



Submission No 16

Inquiry into Australia's trade and investment relationship with the economies of the Gulf States

Organisation: SMEC International Pty Limited

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23rd April 2004

The Secretary
Joint Standing Committee on Foreign Affairs
Defence and Trade
Parliament House
CANBERRA ACT 2600

Attention: Mr Pierre Huetter

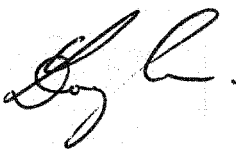
Dear Mr Huetter

**INQUIRY INTO EXPANDING AUSTRALIA'S TRADE AND INVESTMENT
RELATIONSHIP WITH THE ECONOMIES OF THE GULF STATES**

I am forwarding a submission to the above Inquiry. The submission has been authorised at Chief Executive level.

I am happy to act as the contact person for any additional information you may require and for arrangements for a senior SMEC executive with appropriate experience to give oral evidence to the committee if this should be required.

Yours sincerely



Les Douglas
General Manager Corporate Development

SMEC INTERNATIONAL PTY LTD

1. Background

SMEC (Snowy Mountains Engineering Corporation) is one of Australia's most prominent consulting firms with a turnover of more than A\$130 million, around 1300 staff and offices around Australia as well as throughout the Asia-Pacific region and in Africa and the Middle East. SMEC was established in 1970 by the Australian Government to retain the skills assembled for the Snowy Mountains Scheme. SMEC was corporatised in 1989 and privatised by sale to the staff in 1993. The company remains staff owned.

SMEC's core business is in consulting for infrastructure (transport, energy and water), environment and social development. SMEC's services cover the full project cycle from investigation and feasibility analysis through design to project management and construction supervision. More than 60 per cent of SMEC's business is overseas.

2. SMEC in the Middle East

SMEC began to work in the Middle East in the 1980s with early projects being in Bahrain, Egypt and Yemen. However, during the past five years we have expanded our operations considerably, especially in the Gulf region and In Yemen. (An experience summary is attached). The bulk of our work has been in highways development, water resources and environmental rehabilitation. Current or recent projects include:

- **Kuwait Groundwater Assessment (2002-2007):** SMEC is appraising the damage to fresh and brackish groundwater resources in Kuwait due to oil spills and leakage in hydrogeological systems resulting from the invasion and withdrawal by Iraqi occupying forces; the results will be used in calculation of a compensation claim against Iraq through the UN Compensation Commission
- **Hatta Road Rehabilitation, Dubai (1998-2002):** Investigation, design and supervision of the rehabilitation of a 106 kilometre 4- and 6-lane highway linking Dubai to Oman
- **Northern Iraq Electricity Rehabilitation (2001-2004):** specialist assistance with the rehabilitation of three sub-stations in the Kurdish region of northern Iraq; this project was originally financed by UN Development Programme under the Oil-for-Food program; when this was terminated the contract was transferred to the Coalition Provisional Authority and is expected to continue.

SMEC's expansion in the Middle East is consistent with the strategic direction in which the Board wishes the company to move as articulated in the Strategic Plan. This involves:

- Expansion in stages to become a truly global supplier of professional services with an Australian base and identity
- Development of subsidiaries in key markets with local staff and increasingly local support systems though within the overall structure of the SMEC Group of Companies
- Increased interchangeability of staff resources within the network so that SMEC can service the needs of the Middle East from other regions (such as South Asia) where this is appropriate and cost-effective rather than exclusively from Australia.

The steady growth of SMEC's business in the Gulf was the result of a market assessment that the region offered significant prospects for SMEC's services and a substantial commitment of resources to expand our presence. SMEC now has representation in Qatar (our regional headquarters), UAE (Dubai) and Kuwait. From prior experience over more than a decade we had no illusions that the Middle East generally and the Gulf in particular were easy markets in which to work. Having said that, much of SMEC's international business has been in markets which most companies regard as difficult or complex.

SMEC's turnover in the Middle East in 2002/2003 was A\$6.5 million.

3. General Comments on the Gulf Market

- The Gulf States are not really a homogeneous entity, despite being linked through historical connections and the framework of the Gulf Co-operation Council' the various states differ considerably in development strategies and priorities and in administrative arrangements
- The existing trade relationship dominated by commodities such as wheat and live sheep will continue, but the growth area for the next few decades is likely to be primarily in services, especially professional services of all kinds such as consulting, management, architecture and design, health care, education ,etc; often the statistics for these sectors are poorly documented or the value of exports is included in other categories (eg services provided in support of equipment) so the true scale of this trade and its growth rate is probably understated; in many respects Australian professional services are highly appropriate to the Middle East generally and the Gulf States in particular; nevertheless, other suppliers are also very competitive and they are often supported heavily by their respective governments; the Middle East is an extremely competitive marketplace because it is one of the few non-aid markets in the world's emerging economies

