"Working Together"

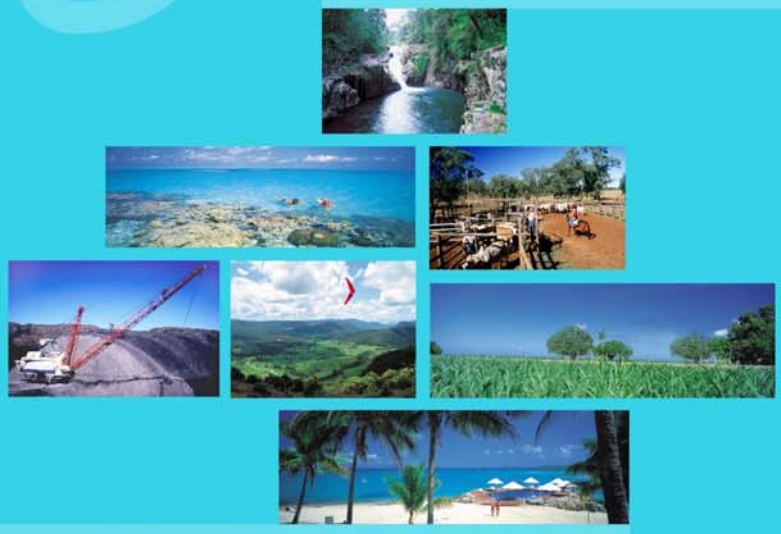
Institute of Public Works Engineering Australia Qld Division Inc

REGIONS · PARTNERSHIPS
COMMUNITIES · ALLIANCES

Sustainable Service Delivery in a Challenging Environment

Brian Milanovic

IPWEAQ
2003 STATE CONFERENCE
MACKAY



SUNDAY 5 — FRIDAY 10 OCTOBER 2003
WINDMILL MOTEL & RECEPTION CENTRE

C/-MACKAY CITY COUNCIL · PO BOX 41 · MACKAY · QLD 4740
TELEPHONE: 07 4968 4598 · FACSIMILE: 07 4968 4562
EMAIL: ipweaqcon@mackay.qld.gov.au

Sustainable Service Delivery in a Challenging Environment

1. INTRODUCTION

The topic of my paper is Sustainable Service Delivery in a Challenging Environment. It has been prepared on the basis of examples of sustainable service delivery encountered during the 2002 IPWEA Study Tour of North America which I was able to participate in as the recipient of the 2002 Fellowship awarded by the Queensland Foundation for Local Government Engineering. The Study Tour was based on visits to local authorities in Canada and the United States and included attending the annual American Public Works Association Congress in Kansas City, Missouri. The theme chosen for the Study Tour was "Towards Sustainable Communities".

One of my main objectives during the Study Tour was to examine the role engineers in North America played in delivering sustainability in their day to day activities. I chose to study this topic on the basis of the challenges all of us here in Queensland face on a daily basis.

Today, the role of modern engineering managers has changed significantly since the days of simply constructing infrastructure to meet the every day needs of the community such as water supply, sewerage and transportation. Now, we also need to be responsive to the community's needs and aspirations in terms of its environmental and economic well-being. And, in times of natural disasters, engineers are called upon to provide leadership in the areas of hazard mitigation and emergency response. In summary, modern day local government engineering managers need to have a multi-disciplinary approach to deliver sustainable outcomes in the face of environmental, economic and social challenges.

And, in addition to engineering managers assuming a more diverse role, the meaning of the term "Sustainability" has also become much broader, now having economic and social ramifications as well as its traditional environmental focus.

The three topics I've chosen to include in this paper are examples of sustainable service delivery encountered during the Study Tour based on the above interpretation of sustainability and within the context of my own objectives described above. They are:

- Continuous Improvement in Maintenance Management adopted by the cities of Reno and Sparks in the US state of Nevada. This topic relates to the economic sustainability of service delivery in the context of deteriorating infrastructure and shrinking budgets,
- The Brush Creek Technical Tour conducted during the APWA Congress in Kansas City, Missouri. This is an example of how the principles of environmental and social sustainability can be applied to the restoration of local government assets following a natural disaster, and,
- Quality-based consultant selection which, as a method of procurement of consultancy services, allows public works' authorities to incorporate sustainability principles into the development of community infrastructure which would not have been possible if price alone was the primary consideration. The methodology has been widely used in the United States since its introduction in 1972.

