

IPWEA International Study Tour 2004

Study Tour Theme:

BEST PRACTICE & INNOVATION IN PUBLIC WORKS

Report Paper Topic:

EMERGENCY RISK MANAGEMENT IN PUBLIC WORKS ENGINEERING

Report to FAMET

(Foundation for the Advancement of
Municipal Engineering in Tasmania)

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1 Executive Summary

During September 2004 an overseas study tour of professional engineers representing every state of Australia was conducted by the IPWEA National.

The tour group visited four (4) local government authorities in the State of California and attended the national conferences of the American Public Works Association in Atlanta and the American Institute of Architects in New York. Each study tour participants was to prepare a research paper into a topic previously approved by foundations involved with the advancement of the professional in the participant's state. My research topic *Emergency Risk Management in Public Works Engineering* involved 'proactive' planning to minimise risk in the construction of infrastructure projects.

Presentations, site inspections and discussions with infrastructure asset managers that are relevant to the research topic are:

- Presentations and site inspection of the ex-World Trade Centre site in New York
- Presentation on the 29 hour power black-out in New York in 2003
- Discussions on initiatives to counter terrorists' actions concerning water supply and sewerage networks in both the San Louis Obispo City and Santa Cruz City
- Discussion and site inspection of the City of Campbell's SWAT team
- Discussion on practices to address flood prone land in San Louis Obispo City
- Discussion and site inspection of areas subject to catastrophe damage caused by earthquake in the cities of Santa Cruz, San Louis Obispo and Santa Barbara and

American standards addressing risk management are similar to the process within Australian Standard AS/NZS 4360:1995 *Risk Management* – in brief a systematic process of Prevention, Preparation, Response and Recovery (PPRR). However it is evident that, with the exception of New York City, every other local government area involved in the study tour treated risk management inconsistently and implemented measures generally only to satisfy legal, politically or community expectations. The statement '*Risk management is an exercise in covering the City's 'back-side' in the event that something happens*'¹ exemplifies the strategy adopted towards risk prevention.

It also became apparent that during our discussions with local government officers that there were issues that were of significant difficulty to local Councils or processes which are unfamiliar to Australian Local Government. Some of the issues discussed were:

- The annual income of local government authorities are fixed by the State of California – a fixed percentage allocation of property tax

¹ *per. comm.* Mark Dettle P.E., Director of Public Works–Public Works Department, City of Santa Cruz

and goods & services tax. Additional income is derived from charges on utility providers leasing the road reservation and direct charges for water & sewer services. High cost capital projects are funded by issuing 30 year 'Investment Bonds' but these need to be approved by ballot by $\frac{2}{3}$ of residents - however 'Investment Bonds' are rare. More common place is private funding of public facilities given that wealthy individuals and companies feel a sense of community obligation.

- A significant and highly sensitive rating anomaly exists in the State of California. State legislation passed in 1978 has capped the percentage annual increase in 'rating' property value based on CPI provided the ownership has not changed. At a property is sold then the 'market' or purchase value then becomes the base 'rating' property value. It is not uncommon that 2 properties side-by-side and of equal 'market' value may pay annual property tax which varies by 3 fold.
- Councils are able to compulsorily acquire under-developed or poorly maintained land and on-sell that land to a private developer.
- Over half of the professional engineers in America of female.
- Councils must public tender all projects which have a value more than US\$5,000. State legislation requires the lowest bidder to be awarded the contract regardless of their past performance or capabilities. Significant contract supervision difficulties are common.
- Over $\frac{1}{3}$ of American States allow the community to have final veto of any planning application provided a $\frac{3}{4}$ majority vote against the project in a public ballot.
- Privacy laws in California are almost non-existent. Criminal records of existing or potential neighbours are easily and freely available.

2 Introduction

2.1 IPWEA Study Tour

Between Thursday 2 September and Wednesday 29 September 2004 an overseas study tour of the United States of America was conducted by the IPWEA National.

The study tour delegation had representatives from every Australian state and was led by IPWEA Executive Officer, Chris Champion. The tour group consisted of:

- Chris Champion IPWEA NSW CEO (Tour Leader);
- Ian Paterson Vinidex QLD;
- David Richardson City of Casey, Victoria;
- Paul Di Iulio City of Campbelltown, South Australia;
- Dennis Blair City of Wanneroo, Western Australia;
- Richard Jane Inverell Shire Council, New South Wales and
- Myself representing Tasmania.

Fortunately every state of Australia was represented on the study tour.



**IPWEA National President & Executive Officer
and Study Tour participants**

The study tour's primary purpose was to attend the American Public Works Association Conference in Atlanta, Georgia, American Institute Of Architects National Conference in New York and to facilitate attendance at a number of local government offices to discuss matters of mutual interest. Specific local authorities visited were:

- City of Campbell,
- City of Santa Cruz,
- City of San Louis Obispo and
- County of San Louis Obispo.

All of the local authorities were in the State of California.

Each of the study tour participants had pre-tour identified specific areas of interest which would form the topic for their research paper. In my

situation I intended to research ways differing local authorities were dealing with risk in the design, construction and operations of public infrastructure works.

I wish to extend my appreciation to both the Foundation for the Advancement of Municipal Engineering in Tasmania (FAMAT) and the National Foundation for sponsoring my participation in this tour. Without their assistance participation in the tour would not have been possible. I would strongly recommend any fellow engineer if the opportunity arises to also participate in a future study tour.

2.2 Scope of Report

This paper will include two (2) parts –

- firstly a summary of discussions with staff and elected representatives of Local Government authorities and summary of presentations that I attended at the two (2) conferences (Atlanta – APWA Conference and New York – AIA National Conference) and
- secondly a report on the study tour results and other investigations into my research topic Emergency Risk Management in Public Works Engineering. The research topic paper will not be about the ‘reactive’ parts of emergency management but more so the ‘proactive’ planning to build into a system of contingencies or redundancy to cater for differing levels of risks.

2.3 My Background

My professional career spans 27 years and includes the Local Government Authorities of City of Chelsea (Port Phillip Bay bayside suburb in Victoria), Shire of Healesville (country Council at the foot of the Great Dividing Range in Victoria), Town of Camperdown (rural Council in the western region of Victoria) and Northern Midlands Council (rural Council in the midlands of Tasmania).

At these Councils I have held management roles responsible for investigation, engineering design and project management of civil infrastructure projects.

Over the past 21 years my duties also included land-use planning with full management responsibility for delivery of the task over the past 15 years.

In addition to engineering and planning responsibilities I am also a qualified Building Surveyor and have held this position at both the Northern Midlands Council and Town of Camperdown a period of 15 years.

At the Northern Midlands Council I was also responsible for natural resource management and environmental health.

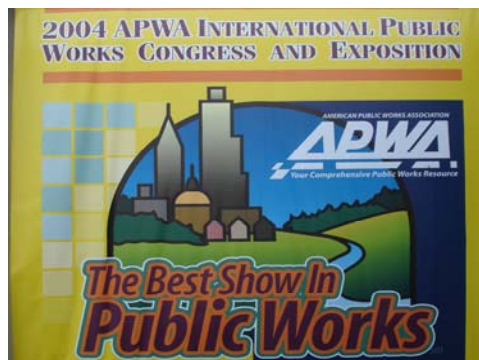
My interest and responsibilities in the above task have lead to appointments to various committees and reference groups. Of these which had some relevance to the report topic paper are:

- Northern Tasmania Regional Emergency Management Group
- Western Victoria Regional Emergency Management Group
- Tasmanian Assessment Committee for Dam Construction
- Tasmanian Waste Advisory Council
- Northern Tasmanian Natural Resource Management Council
- State Salinity Reference Group
- State Planning Legislation Advisory Group

3 AMERICAN PUBLIC WORKS ASSOCIATION Conference – The Best Show In Public Works (Atlanta, Georgia – September 12-15, 2004)

The conference theme was 'The Best Show in Public Works' held in Atlanta a city which has grown from a population of 2 million in 1980 to 4 million now.

The opening session would rival the 'Oscars' – raising of the (American and Canadian flags), military flag bearers, singing of both national anthems, blessing by an Atlanta Reverent, Atlanta's Mayor's official opening speech.



It was ironical that the guest opening key-note speakers were an Australian couple (Dr Glenn Singleman and Heather Swan) who spoke on 'Defying Gravity, Defying Fear?' Both were Base-Jumpers – an extreme sport where you jump off cliffs and free fall before parachuting the landing.

It may be interesting to note that the conference:

- is attended by 3,000 delegates and
- has 450 trade displays – that cover an area the size of 2 Aussie football ovals long and 1½ wide.



Trade Display area covering 300m by 180m

I attended many sessions – brief notes of each session are included as Appendix B.

Some facts of general interest were:

- New York City have ¼ million employees
- The state of California has 3,300 APWA members which is 3 times more than the whole of Australia (total APWA membership is 27,000)
- Children smile or laugh 400/day; adults 7.
- Generally American City Councils look after police and fire brigades

The American government system is highly layered and complex. As a rule:

- Federal – Defence
- State (50#) – Health
- County – Education, ‘unincorporated’ areas, courts, Sheriff (public highways)
- Cities – public utilities, (some cable TV), police, fire, civil, community services.
- The system is proving highly inequitable – no equalisation funding.
- The Americans are (new) capital construction focus and have done little to maintain or extend the life of existing assets.
- Professional staff have between 11-13 public holidays per year but only 2 weeks leave
- maintenance of roads is not high on the budget priority:
- on average roads in rural areas are resealed every 30 years
- even minor maintenance is a discrete budget item in their 2 year budget. There is no funds for the City Engineer to spend on maintenance
- road maintenance or construction is highly political and Councillor acquaintances do well (& vice versa)

That evening we were dining with the South Carolina & Nevada Chapters of the APWA – this is a tradition which began in the early 1970’s.

The host city, Atlanta is a thriving metropolis that:

- was founded in 1837 as purely a railroad town
- is a university city – 46. This plus relatively low house prices and a busy regional hub airport are the reasons for its huge growth – 1.2 million people every 10 years (currently 4.6 million)
- has the world’s busiest airport – 85 million passengers each year. 199 plane docking terminals

- has the 4th largest convention centre in the world – 1.6km long and 0.8km wide. Over 19 million delegates annually
- held the final major battle during the American Civil War. Major Jackson after capturing Atlanta burnt down every building except one – a brick Catholic church
- infrastructure and buildings for the whole of the Atlanta Olympics was privately funded and donated to the city. Private funding of sporting venues, public buildings etc are common practice. Americans would vehemently oppose using public taxes for such ventures
- Ted Turner is an Atlantean who has donated significantly to the city and the UN (US\$10 billion over 10 years). He owes 17% of New Mexico (about 4/5 of Tasmania) as well as other land and intends to donate his land holdings to government as nature reserves upon his death.

