

2004 Australian National Plumbing Forum

This series of reports summarise the papers presented to the 2004 Australian National Plumbing Forum held 3 to 4 September 2004 at the Sheraton Perth Hotel, Perth Western Australia and also provide conclusions reached by the attending Plumbing Professionals from Australia and the World. The Forum was hosted by the Institute of Plumbing Australia Incorporated.

Note: The following has been transcribed and condensed from audio recordings and notes of the forum proceedings and not from written papers provided by the speakers. As such, matters in these reports do not constitute advice of any kind but provide a general overview of items discussed. Anyone reproducing, quoting or acting in any way on items contained herein do so at their own risk.

Friday 3 September 2004 – Introduction to the Plumbing Code of Australia

Commissioner Michael Kefford Chairperson National Plumbing Regulators Forum

Mr John McBride Plumbing Industry Commission Victoria

[Music]

Well, for those who don't watch Australian television I need to tell you that that's popular television commercial by the big Telecom and it's based on a song written by, the lyrics written by John Woodley of the Seekers fame. But I think it's what I want to talk about, that's what I want to start anyway. Where I'd like you to finish is the end of the lyrics. I'm starting with – we are one – we are individuals – we are many and if we don't all share the one dream here today well, God help us. Because we have a very big interest – all of us – in achieving an outcome for the nation. And perhaps when John and I have finished and Graeme Perry tomorrow – you might all sing with one voice. Which would close off the song for me very nicely.

It's very difficult to stand up here with a prepared text when you'd rather have a go at the previous speaker – but I'll come to that a bit later. What I'm really trying to paint for you is a picture of perhaps where the plumbing industry in Australia going over the next decade. Perhaps I'm stupid to think I can do that – it's a huge call. Particularly given the political pressure points that are upon every Regulator both state and territory and from a federal point of view. But the bottom line is that the press is full of it whether it's grey water or it's treated water or it's sewage outpours – we heard all about that yesterday – how many millions of litres go out into a bay here. Whether it's energy savings, whether it's reduction in greenhouse tonnage – all that stuff. Is what we're all about.'

Some people say will say we're about health and safety but really I think we can demonstrate to you we're on about more than that.

I think really what I'm on about is that we can maintain the level of quality, of service, of supply, of the amenity – that we all take for granted. You don't think about it! You get up in the morning and you press that button and it flushes away whatever's there. You don't even give a second thought. It just happens. Perhaps the consumer has become a bit greedy in Australia, perhaps it's greed by default – I'm not sure. Perhaps there needs to be a huge campaign of re-education because at the end of the day the resources are finite. And from my understanding of my religion I don't think the good lord is going make any more land or any more sea or give you any more water than he gives you now. So therefore I think you've got to do better with less. Cause here in Australia even the most modest increase in population – it will

remain the case that there'll be more people and you will have to do it with less – because there will be no more to do it with.

I think Regulators, and I'm one of them, need to do it smarter - they need to get up to some sort of speed instead of cringing in the corner when the decisions are hard to make. I think they need to start understanding a bit of technology. They need to standardise what we all do. I suppose that's where we are head for a national plumbing code. Maybe a national regulator. Maybe it's time we threw all the other Regulators out and started again. Because, you know, there are seven states and territories. You know, they've all got bureaucrats like me. And no matter who we are we are on some sort of an ego trip. We all think we can do it better than the next bloke or the next girl. So, it's time to sort of have a look. I think the television Add that I used is pretty clear, we are Australian and we do share the dream.

So, you wonder where do you go from here, how do you make it happen. Shortly John will provide you with a detailed overview of a range of great outcomes and I'll describe them briefly in a minute and tomorrow Graham Perry will do the same with training. But people need to understand is the regulations of the plumbing industry to try and deliver a series of outcomes. What some people in this room will believe of those outcomes is – that it's everything for the plumber. Wrong. What some people in this room will believe is that's it's everything for the consumer – because they are the plumber. Wrong. What it is, is about maintaining a service that we all need to continue to live on this earth. We can't afford for the infrastructure to be polluted, we can't afford for properties to have things installed incorrectly which then reflects on the whole community. I had some material sent to me a fortnight ago from the United Kingdom. What people were on about – what was I going to do – what was I going to do mind you! About do it yourself reality TV shows. I'm not going to do anything about it. I'm not even going to try. Because it's a free world. There is nowhere in the world where you get legislation which prevents point of sale of plumbing products to anybody who wants to buy them. What you've got to deal with is the reality that people need to be educated, they need to be trained, and they need to be qualified to do the work. You've got to convince the people who sell this stuff that they've got a duty of care too. They've got a legal liability. Have a look – it works. The biggest do-it-yourself store in Victoria is now displaying very vivid notices in large print to people buying plumbing products because they are also concerned where the duty of care ends. So you won't regulate it but you can do it in another way.