2. CITIES VISITED

The cities chosen to visit ranged from large metropolitan centres to small rural communities where a diverse range of engineering services were provided in differing forms of organisational structures. This enabled the group to experience at first hand a range of approaches used in addressing common issues and problems that are frequently encountered in modern urban communities.

The group benefited from the organisational skills, contacts and patience of the Study Tour organiser, the IPWEA National CEO, Chris Champion who was able to mould together an enjoyable and interesting itinerary from what was initially a diverse range of individual interests.

Squamish - British Columbia Population 16,000

The official part of the study tour commenced with a visit to Squamish, located about 45 minutes north of Vancouver. Squamish is a small rural community, rich in history, located in a natural environment of spectacular beauty. With a backdrop of rugged mountains covered with forests of douglas fir trees, it is no wonder the town has won the title of the Outdoor Capital of Canada. The group travelled to Squamish by road along National Highway 99, which was only opened in 1955. Prior to then, visitors to Squamish had to travel by river or rail. Highway 99, which traverses some rugged terrain between Vancouver and Squamish, has been constructed to a variable standard not unlike the Bruce Highway from Townsville to Cairns. In places, it consists of a divided highway with dual carriageways while in others it takes the form of an undivided rural road. The variable standard of construction seemed unusual for such an important transport link and indeed, the consequences of two serious accidents, one of which was fatal, were witnessed during the return trip. The upgrading of the Highway 99 will be a high priority now that Whistler, about an hour north of Squamish, has been successful with its bid for the 2010 Winter Olympics.

Surrey - British Columbia Population 360,000

The second of the Study Tour group's meetings was held with representatives of the Engineering Department of the City of Surrey. The Town Hall is located about an hour by road from Vancouver and was reached after travelling through large tracts of land under agricultural production. The city shares a common border with the United States and is recognised as the Gateway for Western Canada. It enjoys a buoyant economy and is one of the fastest growing cities in Canada. It is one of 18 municipalities in the greater Vancouver area which has a combined population of two million people. One third of the City's area of 325 km2 is agricultural land. It therefore has a large reserve of developable land for residential and industrial/commercial growth.

The provision of community infrastructure in new residential and commercial subdivisions is the responsibility of the developer. An accepted system of headworks charges, well tested in the courts, applies to all new development. The cost of headworks on a residential block is around $20,000.

Seattle - Washington Population 560,000 (regional population 3.3 million)

After a 3-hour road trip from Surrey, the study tour group arrived in Seattle, the commercial and technological hub of the US Pacific Northwest. This region accounts for more than $500 billion in annual economic output and, if ranked as a nation–state, would be the 10th largest economy in the world. The Greater Seattle region continues to receive recognition for its quality of life and global competitiveness. It has a vibrant economy with manufacturing (Boeing) and software (Microsoft) major local industries. However the negative affects of downturns in both these industries is starting to filter through to the community. The large number of homeless people encountered on the way to our hotel was surprising to see.

The study tour group met with operational staff from the Transportation and Parks Departments from the City of Seattle, with presentations given on the topics of urban stormwater management initiatives and parks management. In both presentations, the need to address past deficiencies in environment management was evident.

The City is committed to the restoration of its natural habitats and protection of its wildlife, especially its native salmon species. This is to be achieved through improving and protecting water quality, instigating flood control measures and by ultimately reconnecting the community as stewards of the environment.

Gresham – Oregon Population 92,000

Following another 3-hour road trip from Seattle, the study tour group arrived in Portland, Oregon. This city is also a contender for the most liveable city in the United States.

The next day a meeting was held with representatives of the Department of Environmental Services at the City of Gresham, located about half an hour from downtown Portland. The group travelled to City Hall via a light rail system known locally as the MAX – The Metropolitan Access Express. The MAX is operated by a group of local authorities comprising of the City of Portland and surrounding councils. It is heavily subsided with nominal fares applying to outlying areas and travel within the central city area completely free.

