



## CARSTEN M. HÜTTCHE (MSc.)

*Senior Environmental, Ecological and Water Resources Specialist with experience in water quality assessments, contaminant source studies, biodiversity land use assessments, environmental risk and impact assessment, sustainable drainage design and management, green infrastructure and bio-engineering solutions, water treatment technologies and processes, GIS model development for environmental sensitivity mapping, climate change adaptation assessment for building climate change resilience.*

### **Year of Birth**

1966

### **Nationality**

German / Singapore PR

### **Education**

M.Sc. Biology (Tropical Ecology), Freie Universität Berlin (FU Berlin) in conjunction with National University of Singapore (NUS)

### **Professional Registration**

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### **Total Years Experience**

25 years

### **Professional Associations**

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### **Language Capabilities**

German (Mother Tongue)  
English (Excellent)  
French (Good)  
Indonesian (Good)

### **Countries of Work Experience**

Indonesia, Malaysia, Singapore, Philippines, Maldives, India, Iran, Afghanistan, Thailand, Germany, SAR Hong Kong, China, Timor Leste, Morocco, Solomon Islands, Vietnam.

Carsten is an experienced environmental and urban drainage specialist with 25 years professional experience. He has been working in Singapore since 1993, and has been based there since. He currently works closely with Singapore's government agencies, providing specialist biodiversity and environmental design advice on applied Bio-Engineering solutions for ABC Watershed Projects. Carsten possesses full familiarity with Singapore ecological and environmental conditions and legislation, and how this relates to natural resources management in the country. He has worked on a number of similar projects in South and South East Asia, China, Africa, Middle East, and the Pacific Region and has been responsible for leading, managing, and coordinating multi-disciplinary environmental, ecological and water resources projects.

His environmental management experience includes undertaking water quality assessments, contaminant source studies, biodiversity and land-use assessments, and environmental risk/impact assessments and pollution control studies. He has also acquired an expertise in Climate Change Adaptation Assessment. In Indonesia and Timor Leste, he has pioneered together with other specialists the development of a GIS based model for the mapping of environmental sensitive areas for policy decision-making and land-use planning.

He has a Masters Degree in Biology (major Tropical Ecology) from the Freie Universität Berlin (FU Berlin), one of Germany's leading universities.

Carsten is the Founder and Director of four environmental businesses in Singapore, Malaysia and Indonesia: Environmental Professionals (Enviro Pro), 1998, environmental design and consultancy; Enviro Pro Green Innovations (EPGI) (S) Pte Ltd, 2009, green infrastructure design and implementation; P.T. Enviro Pro Indonesia, 2007, environmental consultancy and capacity building and Enviro Pro Green Innovations (M) Sdn Bhd (2012), green infrastructure design and implementation.

Carsten held a Senior Adjunct Lecturer position at Singapore National University (NUS), School for Design and Environment, from 2008 – 2010. He conducted numerous teaching and speaking assignments since 2001.

## **Representative Project Experience**

### **Environmental Impact Assessment for the Proposed Coastal Protection Measures on Sentosa Island**

**Client: Arup Singapore Pte Ltd/ Sentosa Development Corporation (SDC)**

**2018 – Present**

Description of duties: The study will examine how the projected rise in sea level will affect the coast around Sentosa Island, and what measures are needed to be implemented to safeguard the island. The EIA will assess the predicted environmental impacts on Sentosa due to climate change and associated sea level rises, and how the proposed measures will impact the environment with focus on environmentally sensitive receptors. Also, it will assess how the environmental impacts identified can be reduced and mitigated against.

### **Biodiversity Study for Sentosa Island**

**Client: Sentosa Development Corporation (SDC)**

**2017 – Present**

Description of duties: Conducted a Biodiversity Study for Sentosa Island. Provided data and support for an ecologically sound management plan and periodic monitoring programmes to track changes in the habitat and status of species in the study area. Provided recommendations of conservation measures that will be tailored towards SDC's development plan for Sentosa Island.

### **ADB TA 8971- FIJ: Support for Energy Sector Regulatory Capacity and Electrification Investment Planning**

**Client: PT Castlerock Consulting / Asian Development Bank (ADB)**

**International Environmental Specialist (IES)**

**Location: Fiji, Home Office**

**July 2017 – Present**

Description of duties: The project assists with the development of improved frameworks for power sector planning and private participation and will prepare two pre-feasibility studies.

- (i) Screen and categorize each of the network (distribution, i.e. <33kV) and renewable generation projects;
- (ii) Identify relevant selection criteria related to environmental safeguards requirements which should be taken into account in investment decisions;
- (iii) Prepare an environmental assessment and review framework for a subsequent investment program or sector project in accordance with the principles and process requirements of national laws and regulations and ADB's Safeguard Policy Statement 2009 (SPS);
- (iv) Assist in conducting prefeasibility studies for the two potential projects by establishing the environmental baseline, identifying environmental impacts and issues, outlining the due diligence requirements during feasibility study, and undertaking an assessment of government's capacity for compliance with national environmental safeguard requirements and ADB's SPS; and
- (v) Conduct capacity training of relevant government departments.

