

**THE 2002**

**MUNICIPAL ENGINEERING**

**FOUNDATION**

**STUDY TOUR**

**TO**

**CANADA, THE UNITED STATES &**

**ENGLAND**

**December 2002**

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## **ACKNOWLEDGMENTS**

I would like to thank the Municipal Engineering Foundation for the opportunity to travel to the United States, Canada and England on the study tour. Special thanks to Keith Wood for his guidance in the planning and conduct of the tour. The tour revealed that this program is unique in the world and the subject of envy by engineers in each of the countries that we visited.

Secondly, I would like to thank my employer, the City of Greater Bendigo, who supported me in my application for the study tour and by providing study leave during the tour.

Hopefully I will be able to benefit both organisations through disseminating what I have learnt to my colleagues, both within my organisation and local government employees in general on the subject of risk management related to road infrastructure.

Finally, I would like to thank all the people we met at the various organisations the study group visited. All were generous with their time and had gone to extraordinary trouble to collate information and prepare presentations.



## **INTRODUCTION**

Each year the Municipal Engineering Foundation Victoria sponsors a number of senior engineering managers in local government to undertake a study tour overseas. The 2002 overseas study tour focussed on risk management related to road infrastructure. Organisations visited included various Councils in Canada, the United States of America and England, the Department of Transport in England and the Transport Research Laboratory Crowthorn, England.

Further, the study tour group attended and presented a paper at the American Public Works Association International Congress in Kansas City, Missouri.

Participants on the tour included:-

- Mr David Hannah, Manager Engineering Services, City of Greater Bendigo,
- Mr Ian Mann, General Manager Engineering and Infrastructure, City of Knox, and
- Mr Michael Edgar, Asset Management Engineer, Latrobe City Council

Specifically the places visited included:-

1. City of Richmond - British Columbia, Canada
2. City of Surrey - British Columbia, Canada
3. American Public Works Association International Congress – Kansas City, Missouri, USA
4. City of Independence, Kansas City, Missouri, USA
5. The UK Department of Environment, Transport & Regions - London, UK
6. Hammersmith and Fulham Borough Council - London, UK
7. Bristol City Council, UK
8. Transport Research Laboratory, UK
9. Oxfordshire County Council, UK

The touring party visited all these sites as a group.

Apart from investigating Risk Management, much more information was obtained regarding the varying environments in which Councils operate including the political, social and organisational influences.

A summary of the information gathered in Risk Management is covered in the following report.



## **EXECUTIVE SUMMARY**

### **Introduction**

The 2002 Municipal Engineering Foundation Victoria overseas study tour focussed on an investigation into risk management of road infrastructure in Canada, the USA and England. The study tour group visited Councils and Authorities in each country and also attended the American Public Works Association National Congress.

### **Canada**

The operation of local government in Canada has its roots in the British system and would be quite recognisable to Australians.

The following of established Council policy is seen as a key part of a legal defence for Council's in managing risk. This means that for some municipalities a 'no inspection' policy is adopted practice.

### **United States**

Generally in the USA, services are delivered by Councils in a similar manner to Australia.

Strategies for managing risk vary from municipality to municipality, ranging from regular safety inspections and programmed maintenance to purely reactive maintenance programs.

### **England.**

There is a more consistent approach to the management of risk for roads within the UK, which has been encouraged by the central government via methods of distributing road funds and the development of the Code of Practice for Road Maintenance.

Generally the road network in the UK is in reasonably good condition and capacity appears to be the issue of concern. It is claimed that the UK has the safest roads in the world.

## **CANADA**

### **Government Structures**

The operation of local government in is similar to Australia in that it has its origins in the British system.

Municipalities are constituted through laws enacted by the Province (the equivalent to Australian States). Further within the metropolitan area of a large city incorporating a number of municipalities, there may be regional authorities responsible for a number of services such as sewerage and water. This to would be familiar to Australians.

Councils operate in a similar fashion to Councils in Australia. The approach to managing risk does vary from the practice of regular inspections according to a hierarchy with associated intervention levels, to that of no inspections and purely reactive maintenance practices.

The Courts are supportive of Council policies with regard to risk, provided these policies are seen as reasonable and are made on a sound basis. This provides the basis to the way Councils manage risk whereby the adoption of Council policies and the adherence to these policies are the key components to a legal defence against claims.

### **City of Richmond**

The City of Richmond is located within the Greater Vancouver Regional District south of downtown Vancouver in the Province of British Columbia. It is comprised of a series of islands in the mouth of the Fraser River, has a population of 165,000 people and an area of 130 square kilometres.

Richmond's economy supports 100,000 jobs and the Vancouver International Airport is located here.

The City provides the full range of services although water and sewerage are purchased from the Regional Government.

Community Safety and Infrastructure Management are specifically referred to within the Corporate Plan as strategies to achieve the vision '*to be the most appealing, liveable, and well managed community in Canada*'.

Also highlighted in the Corporate Plan is the 'Team Approach' to management that is adopted by the organisation.

This was evident in the meeting with the City, when managers from across the organisation were all present and willing to participate in the discussion.

The Legal Department has the lead role in risk management. This department liaises closely with all other departments in this regard.

The approach to Risk Management was described as having 3 components:

- Policy
- Inspection
- Insurance

Council policy with respect to managing risk feeds into the operational policy. For example, it is Council policy that safety inspections are not undertaken for sidewalks.

