

# Presentation Paper



**Presentation:** Citywide Greenpave  
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## **Citywide Greenpave: Safer and Greener Roads**

An overview of Citywide Greenpave, Australia's first advanced warm asphalt mix and the first 12 months of road paving in Victoria.

### **A new era: responding to policy and community expectation.**

On 3 December 2007, Prime Minister Kevin Rudd announced Australia's ratification of the Kyoto protocol. The first official act of the new Labor Government, it signalled a departure from the policies of John Howard. Australia no longer an international pariah, Mr Rudd returned from the United Nations Climate Change Conference in Bali identifying the Garnaut Climate Change Review as the premier guide to further action.

The government's response to the final Climate Change Report came with a host of conditions, most aimed at giving it maximum flexibility in global talks planned for Copenhagen later this year. Although Ross Garnaut's 10% emission cuts were decried by many green groups, it set him on a collision course with the federal government which is angling for a minimum of 5% by 2020.

The government hopes to introduce a bill to parliament later this year with a scheme up and running in 2010. Mr Rudd also says the government will not ignore the problems caused by climate change while it deals with the global financial crisis. Behind the debate is a certain fact, Australia will have a carbon emissions trading scheme and a tax on carbon emissions (currently estimated at \$20-a-tonne).

A growing number of Australian councils are setting tough emissions targets. In 2002, the City of Melbourne launched its strategy, *Zero Net Emissions by 2020 – A Roadmap to a Climate Neutral City*. It not only requires a 50% reduction in emissions from City operations by 2010 but also a 50% reduction in whole-of-municipality emissions. The only way Melbourne will reach these targets is by influencing business and residents while achieving reductions in every aspect of its own business.

### **There will be a cost to pay for all – particularly energy intensive industries such a road building – and the consumer is highly unlikely to accept the full expense being passed on.**

Already under pressure, public works in both the private and public sectors will be subject to rapid change in response to the imminent environmental policy decisions of political leaders. What might climate change mean to the asphalt industry?

- There will likely be a need to purchase carbon credits to offset CO2 emissions
- Tougher conditions will be placed on new and existing plants.
- Contracts with governments and corporate organisations will include specifications relating to carbon emissions.
- Public pressure will continue to escalate: Greenpeace litigation against Fulton Hogan in NZ is a case in point.
- Risk to reputation will increase for companies that do not genuinely attempt to reengineer for sustainability.

However, with challenge comes opportunity and innovation.

## Advanced technology. Low emission asphalt.

Citywide predicted scientific evidence and community opinion would drive policy change in response to climate change. A producer of asphalt and provider of road maintenance services, the company investigated energy use and the level of emissions produced along its supply chain with the aim of reducing its carbon footprint and that of its customers.

In February 2008, Citywide opened the doors of its high tech, redeveloped North Melbourne asphalt plant. It produces a suite of asphalt products which includes standard hot mix, Recycled Asphalt Product (RAP) and Australia's first low emission asphalt, Greenpave.

Citywide Greenpave is made using Shell Bitumen technology tested on European roads since 1995. Commonly known as warm asphalt mix or 'WAM' it is produced at significantly lower temperatures than standard asphalt mixes. The new formula offers safety and environmental benefits with performance standards at or above those previously available in the Australian market.

With Greenpave, Citywide responds directly to the huge groundswell of community and government concerns over climate change. It offers the Victorian market an asphalt product that is safer and has significantly less environmental impact than standard mixes.

Greenpave takes the environmental benefits of the new plant out into the nation's suburbs and highways; as our automobiles become greener, so too will our roads.

## Technology.

A conventional hot mix asphalt production process uses one grade of bitumen at approximately 170°C whereas the Greenpave process (Fig. 1) uses two binders at significantly lower temperatures (~110°C). Combined application of the binders results in higher performance bitumen.

Unlike hot mix which is susceptible to weather conditions, Greenpave offers greater workability and therefore a longer construction season. It is subject to less oxidative hardening of binder leading to better fatigue performance over time, and layers can be paved thicker offering:

- greater productivity
- operational savings
- a rapid return to traffic

## Pro environment: benefits from production to paving with 30% fewer emissions

Traditional asphalt mixes for road making are heated to 160°C-170°C for fluidity and workability. Greenpave is manufactured at only 110°C-120°C, a reduction of up to 60°C. This leads to substantial environmental benefits:

- **Over 30% reduction in fume emissions during production**
- **Over 30% reduction in greenhouse gases**
- **Up to 55% reduction in fine dust**
- **Energy savings of up to 30%**

See Fig. 2 and Fig. 3 for comparisons with standard hot mix asphalt.