**Enviro Pro / Singapore**

**Development of Jurong Lake Garden West, Singapore**

**Client: National Parks Board, Singapore**

**2017 – Present**

Description of duties: Development of bio-engineered and WUSD designs to incorporate features of ecological enhancement, including the planting and selection of native plant species. Monitoring and supervision of construction activities within ecologically sensitive areas.

**Design and Built Services for Sustainable Drainage Design and Water Treatment Facilities, Teluk Bahang, Pulau Pinang, Malaysia**

**Enviro Pro Green Innovations (M) Sdn Bhd (Fully owned subsidiary)**

**Client: Tetuan Senja Aman Development Sdn Bhd (Malaysia)**

**Environmental Specialist and Bio-Engineering Expert**

**2014 – Present**

Description of duties: Provide consultancy services and Bioengineering techniques for sustainable drainage designs, provide a concept and detail design and Hydrological assessment. Construct specialized bio-engineering systems for the Eco-drain design.

**Environmental Monitoring and Management Program Consultant Service for Supply and Laying of Additional Outlet Pipes at Bukit Kalang Service Reservoir**

**Client: Singapore Environmental Consultancy & Solutions Pte Ltd/Public Utilities Board**  
**2016 – Present**

Description of duties: Conducted a pre-construction and construction survey of fauna, and the development of a Biodiversity Management Plan. Carried out surveys on mammals, reptiles, amphibians, birds, odonates and butterflies using transects and fixed position camera trapping.

**Biodiversity Management and Monitoring for LTA Road Expansion at Lorong Halus**

**Client: Singapore Environmental Consultancy & Solutions Pte Ltd/Hwa Seng Builder Pte Ltd**

**2015 – Present**

Description of duties: Conducted a Biodiversity Impact Assessment for a road expansion of KPE/TPE Interchange to Punggol Central in Singapore. The scope of the BIA included the physical environment and ecological baseline analysis for aquatic and terrestrial ecosystems, direct and indirect impact analysis, mitigation measures and environmental monitoring plans. During the construction process, monthly ecological monitoring surveys have been conducted.

**Technical Assistance To Pt. SMI For Up-Grading Environmental And Social Risk Management**

**Client: PT Castlerock Consulting / AFD (Agence Francaise de Development)**

**International Environmental Specialist (IES)**

**Location: Jakarta, Indonesia**

**Main project features: The project supports PT SMI with technical assistance in appraising and assessing renewable energy, energy efficiency, and climate change projects.**

**May 2016 – July 2017**

Description of duties:

- Assisting the financing institution in upgrading its environmental and social risk management practices.

- Help the financing institution improve its skills in appraising and assessing renewable energy, energy efficiency, and climate change projects, on technical, financial, and environmental and social impact terms. The deliverable is in the form of comprehensive modules for each subsectors of RE and CC investments (hydropower, waste-to-energy, biomass, etc.).

- Promote RE and EE investments in Indonesia and, in so-doing, develop the financing institution pipe of projects.

**Technical Assistance Project Preparation Grant (TAPP) For Solar Pv Power Project In Sumba Island**

**Client: PT Castlerock Consulting / Millennium Challenge Account (MCA)- Indonesia**

**Location: Jakarta/ Sumba, Indonesia**

**International Environmental Specialist (IES)**

**September 2016 – 2017**

Main project features: The project supports the developer to receive grant support by MCA-I for the generation and distribution of Solar PV Power.

Description of duties:

i. Revise ESMS document according to MCA-I Guidelines.

ii. Revise ESMP document according to MCA-I Guidelines, including: HSE policy, Grievance Mechanism, Monitoring Plan, Community Health, Safety and Security Management Plan.

**Enviro Pro / Singapore**

**Water Sensitive Design and Build Services for Residential Development “The Tembusu” at Tampines Road, Singapore**

**Client: Wing Tai Asia Ltd Singapore**

**2014 – 2017**

Description of duties: Development of bio-engineered and WUSD designs to incorporate features of ecological enhancement, including the planting and selection of native plant species. Monitoring and supervision of construction activities within ecologically sensitive areas. Design and Build Services for Residential Development.

**Enviro Pro / Singapore**

**Upper Cisokan Pumped Storage Power Project - Supervision Engineer**

**Jakarta/Bandung/Upper Cisokan, Indonesia**

**Client: Sinotech Engineering Consultants, Ltd. / PT PLN (Persero)/ WB**

**Environmental Engineer A**

**February 2016 – 2017**

Description of duties: The project supports and supervises the implementation of the Upper Cisokan Pumped Storage Power Project by PT PLN.

Activities performed:

- Review and provide recommendations on the ESMP/SSHP prepared by the contractor for Package 1 of the Project.

- Prepare training materials related to the implementation program of the ESMP/SSHP.

- Establish a project team of environmental inspectors, as well as the procurement of environmental monitoring equipment.

**Enviro Pro / Singapore**

**Ecological/Biodiversity Impact Assessment for Upgrading Works at Chestnut Avenue Waterworks (CAWW)**

**Client: Public Utilities Board (PUB)**

**Singapore Ecology Specialist**

**2015 – 2016**

Description of duties: Conduct a Biodiversity Impact Assessment (BIA) for CAWW upgrading project by PUB. This includes a Physical Environment and Ecological Baseline Analysis for Aquatic and Terrestrial Ecosystems, Direct and Indirect Impact Analysis, Mitigation Measures and Environmental Monitoring Plans.

