

- 1. Proposed Position:** **CIVIL ENGINEER, CONTRACT & PROCUREMENT SPECIALIST**
- 2. Name Of Expert:** **Christopher John TOLLEY**
- 3. Address** 53 Cliff Street, Raglan 3225, New Zealand  
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**E-mail Address:** [tolleyc@gmail.com](mailto:tolleyc@gmail.com)
- 3. Date of Birth:** 15 February 1959      **Citizenship:** New Zealand & UK
- 5. Education:** BSc (Civil Engineering), Southampton University, 1980  
MBA, University of Bath, 1996
- 6. Membership of Professional Associations:** Member, Institution of Civil Engineers (UK), 1985  
Member, Chartered Institution of Highways & Transportation (UK), 1991  
Fellow, Institution of Professional Engineers New Zealand, 2016  
Chartered Professional Engineer (UK & NZ)  
International Professional Engineer (NZ)
- 7. Other Training:** Best Practice in Pavement Engineering and Design (IPENZ), July 2017  
Managing AECOM Projects (MAP) – Contracts, February 2013  
NZ Partnerships for International Development Fund, Appraisal Training, November 2012  
FIDIC Asia-Pacific Contract Users' Conference, 2011  
Personal Security and Communications, NZ Defence Force and RedR NZ, NZL, 2005  
PSMJ Project Management Training Course, 2005  
The Contract in Successful Project Management, Centre for Advanced Engineering, Christchurch, New Zealand, February 2002  
HDM-4 Training Course, Fiji, January / February 2001
- 8. Countries of Work Experience:** Afghanistan, Armenia, Bangladesh, Botswana, Cambodia, Cook Islands, Fiji, Georgia, India, Indonesia, Kiribati, Lao PDR, Lesotho, Mongolia, Nepal, New Zealand, Papua New Guinea, Philippines, Russia, Samoa, Solomon Islands, South Africa, Sri Lanka, Swaziland, Timor Leste, Tonga, Tuvalu, Uganda, Uzbekistan, Vanuatu, Vietnam, Zimbabwe.
- 9. Languages:**

	<u>Reading</u>	<u>Speaking</u>	<u>Writing</u>
English	Excellent	Excellent	Excellent
- 10. Employment Record**

<b>From:</b> 2017	<b>To:</b> Present
<b>Employer:</b>	Independent Consultant
<b>From:</b> 2000	<b>To:</b> 2017
<b>Employer:</b>	AECOM New Zealand Ltd
<b>Position held:</b>	Technical Director - Transportation
<b>From:</b> 1991	<b>To:</b> 2000
<b>Employer:</b>	Scott Wilson Kirkpatrick, United Kingdom
<b>Position held:</b>	Team Leader & Project Manager for road projects in Africa and Asia
<b>From:</b> 1988	<b>To:</b> 1991
<b>Employer:</b>	Binnie & Partners
<b>Position held:</b>	Senior Chartered Engineer working on projects in the UK and Lesotho
<b>From:</b> 1986	<b>To:</b> 1988
<b>Employer:</b>	Sir Alexander Gibb & Partners, Botswana
<b>Position held:</b>	Project Manager for variety of infrastructure projects in Botswana
<b>From:</b> 1982	<b>To:</b> 1986
<b>Employer:</b>	Brian Colquhoun Hugh O'Donnell & Partners
<b>Position held:</b>	Engineer on road and infrastructure projects in Southern Africa

**11. Work Undertaken that Best Illustrates Capability to Handle the Tasks Assigned**

**PROCUREMENT**

**Name of assignment or project:** Pacific Aviation Investment Program (PAIP)

**Year:** April 2017 - ongoing

**Location:** Tonga, Tuvalu, Kiribati, Samoa, Vanuatu

**Client:** Tonga Airports Limited

**Main project features:** PAIP, a World Bank funded program, is currently implementing key aviation investments in five (5) Pacific Island countries: Kiribati, Samoa, Tonga, Tuvalu and Vanuatu; and other countries may join in future phases. The program's Implementing Entity is Tonga Airports Ltd (TAL), who leads the program via the Technical and Fiduciary Services Unit (TFSU). The PAIP TFSU also provides project implementation support to the related Pacific Aviation Safety Office (PASO) Reform Project supported by The World Bank.

**Position held:** Periodic Procurement Specialist for Technical and Fiduciary Services Unit (TFSU)

**Activities performed:** As Periodic Procurement Specialist provided operational procurement services, advice, and support to the TFSU and PAIP/PASO stakeholders, and to undertake procurement of all facets of PAIP/PASO investments, following World Bank Procurement Guidelines for Goods, Works, Services and Non-Consulting Services. This includes:

- Undertaking procurement activities
- Procurement Capacity Building and Training
- Support to the Development/Updating of Procurement Support tools and Reporting

**Name of assignment or project:** TA-8852 MON: Regional Road Development and Maintenance Project

**Year:** October 2016 - ongoing

**Location:** Mongolia

**Client:** Asian Development Bank

**Main project features:** The purpose of the Project Preparatory Technical Assistance (PPTA) is to assist the government of Mongolia and specifically the Ministry of Road and Transport Development (MRTD) prepare the Project which will support the country's road sector development strategy, roadmap and investment program. The original scope of the project included the construction of a 272km road section between Baruun-Urt and Bichigt, the final section of the Eastern Regional Road Corridor (ERRC) but this was dropped as the low traffic levels meant it was not economically justified. In addition, the loan commitment of \$200m was not considered sustainable. Focus instead shifted to the development of a sustainable road asset management system and the implementation of priority road maintenance and rehabilitation works funded by a smaller loan of \$60m. The revised scope comprised three components:

- Periodic maintenance of, and safety improvements to, the road between Nalaikh (25 km south of Ulaanbaatar) and Choir (201 km) over a nominal 2-year construction period with an extended 3 year Defects Notification Period. Concurrently the contractor will also be responsible for the routine maintenance of the road over the full 5-year period through a performance based contract model.
- Periodic maintenance of, and safety improvements to, the road between Darkhan and Altanbulag (118 km) over a nominal 2-year period with a standard 1 year Defects Notification period. Concurrently the contractor will also be responsible for the routine maintenance of the road over the full 3-year period through a performance based contract model.
- In addition, and as part of the proposed improvements to road asset management capacity and implementation, a number of maintenance packages will be procured through national competitive.

