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Reporting on the asphalt industry

Issue 34 | Summer 2015

ALARM 2015 PAINTS A MIXED PICTURE 20th anniversary of local roads survey

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INVESTMENT DRIVES DEMAND Gearing up to meet the challenge

SHARING BEST PRACTICE EVENT Going the distance for better roads

ASPHALT INDUSTRY NEWS

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MOVING UP THE AGENDA



Roads are moving up the political agenda, with the £28 billion of investment pledged for road

infrastructure set to continue under the new government.

We support the security of funding promised over the next five years but the challenge going forward will be reconciling the huge variation in funding between the strategic road network and our local roads.

This is critical because clearing the maintenance backlog remains out of reach for many local authorities. Our 2015 Annual Local Authority Road Maintenance (ALARM) survey, now in its 20th year, provides a detailed picture of the condition of the local road network as well as insightful analysis into road maintenance and funding issues. It shows yet again that highway departments are still only treading water and struggling to prevent the continuing deterioration of our local roads (see pages 4 and 5).

It is encouraging that 85 per cent of respondents to this year's ALARM survey recognise the benefits of developing asset management plans and we continue to advocate an 'invest to save' approach to ensure limited funds are spent efficiently.

To promote this we hold an annual Sharing Best Practice event in partnership with APSE and ADEPT, where delegates from across the country share experiences and learn from local authority case studies. The last event was held in Doncaster and included a keynote speech from DfT Director John Dowie as well as presentations from local authorities and the industry (see page 11).

Sustainability is also critical to the industry and we have an interesting case study demonstrating how this links to durability (page 10).

This issue also includes a look at what suppliers are doing to meet the increasing demand for asphalt as well as case studies, news items and some key dates for your diary.

Enjoy – and please, if you have any feedback, email us at info@asphaltuk.org

> Alan Mackenzie Chairman, Asphalt Industry Alliance

WORN OUT ROADS RECYCLED FOR BETTER SUSTAINABILITY



Midlands-based asphalt and aggregate recycling company Coldcarr Recycling Ltd is working with local authorities to process their worn-out road surfaces for reuse around the country.

Annual production levels exceed 200,000 tonnes, helping councils and other clients, such as Amey and Hanson Aggregates, improve the sustainability credentials of resurfacing projects.

The company uses Rubble Master machines, which can crush a wide range of materials to a maximum size of 14mm for reuse in asphalt mixes, and have been rated highly by the Environment Agency for low dust and noise levels.

DIARY DATES

Some key dates for your diary:

18 June	Institute of Asphalt Technology National Conference, Leeds www.instituteofasphalt.org
25 June	'Fit for the Future' – MPA Asphalt Stakeholder Workshop www.mineralproducts.org/events.htm
1 July	Westminster Energy, Environment and Transport Forum, London www.westminsterforumprojects.co.uk
8-9 July	NCE UK Roads, Millennium Gloucester Hotel, London www.roads.nce.co.uk
6-11 Sept	42nd Annual Residential Course in Asphalt Materials and Pavements, Newcastle www.ncl.ac.uk/cegs.cpd/cpd/asphalt.php
3 Nov	AIA Sharing Best Practice event, National Motorcycle Museum, Birmingham www.asphaltuk.org
4-5 Nov	Road Expo Scotland www.road-expo.com
25-26 Nov	Highways UK: 'Roads for a Modern Britain', ExCel, London www.highways-uk.com/the-event
1-3 June 2016	Eurasphalt and Eurobitume Congress, Prague: 'Investing in our greatest asset' www.eurobitume.eu/events/ee-congress-2016-destination-prague

ASPHALT INDUSTRY NEWS

RBA BECOMES:

Eurobitume UK is now the trade

has served the industry since 1968.

industry over recent years.

representation."

eurobitume

association of the UK bitumen supply industry,

representing the major suppliers. It supersedes

the Refined Bitumen Association (RBA), which

The change comes in response to the

consolidation, restructuring and common

challenges that have taken place within the

have taken the decision that our members' interests will be enhanced and strengthened by

Dave Foster of Eurobitume UK explains: "We

being part of a centralised European operation. "This will help us continue to promote bituminous materials and serve the

SIXTH EDITION OF **BITUMEN HANDBOOK**

Shell has published the sixth edition of the Shell Bitumen Handbook, a comprehensive guide to bitumen, asphalt and paving technology.