- There is considerable debate within the region about the nature of the post-oil economy and what steps need to be taken within the region to prepare for that economy; inputs by Australian service providers need to be seen in that context
- Foreign service providers are regarded primarily as a necessary component in the process of national and regional development
- The Gulf States are not developing countries in the generally accepted sense; although their economies can be quite narrow in base compared to OECD models, they are nevertheless sophisticated in their modes of operation and expectations of foreign service providers
- The small size of some Gulf markets means that in order to sustain a commercial presence companies need to seek and win work across the region rather than relying on only one or two countries
- Most Gulf States are focusing on science, R&D and advanced technologies as the foundation for their future economies; they are interested in world class technology and expertise from abroad
- In due course the economic reconstruction of Iraq will certainly affect not only the market for professional services in Iraq but also the dynamics of the regional economy

4. Constraints on the Growth of the Trade Relationship in Professional Services

- **Company legislation and procedures:** SMEC has recently been through the exercise of registering a joint venture company in UAE; this experience has been trying for all concerned due to the demanding legal and administrative procedures with which we have had to comply, including registration; powers of attorney, sponsorship, etc; there is considerable scope for these to be simplified and costs and time delays reduced without compromising the sovereignty or governance standards of Gulf States
- **Tendering procedures for government contracts:** in some States registration of foreign companies and joint ventures for government contracts is a protracted and bureaucratic procedure; in most States there is a need to register with every individual government department or agency in order to tender for work; the procedures are such that months or even years are needed to complete these registrations; SMEC does not dispute the need for a registration process, but the process in the Gulf States is the most complex SMEC has encountered in more than 30 years of international development work; many companies without SMEC's depth of international experience have certainly given up

- **Visas:** delays in issuing business visas, capacity to obtain visas at the airport, multiple entry visas and the cost of issue are all problems in various Gulf States; SMEC has also encountered delays and obstacles in connection with residence visas for project staff, especially for staff from our Asian offices who are not permitted to bring their families with them on longer assignments
- **Cultural understanding;** over the past half century Australia has invested significantly in promoting an understanding of Asian history and culture through education, institutional links and media coverage of daily life and long term processes rather than emergencies; this has delivered enormous competitive benefits to the Australian economy through the development of trade and investment relations; this process is still in its infancy in the Gulf region; very few Australians speak or read Arabic and more importantly the knowledge of how business is done in the Middle East generally, how problems can be solved and bottlenecks overcome is rare and located in a handful of companies and agencies; this was reflected in the recent live sheep dispute with Saudi Arabia; SMEC has very few staff with a sound knowledge of the practicalities of doing business in the region which means that we are constantly on a steep learning curve as we expand our operations; it would be comforting to feel that the body of knowledge and understanding of the region amongst professionals in Australia were increasing over time; the Council for Australian Arab Relations is a useful initiative with potential to overcome some of these problems if its directed and resourced properly in the years ahead
- **Australian Government representation:** DFAT and Austrade representation in the region is significantly less than the presence of governments of our non-Australian competitors; Austrade representation has actually reduced in numbers and seniority in recent years; this has been noticed in the region and has been interpreted in some circles as reflecting Australia's geopolitical priorities; the recent Austrade location of the key executive responsible for the Gulf Region in Europe is puzzling to most companies doing business in the Gulf; if there is any market where personal presence and hands-on government assistance is critical ,it is certainly the Middle East

5. Recommendations for Possible Action by Australian Government Agencies

- It would be extremely helpful if the Australian Government could encourage the Gulf Co-operation Council to embark on a program (perhaps lasting 10 years or longer) to harmonise business legislation and policies, technical standards and commercial practices to bring them into compliance with both each other and international norms; there may be scope for the Australian Government to provide some technical assistance with this process in the same way as has been done in Asia through APEC; support would also be available from international agencies such as the World Trade Organization and the International Chamber of Commerce