The City places a strong emphasis on environmental stewardship and has integrated environmental improvement strategies into its day-to-day engineering activities. The restoration of salmon habitats is again a high priority. However the funding of its engineering commitments poses a considerable problem for management for, apart from its commitment to improving environmental outcomes, the City has the second lowest property tax in Oregon. This has led to new and novel sources of funding such as:

- More emphasis on user pays
- New utility changes eg stormwater utility charges based on impervious land area
- Assigning of footpath maintenance to adjoining property owners
- Sharing resources with adjoining local authorities

The Inter Government Agreement (IGA) is a similar arrangement as the Roads Alliance with Main Roads Department here in Queensland although it is much more widely accepted as a cost saving measure. The initiative was originally proposed by the City of Gresham and is proving to be a very successful arrangement in terms of achieving cost reductions through economies of scale and the sharing of resources.

Kansas City – Missouri Population 430,000 (regional population 1.7 million)
Having spent all of our time thus far in the western part of North America, the time had arrived to explore points of interest further to the east. Following a 6-hour plane trip from Portland via Dallas, Texas, the study tour group arrived in Kansas City, Missouri, in readiness for the commencement of the APWA Congress the following day. Although no meetings were held with councils in Kansas City, through the group's interaction with the locals and presentations given at the Congress by past and present Mayors, we were able to gain an appreciation of this historical city, located in the heart of the mid-west of the United States.

Kansas City, Missouri, not to be confused with Kansas City, Kansas, is steeped in American folklore. It was from here that many settlers of the western states of America set out in their wagon trains along the Oregon and Sante Fe trails to begin new lives. Following the completion of the railway linking Kansas City to the major cities in the east in 1865, the city flourished and established itself as a railhead serving the vast agricultural region to the west. Today Kansas City continues in its role as a major marketing and shipping centre for the mid-west. At the opening of the Congress, the Mayor provided some interesting facts about Kansas City. Apart from its association with that movie featuring the famous yellow brick road, Kansas City is also the birthplace of Walt Disney. In addition, the Negro League Baseball competition was formed here in 1920. And due to its location close to the geographical centre of the United States, it hosts the headquarters of many national organisations including the APWA.

Toronto – Ontario Population 2.5 million
The final city visited by the study tour group was Toronto located on the edge of Lake Ontario. The local government area covered by the City was expanded in 1998 with the amalgamation of six adjoining councils. The current population of the city is 2.5 million with there being 4.5 million in the Greater Toronto Area. Toronto is the financial centre of Canada and one of the largest financial centres in North America. It is heralded as one of the most multicultural cities in the world with 48% of its residents being immigrants.

The study tour group arranged a full day meeting with Managers and Supervisors from the Department of Works and Emergency Services. The interesting aspect of this department is that as well as providing a full range of traditional engineering services, it also provides fire and ambulance services together with emergency management. The total number of employees in the department alone is 9500.

3. APWA CONGRESS

Along with the other five members of the Australian Study tour group, I attended the American Public Works Association Congress held over four days in Kansas City, Missouri commencing on Sunday 22 September 2002. The Congress, suitably named "The Best Show in Public Works" proved to be a very popular event for the 7000 or so delegates from all over the United States and from fourteen other countries.

There was no shortage of education sessions to attend with over 150 of them being offered covering a range of topics such as Personal Enrichment, Street and Road Maintenance and Water and Wastewater. In total, there were thirteen different areas of interest that were covered. Choosing which papers to attend was not such an easy task. The Congress was hosted by the local APWA chapters in and around Kansas City with assistance from the APWA head office and armies of volunteers. The opening of the Congress by Past President Richard Ridings from Austin, Texas was initially a sombre affair with his reference to the tragic events of September 11 that unfortunately coincided with the 2001 Congress in Philadelphia. In his speech he referred to the important role public works professionals play in emergency management and in ensuring the safety and well being of our communities. This theme was to re-emerge a number of times during the course of the Congress.