Highlights of Atlanta



Home of the deep South



Site of the end of the Civil War



Only building spared from fire after losing Civil War



Home of Martin Luther King



Home of Coca Cola (invented 1880)

4 AMERICAN INSTITUTE OF ARCHITECTS

National Conference notes - *AIA Learning From Lower Manhattan (New York, New York State – September 17-18, 2004)*

Our hotel accommodation was located in Lower Manhattan directly overlooking Ground Zero (the ex World Trade Centre site). Construction of Freedom Tower (commercial office space and a huge commemorative structure on the top) began on American Independence Day 2004. The WTC would have dominated the landscape being twice as high as any building in the immediate area.



World Trade Centre, New York – built 1973

While in NY we registered with the Architects Institute of America (AIA) in their National conference on the revitalization of Lower Manhattan. The conference included presentation of conference papers in the morning, a walking tour of Lower Manhattan in the afternoon, a boat tour of Lower Manhattan Island and a site inspection of 'Ground Zero'. Brief notes on each conference paper are included as [Appendix C](#).



Terrorist Attack of 9 September 2003

The conference spoke about the devastation of the 9/11 terrorist attack and how the City of New York and the community rebuilt (or plan to

rebuild). There were plans to replace the office space lost, to build a memorial for the 2,700 who lost their lives, improve the residential amenity of the area by improving public open space and generally reconstruct the run down roads and footpaths (sidewalks). The whole project was very ambitious and involved an area of 270 acres.

The project involved:

- 2 reflection ponds being the footprint of the 2 main towers
- 'Freedom Tower' to stand taller than the previous World Trade Centre
- the reconstruction of almost every road and sidewalk in the Lower Manhattan area over the next 4-6 years
- improvements and linking the small and larger pockets of public open space (needed due to the introduction of residential towers since the 80's/90's – previously it was only a business district).

The walking tour included the Skyscraper Museum located near the water front and inspection of the reclaimed land mainly from the foundation material excavated during the construction of the WTC in 1970. Now the reclaimed land is almost fully occupied with office blocks and housing apartments.

A site inspection of the 'Freedom Tower' construction site was completed. Included as Appendix D are brief research notes on engineering aspects of the World Trade Centre collapse, the effect of the 9/11 terrorist attack and the plans of the 'Freedom Tower' development.



Design Concepts – New York’s Freedom Tower

A tour of NY included the Empire State Building. Some facts of the building are:

- ¼” sway even in high winds
- tallest building in world when built in 1931 until 1970 (when WTC was constructed)
- erected at the rate of one floor per day – total construction time of 15 months – total conception to occupation time of less than 2 yrs
- 85 storeys high
- top tower constructed to land blimps – although only used once.

5 International Public Infrastructure Practices and Organisations

5.1 CAMPBELL CITY

At the City of Campbell we were introduced to the management team and CEO as well as being shown around their 6sq mile Council area. At the depot we caught up with Campbell's SWAT team – they haven't fired a shot in anger in over 203 years.

The City Engineer (known in Australia as a 'Senior Design Engineer') indicated that half her wage goes to Federal & State income taxes (still has to pay property tax (i.e. rates) and customer tax (8½% on all goods & services – i.e. GST).

In America there is no universal health care and the Council reimburses their professional staff their health care insurance which is approximately \$1,200 per month (\$25,000pa). It is about to go up by 25% which staff will be required to cover.

That evening we were invited to the City's Council meeting which went for a total of 17 minutes – this even included 5-8 minutes welcome to the Australian delegation. The Council was extremely hospitable and made the study tour group very welcomed.

Details of the City and their Council and initiatives are attached as [Appendix A](#).



City of Campbell SWAT Team



Council Elected Representatives &
Study Tour Group

5.2 SANTA CRUZ CITY

The City of Santa Cruz was established in 1792 and was the first city established in the County. Its current population is 56,000 where the County has 250,000 residents. However the City provides regional services to County in terms of water supply, waste water treatment, library services and fire brigade services.

Its annual income is US\$35 million of which half is spent on public safety (police, fire brigade and emergency response units).

In recent years there has been a ground-swell to enlarging city boundaries to include all urban areas (sweeping together smaller townships into city) or merging the City of Santa Cruz with whole County.

An earthquake in late 80's effectively destroyed the main street of Santa Cruz ('Downtown') as many of the buildings were unreinforced masonry structures. The City planners undertook a major urban renewal of the whole of Downtown and transformed the area into a modern, tasteful, spacious and pedestrian friendly space.

The management of the Council infrastructure assets is an area that performs poorly. In part this is due to a lack of knowledge and investigation into the age, condition and performance of existing assets and more so to do with the lack of financial resourcing. Typically rate increases are held for 3-4 years and budgets are prepared 4 years in advance (including specific maintenance allocations).

Given the disasters experienced in the USA in recent years the City has been active to give emergency risk management a higher priority. Unfortunately the drivers are politicians not the community. *'Risk management is an exercise in covering the City's 'back-side' in the event that something happens²*. In addition there is no consideration on how much to spend and little appreciation of what is a reasonable level of spending for reasonable risk reduction.

Details of the City and the region are attached as [Appendix A](#).

5.3 SAN LUIS OBISPO CITY

The City of San Luis Obispo is built around the historic San Luis Obispo Mission. The Mission building was the original building in the area for a 200 mile radius. It was established in 1772 to convert the native Indians to Christianity and to open the area for settlement by Spain moving up from Mexico. Like so many other good will invasions over 60% of native Indians died of illness and disease in the first 2 years.



San Luis Obispo Mission

² *per. comm.* Mark Dettle P.E., Director of Public Works–Public Works Department, City of Santa Cruz

The City of San Louis Obispo has a population of 44,000 and has effectively no population growth. The residents of the City and surrounding County have actively discourage new development or initiatives which are perceived to significantly increase population and therefore deterioration of their lifestyle.

The region enjoys a very low crime rate attributed to the city being half-way between San Francisco and Los Angeles and therefore declared by the crime gangs as neutral ground.

The city is a very stable place where wages increases are minimal, but having the second highest cost of living in California mainly due to the cost of housing.

San Louis Obispo is a college town. The California Polytechnic University has a student population of 16,000 - generally from wealthy families. The enrolments at the university have been decreasing over recent years because families with young or adolescent children and student can't afford the accommodation.

Due to the regions remoteness, cost of accommodation and comparably low wages, both the City and County have difficulty attracting young professional staff.

Details of the City and the region are attached as [Appendix A](#).

5.4 COUNTY OF SAN LOUIS

The County of San Louis Obispo is 1 of 58 counties in the State of California. It has a population of 245,000 but half of these are in 7 'Cities' within the County boundaries. The county has a housing vacancy rate of 7%.

The county maintains roads and bridges which are outside the municipal boundaries of the 7 Cities – this amounts to 200 bridges and 1300 miles of road (of which 1000 miles sealed).

The county has 18 departments staffed by 2553 employees - the Public Works Department has 183 employees. A major concern for the Country is the difficulty in attracting qualified or experienced staff coupled with the expected future attrition given that the average age of employees is 49.

The County have developed an employee university in conjunction with the local tertiary university to develop non-technical skills in employees. Topics delivered in the program cover leadership development, team building, writing and presentation and dealing with stress and burn-out.

The county's annual budget is approximately US\$364.3 million. The financial system and Government reporting must comply with Government Accounting Standards Board Statement No.34 (GASB 34). GASB 34 is

very similar to the Australian Accounting Standard AAS27, in that all assets and liabilities must be identified and valued and then reported in the Annual Report – however the County have yet to implement a robust asset management system to assist in determining maintenance and construction priorities.

A significant issue for the County is project compliance with Federal and State legislation. Relevant project related legislation are:

- California Coastal Act
- California Environmental Quality Act
- CEQA - Californian Environmental Quality Act
- CWA – U.S. Environmental Protection Agency, Clean Water Act
- CZMA – Coastal Zone Management Act
- EO11593 - Executive Order for the Protection and Enhancement of the Cultural Environment
- ESA – U.S. Endangered Fish and Species Act 1973
- F&G Code – Californian Department of Fish and Game Code
- National Environmental Policy Act

Details of the County and current issues are attached as Appendix A.

5.5 Summary of Issues Effecting Local Authorities

During the visits to the local government authorities a number of issues were raised that were either

- Of significant difficulty to the local government areas or
- Processes or procedures which are unfamiliar to Australian Local Governments.

A summary of these issues are:

5.5.1 Financial Issues

Annual Income

A City's annual income is derived from both property tax and sales tax. California State collects property tax (equivalent of Australian Council Rates) and the County collects sales tax (at a current rate of 8%). Of the property tax collected, 80% is retained by the State and the remaining 20% is divided between the County and City. The State's portion of property tax is fundamentally challenged into education and the school system.

A typical City with an annual income of US\$60 million derives its income from:

- Property tax – 20%
- sales tax – 60%
- Water sales and sewer charges – 15% and

- Other taxes including
 - Tax on using Council road reservation by private utility providers (i.e. phone and television providers)
 - tax on hotels
 - tax on air emissions and
 - entertainment tax draw

Approximately 50% of the City budgeted expenditure is on public safety such as police and fire brigade.

Council issued Investment Bonds (Loans for Capital Works)

The City issues 'investment bonds' to fund specific capital works projects. The bonds are considered to be a very stable investment and are therefore well received by the public and the business community. Bonds are repaid over a period of 30 years by the City introducing a levy or increasing the sales tax rate. The introduction of an 'investment bond' and the means to finance the repayments must be approved by ballot by two-thirds of the voters within the City electoral boundary. Generally speaking projects involving a new capital asset (such as Parks and community buildings) and public safety are more likely to be successful. Projects such as reconstruction of roads and underground utilities are less successful unless their condition is of such deteriorated circumstances that has produced a public 'out-cry' for action.

5.5.2 Rating Anomalies

Prior to 1978, local government (Cities and Counties) were responsible for the rate and collection of property tax without reference to the State or the community – identical to the system in Australia. In June 1978, Proposition 13 was passed by public ballot in the State of California which transferred the property tax collection powers from the Cities and Counties to the State. The changes were popular among the community but as time passes significant inequities now exist and management of Council assets are purely driven by politics and no longer by proactive educated asset management.

The issue? - property taxes in California had escalated to the point that many lower income families and elderly people on fixed incomes were forced to sell their homes because they could not afford to pay the property taxes.

The solution! - Proposition 13 limited property tax rates to 1% of the assessed property value and limited assessment property value increases to 2% pa. In addition in later years Proposition 218 was introduced which requires

- all local general taxes (i.e. equivalent to Council rates) to secure a majority approval and
- special taxes (i.e. investment bonds) to secure a two-thirds approval

of the voters within the City/County electoral boundaries.

The immediate result - A US\$5 billion reduction in property taxes in California - from US\$11 billion to US\$6 billion. Control of rate settings completely taken from the local authorities. Rate income fixed by formula and not needs of local area.