Since it was introduced in 1949, the handbook has sold over 20,000 copies in over 40 countries. The latest edition, aimed primarily at contractors and civil engineers, includes new concepts, practices and case studies as well as new information and innovations.

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03

HIGHWAYS UK

25/26 November, ExCel, London

construction industry locally in the most efficient way. Within Eurobitume, the UK team will contribute to - and benefit from - a stronger, consistent voice; more effective communications tools; and focused local Eurobitume is the voice for the European

bitumen industry and promotes the efficient, effective and safe use of refined bitumen in road, industrial and building applications throughout Europe. Its head office is in Brussels and its members have local representations in Benelux, France, Germany and Switzerland as well as the UK.

The Eurobitume magazine gives news and updates on bitumen activities across Europe and the Asphalt Advantages campaign (www. asphaltadvantages.com), launched as a joint initiative with European Asphalt Pavement Association (EAPA), promotes the use of asphalt materials. For further information visit www. eurobitume.eu

NEW TECHNICAL CENTRE

Pavement engineering and asset management specialist Jean Lefebvre (UK), part of Eurovia, has opened a new technical centre in Cheshunt, Hertfordshire.

It includes a large laboratory which will allow the company to offer more extensive research and product development to its clients. David Gibby, CIHT President, said: "In order to thrive, the highways and transportation industry must focus on innovation, research and development.

"It is great news that this new technical centre has been equipped to aid innovation in the industry."

Formation of Highways England, the new government-owned strategic highways organisation, is placing new emphasis on the country's evolving roads network to support economic growth.

As a result, a major new event has been launched to bring together the people responsible for planning,

developing, managing and maintaining the UK's road network. Highways UK, which will be held at London's ExCel on November 25 and 26 2015, combines a high-level conference with industry and innovation briefings.

For more information visit www. highways-uk.com

UPDATED STANDARDS PUBLISHED

Two British Standard publications relating to asphalt mixtures, their transportation and laying have been updated to ensure compliance with the European Construction Products Regulations and to reflect current UK best practice in the laying of asphalt mixtures.

The updates are to: PD6691:2015 Guidance on the use of BSEN 13108, Bituminous mixtures - materials

specifications and BS 594987:2015 Asphalt for roads and other paved areas specification for transport, laying, compaction and product-type testing protocols.

Further changes are expected following revision of the EN 13108 series of European Asphalt Standards, anticipated to be published in 2016 and come into effect in 2017.





Contraction of the second s

ALARM SURVEY 2015



THE FIRST ALARM survey was conducted in 1995 to provide a detailed picture of the condition of the local road network. There was general concern at the time that the findings of the National Road Maintenance Condition Survey (NRMCS) did not truly reflect the state of the roads. This was proved to be the case and the ALARM survey is now widely recognised as an accurate and insightful analysis of road maintenance and funding issues.

Encouraging signs

The 2015 report, published on March 26, highlights some encouraging signs: local authorities reported an increase in their overall maintenance budgets and there has been a further reduction in the gap between the funds highways departments say they need annually to keep their roads in adequate condition, and the amount they actually receive.

This is supported by the growing number of authorities – 85 per cent of this year's respondents – who recognise the benefits of

ALARM SURVEY 2015 PAINTS A MIXED PICTURE

This year marks the 20th anniversary of the **Annual Local Authority Road Maintenance (ALARM)** survey and the picture painted by the 2015 report is a mixed one. While it is clear that more money is being spent on the local road network, local authorities are just treading water rather than being in a position to tackle the backlog of repairs and prevent continuing deterioration of local roads.

developing Highways Asset Management Plans, as promoted by the Highways Maintenance Efficiency Programme (HMEP). Research has shown that adopting an 'invest to save' approach pays dividends – with every pound of planned investment in the road network providing long-term savings of more than twice the value.