A cost benefit analysis was undertaken prior to the adoption of the policy. Part of the decision was related to concerns that once you know about a defect you are committed to rectifying it. The City's Staff Solicitor holds the view that the Courts will support the Council Policy of not inspecting the sidewalks, provided the operational guidelines back up the policy decisions. Recently the courts have been distinguishing between policy and operational decisions. Council policy sets the amount of money that is available for programs and operational policy implements that policy.

Other Council assets are subjected to safety inspections of varying frequencies. Playgrounds for example, are inspected monthly.

The inspection programs are derived from Council policy.

The third part of the risk management strategy is to insure against the risk.

The Public Works Department has approximately 300 staff. Capital works projects are undertaken both by day labour and under contract. Maintenance is undertaken 'in-house' with a budget of \$7million CAD annually



All crashes involving property damage of \$1000 or more are recorded. Approximately 30 pieces of information are gathered as part of this inventory. This information is used to identify traffic issues. Following the report there may be recommendations to undertake repair work and or improvements and the Legal Department is consulted as part of this process. This is necessary to ensure that if works are undertaken it cannot be seen as an admission of liability.

The Council is in the process of developing a Pavement Management System for it's road assets.

Basically with regard to road assets, it is Council policy not to undertake safety inspections for footpaths and the Council is purely reactive with regard to footpath maintenance. The policy provides for reported defects to be inspected within 24 hours.

Other road assets are managed with respect to the repair of defects by routine maintenance patrols according to a program.

The municipality is relatively compact in terms of area and it's road assets are well developed and overall relatively new. This means that the policy of not inspecting footpaths for defects does work as the network is fully developed and in reasonably good condition. As such the number of defects reported by the public are easily attended to within a short time frame.

The Council is comfortable in the knowledge that the Courts will find that this policy of not inspecting the footpath network is as reasonable one and then any defence rests on the operational aspects of managing the network. That is, the record of response times for defect repair and whether or not they also can be considered reasonable.



Richmond Municipal Offices

## **City of Surrey**

The City of Surrey is a neighbouring municipality to Richmond although much larger and still developing.

It has a population of 360,000 people an area of 325 square kilometres and is Canada's 11 largest city. It is currently experiencing annual growth of up to 16,000 people.

The Council has, in recent years, been opposed to rate rises and there has not been a rate rise for 9 years.

In order to cope with this, there has been an increased emphasis on 'user pays', a strong focus on using money efficiently and the implementation of maintenance management systems.

The Council has a Risk Management Division headed by the Risk Manager

The role of the Risk Manager is to coordinate and administer the risk management program and to be a resource to departments.

Also employed are 5 solicitors and 2 'litigators'.

It was claimed that 'only 15% of claims are paid out'.

Small claims up to \$10,000 (CAD) are approved by the Risk Manager, up to \$50,000 by the City Manager and anything in excess of \$50,000 must be approved by the Council.

The approach taken to risk management has the same 3 elements of Policy, Inspection and Insurance to that in Richmond with the exception that the inspection regimes are different.

It was pointed out that the Local Government Act did not impose a duty with respect to road maintenance or a duty of care.

The City's legal officer believes that '*following established Council policy is a legal defence*'.

The City has 2 Council endorsed policies that are specifically related to risk.

One is a Risk Management Policy Statement that details Council's objective in minimising it's risk and outlines the responsibilities of key officers. The other specific policy outlines the claims settlement procedure whereby all claims are referred to the Risk Manager in the first instance.



## **UNITED STATES**

### **Government Structures**

United States is a federation with several tiers of government.

The Federal Government, at the top of the tiers, is generally responsible for issues affecting the nation.

State Governments are responsible for issues within the State borders, such as state freeways and education.

Within the States, County Councils are responsible for a range of services, which could include police, fire, libraries, roads, water supply, sewerage, schools, social services, drainage and transportation. There may be anywhere from 30 to 120 Counties in a State. Small Counties however, may depend on the State for the provision of some services.

City Councils may also exist within a County and may supply the same range of services as a County Council. The determination of which services are provided by the City and which are supplied by the County is usually contained in a compact. City Councils are formed by incorporating a section of the County through a plebiscite. Thus cities may be very small by Australian standards.

Both Counties and Cities raise taxes. Additional revenue may be raised for specific purposes via increases in sales tax. For this to occur, a majority of residents in the municipality must vote in favour. The additional tax is collected by the State and passed on to the municipality.

In addition, Special Districts can be formed which have responsibility for limited functions. For example a Down Town Management District may collect taxes for the maintenance of the streetscape or a Home Owners association may raise taxes and contract for the removal of snow or garbage collection.

## **City of Redmond**

The City of Redmond is a municipality located within the city of Seattle urban area in Washington State on the north west coast of the USA. Washington State has almost 40 counties and the City of Redmond is located within Kings County. It has a population of 50,000 and covers an area of approximately 43 square kilometres and was just 13 square kilometres when first incorporated.

The city is well known as a technology centre and is home to such companies as Microsoft, Nintendo and AT & T Wireless and as such, has high per capita income levels.

The Council's Director of Public Works David Rhodes pointed to the fact that there are no immunities for Road Authorities in the USA. Some States have caps on the amounts that can be claimed, for example \$150,000 applies in the state of Colorado, however there are no caps in the state of Washington.

