

APSE Highways, Street Lighting and Winter Maintenance Seminar 2026



THE ROAD SURFACE TREATMENTS ASSOCIATION

Highway Maintenance Best Practice - Prevention, Permanent Solutions and Supporting Decarbonisation

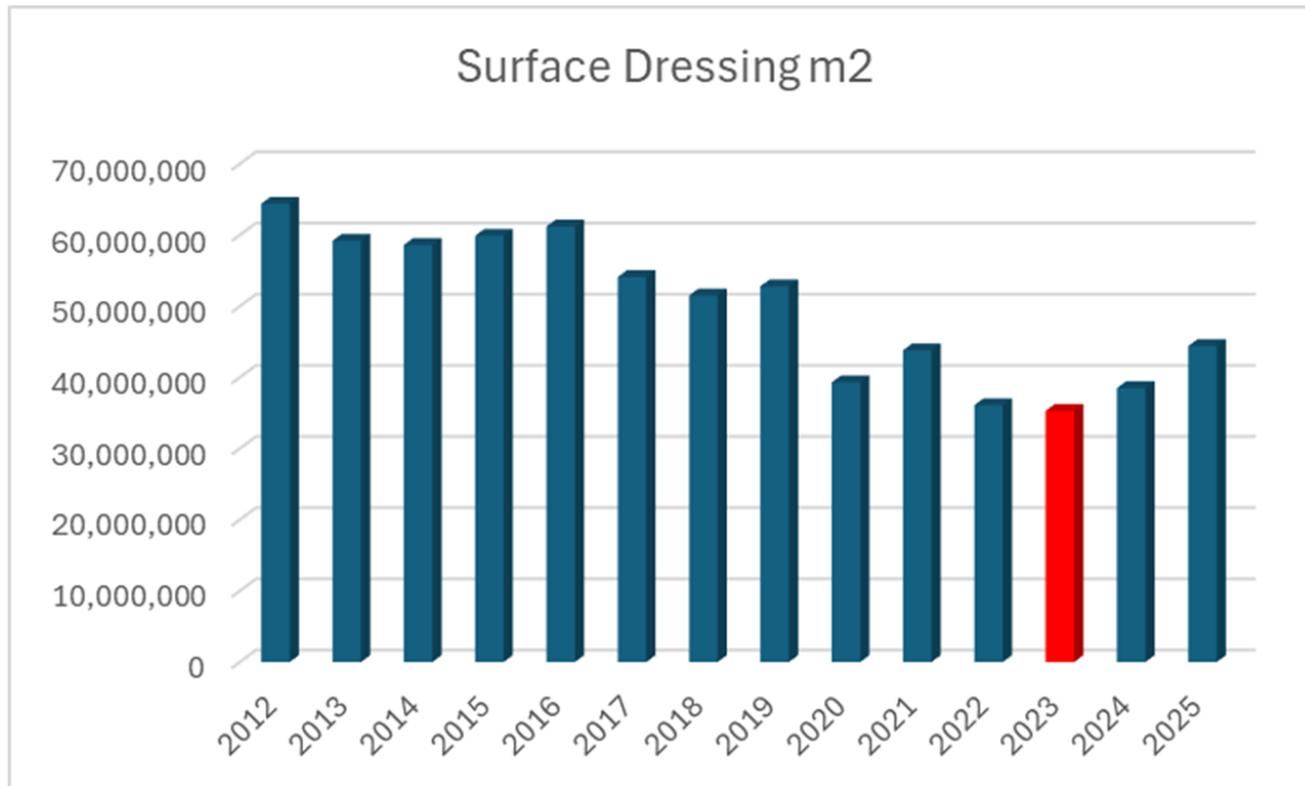
Mike Hansford
Chief Executive



Best Practice – Core Road Maintenance Principles

- Remove water from the road – manage highway drainage
- Seal roads early to prevent water ingress - preventative surface treatments
- Proactive, permanent repairs

So how has that gone.....Preventative Maintenance?



37,000kms – length of network that would have been dressed – therefore sealed for 10-15 years – had we continued to surface dress at levels in 2012!

7% - length of road treated with preventative treatments in 1985*

2% - length of road treated with preventative treatments in 2024*

*RDC Government stats

So how has that gone.....Highway Drainage ?