The long-term problems! – As mentioned property tax is calculated at 1% of the assessed property value. The assessed property value of each property is the actual value at the last date of sale (or the value as of June 1978 if no subsequent sale since the adopted of Proposition 13). The assessed property value is adjusted annually by CPI or a maximum of 2%. In the short term this does not present any problems. However as the years pass the gap widen between inflation (or a max. 2% pa) and exponential growth in actual housing prices. This gap is exemplified by the statement '*there are equivalent houses side by side where one pays 3 times more property tax than their neighbour. The neighbour has lived at the same address since 1978 and the other a recent first home buyer.*'³

5.5.3 Compulsory Acquisition of Under-Developed Land

State law allows Councils to compulsorily acquire under-developed or poorly maintained land and on-sell that land to be developed by another party. This is significantly different to Australian statute which prohibits land from being compulsorily acquired for other than genuine 'public' purposes.

5.5.4 Attracting Professional Engineers

It is staggering to note that more than half the qualified engineers in American working in Local Government are female. It is apparent that the community place a high value on 'technical' based skills and there is no stigma in any sex (whether male or female) in pursuing a career which has a science or mathematical core.

5.5.5 Project Tendering

In 1950 the State of California legislated to allow cities to complete capital projects with a maximum value of US\$5,000 before compulsory public tendering. This amount has not been updated since. Since 1950 the value of the US\$ has increased by over 120 fold (or US\$5,000–1950 = US\$600,000-2004). Where the restriction may have seemed a reasonable trigger for public tendering in 1950 the restriction now places a significant constraint on local government and effectively has forced the dismantling of the Council's workforce in completing capital works.

Once a design is completed and all due diligence issues such as public exhibition and environmental impacts have been assessed, the project is exposed to public tender. The law of Californian State and most other states is that the authority is obliged to accept the lowest bidder, regardless of previous performance or any other matter. Tender evaluation criteria are unable to be used. It is clear that this system has produced unsatisfactory results and is very resource intensive to contact manage particularly if a poor performing contractor. It is also apparent

³ *per. comm.* Joe Hall, Assistant Director – Redevelopment Agency, City of Santa Cruz

that claims for 'extras' (works in excess of the contract specifications) are frequent and vehemently vindicated.

5.5.6 Land-Use Planning Approval

Californian law (and one-third of the 52 other States in the United States of America) allows an individual to initiate a public ballot which can legally veto the approval of a development application under the State's Land-Use planning system. To initiate the public ballot the individual is required to present a petition opposing the development signed by a minimum of 10% of voters registered to vote in the local government elections. The ballot is administered by the City and requires a $\frac{3}{4}$ majority to veto the development's approval.

A development application in San Luis Obispo City for a regional shopping centre has been under consideration for 11 years. The environmental impact statements took 7 years to complete and approve. The development is facing significant opposition as the community is concerned that the scale of the development and traffic generation will have a negative impact on the amenity of the City.

5.5.7 Privacy Laws

Most Cities have a very advanced GIS system similar to that administered by the vast majority of larger Councils across Australia. The unique difference is that law and order is a local government responsibility and therefore police records (eg parking tickets, speeding fines and criminal convictions) are customer related and linked to the property in the GIS. Given the limited privacy laws in California, any person can access over the internet the police records of any person living in these Cities. This appears to be *frequently used to research neighbours as people move into an area.*⁴

⁴ *per. comm.* Robert Livick, Supervising Civil Engineer, City of San Luis Obispo

6 Emergency Risk Management in Public Works Engineering

My research topic *Emergency Risk Management in Public Works Engineering* involved 'proactive' planning to minimise risk in the construction and operation of infrastructure projects.

During the study tour opportunities arose to be able to discuss risk management in the context of Public Works and attend workshop presentations at both the America Public Works Association congress in Atlanta and the American Institute of Architects National Conference in New York city. The AIA Conference provided the opportunity to participate a site visit on the ex-World Trade Centre site in Lower Manhattan.

American standards addressing risk management are similar to the process within Australian Standard AS/NZS 4360:1995 *Risk Management* – in brief a systematic process of Prevention, Preparation, Response and Recovery (PPRR). The Australian Standard Emergency Risk Management Process concentrates on Prevention and involves five main steps – being:

- Step 1 – Establish the Context
- Step 2 – Identify Risks
- Step 3 – Analyse Risks
- Step 4 – Evaluate Risks
- Step 5 – Treat Risks

The well-defined steps of the cyclic process, stakeholder consultation, monitoring and review, and a focus on continuous improvements would allow emergency management officers to work with the community on identifying, assessing and treating those risks considered unacceptable to the community.

The risk management process in America is similar to that in Australia. Since the attacks of 9/11 the President, Congress, and the Department of Homeland Security have recognized this crucial first response role in the *Homeland Security Act of 2002* and *Homeland Security Presidential Directives 5 & 8*. The USA recognise that to combat the threat of terrorism and disasters of any description all disciplines must work together during the prevention, preparedness, response, and recovery operations.⁵

Since the terrorist strike on the World Trade Centre on 11 September 2003, the Federal, States and the various arms of Local Government have raised Risk Management to the highest level. However continually the asset managers (particular at a local government level) have failed to prove that the approaches taken are systematic, balanced, focused or a wise use of resource.

⁵ *The Essential Role of Public Works in Emergency Management* – APWA fact sheet www.apwa.com

Measures undertaken by local authorities under the banner of risk management – either prevention, preparation, response or recovery; include:

- City of Campbell
The City operates a SWAT team similar to an armed forces combat team. In 132 years they have not fired a shot in anger. Public safety (including police) is a role for local government – it is normal that ½ of the Council's annual budget is allocated to the department. Any program or initiative identified under the banner of public safety is rarely questioned by the elected members through fear of negative publicity. In fact the reverse is generally true where elected members align themselves vigorously with such program and dare not question their effectiveness or value for money. At Santa Cruz City it was mentioned that *'no consideration on how much to spend – little appreciation of what is a reasonable level of spending for reasonable reduction of risk'*.
- Water and Sewer Infrastructure
After the events of 911 the US Federal Government instructed all potable water supply authorities to undertake an infrastructure vulnerability assessment. Both San Louis Obispo City and Santa Cruz City undertook the assessment but were reluctant to circulate the results (even to the Federal Government) through fear that the results in the hands of terrorists would lead to catastrophic results. The Council had little faith in the Government being able to guarantee the confidentiality of the information. Although a number of measures were adopted to minimise risk, the process to identify the measures were conducted internally with almost nil input from any cross section of stakeholders. The process was diagrammatically opposite to the process espoused in the American Risk Management standards. Fear that confidentiality was absolutely paramount dictated this approach.
- Flood prone Land
The San Louis Obispo City has divided the urban area into 3 flood zones – areas under the 100yr ARI, areas between 100yr-500yr ARI and areas >500yr ARI. Residential buildings within the 100yr ARI zone are required to have habitable floor levels 300mm above the 100yr ARI flood level while other building types must be able to install flood gates to provide the 100yr ARI flood. The measures are specified in the Council's land-use planning scheme and meets basis height provisions as adopted by other local government areas. A significant portion of the flood prone land in San Louis Obispo is within a highly active flood plain and contains most of the old residential area of the City. Except for emergency response measures no prevention or risk minimisation initiatives have been prepared nor envisaged within any medium-term timeframe.
- United States north-east Power failure

The north-east sector of the United States experienced a total power black-out for a 29 hour period. The City of New York was one of the effected cities.

The blackout demonstrated clearly that electrical outages have a cascading effect across the full spectrum of infrastructure elements from waste water facilities and water distribution to telecommunications, traffic flow and transit operations.

The cause was traced back to human error – a failure to act appropriately to a system failure. The system failure triggered other plant to shut down and the cascading effect devastated the north-east sector of the US.

The electrical failures are one of the most taxing emergencies faced by governments it was worse than the 9/11 event.⁶

Why was this event worst than the 9/11 event?

Key Issues:

- disruption of all subway and train services - 400,000 commuters stranded
- gridlock of roads - 11,000 intersections uncontrolled
- public safety – 137,000 emergency calls & 71 structure fires (normal 5-10), 800 elevator rescues
- failure of public inner city reticulated steam system providing steam to tens of thousands of residential and commercial customers for heating

The City of New York had a comprehensive Emergency Management Plan that was developed on the framework specified in the *Homeland Security Act of 2002* and *Homeland Security Presidential Directives 5 & 8*. The City were unable to predict the extent of the electrical black-out but had contingency plans involving emergency power requirement audits for essential services (and matching generator back-ups); transportation; and traffic management.

▪ Earthquake

The west coast of the America and particularly the State of California are areas subject to a high probability earthquake zone. The study tour visited the cities of Santa Cruz, San Louis Obispo and Santa Barbara which suffered catastrophe damage caused by earthquakes. The downtown areas of each of these Cities were completely destroyed by the earthquakes – cities with an average population of 50,000 and compare closely to Launceston in both population and regional significance. The probability of serious earthquakes effecting an urban area in the State of California is less than 1 in 20 years. The 3 cities visited suffered their

⁶ *per. comm.* Mary-Ann Marrocolo – Director, Recovery and Mitigation, New York City

catastrophe in the 1989, late 1920's and early 1980's. The southern area of California has had 10 earthquakes since 1850 which have had a magnitude of 7.5 or over.

Although the probability of earthquake was high, the community always retained the will to re-build. New building standards were used in the reconstructed areas which prohibited masonry construction in favour of timber. Although this will assist to defray minor earthquakes any major event will have similar devastating effects. I expect that the community have invested too much into the history of their areas to allow serious discussion into relocation or any alternative other than replacement. Effectively, *the community and the politicians have buried their heads in the sand and living in hope that the area will never again experience a serious earthquake – the question is not if but when and how big.*⁷

Conclusion

In recent times, the cost of natural disasters to the community, the economy and the environment has been much reduced by assessing the risks of the main natural hazards and putting in place measures to lessen those risks. Similarly, looking at the risks associated with technological hazards such as building collapse and infrastructure failure should reduce costs in that area. Recent international events have meant that the national focus has been on the risks arising from terrorist activities, but the community must never lose sight of the higher potential for natural and technological disasters to affect their daily lives.

What is missing is a method to determine the relative probabilities and the magnitude of the consequence between differing natural, technological and human (whether unconscious or deliberate) events.

A structured approach is necessary. The processes set out in Risk Management standards do provide a structured approach but comparisons between events prove to be difficult. In addition the success of Risk Management standards relies on the commitment and diligence of application. Examples have surfaced in Cities and Counties in California where minimising risk (both accidental and deliberate) is an exercise in defraying blame and deflecting liability if such an event occurs.

This research paper presents issues for consideration by both infrastructure asset managers in determining appropriate treatments to address risks and by those who have input into the development of standards and procedures concerning Risk Management.

⁷ *per. comm.* Robert Livick, Supervising Civil Engineer, City of San Luis Obispo

APPENDICES

- A State of California Council Visit Summary Notes
- B AMERICAN PUBLIC WORKS ASSOCIATION Conference Summary Notes
- C AMERICAN INSTITUTE OF ARCHITECTS National Conference Summary Notes
- D State of New York World Trade Centre Research Notes

Appendix A

State of California Council Visit Summary Notes

Campbell City Council

Date & Time: 9.30am, Tuesday 7 September 2004

The tour group attended the Management Team meeting of Campbell City. In attendance were the General Manager, Director Public Works, Director Corporate Services, City Solicitor and City Engineer.

