

# Coventry City Council



## Recycled materials used in asphalt mixes



## **Background**

Following National news items and with senior member support Highways Officers looked into using recycled plastic pellets made from waste plastic products in road materials (asphalt mixes). A company MacRebur had developed this idea and began working with asphalt suppliers in Cumbria to use such waste materials in roads. We made enquires with Cumbria County Council, who were the first council in the country to use the product; they offered advice and support to the Council following their experience of delivering road resurfacing using plastic pellets. The pellets are produced from hard to recycle plastics that would otherwise be destined for landfill, such as computer monitors and keyboards.

We engaged with local asphalt producers' to see if they would partner with us to deliver this new sustainable solution for road resurfacing. Our contractor, Tarmac had already carried out a small trial in Gloucestershire, which provided Council Engineers with confidence that they knew how to distribute the plastic within the asphalt mix. Tarmac were also keen to trial the use of shredded tyre rubber in a test section within a road trial site, which after further investigation officers agreed to trial.

Working with Tarmac we decided to move forward with this initiative and select a suitable site for the trial.

### **Coventry's expectations from the use of the product**

- To demonstrate the use of innovation in the Highway Service: Identifying and supporting new solutions for the delivery of the highways service both at local and national level.
  - Opportunity to improve outcomes for waste management.
- Potential to increase the time between maintenance life cycle intervention, due to increased flexibility in the material.

# Montalt Road

Daily Mail 6 March 2017

Is this Britain's worst road?

Residents of Montalt Road in Coventry certainly think so and have expressed their frustration about the state of it, calling it a 'complete mess'.



Montalt Road was selected as the initial trial site for the following reasons:

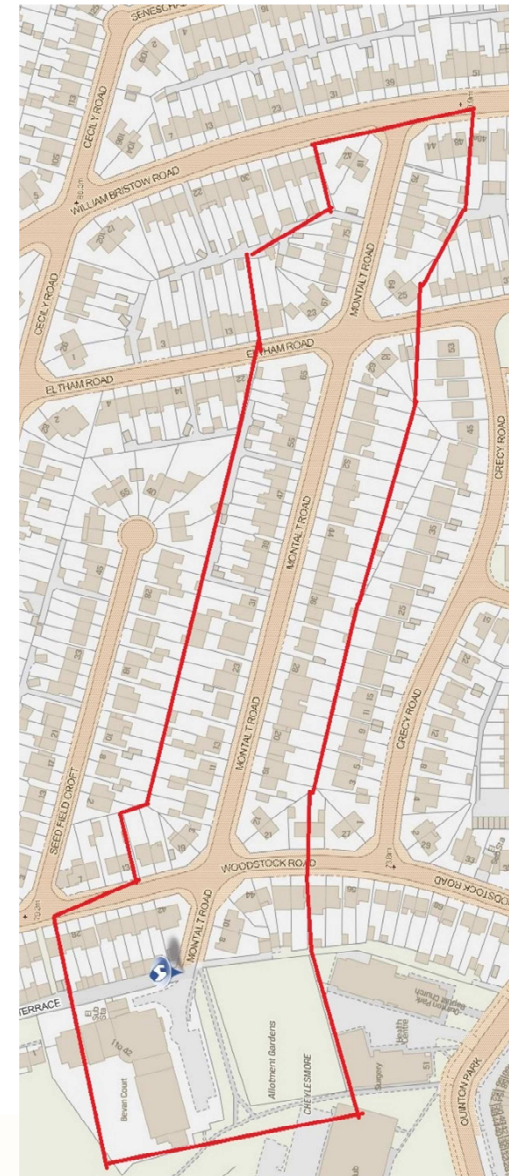
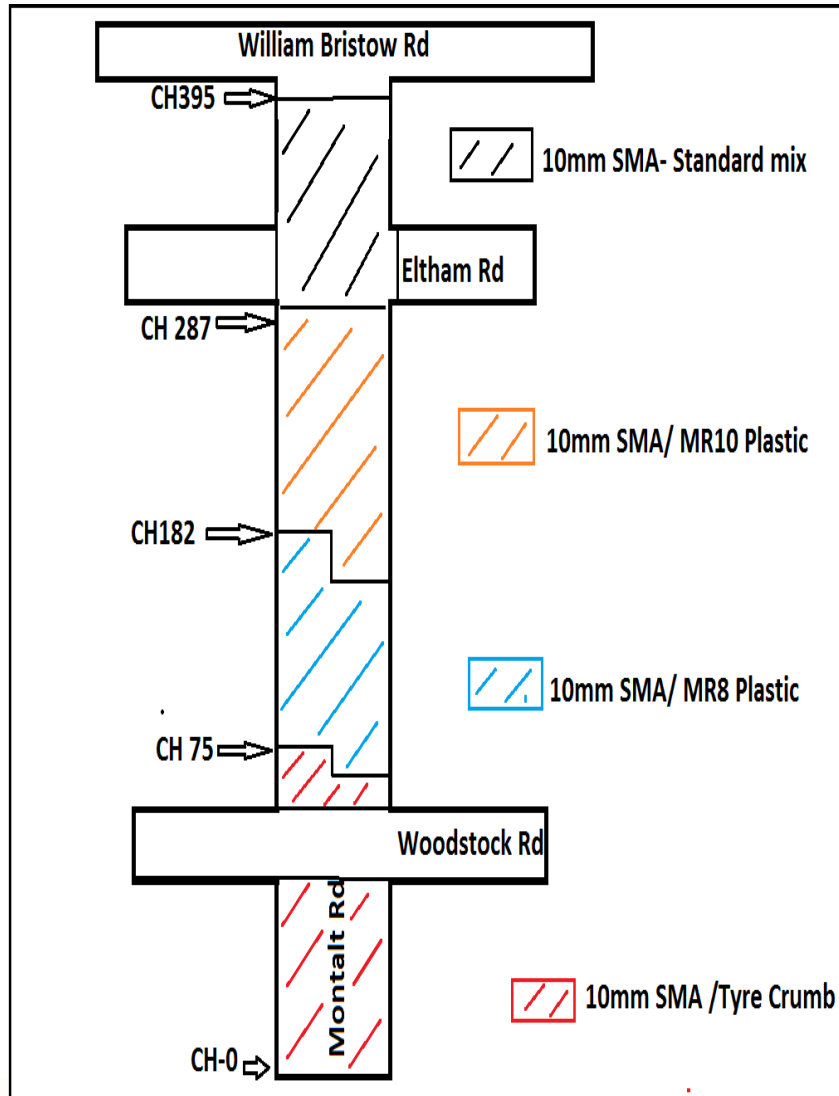
Montalt Road is a residential road taking local traffic which had areas where the road was failing. This was leading to continuous expensive reactive repairs, and A high number of customer complaints Testing and monitoring could be carried out with little disruption to traffic



- The trial involved this residential road being resurfaced using material containing two different types of plastic pellets, recycled rubber, and a standard asphalt mix called SMA.
- The pellets were used as a binding agent, MacRebur promote their product on replacing some of the bitumen which is a fossil fuel, to help reduce the carbon footprint of the process. Half of the road was resurfaced with asphalt containing plastic pellets.
- One quarter of the road was resurfaced using rubber ‘crumbs’ that have come from old vehicle tyres, while the remaining quarter was resurfaced using traditional asphalt.
- The Road will be monitored to see if these alternatives are as hard-wearing and effective as the traditional materials.