**Position held:** Procurement Specialist

**Activities performed:** As Procurement Specialist was responsible for (i) reviewing and assessing MRTD and the Government Procurement Agency's (GPA) procurement and internal control capacity and developing a strengthening plan including training material for the PIU, MRTD and GPA on the ADB's procurement requirements; (iii) assessing the capacity of the local road industry to undertake civil works under the project; (iv) completing the draft procurement plan and implementation schedule as required for the Project Administration Manual (PAM); (v) making recommendations on contract packaging; (vi) preparing bidding documents for civil works and construction supervision consulting services acceptable to ADB; and (vii) working with the RAM and PBMC specialists to introduce performance based road maintenance contracting principles and practices to the Mongolian road sector.

**Name of assignment or project:** Munda Airport Emergency Alternate Status (EAS) Project

**Year:** Phase 1 - Design & Procurement from November 2014 to August 2015

Phase 2 - Construction from July 2016 to February 2017

**Location:** Solomon Islands

**Client:** New Zealand Ministry of Foreign Affairs and Trade, Aid Programme

**Main project features:** To allow Munda Airport, West Georgia, to be certified for Emergency Alternative Status (EAS) for Honiara Airfield, the following additional works were required:

- Construction of a new perimeter security fence that meets ICAO and NZCAA Advisory Circular requirements;
- Design specified components, manufacture / supply, install and commission complete new airfield ground lighting (AGL) and navigational aids (NavAids); and
- Construction of a complete new Airport Rescue Fire Fighting building including procurement of two Cat 6 fire trucks.

AECOM developed the detailed designs of these components, developed procurement options and tender documentation; and provided procurement services including tender management and evaluation. Following on from the detailed design and procurement phase of the project, and after finalising the Grant Agreement between the two governments, AECOM were retained by MFAT to supervise the construction of the three works contracts needed to be certified for EAS.

AECOM's role during this phase of the project included the preparation and finalisation of the three construction contracts, engineering services during construction, project and contract management, site supervision of the three works contracts under the NZS3910:2003 Conditions of Contract, managing the survey, clearance and disposal of unexploded ordnance (UXO), procurement of fire trucks and asset management training.

**Position held:** Principal Adviser (Procurement) and Engineer to the Contract

**Activities performed:**

**Phase 1** - As Principal Adviser (Procurement), was responsible for finalising the Tender Management Plan (TMP); opening and evaluation of tenders including preparation of Tender Opening Reports, Technical Commentary Reports and Price Equalisation Reports; taking part as a non-voting member of the Tender Assessment Panel (TAP); and preparation of the TAP meeting summary and Tender Evaluation Reports for all three tenders in consultation with MFAT and in accordance with MFAT procurement guidelines.

**Phase 2** - As Principal Adviser (Procurement) during Phase 2 was responsible for finalising contract documents for all three works contracts based on the NZS3910:2003 Conditions of Contract. As Engineer to the Contract was responsible for the supervision of the works through the site based Engineer's Representative and dealing with all contractual matters.

**Name of assignment or project:** Padma Multipurpose Bridge Project – Evaluation of Suppliers of Friction Pendulum Bearings

**Year:** June to November 2016

**Location:** Bangladesh

**Client:** Korea Expressway Corporation (KEC)

**Main project features:** AECOM were initially employed by Korea Expressway Corporation (KEC), the construction supervision consultant for the Padma Bridge, to prepare an independent Comparative Evaluation Report on the technical proposals submitted by three potential suppliers of the Friction Pendulum Bearings (FPB) specified for the Main Bridge. AECOM were then asked to review and report on the two technical submissions from Wuhan Hirun. These technical submissions included shop drawings, calculation reports, construction and maintenance procedures, bearing testing proposals, quality control plans, and a schedule of work.

**Position held:** Procurement Specialist and Project Manager

**Activities performed:** As Project Manager and Procurement Specialist, was responsible for managing the assignment and preparing the evaluation reports based on inputs from technical specialists.

**Name of assignment or project:** Padma Multipurpose Bridge Project

**Year:** Phase 1 from June 2009 to November 2011

Phase 2 from June 2013 to December 2014

**Location:** Bangladesh

**Client:** Bangladesh Bridge Authority

**Main project features:** The Padma Multipurpose Bridge Design Project comprises a new fixed crossing of the Padma River in Bangladesh, which will consist of a new bridge approximately 6.15km long, approach viaducts, major river training works, approximately 12km of approach roads and bridge end facilities, including toll plazas, service areas and offices. The main bridge is to carry a highway, future rail and other facilities including gas and communication lines. The project poses some of the most significant challenges in bridge engineering involving river scour, earthquake, ship impact, marine construction, cost-effectiveness, and durability, together with the need for developing a combined rail-road crossing to minimize land acquisition.

**Position held:** Contracts Engineer and Project Manager (Phase 2)

**Activities performed:**

**Phase 1** - Developed procurement strategy for project, including contract packaging, in consultation with Government of Bangladesh (GoB), Development Partners (World Bank, ADB, JICA and IDB) and design team. Worked with GoB and Development Partners (DPs) to develop harmonised procurement documents based on DPs Standard Prequalification and Bidding Documents (SPQD & SBD). Developed project specific Prequalification Documents for all civil works contracts

including development of contract specific prequalification criteria. Prepared Bid Documents for all civil works contracts including developing bespoke Two-Stage Bidding Documents for procurement of two largest contracts, Main Bridge and River Training Works. Carried out evaluation and assessment of applications for prequalification for five civil works contracts and prepared Prequalification Evaluation Report for all five civil works contracts. Carried out evaluation of bids for Janjira Approach Road and Bridge End Facilities (AR-01). Prepared, updated and maintained project implementation and procurement schedules.

**Phase 2 -** Following the Government of Bangladesh's decision in February 2013 to finance the construction of the Padma Bridge using their own resources, AECOM were contracted to provide technical assistance to the Bangladesh Bridge Authority with the procurement of the five civil works contracts – Main Bridge (MB-01), River Training Works (RTW-01), Janjira Approach Road and Associated Bridge End Facilities (AR-01), Mawa Approach Road and Associated Bridge End Facilities (AR-02) and Service Area 2 (SA-02). Tasks included updating prequalification submissions, updating Bid Documents including commissioning and supervising additional studies (hydrographic and morphological), assisting with bid process including responding to requests for clarification and managing pre-bid meetings, carried out independent evaluation of bids, including First Stage Technical Proposals and Second Stage Bids for two largest contracts, preparation of Bid Evaluation Reports for contracts worth in excess of US\$2.7 billion and preparation of Contract Documents.