Fast Facts

- Web address: www.cityofcampbell.com
- Population 40,000
- Include area known as Silicone Valley
- 5/6 engineers
- all domestic construction is weatherboard due to earthquake regulation

Functions of Local Government

- police
- community development
 - arts/galleries
 - home ownership/housing programs
- adult education
- utilities – sewer, s/w (many have sewer & water) Note: sewer out-sourced
- municipal attorney
- fire & ambulance
- public transport/traffic signals & lighting
- airports
- business licensing

Property Taxes (or Rates)

- US\$2,500 property tax (average house) *
 - 15% Council
 - 85% State

* Note: Highly complex & inequitable 'rating' system. State politicians reluctant to modify for fear of negative political backlash

Officer PowerPoint Presentation

- 45 miles south of San Francisco
- population 40,000
- municipal area of 6 square miles
- economic base is commerce, small industry, services

- 28,000 jobs
- mean household income US\$80,000pa
- home ownership 47%
- housing units 16,000
- employed residents 23,200
- housing costs US\$450,000 - \$1.2 million (single family house)
- average lot size 500m² – 800m² (large)
- public open space contribution US\$12,000/house *
- land owners pay for kerb & channel and footpath *

* Note: Payable on every lot in a new subdivision and on existing lots when permit issued to construct a house or extend existing house

Council Practices & Initiatives

Council Assisting First Home Buyers

An innovative program introduced by the Council involves offering 'silent' second mortgages to low-income first home buyers. The loans are offered with no interest nor payments on the capital – the Council retains a 'share' in the property which is redeemed at the market value at the date of sale. The initiative is designed to allow low-income earners the opportunity of home ownership in a climate of higher housing costs.

Compulsory Acquisition of Under-Developed Land

State law allows Councils to compulsorily acquire under-developed or poorly maintained land and on-sell that land to be developed by another party. This is significantly different to Australian statute which prohibits land from being compulsorily acquired for other than genuine 'public' purposes.

Risk Management

The excess on the Council's public liability policies is US\$100,000 – this does not appear to be significantly different to Australian practice.

Campbell have out-sourced its risk management assessments to private consultants. Under Californian law, a co-ordinated and structured risk management program does not provide legal defence in the event of a claim. It is accepted practise (as in larger Australian Local Government areas) that most cities and counties have a contract (or staff) solicitor employed on at least 0.6EFT basis.

Public Works Projects and Project Management

In recent years the Council has undertaken in-house survey and design of Capital Works Project. Previously all projects were outsourced as design projects or design & construct. The Council came to the conclusion that in-house resourcing was the most economical and offered greater control on capital works projects. As a result engineers, technicians and surveyors were recruited. It is staggering to note that more than half the qualified engineers in American working in Local Government are female. It is apparent that the community place a high value on 'technical' based skills and there is no stigma in any sex (whether male or female) in pursuing a career which has a science or mathematical core.

Once the design is completed and all due diligence issues such as public exhibition and environmental impacts have been assessed, the project must be exposed to public tender. The law of Californian State and most other states is that the authority is obliged to accept the lowest bidder, regardless of previous performance or any other matter. Tender evaluation criteria are unable to be used. It is clear that this system has produced unsatisfactory results and is very resource intensive to contact manage particularly if a poor performing contractor.

The tour group visited a roadworks project in Campbell. The project was 3000 foot long (914metres), with a budget of US\$1.2million (A\$1.6million or A\$1750/m). The practice in the urban areas of the United States is to use deep lift asphalt pavements over a sub-base layer – typically asphalt layers are 7inch (180mm). As a rule-of-thumb this asphalt layer is equivalent to a granular base of 500mm. When asked about the reasons for this form of construction it was indicated that '*we have always done it this way and it minimizes the disturbance to the local residents*'⁸. Further discussion brought me to the view that due to

- negligible expertise in granular pavement construction (both by contractors and Council technical staff) due to very very infrequent capital works programs
- Council staff were unable to take any form of risk in a new project (even minor defects than would be expected to occur in the defects liability period)

then design assumptions and construction methods were chosen which were ultra conservative and 'bomb-proof' to implement.

The contract for the construction of almost all capital projects is a schedule of rate contract - payment is made for quantities calculated by survey. Conformance testing and material testing is directly undertaken by the Council's project managers and if satisfactory then quantities are measured and payment made.

Santa Cruz City

Date & Time: 10am, Wednesday, 8 September

Fast Facts

- Web address: www.ci.santa-cruz.ca.us
- City of Santa Cruz established in 1792
- Population 56,000

Property Taxes & Income

- Income of City (US\$35 million)
- Sales Tax US\$11 million (8% - city get 1¼%)
- Property Taxes US\$9.9 million
- Utility User Tax US\$7.8 million (Tax for Cable, Electricity, Phone etc to 'rent' road reservation plus direct tax to properties for service provision)

⁸ *Per. comm.* Bob Keems, Engineering Director, Campbell City Council, California

- Raising funds
 - Property tax used to be the main source of City income in the 70's. Law fixed it with a rise of max 2% or CP) – 1970 US\$1,000; late 1990 US\$5,000. When sold then based on current purchase price. Very inequitable
 - State have taken over collection of Property Tax – now have first call – 80% State; 20% Cities/County
- Income of City (US\$35 million)
 - Sales Tax US\$11 million (8% - city get 1¼%)
 - Property Taxes US\$9.9 million
 - Utility User Tax US\$7.8 million (Tax for Cable, Electricity, Phone etc to 'rent' road reservation plus direct tax to properties for service provision)
- 50% of Council funds are public safety (police etc)
- to raise extra money then need a ratepayer poll where 2/3 have to agree
- US\$2.5-\$3 million/year need to maintain (only spending US\$1 million/year):
- Intend to raise loans (ratepayer ballot) to cover maintenance. However the public will not be sympathetic unless roads are significantly deteriorated
- Raising bonds – prospectus prepared – circulated among loan companies – offers are received – lowest interest rate adopted. Cities have a credit rating – high credit rating = lower interest rate – eg of bond – open space, fire station, playing field
- Bond period is typically 20-30 year term

Country and City relationship

- first city in (County) area
- 250,000 county population
- City provides regional services to County
 - City provides water (to population 90,000)
 - waste water treatment
 - library services
 - fire brigade services
- Cities provide – roads & services, arts, permits & land use, police & fire
- Country provide: public welfare, courts
- 125,000 in unincorporated areas (only disadvantage is lower police services – rely on County Sheriff)
 - lower standards (connections to sewer, kerb & channel/footpath construction)
- Insignificant price differences for County properties and City properties – side by side
- Makes sense to consider:
 - Enlarging city boundaries to include all urban area (sweeping together smaller townships into city) OR
 - Merging City of Santa Cruz with whole County (only example in California is San Francisco i.e. County & City are the one and same)

Revitalisation of Santa Cruz

- Earthquake in late 80's effectively destroyed main street of Santa Cruz – many unreinforced masonry structures

- 18 months & public consultation/planning period to redevelop streetscape – total reconstruction of downtown (i.e. CBD) area
- area is fairly left wing – attitudes are ‘not in my back yard’. People do not want development; lack of incentive for large box retailers/larger companies to develop in area
 - since 1989 have invested US\$35-\$40 million (public) and >US\$100 million (private) funds into project
- highway built in the mid-50’s – needs substantial improvement
- typically rates increase is held for 3-4 years (need 4 year budget – still do annual balancing budget)

Public Works Section

- very basic asset management system
- unsure of age of below ground assets
- GASB34 (a few years ago) is similar to AAS27 – can use valuation data or historic data
- Maintenance in-house - capital out-sourced
- No waste water re-use – farming community too far away (20 miles)

Emergency Risk Management

- water and waste
 - security – cameras
 - fire department
- drivers are politicians not the community (risk management – seen to have done something if something happens – covering back side)
- now controls in place to limit egress at plants (none before)
- security camera connected to SCADA
- no consideration on how much to spend – little appreciation of what is a reasonable level of spending for reasonable reduction of risk
- issues considered and partially implemented:
 - IT access to SCADA
 - Limiting/eliminating access to plants
 - Security
- Required to do a viability analysis
 - Some grates in sewer (stop floating bombs from getting to plants, or if under major public/security buildings)
- No new money for security – little enough for normal work

Council Projects & Issues

Financial Issues

Although this section deals with financial issues at the Santa Cruz City, it also provides an overview of and mirrors the opportunities and constraints faced by majority of other American local government areas.

The City’s annual income is derived from both property tax and sales tax. California State collects property tax (equivalent of Australian Council Rates) and the County collects sales tax (at a current rate of 8%). Of the property tax collected, 80% is retained by the State and the remaining 20% is divided

between the County and City. The State's portion of property tax is fundamentally challenged into education and the school system.

Santa Cruz City in 2003/04 derived income from:

- Property tax - \$9.9million
- sales tax - \$35million
- Water sales and sewer charges - \$7.8million and
- Other taxes including
 - Tax on using Council road reservation by private utility providers (i.e. phone and television providers)
 - tax on hotels
 - tax on air emissions and
 - entertainment tax draw

Approximately 50% of the City budgeted expenditure is on public safety such as police and fire brigade.

The City issues 'investment bonds' to fund specific capital works projects. The bonds are considered to be a very stable investment and are therefore well received by the public and the business community. Bonds are repaid over a period of 30 years by the City introducing a levy or increasing the sales tax rate. The introduction of an 'investment bond' and the means to finance the repayments must be approved by ballot by two-thirds of the voters within the City electoral boundary. Generally speaking projects involving a new capital asset (such as Parks and community buildings) and public safety are more likely to be successful. Projects such as reconstruction of roads and underground utilities are less successful unless their condition is of such deteriorated circumstances that has produced a public 'out-cry' for action.

Prior to 1978, local government (Cities and Counties) were responsible for the rate and collection of property tax without reference to the State or the community – identical to the system in Australia. In June 1978, Proposition 13 was passed by public ballot in the State of California which transferred the property tax collection powers from the Cities and Counties to the State. The changes were popular among the community but as time passes significant inequities now exist and management of Council assets are purely driven by politics and no longer by proactive educated asset management.

The issue? - property taxes in California had escalated to the point that many lower income families and elderly people on fixed incomes were forced to sell their homes because they could not afford to pay the property taxes.

The solution! - Proposition 13 limited property tax rates to 1% of the assessed property value and limited assessment property value increases to 2% pa. In addition in later years Proposition 218 was introduced which requires

- all local general taxes (i.e. equivalent to Council rates) to secure a majority approval and
- special taxes (i.e. investment bonds) to secure a two-thirds approval of the voters within the City/County electoral boundaries.

