

Economy, Infrastructure and Skills Committee

SeneddEIS@assembly.wales

Economy, Infrastructure and Skills Committee
National Assembly for Wales
Pierhead Street
Cardiff
CF99 1NA

27th April 2018

Dear Sir / Madam

Re: State of Roads in Wales Inquiry

Thank you for the opportunity to contribute to this consultation.

Tarmac is the UK's leading sustainable building materials and construction solutions business. Our innovative services and solutions help to deliver the infrastructure needed to grow the economy today and create a more sustainable built environment to support our future prosperity. We employ approximately 7,000 people at more than 350 operational locations across the UK and are the largest manufacturer of cement and lime with facilities based in England, Wales and Scotland. In addition, Tarmac is the leading roads contractor in the UK.

Current Condition of Roads in Wales

Generally, there is an inconsistent standard across Wales, no one county/authority seems to be performing better than others. There is an opportunity to raise the standards of roads and user experience across the country's whole network through interventions to maintenance practices and investment strategy.

Funding and Delivery of Maintenance Programmes for Roads

The Welsh Government should seek to make arrangements that allow the relevant authorities to plan long-term preventative maintenance based on good information on the condition of infrastructure. Any opportunities for Welsh road maintenance departments or for Government/private sector collaboration could reduce total costs. Asset management plans should be put in place that detail the conditions of the roads. These plans should include an inventory of the road network and thorough assessment of the current condition of the roads, as this is key to cost-effective preventative maintenance. The information gathered, in the longer term will give improved background to the probable future performance of the road network and enable improved planning for good-quality prioritisation and maintenance work. This improved planning should minimise disruption to road users. Funding decisions should incentivise efficiency and collaboration.

Balancing road maintenance over the whole year is important, with focus on the correct repairs implemented rather than the 'fastest' repairs - for example the proper repair of potholes rather than quickly 'patching' them. Some estimates suggest replacing surface course is 20 times more cost effective than filling potholes (based on a 'day's output' - source Mineral Products Association). Long-term programmes of preventative work are the most efficient way of maintaining road infrastructure, with good

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planning works completed more efficiently (i.e. with reduced influence of winter weather on maintenance activities).

Any unpredictable or fluctuating budgeting for the maintenance of roads will lead to an inability to deliver the structured and planned maintenance required for the best user experience and could result in economic damage. There may be a need to carry out unplanned work from time to time (for example, in the event of flooding and extreme weather) however, with improved inspections and related maintenance activities for services such as drainage, road infrastructure will be in a better condition and more resilient to such events. In the example of drainage, good maintenance practices improve resilience to flooding that would otherwise result in water penetration into the road structure, causing additional cost, damage and inconvenience to the user.

With an increasing demand for whole of life maintenance and management of infrastructure there will be an increasing requirement to capture, collate and share construction information by way of a single streamlined solution. Building Information Modelling (BIM) for highways will provide an understanding of the asset's whole life cost and performance allowing smart data driven decisions to be made regarding its future maintenance. For example, it can be used to analyse the impact of various materials, contractors, laying conditions, pavement composition, construction methodologies and the quantity and quality of asphalt which could be recycled in the future.

Tarmac offers road maintenance solutions and already has a number of existing framework contracts in place. These offer the benefits of quality maintenance, improving longevity of road assets and user experience. Tarmac would welcome the opportunity to work with the Welsh Government and can help develop improved ways of procuring maintenance services that deliver better value for the taxpayer. Additional value can be realised through more collaborative and integrated design, procurement and construction delivery models.

Key considerations and measures for road construction and maintenance should include:

- Whole life costing
- The desired long term outcomes for the road
- Targets set for maintenance, for example, not returning within 5 years for additional work or similar
- Light touch / simple maintenance requirements - constructing and maintaining a durable asset
- Quality of repairs for longevity and reduced on-going maintenance, this should provide value for money when considering whole life costings
- 'Legacy' of the asset, for example, contribution to the local community
- Economic contribution of the asset
- Contribution to the housing requirements of Wales
- Public satisfaction and user experience

Major Enhancements

Projects need to be fully financed with guaranteed funding in place so they can be delivered on the ground and on time. Tarmac has experienced a number of cases where it has invested in production capacity in response to requests from the market but projects have failed to materialise. This significantly impacts confidence in future investments.

The planning of infrastructure changes and upgrades should be completed in a strategic manner that includes all the upcoming needs of Wales' 'smart infrastructure'. There may be opportunities to combine smart infrastructure development with other infrastructure development to reduce cost and minimise disruption.

The supply chain often has the solutions needed to deliver the best outcomes for the infrastructure project. Early supplier engagement in projects has been demonstrated to help arrive at better project outcomes. Many solutions already exist but can be slow to be specified and adopted. Government procurement processes can be used to support the testing and development of new innovative solutions. The management of infrastructure projects should move towards them being viewed as 'assets' and

maintained under on-going maintenance contracts with a focus on performance and regular review of 'big data' to make improved decisions.