- Bilateral agreements concerning business categories of visas and reduction of visa fees and costs associated with legalisation of corporate documents to something resembling international norms would assist many more business to take and interest in the region
- More extensive research co-operation building on earlier programs would enhance Australia's reputation in the region as a source of technology and expertise beneficial to local development
- Educational co-operation (in both directions) would improve mutual understanding at a business and government level
- Political lobbying for contracts is normal in the Gulf region and the role of the Australian Ambassador in particular can be critical in the process of winning the work; Gulf agencies expect to be lobbied as our competitors (especially in Europe or Japan) enlist Embassy support as a matter of course; failure to do so is taken as evidence of lack of serious interest in the assignment; SMEC's experience in this regard over the past few years has generally positive, though there have been a few occasions on which there has been an apparent reluctance by some senior Australian diplomats (Ambassador level) to take a serious interest in the efforts by Australian companies to win work in their areas of responsibility; this may well be the result of shrinking staff resources and the need to set priorities, but our experience in the Gulf is in marked contrast to our experience in Asia where the Australian Embassy (at all levels) is normally a steadfast and effective ally in business development
- Upgrading of DFAT and Austrade representation in the region; there is value in the Senior Trade Commissioner in Dubai also being Consul General because of the importance of practicalities of moving people in doing business in the region
- The program of sponsoring business delegations from the Gulf Region to visit Australia is extremely valuable as long as the choice of delegates and the structure of the program is made in consultation with industry; if possible, this program should be expanded
- It would be helpful if all Ambassadors designate, other senior diplomats and trade commissioners received some focused training (developed by industry and government supported) on the promotion of consulting services which is quite different in character to commodities and manufactures; this would not need to be of long duration (possibly as little as a day), but would assist them enormously to identify commercial opportunities and provide appropriate support

ATTACHMENT

**EXPERIENCE IN
MIDDLE EAST AND REGION**



Snowy Mountains Engineering Corporation

SMEC'S EXPERIENCE IN MIDDLE EAST AND REGION

BAHRAIN

CENTRAL IRRIGATION SYSTEM PROJECT (1984)

Client: Rural Management International

SMEC participated in a study of water resources for agricultural development in Bahrain. The purpose of the study was to produce a long term plan for water development taking into account all the inter-related factors including groundwater abstraction, water quality and drainage, availability of treated sewage effluent and water needs in competition with residential gardens and urban development.

BAHRAIN CAUSEWAY PROJECT (1984)

Client: Soil and Rock Engineering Pty Ltd

The project involved a causeway to connect Saudi Arabia with Bahrain. The total length of the fixed shore to shore connection is 25 km, half of which is of embankment construction (earth and rock) and the balance consisting of 5 bridges with dual double lanes. The bridges consist of prestressed concrete and vary in length from 950 m to 5 200 m.

SMEC provided specialist geotechnical engineering inputs for quality control during the construction phase of the embankment causeway particularly related to advice on placement of rockfill and armour protection against wave action, and testing of materials including dredged fill material and imported rockfill.

EGYPT

SITE RANKING STUDY THERMAL POWER STATION (1988-1989)

Client: Australian Trade Commission

The project involved a site ranking study for priority thermal power station development over a 20 year planning period. The study, undertaken for the Egyptian Electricity Authority, identified 8 possible coal/gas-fired thermal power station sites on the Gulf of Suez, Mediterranean Sea, Red Sea and Nile River and ranked the sites according to economic and technical feasibility. Factors examined included coal/oil/gas fuels, water supply, geology, access, transport and handling, transmission, environmental and social. A feature of the study was a requirement to consider all possible world sea-borne coal sources including Australia.

Services provided by SMEC included:

- project management of study
- generation and transmission planning studies
- probabilistic simulation modelling of system expansion to meet load forecast with acceptable reliability
- evaluation of types and costs of port loading/ unloading facilities for various fuel types

- preliminary geological and geotechnical assessment of all sites, preliminary design for foundations, and advice on design aspects associated with reclamation, dredging and slope stability.

IRAN

DIVERSION SYSTEM FOR UPPER GOVAND HEPP (1998-2001)

Client: Moshanir Power Engineering Consultants

SMEC provided technical assistance to the consultant undertaking the investigations and design of the diversion system for the hydroelectric project. The assistance involved guidance in and review of civil design works (including hydraulic steel structures), hydraulic works, and rock mechanics and geotechnical works.

KARUN 3 HYDRO PLANT (1996-1999)

Client: Farab Company, Iran (Affiliated to Ministry of Energy)

The Government of Iran initiated major projects to develop the hydro potential of the Karun River system. One of those projects included Karun 3, a development comprising a 2 000 MW (8 x 250 MW units) underground power station, a concrete arch dam, pipeline and power tunnel system, and associated works. SMEC was engaged by the Electrical and Mechanical Plant Contractor to provide assistance with all electrical and mechanical aspects of the 2 000 MW development.

SMEC services included detailed engineering design and design review; project management; planning; cost control; supervision of installation; and transfer of technology to Iranian nationals in the design, planning and execution of major hydropower development projects in relation to electrical and mechanical works.

KARUN 1 HYDRO PLANT EXTENSION (1996-1999)

Client: Farab Company, Iran (Affiliated to Ministry of Energy)

Karun 1 is an existing underground power station of 1 000 MW capacity (4 x 250 MW units). The Government of Iran initiated an 1 000 MW extension (4 x 250 MW units) to the project to further develop the hydro potential of the Karun River system. SMEC was engaged by the Electrical and Mechanical Plant Contractor to provide assistance with all electrical and mechanical aspects of the 1 000 MW extension.