The immediate result - A US\$5 billion reduction in property taxes in California - from US\$11 billion to US\$6 billion. Control of rate settings completely taken from the local authorities. Rate income fixed by formula and not needs of local area.

The long-term problems! – As mentioned property tax is calculated at 1% of the assessed property value. The assessed property value of each property is the actual value at the last date of sale (or the value as of June 1978 if no subsequent sale since the adopted of Proposition 13). The assessed property value is adjusted annually by CPI or a maximum of 2%. In the short term this does not present any problems. However as the years pass the gap widens between inflation (or a max. 2% pa) and exponential growth in actual housing prices. This gap is exemplified by the statement '*there are equivalent houses side by side where one pays 3 times more property tax than their neighbour. The neighbour has lived at the same address since 1978 and the other a recent first home buyer.*'⁹

Redevelopment

Downtown (i.e. CBD) Santa Cruz was all-but destroyed in the 1989 earthquake. The City Council implemented a program called 'Vision Santa Cruz' to rebuild the downtown area. Immediately following the earthquake and during the re-building program businesses conducted trade from tents.

'Vision Santa Cruz' allowed the City urban planners to completely change the streetscape. The redesign focussed on wider streets, better public visibility, more intensive density and discouragement of motorised transport. Incentives were given to business to re-establish. Speciality shops were preferred to Walmart type developments to create a more attractive market feel atmosphere. The US\$100 million project was funded with the community approving the introduction of a bond to be repaid with ½% increase in sales tax.

Risk Management in Public Works

The US Federal Government instructed all potable water supply authorities to undertake an infrastructure vulnerability assessment. Santa Cruz City undertook the assessment but refused to circulate the results (even to the Federal Government) through fear that the results in the hands of terrorists would lead to catastrophic results. The Council had little faith in the Government being able to guarantee the confidentiality of the information. The Federal Government retaliated by linking potable water supply government funding to lodgement of the assessment results. '*A fundamental flaw in this approach is that the feds have not had a funding program for water for over 10 years.*'¹⁰

San Louis Obispo City

Date & Time: 9am, Thursday 9 September

Fast Facts

- Web address: www.ci.slo.ca.us
- Population 44,000 (includes 10,000 retired & 16,000 at University)

⁹ *per. comm.* Joe Hall, Assistant Director – Redevelopment Agency, City of Santa Cruz

¹⁰ *per. comm.* Mark Dettle, Director of Public Works, City of Santa Cruz

- Half-way point between San Francisco and Los Angeles
- Considered to be a no growth city, i.e. growth $\leq 0.25\%$.

The City, people and the environs

- average age is 29.5: average education is 3 years at Uni
- mission established in 1771
- difficult to get project approved (currently 11 years to approve a shopping centre)
- to get a private ballot then need a petition consisting of 10% of the voters
- people use traffic congestion as the excuse to stop development – want to keep the ambience
- very little violence
- shopping centre development:
 - 11 years rezoning rural to commercial
 - 1 million square feet
 - extensive environmental impact statement
- population of California is 33 million
- City has the second highest living cost in California – mainly due to housing costs (average price is US\$625,000/house)
- high number of people drive to work (80,000 population in day and 44,000 at night)
- taxes and property charges for an average person:
 - Federal Income Tax (average - 18% of income)
 - Spent generally on Defence, interstate freeways and EPA
 - State Income Tax (flat 11% of income)
 - Petrol Sales Tax (federal and state - US\$2.16/gallon of which US\$1 is tax)
 - Yearly property tax
 - Water & Sewer Fees
 - Sales Tax is 8% (not applicable on food to be consumed at home)
- Staff Retention
 - offer a 9 day fortnight
 - lower pay than majority of other Cities
 - incentive is life style; low commuting time
 - 10 days vacation (>5 years service = 15; >10 years = 20)
 - plus 13 days public holidays

Specific Infrastructure Issues

- in 1950 State of California legislated to allow cities to complete capital projects with a maximum value of US\$5,000 before compulsory bidding – amount has not been updated since
- in California 2 types of cities – charter law or general law
- charter law cities are allowed to have an annual schedule of rates (called 'Blue Book') – differences are:
 - the successful contractor is responsible for every item in the 20,000 'Blue Book' list and must organise sub-contractors for items he is unable to perform
 - the schedule of rates is specified by the City Council. The contractor bids on the overhead rate

- when a job comes up the City Engineer specifies what needs to be done. The contract identifies the 'live items', applies the overhead rate and determines the total price. If within budget then ok, if not, then city allowed to publicly bid
- Strict controls on utilities – not allowed to open street or replace utility in roads where pavements are new – may be required to wait 5 years after reconstruction (unless an emergency)
- Encroachment Permit Process (i.e. Road Opening Permit)
 - contractors need US\$1 million public liability insurance
 - trenchless technology is common
 - fee schedule covers administration and inspection
 - minimum fee US\$193, minimum excavation fee US\$1042
 - contractor responsible for reinstatement (12 months defects liability period)
- Flood Zones - A 100yr ARI; B 500yr ARI & C >500yr ARI
 - floor level 300mm above 100yr ARI flood
 - in B zone – 300mm above existing ground level
 - A zone requires flood insurance by lender
 - flood proofing is either by raising floor level or installing flood gates (i.e. barriers erected before flood if floor level < 100yr ARI flood level)
 - flood gates are not allowed to be used for residential buildings
- Emergency Risk Management

Since 9/11

 - previously maps produced by City were all available to the public
 - now maps (water supply & sewer) details withdrawn from public
 - essentially eliminated recreational use of public reservoirs/dams
 - post– beefed up emergency management centre
 - more frequent drills
 - improving earthquake proofness of building (no relevance to 9/11)
 - consistent implementation of building standards in flood prone areas (no relevant to 9/11)

Land-Use Planning Approval

Californian law (and one-third of the 52 other States in the United States of America) allows an individual to initiate a public ballot which can legally veto the approval of a development application under the State's Land-Use planning system. To initiate the public ballot the individual is required to present a petition opposing the development signed by a minimum of 10% of voters registered to vote in the local government elections. The ballot requires a ¾ majority to veto the development's approval.

A development application for a regional shopping centre has been under consideration for 11 years. The environmental impact statements took 7 years to complete and approve. The development is facing significant opposition as the community is concerned that the scale of the development and traffic generation will have a negative impact on the amenity of the City.

Public Works Tendering

In 1950 the State of California legislated to allow cities to complete capital projects with a maximum value of US\$5,000 before compulsory bidding. This amount has not been updated since. Since 1950 the value of the US\$ has increased by over 120 fold (or US\$5,000–1950 = US\$600,000–2004). Where the restriction may have seemed a reasonable trigger for public tendering in 1950 the restriction now places a significant constraint on local government and effectively has forced the dismantling of the Council's workforce in completing capital works.

In California there are 2 types of cities – charter law or general law. Charter law cities are allowed to have an annual schedule of rates (called the 'Blue Book'). The 'Blue Book' system for capital and maintenance infrastructure works provides:

- The rates in the 'Blue Book' are placed on public tender every 2 years and a contract is awarded. The successful contractor is guaranteed US\$50,000 of work for the two year period (with an upper limit of US\$1million).
- The successful contractor is responsible for every item in the 20,000 'Blue Book' list and must organise sub-contractors for items he is unable to preform.
- The schedule of rates is specified by the City Council. The contractor determines the overhead rate for each specific project.
- The City Engineer specifies the items in the 'Blue Book' which apply to the construction project and applies the Contractor's overhead rate. If the total cost is within budget then the project processes - if over budget then the City can approve an increased budget or may publicly tender the project.

Geographic Information System

The City has a very advanced GIS system similar to that administered by the vast majority of larger Councils across Australia. The unique difference is that law and order is a local government responsibility and therefore police records (eg parking tickets, speeding fines and criminal convictions) are customer related and linked to the property in the GIS. Given the limited privacy laws in California, any person can access over the internet the police records of any person living in San Luis Obispo. This appears to be *frequently used to research neighbours as people move into an area.*¹¹

San Luis Obispo County

Date & Time: 1pm, Thursday 9 September

Fast Facts

- Web address: www.co.slo.ca.us
- population 245,000 (Y2000) of which half are in 7 cities
- founded in 1850
- 1.2% average annual growth rate

¹¹ *per. comm.* Robert Livick, Supervising Civil Engineer, City of San Luis Obispo

- 7% of housing units are vacation homes
- 3304 square miles

County Issues

- Economics:
 - agriculture (was wheat, then cattle now wine)
 - state institutions (Uni, Jail, State Hospital)
 - tourism
 - recreation (beaches, 3 major water reservoirs)
- Over regulation – significant number of Federal and State Government regulations
- environmental regulatory etc:
 - must comply with both federal and state agencies (>30 in all)
 - environmental control are justified but the process is ‘screwed’
- 58 counties in California
- State attempting to regionalise more (say 5 regions)
 - just talk at moment
 - hard to implement – nobody wishes to give up power
 - rural areas feel the more populated areas are ruling
- Hierarchy of governing bodies – Federal → County → City → County Service Area (CSA)^{*1} → County Service District (CSD)^{*2}
 (Notes: ^{*1} CSA have a 5 member board and reports to County. Next step is City
^{*2} CSD is a step down from CSA and also reports to County)
- SLOC provides services to rural areas
- Water; waste water; roads (1300 miles – 1000 sealed, 300 unsealed, 200 bridges); dams (flood control and water); street lighting; cable TV; waste management; land-use planning; transit systems between cities and CSA and CSD
- issues struggling with:
 - GASB 34 – capitalising infrastructure Govt Accounting Standards Board (i.e. depreciation – same as AAS27 – long term condition)
 - Funding plant replacement (currently 75% - move to 100%)
 - GASB34
 - currently only using to comply with accounting standards
 - not being used to justify maintenance & capital expenditure
 - have adopted a Pavement Management System – are struggling with incorporating a Results Based Decision Making (like zero based budgeting)
 - attempting to reduce waste to 5.2lb/capita/month
- County Government
 - 5 member board of supervisors
 - County Administrative Officer
 - 18 Departments – 1/3 elected, 1/3 appointed, 1/3 staff
 - 04/05 Budget US\$364 million
 - 80% committed & designated (grant based income)
 - 20% discretionary
 - 2553 employees
 - 183 staff in public works

- County employee university:
 - non-technical training (i.e. supervisors, team building, continuous improvement)
 - enhance employee skills to meet needs of organisation and community
 - key programs:
 - 7 habits of highly effective people
 - 4 roles of leadership
 - supervisory academy
 - writing skills
 - presentation skills
 - reducing stress and burnout
- average age of staff is 49 years
- hard to get professional staff –housing affordability is major issue

AMERICAN PUBLIC WORKS ASSOCIATION

Congress Notes

The 2004 APWA International Public Works Congress was held at the Georgia World Congress Centre, Atlanta, Georgia between September 12-15, 2004. The following are summary notes of sessions that I attended.