**STRATEGIC FRAMEWORK FOR INFRASTRUCTURE INVESTMENT PLANNING (SFIIP) (TA-8345 REG)**

**Client: Asian Development Bank (ADB)**

**Location: Marshall Islands (RMI)**

**Climate Change Specialist**

**October 2015 – October 2016**

Main project features: Technical assistance to define a framework for strategic planning of economic and social infrastructure investments, anchored in the National Strategy Plan (NSP) of the Marshall Islands

Description of duties:

- i. Review the experience of RMI with (a) asset management and maintenance, including processes for budgeting, and monitoring; and (b) water harvesting, energy efficiency, renewable energy, climate proofing and infrastructure planning and investment, and draw on lessons learned to guide the development of the framework.
- ii. Collect and review existing studies and reports on the vulnerability and risks of climate change and natural disasters for RMI and the possible effects on infrastructure operation and development. Review current policies to mitigate and adapt to climate change risks.
- iii. Formulate a high-level assessment of the major risks and vulnerability to climate change and natural disasters for RMI and the potential effects on infrastructure.
- iv. Consult with sector agencies, project staff and climate change experts on the options for adapting and mitigation of infrastructure.
- v. Develop the prioritization methodology and ensure that climate change and natural disaster considerations are adequately incorporated.
- vi. For each sector, identify specific criteria, measures and standards that should be incorporated into the planning and design of infrastructure investments to take account of water conservation/harvesting, and energy efficiency/renewables.
- vii. Contribute to the funding strategy by identifying potential sources of funding from various climate change funding initiatives for RMI and their possible contribution to funding of new infrastructure or asset maintenance.
- viii. Prepare recommendations on other policies, strategies and measures that should be undertaken to mainstream climate change and natural disaster issues in RMI, and develop criteria, measures and standards needed to ensure that the potential effects and risks of climate change and natural disasters on infrastructure and the country as a whole are incorporated in future infrastructure investments, in line with the objectives in the NSP.

**Public-Private Partnership Support Project (P3SP) – In Vietnam**

**Client: EGIS International / ADETEF / Ministry of Planning and Investment / ADB**

**Location: Hanoi, Vietnam**

**International Environmental Specialist (IES)**

**June 2015 – 2018 (6 months)**

Main project features: The project support the PPP Office at the Ministry of Planning and Investment on the proposal and appraisal processes for PPP in Vietnam.

Description of duties:

- i. Support the PPP Office in establishing standard procedures for environmental screening and assessment of PPP projects during preparation and approval, and environmental monitoring during implementation procurement.
- ii. Review and if needed develop national environmental sustainability policy for PPPs in Viet Nam in line with international best practice.
- iii. Develop program and modules and deliver targeted trainings to PPP Office and ASAs on compliance and application of environmental sustainability analysis in PPP projects at critical project cycle phases.
- iv. Advise and support the PPP Office and ASAs on environmental sustainability aspects of the PPP infrastructure projects proposed for and supported by PDF through: (i) review the proposed PPP projects' overall soundness of environmental sustainability and risk mitigation at submission for PDF support, (ii) review of TORs of the PDF consultants to ensure adequate coverage of environmental issues, and (iii) comprehensive and constructive review of outputs produced by the consultants funded by PDF to ensure adequate mainstreaming of environmental sustainability issues in the PPP projects under preparation.

**Enviro Pro Green Innovations (M) Sdn Bhd (Fully owned subsidiary) / Environmental Professionals (Enviro Pro)**

**Environmental Assessment and River Rehabilitation for Sungei Satu, Batu Ferringghi, Penang, Malaysia**

**Client: Selangor Dredging Berhard (SDB) Properties**

**Environmental Consultant, Design and Build**

**2011 – 2016**

Description of duties: Hydrology, hydraulic, water quality and ecological studies of Sungei Satu. Detailed Bio-Engineering Design for River Rehabilitation and construction supervision. Construction of River Rehabilitation project.

**Enviro Pro / Singapore**

**Limited Scope Biodiversity Assessment (BIA) for Proposed Windsor Green Nature Park and Water Sensitive Urban Design at Central Catchment Nature Reserve, Singapore**

**Client: National Parks Board/ Millenniums Consultants Pte Ltd**

**Biodiversity Specialist / Project Director**

**2014 – 2016**

Description of duties: Conduct a Limited Scope Biodiversity Impact Assessment (BIA) for Windsor Nature Park project. This includes a Physical Environment and Ecological Baseline Analysis for Aquatic and Terrestrial Ecosystems, Direct and Indirect Impact Analysis, Mitigation Measures and Environmental Monitoring Plans. Another component is the green infrastructure design for a phyto-remediation system and open water ecosystem.