Reduced cyclic drainage maintenance to include:

- Gully emptying
- Grip / ditch clearance
- Rural side verging (exposing road edge and gullies)
- Other drainage assets manholes, catchpits, soakaways, balancing ponds



Reactive approach to maintenance of these assets costing significantly more – responses to flooding, accelerated road deterioration



15 individual repairs/visits (Reactive repair – AIA ALARM survey 2025 - £81.62 to 106.52 per repair) so cumulatively would have cost **£1,224 - £1,597** with further costs likely to be required on this site (**108 kgCO₂e/m²**)



A planned patched repair for that entire area (approx 5m x 1.5) would be (based on £54.25 -57.87 per m² – Planned repair AIA ALARM survey 2025) costing **£406 - £434**. (**20-25 kgCO₂e/m²** - based on Conventional, Thermal, PMMA screed patching)



DfT Transparency Reporting

Transparency Reporting introduced in 2025

From 2015 – 2020 Highways Incentive Fund – Self Assessment (Not audited)

National Audit Report / Public Accounts Committee

Key points :

- Condition of local roads
- Knowledge – data and information supporting decisions
- Asset Management Guidance for local authorities

Metric	What it measures	Which scorecard element it counts towards
1	Condition of A roads	Condition
2	Condition of B and C roads	Condition
3	Condition of U roads	Condition
4	How much of a local highway authority's maintenance spend was spent on preventative maintenance, rather than reactive maintenance, as a percentage	Best practice
5a	The percentage of red-rated roads that a local highway authority plans to resurface in the financial year ending 2026	Best practice
5b	The percentage of green and amber-rated roads that a local highway authority plans to apply preventative treatment to in the financial year ending 2026	Best practice
6	How much capital funding a local highway authority plans to spend on highways maintenance in the financial year ending 2026, compared to their allocation from Highways Maintenance Block	Spend
7	Whether a local highway authority has plans to adopt innovation, such as innovative technologies in highways maintenance	Best practice
8	Whether a local highway authority has plans to minimise disruption caused by street or road works	Best practice
9	Whether a local highway authority has plans to decarbonise its maintenance operations and increase climate resilience	Best practice
10	Whether a local highway authority has plans to maintain footways or cycleways	Best practice

Pothole numbers have doubled in year, says council

Media Coverage

one Panorama

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The Pothole Problem

The UK is plagued by potholes. They can cost drivers dear, injure an even kill. So why are there so many, and why are councils struggling to stay on top of the problem? Richard Bilton investigates.

Show more



The Telegraph
Pothole crisis reaches record high as ...



Facebook



PAS2161 Data Standard

Table 2 – Road condition categories

Category	Description	Potential maintenance treatment option
1	No deterioration	Pavement is not considered for maintenance
2	Minor (and/or aesthetic) deterioration	Light maintenance (e.g. minor patching)
3	Moderate deterioration	Localized intervention or mid-life preventative maintenance (e.g. surface dressing, patching, crack sealing)
4	Moderate to severe deterioration	Rehabilitative maintenance, perhaps full carriageway (e.g. resurfacing with thin overlay/surface dressing and multiple patching, edge haunching)
5	Severe deterioration	Structural maintenance (e.g. full carriageway resurfacing or reconstruction)

PAS 2161:2024

Road condition monitoring (RCM)
data – Specification



Highway Maintenance Funding

Table 1: Highways maintenance block funding for 2026 to 2030

Year	Baseline (£m)	Incentive (£m)	Total funding amount (£)
2026 to 2027	1,092	525	1,617,000,000
2027 to 2028	1,201	525	1,726,000,000
2028 to 2029	1,337	530	1,867,000,000
2029 to 2030	1,594	540	2,134,000,000
Total (2026 to 2030)	5,224	2,120	7,344,000,000



Commissioned a Review of the Code of Practice – Well Managed Highway Infrastructure