Sunday, 12 September

10-10.45am - General Opening Session

1. Mayoral Welcome

(Mayor Shirley Frankland [Atlanta City] – First Afro-American woman mayor)

- 9 years as Chief Administration Officer under previous mayors
- Public works engineering goes un-noticed by the community
 - providing healthy drinking water
 - sanitation
 - transportation
- US\$3 billion to overhaul water infrastructure
- US\$6 billion to upgrade the airport
- Implemented the ‘pothole possie’ and ‘trash troopers’
- Buying \$26 million of riparian land to protect streams & rivers
- Assisting the Congo – to provide clean water and reinstate roads washed away during flooding

2. APWA Past President Address

(Dwayne Kalyzohik [Canada Chapter])

- Visited 30 chapters across America
- 150,000 flying miles
- Association has established a brand for the organization “APWA – Your Comprehensive Public Works Resource”
- Introduction of 2004/2005 Board of Directions
- Introduced incoming 2004/05 APWA President - Tom Trice
- Summary of congress statistics - conference over 3½ days; 450 trade displays; over 150 technical/educational sessions

3. Keynote Speakers

(Glenn Singleman & Heather Swan [Sydney])

Abstract:

If your partner told you, you can jump off the highest cliff in the world, would you believe it? Heather Swan did, and as she faced her fears, she discovered untapped strength and with it a new passion for life. Glenn Singleman made world headlines in 1992 when he jumped with a parachute from the Great Trango Tower (20,000 ft) in Pakistan. BASEClimb – the film he made about the adventure – receive critical and popular acclaim winning

21 international awards and becoming *National Geographic's* top-selling adventure documentary.

- (i) Dr Glenn Singleman (Sydney, Aust)
(Doctor of medicine at NSW Hospital system)
- started 10 years ago
 - 'If you want to keep getting what you're getting ... keep doing what you're doing'
 - now active extreme sport participant
 - recently jumped off the highest cliff in the world – 20,000 feet high in Pakistan (3 weeks to climb – 1 week to find jump)
 - has been on 11 major exhibitions
 - teamed up with a base jumper and each taught each other to mountain climb and base jump. Took 1 year to learn
- (ii) Heather Swan (wife of Glenn Singleman)
- heard Glenn speak at a corporate function
 - later married Glenn
 - found a higher cliff – 24,000 feet
 - Heather's idea of excursion is a 4 star instead of a 5 star hotel
 - Tools to aid completion of task:
 - mediation
 - self talk
 - visualization
 - destination should never overtake the journey

2 -2.50pm – Technical Sessions

4. The Northeast Blackout of 2003 – Implications for Public Works (Mary-Ann Marrocolo – Director, Recovery and Mitigation, New York City) mmarrocco@com.nyc.gov

Abstract:

What happened when the lights went out and the impact on New York City's infrastructure systems are the focus of this session? The blackout demonstrated clearly that electrical outages have a cascading effect across the full spectrum of infrastructure elements from waste water facilities and water distribution to telecommunications, traffic flow and transit operations. We are all hooked up to the grid, so let's learn from New York's experience and explore what pre-planning and response steps should be included in our emergency response plans.

Cause – human error failed to act appropriately to a system failure. The system failure triggered other plant to shut down.

Logistics:

- deployed 33 generators and 33 light towers
- distribution of fuel
- third party (contractors) charging as much as 3 x the contracted rate

- pre-event inspections needed to match generators with premises
- re-deploy council employees during emergencies

Electrical failures are one of the most taxing emergencies faced by governments. Worse than the 9/11 event.

Key Issues:

- right hand/left hand thinking (co-ordination centres)
- communication is vital (telecommunication)
- does your back-up system have a back-up system
- disruption of all subway and train services
- gridlock lock
- 400,000 commuters stranded (train only transport home)
- train/station evacuation
- 11,000 intersections uncontrolled – 17,000 riders – twice the average (charge of double fare)
- traffic signal sequencing is still not fully resolved even after 18 months
- public safety:
 - looting minimal
 - 911 calls - 137,000
 - 800 elevator rescues
 - 71 structure fires (normal 5-10) - City of New York employees 12,000 fire fighters
- 89 City hospitals
 - hospital found it had to obtain fuel
- Food spoilage
 - event > 29 hours
- New York City has 250,000 Council employees
- a public reticulated steam system (very old and exists in inner city areas)
- provide steam to tens of thousands of residential and commercial customers for heating
- must ensure system is stable before individual users turn on taps (risk of explosion)

3 - 4.50pm – Technical Sessions

5. Creating an Extraordinary Organisation (Scott Hunter)

Abstract:

People work to live. Yet only six percent of Americans say that they love their jobs. Personality conflicts, power struggles, hidden agendas, misunderstandings and not feeling appreciated or understood are robbing people of the aliveness they want at work. A true leader is one who has learned how to powerfully speak and listen in a way that engenders hope, confidence and enthusiasm in co-workers and employees. Relationship expert Scott Hunter will guide this highly interactive examination of how to use the tools of attitude, language and listening to create work and personal relationships that are respectful, caring, productive and empowering.

- 'Paradigm – a core set of assumptions'. A paradigm is a way we perceive the world. Your paradigm determines what you can and cannot accomplish. Our world is determined by the paradigm we live in.

REV 1 – How We Listen:

- want people to 'get the point'
- name that tune – people finish what you say
- what am I going to say next? People that expand or take over your conversation
- agree/disagree – people agree or disagree with what you say
- win/lose – opening line 'any intelligent person would ...'
- right/wrong – some people believe the way they do things are right and other ways are wrong
- find the flaw – with everything that is said
- I know – i.e. teenagers
- attach
- either/or

All of the above ways of listening are designed for survival

Costs for listening (unconsciously)

- understanding, happiness, appreciation, well being, satisfaction, results, power, authentic communication

The key is not going through life on how others can make you happy but the ultimate happiness is how to make others happy

Once you become responsible for your listening you don't have to listen that way

You can generate a different listening by:

- listening for the possibilities in what people say
- working out what the person is committed to
- listen for the 'gold' (not dirt) in what people say
- listen with compassion
- win/win

REV2 – How to Communicate (how to use language)

The function of language is to create your reality. Satisfaction is a state of mind – being comfortable with your lot. It is not a measure of complacency or underselling. Improvements start from being satisfied with your starting position.

'Happiness is a choice you make in each moment about how you experience that moment, not a state you one day achieve'. Barbara De Angelis, PLD

We are prone to judge people – don't judge, look for the 'gold'

Principle #1 – You'll always find what you go looking for

Principle #2 - People 'show up' in your conversation about who you believe them to be

Principle #3 – Who people are and how they behave are separate and distinct.

Monday, 13 September

8.30 - 9.45am - Technical Sessions

6. True Success: A Philosophy of Excellence (Tom Morris PhD)

Abstract:

"Philosophy is not just an ancient activity engaged in by old bearded guys in togas. I've never had a beard. I'm not old and I promise that it's been quite some time since I was seen in a toga" – Tom Morris

Great ideas lead to great achievements! Tom Morris inspires audiences to change their lives – at work and at home – by unleashing the power of the world's greatest thinkers. He offers a totally new perspective on the contemporary world by linking it to another time marked by change, great thinking and wisdom. He reveals what the world's greatest philosophers – Socrates, Plato, Aristotle, and Thomas Jefferson – had to say about the perpetual challenges of leadership, success, personal and organizational excellence, relationships and personal fulfillment.

Notes:

All of the ancient philosophers concentrate the keys to success to 7 concepts. These are:

1. A clear conception of what we want, a vivid vision, a goal clearly imagined
 - must set goals
 - do not allow what is very good to keep you from what is best
2. A strong confidence that we can attain the goal
 - percussive faith (i.e. positive thinking)
 - need both initial and resilient confidence
3. A focused concentration on what it takes to reach the goal
 - as well as setting goals, it is necessary to take appropriate steps
4. A stubborn consistency in pursuing our vision
 - we must avoid ignorance, indifference and inertia
5. An emotional commitment to the importance of what we are doing
6. A good character to guide us and keep us on a proper course

- need ethics, honesty
7. A capacity to enjoy the process along the way
- enjoy the process

10 – 11.50am - Technical Sessions

7. The Myron Calkins “Excellence in Leadership” Series: Public Works Leadership and Renewal – Developing the Talent Within (Dr John Luthy, President, The Futures Corporation, Boise, ID)

Abstract:

Growing demand, greater public scrutiny, finite resources and an aging workforce are all converging to create enormous challenges for public works leaders. Long time public works advocate John Luthy will provide clear analysis and recommendations for how you can guide the renewal of your agencies focusing on professional development, recruitment and retention, innovative organisational development and creative leadership strategies to meet these challenges. NOW is the time to rethink our profession and our organisations to serve our communities and create work environments that promote high morale, productivity, quality, effort and tenure.

Topic: Developing the Talent Within

- the focus will have to be on the future
- it is important to remember that we and the people we led are not in our jobs permanently – everybody leaves sooner or later
- job competence, capability and capacity to perform are virtually always among the top 3 internal issues in government. However equally important are morale, commitment, initiative and motivation.
- 25 million ‘free workers’ (i.e. contractors in America)
- workplace growth between 1998-2008
 - Asian Americans 40%
 - Hispanic Americans 37%
 - African Americans 20%
 - Caucasian 10%
- 45-64 year old age group growing faster than any other cohort
- today’s reality:
 - insufficient staff (more work/less staff)
 - older facilities and equipment
 - lower stature
 - complexity, demand and scrutiny all growing
 - high retirement
 - difficult recruitment and retention
 - increased training (money and time)
- Management History
 - FW Taylor (1900’s) - developed concept of process/chain command where each person specialises in a narrow area and passes the task to the next person

- Elton Mayo (mid 1920's) - greater productivity with communication and understanding the whole

(Best book written on management by D McGregor – *The Human side of Enterprise*)

What motivates people?

- Appreciation, opportunity, belonging

(Another book by P Senge and D Coleman)

- You can buy a person's time and talent but loyalty, commitment and enthusiasm you have to earn.
- It is important to move-on staff which are 'toxic' to other staff. In the long term the bumps and pain benefit the organisation.
- Employees are the greatest single asset with the power to energise or debilitate, create or destroy, innovate or stagnate, motivate or contaminate
- In times of stress ... people and communities seek:
 - clarity
 - direction
 - the truth
 - quiet, dignified and harmonious leadership
- Some simple truths:
 - leaders set the bar
 - people learn what they live
 - organisation create culture
 - we are all just passing through
- Recruiting new talent:
 - be proactive – develop a staffing plan
 - tell your 'story' – share the achievements
 - link with local secondary and tertiary schools
 - identify your best recruiter
 - know what kind of people you want and be relentless
- What is listed in 'Your Story'
 - future challenges
 - quality of workplace
 - opportunity for – challenges, advancement, learning and career
 - impact and contribution to the community
- Interviewing is critical. Learn how –
 - great question
 - multiple interviewers
 - personality profiles
 - career questions
 - Know what you want/don't want ... have a profile and don't compromise
- New employee orientation is critical. Include:
 - long lead time (weeks? months?)
 - build in training
 - schedule introductions

- involve multiple people
- reinforce organisation culture
- Old saying 'Never fear hiring your successor'
- Allow staff to have responsibility, to grow and to develop
- Performance evaluations fail because:
 - Measure the wrong things
 - Process/forms don't fit everyone
 - Focus on negatives too much
- Traditional measurement
 - behaviour and inter-personal style
 - quality of work
 - productivity
 - technical knowledge and skill
- Don't ignore employee to supervisor feedback – 'How can I be a better supervisor to you'
- Emotional competence (self awareness, motivation, self control, empathy and adeptness in relationships) are twice as important than IQ's and expertise
- Recommendations:
 - focus on employee development – not what is poorly done
 - recognise the value of 'emotional intelligence'
 - measure contribution and stress development
 - be an example of 'emotional intelligence'
 - delegate and transfer responsibilities to employee
- Don't forget these questions:
 - Can I trust you?
 - Are you committed to excellence?
 - Do you care about me as a person?