**Developing And Designing A Logic Model And Business Process (Contributing To The Development Of Strategic Plan [Renstra] For The Ministry Of Environment (KLH)**

**Client: Danida / Ministry of Environment Indonesia**

**Location: Jakarta, Indonesia**

**Team Leader**

**July - November 2014**

Main project features: Assistance to the development of a strategic plan for KLH  
Description of duties: The project provided inputs into the next strategic plan and re-organization of KLH's management systems. The consultant team provided technical inputs to KLH on international benchmarking on strategies for climate change, biodiversity and sustainable development. The project also reviewed KLH's institutional arrangement to manage these key strategic areas in Indonesia and provided technical support for an improved institutional structure of the ministry. This project formed part of Component 1 of the DANIDA funded Environmental Support Programme ESP3, which aims at supporting the effective implementation of consolidated environmental management and climate change policies by combining support to three thematic areas, at both national and decentralized levels. One of the thematic areas is improved implementation of existing planning and management systems by environmental management institutions, aiming at a more efficient use of environmental funds. This planning support will be provided to Ministry of Environment (KLH), Bureau of Planning and International Cooperation.

**System Analysis And Programme Assessment**

**Client: Danida / Ministry of Environment Indonesia**

**Location: Jakarta, Indonesia**

**Position held: Team Leader**

**August 2013 – February 2014**

Main project features: Assistance to the development of a strategic plan for KLH  
Description of duties: Support to KLH in conducting system analysis and programme assessment of the priority and strategic programmes of KLH. The output to be fed into the ongoing development and design models and business processes as part of the RENSTRA planning. SWOT analysis and focus group discussions. This project formed part of Component 1 of the DANIDA funded Environmental Support Programme ESP3, which aims at supporting the effective implementation of consolidated environmental management and climate change policies by combining support to three thematic areas, at both national and decentralized levels. One of the thematic areas is improved implementation of existing planning and management systems by environmental management institutions, aiming at a more efficient use of environmental funds. This planning support will be provided to Ministry of Environment (KLH), Bureau of Planning and International Cooperation.

**Vietnam Road Asset Management Project (VRAMP)**

**Client: EGIS International / Ministry of Transport / The World Bank**

**Location: Hanoi, Vietnam**

**International Environmental Specialist (IES)**

**January - April 2014**

Main project features: The project provides project management support to the Vietnam government for the implementation of road asset management tasks.

Description of duties: Updating the EIA and EMPs according to updated road designs. Training on environmental issues for Client's and other stakeholders. Conducting Project Disclosure program, public consultation as required. Preparing environmental contents of bidding documents and cost estimates for environmental management and monitoring programs under the EMP. Providing inputs for Monthly Report and Final Project Completion Report.

**Enviro Pro / Singapore**

**Environmental Management and Monitoring Plan (EMMP) for Sungei Buloh Nature Reserve Re-development**

**Client: National Parks Board/Zhengda Construction Pte Ltd**

**Environmental Specialist and Project Director**

**2011 – 2014**

Description of duties: Provide environmental management and monitoring consultancy services for ambient water quality during the redevelopment of Singapore's only wetland nature reserve.

**Enviro Pro / Singapore**

**Design, Supply and Install of Floating Wetlands at Kranji Reservoir**

**Client: Public Utility Board (PUB), Singapore/ML International Pte Ltd (Contractor)**

**Environmental and Bio-Engineering Specialist**

**2010 – 2011**

Description of duties: Design and Supply Wetlands and Floating Gardens at Kranji Reservoir, Singapore

Design, installation and maintenance of wetland habitats and floating gardens at Kranji Reservoir under the ABC Watershed Manager Program.

**EPI / Singapore**

**Supply and Install of Cleansing Biotope Wetlands at Bishan Park**

**Client: Public Utility Board (PUB)/ National Parks Board, / Chye Joo Construction Pte Ltd (Contractor)**

**Environmental and Bio-Engineering Specialist**

**2010 – 2011**

Description of duties: Build and maintain a 4,500 sqm large cleansing biotope wetland system at Bishan Park for the treatment of Kallang River water.

**Eastern Indonesia National Road Improvement Project (EINRIP)**

**Client: AUSAID - Loan No. AIPRD-L002**

**Location: Indonesia**

**TL of team of environmental and social safeguard specialists and sub-cons/  
International Senior Environmental Specialist**

**September 2009 – 2012 (18 months)**

Main project features: The project provides project management support to the Indonesia government for the implementation of the Eastern Indonesia National Road Improvement project.

Description of duties: Advise the Indonesian Ministry of Infrastructure Development, Road Section, on AUSAID compliant land acquisition, resettlement and social and environmental impact mitigation management. Review and implement latest Indonesian environmental and social safeguard policies and regulations and align



them with AUSAID standards. Review and up-date environmental review frameworks and guidelines for the implementation of environmental and social safeguards for AUS\$ 450 million of road improvement projects. Lead a team of monitors to supervise and verify compliance with ESS and provide feedback on rectification. Provide conflict resolution mechanism on the aspects of land acquisition and environmental impact mitigation during the preparation and implementation of the project to the Indonesian Infrastructure Ministry and other stakeholders.