SMEC services included detailed engineering design and design review; project management; planning; cost control; supervision of installation; and transfer of technology to Iranian nationals in the design, planning and execution of major hydropower development projects in relation to electrical and mechanical works.

UPPER GOVAND (KARUN 5) HYDROELECTRIC PROJECT (1996)

Client: United Nations Development Programme/Moshanir Power Engineering Consultants

The project involved a large hydropower development comprising a high dam, diversion and power tunnels, and a 1 000 MW surface power house. The appointed consultants experienced difficulties in determining the optimal project layout. Accordingly, the UNDP required a review of the project status.

SMEC carried out an independent review of the work undertaken to date by the consultants on the project. The review included the provision of advice on the optimal project layout, including type of dam and the location of dam axis, and preliminary costings on recommended options.

NAMRUD DAM (1996)

Client: United Nations Development Programme/Lar Consulting Engineers

The project involved the construction of a large water supply dam in a limestone canyon, together with associated outlet works and a 7 MW power station. Geological exploration, as part of a feasibility study, had found a deep buried canyon below the river bed and extensive joint opening in the canyon walls.

SMEC undertook a review of the geology and site conditions, and provided advice on the work required to successfully complete the feasibility study and on the most suitable type of dam.

GODAR-E LANDAR HEPP (KARUN 4) (1995-1996)

Client: Nippon Koei Co Ltd

The project involved the provision of training in project scheduling and cost control using Primavera P3 software and setting up an original construction program for a hydropower and dam project.

LAVARAK UNDERGROUND POWER STATION (1985-1998)

Client: United Nations Development Programme

The 46 MW Lavarak underground power station forms part of Lar Dam project which augments Tehran's water supply and provides irrigation water and electrical energy. The project comprises a dam, tunnels, pipelines, and two power stations. The power station caverns were excavated in conglomerate of low to very low strength at a depth of about 200 m.

Services provided by SMEC included feasibility studies for the underground power station; advice on design and preparation of tender documents for both civil works and electrical and mechanical plant; geotechnical investigations, analysis and design; and organisation of a study tour to Australia for Tehran Regional Water Board (TRWB) and LCE staff.

WATERSHED MANAGEMENT TRAINING PROGRAM (1990)

Client: United Nations Development Programme

SMEC provided technical personnel to the Food & Agricultural Organisation financed Watershed Management Training Project. Services included the formulation of measures to prevent badlands formation, the preparation of manuals and training of Iranian staff.

IRAQ

CONSULTING SERVICES FOR SUBSTATIONS IN NORTHERN GOVERNATES (2001-2004)

Client: United Nations Development Programme/ENRP

Specialist assistance with the implementation of rehabilitation of the electricity network in 3 governates of northern Iraq under the Electricity Network Rehabilitation Programme (ENRP).

As part of the programme, the UNDP has awarded, or intends to award, an initial 11 EPC contracts covering the engineering, detailed design, supply and erection/installation, testing and commissioning of new substations and the rehabilitation of existing substations. The contracts encompass the refurbishment of 4 conventional and 2 GIS 132/33/11 kV substations, and construction of 11 132/33/11 kV substations and 39 33/11 kV substations.

SMEC was engaged in the role of "Owner's Engineer" to undertake the design review, contract and project management and execution of the EPC contracts. Services also include assistance in pre-qualification of contractors and in the international bidding process including bid evaluation, contract negotiation and award; review and monitoring of inspection, testing and delivery control during manufacture; supervision of construction, installation; testing and commissioning; assistance to local electricity authorities in operation and maintenance requirements; and provision training and transfer of technology to local personnel.

WEST QURNA OIL FIELDS – WATER SCADA SYSTEM (2002-2003)

Client: Control Links Engineering Co

The project involves the supply and commissioning of a Supervisory Control and Data Acquisition (SCADA) system for water injection facilities at West Qurna Oil Field comprising high pressure pumping facilities at No 7 and 8 degassing stations, water intake structure and water treatment plant.

SMEC was engaged by the contractor to provide preliminary and detailed design of the SCADA system.

WEST QURNA DEGASSING SYSTEM – DCS (2002)

Client: Control Links Engineering Co

SMEC was engaged by the contractor to provide specialist services during the design and commissioning of the Distributed Control System (DCS) for the crude oil system associated with a new Degassing Station at No 6 Plant at West Qurna Oil Field.

Services included the preparation of Specification, equipment selection and detailed design of the DCS, detailed design of fire alarm and fire fighting control panels for the crude oil system, and supervision of commissioning for the DCS and fire alarm/fire fighting panels.