The key component of the strategy in managing risk is to insure against the risk and under this cover, the City of Redmond pays the first \$100,000

Also, as part of the risk management strategy, the city undertakes inspections of the network. Sidewalks are inspected every 2 years, as are pavements. Works are prioritised arising from these condition surveys and in addition there is a strong commitment to respond quickly to complaints from the public.

Almost every municipality in the USA according to David has a Pavement Management System (PMS) of some sort. He went on to say that '*no one has enough money to maintain their network to what the courts would say is reasonable*'.

The City of Redmond has had a trip hazard program in place for the past 5 years. This has involved grinding or ramping of trip hazards.

The legal system provides for jury trials for claims cases. In David's time at Redmond, no claim had progressed to this point as they had all been settled prior.

The procedure is that a complainant has to lodge a complaint and has 3 years to lodge a claim.

Municipalities often require claims to be lodged within 90 days although there is no legal basis for this.

Some municipalities and their insurance companies have gone to the extent of running 'mock' trials. This has been undertaken in Redmond for one particular case of a vehicle crash where 3 people were killed and 1 injured. The trial cost \$25,000 and showed that the jury had made up it's mind in the case very early on in the procedure. The results of the trial were used by Council and its insurance company in planning its strategy relating to the claim.

The City has a 20 year Transport Improvement plan. This is broken down into a 6 year detailed plan, which is prepared by Public Works staff. The Council operates a 2-year budget.

The City does have basic Asset Management plans whereby the priority is given on technical and safety grounds.

Although assets are inspected, 2 yearly frequencies with respect to footpaths would not be considered as 'safety inspections'. The program of dealing with a backlog of works on a priority basis and responding quickly to reported defects, is viewed by the City as a reasonable approach to risk management.

Redmond is a relatively small municipality with fully developed road infrastructure.

Basic asset management plans are in place and these are linked to it's risk management strategy.



Redmond City Hall  
L to R: Brian Henkel, Keith Wood, Michael Edgar, Ian Mann

## **City of Kirkland**

The City of Kirkland is located within the greater Seattle urban area.

Kirkland has a population of 45,770, a budget of \$140 million and 387 full time employees.

The municipality covers 12 square miles in area.

In terms of road assets there are 154 miles of city streets with 108 miles of sidewalk

According to Public Works Director Jim Arndt, risk is *'always at the forefront'* and *'once you know about a defect, you need to react'*.

The City has a budget of \$30,000 per year to fix sidewalks and a requirement of \$150,000 and so generally for this municipality money is tight

The City is complaint based, that is to say, they are reactive when it comes to maintenance.

The procedure with regard to claims is that the claims go to the relevant Division. The Maintenance Manager will submit a report on the incident to the insurance company who decide whether to deny the claim or not.

The Public Works Department is small. A staff of 14 undertake the street maintenance with some aspects contracted out. A total field maintenance staff of 36, which includes the street maintenance crew of 14.

There are 35 staff involved in stormwater, sewer and water maintenance.

Strategic Planning is undertaken via Council's 20-year plan, which is reviewed on a ten-year cycle.

The Council has a 6-year Capital Improvement plan, which is reviewed each year.

This plan is signed off each year by the Council as part of it's budget process.

The Council has a Pavement Management System (PMS) with a 2-year inspection regime for arterial roads and 4 years for local roads.

There is an asset inventory for sidewalks.

Sales Tax is collected by the state, of which the city gets 1/10<sup>th</sup>.

Basically the strategy is to insure against the risk, to react to reported defects in a timely fashion and to move towards planned maintenance by adopting basic asset management plans.



Seattle Skyline



## **City of Independence**

The City of Independence is located to the east of Kansas City in the State of Missouri.

Howard Penrod the City's Public Works Director gave an outline of the municipality as follows:

Population: 120,000

Area: 78 square miles

Road Assets: 532 miles of local streets

30,000 signs and 42 Traffic Signals

Revenue:

- 54% from taxes
- 10% grants
- 16% payment in lieu
- 7% licences/permits
- 13% other

Public works budget \$6.75m

The City has older historic areas, which date back 150 years, as well as newer developing areas. There was concern from residents in the older areas that the focus was on the newer areas.

As a result, during the last 5 years there has been a uniform philosophy of upgrading of the councils assets in particular roads, parks and building assets. According to Howard Penrod, Public Works Director, this has been accepted by the community along the lines of *'a rising tide raises all ships'*.

To achieve this, 8 'ballot issues' have been passed in the last 4 years whereas there had not been a tax passed in the 25 years prior to that.

In 1998, a Sales Tax increase was passed for roads and parks. The funds raised have been used for pavement rehabilitation works and for upgrading the City's many parks.

Citizen Oversight Committees review the expenditures from Sales Taxes sometimes twice per year.

With regard to Risk Management the key components include:-

- Use of recognised standards and this is documented in the City Code, which has specific requirements regarding geometric design standards.

- On a broader scale, standards used are based on nationally developed standards

Eg. Manual of Uniform Traffic Control Devices

- Adopted Standards For All Contracts

With regard to insurances, bonds, specifications etc.

- Use of Asset Inventories

In order to know what assets Council is responsible for, the condition of those assets and programs for maintenance

- Inspections Group

All construction that is undertaken is subjected to rigorous inspection.

No routine inspections are undertaken to identify defects

The City has a PMS and condition surveys are undertaken every 3 years.

A pothole 'hotline' is operated whereby the undertaking is that reported potholes will be repaired within 24 hours and repairs documented.

