

Agenda Item	<b>22</b>
Report No	<b>EDI/84/19</b>

## HIGHLAND COUNCIL

**Committee:** Environment, Development and Infrastructure

**Date:** 7 November 2019

**Report Title:** Use of Recycled Plastic in Road Surfacing Materials

**Report By:** Executive Chief Officer Customer and Communities

### 1. Purpose/Executive Summary

1.1 This report provides Members with an update on the use of recycled plastics within bituminous surfacing materials used in road surfacing.

### 2. Recommendations

3.1 Members are asked to:

- i. note the ongoing discussions between Transport Scotland and suppliers within the industry regarding the performance of bituminous surfacing materials containing recycled plastics;
- ii. agree that bituminous surfacing materials containing recycled plastics are not to be used on the Highland Council **adopted** road network until approval is given by Transport Scotland, and Highland Council considers the product technically suitable for their adopted road network; and
- iii. agree that bituminous surfacing materials containing recycled plastics may be used on **unadopted** roads within the Highland Council Area subject to the planning condition as stated in item 11 of this report.

### 3. Implications

3.1 Resource - There are short, medium, and long-term resource implications to consider. In the short-term early indications are that the unit rate for asphalt containing plastic is higher than established products currently available. These costs may well become lower as and when overall production rates increase. Until further testing is carried out the cost associated with repairs, maintenance and replacement in the medium to long-term are not yet known.

3.2 Legal - Under the Roads (Scotland) Act 1984 the Council, as Roads Authority, has a duty of care to manage and maintain the adopted road network.

- 3.3 Community (Equality, Poverty and Rural) - No known implications.
- 3.4 Climate Change / Carbon Clever - The Council encourages new ideas, innovation and the reduction in resources required in road maintenance/construction work. The inclusion of waste plastic in bituminous materials, where that product is proven and meets British Standards, will always be encouraged. In the longer term as production facilitates increase in number there may also be a net reduction in carbon emissions from the road transport sector which in turn will assist in the fight against global climate change.
- 3.5 Risk
- 3.5.1 Where a Roads Authority is unable to demonstrate that the products it uses to maintain the road network meet national standards, it may lead to a greater risk of it being unable to defend itself against claims made against it where the safety of road users has been put at risk.
- 3.5.2 The Council needs to be aware that should this material be accepted for general use on its adopted road network and then fail prematurely in subsequent years, it will be left with a very expensive legacy to repair.
- 3.6 Gaelic - No known implications.

#### **4. Background**

- 4.1 This report follows the presentation made to the Committee in August this year by the supplier Macrebur.
- 4.2 There have been a number of media releases highlighting the use of recycled products within bituminous surfacing materials used in road surfacing. These new products are at an early stage in their evolution and many of the claims made by the suppliers are not, as yet, substantiated causing difficulties to road professionals as they try to provide evidence-based support to communities and Members.
- 4.3 Although this report concentrates on one particular process and supplier, there are other similar products on the market which will need to be scrutinised in the same manner.

#### **5. Constituent materials**

- 5.1 The term "plastic road" is misleading as it gives the impression that the majority of the road is made from plastic when in fact the added plastic only forms a very small proportion of the overall product.
- 5.2 A traditional asphalt mix used to resurface a road will contain crushed rock, sand and bitumen. Typically, the proportions of the constituent elements will be 93% crushed rock and sand with the remaining 7% made up of bitumen.
- 5.3 The process being promoted under the term "plastic road" is to substitute part of the bitumen with recycled plastic. The exact proportion of plastic used is commercially confidential but at a recent presentation by the supplier Macrebur, in this Chamber, a figure of 1 tonne of recycled plastic in every 330 tonnes of asphalt was given.
- 5.4 Using this ratio would indicate that for every tonne (1000kg) of asphalt produced the

constituent elements would be shown in the table below. As can be seen the amount of recycled plastic is very small.