I think everybody in this room would say that the plumbing regulators – if I listened to Mr Watts was quoted this morning, I heard him being quoted by another source from the U.K. saying - health and safety is the issue, that is why you regulate plumbing and plumbers. I don't think it is, I think it used to be. But I think the worlds changed. We've had ten years of drought conditions; it is the driest continent in the world. It's been a wake-up call, it's been a wake-up call – not everybody's heard it. Not every regulator has heard it yet. What they're really doing if they continue to ignore it or not hear it is to really give up the opportunity of managing it to the best of their ability. There are regulators that are charged by their government with the responsibility to manage these things – so you can't keep putting your head in the sand.

On August the tenth the Australian newspaper published a full-page set of articles. It was a wonderful insight into the different philosophies of plumbing regulators in this country. It's absolutely brilliant – whomever the journalist was – they got right behind the smoke screens and were able to articulate very well what was going on. And what it clearly said to me was there are still some regulators they have got a conflict of interest – in fact the paper said that. You can't be a regulator and at the same time be a supplier of services – or be the rule maker. It really begs the question of how some states are interpreting the national competition policy. Because it's just not on.

So, in Victoria, you can take that as a case – for ninety years in five weeks time we've been regulating plumbers – licensing, registering and doing all those sorts of things. And probably for the best part of that ninety years it was seen as a health and safety reason why we did it. Not any longer. The government of the day now give equal priority and status to things like: environment energy savings; water management savings and charge this regulator with the responsibility of implementing regulations to do it. Now it's interesting because a building regulator can't do it, because the building regulator doesn't control water, or energy use. He can only control the fabric of the building but where the real savings are is down the line a bit and that's in the plumbing area. So I think the time comes for the regulators to address the questions relating to the technological change. Put some quantification on the use of resources, you might say how in the hell are you going to do that? I'll tell you in a moment. Provide some leadership on the way forward in maintaining a sustainable environment – from a personal point of view if that is just simply to ensure that my grand-kids have the necessary resources to survive on this planet – would be a pretty good start.

I'll give you a bit of an overview of a case study. We've got a water problem in Victoria – lack of it – and the man told us this morning we haven't built a dam for a thousand years – you can't water your grass, you can't wash your car – you can do all of those things. Except build a dam because it's not environmentally right. But we need to save about 20% of our water consumption. We were told this morning there is nothing under the ground for us to pump out. True. So we go about working out how to save a range of waters. You can do it with what we've seen this morning – subsidies. With the washing machine, or a shower or pressure washer or whatever it might be. We've taken a slightly different approach to that. We've gone down the track of doing a number of things: Reducing the water pressures for a start, that is supplied by the water companies. Because if you buy what people commonly refer to as triple A rated taps – which actually I can't find in the Australian standard because they are measured in litres per minute in efficiency – they actually perform a lot better and deliver the litres correctly if the supply pressure is somewhere between 450/550 kpa. As the pressure increases the effectiveness of the delivery rate diminishes. So reducing the water pressure has a bit to do with it.

So, I suppose you say we regulate the flow rates then. Well, we've done that as well. We've also cost new home builders more money because we've said you either put a \$2000 new tank down the sideway and hook it to the toilet to flush it and if you don't like that – that's ok, we don't mind. But the alternative is that you will put in a solar hot water unit. That solar hot water will have a measurable efficiency outcome of 60 % saving in generating the use of 200 litres a day by a family of two adults and two children – against an electric hot water unit. So, there are some options there. That cost more money that means the cost of a new house in Victoria has gone by \$1500 I suppose. But isn't it interesting, that not one talk back radio caller in Melbourne – we've got about five stations who specialise in criticising governments and policy and all that on talk back radio - not one caller! Because we monitored the lot – was critical of it. It's a funny thing; they actually supported it – even though it cost them money. Because they got a very nice, fuzzy warm feeling about it at the same time.

Even with the lack of concern on public radio we still put it to public comment and again we came out very clearly in front. That addresses what we call the domestic scene or what I call the domestic scene. In relation to the commercial industrial area, well, we'll move forward on that. And we'll address that and we'll find some solutions, which are measurable. We'll regulate for that. But you don't look very far. You can look in Denmark, for example, and you'll find commercial laundries that do not take any water out of the mains and do not put any discharge back in the main. It is all treated, purified and reused on-site. They're there, they're there.

I need to say to you, it's all very well for a Smart Alec like me to stand up here and say these things but a regulator can't do it. All the regulator can do is make the rules. He can't do it all on his own though, it has to be a team effort. Which in fact means the regulator must become more than a rule maker and an enforcer – he must become a facilitator between the consumer, the plumber, the manufacturers, the importers. They've got to try and be balanced, they've got to be able to articulate where they are going and convey that to all party's. In other words, bring them on board, having them running with you, not against you. I can tell you if you don't, you won't go anywhere.