In the awards ceremony that followed the opening of the Congress, the two major awards that were presented reinforced this connection. In the first, the APWA Award of Merit was presented to Peter Mantalbano, Deputy Commissioner of the Department of Sanitation from the City of New York. Peter witnessed the second aircraft crashing into the World Trade Centre through his office window and, along with his response team using excavators and dump trucks, was first on site searching for survivors. Later, he was involved in removing debris in the initial clean up operations.

The APWA Presidential Leadership Award was presented to Joe Allbaugh, Director of the Federal Emergency Management Agency (FEMA). This agency is responsible for providing federal assistance following a disaster and for the coordination of relief activities. Through Joe's efforts, clean up operations at The World Trade Centre went ahead smoothly and were completed ahead of schedule. Since the September 11 events, Joe has initiated a new strategic planning process and has proposed new training and support for the country's fire services. Also a memorandum of Understanding (MOU) establishing a formal relationship between FEMA and the APWA was signed at the Congress. The MOU will provide the framework for increased awareness and understanding of the key role that public works professionals play in disaster mitigation, preparedness and recovery.

The incoming APWA President, Marty Manning from Nevada, then introduced the first of three guest speakers who would entertain and inspire Congress delegates over the course of the next four days. Homer Hickam, a distinguished aerospace engineer from NASA, spoke of his growing up in a rural mining community during the Sputnik era. As a senior high school student, he was able to gather the support of a sceptical community, disinterested in the emerging field of space technology and coordinated the winning entry of the 1960 National Science Fair. Later, at NASA he worked in propulsion, spacecraft design and crew training winning many awards. A movie about his life story, October Sky, was released in 1999. Following Hickam's speech, the delegates were treated to a performance of Kansas City's Marching Cobras Highstepping Band who led a procession of delegates into the exhibition hall for its opening. The exhibition hall had an area of 9000m² and contained hundreds of displays of the latest equipment and resources for public works professionals. A mascot by the name of P.W. Paws was also on hand to keep the delegates entertained.

As with other Congresses, the Australian contingent set up and manned an information stall in the general exhibit area. The objective was to inform our American friends about public works engineering in Australia including the IPWEA. It proved to be a raging success, especially as we conducted a raffle of a koala bear that won the hearts of many passers-by

However, it wasn't a case of all work and no play as we also attended some entertaining social functions during the Congress. The first of these events was the Getting Acquainted party, held at the historical Union Station. This imposing building, recently refurbished at a cost of US$250

million, reminded delegates of the important role rail has played in the development of Kansas City. Music and entertainment was provided by members of the KC Jazz fraternity. Apart from the conference dinner held on the Wednesday night, we also attended the Reception for International Guests and were fortunately asked to join the Nevada Chapter in celebrating Marty Manning's new role as National President of the APWA.

4. SUSTAINABLE SERVICE DELIVERY IN A CHALLENGING ENVIRONMENT

The following topics discuss examples of how communities in North America have integrated various principles relating to sustainability in their day-to-day engineering activities.

4.1 Continuous improvement in Maintenance Management

In 1995, The Regional Transportation Commission in Nevada implemented a Maintenance Management System (MMS) for road and traffic maintenance in Washoe County and the Cities of Reno and Sparks. The MMS placed an emphasis on achieving continuous improvement in the day-to-day maintenance activities carried out by the various workforces involved.

4.1.1 Need for new MMS

The decision to introduce a new MMS was made at the County level following a review of road based maintenance activities by the three organisations concerned. It was found that:

- Aging infrastructure was requiring a greater maintenance effort to maintain the level of service traditionally provided.
- The public at large were becoming less tolerant of poorly maintained roads and streets and had developed higher expectations of the road authorities.
- Government legislation required greater financial accountability in the form of GASB 34.
- The overall Pavement Condition Index (PCI) in all three areas was declining due to insufficient funding being provided to carry out the necessary maintenance work.
- Increased political intervention by elected members was proving difficult to manage.

4.1.2 Key components of the MMS

The basic concept behind the MMS involved applying traditional management tools in conjunction with computerised cost control and performance monitoring techniques. The traditional management tools that were applied were:

- Planning
- Organising
- Scheduling
- Monitoring
- Controlling

A detailed review of the annual works program was carried out and a resource plan considered necessary to deliver the outcomes identified in the works program was then prepared. At the same time the MMS was being formulated, it was recognised that asset management principles also needed to be applied if a predictive works program was to be adopted with minimum resource wastage.

