

Client Side

Carbon calculations back long life pavements

Transport Scotland is introducing a carbon calculator tool for transport schemes. The authority expects its supply chain will adopt the same method, encouraging materials with lowest 'lifetime carbon', writes Graham Edmond.

Scottish Government is keenly aware of the challenge posed by climate change and the imperative it presents to reduce emissions. The Climate Change (Scotland) Act and its ambitious target of reducing emissions by 80% puts Scotland at the forefront of international action towards a sustainable low carbon economy.

For this work, Transport Scotland has developed a carbon calculator tool, as part of a comprehensive Carbon Management System (CMS) intended to provide a robust and reliable means of measuring, monitoring and reporting the carbon footprint of all of Transport Scotland's activities.

The current draft version of the CMS has been developed and tested over the last six months by applying it to sample activities and projects.

Transport Scotland expects that carbon reporting will become a mandatory activity across all projects, maintenance and corporate activities within a few years. This approach is to engage with suppliers and industry now to ensure that CMS can be applied as effectively as possible as well as encouraging industry to develop innovative low carbon solutions.

As part of a pilot project, the CMS will be deployed across project management, design and contracting teams on 10-12 projects across both road and rail sectors.

Transport Scotland recognises the majority of transport related carbon footprint is associated with users of infrastructure, but important strides can still be made in the area of road construction and maintenance.

Road pavements are a significant source of embodied carbon – when building major and minor roads and as maintenance activity such as overlay and patching works. The layers of



Transport Scotland is expecting highly durable materials to exhibit the lowest life time carbon footprint

the road can be rich in materials which have a high embodied carbon content and there is a carbon implication from transport of materials to site and the energy expended laying them.

The CMS allows input of information about the pavement, the materials available and the transport and energy use on site to calculate the predicted embodied carbon.

It is hoped the CMS will be used to estimate the whole life carbon emissions of pavements, allowing project and structural maintenance decisions to be based not just on the immediate footprint of road construction but on its lifetime emissions profile.

For example, more carbon rich but durable road construction, which requires infrequent resurfacing through its design life, is expected to have an overall lower lifetime carbon requirement than a pavement with less initial construction footprint but requiring more frequent maintenance intervention over time.

The CMS will provide a robust and accurate estimate of carbon emissions for pavement

design and product selection options, which Transport Scotland expects will become an industry standard approach and one which all of its supply chain will adopt.

Once the six month pilot is finished and analysis completed, an implementation plan will be prepared for Transport Scotland, setting out the management, resource and technical implications for a full deployment of the CMS on all of Transport Scotland's activities and projects in future.

Transport Scotland is also piloting other innovative approaches to road reconstruction and maintenance, including recycled road base on the A90 west of Dundee and more durable surface course on the M8 between Edinburgh and Glasgow.

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