If you look at the hot water issue in Victoria, and that's an easy one to talk about, the efficiency that the Australian Standard required for hot water was 45 % saving – roughly. And if you took it for those Australians – sorry about the Scots – but it's a great dividing range runs down and goes to the middle of Victoria. South of the dividing range – well, it's useless to put one of those in. So you've got all the hot water manufacturers have worked together and you've got 60% efficiency unit in the market place now. Within two months it will be 70% - it's a huge lift. But it's because the manufacturers understood people were fair dinkum. Understood they were going to regulate it, understood the market place was there – there investment was secure – and they got on with it, made it happen.

It's interesting that 200 litres a day – two adults, two kids, 60% efficiency – about \$220 a year saving in energy. You might say hardly worth while – \$5.00 a week. But then you turn that into greenhouse gas savings, that's about 24 tonnes a year. If you multiply that by the 43 000 homes that will be built in Victoria this year – that's a saving of just over a million tonnes of greenhouse gas. If you take the cumulative effect of that over ten years, your talking about over 55 million tonnes per year – a huge saving for a small step forward.

I can go infinitum about this but enough is enough and I say to you the do-it-yourself thing – stop being stressed about it. It's going to stay there, people have got to live with it, and people have got to manage as best they can. We're managing by getting retailers to work with us.

The Plumbing Code of Australia – a great document! John's going to talk about it, he is also going to talk about the break-through on product approval and how the National Plumbing Regulators Forum have negotiated the use of standards watermark under a license agreement that it can now use and include a number of testing laboratories rather than just QIS. The questions that people can't answer is – when will it happen? Well, my best guess is that I will sign the trust deeds for the whole thing before the end of this month. And I am awaiting the twenty-eight day period from the ACCC for the rules to expire. Then it's up to states to call it up one state at a time or as many as want to and that will happen over the next twelve months. Then in effect you will have in position a National Plumbing Code. You will have in effect National Training Competencies standardised across the nation. You'll have in place a national assessment framework to assess the apprentices exiting their training. You'll have a national set of competencies in place for license level. I suppose the next logical step would be for me is that you'd want a national regulator. And probably a plumbing version of the Australian Building Codes Board. I think, I think the hard work is done, I think we are 85% of the way there, but I think the last 15% will be bloody hard. If I listen to my key people and myself with the frustrations we have been through in the last three years to get this far, you'll wonder if we'll have the strength to sustain getting it right to the end of the line. But one lives in hope. As I said, I probably share your dream, that dream is to have a national standardised system that we can all work to. Now I am going to have great pleasure in giving it to John to do the hard work. Thank you for listening to me.

John McBride

Thanks for the opportunity to be with you here this afternoon. I just have to look at a bit of a broad picture from a regulators perspective, look at some of the influences on regulators. Look at some of the options in regulation and placing regulation so they are effective. I'd like to also have a brief look at the Plumbing Code of Australia and the product approval process that is inbuilt into that Plumbing Code of Australia. And then I'd like to extend on the ideas and visions of both Michael and some speakers we had here earlier today on the pivotal role that a plumber is going to take as we move forward in the next twenty, thirty to fifty years. Because no matter what regulators do and try and achieve through education or proscriptive positions, the plumber doing the work on-site is the fellow who will make or break the regulation objective.

I think from a regulators point of view it's important to not over-regulate. I know there was a question here this morning talking about de-regulation. I think we looked at this a few years ago and you were right there was a push for deregulation. And as we move down this path in Victoria, in fact the self-certification system that we put in place bought along with more regulation than we had in the past. But it was a different type of regulation – so there is a need for regulation there. To make sure that the consumer at the end of the line is protected, that will always be the case. And as society goals move and communities seek more from a regulation or a government or leadership from a government – regulation will increase.

There are a few people delving in the regulation, both state-wide and nationally in plumbing systems. The federal government has reached an agreement with the Building Codes Board of Australia and the Greenhouse Office. To look at developing mandatory efficiency measures in the areas of the building fabric, they'd be very comfortable with that because that is what they know. Heating and cooling systems and that is something that's way out of left field for building regulators. And it's important for plumbers because it is in the scope of the Plumbing Code of Australia.

Heated water systems – crucial aspects as far as energy and efficiency within our buildings – a home, a domestic dwelling, or a commercial building. And you can't do anything about heated water efficiencies without controlling the water-use within the building. So, whether these other regulators like it or not the person that is going to deliver the outcomes will be the plumber and there's no way around that.

We are going through major national regulatory reform at the moment. As you all know I guess if you move around the state and some of you have the opportunity to go overseas, it's done different ways. In our own country, individual jurisdictions are at various stages of separating the service provisions from regulatory responsibilities. Each state and territory regulates plumbing in its own way, in some cases local council or water authorities. And that's ok when they stay down in that very narrow area of sanitary and water. But what I'm putting to you today is that plumbing is much broader than that. With heavy reliance in this country on Australian standards and that is ok provided that everyone interprets the standards the same. But that doesn't happen. So we've got in some states an uneven inconsistent and in some places contradictory approach to regulation. I think in Western Australia you would have had that in the past, where you had your local plumbing inspector with his ideas, and the next town another inspector would have had some other ideas. I think the Plumbing Code of Australia on moving forwards – will start to tie all that down.

