INTERNATIONAL OVERSEAS STUDY TOUR 2016 REPORT

Andrew Ryan, Director Infrastructure Services, Sunshine Coast Council

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The United States, Spain & the Netherlands
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A. STUDY TOUR OVERVIEW

SUSTAINABLE PRACTICES & INNOVATION IN PUBLIC WORKS

A group of four Australian local government and public works engineers including myself visited North America and Europe in August / September 2016. During the tour we visited the cities of Los Angeles, then on to Minneapolis in the State of Minnesota for the APWA Public Works Exhibition and Conference, then to New York and across to Madrid, Spain, and Amsterdam in The Netherlands before returning to Australia.

The theme of the study tour was “Sustainable Practices and Innovation in Public Works”. Participants were interested in meeting with local government managers and public works practitioners to hear of their experiences, innovations and lessons learnt.

During the tour, we were able to meet and interact with many public works professionals across the globe. We are not only able to learn from others, but also had the opportunity to share our Australian expertise. Chris Champion and myself provided joint presentations on the Australian approach to asset management at the APWA Conference in the USA and then in the Netherlands at a meeting of the Stadswerk group (our IPWEA partner organisation) attended by a number of Dutch engineers.

AREAS OF INTEREST

The Study Tour group were made up of engineers with a range of engineering and executive management backgrounds, from different size communities – from urban cities to regional communities.

Particular areas of interest included sustainable practices and innovation in:

- Smart Cities - Emerging use of technology; LED, street lighting, Wi-Fi, waste systems, data management; energy saving, 3D/photo imagery
- Asset Management Practices - Strategic life-cycle modelling; service levels vs available funding; community engagement; maturity models
- Systems & Mobile Technology - New mobile solutions, customer defects, project management, costing, connected workforce, drones, crowdsourcing
- Sustainable growth & development - Challenges of growth; sustainable transport/infrastructure; green space; master planning; development assessment
- Water cycle Management - Management of stormwater quantity (flooding), quality (treatment systems), life cycle - costs, maintenance

STUDY TOUR PARTICIPANTS

The Study Tour participants are representative of a number of States across Australia and included:

- Chris Champion (NSW) – Director International IPWEA, and the study tour leader;
- Andrew Ryan (Qld) – Director Infrastructure Services, Sunshine Coast Council
- Gleb Kolenbet (Qld) – Development Engineer, Redland City Council
- Doug Bartlett (WA) – Coordinator Asset Management, City of Mandurah
B. PLACES WE VISITED & HOST ORGANISATIONS

We were incredibly fortunate to be able to visit three countries and meet with many different organisations and attend events and hosted visits to many council facilities and interesting projects and development areas along the way.

USA

- Santa Monica (Los Angeles, California)

We spent a morning being hosted by the Santa Monica County Council Works Director, Gil Borbon, and his leadership team. They presented on the impacts of drought and the approach they have been taking to water sustainability within in their council, of some 90,000 people. Of interest was the impacts of climate change on their regular water supply sources for the city of Los Angeles. LA gets most of its water from the snow melt from the high mountains some 300km or so to the north west of LA, and the lack of winter snows for three seasons has seen a severe drought impact the city. Hence they have been active in large scale localised stormwater harvesting and treatment systems, together with effluent treatment and reuse into their potable water supply.
We were taken around some of their projects and the contrast with asset standards was marked. While the City is committing to a major $350m new town hall that will aspire to be a living building (http://living-future.org/lbc), the asset standards varied greatly across the city, and one street back from the main thoroughfares, roads and pavements were in a state of failure. In discussing these issues it was apparent that the city (like many other USA councils) did not have a systematic approach to asset management.