Fig.1 The production process

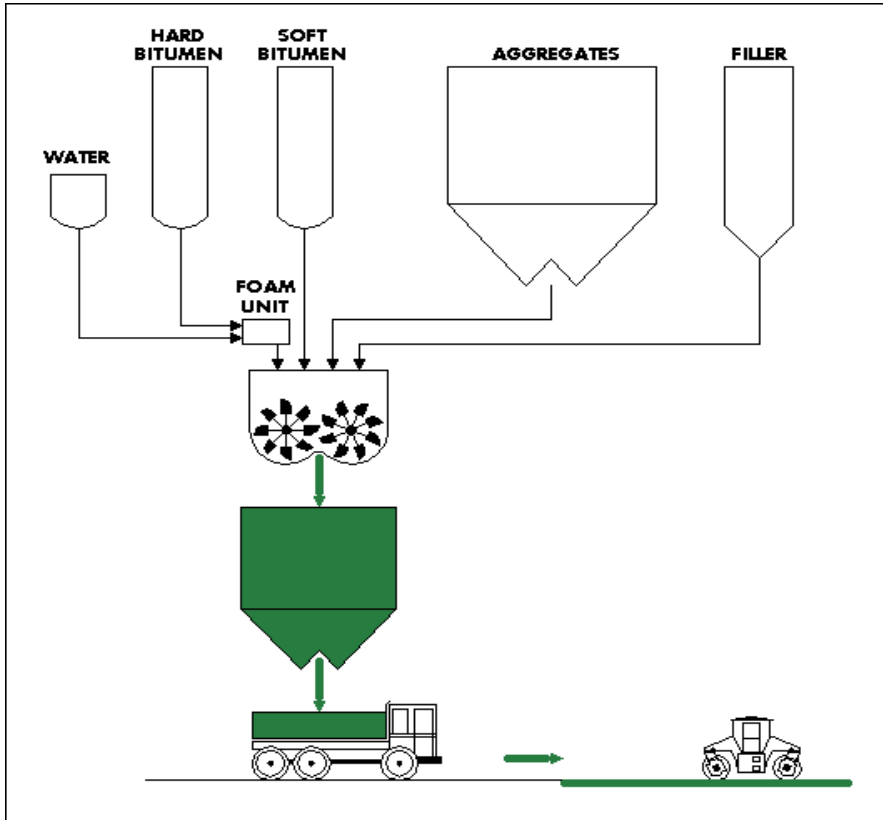


Fig.2 Emissions at the chimney

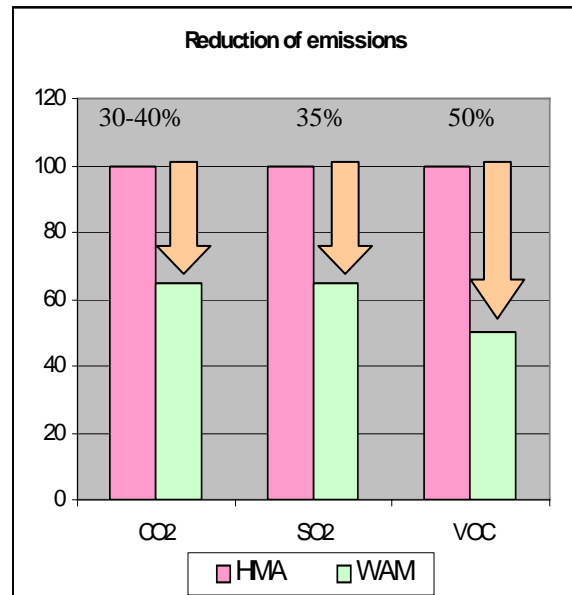
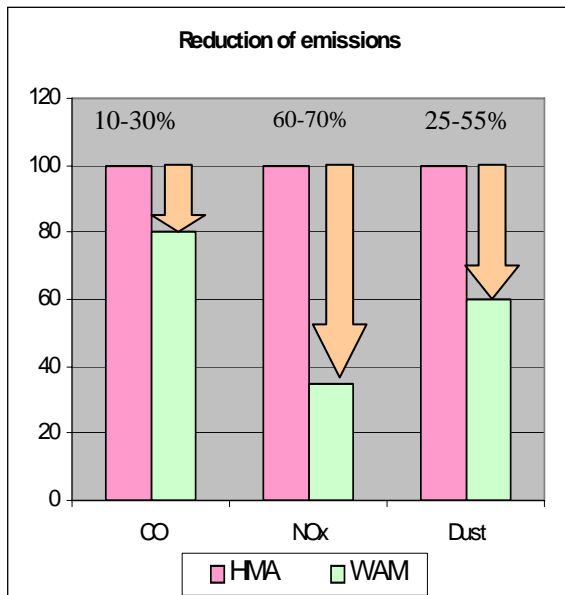
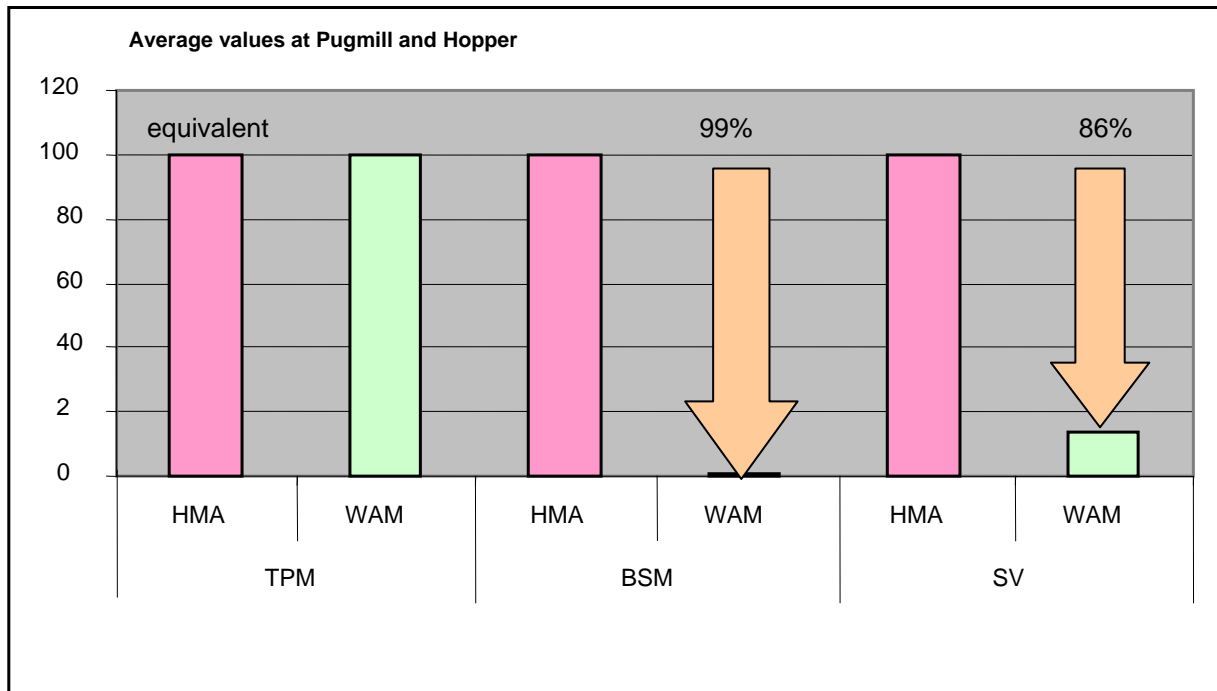


Fig.3 Emissions during production of WAM



**Reduced risk to people: workplace and community safety**

The reduction in production temperatures and fumes deliver immediate safety benefits to workers and community members; because employee exposure to heat and fumes is reduced, and fumes and emissions are reduced in inner city communities (see Fig. 4 for visual depiction).

Improving the workplace improves the outcome. A low heat, low emission and low fumes product is an important leap forward in improving safety as well as general workplace conditions. It enhances the perception of the role and supports efforts to improve productivity.

In addition, as any council officer knows, general perceptions of safety are extremely important to the attractiveness of a municipality as a place in which to live and work. Air pollution is an area of considerable community concern. Local government and the development industry need to demonstrate progress, improving safety and pollution reduction outcomes.

Fig.4 Visual observation of emissions during production of WAM



## Greenpave across Victoria. 12 month report.

In just 12 months, Greenpave has been laid at 17 sites across metropolitan Melbourne.

Seven councils (Melbourne, Boroondara, Wyndham, Moreland, Yarra, Manningham and Darebin) have chosen the new product, promoting its use through the local press and council publications. Community reaction has been positive.

The Victorian state government road authority, VicRoads, is also conducting a trial on the Deer Park bypass, due for completion later this year.

Completed three month trials have passed independent audits across all categories.

## Asphalt production facility

On 15 February 2008, Citywide launched its redeveloped North Melbourne Asphalt plant, the most environmentally sensitive facility in the southern hemisphere.

The North Melbourne plant reduces greenhouse gas emissions by 30%. Designed by world leaders, the Swiss Ammann Group, the plant incorporates cutting edge pollution control, noise reduction and dust extraction technologies.

The North Melbourne plant is the city's most centrally located, just minutes from the CBD. In addition to technologically driven benefits, the short transport routes needed to supply asphalt reduce the time trucks are on the road. The outcome: less emissions and congestion.