The pressure on government for this change - and it was put on federal government as well as state government legislature – came from manufacturers, designers, the building industry or the building contractors – who saw this variation of plumbing regulation as costly and in a lot of cases inappropriate. I guess I won't go over old ground that we have been over this morning. But how important plumbing has always got to be driven home to consumers that you are talking to, and if you are talking to legislators certainly always take the opportunity to drive the message.

Health and safety is absolutely given, people do take it for granted. The three new issues that are starting to emerge, and we are seeing them daily, is water efficiency, energy efficiency and what we call environmental efficiency. Or the impact you are going to have further down the chain. The Plumbing Code of Australia will start to address those issues and for the first time you'll have those efficiency uses dragged into regulation.

In the past plumbing regulations have been aimed at the comfort zone of doing something right, make sure it doesn't go wrong, if I follow the standard everything's kosher. And it was really health and safety, cross flows making sure the sewage was transported off site, safely and disposed. And we are all very good at that, especially in the developed countries. But these new ones that are coming in are certainly going to stretch you as a plumbing operator, or a plumbing regulator.

In Victoria we've just changed our building act to give us the head of power to do a few things on energy efficiency, water efficiency and environmental efficiency. If we had the Plumbing Code of Australia in place we wouldn't have had to make this adjustment because they are issues that are going to come up on a national basis through the Plumbing Code of Australia. Importantly, those small words will enable issues of sustainability and conservation of water and energy - to be regulated within a building. We haven't had that before nationally, and there is very little legislation internationally that will give you any sort of head of power to be able to regulate how a building will perform. It raises a few questions on what's the best way to approach this from a regulators point of view. You can go down the educational track and nothing will happen for ten years. You can be prescriptive and things will happen very quickly. You can be performance based and that brings a bit of uncertainty. But I wouldn't walk away from performance based because that's where most codes are heading.

The regulatory approach is for compliance. As I mentioned before the use of Australian standards, you can use verification of alternative approaches – that's the performance position. You can use a class A regulatory approach, which is a regulator putting out a letter to the industry, maybe a practice note. Or maybe a warning. Even though that is not in regulation or law, when you are up in front of a judge and the regulators put something out in writing – that's a very powerful argument. And we in Victoria have learnt that lesson the hard way. You can go down the very prescriptive path and we've done that to a certain degree and that has great benefit but I'm not saying it is the only answer.

Making it all happen; and this will impact nationally throughout Australia and I hope it is all up and running within the next two years. Certainly we would hope to have the Plumbing Code of Australia in regulation by very early, at least, next year. It will sit beside the Building Code of Australia and you will find, hopefully, that there is no problem between what's in the plumbing code and the building code. Because some of you would know the building code sometimes encroaches into plumbing matters.

It has been agreed that each state and territory will pick this up, so under the plumbing code and the building code umbrella you will pick up through the acts and

regulations of each state and territory a new way of looking at plumbing regulation and doing plumbing work. As I said the state and territories have agreed to implement the Plumbing Code of Australia. The draft code is on our web site at the moment and I hope we will be published by Standards Australia within the next three weeks. The code defines what we really talk about as plumbing. And the code is really a regulators document, although it will give you the performance outcomes for the plumbing installations. This is where the big change starts to take place; it is the scope of the code. And I've broadened out water services as one of those areas that I will look at.

Under the old plumbing code water came in, it was dirtied and sullied and it went back out and that was about it. Well, that's not the case anymore, you've got cold-water services, you've got heated water services, non-drinking water services and they will cover your classes A, B, C and D water qualities. All have different requirements as far as risk management, once they are in a building. All will impact and require the expert of a plumber to make sure that they're delivered correctly. And fire fighting services.

I'll just go back to the non-drinking water services for a moment. They've got two very high-rise buildings in Melbourne being constructed at the moment that will have their own water treatment plant in the basement. So they will deliver class A water into the building into that building for flushing all the sanitary appliances from the water within the building.

As a regulator we'd like to know whose going to run that plant – is it going to be the building owner? Or is it going to be the water board? If it's the water board, we've got a comfort zone, if it's privately owned; we've got some issues. Those decisions haven't been made. This building is out of the ground and growing. So, we've told the consultants it will be class A water, without any doubt, whether it's the Water Board running the treatment plant in the basement, or if it's the body corporate, or the owner of the building – the risks will jack up substantially. And the backflow provisions requirements and the risk-managed approach to that building will be more severe.

About three or four years ago, that wasn't an issue for plumbers. Water came in it was used and it went out. And it was clean. The whole situation was clean, if there were impurities in the water it went down to the sewage farm. It was out of the building and away. But that's not going to be the case with plumbing anymore.