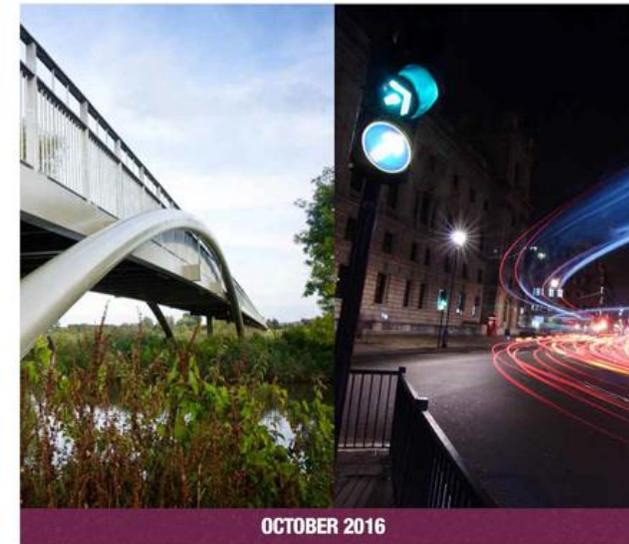
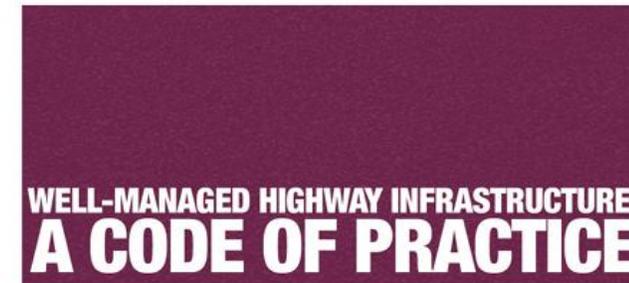
- UK Road Leadership Group (UKRLG)
- Atkins Realis
- Representatives from the industry forming working groups

Building on the ‘risk based approach’

Data led and informed decisions

Reference to good practice case studies

UK ROADS LIAISON GROUP



Life of an Untreated Asphalt Road

An asphalt road surface will naturally break down and degrade due to :