WEST QURNA WATER INJECTION PLANT (2001-2002)

Client: Control Links Engineering Co

The project involved the supply and installation of 5 manifold skids to inject high pressure water into oil wells at West Qurna Oil Field. SMEC was engaged by the contractor to provide detailed design of instrumentation and control equipment for the skids, including preparation of piping interface drawings, instrumentation specification and hook-up and installation diagrams.

BURNER MANAGEMENT SYSTEM (2001-2002)

Client: Euro Mechanical and Electrical Contractors

Engaged by the contractor to assist with for modifications and provision for a burner detection system and panels at the existing NGL of the South LGP Plant in Basrah.

Services included design of control and instrumentation, specification of interfaces with existing plant and equipment, and supervision of installation and commissioning of the system.

ELECTRICITY NETWORK REHABILITATION PROGRAMME (ENRP) – MINI HYDRO COMPONENT (2000-2001)

Client: United Nations Development Programme/ENRP

Specialist assistance with the implementation of rehabilitation of the electricity network in 3 governates of northern Iraq, involving the implementation of a number of mini-hydro projects (ranging from 300 to 1500 kW) to supply power to villages in remote areas which are currently without power.

Services included the identification of potential sites, supervision of detailed investigations and survey, detailed design of weirs, water conveyance systems and power stations, preparation of tender documents and technical specifications, tender evaluation and procurement, supervision of construction works, training of local personnel, and liaison with UNDP personnel.

ELECTRICITY NETWORK REHABILITATION PROGRAMME (ENRP) (1999-2002)

Client: United Nations Development Programme/ENRP

Specialist assistance with the implementation of rehabilitation of the electricity network in 3 governates of northern Iraq, involving rehabilitation of the transmission and distribution system (including transformers, line and substations), rehabilitation of 2 hydroelectric power stations, construction of 3 diesel power stations, and installation of over 1000 small diesel generating sets to provide power for pumping rural water supplies.

Services included assistance with project management of the rehabilitation program; preparation of technical specifications and bid documents, tender analysis and contract supervision; preparation of terms of reference for consultancy packages; power system fault level studies; supervision of work undertaken by local personnel and local and international contractors including supervision of plant installation and commissioning, establishment of mapping/GIS database; and training of local personnel.

TRANSMISSION AND DISTRIBUTION SYSTEM REHABILITATION - TECHNICAL SURVEY AND IMPLEMENTATION (1998-1999)

Client: United Nations Procurement Division

SMEC was engaged to undertake a detailed technical survey and analyses of the existing transmission and distribution networks in 3 governorates of northern Iraq, to prepare plans and strategies for network rehabilitation, and to assist in implementation of the works.

Services included the development of medium term and long term rehabilitation plans, system stability studies, assessment of capability of local authorities to maintain and repair the network, recommendations for other surveys/studies required to finalise a strategic plan for the long-term rehabilitation of the total electricity sector, preparation of detailed report including cost estimates and funding requirements, and assistance in supervision of the implementation of the urgent pre-winter rehabilitation program as well as ongoing works.

GENERATION EXPANSION OPTIONS FEASIBILITY STUDY (1999)

Client: United Nations Department of Economics and Social Affairs (UNDESA)

As part of United Nations assistance for the rehabilitation of the electricity generation, transmission and distribution systems in the 3 governorates of northern Iraq, SMEC was engaged to carry out a detailed feasibility study on the options for addition of generation capacity.

Services included a technical survey and study of generation requirements and of the transmission and distribution network configuration; analysis of available generation expansion options including thermal, hydro, wind and solar power; and development of proposals for expansion of the generation capacity and integration into the existing transmission and distribution networks.

KUWAIT

KUWAIT ENVIRONMENTAL (GROUNDWATER CLUSTER) (2002-2007)

Client: Public Authority for the Assessment of Compensation for Damages resulting from Iraqi Aggression (PAAC)/United Nations Compensation Commission (UNCC)

SMEC was engaged to accurately assess damage to fresh and brackish groundwater resources in Kuwait due to oil spills and leakage and hydrocarbon migration into the hydrogeological systems that has resulted from the consequences of the Iraqi invasion.

The scope of work involves quantitative and qualitative damage assessment of the groundwater resources, identification of the likely long-term migration and extension of petroleum hydrocarbon in the aquifers, testing and proposal of innovative treatment techniques to ensure the protection and sustainability of Kuwait groundwater resources, and quantification of the financial burden associated with treatment processes.

The study will deliver legally defensible environmental evidence to the UNCC as well as support the on-going environmental monitoring and assessment in Kuwait.

SAUDI ARABIA

FAO JOINT REVIEW MISSION (1985)

Client: Food & Agricultural Organisation (FAO)

SMEC provided the services of an expert for the land and water resources development aspects of a FAO Joint Review Mission.