**AMDAL (EIA) For Cluster IV Flood Control Development, Development Of Main Drainage And Irrigation Rehabilitation In Aceh Province**

**Location: Indonesia (Aceh Province)**

**Client: United Nations Development Program (UNDP)/ Multi-Donor Trust Fund**

**Aceh**

**Team Leader for environmental and social safeguard team**

**April 2010 – February 2012**

Main project features: Cluster AMDAL for Water Resources Rehabilitation in Aceh Province

Description of duties: Lead a multi-disciplinary team of national and international consultants to provide full AMDAL/ EIA services for the development and rehabilitation of water resources infrastructure in post-tsunami Aceh province.

This included a cluster approach for EIA/ AMDAL for four sub-projects in the water resources sector. This is a new approach in more efficient environmental impact assessment in Indonesia.

**Climate Resilience Road Project For Timor Leste**

**Client: SKM / The World Bank**

**Location: Timor Leste/ Jakarta, Indonesia**

**International Environmental Specialist (IES)**

**February – March 2011 (1 months)**

Main project features: The project provided feasibility assessment services for the rehabilitation of the road link in Timor Leste (Dili to Ainaro)

Description of duties: Provided an Environmental Management Plan (EMP) and climate change impact assessment for the road link from Dili to Ainaro in Timor Leste, including the identification of significant environmental impacts from project activities based on a desktop environmental sensitive area analysis (ESM) and ground assessment data. Develop a set of site-specific environmental impact mitigation measures for the project, including recommendations for capacity building, disclosure of information and EMP budget.

**EPI / Singapore**

**Design, Supply and Install of Floating Wetlands at Jurong Lake**

**Client: Public Utility Board (PUB), Singapore/ Chartworth (Contractor)**

**Environmental and Bio-Engineering Specialist**

**2009 – 2010**

Description of duties: Design and Supply Wetlands and Floating Gardens at Jurong Lake, Singapore

Design, installation and maintenance of wetland habitats and floating gardens at Jurong Lake under the ABC Watershed Manager Program.

**EPCI / Singapore**

**Design, Supply and Install of Floating Wetlands at Pandan Reservoir**

**Client: Public Utility Board (PUB), Singapore**

**Environmental and Bio-Engineering Specialist**

**2009 – 2010**

Description of duties: Design and Supply Wetlands and Floating Gardens at Pandan Reservoir, Singapore

Design, installation and maintenance of wetland habitats and floating gardens at Pandan Reservoir under the ABC Watershed Manager Program.

**Enviropro / Indonesia**

**Client: Unilever Indonesia (UL Indonesia)**

**Environmental and Bio-engineering specialist**

**2008 – 2009**

Description of duties: Water Sensitive Design, Unilever Training Centre, Megamendung

- Conduct site survey and design the stormwater management plan using water sensitive bio-engineered systems and landscape water features

**PREPARATION OF THE ROAD NETWORK DEVELOPMENT PROJECT, TIMOR LESTE**

**Client: Cardno Acil / ADB**

**Location: Timor Leste**

**Main project features: Develop a strategic environmental assessment (SEA) framework for the development of a national road network in Timor Leste International Environmental Specialist (IES) / Climate Change Adaptation Specialist February 2009 – October 2009 (4 months, intermittent)**

Description of duties: In the absence of complete EIA legislation and data in Timor Leste, the consultant developed a SEA framework and methodology for the environmental assessment of programmed national roads. A GIS database was compiled, containing environmental data for the whole of Timor Leste. The consultant developed a methodology to process those environmental data for identifying spatial environmental sensitivity zone at national level. For selected, programmed road links, the consultant prepared an initial environmental examination as well as a summary IEE, in accordance with applicable national standards. In addition, a Climate Change Adaptation Study was performed for two proposed road links using the developed strategic assessment framework and GIS database.

**Proposed MFF: Energy Sector Development Investment Program – Tranche 1 & 2, Afghanistan**

**Client: ADB**

**International Environmental Specialist (IES)**

**August 2008 – December 2009 (3 months)**

Main project features: Support to the government of Afghanistan to reconstruct energy infrastructure.

Description of duties: Prepared the initial environmental examination (IEE) and Summary IEE for four energy sector Subprojects in Afghanistan, based on remote sensing environmental data and GIS processing in accordance with applicable national standards, and in line with ADB safeguards requirements. Synchronize environmental assessment requirements between GoA and ADB.

**Enviropro / Singapore**

**Client: Roundhill Properties Pte Ltd**

**Environmental and Bio-engineering specialist**

**2008 – 2009**

Description of duties: Environmental and Water Planning and Management Services for Roundhill Properties, Bintan Island

- Conduct a full BIA and hydrological survey. Design the stormwater management plan for integrated 80 ha resort development.

**Enviropro / Singapore**

**Client: Urban Redevelopment Authority (URA), Singapore**

**Biodiversity Impact Assessment for Berlayer Creek Coastal Boardwalk**

**Biodiversity Impact Specialist**

**2007 – 2008**

Description of duties: Biological Impact Assessment (BIA) for proposed Boardwalk in Berlayer Creek

- Conduct a full BIA for different boardwalk options through Berlayer Creek environmental sensitive areas and advise on adequate environmental mitigation measures for the protection of environmental sensitive areas.