**Name of assignment or project:** Pacific Aviation Investment Program (PAIP) – Tonga, Kiribati and Tuvalu

**Year:** September 2012 to February 2017

**Location:** Tonga, Kiribati and Tuvalu

**Client:** Tonga Airports Limited (TAL), Kiribati Ministry of Communications, Transport and Tourism Development and Tuvalu Ministry of Transportation and Communications

**Main project features:** Phase 1 of the Pacific Aviation Investment Program comprises the assessment, detailed design, bid documentation, procurement and construction supervision to upgrade existing airport facilities in Kiribati, Tonga and Tuvalu to support the continued and sustainable growth of international air transport services. It includes five airports, two in Kiribati (TRW, CXI), two in Tonga (VAV, TBU) and one in Tuvalu (FUN), and covers resurfacing or rehabilitating and upgrading of runways, taxiways and aprons; upgrading the navigational aids (such as runway lighting) and other safety and security facilities to meet ICAO requirements; terminal improvements to ensure safe and efficient movement of passengers, baggage, and freight; providing environmentally sustainable alternatives for running the airport facilities, such as rainwater harvesting, power generation from renewable energy sources, and use of energy efficient equipment and lighting; assuring that all improvements are compliant with ICAO Standards and Recommended Practices (SARP); and preparing a detailed training needs assessment for each country.

**Position held:** Procurement Specialist

**Activities performed:** As Procurement Specialist, was responsible for the development of a Procurement Strategy, including contract packaging, covering three countries, five airports and the procurement of works (civil and building) and goods contracts; the preparation of bidding documents in accordance with the respective government procedures and World Bank guidelines; assisting with bid phase management and bid evaluation including preparation of detailed bid evaluation reports.

**Name of assignment or project:** Samar Secondary National Road Development Project

**Year:** June 2012 to January 2015 (2 ½ months over 5 trips)

**Location:** Philippines

**Client:** Millennium Challenge Account - Philippines

**Main project features:** The Samar Secondary National Road Development Project is a component of the Millennium Challenge Corporation funded Millennium Challenge Account assistance to help facilitate poverty reduction through economic growth in the Philippines. The project objectives are to save time, lower vehicle operating costs for those Filipinos living near the roads, improve profitability and marketability of goods carried on the roads, improve access to social services among communities serviced by the roads, and improve road safety.

**Position held:** Procurement Specialist

**Activities performed:** Member of Bid Review Panel to review the bids for the Contract Package 1, 2, 3 and 4 of the Samar Secondary National Road Development Project in accordance with the qualification, evaluation and award criteria set out in the bidding documents in accordance with MCC's Program Procurement Guidelines and the Review Guidelines.

**Name of assignment or project:** Munda Runway, Noro-Munda Road and Nusatupe (Gizo) Runway Rehabilitation and Upgrade Project

**Year:** January 2011 to August 2013

**Location:** Solomon Islands

**Client:** Ministry of Foreign Affairs and Trade, New Zealand

**Main project features:** The Munda Runway, Noro-Munda Road and Nusatupe (Gizo) Runway Rehabilitation and Upgrade Project comprises (i) the upgrading of Munda runway to cater for larger aircraft and to improve aviation safety standards by reconstructing and extending the existing runway from 1400m to 1800m length, constructing a new taxiway and reconstructing and enlarging the aircraft parking apron; (ii) upgrading Nusatupe runway to improve aviation safety

standards by providing a reshaped all-weather sealed runway, taxiway and parking facility; and (iii) improving and sealing the existing road between the township of Noro and the Airport at Munda, including reconstructing water crossing structures and establishing a program for road maintenance. Tasks carried out by AECOM included surveys and investigations, development and review of options, detailed design, preparation of tender documentation, assistance with procurement, evaluation of tenders, and assisting with contract award.

**Position held:** Contract and Procurement Specialist

**Activities performed:** Advised on preparation of tender documentation in accordance with MFAT and Solomons Island Government requirements and evaluation of tenders.

**Name of assignment or project:** Melamchi Diversion Scheme – Project Management Consultant and Adit Access Roads Subproject

**Year:** October 2005 to October 2009

**Location:** Nepal

**Client:** Melamchi Water Supply Development Board (MWSDB)

**Main project features:** The US\$ 328 million Melamchi Diversion Scheme will divert by way of a 26km tunnel, water from the Melamchi Valley to the Kathmandu Valley to alleviate chronic water shortages there. The Adit Access Roads Subproject was to construct access roads to the sites of two adits to be used to construct the diversion tunnel. The contract value of the two access roads, with a combined length of 20km and constructed through very difficult terrain, was US\$13.5 million.

**Position held:** Contracts Specialist, Engineer to the Contract and PMC Team Leader (from February 2008)

**Activities performed:** Worked with AECOM's Tunnel Specialist to update bid documents for the tunnel civil works contract, including bringing them into line with ADB Standard Bid Documents. Assisted MWSDB with procurement of tunnel contract including site visit and pre-bid meeting, and evaluation of bids as a member of Bid Evaluation Committee including preparation of Bid Evaluation Report. Provided contractual advice to MWSDB on a range of contractual issues affecting all contracts under the project. As Team Leader provided ongoing advice to MWSDB on technical and institutional issues and managed the PMC team of both international and national specialists. As Engineer to the Adit Access Roads FIDIC Contract carried out assessment of claims and provided contractual advice to MWSDB and the site team.

**Name of assignment or project:** Vietnam Road Safety Project – Phase 1

**Year:** 2006 to 2007

**Location:** Vietnam

**Client:** Vietnam Traffic Safety Projects Management Unit (TSPMU)

**Main project features:** The project, a component of the World Bank funded Vietnam Road Safety Project – Phase 1 – Institutional and Capacity Building, was to provide project implementation support to the Traffic Safety Project Management Unit (TSPMU).

**Position held:** Team Leader and Procurement Specialist

**Activities performed:** Specific tasks included working with the TSPMU to finalise the Project Implementation Plan (PIP) and providing training to strengthen the TSPMU's skills in the development of contracts and procurement of Consultants, Works and Goods in accordance with World Bank Guidelines.

**Name of assignment or project:** Fourth Road Upgrading Project (FRUP IV)

**Year:** 2005 to 2008

**Location:** Fiji

**Client:** Department of National Roads

**Main project features:** This ADB funded project comprised (i) feasibility studies on a total of 480km of primary and secondary roads in Fiji to identify a total of approximately 200km for upgrading and rehabilitation; and (ii) preparation of detailed designs and bidding documents for upgrading and rehabilitation contracts. Project also included extensive training component covering calibration and operation of HDM-4 economic evaluation model and development of computer aided detailed designs.

**Position held:** Co-Team Leader / Highway Engineer

**Activities performed:** Developed procurement strategy for project including options for maintenance contracts and civil works contracts. Prepared bid documents based on ADB's Standard Bidding Documents and Government of Fiji Islands requirements.