UNITED ARAB EMIRATES

SHARJAH-RAS AL KHAIMAH ROAD – PAVEMENT EVALUATION STUDY (2002)

Client: Halcrow International Partnership

Detailed assessment of 45 km of pavement on the dual carriageway highway, including visual condition assessment, FWD testing, pavement materials investigation, detailed analysis, and preparation of comprehensive report and recommendation on rehabilitation and upgrading options for the existing pavements.

EXPERT WITNESS TO DUBAI INSURANCE COMPANY – FIRE AT AJMAN POWER STATION (2001-2002)

Client: Clyde & Co., Dubai

A fire accident at Ajman Power Station in late 1998 caused major damage to the main substation. A case for compensation was filed against the main Contractor by the Federal Electricity & Water Authority.

SMEC was commissioned, by the lawyers of the insurance company covering the contractor, to investigate the cause of the fire and to provide Expert Witness.

SHOBAISI AND REMAH UNIT IV PUMPING STATIONS, ABU DHABI (2000-2001)

Client: Odeh Asalem Automation Systems

SMEC was engaged by the equipment supply sub-contractor to carry out detailed design and commissioning of PLC instrumentation and control systems associated with the renovation of 5 pumps and the addition of 2 pumps and associated equipment.

HATTA ROAD REHABILITATION PROJECT, DUBAI (1998-2002)

Client: Dubai Municipality

Investigations, design and supervision of the rehabilitation of Hatta Road, a main route which links Dubai to Oman. The road, 106 km in length, comprises a 4 and 6 lanes of asphaltic concrete pavement. The rehabilitation works included structural pavement as well as road safety and drainage improvements. Services included pavement evaluation, materials analysis, road safety audit, traffic forecasts and vehicle load surveys, consideration of rehabilitation options including cost analysis of options, cost estimates, tender and contract documentation, prequalification, assistance in tendering, evaluation and award, and contract management.

JEBEL ALI – LIHBAB ROAD REHABILITATION PROJECT, DUBAI (1999-2001)

Client: Dubai Municipality

Investigations, design and supervision of the rehabilitation of a 40 km section of dual carriageway (4-lane) main road linking Jebel ali to the Al Ain road. The rehabilitation works included structural pavement as well as road safety and drainage improvements. Services included pavement evaluation, materials analysis, road safety audit, traffic forecasts and vehicle load surveys, consideration of rehabilitation options including cost analysis of options, cost estimates, tender and contract documentation, prequalification, assistance in tendering, evaluation and award, and contract management.

AL-AIN CEMENT FACTORY MODERNISATION PHASE 2, ABU DHABI (1999-2000)

Client: Odeh Asalem Automation Systems

The project involved the upgrading of the existing control system, including a new central control room, at the Al-Ain cement factory. SMEC was engaged by the equipment supply sub-contractor to carry out detailed design of the PLC control and automation system, equipment and additional instrumentation, and provide supervision during installation.

DUBAI-FUJAIRAH FREEWAY CONCEPT STUDY, DUBAI, (2000-2001)

Client: Ministry of Public Works and Housing

Concept study to provide the Government with options for the provision of a freeway standard link between Dubai and Fujairah, and to assist in the determination of the viability of developing a freeway and to proceed to design stage.

Services included satellite imaging, traffic analysis, corridor and route selection, economic analysis, presentation of road options and recommendations, map production, and training of client engineers.

BOARDER AND COASTGUARD FACILITIES, RAS AL KHAIMAH (1999-2002)

Client: Ministry of Public Works and Housing

The project involved marine and building works for the boarder and coastguard facilities at Ras Al Khaimah. The works included construction of a permanent wharf, a pontoon jetty, and a launching ramp; dredging of a boat pool and an entrance channel; protection works; and construction of administration buildings, workshop, security department, weapons store, residence, and compound wall.

Services included preliminary studies, preliminary design, detailed design, tender documentation and tender analysis.

TRAFFIC LOADING GUIDE, DUBAI (1999-2001)

Client: Dubai Municipality

Coordination of weight-in-motion studies on a number of Dubai Municipality roads, analysis of results and development of truck factors representative of the Dubai traffic, and development of a Traffic Loading Guide.

NAJMA PUMPING STATION, DUBAI (1999)

Client: Alia Electrical Contracting

SMEC was engaged by the main contractor to provide design and commissioning for the installation of all field instrumentation for 8 pumps and associated equipment.

INDUSTRIAL LAUNDRY PROJECT, ABU DHABI (1998-1999)

Client: Emirates Property Investment Company

The project involved the refurbishment of an existing showroom building for use as an industrial laundry to serve the hotel industry.