In the case of the City of Sparks, the end result of the planning, organising and scheduling process was the development of 181 different activities that were programmed to be carried out throughout the year. Each activity is accompanied by a method statement, resource requirements and most importantly, performance guidelines. The guidelines set out the standard of work to be performed and the estimated time necessary to complete each task. To allow monitoring of costs, all resources required to complete the works program are costed at unit rates. These include labour, plant and equipment and materials. Each of the speakers emphasised the importance of getting the works supervisors and foremen responsible for the work, involved in the development of each of the method statements and performance measurement criteria. In this way, ownership of the process is achieved and ongoing modifications are more easily introduced.

The end result is that the annual works program is transformed into monthly statements of activities that are to be carried out along with a summary of resources needed for the work. To

facilitate the organisation of the field staff and the scheduling of plant and equipment, bi-weekly meetings are held with the works supervisors and foremen. During this time, a works plan for the following two weeks is finalised. By fine tuning the scheduling of the maintenance works on a proactive rather than reactive basis, it is intended that a minimum of 70% of the works are pre-planned with less than 30% of the work carried out as service requests.

The final aspect of the MMS, and the one I consider to be the key to its success, is the software package developed by Lorick Associates Consulting. This package is used to capture and track all input costs. The software is spreadsheet based and requires each of the foremen to record their cost data on a daily basis and to forward the information to management support staff.

By using this process, management is able to monitor productivity by comparing actual outcomes with predicted performance criteria developed in conjunction with the workforce. Productivity monitoring is therefore carried out on a job-by-job basis and continuous improvement becomes an integral part of the process.

The success of the software, which was developed as part of US$250,000 review of operations by the management consultant, depends heavily on there being a "system champion" from management support staff. This person's responsibility is to ensure the necessary data is collected and analysed on a timely basis as each job is subject to performance measurement. Unlike other software used in this type of work, data collection has become an integration not an overlay in daily work routines. This has no doubt contributed to the overall success the process has enjoyed.

4.1.3 Implementation of the MMS

In the case of the City of Reno, immediately after its implementation, annual productivity increases of 10% were achieved. This translated into documented savings of US$6 million in the first three years alone. In addition, at the County level, the decline of the PCI of the combined road network was reversed and a general improvement was achieved. Maintenance costs per mile are now less than when the system started. Another important benefit has been the improvement in relations with the Mayor and other elected members of the City who are now satisfied ratepayers money is being spent on maintenance works as efficiently and effectively as could be expected. This has led to increased job security for management and employees alike and an overall increase in morale. Budget submissions are now more likely to be accepted by the City and a greater level of trust exists between the elected members and operational staff.

4.1.4 Conclusion

The introduction of a MMS in the County of Washoe, Nevada has shown that the application of traditional engineering management processes together with automated record keeping has led to a marked increase in efficiencies and consequential cost savings.

The impetus for introducing a new MMS, that of an ongoing decline in the overall condition of the asset base, has been reversed, resulting in improved customer relations and staff morale. At the core of the process is the activity based planning of maintenance works which are carefully resourced and scheduled on the basis of modern asset management principles.

There is an emphasis on proactive maintenance and automated record keeping on a daily basis ensuring that management has access to up to date performance and cost data. This allows productivity to be constantly monitored and, where necessary, improvements made to achieve the desired outcome. Continuous improvement is therefore an integral part of the process.

There needs to be a "system champion" to ensue a constant flow of accurate data and a strong commitment to the process from senior management down to the foreman level.

4.2 The Brush Creek Technical Tour

One of the technical tours organised for the APWA Congress showcased two recently completed flood restoration projects located in the Brush Creek catchment – a local watercourse within

Kansas City. This catchment extends over two states, three counties and thirteen local government areas. The following is a summary of the technical tour conducted on 25 September 2002 and highlights the different approaches adopted in the completion of the two projects.