But the results of the 2015 survey also demonstrate the scale of the task that still remains to bring the local road network up to scratch: local authorities would need more than £12 billion, the amount reported last year, in spite of the additional funding that has been made available.

There are many reasons for this – and these vary from authority to authority – but another winter of record rainfall and severe flooding has been a significant contributory factor. While there has been a large reduction in the number of authorities that had to cope with unforeseen costs, the average additional costs has seen a three-fold increase in England from £1.6 million

in last year's report to £5.7 million in this.

Any unforeseen costs puts pressure on an already stretched road maintenance budget and the number of compensation claims for personal injury or damage to vehicles as a result of poor road condition can also have a dramatic effect.

Significant decline

The average number of claims received has remained fairly stable but the amount paid out in compensation claims over the last year has doubled in England from £11.1 million last year to £20.2 million this. Wales and London fared better, with both areas reporting a significant decline for the second successive year.

That said, the associated staff costs spent processing claims was higher for all regions giving a total estimated cost for road user compensation claims of £40.8 million (up 29 per cent from £31.6 million last year), broken down as £23 million on compensation and £17.8 million on staff costs. Although some of this

OVERALL ROAD MAINTENANCE BUDGET 2014/15



England £23.4m England £23.4m London £7.5m England £7.5m

Average per authority

inc. bridges, cyclical, lighting, etc

STRUCTURAL MAINTENANCE BUDGET



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ALARM SURVEY 2015

KEY FINDINGS	TOTAL*	England**	London	Wales
Percentage of authorities responding	52%	53%	56%	41%
Shortfall in annual road structural budget	£548.6m	£428m	£39.8m	£80.8m
Average annual budget shortfall per authority	£3.2m	£3.7m	£1.2m	£3.7m
Percentage of budget used on reactive maintenance	25%	23%	29%	34%
Estimated time to clear carriageway maintenance backlog ¹	13 years	12 years	15 years	13 years
Estimated one time catch-up cost	£12.16bn	£10.7bn	£807m	£646m
Estimated one time catch-up cost per authority	£71m	£93m	£25.2m	£29.4m
Percentage of authorities reporting unforeseen additional costs	32%	31%	28%	44%
Frequency of road surfacing (all road classes)	63 years	64 years	31 years	59 years
Number of potholes filled over past year	2,670,350	2,380,730	159,776	129,844
Average number filled per authority last year	15,706	20,702	4,993	5,902
Average cost to fill one pothole	£57	£52	£72	£65
Total spent filling potholes in past year	£144.3m	£124.4m	£11.5m	£8.4m
Amount paid in road user compensation claims	£23m	£20.2m	£2.2m	£702k
Staff costs spent on claims (per year) average per authority	£104k	£104k	£88k	£138k

¹Based on current budgets

may be attributed to claims from previous years, it remains a continuing drain on resources.

Pressures

Alan Mackenzie, Chairman of the Asphalt Industry Alliance, said: "The 2015 ALARM survey shows that the number of potholes filled increased by over a third in the last year to almost 2.7 million. The government's emergency funding has been a major factor in this increase in potholes filled, but it is not an efficient use of resources. While we understand that the Department for Transport is promoting permanent repairs, the fact remains that filling potholes is like chasing your tail and the money would be far more wisely spent on planned preventative maintenance to prevent potholes forming in the first place.

"Given the pressures that local authorities continue to face, they must be commended for all the work they do, in collaboration with industry, in delivering a local road network that we all rely on daily.

"The government's commitment to £6 billion

* England, London and Wales **excludes London

of funding for local road maintenance between 2015 and 2021 is welcome but, although it sounds like a big investment, it will only be enough for local authorities to tread water and it will do nothing to tackle the backlog or prevent continuing deterioration.