The scope also covers sanitary plumbing and draining systems and the basis, or the deemed to comply requirements are our AS3500 series of standards. Storm water draining systems – this is an area which is going to become an integral part of the water cycle within a building. Storm water in the past was rib catchment – get it off site somewhere so it will be a nuisance somewhere else. But you've got a lot of cities moving towards retention tanks – to make sure there aren't any impacts on storm water flows further down the track – that were causing problems in inlets and bays with too much fresh water killing the seagrass. It was going to waste and it wasn't given any value at all, yet it is a very valuable item – storm water, if you can hold on to it.

Move on to on-site waste water systems. Now not all regulators will pick this up because you have got EPA, your State or Territory EPA involved, you will have your Health Department involved and you will have the plumber/ contractor involved who is constructing and bolting all this together. So I think that would be a very shared responsibility as far as regulating is concerned. And again if it is reused water on site it is going to have a big impact on how you plumb that building. Then we get to the crucial part the materials and products certification and authorisation. If I go back to the first speaker we had today, if the materials are not available to do the job that

they are supposed to do, if they are not durable, if they can only last ten years when the building life is supposed to be 50 years well then they are useless.

I have got to say that the product approval process in this country has been a dogs breakfast. But we have changed all that. You will find in the plumbing code of Australia a listing of the products that are going to require certification. And they will require certification at level one or level two, and they will carry one identification mark out on the site. This is absolutely crucial for high risk plumbing that we are starting to move into. If the materials are not fit for purpose, if they are not durable, if they look like they ought to look like but in fact reality is that they are something else well then we have got a market that is uncontrollable. So materials will have to meet certain Australian standards they will have to be clearly marked and there has got to be some traceability in the marking so we can find out when we do get failures, who the manufacturer and certifying body was.

That is the watermark that you will see. Now if you will look at the displays out here today you will see mainly two marks out there you will see the standards marked at the five tick mark and you will see some products with this water mark on it. The regulators are saying that the only mark we want is the watermark. The water mark level one it is going to be based on ISO-certification principals system five. Which is the equivalent today to the five tick mark. That is your standard mark certification scheme.

Water mark level two. These are for the less risked products. They will be sitting in system one B, which is equivalent roughly to your type tests requirements of the previous scheme. But out in the field, the only mark that we will be looking for as regulators Nationally will be the watermark.

Just move on a little bit to another regulator that is dabbling in plumbing and this is Environment Australia a federally based group. They have got the mandatory water efficiency-labelling scheme or the Wells bill going through federal parliament at the moment. This bill will override States rights. It, for the first time introduces a bit of legislation at the retail level. The legislation will be a mandatory labelling scheme and it will label products on their water efficiency use. So you mentioned, it was mentioned this morning here, AAA and AAAA. Well the A's are going to disappear they are going to turn into stars. Don't ask me why but they are turning into stars. The three star will be equivalent to the AAA that we have just seen in this mornings presentations.

It is part of a Council of Australian Governments initiative on urban water reform. It will only become effective in its objectives if we have got a National regulatory system in place and that is clearly understood by the drivers Environment Australia of this piece of legislation, they are going to rely on the plumber at the end of the day to make sure that what they set out to achieve can be achieved. So it is the certifying plumber on site that is going to deliver. The products in this are from clothes washing machines, dish washing machines, tap ware, showers, toilets and you see out there today a product in the display which is a AAAA rated toilet from Caroma. It is in the market just now, we have been very comfortable with our six three dual flushes and now you have got one out there in the market that works at four and a half to three litre flush. We know it works because we have been tracking these discharges down drains in Melbourne for the last couple of months with cameras. There is Yarra Valley water and Caroma have been running some trials on very old drains in some of Melbourne's older suburbs and we have had camera's following through as the discharges are happening.

We wanted to see what was really going to happen with the reduced flows in the drains. They work ok. So there is a substantial saving and that will come out as a four star appliance under this Wells bill.

I would just like to move now to a little bit of stuff that we are doing in Victoria on water and energy efficiency and it will overlap into the plumbing code of Australia. We have got a few options for new houses in Victoria where they can be from a five star energy rating point of view, a four star plus water savings or a solar hot water system or a four star energy saving plus a rainwater tank with a connected to a toilet or all the toilets within the house. From 2005 the first of July 2005, the position will be a five star energy rating building for the building fabric, there will be water conservation measures which I will deal with in a moment, and it will be a rainwater tank or a solar hot water service. There will also be a requirement that the maximum static pressure within the building cannot be any greater than 500kpa and that is going to become a national position through 3500. It is already written in the new standard so it will be a national position. A static pressure of 500kpa will give you a dynamic pressure of around about 350. Water saving tap ware.

This is the wells scheme that I spoke about a moment ago. The 6400 standard as it is called in standards jargon or in the mum's and dad's it is the three or four star ratings scheme. Showers, basins, kitchen laundry's the outlets will be 7.5 to 9 Litres per minute. The 3500 national standard is only going to set a maximum of 9 Litres per minute for outlets within a building. To give you some comparison a uncontrolled outlet at 500kpa will deliver around about 18 – 22 Litres per minute. Here we are bringing the shower back to 9 Litres per minute. Now, you can't get much less than that especially in these latitudes. You get cold weather down here as like we do in Victoria you don't only get in the shower to get wet you get in there to get warm as well so you need a reasonable flow and 9 Litres per minute will do it for you. The regulation in Victoria is not going to be prescriptive but appliances set to 6400 test provisions will be deemed to comply.