The maintenance of the sidewalks and kerbs are deemed via a City Ordinance to be the responsibility of the adjacent property owners. When instances arise which require action a City Inspector will issue a Code Violation Notice to the property owner.

With regard to liability, it was explained that for a claim to succeed against a municipality the injury or damage must be directly attributable to the defect.

John Dougherty the City's Street Maintenance Superintendent was able to clarify how this works in practice - *'if a car hits a pothole and is damaged by it, if the Council didn't know about the existence of the pothole then Council has not been held to be liable'*.



Arterial road – City of Independence

According to Dayla Schwartz, The City's Assistant City Counsellor, there was a waiver of immunity in the late 1970's and under a state statute this immunity was retained with 2 exceptions. These exceptions are:

1. Injuries directly arising from negligent acts or omissions by public employees arising out of their use of public vehicles
2. Injuries caused by the dangerous condition of a public entities property.

The second item means that an authority can be held responsible if:

- Property is in dangerous condition
- Injury arises
- Negligence is proven.

The authority is negligent if it should have known of the condition and taken appropriate action.

## **American Public Works Association National Congress**

Generally road maintenance in the USA is carried out by Councils in a similar manner to Australia. That is Council staff undertake the work with assistance from contractors for specialised tasks.

At the American Public Works Association (APWA) National Congress, there were sessions on maintenance management of road infrastructure services which were well attended.

Many municipalities in the USA are well advanced on implementing computerised maintenance management systems.

In a paper presented to the Congress by Kenneth Rosenfield Director Public Works for the City of Laguna Hills a basic outline of such a system as given.

Under this particular system a complete inventory and work order system has been implemented which is entirely paperless.

The key aspects include:

- Established asset inventory – including condition assessments
- Works Programs (20 years for Parks)
- On line permits and works requests

Advantages:

- Improved response times on work orders
- Immediate access to data
- Less field work required
- No filing cabinets

The system has greatly improved the efficiency of managing the maintenance task and provides great benefits in terms of risk management in that the City can demonstrate a system of programmed maintenance, a history of timely responses to reported defects and the ability to easily retrieve records whenever a claim is made.

Future enhancements will include use of PDA's (hand held data recorders), a wireless link between laptops/PDA's and a GIS interface.

Another interesting paper on risk management/asset management was presented by George Gonzalez, Chief Forester Department of Public Works at the City of Los Angeles.

In this paper George detailed the history of sidewalk repair in the City of Los Angeles which began in 1999. The task faced by the City is a huge one when the extent of the asset is considered, which consists of 10,750 miles of sidewalk of which 650 miles is in 'damaged' condition. Damaged actually means you are unable to walk along these paths so badly have they been affected by tree roots.

You may wonder how a large City such as this (area 468 square miles) in one of the most affluent countries in the world could be confronted with this situation.

Briefly, the history to this goes back to 1911 when the State of California Improvement Act required property owners to maintain sidewalks adjacent to their property.

In 1974, the City believing that the property owners were not performing this requirement, exempted the property owners of this responsibility and the City assumed the cost for these repairs.

Between 1976 to 1978 the city instituted a pilot sidewalk repair program to repair sidewalks at no cost to residents. By 1979 all funds had been exhausted leaving the City without a sidewalk repair program and so the City reinstated the 1911 policy.

However, the property owners did not accept this responsibility and so for the 20 years to 1999 there has been no footpath repair program. This has cost the City \$2 million per year on trip hazards with 70 to 80% of the damage attributable to trees.

Thus, the Sidewalk Repair Program has eventuated with the following objectives:

- To provide a safe, acceptable walking surface for pedestrians
- To decrease the City's exposure to liability
- To maintain a healthy, safe and sustainable urban forest.

Under this program in the current 2002/03 year 118 miles of sidewalk are to be repaired.

In terms of resources 28 staff are dedicated to the sidewalk repair program, 14 concrete crews, 5 Production Tree Crews with 1 co-ordinator and 1 inspector, 5 root prune crews.

Some of the options that are used to repair the footpaths are:-

- Grind Sidewalk
- Meander sidewalk
- Enlarged tree well
- Reduced sidewalk width
- Rubberised pavers
- Poured in place rubberised sidewalk
- Sidewalk ramping

In some instances whole city streets have been reconstructed from property line to property line because the damage caused by the trees has been so great the assets have not been able to be reinstated without removing the trees.

In effect, this failure of policy has left the City with large liability, which will take many years to rectify. However, the Council and it's officers should be congratulated for the professional manner in which they have taken up the challenge.



Kansas City – Conference Centre on the right

## ENGLAND

### Government Structures

Local government in England consists of three tiers.

Firstly, the County Councils which deliver a broad range of services including education, social services, road maintenance, births, marriages and deaths amongst others. They may have budgets in excess of £400 million, have up to 15,000 staff and service populations of 5 million. They maybe governed by 60 to 70 Councillors. These Councils operate more like Australian State Governments than Councils that Victorians would be used to.

Secondly, District Councils (these include Borough Councils) are contained within the borders of the County Councils and deliver a reduced range of services. They often receive funding from County Councils for various functions. District Councils have budgets of £20 million upwards. These Councils more closely approximate the type of Councils familiar to Victorians.

The third tier consists of Parish Councils. A large Parish Council would have a budget of £½ million. They deliver a very limited range of services but are the closest to the local community. They have a more limited influence on citizen's lives than District or County Councils.