Services included the management of associate consultants in a study of the existing structure; design of all building services; design of all laundry services; design of new mezzanine floor and new accommodation floor, and supervision of construction and equipment installation.

REPUBLIC OF YEMEN

NATIONAL HIGHWAYS AND RURAL ACCESS MASTERPLAN (2003/2004)

Client: Ministry of Public Works and Highways/World Bank

SMEC was engaged to assist the Ministry of Public Works and Highways to establish an operational framework for investment in new roads and management of the national road network through the development of masterplans for 2 levels of the network, comprising the Main and Strategic Road network and the Secondary and Tertiary networks.

The project scope includes:

- establishment of a GIS based Road Classification System covering all types of roads in the country and assigning management responsibilities
- establishment of a 10-year Highway Masterplan for the Main and Strategic Road Network, as defined in the Road Classification System, including the development of annualised road improvement, maintenance and management plans
- establishment of Road Masterplans for an initial 5 governorates and provision of guidance and monitoring for the establishment of Road Masterplans for 13 other governorates, covering all Secondary/Intermediate and Tertiary/Village Access roads and including priority investment and management plans, and
- capacity building through the provision of on-the-job training for Ministry counterpart personnel.

VOCATIONAL TRAINING CENTRES (1998-2002)

Client: Ministry of Labour and Vocational Training/World Bank

The project involved the upgrading, expansion and renovation of 7 existing vocational training centres and the construction of a new vocational training centre, with a total works value of US\$ 12 million. SMEC provided project management as well as other specialist input within the project scope which included investigations and reporting on required works, preliminary designs and cost estimates, detailed design and documentation, assistance in prequalification of contractors, tendering, and contract administration and supervision of construction works.

YEMEN TRANSPORTATION REHABILITATION (1997-2002)

Client: Yemen Board for Management of the Road Maintenance Fund/World Bank

Provision of technical assistance for the establishment of the Road Maintenance Fund and its associated administration board, the Yemen Board for Management of the Road Maintenance Fund.

The main objectives of the technical assistance included:

- development of operating modalities for the recently established RMF and YBRMF
- preparation of an action plan for implementing the RMF and making the YBRMF and its Executive Body operational
- development of management systems for the management and administration of the RMF
- assistance in the implementation of the action plan
- implementation of human resource development through the transfer of technology to ensure effective maintenance planning, programming and budgeting.

Services also included classification of the road network; implementation of the SMEC Pavement Management System (PMS) including the development of a pilot study of 300 km of roads; economic and financial evaluations of proposed expenditure programs; development and implementation of a Routine Maintenance Management System; and training of staff in all aspects.

THIRD POWER PROJECT (1992-2000)

Client: Public Electricity Corporation – Aden Branch/World Bank

Provision of assistance with a project aimed at a substantial improvement in the quality, reliability and availability of electric power in Aden. The assistance was initially associated with 3 procurement and 2 design/construct contracts, however following a period of civil unrest in 1994, the project was restructured to include repairs to war damaged substations and distribution system.

This resulted in an increase in the total contracts to 21, being 1 turnkey contract for the supply and installation of 5 new 33/11 kV substations and associated civil works, 20 supply contracts for materials/equipment for the rehabilitation of 70 km of 132 kV transmission line between Aden and Abyan, and for rehabilitation of the distribution system including transformers, conductors, insulators, cables, poles, fuses, energy meters, test equipment, telecommunications equipment and batteries, as well as the development of a SCADA system and provision of distribution system planning and management software.

Services included overall project management and scheduling, assistance with technical design, preparation of tender documents, tender resolution, contract administration and management, construction supervision, factory inspection during manufacture of components, supervision of commissioning, and provision of training and transfer of technology to local personnel.

HISWA THERMAL POWER STATION AND DESALINATION PLANT (1992)

Client: Public Electricity Corporation – Aden Branch

The project involved a study to determine the economic feasibility of rehabilitating a thermal power station and desalination plant near Aden in southern Yemen. The complex, with an installed capacity of 5 x 25 MW oil/gas fired steam turbine sets and 3 desalination units each with

an output capacity of 14 000 m³ per day, has been plagued with progressive defects and major problems since commissioning commenced in 1985.

SMEC undertook a detailed feasibility study for the rehabilitation of the power station and desalination plant under various scenarios. This involved: examination of past and future operation and maintenance of the complex and its future role in the supply of electricity and water; identification and analysis of major engineering defects (mechanical, electrical and civil) including institutional studies; recommendations for scope of prioritised rehabilitation including the provision of cost estimates and schedules, and implementation of effective training; value engineering analysis; and recommendation for specifications and sourcing equipment.

WASIT-BEIHAN ROAD (1986)

Client: Ministry of Construction

SMEC assisted in the preparation of a tender for construction.