Plumbers at the end of the day are going to be required to make sure that 9 litres per minute is achieved. Michael mentioned the solar water heater performance requirement and the 60% based on a solar gain. Compared against an electric hot water service so that is the 60% savings in your power bills from the 1st of July 2005 with a solar hot water service. The hot water services that were in the market were chuffing out at around about 40-45% solar gain. So the manufacturers had to go back and re-gig their appliances to improve the performance. Many of them had to rework the solar collectives. But that caused another problem. Once you lift up the efficiency of the solar hot water service you start to lose water. Because the practice for a lot of manufacturers was to use the pressure temperature relieve valve as a means of controlling the overheating problems with solar hot water services.

It was on a very hot day there was nothing unheard of for a pressure temperature relieve valve to discharge at about 100 degrees Celsius. It wouldn't close back off until around about 130L had been discharged out of the cylinder. That couldn't continue. So what we have worked with, with the manufacturers, is a new test provision for solar hot water services in short they are going to have to stand in the sun or in a laboratory under 50 degrees Celsius heat for four days in a static position without any water loss. Now they can do it by changing the valving arrangements or by changing the approach they make to their designs. That is out for comment with them at the moment but there isn't an issue there, which is going to prevent them from achieving that outcome.

But it was certainly critical for us we are trying to lift up the performance and we are losing water down the other end and it just wasn't sustainable for us to continue down that track.

This gives you a bit of an idea where we are in solar hot water performance on an International scale. It is a pretty miserable performance for Australia seeing that 25 years ago we were the world leaders. Israel has 600 square meters of solar collector

for hot water per 1000 head of population. They have a mandatory position for around about 20 years to achieve that. As we get down the list Australia around about 60 square meters. One tenth of what Israel is achieving. When I get down to my own State Victoria 10 square meters. The reasons were because we are south, the population is south of our divide and the things wouldn't work. We would hope that would at least come up to an Australian standard in the next few years.

Here you have got free energy going to waste. Israel had a power problem so they did something about it. Greece, Austria, Turkey, have just started to move into mandatory positions for solar hot water services. Australia, 25 years ago was the world leader is performing miserably. Some of the new technology that is coming in to the market. We are seeing now preheat storage with continuous flow hot water services attached. New technology that is just starting to develop here. But if you can virtually give your continuous flow of hot water service a 30 or 40 degrees water temperature start before it fires up the burner there are an enormous gains in Greenhouse gas emissions.

This is another domestic product that is in the market. It is a gas fired storage heater but it has a storage tank which is a preheat tank and it will deliver probably through the winter months a 40 degree saving in water temperature. That is one of the more expensive models in the market but it is certainly going to cut down substantially on the greenhouse gas and running costs of hot water in the home.

In Victoria where we have got natural gas at the front gate, there isn't any option they can only have gas boosted solar hot water services. I will show you why. This looks at the greenhouse gas emissions for the normal hot water services that we have in this country. The one down the bottom the electric storage it generates about 4.8 tons of greenhouse gas emissions per annum based on 200L per day. You can go up to a solar gas or blue arm second from the top in a warm climate so you are getting in to middle NSW up into Queensland and it is point 3 of a tonne of greenhouse gas emissions

Victoria, solar gas and a cool climate at point five of a tonne. Nearly one tenth of the savings as against an electric powered hot water service. A point of interest there too you have got your five star gas appliances and your two star gas appliances. Your five star gas appliances you see them out here. They will generate about 1.3 tonnes of greenhouse gas emissions. Pretty good but nowhere near the point 5 or the point 3 we can get if we introduce a better simple technology which is solar.

Flow and return pipes on all new solar hot water services will need to be insulated to an on our value of point 3. This looks at the blue line is insulated copper pipe and its performance and the temperature drop that you get through copper pipes. There are a few others there of course copper pipes is the only thing you can use in flow and return lines but certainly we have got the polybutylene the cross linked polyethylene and bare copper which is the bottom rung. Building code of Australia is looking at performance in buildings and certainly the lagging or insulation of hot water pipes will change. Without getting into too much detail the heat load on hot water sizing it is critical that any solar hot water service is sized correctly otherwise you find the thing boiling its heart out. And we are looking at a three bedroom or more at a minimum of 42 mega joules per day or less than three bedrooms at 25 mega joules per day so it gives you some sizing outcomes that will make sure that you are not over-sizing the system.

Just a quick look at commercial buildings and energy use in commercial buildings and it is interesting to note that plumbing systems account for 76% of energy used within a building. Hot water around about 6%. And we can make some big differences with hot water. But certainly the ventilation, and the cooling, and the heating are big eaters up of energy. The building controllers around our country are

going to make their buildings perform better with better fabrics better windows, double glassed windows. There is going to be substantial cut back in energy use within buildings through regulation and it will be virtually prescriptive regulation.