**Name of assignment or project:** Karnataka State Highways Improvement Project

**Year:** 1999

**Location:** India

**Client:** Karnataka State Government

**Main project features:** The Karnataka State Highways Improvement Project was aimed at improving the core road network in Karnataka, defined as the state highways plus the most heavily trafficked major district roads. The Project Co-ordinating Consultants (PCC) team on this World Bank funded project were required to (i) identify through a detailed

economic analysis 2,500 km of the core road network for reconstruction and maintenance; (ii) prepare detailed designs for all the road sections identified; and (iii) assist with procurement of the works contracts, including preparation of bid documents and bid evaluation.

**Position held:** Contracts / Procurement Specialist

**Activities performed:** Responsible for developing a Contract Strategy for the procurement of the construction contracts & consultancy services based on World Bank Standard Bid Documents and Guidelines. Project required extensive consultation with stakeholders, including the World Bank and State Government officials, through discussions and workshops. Scope also included training of Government staff in procurement practices.

**Name of assignment or project:** Ho Chi Minh City to Phnom Penh Highway Rehabilitation Project

**Year:** 1996 to 1997

**Location:** Vietnam

**Client:** Asian Development Bank

**Main project features:** Review and updating of feasibility study for road between Ho Chi Minh City and Phnom Penh; preparation of detailed engineering design for 240 km of dual and single lane carriageway highway including alignment and drainage works; preparation of bid documents and procurement assistance; environmental and social impact analysis; and legal and other aspects of cross-border movement.

**Position held:** Deputy Project Manager & Senior Highway Engineer

**Activities performed:** Responsible for developing contract packaging, updating and maintaining project implementation schedules, and preparation of bid documents based on FIDIC conditions suitable for international Competitive Bidding (ICB) based on ADB Standard Bidding Documents and Guidelines. Provided training to local personnel on contract documentation, procurement processes and procedures. Responsible for liaison with clients in Vietnam and Cambodia and donor agency (ADB) on design and implementation requirements. Also, responsible for selection, examination of options and highway alignments during the feasibility study phase.

**Name of assignment or project:** World Bank Highway Infrastructure Project

**Year:** 1993 to 1995

**Location:** Nepal

**Client:** Department of Roads (DoR)

**Main project features:** Project involved the investigation, detailed design, procurement of works contracts and construction supervision of repairs to a section of the Prithvi Highway between Naubise and Malekhu; the main link between Kathmandu and India, which had been severely damaged by monsoon rain and floods in 1993. Tasks included materials, pavement and topographic surveys and investigations; design of repair works including reconstruction and replacement of massive retaining walls, cut and fill slopes, highway pavement, culverts, bridges, and embankments. Prepared Bid Documents based on World Bank's Standard Bidding Documents and assisted DoR with procurement of contractors and award of contract. This was followed by construction supervision of repair works in role of Engineer's Representative under the FIDIC Conditions of Contract.

**Position held:** Deputy Project Manager / Resident Engineer & Engineer's Representative

**Activities performed:** Responsible for all aspects of the emergency repairs including investigations, detailed design, preparation of bid documents, procurement of contracts and construction supervision of the civil works. As Resident Engineer for management of construction supervision teams operating under FIDIC Conditions for Contract, administered contract works, developed quality assurance and quality control procedures and requirements, assessed contract claims and assisted contractors in planning works. Responsible for preparation of physical and financial progress reports to client and donor agency. Also, carried out extensive on-the-job training of counterpart staff and local associates.

## **CONSTRUCTION SUPERVISION / CONTRACT MANAGEMENT**

**Name of assignment or project:** Construction Supervision of Padma Multipurpose Bridge Project

**Year:** July 2017 - ongoing

**Location:** Bangladesh

**Client:** Korea Expressway Corporation (KEC)

**Main project features:** Construction supervision and contract administration of the US\$ 2.7b Padma Multipurpose Bridge Project comprising a new bridge approximately 6.15km long, approach viaducts and major river training works.

**Position held:** Senior Contract Specialist

**Activities performed:** As Senior Contract Specialist was responsible for evaluation of claims submitted by the Main Bridge (MB-01) and River Training Works (RTW-01) Contractors; preparation of draft Variation Orders for both contracts; and assisting KEC, Engineer and Employer with contractual advice in relation to engineering decisions.

**Name of assignment or project:** Munda Airport Emergency Alternate Status (EAS) Project

**Year:** Phase 2 - Construction July 2016 to February 2017

**Location:** Solomon Islands

**Client:** New Zealand Ministry of Foreign Affairs and Trade, Aid Programme

**Main project features:** To allow Munda Airport, West Georgia, to be certified for Emergency Alternative Status (EAS) for Honiara Airfield, the following additional works were required:

- Construction of a new perimeter security fence that meets ICAO and NZCAA Advisory Circular requirements;
- Design specified components, manufacture / supply, install and commission complete new airfield ground lighting (AGL) and navigational aids (NavAids); and
- Construction of a complete new Airport Rescue Fire Fighting building including procurement of two Cat 6 fire trucks.

Following on from the detailed design and procurement phase of the project, and after finalising the Grant Agreement between the two governments, AECOM were retained by MFAT to supervise the construction of the three works contracts needed to be certified for Emergency Alternative Status (EAS) for Honiara Airfield. AECOM's role during this phase of the project included the preparation and finalisation of the three construction contracts, engineering services during construction, project and contract management, site supervision of the three works contracts under the NZS3910:2003 Conditions of Contract, managing the survey, clearance and disposal of unexploded ordnance (UXO), procurement of two fire trucks and asset management training.

**Position held:** Principal Adviser (Procurement) and Engineer to the Contract

**Activities performed:** As Principal Adviser (Procurement) during Phase 2 was responsible for finalising contract documents for all three works contracts based on the NZS3910:2003 Conditions of Contract. As Engineer to the Contract was responsible for the supervision of the works through the site based Engineer's Representative and dealing with all contractual matters.

**Name of assignment or project:** Melamchi Diversion Scheme – Adit Access Roads Subproject

**Year:** October 2005 to November 2007

**Location:** Nepal

**Client:** Melamchi Water Supply Development Board (MWSDB)

**Main project features:** The US\$ 328 million Melamchi Diversion Scheme will divert, by way of a 26km long tunnel, water from the Melamchi Valley to the Kathmandu Valley to alleviate chronic water shortages there. The Adit Access Roads Subproject was to construct access roads to the sites of two adits to be used to construct the diversion tunnel. The contract value of the two access roads, with a combined length of 20km and which were constructed through very difficult terrain, was US\$13.5 million.

**Position held:** Engineer to the Contract

**Activities performed:** As Engineer to the Adit Access Roads FIDIC Contract carried out assessment of claims and provided contractual advice to MWSDB and the site team.