4.2.1 Bio-engineered channel improvements

The first of the two projects inspected during the technical tour was an example of where environmental stewardship has been integrated with traditional engineering solutions to produce what is locally known as bio-engineered channel improvements. This section of Brush Creek suffered severe flood damage to its banks and bed and significant restoration works were required to prevent further damage from occurring to essential infrastructure such roads and buried services. Instead of using traditional engineering methods such as retaining walls to repair the damage, after consulting with the community, it was decided to implement a green solution that restored some of the creek's original habitats in the repair process. Additionally as the local council had to contribute most of the funding itself, the repair works needed to be carried out within a limited budget.

It was recognized early on in the project that the bio-engineered solution to the flood damage would adversely affect the flood immunity of the community. Because of its use of plantings to stabilise the banks and other design features such as ornamental ponds, it was recognised that the hydraulic capacity of the stream would not be as great as a traditionally engineered stormwater channel. It was decided that this was not an insurmountable problem as it would be possible to accept a lower flood immunity as long as property damage was avoided and the relevant evacuation plans in the city's Emergency Response Plan were modified accordingly.

The solution finally adopted for the structural repairs comprised of three main elements. Along the straight sections of the creek, biogabions and geocells were used. Biogabions consist of traditional wire baskets filled with equal amounts of rock and soil while geocells are prefabricated planting structures used to contain soil in much the same way as would a series of pot plants joined together. Both of these structures relied on selected plantings to achieve stability. At changes in direction in the creek, limestone blocks were used for bank stabilisation. One of the desired outcomes of the repairs was to create a series of pools along the one kilometre section of the creek to be repaired. This would create aquatic habitats for local flora and fauna and would also increase the amenity of the area. The end product has been well received by the local community that has not only benefited from the stabilisation of the creek's banks, but has also been provided with an environmentally friendly solution in the process. At the same time, by adopting this innovative approach, the overall cost of the project was reduced from an original estimate of US$3 million to a final cost of US$1.8 million.

4.2.2 Country Club Plaza redevelopment

The second part of the technical tour involved the inspection of the redevelopment of the Country Club Plaza – one of the five city centres in Kansas City. The catalyst for the redevelopment was a US$30M flood restoration project which, in addition to providing a higher level of flood immunity, stimulated economic and neighbourhood development along a ten kilometre section of Brush Creek that meandered its way through the city centre. This was achieved through an innovative design approach which integrated traditional engineering solutions incorporating aesthetic and cultural qualities of the local environment.

Planning for the flood restoration works commenced in earnest in the early 1980s following a severe flood event that caused almost US$200M of damage and the loss of 12 lives. Flood modelling was carried out by the US Corps of Engineers to increase channel capacity so as to cater for a 1 in 500 year event. This was to be achieved though the widening and deepening of the flow channel through the town centre which had been subject to numerous low capacity upgrades over its 100-year history. A number of bridges constructed in earlier times were also removed to increase hydraulic capacity. As considerable civil engineering works were required to improve the flood immunity to the desired level, it was decided to incorporate various aesthetic and environmental considerations into the final design to reflect the outcomes desired of the community. The end result was the creation of large areas of public open space in the form of landscaped parklands, recreational facilities and ornamental lakes.

While the flood restoration works were funded federally through the normal natural disaster arrangements, the additional improvements sought by the community were funded by the various cities involved together with local developers and other community groups. The completed project has resulted in significant commercial, institutional and industrial redevelopment that has brought about an increased sense of community through what is now known as the City Park.

4.3 Quality Based Consultant Selection

4.3.1 Introduction

Quality-based selection (QBS) of professional engineering services is a process whereby the qualifications of the chosen firm best reflect the tasks required to complete the design project under consideration. It ensures that adequate attention is given to defining the scope of the project and that the appropriate level of design capabilities is available in the firm that is chosen. Under this approach, design fees are not discussed until the scope of the project is established and the firm chosen has demonstrated their capability of achieving the desired outcome. The discussion that follows is a summary of the paper delivered by John Herzke of the City of Virginia Beach, Virginia.