Again I will have a quick look at a, this is a commercial application of a means of dropping down that 6% to somewhere around about 4% of the total energy use. Previously we have been heating water up to 60 degrees Celsius because of Legionella and then cooling it down to use it which is pretty dumb. So what you can do now, have an indirect system this is not new this has been around since dot I think you are finding in some of the very old plumbing manuals in England that we probably built our schemes on, an indirect system and you can circulate at 45 degrees around a building without chuffing it up to all those high temperatures and then cooling it down prior to use.

Depending on the building there would have to be some measures of control on microbial growth. The new technologies the continuous flow or instantaneous but mainly continuous flow they used in these bank type applications they too will take water in out of the main they will heat only to 45 degrees and deliver into the building at 45 degrees. There is a tremendous saving in energy in doing that and there is no record of any microbial growth issues within those systems. Rain water tanks with flushing toilets I will have a very quick look at this but basically in Victoria we have regulated that if you put a rainwater tank in it will go to a toilet it gives you an immediate saving of 20% of the water use within the house. Straight away 20% saving of water within the house.

It has got to be 2000L and it must come off at least 50 square meters of roof. Now that is not very big. Ten meters by five meters. It is the bunkhouse at the back. But that will deliver in some instances 22 or 23 thousand litres of water per annum, and for two adults two children flushing a six three flush pan which averages out a 3.8L per flush doing that 16 times a day we want about 20,000L of water per annum.

This is an area running up into the hills at the back of Melbourne it is our wettest suburb it has around about 32,000L of water generated off that scenario. So it will have water to burn. The other side of Melbourne this is our driest suburb we have got an annual rainfall there of 520mm. It will deliver off 50 square meters 22,000L. So we are fine in Melbourne, we haven't got a problem. When we move up to Mildura though and this is probably around about the rainfall of Perth I am not quite sure what the rainfall of Perth is can somebody tell me? Very little at the moment.

[Inaudible in background] Well Melbourne runs a bit that way too but people mightn't agree with that reckon it is drizzling all the time but here we have got Mildura very dry, right in the middle of the desert, 266 millimetres per year and all we do is jack up the roof area to 100square meters and that will deliver in theory 22,000L of water for sanitary flushing. So you can manoeuvre this you can build your tank bigger or you can get your roof catchment out bigger and you will give a family of four their annual discharge through the sewers, through the systems in the houses. Tremendous savings. Cost though of about \$2,000.

Recycled water - is the one that is being driven very hard by the water companies I guess, especially in the Eastern States. This is starting to look at where plumbing is going in the future. You used to have as I said one pipe coming in and one pipe going out now we have got a potable main coming in a sewer going out that may be separated from black and grey water on the site and we have got a couple of developments in Melbourne that are doing that now. You have got reclaimed water coming in that will do certain things for you and you have got storm water that is going to go somewhere be retained and be reused. You have got a different look at what a water cycle is going to be in a normal domestic dwelling in Australia in the future. The one pipe in and one pipe out is going to be history. So plumbers are

going to have to be on the ball as far as identification of pipes, backflow issues and making sure that the consumer is safe at the end of the day when the taking, the plumbing system for granted.

The 3,500 has been changed and this will come in as a national regulation so you will have some changes taking place that will deal with water services and recycled water services and I won't go into a great deal of detail it gets a bit too technical but cross connection control will be well covered in the national standards. Digging water requirements these are in the standard there will be 100mm separation and a 300mm separation below ground. There will be warning signs on the taps that are available out in the garden and there will be identification tapes laid on top of some of these non drinking water supplies.

The pipe will be coloured lilac that is any recycled water pipe will be coloured lilac. It will have standard threads and there is a testing and commissioning procedure where there is recycled water coming back into the property that is going to absolutely going to be mandatory for the plumber to follow. I had an email yesterday that there is a substantial cross connection in the XXXX development which is in Sydney in the last week. So certainly that doesn't go down too well when you are trying to promote non drinking water in an urban setting. The lilac colour the taps will be coloured lilac if they are delivering non drinking water we are talking about recycled water and there will be a non standard thread on that tap to prevent people from throwing it away and putting a normal tap on it and that will have an international signage which will be a warning signage that you cannot drink. And that is all I have but just in closing I would like to say that the plumbing code of Australia will drive change, it will set performance provisions for plumbing across those whole areas of plumbing and it certainly is going to add a lot more plumbing into a building compared with what we have had in the past. Thank you.

Can I ask John and Mike to come back up and we will open the floor for short question time before afternoon tea.

Any questions?

Have you thought of childproofing the taps for non-potable supplies?

Yes the non-potable supply has a removable top on it. It is a removable top.

Thank you.