**Name of assignment or project:** Wayang Windu Unit 2 Geothermal Project

**Year:** 2005 to 2008

**Location:** Indonesia

**Client:** Magma Nusantara Limited

**Main project features:** The project, for Magma Nusantara Limited, provided engineering review, detailed design and supervision services for the construction and implementation of a second turbine-generator unit and associated facilities at the Wayang Windu geothermal field in West Java, Indonesia.

**Position held:** Civil / Highway Engineer

**Activities performed:** Responsible for design and supervision of access roads; geothermal well pads including thermal ponds and associated facilities; and civil works associated with the steam above-ground pipeline system (SAGS). Included preparation of bidding documents, evaluation of bids, and construction supervision of all civil works.

**Name of assignment or project:** Jaipur Bypass Construction (NHAI/ WB loan)

**Year:** May 2002 to Sep 2006

**Location:** India

**Client:** National Highways Authority of India

**Main project features:** Construction of an access controlled 4 / 6 lane divided carriageway (with 5m wide median) with 6 lane structures, connecting Km 220 of NH-8 (Delhi-Jaipur Road) at Chandwaji at Km 246 of NH-11 (Jaipur-Sikar Road) at Harmara.

**Position held:** Project Director and Engineer to the Contract

**Activities performed:** As Project Director, responsibilities included project oversight and QA, contract negotiation, client liaison, consultant management, project visits, attendance at key client meetings, project assessments and reviews. As

Engineer to the Contract, reviewed and assessed claims submitted by Contractor and advised client on dealing with contractual disputes.

**Name of assignment or project:** World Bank Third Roads Project

**Year:** 1997 to 1999

**Location:** Sri Lanka

**Client:** Roads & Highways Department

**Main project features:** Construction supervision and contract administration for rehabilitation and widening of 230 km of road in five contracts.

**Position held:** Team Leader & Chief Resident Engineer

**Activities performed:** Led a team of three Resident Engineers and administered contracts as Engineer under the FIDIC Conditions of Contract. Supervised and managed construction of works through resident supervision teams. Worked with site supervision teams to review and revise designs as required; approved and monitored contractors' programmes; evaluated contractors' claims; dealt with disputes; and issued instructions and certificates, including completion and defect liability certificates. Advised client on contractual matters and liaised with client and World Bank as donor agency. Advised client on progress, monitored all works and prepared all project level reports including monthly, quarterly, special and completion. Provided both formal and hands-on training to local personnel from both Employer's and Engineer's teams in contracts, construction management and supervision.

**Name of assignment or project:** World Bank Highway Infrastructure Project

**Year:** 1993 to 1995

**Location:** Nepal

**Client:** Department of Roads (DoR)

**Main project features:** Project involved the investigation, detailed design, procurement of works contracts and construction supervision of repairs to a section of the Prithvi Highway between Naubise and Malekhu; the main link between Kathmandu and India, which had been severely damaged by monsoon rain and floods in 1993. Tasks included materials, pavement and topographic surveys and investigations; design of repair works including reconstruction and replacement of massive retaining walls, cut and fill slopes, highway pavement, culverts, bridges, and embankments. Prepared Bid Documents based on World Bank's Standard Bidding Documents and assisted DoR with procurement of contractors and award of contract. This was followed by construction supervision of repair works in role of Engineer's Representative under the FIDIC Conditions of Contract.

**Position held:** Deputy Project Manager / Resident Engineer & Engineer's Representative

**Activities performed:** Responsible for all aspects of the emergency repairs including investigations, detailed design, preparation of bid documents, procurement of contracts and construction supervision of the civil works. As Resident Engineer for management of construction supervision teams operating under FIDIC Conditions for Contract, administered contract works, developed quality assurance and quality control procedures and requirements, assessed contract claims and assisted contractors in planning works. Responsible for preparation of physical and financial progress reports to client and donor agency. Also, carried out extensive on-the-job training of counterpart staff and local associates.

**Name of assignment or project:** Rehabilitation of Maharashtra State Roads

**Year:** 1992 & 1993

**Location:** India

**Client:** Maharashtra State Government

**Main project features:** World Bank funded project for the rehabilitation of 100 km of asphalt surfaced road in Maharashtra State between Aurangabad and Ahmednagar.

**Position held:** Deputy Chief Resident Engineer / Team Leader

**Activities performed:** Responsible for construction supervision and administration of the works. Developed quality assurance system and set up quality control process with the contractor. Reviewed design and made alterations to suit the project. Reviewed contractor's programme to ensure programme targets would be met and maintained progress throughout the period of works. Advised client on contractual matters and assisted contractor to interpret documents. Processed claims and issued variations for works. Issued certificates for payment, completion and defects liability under FIDIC Conditions of Contract. Provided training to local personnel in construction supervision.

**Name of assignment or project:** Rehabilitation of Trans-African Highway

**Year:** 1991 to 1992

**Location:** Western Uganda

**Client:** Government of Uganda

**Main project features:** Ugandan Government funded project for the proposed upgrading of 225 km of the existing gravel road Trans-African Highway in Western Uganda between Mityana and Fort Portal to two lane double seal standard. Completed 81km of upgrading between Mityana and Mubende before moving to the western end of the road and proceeding with the rehabilitation of the road from Fort Portal going east.



**Position held:** Team Leader

**Activities performed:** Initially Deputy Team Leader then Team Leader responsible for management of the construction supervision team and project quality control, programming, progress monitoring & review, and advising client on contractual issues. Also, responsible for detailed design and preparation of contract documentation for the rehabilitation & upgrading of a 50km section of the highway at the western end of the project. In addition, carried out a detailed engineering assessment of the central section of the highway, review of treatment options and preparation of economic cost benefit analysis.

**Name of assignment or project:** Maseru Water Treatment Works Extension

**Year:** 1990 to 1991

**Location:** Lesotho

**Client:** Lesotho Water and Sewage Authority

**Main project features:** Construction supervision of the final stages of Maseru Water Treatment Works Extension.

**Position held:** Contracts Manager

**Activities performed:** Responsibilities included finalising measurement, preparation of as-built drawings, commissioning & handover of project to Client.

**Name of assignment or project:** Botswana Infrastructure Development

**Year:** 1986 to 1988

**Location:** Botswana

**Client:** Various including Ministry of Works & Transport, Department of Roads; City of Gaborone; and Civil Aviation Authority of Botswana

**Main project features:** Detailed design, preparation of contract documentation, procurement assistance and construction supervision of a variety of transport infrastructure projects in Botswana. These included airport apron extensions; signalisation of highway intersections; major stormwater drainage; widening of a single carriageway urban highway to two lanes and reorganisation and supervision of a materials testing laboratory.