Santa Monica Footpath - California

- Minneapolis (Minnesota)
  We attended the American Public Works Association (APWA) annual national conference, now rebranded as the Public Works Expo (PWX), for over four days and attended many different presentations and social events. We also were able to explore the city of Minneapolis, a city of one million people, and its outer areas. Given they can experience winters of up to minus thirty degrees Celsius, it’s no wonder that they have elevated skywalks connecting the city buildings to allow one to walk a couple of kilometres across the city centre without going to street level. The down side is a distinct lack of activity at street level, compared to many other cities of a similar size.
Myself and Chris Champion presented jointly on the Australian approach to asset management. Chris focussed on the overarching strategic approach to asset management and long term sustainability, as articulated through the various IPWEA / NAMS products, such as the IIMM, while I shared the journey that my council had been on, in putting the NAMS plans and strategies into action, and the outcomes that we have been able to achieve in doing so.
- **New York City (New York State)**

We spend an interesting day getting to see the sights of New York and experiencing firsthand the congestion, noise, energy and frenetic pace of a city of great contrasts, from gleaming sky scrapers, the dignified and impressive Grand Central Station to cracked streets and noisy, dirty subway trains.

![New York Grand Central Station](image)

*New York Grand Central Station – New York, USA*

- **City of Yonkers (New York State)**

We travelled up the Hudson River from New York by train to the City of Yonkers, where we spent a morning being hosted by the Director of Sustainability, Haliano Higbie and her colleague Chris the Director of Communications. They showed us around their redeveloping city which is emerging from an older, run down area, to one that is starting to find its feet, with a new vision of a green and smart city. The projects and sites we visited included a major rooftop solar farm; an innovative solar light pole that also houses a mini wind turbine and in built battery; an ECO barge community display centre, that runs off grid; a new urban development project that is taking an abandoned factory and turning it into small to medium apartments. Their centre piece project was called the “daylighting” of the Saw Mill River, where they removed an old car park, and reclaimed a river out of buried culverts. This new river and urban park, frames the centre of town and has seen a boom in new development and regeneration of old buildings and a lift in city pride.
The City is also actively pursuing smart technology (like many other American cities) and deploying public Wi-Fi, smart waste bins and other monitoring systems in the public realm as it seeks to leverage such investments to attract new residents and businesses.

Yonkers Saw Mill Creek Day Lighting Project – City of Yonkers, USA

SPAIN

- Madrid

We spent some time getting acquainted with the inland city of Madrid. It’s a hot city, of some four million people, and built for a climate that ranges from plus 40 degrees to minus 10 in winter. Typified by beautiful stone building and large open spaces and parks, it’s a city for the people, with highly effective public transport via a metro and train line serving the inner city. People in Madrid go out late and stay out late, and still take time for their daily siestas. Quite a contrast to the USA. The city was clean and well maintained a seemed at odds with the perception from afar that Spain is beset with high debt and high unemployment.
A typical Madrid town square – Madrid

- Madrid Rio Park & Calle 30 Traffic Control centre

We spent a day with Samuel and Emilio at the Madrid Calle 30 traffic control centre, and then inspected the newly formed parklands, running alongside the Madrid Rio River, that resulted from taking above ground arterial roads, and creating a system of cut and fill tunnels, and then creating parklands on the reclaimed land above the tunnels. This is one of the main urban transformation projects in the city of Madrid and involved the remodelling of the roadway and land where the old M-30 motorway used to run, following the construction of over 47 km of tunnels.

The traffic control centre coordinates and synchronises the installations and human resources, and is a sophisticated and efficient operation, run through a public–private partner contract by an expert contractor (SICE) who specialise in smart city technology to assist more efficient use of the tunnels.

The Rio parklands were highly impressive, and probably should be at a total project cost of four billion euros. The tunnel / park project was constructed prior to the Global Financial Crisis (simply called “The Crisis” in Europe), and contributed to the total Madrid City debt swelling from one billion to seven billion euros. Since the GFC, the city has had to greatly pare back expenditure to reduce their debt levels. But the parklands are a wonderful community asset, with striking bridges and art works, amongst a tradition garden setting.
Toledo

We visited the medieval city of Toledo, whisked there by a modern, clean, efficient fast train, covering 120km in under an hour. Toledo typifies the ancient forms of city construction, where public space and places of worship were primary parts of the city layout and design, focussed around places for people and communion in harmony with commercial activities, and yet still has modern features, such as retractable bollards to manage narrow laneways that take modern vehicles through the city.
Valladolid

We spent an entire day with the Director of Public Works, Francisco Andre Peres Narito and Lucía Oroz Cortés, the Director of Water Sustainability and their team leaders, from the City of Valladolid. Valladolid is a city of some 300,000 people, sitting up on a plateau some 200km south of Madrid. The city is yet another example of beautiful older style stone and brick European buildings, integrating with newer modern buildings and services. Like much of Spain it has suffered from the GFC, but through a new Mayor and a determination are still focussed on growth and sustainable asset and service management. Our hosts were incredibly generous with their time, and introduced us to their Mayor Oscar Puente, and took us to their traffic Control Centre, the old water treatment plant, with some facilities over one hundred years old and still in operation, and undertook a walking tour through the old parks into the city centre.