"We have come a long way in the last 20 years but there is still much more to be done to ensure we have a road network suitable for the 21st century."

The full 2015 ALARM survey is available to download at **www.asphaltuk.org**

BUDGET SHORTFALL

Average required per authority and average budget shortfall

England £17.3 m required: shortfall £3.7m

London £5.5m required: shortfall £1.2m

Wales £7.8m required: shortfall £3.7m

POTHOLES FILLED PER YEAR



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PLANNING AHEAD DELIVERS EFFICIENCIES



The benefits of long-term funding visibility and stability are vital if local authorities are to deliver the service and efficiency improvements required to bring the local road network up to scratch. Chris Allen-Smith, Head of Profession, Asset Management & Maintenance at Hertfordshire

County Council explains:

ASSET MANAGEMENT is now widely recognised as a key tool in delivering value for money in the management and maintenance of our highway networks. Planning ahead and making informed decisions to keep whole-of-life costs to a minimum can deliver real efficiencies but real long-term planning depends on long-term visibility and reliability of funding.

To help maintain stable, long-term funding and determine priorities, it is important that local authorities can accurately place a value on all their assets and local roads are no exception. It is not an easy task and I think many authorities are guilty of underestimating the true value of their local road network.

In Hertfordshire, for example, we have around 5,000km of roads under our stewardship. Under current rules this is valued in our accounts at approximately £600 million but we now know that the real asset value of this infrastructure is



...many authorities are guilty of underestimating the true value of their local road network.

close to £7 billion. This is because the current system only considers 'historic costs' – what has been spent on the asset in the past, typically the last 20 years or so - not the true replacement cost of the asset. The good news is that local authorities are already producing asset management based valuations to support the Treasury's Whole of Government Accounts programme and local authority accounting rules will be changing in the next few years to use this more realistic methodology.

If we can place a more accurate value on this asset then this will strengthen the DfT's discussions with HM Treasury about national priorities, demonstrate the need to consider the balance between funding levels for the strategic road network and local roads and help local highways teams compete with other services for scarce resources.

Security of funding

The key to good asset management is the ability to plan long-term, which itself is influenced by security of funding. It is simple: the more security of funding, the more confidence there is to plan for the long-term and ensure the best value for money.

An authority can only make the best choices if they know what resources will be available in the medium term at the very least. This will allow them to make informed decisions. It could be that it is necessary to carry out a short term fix and delay a big spend on renewal or it might be a better decision to carry out a full repair immediately, despite the higher initial cost. However arriving at the right choice requires both good engineering judgement and financial foresight.

Hertfordshire has been following an asset



management approach for over a decade; it plays a critical role in making decisions and obtaining the required capital and revenue funding to carry out the plan. We use a variety of tools, including an innovative deterioration model that helps us to predict future maintenance needs and plan interventions on the basis of the 'Right Treatment at the Right Time'.

Best value for money

It also allows us to predict future condition trends for different budget scenarios; this gives key decision makers real choices by spelling out clearly the different options and the likely consequences of each one. Using this model, we have looked at the potential difference between pursuing an optimised asset management based programme and relying on a more reactive worst-first approach to drive the work. Using asset management to help us select the best longer term treatments, we estimate we can get up to 30 per cent more benefit from a given budget - provided of course that we can plan far enough ahead to make the most of it.

Getting the most out of all available resources – including asphalt plants, machinery and the work force – is crucial to getting best value for money. This means less short term jobs and more coordination between projects and, to return to my theme, longer term visibility and certainty of budgets to help unlock these efficiencies.

I welcome the DfT's move to providing longerterm visibility of capital funding allocations this is a big step in the right direction – but, for many local authorities, the annual nature of the budget setting cycle means that confirmation of budgets, whether from the (non-ring fenced) DfT funds or locally-derived budgets, can come too late in the process to allow effective planning and certainly hampers multi-year forward programmes.

I think I can speak for all local authority highway engineers when I say that we would welcome a commitment in the new Parliament to take into account the need for us to get best value for money through long-term funding for road maintenance, ideally ring fenced.