Q. My question is you were talking about changes in design I just want to ring you may be looking at designing changes in the hot water system in houses for myself personally when I have a shower I lose probably about two and half litres of cold water per shower before I get the hot water that is. And that is pretty normal with a lot of homes and I have done a quick estimation that I would probably waste about 2 tonne of water per year and just looking around here today there is probably about 50 of you here and there is 100 tonne of water down the drain. I am just curious if that will happen in future where I mean Mr Gill talked about the Water Wise house this morning I haven't actually been down there I am just curious if there will be changes in plumbing designs in homes.

Well we will certainly promote the design where the heating source is close to the main use in the house. Once you start putting in flow and return lines there is a balance here between energy and water and it becomes a cost too. But certainly there is technology coming into the market where you will get a one-stop shower out of a small, instantaneous unit - if you have got a remote shower. It is not an easy one in a normal domestic dwelling this because you usually have one hot water appliance delivering to some remote outlets. It is not ideal that the option to that is to dull your heating appliances which is extra cost.

Q. Are we going to have a 9L rating for a AAA or for a four star because there was some move I believe in NSW or Victoria for the basins for example to be four litres per minute.

The 6400 standard did have the basin outlet set at 4.5 to 6L and I believe that committee has changed that position and it will be outlets in the building of 7.5 to 9 that is all outlets within a building.

So that is going to become what law coming up?

No that will come under the mandatory labelling scheme but the Australian Standard 3500 will not put the lower level in position they will have a maximum outlet of 9L per minute for all outlets within a building and then if you have a one off building design where you can get down to 4L per minute say for a basin that would still be achievable and it would still be within regulation. The problem that we had in saying the basins were going to go from 4.5 to 6, many instantaneous hot water services wouldn't work with that flow rate. So we had to rethink it and move it up. But it shouldn't preclude storage hot water services from operating at 4.5 to 6 they will still be within the regulation.

Q. I was very interested on the comparison with the amount of solar energy we use in Australia as compared to Israel. Just off the top of your head what sort of extra items have they got compared to what we have got.

There is some very high tech Israeli gear around and there is a heap of that being tested here in this country at the moment and it is virtually the old tubular approach that we had a few years ago coming back. So the flat collectors are probably going to be something that we will see disappear in time I guess. Israel has been in a mandatory position for nearly 20 years to achieve that and it generates around about 3 or 4% of their total power production within the country. That doesn't sound much but that is just hot water on domestic dwellings and I think we have really got to start heading down that track again where we were 25 years ago.

Q. I have got a small one for you while I am standing up. Michael mentioned the inability to regulate point of sale, what about this, when you set a standard like AS3500 at a definite water flow rate, is there any means of and shouldn't we be lobbying government to make a point of sale mandatory to Australian Standards?

I am sure the manufacturers would love it.

I am sure they would because they would have a regulated industry that they could work in.

Yes, well, the Wells labelling scheme will do it to a certain degree but that label poor performing appliances as well as good performing appliances. The regulator wants to say well you can have all those for sale but as a regulator we only want no more than 9L per minute. Now we will do that through plumbing regulation but you can still buy the poor performing appliance. Now maybe there is a market for that too, say a one star rated shower, where you have got only one metre head for some reason it might be a rural property well that will deliver a shower for you but certainly a three or four star rated shower will not work.

So point of sale legislation in a mandatory sense that ties it down so tightly so there is no flexibility can cause problems.

Well the other side of that one is then that the approved fixtures need to be very well marked visibly marked so that regulators such as plumbing inspectors and so on can very easily inspect them and proof that, and also that the you can then educate the plumber in the street that is installing it I am talking about the plumber and not the householder who wouldn't care, that he is putting in an approved appliance. One of the things that come out at the moment when you do an inspection on the property and I do property inspections amongst what I do is that plumbers are not aware that the fixture they are putting in is approved or not approved. Some of them don't realise that they should be watching that.

Well this is what we are trying to get away from. You have got three marks out there at the moment. You have got a type test mark you have got a water mark and you have got a standards mark and that standards mark looks very like a quality approval mark for businesses. So you can have a manufacturer from the back of China coming in with the standards business mark on it on the product and the plumber is left high an dry. So that is why we are going to get rid of all of those marks there will be just one mark out there that the plumber will be looking for it will be the water mark. If the watermark is on it you can use that product. If the water mark is not on it, you can't use it and it is as simple as that. So we will try and simplify the process.

We came under a lot of stick when we put our legislation in place because we were too prescriptive. And we are still coming under that pressure even from within our own government departments. Look, I have worked in the plumbing industry for 40 years and plumbers want to know what they have got to do they don't want to these hairy fairy performance provisions that it could be mulch in the garden that thick will give you so many points and I don't have to do something else in the house with the water system. But something that we learnt by mistake in this process also, when we came out with a prescriptive position, it gave the manufacturers absolute certainty. They knew that they were going to get 80% of the new houses in Victoria for solar, their market research told them that, then they were prepared to go back and re-gig their appliances because they knew there was a market niche there to get some return on.