**Position held:** Team Leader / Project Manager

**Activities performed:** Responsible client liaison, management of engineering design & construction supervision teams, reporting, procurement, programming & progress monitoring & review.

**Name of assignment or project:** Upgrading of Lonlupheko to Lomahasha Road in Eastern Swaziland

**Year:** 1983 to 1986

**Location:** Swaziland

**Client:** Ministry of Public Works & Transport

**Main project features:** Project to upgrade 50km of road in eastern Swaziland to a double bitumen surfaced standard.

**Position held:** Assistant Resident Engineer

**Activities performed:** Responsible for review and adjustment of road alignment and drainage design during construction as well as checking of setting-out and measurement of works.

**Name of assignment or project:** Sewerage Infrastructure Project for Small Town in Botswana

**Year:** 1982 to 1983

**Location:** Lobatse, Botswana

**Client:** Lobatse Town Council

**Main project features:** Sewerage infrastructure project involving reticulation, stabilisation ponds & two screw pumping stations.

**Position held:** Assistant Resident Engineer

**Activities performed:** Supervision of the construction of a sewerage infrastructure project for Lobatse Town in southern Botswana involving reticulation, stabilisation ponds & two screw pumping stations. Responsibilities included quality control, survey & measurement of works.

## **FEASIBILITY STUDIES AND DETAILED DESIGN**

**Name of assignment or project:** Assessment of Project Costs of the Nam Theun 1 Hydropower Project

**Year:** August 2016

**Location:** Lao PDR

**Client:** Government of Lao PDR, Ministry of Energy and Mines, Department of Energy Business

**Main project features:** AECOM were hired by the Department of Energy Business, Lao PDR, to carry out a review and cost estimation for the work undertaken by Gamuda Berhad SPV and EPC at the Nam Theun 1 Hydropower Project, a 500MW hydropower scheme located on the Nam Kading River, approximately 33 km upstream of its confluence with the Mekong River, in Bolikhamxai Province, Central Lao. This included the work undertaken by the Special Purposes Vehicle (SPV) (including all costs associated with studies; financial adviser, technical adviser, legal and E&S; and all associated

costs) and the work undertaken by Gamuda as part of the EPC (road construction and site facilities, general and preliminaries and professional fees paid to consultants).

**Position held:** Infrastructure Specialist

**Activities performed:** As Infrastructure Specialist was responsible for assessing those costs associated with the EPC, specifically the construction of the access roads and site facilities including housing, offices and workshops. Included a site visit, evaluation of information and data supplied by Gamuda and the current developer of the scheme, and reporting.

**Name of assignment or project:** Central Plains Water Enhancement Scheme, Stage 2

**Year:** August 2016 to February 2017

**Location:** New Zealand

**Client:** Central Plains Water Limited

**Main project features:** Stage 1 of the Central Plains Water Enhancement Scheme covers approximately 20,000 hectares of farmland in the Canterbury Plains area of New Zealand bordered by the Rakaia and Hororata Rivers. An intake at the Rakaia River directs water into a 17km long gravity fed headrace. A distribution network, consisting of four trunk lines and a total of approximately 130km of underground HDPE pipes, distribute water to shareholders downstream of the headrace. AECOM prepared the feasibility, development of preliminary design and planning consents from 2000 to 2011. Construction of Stage 1 started in early 2014 and was completed in September 2015 at a total cost of approximately US\$100 million.

Stage 2 of the scheme covers a further 34,000 hectares of farmland bordered by the Hororata and Waimakariri Rivers north of the existing Stage 1 coverage area. It comprises a 21km long extension to the 2.5m diameter GRP trunk main pipeline and approximately 184km of HDPE distribution network delivering pressurised water to approximately 160 shareholders. It also includes upgrading the Stage 1 headrace to accommodate the additional flow comprising additional works at the intake and headpond, expanding the emergency spillway and constructing a new offtake for an expanded piped network. Stage 2 is expected to cost approximately US\$150m.

**Position held:** Project Manager

**Activities performed:** AECOM are responsible for the detailed design for the upgrading of the Stage 1 headrace. As PM was responsible for all aspects of project delivery, both to our client CPWL and internally, including project programme and progress, quality, and cost.

**Name of assignment or project:** Purari Hydropower Project

**Year:** February to August 2012

**Location:** Papua New Guinea

**Client:** PNG Energy Developments Limited, Papua New Guinea

**Main project features:** The Purari Hydropower Project comprises a potential hydropower development on the Purari River near Wabo in the Gulf Province of Papua New Guinea to provide electrical energy to an industrial development in the Western Province of PNG, rural areas in Gulf Province and feed into the Australian electricity transmission grid in Queensland. The scheme includes a hydropower development generating at least 2,000MW and a 2,000km long transmission system comprising overhead transmission lines and undersea cables to Townsville in Queensland. AECOM's scope of works includes an assessment of available data, site reconnaissance, technical and risk workshops, scheme definition, preliminary design and feasibility and social and environmental impact assessment reporting.

**Position held:** Civil Infrastructure Team Leader

**Activities performed:** As Civil Infrastructure Lead was responsible for carrying out an options assessment for the civil infrastructure required to construct, operate and maintain the Purari Hydropower Project including the construction of both temporary and permanent access roads, jetties and airfields. The assessment comprised a desk study of all available topographic, geotechnical, materials, hydrology and other survey data; a field visit comprising discussions with companies and government agencies involved in the infrastructure sector in Papua New Guinea and a reconnaissance survey of the various dam sites. The output formed a key input to the overall scheme definition and feasibility.

**Name of assignment or project:** MCA Vanuatu Transport Infrastructure Project – Design Consultant to D&C Contractor

**Year:** 2008 to 2010

**Location:** Vanuatu

**Client:** Downer EDi Works

**Main project features:** The US\$55 million Vanuatu Transport Infrastructure Project, funded by the Millennium Challenge Corporation through MCA Vanuatu, was implemented as a Design & Construct Contract. AECOM was appointed by Downer EDi Works, the D&C Contractor, as their Design Consultant for the project. Although the original scope of works comprised about 20 infrastructure subprojects including upgrading of rural roads, wharves, airfields, bridges and cargo warehouses, funding constraints resulted in this being limited to the upgrading of two main roads comprising upgradation and sealing of 151km of unsealed road on the islands of Efate and Espiritu Santo.

**Position:** Project Manager / Design Manager

**Activities performed:** As Project Manager / Design Manager was responsible for ensuring the designs were completed to both the Contractor's and Engineer's requirements and delivered on time and within budget. Managed a team of

Engineers, Technicians, Surveyors and Specialists.