There is a fourth type of Council called a unitary authority. They combine the responsibilities of a County and a District Council into one authority. Often Cities are constituted as unitary authorities. They have large budgets and are governed by up to 70 Councillors. English road authorities have operated without 'non-feasance' legislation since 1959 when the Highways Act 1959 was introduced.

The Highways Act 1980, section 41 imposes a duty on a highway authority to maintain highways at the public expense.

Section 58 provides a statutory defence where a highway authority can establish that it has taken such care as is in all circumstances reasonably required to ensure that part of the highway to which the action relates is not dangerous to traffic.

The duty to maintain a highway extends to maintenance to the standard necessary to accommodate the ordinary traffic which passes, or may reasonably be expected to pass along the highway.

The wording of the statutory defence both emphasises that there must be a causal link between a danger and the accident and suggests the need for the reasonable anticipation of accident before any liability in civil proceedings results.

A plaintiff must first prove that the road was in such a condition as to be dangerous to traffic. Foreseeability of danger must be established. The dangerous condition must be shown to be caused by the breach of duty to maintain the highway. Thereafter it is for the highway authority to establish the defence contained in the Highways Act 1980 section 58 in order to escape liability.

There is considerable case law to assist the Courts in determining claims.

The Audit Commission Performance Indicators gives guidelines on what could be considered to be a hazard. This provides for intervention at 20mm for highway trips and gives general guidelines for potholes and depressions in the footway.

Claimants have 3 years from the date of the incident in which to make a claim.

Authorities must acknowledge receipt within 21 days and a decision on liability within 3 months. If liability is disputed, the authority must forward any documentation that supports its case and any documents that support the claimants case to the claimant or their representative.

For a claim to be successful claimants must first prove that the defect did in the view of a reasonable person represent a hazard to highway users and secondly beat a Section 58 defence.



## **Department of Transport**

The group met with Ian Holmes, Head of the Highway Maintenance Section of the Department of Transport

The Highway Maintenance Section of the Department of Transport (DOT) is responsible for 270,000 kilometres of roads including 10,000 kilometres of motorways and trunk roads, which carry 60% of all traffic.

There are 149 other highway authorities that fall into either rural or urban categories.

In the metropolitan area there are Metro Districts.

Also, Unitary Authorities are urban areas that have broken away from the Highway District.

There are 32 Borough Councils in London.

The DOT Highways Agency sets standards for trunk roads and highways.

The 149 Local Authorities operate under no set standards and operate on the basis of what is reasonable. The DOT gives advice on maintenance. Councils have requirements under Best Value.

A National Roads Maintenance survey is undertaken annually. This is done by sample sections and measured visually. The system is moving to mechanised surveys, although footpaths are still visual.

The government has funded an additional £31 billion over ten years to improve the condition of the nations roads. Under the Best Value legislation an authority has to demonstrate that it is producing best value in order to get the money.

The Best Value review triggers an inspection by the audit commission. If an authority is not performing in highway maintenance the Secretary of State can take over the function.

A National PMS will be set up.

The Government has a 10-year plan to bring the roads up to standard backed by the additional funding of £32b.

The Code of Practice for Highway Maintenance, which was released in July 2001, nominates an inspection hierarchy and intervention levels.

Road Classifications are set by Regional bodies to avoid individual councils coming up with something different.

English Councils will be required to report on the value of their assets and to provide for their depreciation.

Ian Holmes outlined background to the Government's Transportation Strategy:

- Population is getting older, more demand on social services,

Hence strategy is for more public transport, encourage people to ride bikes or walk (for health reasons)

- Policy is to get congestion back to 2000 levels.

- During the last 50 years there has been a lack of investment in maintenance. The Central Government has a strategy to improve the condition of the road network.

National Roads Survey – started in 1977, visual surveys based on sample sections

Backed by extra £32b

Code of Practice for Highway Maintenance

- Best Value Legislation.

With regard to risk, Section 41 of the Highways Act places a duty on Highway Authorities to maintain the highways for which they are responsible. The duty to maintain extends to keeping the fabric of the highway in proper repair and to the taking of preventative measures to ensure that it does not fall into disrepair. The Act does not specify the standard of repair required, but case law has decided a standard necessary to accommodate the traffic that ordinarily uses the road. This means that the standard may differ according to the type of road.

If a highway authority fails to maintain a road and someone suffers injury as a result, the authority will be liable for a breach of statutory duty.

Inadequate maintenance can lead to deteriorating condition and increased claims from road users.

For A and B roads in England (which are in good condition) the levels of claims and those settled have remained roughly constant in recent years.

On local roads there is some evidence to suggest that claims were increasing. The Department is not sure whether this is a consequence of highway deterioration or increased litigiousness. (Local Councils on the study tour believe the latter)

According to the DOT only about 21% of claims on motorways and trunk roads succeed.

Section 58 of the Highways Act 1980 provides a defence for highways authorities in an action against them if they can prove they has taken reasonable care to ensure that the highway was not dangerous for traffic.

The Department of Transport follows UK engineering standards for motorway and trunk roads as set out in the Design Manual for Roads and Bridges (DMRB)

There are no compulsory standards for principal roads, but local authorities in practice tend to use trunk road standards. The new local authority Code of Practice for Maintenance Management “Delivering Best Value in Highway Maintenance” was published in July 2001.