### Quick facts: environmental benefits of the new plant.

The new plant meets European environmental standards which are twice as tough as Australia's. Here are some of the benefits to Victoria:

- Gas and & electricity consumption savings of 30%
- Noise reduced through fully silenced burner system and frequency converters
- Odour is virtually eliminated through a post combustion fume control system and use of odour filters on bitumen kettles
- Dust control is best practice due to full insulation of plant components.
- Site drainage has been improved to reduce storm water contamination
- Old asphalt can be recycled into new mix
- Designed to produce advanced Greenpave in partnership with Shell

## Citywide: shaping sustainable landscapes

Citywide is a diverse company shaping and maintaining high performance assets. The company delivers the full scope of environmental and civil infrastructure services, supported with expert advice, to government and private enterprise. Citywide has a strong reputation for service innovation and the quality of its work. The company is a trusted partner in the growth and development of sustainable urban communities and customer businesses.

### Citywide

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Fig.5 Asphalt plant emissions reduction

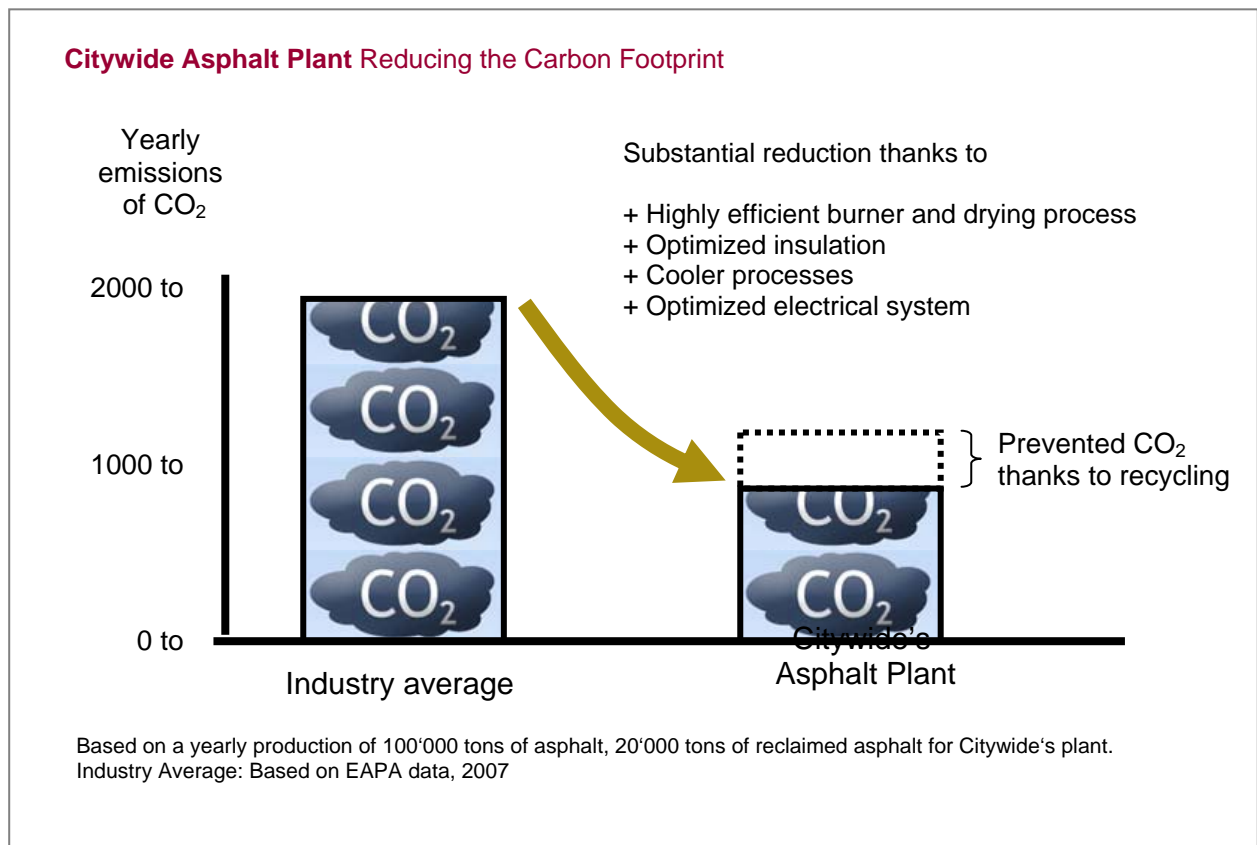


Fig.6 Asphalt plant combined with Greenpave - emissions reduction