- Ageing
- Effects of trafficking
- Oxidisation process, caused by exposure to the elements including UV light
- Accelerated by standing water
- Exposure to pollutants

Typically lasting 10-15 years





Life of an Untreated Asphalt Road





The Life of an Asphalt Road

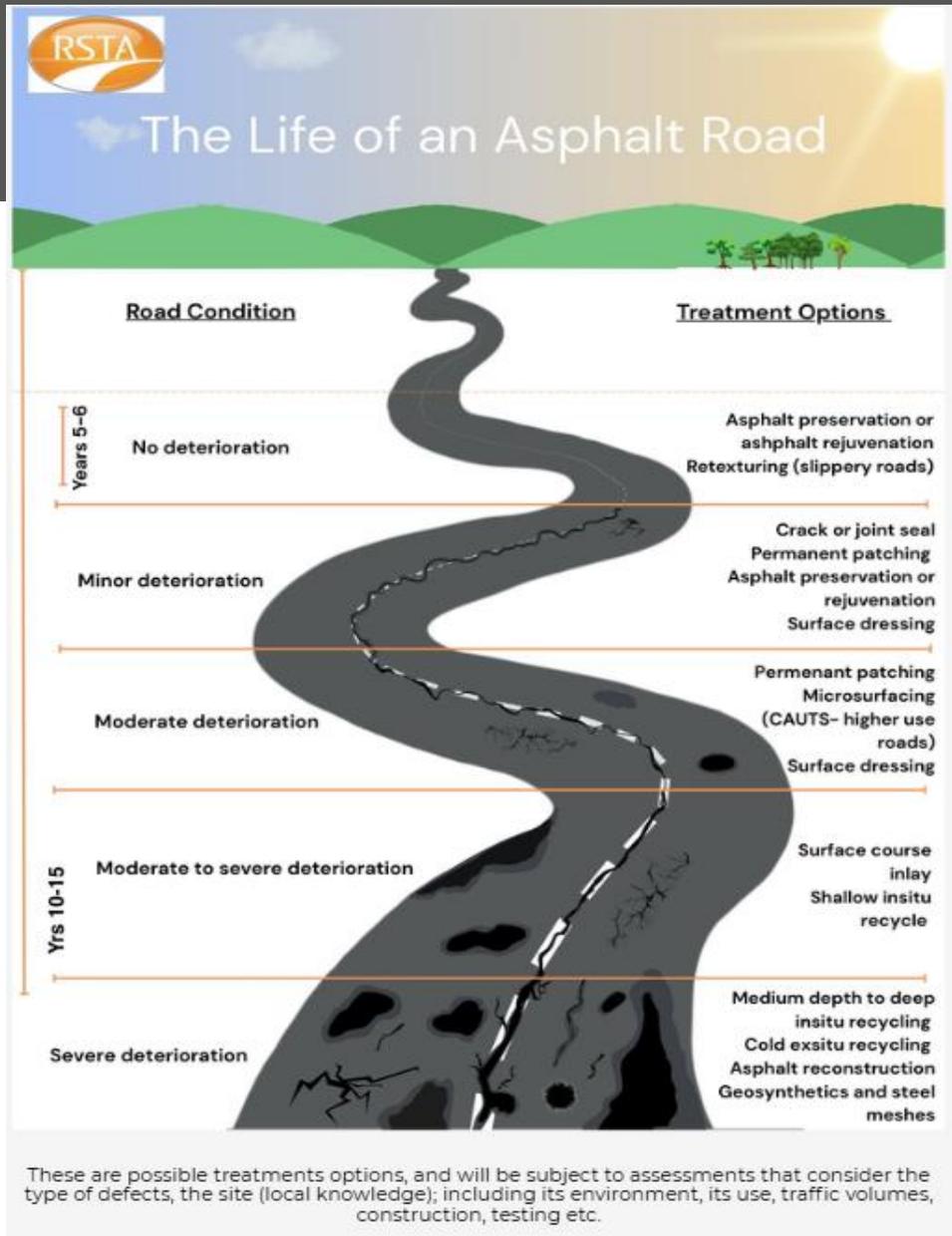
Untreated asphalt roads naturally degrade through ageing, trafficking and process of oxidisation caused by exposure to the elements