The QBS methodology is used widely in the United States as a result of legislation passed in 1972 which requires federal agencies to use QBS methods when soliciting design services. Legislation of a similar nature has been enacted in 34 states across America requiring it to be used in the consultant selection process. Additionally, the QBS process is also used internationally by the World Bank for the selection of its engineering consultants.

4.3.2 Key components

Key components of the QBS system are as follows:

1. ***Established financial limits***
   This is normally based on statutory limitations contained in state legislation. In the case of Virginia Beach, the QBS process must be used where the design fees are greater than US$30,000. For smaller consultancies, Virginia Beach utilises annual services contracts of pre-qualified consultants.

2. ***Establishment of a selection committee***
   Virginia Beach utilises a Selection committee with rotating membership of qualified personal in selecting the successful consultant.

3. ***Specific selection criteria***
   Virginia Beach have established ten selection criteria, outlined in their official policy document endorsed by Council. These are:

   1) Professional qualifications
   2) Specialised experience of the firm
   3) Degree of familiarity of the firm with the particular project
   4) Quality of past performance
   5) Experience and qualifications of sub-consultants
   6) Evidence of cost control effectiveness
   7) Current work volume affecting ability to complete this project
   8) Accessibility of design team to project site
   9) Capability of design team to provide aesthetic features for the project
   10) Demonstrated ability to establish a public participation process

   (Note that price is not part of the selection criteria).

4. ***Request for Proposals (RFP)***
   The key to successful process is to utilise an RFP which is concise and to the point in the general description of the project without trying to do a full-blown project scoping. A major

benefit of the QBS approach is that it will allow design consultants to showcase their creativity and design expertise for the particular project under consideration. The RFP should be no more than one page. Too often project management agencies feel compelled to list in considerable detail the project scope in the RFPs rather than allowing the selection process to allow the chosen firm to help establish the final details of the scope of work to be accomplished. The consultant is being paid for their expertise and accordingly, those talents should be utilised in the scope development process.

5. ***Established a detailed flow chart for the process***
   All critical tasks and dates need to be documented so that from the outset of the project, the progress of the selection process can be monitored.

6. ***Consultant selection and contractual issues***
   A procedure is required for the notification of the successful and unsuccessful consultants upon the completion of the selection process. Also, in order to facilitate the early commencement of the design project, it is helpful if the successful consultant is agreeable to the Council's Standard Conditions of Contract (without any changes) at the time of award.

4.3.3 Conclusion

The QBS process attempts to ensure that the best-qualified firm is selected for the design project under consideration. Under this system, design fees more closely reflect the scope and quality of services being offered. It avoids the situations of unfair comparisons being made between consultants who offer substantially different services for a project which has been scoped by the client. By using a well-documented process which is consistently applied, the parties concerned will see that the process is fair and equitable. This will not only result in the selection of the best qualified firms but will also tend to reduce the potential for objections being raised by unsuccessful participants in the selection process.

5.CONCLUSION

The 2002 IPWEA Study Tour of North America provided an ideal opportunity to experience at first hand a range of approaches used in addressing common issues and problems that are frequently encountered in modern urban communities. It reinforced my perception that, internationally, we are all facing similar problems and by undertaking study tours and attending conferences our ability to find workable solutions is greatly enhanced. From my observations, I consider we compare favourably with our North American associates in terms of our understanding of the issues relating to sustainability and the role public works professional have in achieving appropriate outcomes.

The Study Tour also presented many opportunities to experience differing cultures and to enjoy the hospitality of our various hosts and fellow travellers. Some of the more memorable aspects of the cultural interaction were:

- experiencing the vitality of Hong Kong by night during a stopover on our way to Vancouver
- visiting the snowfield resort town of Whistler, BC, the host for the 2010 Winter Olympics
- shopping at the world's oldest farmers markets in Seattle
- attending a Who concert in Toronto at the Air Canada Centre
- a day trip to Niagara Falls

On the return trip to Australia, I was able to spend some time in London and take in the sites. I also took the opportunity of catching up with relatives who are now living in various parts of England.

I would like to thank the Queensland Foundation for Local Government Engineering who provided the funding which enabled me to participate in the Study Tour and National CEO Chris Champion for his time and effort in preparing and leading the Tour.