Like many European cities, their challenge is to try and attract businesses and stimulate population and economic growth, while preserving their heritage and older buildings, a trade off which is not always easy to achieve with limited new development fronts and many older areas constrained through older utilities of limited capacity. Impressively they presented their approach to town planning and urban design, with town plans going back centuries that are still relevant today.
We stayed in the city of Haarlem, some fifteen minutes by train from Amsterdam. Typified by leafy streets, bikeways taking priority and intersected with canals and lovely old brick buildings, we were spoilt by the public transport options. In typical Dutch fashion, we were initially surprised to see Tesla electric cars in the taxi ranks and later learnt that Amsterdam has 25% of its taxi fleet as
electric and by 2020 all taxis will be electric. In a country that has 25% of its land mass below water level (and its airport 4.5m below sea level) they take climate change and sea level rise seriously, and have implemented ambitious renewable energy targets for their country.

We had no need to take a car anywhere within Holland the entire time we stay, but instead used busways, trams, trains or bicycles to move around with ease. In a country of only 17 million people, 350 km long by 250km wide and the most densified country on earth you can see how effective public transport works for the Dutch but they still have many examples and systems that we could apply in Australia in our denser city and regional areas as we plan and grow.

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**A Typical Haarlem Canal – Haarlem, The Netherlands**

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- **Haarlem – Province Noord-Holland – Solar Road Project**
  We visited the ultra-modern officers of the Noord Holland Province (similar to a state roads authority) and were hosted by Transport Manager, Hjalmar Boon. The national government has set 25% energy reduction targets to all state departments and hence the Province are implementing a number of innovative energy reduction or energy generation projects. One of these is the innovative Solaroad project. We were given a presentation by Paul Rutte, the Manager Innovation with the Province, and Sten DE Wit from a private consultancy. Together they outlined the drivers of their innovative road (or bikeway) project.
We later visited the Solaroad and witnessed multiple bicycles and scooters whizzing along, oblivious to the fact that the section of bikeway was generating electricity as they rode across it.

**Solar Road – The Netherlands**

The Netherlands public works engineering association, Stadswerk, hosted a joint forum with around 20 Dutch engineers in Amsterdam, who travelled from across the Netherlands to participate. The forum took a focus on international asset management practices and two Dutch engineers presented, along with Chris Champion and myself.

The discourse was very interesting to all, and it was pleasing to note that in Australia we have been putting into practice many of the more advanced strategic asset management practices, whereas a number of Dutch councils are still to progress beyond basic asset management. We ended the day with a cycle tour around the Amsterdam canals looking at how they manage the roads and canal walls that are in a continual state of settlement and then collapse, with a proactive program of canal wall, street and tree replacement.
We visited the province of Noordwijkerhout and had a fascinating presentation by eminent Dutch Architect, Thomas Rau. Thomas advocated for a different form of engaging products and services by taking an outcome based performance contracting approach, but with a requirement for materials preservation and recycling to be the key driver of the service. He has entitled this approach as “Product as a Service” and advocates this as an advanced form of performance contracting, that ensures true innovation in design.

His presentation was thought provoking and challenging and a great insight into how far advanced some Europeans are in their thinking when it comes to design and sustainability. Unlike many others though, he practiced his design philosophy by implementing this approach in several award winning large scale commercial buildings. A glimpse of the future no doubt.