3 – 4.30pm - Technical Sessions

8. So What are you Really Saying?

(Dr Lewis Bender, Professor, Southern Illinois, University Edwardsville)
 lewbender@qol.com & www.lewbender.com

Abstract:

Does your body language match what you are trying to communicate?
 Research indicates that our nonverbal signals speak louder than our words!
 Attend this fast paced and fun workshop and discover the more subtle elements of communication. You'll leave knowing how to identify the meaning behind various gestures, voice tones and speech patterns. Anyone who supervises others, participates in project teams, deals with conflict, conducts interviews or just wants to communicate better will enjoy this session.

- There is a reason why technical people and non-technical people fail to communicate highly effectively
- People learn by:
 - taste 1.0%

- touch 1.5%
- smell 3.5%
- hearing 11.0%
- sight 83.0% - the dominant forum for learning
(sight does not include printed words)
- People remember:
 - 10% of what they read
 - 20% of what they hear
 - 30% of what they see
 - 50% of what they hear and say
 - 70% of what they say
 - 90% of what they say as they do something
(i.e. analysis information for a Council report)
- People need to engage (and talk) to learn effectively
- Right hand people telling their personal experience will look to the right side of the person they are speaking to. If they are constructing the story (make up) then they look to the left side
- Communication is:
 - 55% - body language
 - 38% - voice tone (jumps to 90% over the telephone)
 - 7% - meaning of words
- Communication comes from the heart (body language) rather than from the mind
- Letters (email) are not necessarily 100% (meaning of) words – always the last physical contact influences the interpretation

Tuesday, 14 September

7 – 8.30am - Training Sessions

9. Advanced Outlook Training Section

(Daniel Armstrong, Director of Information Technology, American Public Works Association, Kansas City, MO)

- Need to have outlook on mail server
- Suggest to use 'folder list' to score read emails
- Text
 - plain is just plain
 - rich text allows colour, bold etc
 - HTML provides more versatility but are the most likely to be rejected by incompatible programs
- Customize outlook 'options' to set defaults
- Auto signature – Tools; Options: Mail Format (able to use different signatures for different text)
- Flags – right click on message to create flags – different flags for different purposes
- Roles wizard is excellent to assist in cleaning up on email – 'Tools' then 'Rules Wizard'
- If wish to always then full menu then 'Tools':, 'Customise', then click 'Always show full menus'

- 'Tools', 'Organise' – is a mini version of Tools Wizard
- Can use 'Junk Mail' to filter junk mail and if you wish have them automatically deleted
- Can use 'Read Receipt' or 'Delivery Receipt' – can also use voting buttons which
- To add new fields in summary – right click on bar, then click 'Field Chooser'
- Setting up email distribution list – click 'Contacts', then 'File", then 'New', then 'Distribution List'
- Use 'Options' drop down box on new emails to apply special fields on individual emails
- Can create a rule to sort 'Sent' items
- Calendar – press 'Alt' & No to show that No of days
- Can use email trace – right click on message then 'Find Related Messages'

8.30 - 10am - Technical Sessions

10. Lighten Up and Laugh – For the Health of It

(Craig Zablocki, President, Positively Humour, Denver, CO)

Abstract:

Are you burned out? Is your LPD (Laughs per Day) average running low? Is it getting tougher and tougher to find humour in a world that is not always humorous? When we learn to laugh with others and take 'humorists" we can open ourselves to healing and living in the moment. Learn how the skilful use of "humour tools" in the workplace can increase productivity, motivation and learning. Laughter gives new perspective on your worries and increases team morale.

- young children smile or laugh up to 400 times per day – adults only 7
- adults have too many inhibition – we choose not to sing, paint or laugh because we may be embarrassed. Children have no such inhibition
- fear of adults:
 - public speaking; standing in front of a group
 - doing things that appear different to what others are doing

1 – 3pm - Meeting

11. APWA/IPWEA/Ingenium (NZ) Task Force Meeting

Purpose: The Task Force provides recommendations to the APWA International Affairs Committee

Forums: As a rule the task force held their meetings by email

Business:

- discussion on sharing articles from IPWEA, APWA and Ingenium to each others journal
- APWA is soon to advertise for applications for an international (American) member exchange in Australia
- Proposed to sign a tripartite agreement between APWA, Ingenium and IPWEA. Matters listed are:
 - collaboration and sharing of training/education standards
 - member exchanges/study tours
 - IT links
 - protocols to share products and services
- discussion on best forum/means to hold meetings
- discussion on the task force's work plan and development of an item specific action plan. Issues considered:
 - lack of young engineers and lack of young local government engineers
 - development of Auspec for use in USA (including training modules)

3 – 4.30pm – Technical Session

12. Design & Constructing of Public Infrastructure to Minimise/Manage Emergency Risk

(Graeme Preston)

prestong@maroochy.qld.gov.au

- landslip
- bushfire – Queensland use probability
- terrorism – Queensland
- risk assessment card
- Maroochy water hacked SCADA system
- Emergency Management Australia

Appendix C

AMERICAN INSTITUTE OF ARCHITECTS

National Conference Summary Notes

Friday, 17 September 2004

8.30am Introduction by Mark Ginsberg (AIA New York Chapter – President)

8.40am Welcome by Mark Johnson (Manager & Architectural & Design Marketing for Whirlpool Corporation)

- establish 5 design studios in 1999
- intend to move away from white goods manufacture
- have won numerous design awards (mainly refits both commercial and residential)

8.50am Doug Steidl (Vice President AIA)

- goal of architects is to build a safe, sustainable and vibrant community for future generations
- this conference is about achieving that goal for all New Yorkers with the redevelopment of Lower Manhattan
- AIA New York Chapter were congratulated on their proactive involvement in the audit of the redevelopment after the 9/11 events

8.55am Carl Weibrod (AIA NY Chapter President)

- Discussion on Lower Manhattan(LM) rebuilding process (includes ground zero – i.e. ex World Trade Centre site) but also many other redevelopment projects
- normally any major redevelopment takes 2 decades – the revitalising of LM is significantly way ahead of any schedule
- immediately after 9/11 the LM district had ground to a halt (loss of 3,000 lives)
- options for ground zero – two extremes:
 - (i) rebuild World Trade Centre exactly as was
 - (ii) leave site as memorial
- a compromise has been reached
- construction on Freedom Tower has begun (4 July 2004)
- conference concentrates on revitalisation of LM – nowhere does conference recognise architects as the engine room of development over the past 200 years
- revitalisation important – note:
 - 25% of businesses who do not re-new existing leases leave NY altogether
 - previous downturn of commercial occupancy
 - older run-down downtown commercial buildings were being converted to residential (14,000 units by end 2005)

- 1/3 of downtown residential residents walk to work
- residential conversions have been opportunistic rather than strategically based
- a balance plan is necessary

Key Question:

How best can we reconcile housing and commercial development?

- surveys overwhelmingly reach a view that high quality retail is lacking in LM

Key Question:

How can high quality retail outlets be implemented without unduly limiting commercial space?

- commuter/public transport to LM from the east side and north side is non-existent
- vital that public transport to the growing portions of NY is vital
- on drawing board is a US\$6 billion project for a rail link between LM and JFK Airport (being a growing area)

9.20am The Middle Ground –Lance Jay Brown

- developments include:
 - Freedom Tower
 - Balance of residential conversions and commercial development
 - US\$6 billion rail link between JFK Airport to LM then to west side
 - upgrading and linking public open space

Questions:

- Integrate the public planning processes with an independent memorial jury
- How to integrate planning process with a politically set schedule
- Architectural designs must be within the publicly accepted master plan

Issues yet to be resolved:

- Covering over/tunnelling or leave open the adjacent road
- 4m cross slope – need to ensure equity of access from all sides
- Should the site have unrestricted public access (particularly vehicles) – what level of security?
- NY (LM) 1766 started as balanced (commercial, residential & industrial) area
- Moved quickly to be mono climate of commercial (within 50-100 yrs)
- Held a commercial focus until recently (say 1940s)
- Now are moving back to a more balanced approach
- The planning in the 40's, 50's, 60's were far less taxing (easier) as the LM area did not have a community (residential) and therefore community involvement non-existent
- NY group used the experiences of the Berlin (Germany) redevelopment group (for post WWII)

- Different areas suffered differently after 9/11. Middle town suffered financially. Chinatown suffered significantly. Battery Park residents did not suffer financial but did emotionally
- Land prices did not change significantly
- NY residents wanting to see the damage of 9/11 were poorly treated and not accommodated for
- Scale of World Trade Centre site
 - 3rd largest retail centre in US
 - density similar to Grand Central Station

10.00am History of Lower Manhattan Development – Eugenie Birch, PhD – Univ of Pennsylvania

- Eleven major plans (1929 – present) on land use for NY Lower Manhattan

#1 – 1929-31 (Sponsor: Retail Plan Association)

- 10 years of study
- Based on survey
- Focal points were civic centre and business centre
- Considerable amount of industry
- Problems were congestion (extreme)
- LM is important engine of region
- Used regional ring roads to reduce congestion:
 - link existing airport
 - use express ways around coastal front (now trying to reduce this)
- Suggested on icon to identify the importance of LM and as gateway
- Turn water frontage to allow public access

#2 – 1966 (Sponsor: NY City development)

- Want to grow civic centre
- Concerned about waterfront
- 2 big anchors – government and finance
- Icon idea strong
- Began integrating residential development in the area (asked later this was the land use of last resort). However easy access to work, integrating retail, commercial and residential

#3 – 1993 NY City Planning Department & LM Association

- Problem at time 23% vacancy rate
- Transportation still a key issue
- Waterfront redevelopment vital

#4 – New York New Vistas (current)

- Driven by World Trade Centre loss
- Surveys, competitions to redevelop site

#5 – Mayor's Plan

- Not only World Trade Centre site but integrating other issues
- Very important proposal to consider all issues
- Each plan has defined LM area differently – ½ mile² to 2½ mile²
- Common issues in plans
 - mixed use
 - icon
 - transportation
 - wharf area/coastal