**Name of assignment or project:** Wayang Windu Unit 2 Geothermal Project

**Year:** 2005 to 2008

**Location:** Indonesia

**Client:** Magma Nusantara Limited

**Main project features:** The project provided engineering review, detailed design and supervision services for the construction and implementation of a second turbine-generator unit and associated facilities at the Wayang Windu geothermal field in West Java, Indonesia.

**Position held:** Civil / Highway Engineer

**Activities performed:** Responsible for design and supervision of access roads; geothermal well pads including thermal ponds and associated facilities; and civil works associated with the steam above-ground pipeline system (SAGS). Included preparation of bidding documents, evaluation of bids, and construction supervision of all civil works.

**Name of assignment or project:** Fourth Road Upgrading Project (FRUP IV)

**Year:** 2005 to 2008

**Location:** Fiji

**Client:** Department of National Roads

**Main project features:** This ADB funded project comprised (i) feasibility studies on a total of 480km of primary and secondary roads in Fiji and identification of a total of approximately 200km for upgrading and rehabilitation; and (ii) preparation of detailed designs and bidding documents based on ADB Guidelines. Project also included extensive training component covering calibration and operation of HDM-4 economic evaluation model and development of computer aided detailed designs.

**Position held:** Co-Team Leader / Highway Engineer

**Activities performed:** Developed procurement strategy for project including options for maintenance contracts and civil works contracts. Prepared bid documents based on ADB's Standard Bidding Documents and Government of Fiji Islands requirements.

**Name of assignment or project:** Kajaki Dam, Environmental and Social Assessment

**Year:** 2005

**Location:** Afghanistan

**Client:** UNOPS

**Main project features:** This project, funded by CIDA through UNOPS, was to assess the environmental and social impacts of raising the water level at Kajaki Reservoir by 15m by installing additional spillway gates. An estimated 5,000 households will be affected by the increased water level with a consequent need to relocate the project affected persons.

**Position held:** Infrastructure Engineer

**Activities performed:** Primary task as the Project's Infrastructure Engineer was to assess the infrastructure requirements for the project affected persons (PAPs) and estimate the cost of providing this infrastructure. As part of this assignment a detailed site visit was carried out which included interviews with affected villages.

**Name of assignment or project:** (EU - TACIS) Nizhny Novgorod Regional Transport Development Project

**Year:** 1999

**Location:** Russia

**Client:** EU-TACIS

**Main project features:** Part of the development of a regional freight transport strategy for the European Union.

**Position held:** Highway Specialist

**Activities performed:** Responsible for assessment of road/highway pavement and traffic requirements which included prioritisation and promotion of infrastructure works for transport and highways and included assessment of pavement requirements, costs and selection of transport routes.

**Name of assignment or project:** Ho Chi Minh City to Phnom Penh Highway Rehabilitation Project

**Year:** 1996 to 1997

**Location:** Vietnam

**Client:** Asian Development Bank

**Main project features:** Review and updating of feasibility study for road between Ho Chi Minh City and Phnom Penh; preparation of detailed engineering design for 240 km of dual and single lane carriageway highway including alignment and drainage works; preparation of bid documents and procurement assistance; environmental and social impact analysis; and legal and other aspects of cross-border movement.

**Position held:** Deputy Project Manager & Senior Highway Engineer

**Activities performed:** Responsible for developing contract packaging, updating and maintaining project implementation schedules, and preparation of bid documents based on FIDIC conditions suitable for international Competitive Bidding

(ICB) based on ADB Standard Bidding Documents and Guidelines. Provided training to local personnel on contract documentation, procurement processes and procedures. Responsible for liaison with clients in Vietnam and Cambodia and donor agency (ADB) on design and implementation requirements. Also, responsible for selection, examination of options and highway alignments during the feasibility study phase.

**Name of assignment or project:** World Bank Highway Infrastructure Project

**Year:** 1993 to 1995

**Location:** Nepal

**Client:** Department of Roads (DoR)

**Main project features:** Project involved the investigation, detailed design, procurement of works contracts and construction supervision of repairs to a section of the Prithvi Highway between Naubise and Malekhu; the main link between Kathmandu and India, which had been severely damaged by monsoon rain and floods in 1993. Tasks included materials, pavement and topographic surveys and investigations; design of repair works including reconstruction and replacement of massive retaining walls, cut and fill slopes, highway pavement, culverts, bridges, and embankments. Prepared Bid Documents based on World Bank's Standard Bidding Documents and assisted DoR with procurement of contractors and award of contract. This was followed by construction supervision of repair works in role of Engineer's Representative under the FIDIC Conditions of Contract.

**Position held:** Deputy Project Manager / Resident Engineer & Engineer's Representative

**Activities performed:** Responsible for all aspects of the emergency repairs including investigations, detailed design, preparation of bid documents, procurement of contracts and construction supervision of the civil works. As Resident Engineer for management of construction supervision teams operating under FIDIC Conditions for Contract, administered contract works, developed quality assurance and quality control procedures and requirements, assessed contract claims and assisted contractors in planning works. Responsible for preparation of physical and financial progress reports to client and donor agency. Also, carried out extensive on-the-job training of counterpart staff and local associates.

## **INSTITUTIONAL STRENGTHENING AND CAPACITY BUILDING**

**Name of assignment or project:** Infrastructure Services Delivery Improvement

**Year:** January 2010 to March 2013

**Location:** Cook Islands

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

**Main project features:** The Government of the Cook Islands (GOCI) is in the process of strengthening infrastructure sector governance, building capacity and improving the financial and operational management of its assets. This TA assisted the Government with the drafting of national policies for infrastructure services; development of asset management plans; institutional strengthening and capacity building; and legislative reform and legal drafting.

**Position held:** Project Manager and Team Leader (Phase 2)

**Activities performed:** As Project Manager and Team Leader (Phase 2) was responsible for all aspects of project delivery, both to our client ADB and the GOCI, including review of deliverables, project programme and progress, quality, and cost.

**Name of assignment or project:** Timor-Leste Infrastructure Sectors Capacity Development Project

**Year:** 2006 to 2008

**Location:** Timor-Leste

**Client:** Asian Development Bank

**Main project features:** This ADB TA Project comprised two components:

Component 1 - Integrated multi-sector institutional development in the infrastructure sectors (communications, power, water supply and sanitation, and transport)

Component 2 - Technical capacity building for the road sector

Component 1 was to analyse and prepare a road map for improving institutional arrangements for government functions such as strategic planning, legislating, regulating and delivering rural services for infrastructure sectors including power and water supply and sanitation, telecommunications, airports and ports, roads, and other public works.