<b>Material</b>	<b>Weight</b>	<b>%</b>
Crushed rock and sand	930kg	93%
Bitumen	67kg	6.7%
Recycled Plastic	3kg	0.3%

## **6. Green Credentials**

6.1 There is challenge to the promotion of using recycled plastic in road surfacing materials on environmental grounds. The following points should be considered:

- clarity is sought as to what types of domestic waste (if any) can actually be reprocessed as the supplier has confirmed that plastic bottles and plastic bags with a melting point higher than 170C are not suitable for the process;
- waste plastic must be selected, cleaned and then milled to produce pellets able to be added to the bitumen mix. This process will require energy and will add to the overall carbon footprint;
- there are limited processing plants available within the UK to convert suitable waste plastic into pellets. These plants are remote from Highland so significant haulage would be required, again increasing the carbon footprint of the Council;
- all road surfacing has a finite life and the question that has to be addressed is what happens in 25 years' time when the road surface needs to be renewed? How or where will the old (plastic) surface be disposed of?; and
- it has been acknowledged that potentially misleading media claims (showing the re-use of bottles and bags) have been broadcast.

## **7. Roads Collaboration Programme**

7.1 A meeting was recently arranged by the Roads Collaboration Programme (RCP) and brought together representatives from the Society of Chief Officers of Transportation in Scotland (SCOTS), Transport Scotland (TS) and Macrebur (supplier) to discuss the emergence of plastic/polymer additives to bituminous surfacing materials.

7.2 It should be noted that Macrebur do not actually manufacture the asphalt but permit established quarries with coating plants to produce their product under licence (i.e. add processed plastic to asphalt).

7.3 SCOTS and TS both confirmed that all Scottish Roads Authorities are committed to encouraging new ideas, innovation and reducing the resource-impact of road maintenance/construction work. However, as custodians of both the road network and of public expenditure, Road Authorities are responsible for road safety and value for money. To protect those interests, it was essential that all new materials were subjected to robust and consistent challenge and stringent testing regimes to provide evidence to prove performance claims and expectations.

## **8. Product – Long Term Performance**

- 8.1 The most relevant issue for all Roads Authorities is the durability and longevity of the product. It was noted by TS during the meeting that product testing carried out to date was laboratory based – not live site trials.
- 8.2 TS has agreed that in-situ testing of existing roads should be undertaken to establish how the product performs in the real world after time. Furthermore, it was agreed that a test plan would be discussed between Macrebur and TS to establish what information was required from Macrebur to demonstrate the suitability of the proposed materials and provide robust evidence of their benefits.
- 8.3 In the interim period it is recommended that Highland Council, whilst endorsing the drive towards recycling and reuse of materials, await the outcome of the ongoing trials before deciding on its suitability for use on its adopted road network.

## **9 Product – Cost**

- 9.1 As with any product the matter of cost is of significance. Early indications are that the unit rate for asphalt containing plastic is higher than established products currently available. These costs may well become lower as and when overall production rates increase.

## **10 Private roads – Test sites**

- 10.1 Whilst this product has not yet been approved by TS for use on the adopted road network, this should not exclude its use on a private or unadopted road.
- 10.2 Should a private developer have confidence in the product to the extent that they are willing to lay the material, at no cost to the Council, on a low traffic unadopted road such as a new housing development or car park, then the Council should be open to the suggestion. The Council would then consider the merits of the proposal based on a site by site appraisal.
- 10.3 Private developers are required to make arrangements to maintain unadopted roads and should also inform householders that the Council are not responsible for maintenance of the road. If a private developer fails to maintain an unadopted road, then householders become responsible for that road.
- 10.4 Where such a proposal has been put forward and accepted by the Council, it would present the Council with an opportunity to monitor its long-term performance first hand with, potentially, a view to more widespread use.

## **11 Planning Condition**

- 11.1 Where such a material is used on a private development it should be stated clearly in the planning conditions that the Council is not obliged to adopt the road at all but may consider adopting it after a period of time has elapsed (recommended to be 10 years), subject to that road meeting the Council's standard adoption criteria at the time of transfer. The material used will have to demonstrate that it has met safety and durability standards as decided by an appropriately technically qualified Roads Officer/ Engineer.

Designation: Executive Chief Officer Customer and Communities

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