



The benefits of preservation

Colin Brookes, highway maintenance consultant for ASI Solutions, and **Will Britain**, head of Blackpool Council's highway and traffic management services and president of the Local Council Roads Innovation Group (LCRIG), discuss how asphalt preservation can reduce carbon emissions generated through highway maintenance activities by extending the life of asphalt surfacing

Reduced carbon emissions targets will become key performance indicators for all industries. The highways sector needs to take positive steps towards reducing carbon dioxide emissions.

Innovative surface treatments can substantially prolong the surface life of roads by sealing the pavement and thus significantly reducing carbon emissions, minimising disruption and creating major financial savings – all key national and local objectives.

Financial benefits are instantly achievable by preserving good roads and extending their life. Major financial savings are evident in any algorithm that highway asset managers use.

Major carbon savings are also evident but at present the carbon impact of different highway maintenance activities are unreported and as such, not consistently measured.

ASI is raising the issue and lobbying via national events and regional workshops to ensure that preservation is a credible consideration for asset managers and that the obvious carbon reductions are sought

after and become an integral part of a developed asset management plan.

Independent research commissioned by ASI Solutions and carried out by Best Foot Forward, which has since been acquired by Anthesis, has found that by extending the life of asphalt, you can deliver a 90% saving on the cost and 97% saving of carbon emissions compared with traditional re-surfacing programmes.

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This demonstrates the benefits of preventative road maintenance in itself, while research led by Rutgers University, New Jersey, demonstrates the benefits of preventative maintenance in terms of the use of the road. The research found major carbon emissions and cost reductions from preventative measures to maintain road surfaces.

The researchers report that extending the life of pavement through preventive maintenance can reduce greenhouse gases by up to 2%; transportation agencies can cut spending by 10% to 30%; and drivers can save about 2% to 5% in fuel consumption, tyre wear, vehicle repair and maintenance costs because of smoother surfaces.

LCRIG is also taking a lead by considering alternative solutions, collaboration and co-ordination; as demonstrated earlier this year at its Technical Training Day held in partnership with the Road Surface Treatments Association and the Institute of Highway Engineers.

Following on from the event, Blackpool Council took the decision to invite suppliers and manufacturers of road surface treatments to participate in Project Amber. Project Amber was launched to enable Blackpool Council to obtain specialist advice from the supply chain for the right treatments in the right place at the right time.

The planning phase was undertaken at a workshop whereby all the organisations involved were able to address the issues and challenges. The workshop also enabled

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attendees to co-ordinate the programme of works to ascertain the road condition data for the network.

The added benefit of Project Amber is that this project will also serve as the first LCRIG trial site, and so a testbed for innovation closely monitored and potentially utilised by other councils and the Department for Transport.

The trials are continuing and an initial 15 organisations provided their expertise; while working collaboratively with each other to deliver Project Amber efficiently and cost effectively for Blackpool Council.

Project Amber forged a new approach to surface treatments - and how these treatments can be chosen with the direct involvement of the supply chain - not only in the use of innovative techniques and materials to repair and maintain the chosen roads, but also in the close collaboration between the suppliers. Often this meant two or three suppliers combining together to produce a solution and then working together to the end result.

The treatments took into account at what stage the road surface was in its lifecycle. Roads that are still in fairly good condition are being treated to preserve that condition, without changing the surface characteristics. It is all about using the right treatment, in the right place, at the right time and at the right cost.



Blackpool, local roads treated with Rhinophalt preservation and new road-markings

ASI's Rhinophalt was a good example of a material and technique that was vital to the success of the initiative as it provided not only the right treatment, but better outcomes for the residents and road users with increased confidence that public funding was being managed carefully.

We hope that Project Amber will act as a showcase of what can be achieved by local authorities working in partnership with the supply chain to achieve lower whole-life costs and reducing carbon emissions in highway maintenance through the use of surface treatments.

Preservation treatments provide a real sustainable alternative to structural maintenance thus helping local authorities to meet their NI 185 and NI 186 carbon

reduction obligations.

The table below shows that Rhinophalt is around 10% of the cost of resurfacing and also highlights the duration comparison, which is a major contribution to reducing carbon emissions.

The resurfacing activities add up to a minimum of 30 shifts compared to the discrete operation of a single night closure for the Rhinophalt treatment.

The 30,000 square metres is a comfortable output from the Rhinophalt treatment and can easily be achieved in one night.

By preserving the road surface before reactive maintenance is anticipated (e.g. patching) the life of our road surfaces can be extended for five years at low cost and minimal disruption. The preservation treatment can be reapplied at five-year intervals, which then takes the road surface into an extended 15 years of life before other forms of treatment become necessary (e.g. surface dressing).

This life cycle approach produces a massive reduction in carbon emissions plus significant financial savings.

Rhinophalt is a highly engineered asphalt preservation system, meeting the requirements of clause 950 in the Specification for Highway Works and carrying HAPAS certification and a CE mark. The product is spray applied usually at night time and is a discrete low noise operation that significantly delays the resurfacing of asphalt roads by up to five years per application.

The spray applied preservative can penetrate up to 30mm on aged asphalt surfaces (hot rolled asphalt, stone mastic asphalt, asphalt concrete) sealing inter-connecting voids and micro-cracks and reducing ingress of water, oxygen, salts and contaminants (fewer potholes, etc).

Rhinophalt also improves wear resistance and reduces binder oxidation thus extending the life of the asphalt pavement and it also reduces whole life cycle costs as proven in UKPMS lifecycle financial modelling. ☺

Comparison Table. Plane Out and Relay / Preservation Treatment					
4KM output @ 7.5m width = 30,000 m2					
Bill of Quantities					
Series	Typical Plane out and Re Surface				
Item No.	Description	Quantity	Unit	Rate	Total
1	40mm Asphalt Surface course	30,000	M2	£25.75	£772,500.00
2	Planing 40mm	30,000	M2	£5.75	£172,500.00
3	Tackcoat	30,000	M2	£0.60	£18,000.00
4	White Lining	4000	LM	£3.25	£13,000.00
5	Traffic Management	30	Days	£1,850.00	£55,500.00
				sub total	£1,031,500.00
	Prelims on items 1,2,3,	12.50%			£120,375.00
				Total	£1,151,875.00
Bill of Quantities					
Series	Preservation with new road-markings				
Item No.	Description	Quantity	Unit	Rate	Total
	Rhinophalt Treatment	30,000	M2	£3.50	£105,000.00
	Road Marking	4,000	LM	£3.25	£13,000.00
	Traffic Management	1	night	£2,250.00	£2,250.00
	Prelims included				
				Total	£120,250.00