**Development Of Newwater Reservoir In Mandai Hill**

**Client: Public Utilities Board (PUB)/ CH2MHILL**

**Position held: Team Leader of multi-disciplinary team of 10 EIA specialists**

**March 2008 to July 2008 (8 months)**

Main project features: Development of a service water reservoir and provision of process water to industry

Description of duties: Conducted an EIA for a 13 ha service water reservoir adjacent to a nature reserve in central area of Singapore. Services performed included tree inventory and GIS mapping, wetland and drainage mapping, biodiversity inventory, direct, indirect and cumulative environmental impact analysis. A detailed impact mitigation and environmental management plan was devised, addressing construction impacts and buffer zones to the nature reserve. An environmental impact compensation strategy was developed and proposed to the Singapore GOV. This included the provision of unused land as a permanent buffer zone to the nature reserve.

**Evaluation Of The European Commission's Cooperation And Partnership With The People's Republic Of China - Country Level Evaluation**

**Client: Evaluation Unit , EuropeAid Co-operation Office**

**Location: PR China**

**Position held: Evaluation Team Member - Environment**

**November 2006 – April 2007 (3 months, intermittent)**

Main project features: Conduct a country-level evaluation of EC development aid program in China

Description of duties: This evaluation provided an independent assessment of the EC-China cooperation and partnership programme and encompasses the years 1998-2006. It contributed to fulfilling the Commission's due accountability responsibilities to the European Parliament and European Council. The evaluation

was designed to give insights into the strategic design and quality of implementation of the cooperation and partnership strategy with China; it also examined the interaction between the various areas of policy dialogue, the thematic programs and the country cooperation programme so as to assess the level of synergy achieved. The environment sector evaluation of the EC China Country Strategy Paper, the collaboration with the State Environmental Protection Administration (SEPA) and various EC environmental programs and projects in China.

**Strategic Environmental Assessment For Comprehensive Transport Study**

**Client:** EGIS / Iranian Ministry of Infrastructure

**Location:** Islamic Republic of Iran

**International Environmental Specialist (IES)**

**April 2004 – December 2008 (6 months, intermittent)**

Main project features: Strategic Environmental Assessment (SEA) of Transport Sector in Iran

Description of duties: Based on current transport policies and plans of Iran, developed a detailed environmental assessment process that was integrated into a multi-criteria assessment process for transport plans and programs, in the absence of SEA legislation in Iran at that time. The SEA was then used to streamline and prioritize transport programs such as modes of transportation and national transport corridors.

**Earthquake And Tsunami Emergency Support Project (ETESP)**

**Location:** Indonesia (Aceh and Nias, North Sumatra)

**Client:** ADB / Black & Veatch

**International Environmental Specialist (IES) / Ecological Risk Assessment Specialist**

**November 2006 – June 2008 (8 months)**

Main project features: Strategic Environmental and Social Assessment (SEA) of Sub-District Spatial and Economic Development Plans in Post-Tsunami Aceh Province

Description of duties: Aceh Province has been given the unique opportunity under the Aceh Autonomy Law to protect remaining large-scale intact forest resources by moving towards a better planning and management approach of its natural resources.

The ADB funded project provided regional economic and spatial development action plans for sub-districts in three Kabupaten. The Consultant provided a strategic assessment of environmental and economic policies, programs and plans with a focus on minimizing impacts on remaining intact forest resources. A recent logging moratorium had increased the pressure to the provincial government for a sustainable approach for forest management in Aceh. The consultant developed an Environmental Sensitivity Mapping (ESM) methodology, targeting the rehabilitation and economic reconstruction process of spatial land units.

Subsequently, the ESM methodology was tested as a decision-making tool in the allocation of future land uses. Key recommendations of the SEA include the allocation of non-forested lands with low environmental sensitivities for future economic development zoning and protection of intact forest resources. The findings & tools of the SEA were then transferred to the prov. BAPPEDA and BLH.

**Metropolitan Sanitation Management And Health Ppta (TA NO: 4763-INO)**

**Location:** Indonesia

**Client: ADB / Black & Veatch**

**International Environmental Specialist (IES)**

**November 2006 – August 2008 (4 months, intermittent)**

Main project features: Preparation of city sanitation strategies (CSS) for maximum of five metropolitan core cities in Indonesia, preparation of subproject appraisal reports and project formulation for three cities

Activities performed: The consultant provided a strategic environmental assessment of sanitation policies, programs and plans in selected metropolitan cities through a participatory approach of consultation in each city. This included also environmental risk analysis in order to comprehend current and future environmental and social risks from lack of proper sanitary facilities as inputs to city sanitation strategies.

Watercourses in cities are grossly polluted creating potential health risks, odor and adverse visual impact. For 3 selected cities (Makassar, Medan and Yogyakarta) a sanitary investment program was defined & subjected to appraisal report.

The consultant performed initial environmental examinations as part of the appraisal process in line with ADB requirements. Subprojects were categorized as A and B projects. A number of subprojects were classified as Category A, requiring further detailed EIA and/or resettlement plans.