Our host, Jeroen Rodenberg from Noordwijkerhout Province, provided a fascinating presentation on the Dutch approach to stabilising their coastal areas. With a 400 year history of working with and taming nature, he presented on a major project to the west of the province, where they constructed a new dual system, placed a car park under it, and extended the beach profile some 90m into the sea to create a buffer from major storm events and future sea level rise. Jeroen also took us on a tour of the project, and we marvelled on both the scale and the seeming ease that they were able to achieve such intervention.
Amsterdam Smart City Cycle Tour

What better way to finish a round the world study tour, than a guided tour behind the scenes of a major city, focusing on smart city innovations and sustainable design treatments and solutions. We were guided by Cornelia Dinca, a local Urban Designer with a passion for sustainable and engaged communities, and she took us throughout the city by bike, exploring start-up companies, the Amsterdam Smart City Centre (similar to the mart Hub we have created in Caloundra in my home town), the MX3D steel printing warehouse, where they are planning to print the world’s first 3D footbridge in the near future. And then through a number of modern medium density new developments, that are built around ease of transport and communal living.

We saw electric cars charging, that residents can book through an online app, and many different cycle ways and differing forms of accommodation types, including a suite of containers converted to student accommodation. For a resource poor country, the Netherlands continues to use its people through education and innovation to create wealth, while still seemingly keeping a focus on a relaxed lifestyle.
Amsterdam Smart City Cycle Tour – Amsterdam, The Netherlands
C. GLOBAL OBSERVATIONS

THE EXPERIENCE
I found the whole tour a wonderful experience. To have the opportunity to travel the globe in two and a half weeks with a three other motivated and engaging colleagues from Australia was a privilege that is greatly appreciated. We not only got to travel to three different and unique countries, but were also able to go behind the scenes and talk with fellow engineering professionals in each place and share views, experiences, and world outlooks and learn from each other in doing so.

HIGHPOINTS
We went from the laid back beach ambience of Santa Monica, to the gentle mid-west pace of Minneapolis, to the frenetic non-stop New York. Then an overnight flight landed us in the hot, clean and busy centre of Madrid, where people go out to eat when we head to bed, and then on to Amsterdam with its culture, canals and engineering prowess on display in all facets of life, with mass bicycles and electric cars for taxis.

But above all the people we met were the real highlight and the hospitality we were shown by our hosts was unexpected and humbling. We went to some amazing places, saw some great sites and some innovative ways of doing business, but to be able to meet so many committed engineering professionals, who all speak the engineering language (though often in different dialects) was such a bonus.

COMPARING OUR APPROACH TO OTHER COUNTRIES - POLITICS & CULTURES
From traveling to different countries, and meeting fellow engineering professionals, it becomes abundantly apparent that engineers globally have very similar problems, outlooks and issues. That public works engineers are passionate people, embedded in and committed to their communities, and only want to do the best for their communities and countries they live in. We also saw how often politics and governance also a huge role in the effectiveness of fellow locally government organisations in the other countries.

We are fortunate in Australia that the principals of the Westminster system of separation of powers between the elected officials and the public service are still largely intact – this allows professionals to give advice without fear or favour to our elected officials and gives them the freedom to make judgements based on sound advice and (sometimes) a longer-term view. We saw evidence that where these lines are blurred (particular with many USA councils where the Mayor is also the CEO, Fire Chief and Police Commissioner in one) the community assets are poorly maintained and resources tend to be directed to one off projects or populist issues rather than to well-planned assets and services.

INSIGHTS INTO BEST PRACTICE IN THE PUBLIC WORKS REALM
I was able to gain insights into many different technologies and treatments that people use and apply in different countries. It’s obvious that the debate on climate change impacts in the Europe is
over, as well as in some parts of the USA, and the focus is on climate change adaptation and management, as well as on focussing on making public assets accessible and attractive for the community to enjoy.

We saw many innovative projects where engineers have developed solutions to reclaim rivers, reduce energy and water use, re-create park lands from road systems, and integrate biological solutions into traditional hard engineering practices. As one of the Dutch engineers put it to me, Holland has been using engineering techniques for four centuries to work with nature and reclaim land from the sea, and they will continue to do so in the face of sea level rise and increased storm activity. It struck me that in Australia many of our regulatory agencies still treat modified environments as if they are natural, whereas the Dutch seem to recognise that once environments have been modified, even if for the wrong reasons in the past, then sometimes, more assertive interventions are then needed to try and stabilise the new environment, and that purely natural approaches will not always work.