## Hammersmith and Fulham Borough Council

Hammersmith and Fulham is one of the 33 'local 'unitary authorities' in the Greater London area. It has a population of around 150,000 and 8,000 businesses are located in the Borough. The Council comprises 60 Councillors (or members), the majority of whom are labour. The Council has an annual turnover of £450 million per year, and employs 6,500 people.

The Highways Division has an annual turnover of £45million (mainly from a large parking operation) and employs 150 people. A large amount of the work is carried out by direct labour.

The assets controlled by the highways division include:

- 212 kilometres Carriageway
- 371 kilometres footway
- 11,162 Streetlights
- 1354 Lit signs
- 5150 Posts and Bollards
- 8000 Trees
- 1000 Ticket machines
- 109 benches



Busy King Street – Fulham

The Borough Engineer, Roger Khanna, explained that the geometry of the roads within the Borough had not changed in 100 years.

The Council has the busiest pedestrian node in London with 100,000 pedestrians per day using the busiest underground station. In addition, 25% of all football games played in London are played in this Borough. Accordingly there is a strong focus on pedestrian safety.

The basis of the legal framework under which Road Authorities act is the Highways Act 1980 which imposes a duty on a highway authority to maintain the highways for which they are responsible.

The current risk management strategy related to highways was first developed in 1992 and according to Roger Khanna *'when the no win no fee came in 3 or 4 years ago we were in a position to deal with it'*.

Section 41 of the Highways Act 1980 is *'the Bible'* which guides Authorities in their approach to maintenance of the road network.

Section 58 of the Act details the Statutory Defence mechanism for Councils.

A plaintiff must first prove that the road was in a dangerous condition and that the danger was foreseeable.

It is the aspect of foreseeability which the borough focuses on in its risk management strategy.

To reduce the risk of the Borough failing the *'foreseeability'* test an inspection program was put in place.

Under this procedure there is a hierarchy of inspections carried out by trained personnel. This varies from 6 monthly inspections of rural type roads to monthly inspections of the busiest urban streets and footpaths. Footpath inspections are undertaken by foot with between 4 to 5 kilometres undertaken per day. All aspects of the process are computer managed. Intervention levels are established but in many instances the inspector must make a value judgement as an instant repair costs 6 times as much as a planned repair.

According to Rodger Khanna, some Boroughs are only reactive and spend all their money on reactive maintenance. This means that the politicians are happy but in Rodger's opinion the money is not well spent.

For the Borough, claims payouts cost approximately £150,000 per year with a single pedestrian claim at about £45,000 with an average of £8000. The Borough averages 150 claims a year and pay out on about 1 in 20 of these.

Every claim that is made against the Council hits Roger's desk. It is then referred to a relevant officer to prepare a report. In this way Roger feels he has control of risk areas.

Every occasion that the Insurance Company pays out on a claim Roger talks to them to see why and to find out if there was anything wrong with his systems.

Part of the strategy is to have sound systems in place to manage the risk in order that the Borough does not become a 'soft target'.

According to Roger the challenge in all of this is to set up Pro-active systems.

What is required are :

- Systems
- Procedures
- People

The use of QA Systems with detailed work instructions is the '*way you have to go*'.

According to Roger there are only 10 to 15% of authorities that have moved along this type of strategy to the extent that Hammersmith and Fulham has. London is a few years ahead of the rest of the country.

## **Bristol City Council**

Bristol City Council has a population of about 400,000 people, an area of about 10,959 hectares and 1,182km of highways. There are 70 Councillors and within the Council reception room there is a wall with the mayors of Bristol listed in gold lettering, the first dated 1216. When you attempt to drive around the narrow streets of inner Bristol, knowing how far back the city dates helps with the frustration.

Bristol City has been successful in recent times in significantly reducing its highways claims costs. The Council now defends up to 70% of highway claims and in recent times 12 of 14 claims which had been pursued through the courts were successfully defended.

The Bristol City Council policy on highways maintenance is summarised as '*maintaining basic minimum safety standards*'.

The strategy adopted by Bristol City in managing risk as a highway authority had its origins in 1996.

In 1996 Bristol City Council took over highways maintenance from Avon County Council following local government reorganisation.

In the preceding years, the records showed a steady decline in the number of claims within Bristol from 445 in 1990/91 to 367 in 1995/96, however the sums relating to these claims had risen from £607,531 (1990/91) to £969,355 (1995/96).

This latter figure amounted to 1/3<sup>rd</sup> of the maintenance budget. This was a concern when considered with the fact that the trend in highways claims was increasing at 55% when at that time nationally it was rising at 30% annually. This if it continued would mean that within 5 years expenditure on claims would equal the entire maintenance budget.

There was a recognition that a strategy had to be developed quickly in order to reduce the growth in claims costs. The policy of '*maintaining basic minimum safety standards*' was adopted because it was reasonable, rational, easily understood and deliverable with appropriate strategies.

To carry out this policy, new operational strategies together with staff training and development were drawn up. Lines of communication between call centre, administrative personnel, insurance section, maintenance and legal services adopted which were clear and unambiguous.

The key components of the strategy are:-

Regular inspection frequencies

- Twice yearly detailed inspection of the entire highway network
- Bi-monthly inspection of major regional shopping centres
- Monthly safety inspection of central shopping routes
- Rapid response teams able to respond within one hour to major emergencies where appropriate

Essentially an inspection program for highway assets with appropriate intervention levels was put in place in order to ensure that the highways are maintained in a basic safe condition. Allied with this is a system of documentation, which consists of inspection reports and works undertaken.