Becomes brittle, cracks and water then gets into the fabric of the road

Downward hydro pressures, combined with freeze/thaw effect

Leads to damage causing potholes and structural failure

Linked to condition categories documented in PAS2161 – Standard for road condition





Keeping Good Condition Roads, In Good Condition

- **Asphalt non penetrative preservation treatments**
- **Asphalt penetrative preservation treatments**
- **Asphalt rejuvenation treatments**

Spray applied from years 5-6 typically – reapplication every 5-6 years.

Preservation

0.3278 kgCO₂e/m²
<£4 per m²

Rejuvenation

0.0328 kgCO₂e/m²
<£4 per m²

Asphalt surface course

7.2471 kgCO₂e/m²
£30 per m²

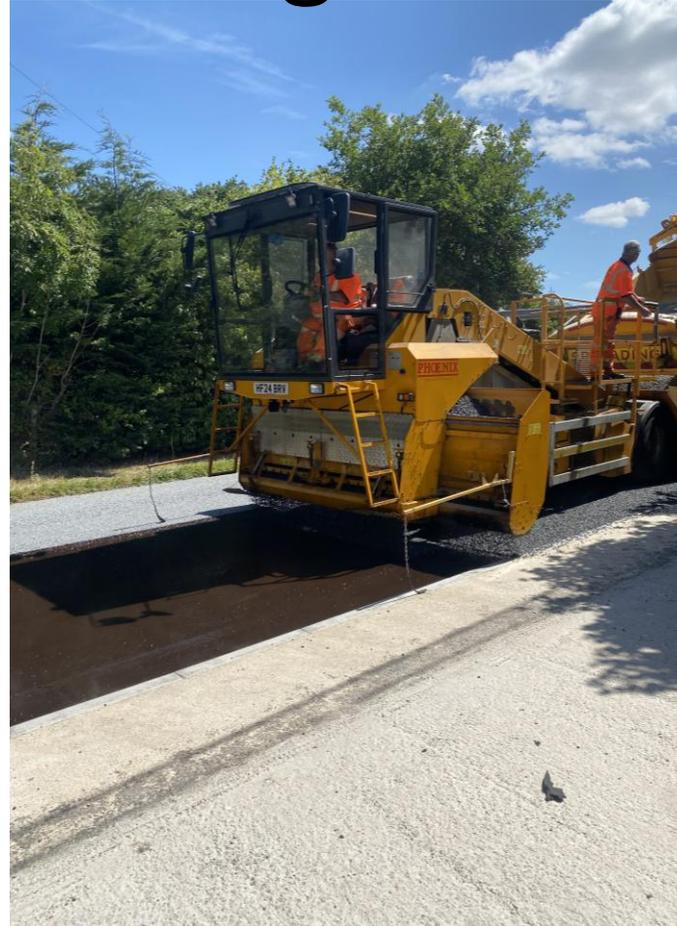
Surface Dressing

Application of a thin layer of bitumen emulsion to the existing road surface, followed by a single or double layer of chippings

Chippings are then rolled, road opened to slow moving traffic to achieve embedment

Swept after 24-48 hours to remove non embedded chippings

Typical life 10-15 years



Techniques such as **ENCAPSULATION** enables surface dressing chippings to be **LOCKED** into the surface

Removes issue of loose chippings

Gives the dressing more **RESILIENCE** (high stress areas, tree canopies) with a double seal

Helps with **AESTHETICS**, improving public perception



Single Dressing

0.8135 kgCO₂e/m²
<£4.5-5.00 per m²

Asphalt surface course

7.2471 kgCO₂e/m²
£30 per m²



Slurry Microsurfacing

- A site-mixed, cold applied asphalt surface course
- Bitumen emulsion, graded aggregates, fillers, fibres
- Blended and spread in single or double layers
- 15mm nominal thickness
- Seals substrate and improves wear/skid resistance



Preservation

1.7892 kgCO₂e/m²
<£10 per m²

Asphalt surface course

7.2471 kgCO₂e/m²
£30 per m²



Cold Applied Ultra Thin Surfacing (CAUTS) on higher use roads (250> cv/l/d)

How long do you continue to fix potholed roads at end of life?



Cold Recycling

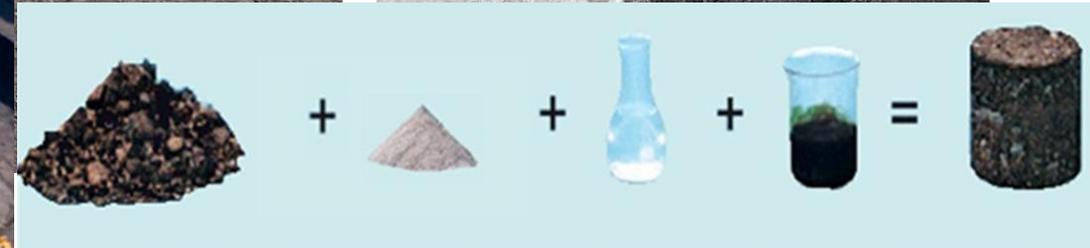
In situ recycling includes the following depths:

- Shallow (Retread) recycling
75-125mm
- Medium depth recycling nominal
150mm - referred to as Regen
- Deep recycling 150-325mm when
the base and subgrade, is recycled

Design will be determined through
trial pits, test mixes

Cold Ex Situ Recycling

Planings removed from site, cold mixed
with emulsion, foam, and returned as
Asphalt binder or base material.



Aggregate
Replacement:
Road planings,
Crushed
concrete
etc

Hydrated
Lime
PFA
Cement

Water

Foamed
bitumen,
Or
Bitumen
emulsion

High –
grade
Stabilised
layer

Geosynthetics and Steel Meshes



Some of the best innovations, were introduced 20+ years ago but not widely adopted.