Many of the learnings I also picked up along the way were not just the big picture issues, but the smaller scale approaches that people take, such as the tree management practices that they use in Santa Monica and Amsterdam, and the use of real time information systems to manage and monitor traffic flows in city centres.

TAKEAWAYS FROM THE US PUBLIC WORKS CONFERENCE (PWX)

The USA is a highly varied country with different standards and practices applying across different states. Some lead the way in sustainability and design, while other states are very slow to react to changing technologies and practices. Similarly, within the conference itself, some of the presentations were first class while others didn't match up to the standards we would expect in our local conferences in Australia. There were also many new or clever products on display at the associated expo, with a strong emphasis on mobile technology apps and software as well as environmental solutions. One of the tools that grabbed my attention was the green road rating tool, that is now being picked up in NZ and I am keen to trial within my own council.

A number of excellent presentations stood out that showcased best practice in public works.

- **Use Of Technology In Everyday Works**
  A number of presenters showcased ways in which they were using new technology to increase efficiencies or enhance engineering practice. Drones are becoming more common for bridge inspections and defects logging in many counties. Many councils are also progressing the use of mobile technology to connect with their field staff and communities, similar to many Australian councils.

- **Vehicle Communication Systems & Real Autonomy**
  Three different presenters provided insight into the rapid advancement in vehicle communications systems. The USA Department of Transport have invested $600m in securing bandwidth for the new software and communication systems that are in trial right now in around 2000 vehicles. They predict that in around five years’ time, all of the 20 million vehicles sold in the USA will be equipped with a mandated standardised in-vehicle software communication system, that will allow cars to become data sources and communicate with each other and fixed infrastructure, and within ten years the majority of vehicles on the road will have such systems in operation.
Current “smart vehicles” only look out, but the real changes will come with a fully integrated transport platform where all road vehicles are communicating and managing speed and complex movements for maximum efficiency. This will then enhance driver safety and create the infrastructure to allow true vehicle autonomy. This will then lead to a raft of changes that we are not yet foreseeing in the way we design road and transport systems, cities and towns, acquire vehicles (or not), manage parking spaces, right down to how houses will be designed when full car ownership may not be a given. Coupled with this, many service industries (long distance trucking, taxis, bus driving) will see a depletion of drivers and the social changes and impacts will need to be managed with care.

- **Complete Streets & Urban Design**

  The progression of the “complete streets” approach to town and city design is gaining momentum in the USA, and is focused on creating towns and cities that place people and lifestyle over traffic and capacity in the design of roads and street systems. They have a raft of well-developed standards and guides that assist in this progressing and the fields of conventional traffic engineering are becoming reintegrated with urban design in many cities. They use the term “context sensitive design” to illustrate the fact that one size does not always suit all, and engineers should do more than simply following the standards road design guides when designing or enhancing street networks.

- **Smart City Technology**

  While there is still a sense of buzz word around the smart city title, many US cities are active in progressing the installation of digital monitoring and control systems in the public realm. The USA Federal Government has offered $40m incentives upon application, for cities to sign up and get active, and in their first round, had over 78 cities apply. The City of Chicago and Boulder, Colorado seem to be leading the pack, with strong investments in creating digital connectivity throughout their city areas.

**THE MOST INNOVATIVE PRACTICES**

We were fortunate to be able to gain such insights into innovation, and the Netherlands is a hub of innovation. The Dutch engineers have worked for centuries on working with their environment and this ethos is embedded it appears in their approach to the future challenges, and their government is prepared to set stretch targets and fund innovation and trust that their engineers and scientists will derive solutions.

- **The Solaroad**

  It’s hard to go past the Solaroad project in the Netherlands that we were fortunate to see. We were hosted by the engineers in the Dutch province who have been the innovators behind the concept. Right now they have laid a prototype bikeway section of some 70m of high strength solar panels embedded in pre cast concrete panels. Their vision is to be able to use future road construction projects as opportunities to generate power and ultimately create conductive systems that may then power electric vehicles as they pass along the road way. Its early days but they are seeking to pioneer and develop this technology to a commercially viable stage.