**Position held:** Project Manager and Transportation Specialist

**Activities performed:** Specific tasks assigned to the Transportation Specialist included carrying out a detailed institutional appraisal of the Ministry of Public Works, visioning workshops with MPW and other infrastructure ministries, and the preparation of a Roadmap for the development of the road sector.

**Name of assignment or project:** Timor-Leste Infrastructure Project Management Technical Assistance - Fact Finding and Feasibility & Design Mission

**Year:** 2006

**Location:** Timor-Leste

**Client:** Asian Development Bank

**Main project features:** ADB TA mission to assess the feasibility of a TA program that would result in the Ministry of Public Works (MoPW), Ministry of Transport and Communications (MoTC), and Ministry of Natural Resources, Minerals, and Energy Policy (MoNRMEP) fully achieving their respective sector capital investment program targets in the short and medium terms.

**Position held:** Engineer / Project Management Specialist

**Activities performed:** As Engineer / Project Management Specialist was responsible for assembling mission inputs from AusAID-funded financial management and project design/institutional specialists and ADB funded power and energy and WSS specialists and preparing full TA documentation including appendixes on logframe/design and monitoring framework, cost estimates and financing plan; plus technical notes. Involved working closely with MoPW, MoNRMEP, and MoTC the Ministry of Planning and Finance (MoPF), as well as the key donors in the infrastructure sector; ADB, World Bank, and AusAID.

**Name of assignment or project:** Better Roads Philippines

**Year:** 1999

**Location:** Philippines

**Client:** World Bank & DPWH

**Main project features:** World Bank funded study to determine a road administration & financing structure that is appropriate & viable for the Philippines.

**Position held:** Institutional Specialist

**Activities performed:** Project included change management issues; extensive consultation with stakeholders; review of funding requirements & sources of revenue; preparation of enabling legislation & preparation of an implementation schedule.

**Name of assignment or project:** Maintenance of Highways and Highway Infrastructure

**Year:** 1993

**Location:** Zimbabwe

**Client:** Crown Agents, UK

**Main project features:** Training course designed to improve the maintenance awareness and capabilities of highway agency personnel from Ghana, Nigeria, Uganda, Kenya and Zimbabwe.

**Position held:** Lead Trainer

**Activities performed:** Lead Trainer and presenter of a one-month course on the maintenance of highways and highway infrastructure. Course content included selection of contractors and administration for routine and periodic maintenance of road pavement, rehabilitation programming works, works/repairs to bitumen surface roads, shoulders and drainage structures.

## **ASSET MANAGEMENT**

**Name of assignment or project:** North Gisborne Network Outcome Contract (NOC)

**Year:** August, September 2016

**Location:** New Zealand

**Client:** Services South East Pty Ltd

**Main project features:** The Gisborne NOC is a US\$42m, 5-year term contract with extension of additional 2 years (Oct 2015 to Sept 2022) for the maintenance, management and delivery of services for approximately 194km of State Highway and 693km of Local Roads. The Network Owner, Tairāwhiti Roads, is a joint venture between the New Zealand Transport Agency (NZTA) and Gisborne District Council (GDC). It is a combination of lump sum and measure and value scheduled items. AECOM has a sub-contractor / partnership agreement with Services South East (SSE) for the term of the contract which includes asset management of State Highway and local roads including data collection and management; forward works programming; pavement renewals and geometric design; road safety management; design services, field assessments, and surveys; storm water drainage, lighting, fixtures, and signage; landscape and ecology; traffic barriers and fences; and geotechnical and civil engineering.

**Position held:** Project Manager

**Activities performed:** As PM was responsible for all aspects of project delivery, both to our client SSE and internally, including project programme and progress, quality, and cost.

**Name of assignment or project:** Asset Management Strengthening Project, (FRUP 3)

**Year:** 2000 to 2009

**Location:** Fiji

**Client:** Fiji Public Works Department, Ministry of Works (now Fiji Roads Authority)

**Main project features:** Development and implementation of an asset management system for 4,100 km of roads and

highways and 760 bridges and major culverts in Fiji involving assessment of road condition, traffic, environmental, social and economic parameters.

**Position held:** Team Leader & Project Manager

**Activities performed:** Examined road and bridge conditions and managed data collection and inventories; recommended road condition data collection equipment, computer software and hardware and procured these; prepare rolling programmes for construction and rehabilitation and managed these; set up bridge maintenance and renewal systems; established software and trained local staff. Integrated system with GIS; trained local Department of National Roads (DNR) staff in condition data recovery in the field for roads and bridges; advised DNR on integration of the system into the Department organizational structure; prepared monthly, quarterly and special reports for ADB and DNR; identified roads for upgrading using economic data and the HDM suite of programmes (HDM 3 and 4); and overall project management.

## **12. PUBLICATIONS AND TECHNICAL PAPERS**

Tolley, C; Ketenilagi, A and Salt, PE (2001); The Implementation and Operation of a Road Asset Management System for Fiji; 4<sup>th</sup> Conference of the Eastern Asia Society for Transportation Studies, Hanoi, Vietnam, October 2001

Tolley, C; Ketenilagi, A and Stephen, A (2003); A Bridge Maintenance Management System for Fiji; 21<sup>st</sup> ARRB and 11th REAAA Conference, Cairns, Australia, May 2003

Warren P, Johnston D, McKinnon, Tolley C (2004); Steps Towards Sustainable Rural Development through Appropriate Technology and Participation in Northwestern Cambodia; International Conference on Sustainability Engineering and Science, New Zealand, July 2004

Eagle, S, Tolley, C (2008); The Use of Lime Stabilization for Rural Road Rehabilitation in Cambodia; Third International Conference on Sustainability Engineering & Science - Blueprints for Sustainable Infrastructure, Auckland, New Zealand, December 2008

Wheeler, WK, Aves, R, Tolley, C, Zaman, M, Islam, MR (2010); Detailed Design of the Padma Multipurpose Bridge, Bangladesh – An Overview; IABSE – JSCE Joint Conference, Dhaka, Bangladesh, August 2010

Wheeler, WK, Aves, R, Tolley, C, Islam, MR (2011); Design of the Padma Multipurpose Bridge, Bangladesh; 8<sup>th</sup> Austroads Bridge Conference, Sydney, Australia, November 2011

Tolley, C, Aves, R (2013); Procurement of the Padma Multipurpose Bridge, Bangladesh; 14<sup>th</sup> REAAA Conference 2013, Kuala Lumpur, Malaysia, March 2013

Wheeler, WK, Tolley C; (2015) Delivering the Padma Multipurpose Bridge Project, Bangladesh; Multi-Span Large Bridges Conference, Porto, Portugal, July 2015