**Enviropro with Black & Veatch (SEA) Pte Ltd.**

**Client: Public Utilities Board (PUB)**

**Environmental Manager for ABC Watershed Manager Program – Masterplanning**

**January – December 2007 (12 months)**

Description of duties: Manage all environmental and ecological aspects of the masterplanning phase for the ABC Watershed Manager Program – Western Catchment

- Prepare detailed ecological and water quality assessments for the Western Catchment based on satellite imagery remote sensing and ground surveys
- Develop environmental and ecological protection strategies for integration into the masterplan (i.e. Eco-Waterways).
- Conceptualize bio-engineering applications for stormwater treatment for the Western Catchment
- Conduct stakeholder consultation meetings during the masterplanning process and provide technical and other inputs for PUB in formal and informal meetings.

**Earthquake And Tsunami Emergency Support Project, Irrigation Component (ETESP)**

**Year: February 2006 – November 2007 (6,5 months)**

**Location: Indonesia (Aceh and Nias, North Sumatra)**

**Client: ADB / Black & Veatch**

**Main project features: Reconstruction and Rehabilitation of Irrigation Systems in Post-Tsunami Aceh**

**Position held: International Environmental Specialist (IES)**

Description of duties: The Ministry of Environment (KLH) has introduced an amended review process for reconstruction and rehabilitation projects in Aceh and Nias to cater to the needs of the reconstruction effort and expedite the environmental assessment and review process. ADB format IEE reports, submitted simultaneously to both ADB and KLH, form the basis of the environmental review process. The

consultant helped to further streamline the process by proposing and implementing a system of batching IEE reports based on a set of cluster criteria. These criteria were subsequently adapted by ADB and KLH.

During the following SPPR process, the consultant prepared 29 IEE Reports, of which 22 district-batched IEEs and 7 individual IEEs were compiled. This covered a total of 93 Subprojects with irrigation schemes in 15 districts.

**Enviro Pro with Public Utilities Board in partnership with Nanyang Technology University (NTU), Singapore**

**Client: Public Utilities Board (PUB), Singapore and Prime Minister's Office 'The Enterprise Challenge Fund'**

**Enhanced Engineering Wetlands for the removal Nutrients from Stormwater Run-off  
Co-Principal Investigator/Bio-Engineering Specialist  
September 2005 – July 2006 (10.0 months)**

Description of duties: Design and conduct pilot field trial of enhanced constructed wetlands for the treatment of stormwater at Kranji Reservoir, Singapore

- Environmental assessment of pollutants in stormwater run-off from urban and mixed water catchments in Singapore
- Design development for stormwater treatment systems based on constructed wetland technology and iron-mediated nutrient removal
- Construction of a 1,000 sqm pilot system and subsequent testing of performance and function
- Recommendations of the wider application of enhanced constructed wetland technologies in reservoirs in Singapore.

**Kerry Hill Architects, Singapore**

**Client: University of New South Wales (UNSW) in Singapore**

**Ecologist**

**November 2005 – February 2006 (3.0 months)**

Description of duties: Advise UNSW and the appointed architect and landscape architect in environmental design solutions for stormwater quality management and water treatment technologies for the UNSW campus in Singapore

- Assessment of stormwater run-off volume and quality from the site's catchment
- Design and integration of stormwater treatment systems based on constructed wetland technology in landscape concept design
- Design for three new gullies and conversion of existing concrete gullies based on principles of sustainable environmental design
- Advise on wetland plant selection for newly design internal drainage systems
- Advise on wastewater treatment systems for grey and black water for design conceptualization.

**BLACK & VEATCH INFRASTRUCTURE LTD., Thailand**

**Client: Government of Thailand**

**International Environmental Specialist**

**January 2005 (0.5 months)**

Description of duties: Feasibility for Samut Prakarn Wastewater Treatment Project, Thailand

- Provide feasibility assessment on the application of engineered wetlands for post-treatment of treated wastewater

- Discuss benefits of central wastewater treatment for water quality in the Upper Gulf of Thailand
- Provide comments and advise on seawater quality modeling of treated water discharge from sea outfall and subsequent ecological marine impacts.
- Assess the suitability of treated effluent quality for application in agriculture and aquaculture projects as alternative to ocean discharge.

**Enviropro / Singapore**

**Ambient Water Quality Specialist**

**Client: Cableski Ventures (S) Pte Ltd**

**July 2003 – September 2003 (3.0 months)**

Description of duties: Water Quality Assessment of Jurong Lake

- Develop and conduct an ambient water quality assessment program for recreational water use in Jurong Lake.
- Supervise hydrographic and water velocity assessments
- Evaluate measurements against national and international standards for recreational uses of lakes
- Advise on public health risks and technical measures to improve ambient water quality.

**Enviropro / Singapore**

**Client: Singapore Zoological Garden**

**Wastewater Treatment Specialist**

**March 2001 – April 2003 (6 Months)**

Description of duties: Design and construction Supervision for Constructed Wetland Wastewater Treatment System at Singapore Night Safari, Singapore

- Design a constructed wetland system for the treatment and recycling of animal husbandry wastewater
- Advise on environmental compliance issues
- Prepare and submit construction drawings National Environmental Agency (NEA)
- Supervise construction and commissioning of system.

**Enviropro / Singapore**

**Client: Bale Village Development, Indonesia**

**EIA (AMDAL) Specialist**

**December 2002 – February 2003 (3 Months)**

Description of duties: RKL/RPL for Kampong Bale Village Development / Riau Islands, Indonesia

- Conduct project environmental assessment process within framework with Indonesian legislative framework (AMDAL).
- Advise on best environmental management practices for wastewater treatment and treated effluent discharge.
- Prepare and submit EIA documentation to authorities for approval.