- **A Material Bill Of Rights**

  We also had a profoundly challenging presentation by a Dutch architect, Thomas Rau, who is advocating a new way of considering sustainability. His view is that we accept the world has finite material resources, and yet still treat waste as a by-product and do not value the inherent finite resource base, or base materials. He gave us a thought provoking hour of his time, and is advocating...
that the UN needs to consider a “materials bill of rights” to create a global change to design and the management and valuing of resources. In some ways our asset management practices are recognising this issue, but his philosophy takes it to a level of seeking to reuse and preserve materials rather than dig up and dispose as is our most prevalent practices.

By way of example, he stated that when lighting a building he wants to buy light, not a light bulb, while ensuring that the earth’s finite resources are not squandered by meeting his needs. Hence he specified full material recovery at product end, and contracts for the services over a longer life period, to encourage the light supplier to manufacture a long life product, hence breaking the built in obsolescence cycle. More to come on this I don’t doubt, as we see population growth over the next decades continue globally while resources are fixed.

- A 3D printed footbridge?

To be able to go into the warehouse and talk to the team of young mechanical engineers who are well advanced in their ambitions to print a 3D steel footbridge was a privilege. The technology involves a series of robotic spot welders, printing one weld at a time, in a 3D matrix array of steel bars that will all be interlinked. Once complete the footbridge will be erected across a narrow canal. While this is small scale it shows the potential of the a very disruptive technology and a glimpse into how this will start to transform traditional construction mythologies as the systems get more sophisticated.
D. LEARNINGS & TAKE AWAYS FOR SUNSHINE COAST & AUSTRALIA

SMART CITY TECHNOLOGY AND SMART TRANSPORT
Smart city solutions that involve the digitisation and integration of smart technology into everyday public works assets and services is growing globally, with many countries and cities seeking to roll out public Wi-Fi, digital information monitoring systems (e.g. waste bin sensors, traffic flows, car park vacancies), to provide better services to their communities. Further the progress of in-vehicle car management software systems as a mandated product in all new vehicles is well underway and the future of transport is forecast to change rapidly over the next decade and re-shape our public transport systems and means of getting around, as well as the way the engineering profession manages our transport assets and systems, with the USA is leading the way with this technology.

The motivations in the USA are about safety and to allow vehicles to communicate with each other in the lead up to autonomous vehicles, but they are also up front that the Federal government in the USA needs to be implementing systems that will allow for future revenue raising, as they are forecasting huge drops in petrol tax revenues due to the progression of hybrid and electric vehicles.

Hence mobility is now the buzz word it seems, and we can expect changes and challenges to some of our traditional ways of dealing with cars, parking and people movement in our urbanised areas.

URBAN DESIGN, PLACE MAKING & PERSONAL MOBILITY ARE CRITICALLY LINKED

The places we visited and the insights we gained confirmed how important it is when designing new urban developments, or retrofitting brownfield sites, that good urban design (or place making) is a critical component in creating liveable communities. The fragmentation of the engineering profession into speciality fields invariably can lead to an over focus on one disciplines outcomes taking precedence, and the design for personal vehicle movements over the last thirty years has created much of our new cities sprawls. Engineers are increasingly aware of this issue, and we saw examples where cities have taken the opportunity to reclaim space from vehicles and return it to the people.

The Madrid Rio Park in Madrid was the most stark example of this, where a full four lane motorway was taken underground and a huge parkland area established, at considerable cost. The outcome though is an active space, that the people are using, that has seen property prices escalate and new investment. Similarly the daylighting project in the City of Yonkers has also returned a car park to open space, that now sees people regularly meet, hold events and interact, and has seen an increase in local investments.

Minneapolis and Santa Monica both have well developed modern light rail systems that have linked disparate communities and seen a change in personal movement and new residential building developments along the routes. And the Netherlands demonstrates what can be achieved by thirty years of focussing on providing cycling links and priorities for public transport, albeit in a very densely populated (and flat!) country. Not every lesson learnt applies to our cities, but we need to be open to new ideas.