ADEN RING ROAD (1986)

Client: Ministry of Construction

SMEC assisted in the preparation of a tender for construction.

TRAINING OF PERSONNEL IN AUSTRALIA (1985-1986)

Client: Ministry of Construction

The project involved training in Australia of Yemen PDR Ministry of Construction personnel in construction aspects including computing and workshop management.

ROADS RECONSTRUCTION AND MAINTENANCE PROJECT (1982-1985)

Client: Ministry of Construction

The project involved the establishment and training of a Road Reconstruction and Maintenance Unit to undertake the reconstruction of roads damaged by floods in early 1982. An aim of the project was to attain a competent maintenance force to conduct future routine and periodic maintenance on conclusion of the construction works.

The works included:

- reconstruction of the Shuqra Ahwar Road and the national highway between Zingabar and Al Mahfid including construction of pavements and asphaltic concrete overlays
- asphaltic concrete overlay of a 50 km section of national highway
- construction of major floodways and other drainage structures.

SMEC services included provision of a management team to assist in setting up the Reconstruction and Maintenance Unit, and to provide engineering management, road and structural design, construction supervision and quality control, and extensive on-the-job training. SMEC's responsibilities included the procurement of construction equipment and overhaul of existing equipment. As part of this project SMEC carried out studies of the hydraulic and

sediment transportation characteristics of Wadi Ahwa and Wadi Kabir, and also carried out a feasibility study, detailed design and cost estimates for a 50 km highway to link the existing Aden-Shuqra road to the site of a proposed cement plant. The route contained a number of significant structures.

FLOOD DAMAGE ASSESSMENT (1982)

Client: Ministry of Construction

Following extensive flooding in March 1982, the Ministry of Construction engaged SMEC to provide services to assess the extent of damage to pavement, drainage structures and roadway embankments over 275 km of primary and feeder roads. Subsequent to submitting a report on this assessment to the Ministry of Construction, SMEC was engaged to manage the recommended rehabilitation work under the Roads Reconstruction and Maintenance Project.

IRRIGATION FARM DESIGN (1984)

Client: Sagric International

SMEC provided the services of an irrigation specialist to assist with preliminary design of a 500 ha – 600 ha farm.

NAQABAH-NISAB ROAD PROJECT (1980-1984)

Client: Ministry of Construction

The two prime objectives of the project included the construction of a highway, 75 km in length, between Naqabah and Nisab, as well as a 17 km branch road to As-Said; and training members of an Independent Construction Unit in methods of planning, managing and implementing a major construction project.

The project was divided into two phases, as follows:

- Phase 1 - SMEC provided assistance to the Construction Unit in preparing its application for prequalification, and in preparing its bid. The bidding was carried out under International Competitive Bidding procedures. This bid was successful.
- Phase 2 - SMEC provided a management team consisting of professional, technical and administrative personnel, which worked with the Construction Unit to successfully implement the project.

Specific services provided by SMEC included the procurement of construction equipment; design of the road, structures and facilities; supervision of construction, for roadworks, workcentre construction, including power and water supplies, a workshop and crushers and bitumen facilities; provision of formal and on-site training for all levels of counterpart staff, in management, civil and mechanical operations; and organisation of off-shore training for selected Construction Unit personnel, which included specialised university and technical courses.

SMEC also carried out a feasibility study for an extension of the project, to link the road with the border town of Beihan.

STUDY OF CRUSHING REQUIREMENTS AND CAPABILITIES (1983)

Client: Public Corporation for Crushers and Quarrier

The Public Corporation for Crushers and Quarries (the Crusher Corporation) commissioned SMEC to undertake a study to assess and evaluate the requirements and capabilities of the Crusher Corporation with respect to their current and projected future demands.

The study was implemented in two parts: the first and major part included the evaluation of quarrying and crushing aspects at two existing sites and one additional site. This involved:

- assessment of future demands for quarrying products
- assessment of quarry and crusher operation aspects
- assessment of existing plant and equipment including rating of condition and performance
- geotechnical investigations and laboratory testing of rock and aggregate sources for evaluation of existing and potential quarry sites
- upgrading of maintenance facilities
- training of personnel
- estimation of resources at each site sufficient for 20 years production, quarry development planning, considering present quarry resources and site layout, and use of and expansion of capacity of existing equipment and possible requirement for new plant including drilling, loading, hauling and crushing plant.

The second part of the study investigated methods of supplying building sand for the Aden area, including potential sources, quality, quantities, systems for extraction and processing, transportation and stockpiling.

SMALL DAMS MAINTENANCE (1978)

Client: ACIL Australia

SMEC provided the services of a mechanical equipment specialist to determine the requirements for plant and equipment for dam maintenance units.