<https://www.youtube.com/watch?v=s3zcS2t4IHM>

# Trial Site – Montalt Road



MR10: replaces 6% bitumen and is recycled from such plastics as computer monitors and keyboards

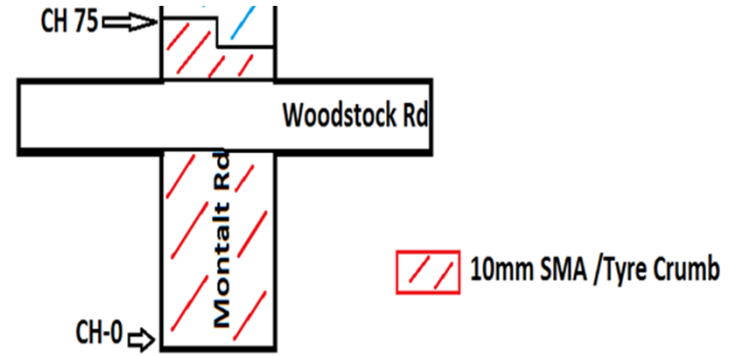


MR8: replaces up to 10% bitumen and is recycled from industrial and agricultural plastic wrapping.

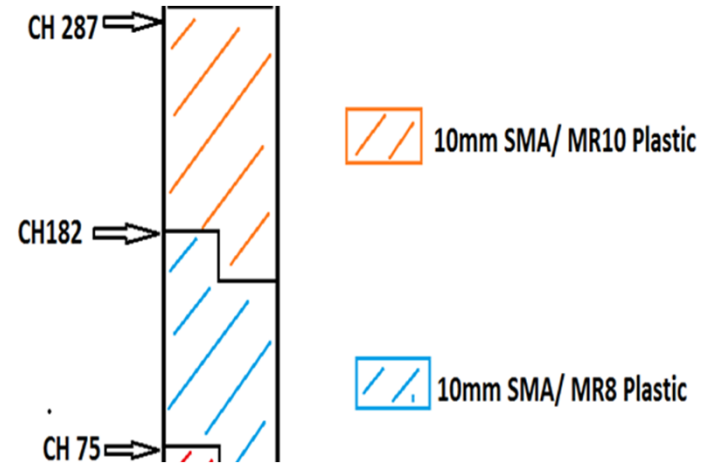




10mm SMA/rubber crumb



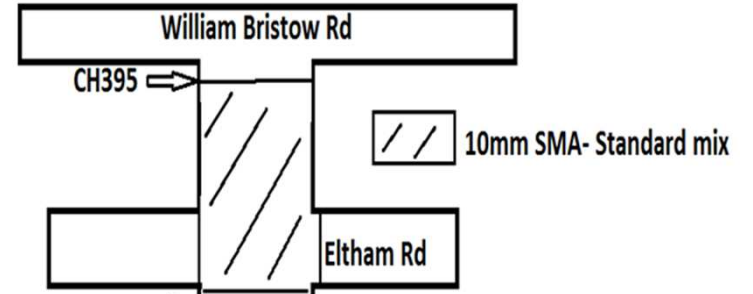
10mm SMA/rubber crumb







10mm SMA MR10 plastic



SMA – End of scheme

## Before and After







## What we have learnt so far

- Further research and development is required to see if the plastic can be fully distributed into the binder which holds the asphalt together.
- We are currently working with Tarmac to review and test the performance of all the products used in the trial.
- During the trials the tyre crumb appeared to perform better during the laying process.
- If the plastic pellet additive becomes standard in asphalt mixes and there is more usage across the industry then there could be potential cost savings over standard mixes in the future.
- There would also be green benefits to the environment, less plastic waste destined for landfill, reduction in fossil fuel usage and a reduction in carbon footprint.

## Monitoring:

- Following completion of the works the various treated sections site will be routinely assessed over the coming years.
- Tarmac have carried out testing of skid resistance on the roads to see if there are any differences between the different materials.
- Tarmac are carrying out a series of lab testing to see how the plastic and tyre crumb perform.

## Latest position :

- In addition to the Montalt Road scheme, Sandy Lane/ Cheveral Avenue has been successfully completed with MR8, recycled tyre rubber and a proprietary asphalt called Utilayer.
- Birmingham Road is the potential site for more plastic and recycled tyre rubber which is programmed for early 2019.
- Finally, we are looking at whether we can find some suitable machine lay footway sites using tyre crumb.