**Enviropro / Singapore**

**Client: P.T. Bintan Hotels, Indonesia**

**Wastewater Treatment Specialist**

**February 2002 – March 2002 (2 Months)**

Description of duties: Wastewater Treatment Systems for Hilltop Spa for PT Bintan Hotels, Indonesia

- Site assessment and design services for wastewater treatment system up-grading (re-design of grease traps)
- Processing of pre-treated wastewater with constructed wetland technology, design development and drawings
- Advise on wastewater treatment standards and processes for spa effluent at Banyan Tree Bintan Resorts
- Construction supervision and commissioning.

**Community-Based Ecotourism Venture Development In Pulau Bintan**

**Client: DFID Tourism Challenge Fund / PT Bintan Resort Cakrawala**

**Location: Indonesia**

**Position held: International Team Leader of multi-disciplinary specialist team**

**July 2001 – November 2003 (15 months)**

Main project features: Development of community-based ecotourism microenterprises

Activities performed: The project aimed to develop community-based ecotourism micro-enterprise for rural low-income families adjacent to the 23,000 ha Bintan Resorts. The consultant led a multi-disciplinary team of specialists for the development of a comprehensive project implementation framework using a participatory approach: a detailed stakeholder analysis was conducted to facilitate a formal cooperation framework agreement between local communities, regional development and private sector tourism partners. Based on the consultations, the consultant designed and implemented micro-enterprise and tourism-capacity building programs. The consultant provided staff management of multidisciplinary team throughout the project period. As part of the capacity building programs, the consultant also developed strategies and plans for sustainable resources usage on village level.

**Strategic Environmental Assessment (SEA) Advisory Services To Provincial Government Of East Kalimantan In Spatial Planning And Environmental Impact Management In The Transportation Sector**

**Client: USAID - Natural Resources Management Program /IRG**

**Location: Indonesia (East Kalimantan)**

**International Environmental Specialist (IES)**

**October – December 1998 (3 months)**

Description of duties: The Natural Resources Management Program, attempted to devise alternative policies and institutions to satisfy the economic needs of the country without sacrificing environmental health, productivity and its natural heritage. The consultant performed an environmental and social impact analysis of spatial planning policies, programs and plans for road sector in East Kalimantan's protected forested areas. Consultations and field rapid environmental evaluations of road projects within protected areas were conducted during the assignment. The consultant proceeded with a strategic analysis of the EIA framework (AMDAL) and its role in the spatial planning and impact management of the road sector in the absence of SEA legislation in Indonesia. As outputs, policy recommendations for making AMDAL a tool for road planning in forests in Indonesia were provided. The consultant



gave direct inputs to the five-year Spatial Plan for the province; provided guidelines for GEG and AMDAL integration to BAPPEDAL.

**Ecological and Socio-Economic Reporting for Fil Estate's Laurel Volcanic Mountain Ridge-Teal Lakeside Integrated Development, Philippines**

**Location: Philippines**

**Client: Private-Sector Client**

**International Environmental Specialist (IES)**

**1996 to 1997 (6 months)**

Main project features: Review and examination of Ecological and socio-economic aspect of the fil estate's laurel volcanic mountain ridge-teal lakeside integrated Development

Description of duties: Conduct an environmental evaluation of development programs and site assessments to determined environmentally sensitive areas. Advise Client on EIA requirements for proposed project. Provide program to integrated principles of sustainable development for planning and implementation process.

**Environmental Planning For El Nido Resort / Lio Site, El Nido, Northern Palawan, Philippines**

**Client: Private-Sector Client**

**Location: Philippines**

**1996 (1.5 months)**

Main project features: Preparation of EIA report for the resort development Position held: International Environmental Specialist (IES)

Description of duties: Conduct an environmental site assessment to determined environmental site assessment to determined environmentally sensitive areas in El Nido. Advise client on EIA requirements for proposed project. Provide inputs on sustainable development for planning implementation process.

**Strategic Environmental Assessment (SEA), Environmental Planning & Management For Integrated Tourism Development**

**Client: Bintan Resort Cakrawala/ Bintan Resort Management Pte Ltd**

**Location: Indonesia**

**Senior Environmental Specialist**

**January 1994 – April 1996 (29 months, intermittent)**

Main project features: Bintan Beach International Resort, 23,000 ha integrated tourism development project on Pulau Bintan, Riau Province, Indonesia

Activities performed: The consultant was in charge of a multi-disciplinary team of consultants for the identification of environmental impacts related to the planning and development of the 23,000 ha integrated tourism development. At the onset of the project, the consultant supervised the AMDAL Regional EIA process, which forms part of a SEA due to the size of the planned project. The AMDAL Regional addressed regional economical development objectives, social, economic and environmental impacts of large-scale development in the region. This was performed based on a master plan for the integrated resort development. Subsequently, the consultant followed recommendations of the AMDAL Regional and implemented the prescribed AMDAL/EIA procedures for individual development components of the project.