With regards to transport infrastructure, the opportunities to take advantage of interconnectivity, big data, and new technologies such as artificial intelligence and autonomous vehicles is enormous but could lead to an increasing amount of services works and upgrades. Careful planning is needed to minimise disruption or delays to introduction of new technology. Improved information through digital asset management will enable better decisions to be made, in particular with regards to managing infrastructure assets and will lead to huge databases of information being held. Smart Technology and associated data will need to be appropriately safeguarded.

'Smart' Technologies in infrastructure

It is clear that there will be a huge range of new technologies and data available to enable the improved design, use and management of infrastructure assets in the future. The improvements should reduce journey times and improve user experience.

With regards to the design of roads and the materials used, should road-going vehicles continue to perform as they do now, the requirements are likely to remain consistent. However, there are likely to be many benefits of 'smart' technology improvements such as autonomous vehicles that will require new 'digital infrastructure'. This new smart digital infrastructure will need to be integrated into both existing and new road networks.

Future developments are likely to include, but not limited to; autonomous vehicles, heat and light use in roads, electric cars and recharging through infrastructure. The construction materials industry will need to be ready to provide the materials that will support implementation of these innovations. However, there must be recognition of the investment required to prepare for this. The Welsh Government should ensure that innovation is not limited by 'red tape' and improve the incentives for suppliers to innovate in these areas. Tarmac would welcome the opportunity to assist in specification requirements with clients / designers and to participate in discussions around the infrastructure requirements of roads of the future.

Sustainability of the maintenance and enhancement of the Welsh road network

Good design considers whole life and circular economy factors. Durability and maintenance costs also need to be considered so that infrastructure is managed as a long term asset rather than a short term capital project. Focussing on durability and quality during initial stages and design will secure the long term and low cost performance of the asset.

A whole life costing approach would support the implementation of the Wellbeing of Future Generations (Wales) Act 2015, opening the door to additional opportunities for savings and allow broader consideration of deliverables such as social benefits, community, housing and economic improvements over the life of the asset. The use of more resilient materials provides greater value when considering a whole life approach due to the superior durability when compared against traditional road construction systems. Such technologies support improved whole life cost of infrastructure within a developing circular economy, they should be used to greater effect in the longer-term asset management of infrastructure. More long-term asset management arrangements would improve the adoption of whole life thinking and investment.

By considering the whole life approach, lower cost/carbon solutions can be delivered than when compared on a first cost/carbon basis. Tarmac has reviewed the installation of a section of Ultigrip product that has been in situ for 16 years. A conventional application would now be on its 5th installation (based on a typical 3 year life). The conventional approach would have also emitted more carbon and cost more to maintain.

Tarmac is using increasing amounts of RAP (recycled asphalt plantings) in our products. RAP embodies the concept of circular economy thinking as it uses the materials contained within failing roads to create new roads - reducing the need for natural resource and energy and also reducing carbon emissions. RAP technology is proven and in use but under-utilised in road specifications. In addition, there are other new

technologies available. This includes permeable concrete and asphalt which can be integrated into drainage schemes or be utilised as a complete system to help create a Sustainable Drainage System (SuDS). Systems integrating permeable surfaces can provide a solution to help manage surface water, through infiltration and attenuation to maintain natural water flows. A SuDS solution is a key element of sustainable planning and can be used to offer flood protection.

Low temperature asphalts (LTAs) are supplied at temperatures typically 40°C lower than a hot equivalent. They require less energy and generate fewer carbon emissions during manufacture than conventional hot mix asphalts and as a result they can deliver significant carbon footprint savings compared to hot equivalents. However, beyond this aspect there are many other benefits to using LTAs i.e. the material can be trafficked quicker therefore reducing public disruption. Contract programmes can be shortened by laying more material each day and it still being ready to open to traffic by the required time. This in turn releases cost savings in terms of reduced plant, labour and traffic management costs. There is also a health and safety benefit for the workforce in terms of improving the working environment and reducing typical visibility impairment that comes from steam emitted during hot mix operations, this is particularly relevant during wet weather or during night shift work.

With regards to the future of road travel, Tarmac has been monitoring the development of hydrogen, electric and hybrid vehicles and trialled them within our business. Lack of infrastructure to support these vehicles is one of the limiting factors to their wider use, for example electric charging points and hydrogen fuelling stations. Significant improvement in alternatively-fuelled infrastructure is necessary to make these more 'sustainable' forms of travel viable in the future.

Strategic, secure supply chain for long term infrastructure development

National infrastructure development depends entirely on a sustainable supply of construction minerals. The Welsh Government need to consider this supply chain to ensure there are sufficient mineral products to meet the needs of infrastructure projects - this is a strategic issue that needs further consideration to meet the requirements for delivery of Welsh national infrastructure. Long term planning of infrastructure is vital - industry needs certainty to secure the investment that will be required to provide the construction products needed to deliver the large infrastructure projects of the future. Effective and efficient planning processes are vital to ensure adequate availability of construction minerals and to realise timely delivery of essential infrastructure. Tarmac has a number of facilities in Wales to enable the use of locally sourced cement, aggregates and asphalt, including recycled materials to be used in the on-going development and maintenance of Welsh roads.

I hope that you find the above comments of interest and use. If you do have any questions resulting from the above, or would like to discuss the points raised in more detail, then please do not hesitate to contact me.

Yours faithfully,

Tim Cowling
Regulatory Affairs Manager