10.30am Panel – Lower Manhattan & the Region

- LM competes with Hong Kong, London, Shanghai
- 3rd largest retail area in US
- 90,000 feet square commercial floor space
- 280,000 people employed in LM
- 90% workers travel by public transport
- Current proposals:
 - strengthening transportation
 - transit centre
 - connecting regions
 - PATH terminal to connect NY and New Jersey
 - waterfront terminals for ferries & taxis
- Building a critical mass of office floor space:
 - 59 million feet square after new WTC development
 - include measures to improve pedestrian safety & access
 - security
 - separating vehicles
- Building new neighbourhoods
 - integration of residential development
 - 24/7 retail and support services
 - since 2000, 10,000 residential units have been constructed
 - another 4,000 under construction
- Improving urban design
 - improving public open space
 - revitalising east river water front
 - enhancing retail

11.05am Challenges and Decisions

Rebuilding Lower Manhattan – Hugh Kelly, Real Estate Economics)

- NY has had growth in all decades except the 70's
- Perceptions of NY economics is too often based on stagnation of the 70's
- Statistics do not indicate that high rentals mean lower occupancy rates of commercial space
- Synergy, location, ability of employees to access area (public transport) are more important issues
- 9/11 events were centred at end of the financial/commercial CBD – promote location diversity for security
- However the commercial market in the LM are booming and has grown from 2001 to 2004

- Commercial property prices for '24' CBDs when compared to '9 to 5' CBDs were generally same in 1980's but now has a 20% advantage
- The highest commercial (and other) land values are adjacent to the larger high profile parks

The highest land values in the US are those properties adjacent to Central Park, NY

Summary of Panel:

- NY needs to retain its #1 world position in the financial business sector
- The strategic plan needs updating to reflect the times – must not in time become a museum piece
- Securing funds for public transportation will be challenging.

12 noon Panel – Lower Manhattan Projects

- All of the streets and footpaths in LM area to be reconstructed in the next 4 years
- Other public utilities will be upgraded
- Old World Trade Centre probably did not integrate area – it was self supporting and alienated adjacent areas
- US\$2.5 million have been made available for upgrading existing buildings
- Many existing buildings were shabby, closed early and many derelict and vacant
- Small historical buildings ignored or built over with modern and not-so modern facades
- Complete lack of on-street parking (and reduction of off-street parking since 9/1)
- At Chinatown – businesses use vans permanently parking kerbside as storage. People shopping in Chinatown drop off their spouse, drive around for an hour and pick up

1.25pm Keynote Speaker – Kevin Rompe (President Lower Manhattan Development Corporation)

LMDC's Mission

- Rebuild the World Trade Centre site
- Create a memorial
- Revitalise Lower Manhattan

Sept 11 2001

- 2,749 lives lost
- 7 buildings & 30 million feet square of commercial space lost
- 1.6 million tons of debris to be removed

Public Participation

- Advisory Council to represent broad spectrum of groups affected by the WTC attack
- 50 public meetings

- Over 10 million visitors to Lower Manhattan

Aim

- 24 hour mix of uses for area
- Reconnect street grid

Memory Foundation

- Commercial 10 million feet square
- Retail space 600,000 feet square
- Hotel space 600,000 feet square
- Open space 57% of site

Freedom Tower will be the world's tallest structure

Transportation Centre will be a work of art

By 2009 phase 1 works will be completed

Freedom Tower Design

- Aim to be safest building in world
- Design to be a green building

7 World Tower

- 46 of 52 floors completed
- Expect occupation in 2006

Memorial Competition

- 5,200 designs submitted during competition
- Narrowed to 8 designs which went on public display
- Design includes 2 reflection pools with the same footprint as the original 2 larger towers. Canopy of large trees. Pools to go to bedrock and show portions of original building

Lower Manhattan Revitalisation

- US\$4.5 billion from Federal Government to improve transportation
- US\$1 billion for business recovery
- Other includes resident recovery, utility services

2.00pm Second Keynote Speaker – Madelyn Wils (Chair-Community Board)

- The board started haphazardly but needed given the circumstances. The process should be avoided if choices available
- 4,000 small businesses closed
- 125,000 people displaced
- Current studies indicate that Lower Manhattan can easily absorb over 1 million feet square of retail floor space
- The resident growth has led to the proposed construction of a second K-8 public school

Engineering Aspects of the World Trade Centre -

Why did it collapse?

General Information:

Height: 417 and 415 meters (110 storeys)

Owners: Port Authority of New York and New Jersey.

Ground Breaking: August 5, 1966

Official Opened: April 4, 1973

Destroyed: Terrorist attack, September 11, 2001

The Structural System:

- Difficulties of building to unprecedented heights
- Engineers employed an innovative structural model: a rigid "hollow tube" of closely spaced steel columns with floor trusses extending across to a central core
- Columns were 450mm wide and set only 550mm apart or 1m centres
- Unique were its core and elevator system. The twin towers were the first super tall buildings designed without any masonry.
- Worried that the intense air pressure created by the buildings' high speed elevators might buckle conventional shafts, engineers designed a solution using a drywall system fixed to the reinforced steel core
- The structural system is impressively simple.
- The 60m wide facade is, in effect, a prefabricated steel lattice
 - columns on 1m centres acting as wind bracing to resist all overturning forces;
 - the central core takes only the gravity loads of the building.
 - The floors tie the system together to stop the outer walls from buckling

Why Did It Collapse?

- Initial plane impacts - structures had been severely damaged, but not necessarily fatally.

- Impact of the plane crash destroyed a significant number of perimeter columns on several floors of the building, severely weakening the entire system. Initially this was not enough to cause collapse.
- The heat from the fire raging in the upper floors, gradually affecting the behaviour of the remaining material.
- The fire would have been initially fuelled by large volumes of jet fuel, which then ignited the combustible material in the building
- The fire would not have been hot enough to melt any of the steel, the strength of the steel drops markedly with prolonged exposure to fire, while the elastic modulus of the steel reduces (stiffness drops), and increasing deflections.
- Normally safety features such as fire retarding materials and sprinkler systems help to contain fires, and prevent steel from being exposed to excessively high temperatures.
- This gives occupants time to escape and allow fire fighters to extinguish blazes, before the building is catastrophically damaged.
- The unusual circumstances – i.e. large volumes of jet fuel, fire retarding coatings blown off during impact, water supply to fire sprinklers severed were conditions which hugely accelerated the buckling of the outer wall columns
- The storey at impact level would have collapsed. Remember that the collapsing floor was supporting 20 or more floors above
- The huge mass of falling structure would gain momentum, crushing the structurally intact floors below, resulting in catastrophic failure of the entire structure.
- The dynamic load of 20 storeys above is very much greater than the static system, and the columns were almost instantly destroyed as each floor progressively "pancaked" to the ground.

About the New York & New Jersey Port Authority

The Port Authority of New York and New Jersey manages and maintains the bridges, tunnels, bus terminals, airports, PATH and seaport that are critical to the bi-state region's trade and transportation capabilities.

The Port Authority

- Owns the 7-hectare World Trade Centre site in Lower Manhattan
- 4 international & regional airports
- Rapid-transit rail system
- Manhattan Heliport
- 6 bridges linking New York state and New Jersey
- 4 seaports
- Bus Terminal in midtown Manhattan

- Port Authority is financially self-supporting and receives no tax revenue from either state.

What were the conditions prior to the 9/11 incident?

- NY (LM) 1766 started as balanced (commercial, residential & industrial) area
 - moved quickly to be mono climate of commercial (within 50-100 yrs)
 - held a commercial focus for over 200years until recently (say 1940s)
 - now are is moving back to a more balanced approach
- The train station ay the WTS carried 67,000 daily passengers of the approx 200,000 carried by the system between and in New York state and New Jersey.
- Normally any major redevelopment takes 2 decades
- Urgent need for the revitalisation of LM
- Revitalisation important
 - 25% of businesses who do not re-new existing leases leave NY altogether
 - previous downturn of commercial occupancy
 - older run-down downtown commercial buildings were being converted to residential (14,000 units by end 2005)
 - 1/3 of downtown residential residents walk to work
 - residential conversions have been opportunistic rather than strategically based

What did the 9/11 incident cause?

- Immediately after 9/11 the LM district had ground to a halt
- 2,749 lives lost
- 7 buildings & 3 million square metres of commercial space lost
- 1.6 million tons of debris to be removed
- Different areas suffered differently after 9/11. Middle town suffered financially, Chinatown suffered significantly. Battery Park residents did not suffer financial but did emotionally
- 90% workers travel by public transport. The LM railway station was buried under the WTC
- A will to make something happen and a will to demonstrate that the 9/11 incident wasn't going to defeat America
- Took only 2 years to complete planning and for construction to be begin
 - options for ground zero – two extremes:
 - rebuild World Trade Centre exactly as was
 - leave site as memorial
 - a compromise has been reached

- Construction on Freedom Tower has begun (4 July 2004)

Design Concepts For Port Authority's World Trade Centre Revitalisation

- Freestanding Glass-and-Steel Mass-Transit Hub (replaces the US\$566 mill temporary station which opened in Nov 2003)
- Port Authority's enduring monument to the heroism of September 11, 2001,
- Glass roof above the hub's freestanding grand pavilion, featuring ribbed arches that evoke a cathedral, will open each year on the anniversary of the September 11 terrorist attacks.
- Glass-and-steel wings will rise up to 50m (17 storeys). Natural light will reach rail platforms 20m (6 storeys) below street level.
- \$2 billion World Trade Centre Transportation Hub will include:
 - eventually will serve more than 80,000 daily PATH riders,
 - By 2020, these connections are expected to accommodate 250,000 daily commuters and visitors.
 - Greater public open space
- 533m Freedom Tower and the Memorial. Take its place among New York City's most inspiring architectural icons.
 - world's tallest structure
 - 24 hour mix of uses for area
- Main building - commercial 1 million square metres (total project will build 3 mill sq m to bring LM to 6 mill sq m – or 600 Ha)
 - retail space 600,000 feet square
 - hotel space 600,000 feet square
 - open space 57% of site
- Freedom Tower Design
 - aim to be safest building in world
 - design to be a green building
- Memorial Competition
 - 5,200 designs submitted during competition
 - design includes 2 reflection pools with the same footprint as the original 2 larger towers. Canopy of large trees. Pools to go to bedrock and show portions of original building
- Other Lower Manhattan Projects
 - all of the streets and footpaths in LM area to be reconstructed in the next 4 years
 - old World Trade Centre probably did not integrate area – it was self supporting and alienated adjacent areas
 - US\$2.5 million have been made available for upgrading existing buildings
 - complete lack of on-street parking (and reduction of off-street parking since 9/1) Chinatown – businesses use vans permanently parking kerbside as storage. People shopping in Chinatown drop off their spouse, drive around for an hour and pick up
 - reconnect street grid
- New Jersey Governor James E. McGreevey said, "The World Trade Centre revitalisation will make a statement to the world: The people of this region are undaunted in the face of the forces of evil.