CASE STUDY

LOW TEMPERATURE BINDERS

INNOVATION

It is 20 years since Shell first started working on low temperature bitumen solutions for the asphalt industry. **David Foster**, Shell Bitumen UK Business Manager, looks at how low temperature (LT) binders can help save time and money, reduce disruption and improve the environmental credentials of a project.



LOW TEMPERATURE BINDERS SOLUTION

ASPHALT LAYING operations are increasingly carried out during restricted working hours, such as at night or in adverse weather conditions, in order to minimise the social and economic costs of road maintenance projects.

Unfortunately this practice brings logistical difficulty and quality issues. Unforeseen delays may lead to longer transport or storage times on site that may impact the workability of the asphalt. In addition, heating asphalt to high temperatures can lead to high energy costs and CO₂ emissions.

This is where LT binders come in. They are designed to be used on all types of roads and allow asphalt to be laid at lower temperatures than a conventional mix. This helps reduce the need to overheat the asphalt, sometimes done to achieve a longer time window for transportation and/or storage, and allows it to remain workable at lower laying temperatures.

The reduced temperature of the asphalt improves health and safety for the workforce and can also help cut the time needed before the road can be reopened to traffic, minimising disruption.

LT binders can also be used to help lower the production temperature of asphalt, compared to a conventional hot mix. They allow a workable mix to be created at temperatures up to 30°C lower than those required for conventional binders for the production of hot mix asphalt, helping cut energy costs and reduce CO2 emissions.

Durability of the finished asphalt can also be improved through the use of LT binders as they reduce the ageing of the binder, which is usually caused by heat during the hot mix production process.



GEOFABRIC BLANKET USED TO EXTEND ROAD LIFE





The A1 Archway Road in North London has been resurfaced using a reinforcement system to reduce cracking and extend the life of the road.

A GlasGrid geofabric blanket and a 100mm, two layer asphalt system was installed between the Shepherd's Hill Junction and Langdon Park Road to minimise cracking to these heavily used areas in the future.

Contractor Colas VolkerHighways URS (CVU) chose the GlasGrid reinforcement system – a composite fibre glass grid and a non-woven paving fabric – as it is proven to extend carriageway life by up to four times.

It also creates a moisture barrier when the non-woven layer is impregnated with bitumen offering additional protection and allowing thinner carriageway design, making it cost effective while reducing the carbon footprint of projects.

In total 1,100 tonnes of asphalt and 2,300m² of geofabric blanket were used to complete the scheme.

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Demand for road surfacing materials is up and ambitious plans to increase the capacity and improve the condition of England's major roads means this trend appears set to continue.

PROMISE OF INVESTMENT TO IMPROVE ROADS

HIGHWAYS ENGLAND'S promise on being launched in April was to deliver the largest investment in the country's principal roads for a generation and this is likely to be upheld by the newly elected government.

It follows the Road Investment Strategy (RIS), announced to Parliament in December, which set out a long-term programme for Highways England and the Strategic Road Network (SRN), which includes all motorways and major roads.

The RIS outlines plans to triple levels of spending by the end of the decade and includes £1.5 billion to add an extra lane to key motorways and turn them into 'smart motorways'.

Suffered

Returning Transport Secretary Patrick McLoughlin described the plan as the "biggest, boldest and most far-reaching roads programme for decades".

"It will dramatically improve our road network and unlock Britain's economic potential," he said. "Roads are key to our nation's prosperity. For too long they have suffered from under-investment."

The promise lays down a distinct challenge

to the roads sector: there is a tremendous amount of work expected of an industry that has slimmed down substantially over years of recession.

Jim Christie, UK & West Europe Area Director of European bitumen producer Nynas, comments:

"The challenge of gearing up or, to be precise, accelerating the gearing up that has already begun, is infinitely preferable to cutting back. I am sure many in our industry welcome both the creation of Highways England and the continuity provided by the return of the government, its ultimate sponsor.

