In May 2018, the Victorian Government announced the $2.5 million program supporting market development for recovered resources at the launch of a road made from recovered materials. Part of this program will support research, development and demonstration projects that have the potential to use significant quantities of recovered resources.

Program announcement

The program was announced by the Minister for Energy, Environment and Climate Change at the launch of Downers soft-plastic asphalt road in Craigieburn, in Melbourne’s north. This project is the first to be funded under the Resource Recovery Market Development Program.

Sustainability Victoria provided over $100,000 to develop the road:

› $40,000 to Close the Loop to purchase infrastructure to increase production of their newly developed soft plastic asphalt additive.
› $70,000 to Downer to construct the road field trial.

Project Overview

Downer has partnered with Hume City Council, Close The Loop and RED Group to set a new benchmark in sustainability and innovation, constructing Australia’s first road utilising a combination of soft plastics and glass. Close the Loop developed a prototype asphalt additive that contains postconsumer soft plastics (i.e plastic bags, food packaging).

Close the Loop supply Downer with the additive; allowing for partial replacement of virgin bitumen. This partnership allowed Downer to commission an internal research and development program to assess product performance, occupational health and safety risks and scalability in a real-world application. The asphalt road mix developed and tested by Downer uses reclaimed asphalt, toner from print cartridges, glass fines as well as soft plastics.

The successful research led Downer to construct the soft-plastic asphalt road in Craigieburn, which will support the commercialisation of this new road product. Downer will undertake performance monitoring of the road over the next year.
Recycled content breakdown

Every 1km of road (2 lanes) paved with plastic and glass modified asphalt will use approximately:
› 530,000 recycled plastic bags and packaging
› 170,000 recycled glass bottles
› Toner from 12,500 used printer cartridges
› 130 tonnes of reclaimed road (asphalt) re-used, with the inclusion of 20% Reclaimed Asphalt Pavement (RAP).

Sustainability credentials and improved performance

Plastic and glass modified asphalt contains:
› Soft plastics and glass that would likely end up in landfill stockpiled, or as a pollutant in our natural environment
› Greater than 25% total recycled content

Compared to standard VicRoads specified asphalt, plastic and glass modified asphalt has:
› 65% improvement in fatigue for longer life pavements
› Superior deformation resistance for withstanding heavy vehicular traffic

Does this material risk releasing microplastics into the environment?

No. The asphalt is made up of 95% aggregate and 5% bituminous binder. The bituminous binder is the ‘glue’ that bonds and waterproofs the aggregates. The soft plastics additive melts and becomes part of the bituminous binder. Because of this process it is not possible for the additive to separate out creating microplastics.

This method involves returning plastic waste to its original polymer state. This is used as a substitute for virgin petrochemical products which are normally mined for use in road construction. The roads industry has used (virgin) polymers since the 1990s and this soft plastics initiative follows a similar vein; where asphalt manufactures modify a road construction material to improve long term performance.

By using recycled plastic, a valuable resource is recovered and reused, rather than being sent to landfill or ending up in our oceans.

If plastic bags are banned, what will the additive use?

The asphalt additive uses soft plastics which includes a broad range of packaging materials such as food packaging; the additive is not limited to only using plastics bags. Sustainability Victoria estimate that 170,000 tonnes of soft plastic waste is created in Victoria each year, with only 17,000 tonnes or 10% recovered. The Victorian Market Development Strategy for Recovered Resources identifies soft plastics as a priority material based on its increasing use in the community and low recovery rate.

Further Information

For more information contact Resource Recovery Strategies and Programs on (03) 8626 8700 or visit www.sustainability.vic.gov.au/research-development-grants/