Further the emergence of vehicles on demand (see Uber) and the future of autonomous vehicles, will have a huge impact on city designs and the amount of land we allocate for vehicles and for parking. The emphasis will shift to the provision of mobility choice, underpinned by well-developed integrated transport solutions, taking a multi modal approach. Exciting times to be a transport
engineer, with a shift from the traditional modelling and planning approach to a technology enabled approach.

The key point is that such outcomes do not happen by accident and engineers need to play a stronger role in my view in working with planners, urban designers and other engineering staff in seeking to provide integrated transport based developments, and in taking a more assertive role in supporting the Hierarchy of mobility options that favour better lifestyle outcomes.

Finally great spaces make great places, and city designers over past centuries have realised this, with examples through Spain, and the Netherlands, as well as in New York, where large spaces have been set aside for people to gather and congregate. The City of Vallodalid were able to share their planning scheme from the 17th century that provided a city layout, open spaces and a development pattern that still works today. This is a struggle in Australia as much of our land is allocated privately and new developments provide capacity under planning schemes, but one wonders if these spaces will stand the passage of time and population growth into the future, as the European cities have done.

AUSTRALIA LEADS THE WAY IN ASSET MANAGEMENT

I was greatly surprised to learn how far ahead we are in Australia with our approach to Asset management. From all we saw and certainly from personal feedback to our group, Australia continues to lead the way in our approach to asset management planning and financing, and the products and guides produced by the IPWEA / NAMS are highly regarded. We have much we can share with other countries still if they are willing to listen and take our learnings on board.

Australian engineers and the IPWEA have been effective over the last 20 or so years in continuing to raise the practice of asset management as both a professional discipline and an essential part of any organisations future planning and annual financing. Through this many Australian states have legislated to ensure asset management plans and long term financial plans are part of our annual budget cycle.

By contrast we saw little evidence that USA councils have advanced down this path, and even our European colleagues have only progressed to basic asset management plan levels. I would also suggest that despite our vast differences, Australian public works engineers are united in the way we approach issues, and committed to work together across councils and state boundaries, evidenced by the increasing numbers of national standards that we develop and adopt for the good of the entire community.

SUMMARY LEARNINGS TO PUT INTO PRACTICE

How to summarise the takeaways I can see putting into practice from a highly engaged and whirlwind two and a half week trip around the globe, meeting interesting people and witnessing the diversity and unity of global engineering? Here are my key learnings:

- The future for transport planners and traffic engineers will get blurry in the next five to ten years with a lot of change coming through in vehicle communication systems and the progression towards autonomy.
- Mobility is increasingly becoming the focus of transport systems design, over the more conventional segregation of modes, which is being driven by the disruptive technologies (such as Uber) and the integration of urban design and smart technology with mobility planning.
• Many cities are jockeying to lead in the smart city arena – a committed local government is best placed to facilitate and / or deliver this technology in collaboration with the private sector as we manage the control the public realm that people interact with daily – not the Telco’s, not the state governments.

• Our asset management practices in Australia are best practice and we need to ensure that we keep this focus, as not only do we maintain the asset quality but also ensure our council’s are financially sustainable and strong.

• Great urban design doesn’t happen by accident – it takes commitment and effort and involves art works, dedicated open space, integrated transport (mobility) systems, and above all, designing for the people first. Where this doesn’t happen, cities and towns cease to function as healthy places and atrophy sets in.

• Open spaces need to be set up for our urbanised areas to cater for future population and be allowed to “breathe” – we need to avoid the temptation to clutter and fill and allow our parks to be spaces for gathering and simply being. In Australia we have a tendency to over embellish and build in our parks and spaces, where, European cities leave them open and allow flexible use and a diverse variety of activities to then occur.

From a purely Sunshine Coast Council perspective, our game changing projects and innovation aspirations are right up there with other major cities projects. These include an international runway airport upgrade; a new CBD development in Maroochydore; an underground waste vacuum system in our CBD; a dedicated 15 MW solar farm; a future light rail system, and a commitment to deliver on our Smart City Plan, which can all be judged as being global in scale and aspiration, and many of the takeaways will apply to how we design our places on the Sunshine Coast for current and future generations.

![Rio Parklands – Madrid, Spain](image)

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