Details of all highway claims against Council are forwarded to Council's Area Manager (Highways).

The strategy of 'basic safety' first has led Council's Highways Maintenance Manager Percy Wee to adopt some practices not shared with many of his other urban counterparts. These include the extensive use of spray seals on the resurfacing program. According to Percy, other urban municipalities will not tolerate the disruption that is involved in pavement rehabilitation



Ian Mann & Michael Edgar inspect Bristol's paving

and or the complaints that are associated with the loose stones created by spray sealing. Percy believes that in order to maintain the network 5 to 6 percent of the network is required to be resurfaced annually and this must be undertaken despite the complaints. In addition, safety first means that in order to stay within the maintenance budget, the replacement of expensive paving materials like granite pavers with like materials is not undertaken, the quick fix with asphalt is the adopted practice.



## **Transport Research Laboratories**

The Head Office of the Transport Research Laboratories (TRL) is located in Berkshire, west of London.

The TRL is a non profit distributing private foundation which originally was a government body that was “externalised” then privatised 6 years ago.

The TRL claims to be the only organisation in the world that examines the human, the infrastructure the vehicles and the interrelationships between them for all forms of surface transport.

The study tour group met with Paul Hillier, head of the Investigations and Risk Management Group.

The Investigations and Risk Management Group represent 12% of the organisation and has specialist staff to undertake incident investigations many of which are multi-disciplinary in nature.

Each incident is investigated by a team with experts in the human, environment and vehicle areas and the reports produced are around 50 times more detailed than the police report.

The research that the TRL has undertaken shown that of the 3 contributing factors in crash investigations (environment, road user, vehicle) it can be demonstrated that the environment will be a contributory factor in a significant number of these crashes. The contributory factor may well be small, however this has significant ramifications for road authorities in the future, as it will mean more scrutiny of the road environment.

In the UK all road deaths will now be treated as an unlawful killing under Corporate Killing Legislation to be introduced.

Paul Hillier believes that vulnerability brings change. He says that ‘*you do not want to have immunities*’ such as the ‘non-feasance ‘immunity recently reinstated by the Victorian Government. This is because some road authorities will then not deliver a safe road environment. ‘*If you have discretionary powers, Councillors will fritter away the money.*’

The system with respect to litigation in the UK requires that the investigation of the crash must establish that the defendant owed a duty of care.

Up to 80% of total claims received by local authorities relate to highways and their maintenance.

The UK has a population of 60 million people and the lowest casualty rates (by any measure) in the world.

Paul believes that there are a number of ways that in his experience road authorities become vulnerable to claims:

- Setting over ambitious policies
- Inconsistency in achieving policies
- Being unable to demonstrate robust, rational prioritisation of funds
- Failure to use prior knowledge eg silo's
- Advising the workforce not to spot deficiencies
- Spending on discretionary powers not statutory or absolute duties

## **Oxfordshire County Council**

Oxford Council is a District Council with a population of 600,000.

The County operates a £18million maintenance budget with Capital works of £70m of which £10m is resurfacing.

A 5 year rolling program of works is in place.

The main funding sources are grants from Central Government and property taxes

District Councils are the tax collecting body and they also collect for Counties and Parish and Police Authorities. Properties receive the one rate bill.

The tax is based on the property value.

The County's Maintenance Management System is based on regular safety and condition inspection and the adoption of the Code of Practice for Highway Maintenance.

Prior to this 4 area officers did 4 different things however this was abandoned, as the Code requires a uniform approach for the whole municipality.

During 2001/02 Oxfordshire County Council received 825 claims from members of the public alleging failure of its duty under the highways act, the majority of those claims were successfully defended. The claims are roughly split 80% property damage, 20% personal injury (pedestrians falling in the street etc).

Recently there has been a rise in the number of claims following changes to regulations allowing solicitors to advertise. Added to this are the changes in legal aid for claimants where legal services can be obtained on a "no win, no fee" basis

The County Council is self –insured against public liability claims. The County Treasurer operates an insurance fund, which pays for claims made against each Department. Each Department has an excess of £500 for all property damage claims and there is no excess for PI claims. Property damage claims up to £5000 are handled within the Department and PI claims up to £3000 can be dealt with by the Department or referred to the insurance company.

Beyond this the County has an excess of £268,000 for each claim, and above this is covered by insurance.

In order to successfully defend a claim the County must be able to show that it has undertaken regular inspection of a site, show that it has identified defects in the past and acted promptly to repair them. Or, if a repair was not made, what steps were taken to warn the public of the defect.

Inspection frequencies for carriageways are:

Category 1 – monthly

Category 2 – Monthly

Category 3 – Monthly

Category 4 - 12 monthly

Footways:

Town Centres – Monthly

Core Pedestrian Routes – monthly

Local pedestrian routes – 3 monthly

All other footways – annually

Cycle routes

Where these exist within the carriageway – same frequency as carriageway

Core cycle routes – 3 monthly

Non core – annually

These frequencies are based on the guidelines within the Code of Practice for Highway Maintenance

Details of the dates and results of inspections are recorded on Inspection Record Cards for each route and Works Instructions (WI's) are raised for each defect. The WI's are passed on to the relevant contractor for action and returned when completed.

Inspectors use either dictaphones or note pads to record defects as to date the hardware devices available have not been considered good enough for this task.

Each inspector has some 200 routes to cover with some monthly and some weekly frequencies. Generally there is a 24 hour turn around on defects.