Option to reduce thickness of asphalt reinstatement

Lowering costs and carbon

Making roads more resilient to the effects of reflective cracking

Can be installed below the surface or binder course layer

Why Surface Treatments - Financial Challenges



Impact on bitumen and oil (and aggregate) prices

Reported maintenance backlogs increasing

Will support whole lifecycle maintenance – extending / preserving roads in good condition

Why Surface Treatments - Road Safety Strategy



Overarching targets

- 65% reduction in the number of people killed or seriously injured on roads in Great Britain by 2035, using a 2022-2024 baseline
- 70% reduction in the number of children (under 16) killed or seriously injured on roads in Great Britain by 2035, using a 2022-2024 baseline

Use of **High Friction Surfacing** (containing calcine bauxite) reduced from 4million m², to around 400,000m²

TRL, RoSPA studies show HFS best performing in reducing collisions

Retexturing

Surface dressing

Microsurfacing





Why Surface Treatments - Decarbonisation of Highway Maintenance

RSTA Carbon Emissions for
Road Surface and Other
Maintenance
Treatments for
Asset
Management
Purposes



2nd Edition



“Decarbonisation of highway maintenance activities is within reach!” Emma Pye, PYE Management

Free to download from the RSTA website:

Treatment	Units	A1-A3	A4	A5	A1-A5 (Total)	B
Rejuvenation (under 40mph)	kgCO ₂ e/m ²	0.0268	0.0061	0.0014	0.0343	0.0645
Rejuvenation (over 40mph)	kgCO ₂ e/m ²	0.0268	0.0049	0.0001	0.0328	0.0328
Penetrative Asphalt Surface Preservation Systems	kgCO ₂ e/m ²	0.2458	0.0152	0.0657	0.3266	0.3278
Non-Penetrative Asphalt Surface Preservation Systems	kgCO ₂ e/m ²	0.2392	0.0356	0.0010	0.2758	0.2767
Surface Dressing – Single layer Carriageway	kgCO ₂ e/m ²	0.6059	0.1865	0.0128	0.8052	0.8135
Surface Dressing – Double Layer (Racked In) Carriageway	kgCO ₂ e/m ²	0.7974	0.1654	0.0175	0.9803	0.9836
Surface Dressing – Double 10mm	kgCO ₂ e/m ²	0.8941	0.2668	0.0220	1.1828	1.1959
Surface Dressing – Double 14mm	kgCO ₂ e/m ²	0.9400	0.2777	0.0364	1.2540	1.2556
Surface Dressing – Decorative	kgCO ₂ e/m ²	0.8395	0.5258	0.0212	1.3866	1.3915
Surface Dressing – Footway	kgCO ₂ e/m ²	0.7485	0.1124	0.0149	0.8759	0.8856
Surface Dressing – Encapsulation System	kgCO ₂ e/m ²	-	-	-	0.2457	0.2513
Microsurfacing	kgCO ₂ e/m ²	1.4394	0.2709	0.0539	1.7642	1.7892
Geosynthetics*	kgCO ₂ e/m ²	1.3703	0.0296	0.1084	1.5080	-
Crack and Joint repairs	kgCO ₂ e/m ²	4.5325	-	-	-	-
Spray Injection Patching	kgCO ₂ e/m ²	1.8594	0.2445	0.9791	3.0830	3.0830
Retexturing Techniques - Waterblasting	kgCO ₂ e/m ²	See A1-A5 Total			0.3118	0.3118
Retexturing Techniques - Shotblasting	kgCO ₂ e/m ²	See A1-A5 Total			0.3573	0.3853
Medium In Situ Cold Recycling - 150mm	kgCO ₂ e/m ²	3.9798	0.0257	0.7750	4.7805	4.7805



RSTA Training Events

Check out our CPD training pages on our website :

- Surface dressing
- Slurry Microsurfacing
- Management of skid resistance
- Asset Management

We will be implementing an online training portal later this year

<https://www.highwaysmagazine.co.uk/news/highways-events/highways-live-sustainable-resilient-highways-workshops>

The poster features a background image of a multi-lane highway with traffic. At the top left, the 'Highways LIVE' logo is displayed in a white box. To the right, the text 'Regional Event Series' is visible. The main title 'Sustainable & Resilient Highways' is written in green. Below this, the event schedule is listed: '28 May | London', '4 June | Scotland', '16 June | Northern Ireland', and '9 July | Birmingham'. A green circular badge with a white checkmark contains the text 'Free to attend for public sector'. At the bottom, logos for supporting organizations (GALVMAC, SPL) and partners (Peacock, WDM, RSTA, IHE Institute of Highway Engineers) are shown.



Maintaining the UK's Greatest Asset

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Thank you for listening