The County uses the Figtree system developed in Australia to record claims. This system allows for the accurate recording of claims on a database and incorporates the use of standard word-processed documents for dealing with claims.

The inspection records are retained for at least 6 years to ensure that claims received close to the end of the period can be investigated and defended.

According to the County Council Claims Officer Keith Stenning the most important aspect of claims management is the accurate recording of inspection dates and WI's arising from these inspections. Equally important is to have a written policy for highway inspections, a clear and consistent method of recording defects, clear documentation for repair of defects and well trained staff. Without these it is impossible to sustain a defence against highway claims.

## **CONCLUSION**

The risk management strategies employed by road authorities in England, Canada and the USA varies from country to country and within each country although to a lesser extent.

The approach taken by Highway Authorities within the UK appears to be more consistent, certainly with those Authorities visited on the study tour. This approach, which is supported by the central government with the publication of the Code of Practice for Highway Maintenance, the adoption of which is not compulsory, is seen as best practice and was adopted by all the Councils visited. In addition to this, the move to a national Pavement Management System which requires all Highway Authorities to participate in order to receive funding from the government and the additional funding of \$32billion over ten years is all targeted at providing a safer road environment.

The fact that all the UK Councils visited had a very clear idea about the requirements of the Highways Act, the defence mechanisms available to Authorities and had maintenance management systems in place gave the impression that overall the UK is more advanced in risk management than either the USA, Canada or Australia.

Councils in both the USA and Canada although aware of their duty as Road Authorities, did not have clear, concise documented risk policies and procedures to the same extent as their English counterparts. They were able to produce basic policies formally adopted by Council that addressed risk generally. However it appears that with regard to road assets there generally are no safety inspections undertaken for footpaths and cycle ways. Patrol maintenance is in place to deal with pavement defects on carriageways.

Safety inspections are undertaken for buildings and park or playground structures.

Otherwise the risk management strategy is to demonstrate a history of timely rectification of defects once they are reported. Many municipalities rely on reactive maintenance measures.

Generally the authorities visited were subjected to a far greater number of claims than that experienced in Australian municipalities. The claims numbered in the hundreds annually and this I believe exceeds what is generally experienced in this country.

This is a trend that could reasonably be expected to occur here and we need to take up the challenge of putting the systems in place in order to make ourselves 'water proof' in

this regard. The model used in the UK is the one that we need to focus on in order to achieve this.

There are 2 key aspects to be considered when looking at the way a particular road authority manages risk. One is the legislative environment under which the road authority operates and the other is the strategy adopted by the authority in response to that environment.

The Legislation under which the authorities operate in the UK clearly defines the duty and there is no 'non-feasance' immunity available to these authorities. This as pointed out by Paul Hillier is a good thing as it strengthens the duty of care obligation and makes it more difficult for resources to be diverted away from roads.

The other legislative component is the 'no win - no fee' basis to the way legal firms are able to operate. All of the authorities we visited in the UK believed that this was a primary factor in the growth in claims experienced in recent years.

The municipalities that were visited in the UK were chosen because they are recognised as having successful strategies in managing risk. In looking at these Councils, a number of common elements were identified and these are:

- Policies – clear policies adopted by the Council and related to Council's Corporate Plan
- Systems – a systematic approach to managing risk based on continuous improvement which includes:-

An inspection regime related to the asset hierarchy

Adopted intervention levels (eg Code of Practice for Highway Maintenance)

A Maintenance Management System that records what was done, when and is easily accessible .

- People – trained staff committed to the task
  - a team approach.

For the Australian perspective the reinstatement of the non-feasance immunity in the long term should not be supported. Governments must be encouraged to legislate to reinstate

the duty of care for highway authorities as this, if the UK experience is any guide, will ultimately lead to better roads across the nation.

The Victorian government has already set the date for the introduction of its roads legislation, which will re-introduce a duty of care for road authorities on July 1 2004.

Victorian municipalities have until then to put the systems in place to deal with this.

In my opinion road authorities must begin to implement the key components of the successful risk management strategies as detailed above. These strategies will need to be modified for Australian conditions. For example, in the UK the road hierarchies are set by regional bodies in order to achieve consistency. The need for consistency will also be required here.

The good thing about the UK model is that it is a systematic approach and where it has been fully implemented it has been successful. The downside for Victorian/Australian municipalities is that it does require resources, which many municipalities do not currently have. This is an issue for governments to be aware of in preparing roads legislation.



## **APPENDIX 1 USEFUL WEB SITES**

### **USA**

[www.ci.independence.mo.us/publicworks](http://www.ci.independence.mo.us/publicworks)

[www.apwa.net](http://www.apwa.net)

[www.ci.redmond.wa](http://www.ci.redmond.wa)

[www.ci.kirkland.wa](http://www.ci.kirkland.wa)

### **Canada**

[www.city.surrey.bc.ca](http://www.city.surrey.bc.ca)

[www.city.richmond.bc.ca](http://www.city.richmond.bc.ca)

### **UK**

[www.oxfordshire.gov.uk](http://www.oxfordshire.gov.uk)

[www.trl.co.uk](http://www.trl.co.uk)

[www.bristol-city.gov.uk](http://www.bristol-city.gov.uk)

[www.detr.gov.uk](http://www.detr.gov.uk)

## **APPENDIX 2 USEFUL REFERENCES**

Best Value In Highway Maintenance

Code of Practice for Highway Maintenance, July 2001