"England's roads in general are in poor condition. Its principal roads – the 6,880km of motorways and major A roads for which Highways England is now responsible – are arguably the best of the bunch. Nevertheless central government's £158 billion road investment strategy calls for (among other things) 80 per cent of the network to be resurfaced and 1,300 brand new lane miles to be built within the next six years. Highways England's delivery plan puts flesh on the bones, refining the strategy and detailing 112 level of investment by the roads sector will be needed to meet these ambitions. Jim Christie, Nynas

A substantial

major improvements to be implemented by 2019/20.

"A substantial level of investment by the roads sector will be needed to meet these ambitions.

"From the mid 1990s to last year, the volume of bitumen sold fell from 2.5 million tonnes a year to almost half that: 1.35 million tonnes. The impact was felt across the whole supply chain in terms of mothballed plant and equipment, reduced materials stockpiles and staff let go.

Expensive

"But by last year things began to get better. Nynas, along with others in the sector, began gearing up: we have acquired facilities on the Thames to import bitumen to add to the capacity available from our refinery on the Wirral, and other company resources at Teesport and Dundee. We will be considering





CERTAINTY NEEDED FOR LOCAL ROADS

Highways England's delivery plan for principal roads comes with a level of certainty that will allow the road industry to invest for the future. But for local roads the position is less clear. Malcolm Simms, Asphalt Director at the Mineral Products Association, explains:

Local roads are the responsibility of local transport authorities and make up about 98 per cent of our highways network. A substantial proportion of them are in a dilapidated state due to underfunding over many years.

Differing budget figures, terminology and individual local authority priorities tend to confuse what exactly is spent on local roads, making life difficult for those planning materials resource levels and delivery.

Pledged

Insufficient clarity about expenditure is one of the biggest problems the supply chain faces. Uncertainty breeds lack of confidence about investment in new material supplies, plant and equipment. It also affects recruitment and the maintaining of skills levels. The headline figures on local roads budgets can look good but when you drill down into them, they are sometimes not what they seem.

The government has pledged funding of £6 billon for local roads during the period of 2015-21.

This is, at first sight, an apparently large increase over

the previous spending round. But, when funds for incentivising asset management and topping up the Challenge Fund (intended to support major one-off projects), and other spending curiosities are factored in, the real increase across England is less.

The increase is, of course, welcome, but is only sufficient to maintain the existing condition of our local roads.

other investments in due course, now that Highways England is a reality.

"Many in the sector have made similar preparations for an increase in work but deficiencies in plant and material supplies may make themselves apparent as work really picks up and these will have to be overcome. The sector's workforce is ageing and attracting new, younger people is going to be expensive. The training of new recruits will come at a cost.

"The good news is that materials quotas stemming from Highways England's delivery plan should be met but delivering any project savings is not going to be easy."

The brighter picture has prompted some major asphalt producers to increase investment in skills, capacity and technology. In 2015 alone, Lafarge Tarmac is taking on 33 graduates, 80 apprentices and five higher apprentices across



the business, while FM Conway has committed to doubling the number of apprentices in its business and has launched a new scholarship programme for school leavers. "We have also made

multi-million pound investments in sites and equipment to meet market demand and ensure we are able to help our clients understand, construct and maintain their road assets as sustainably, safely and efficiently as possible," said Paul Fleetham, above, Managing Director of Lafarge Tarmac Contracting.

"We've built the UK's largest asphalt manufacturing and storage facility adjacent to the M25 with cutting edge technology that



...this approach has been vindicated in the remarkable growth we've experienced in recent years.

David Smith, FM Conway

extends our supply capabilities in the south, and our contracting division has expanded its equipment fleet with over 100 new energy efficient machines and trucks."

Hanson UK is also making considerable investment in order to ramp up production by bringing three mothballed plants back on line and opening a new facility in South Wales. The Craig yr Hesg plant was commissioned in April while Keepershield in Northumberland, St Ives in Cambridgeshire and Tytherington in South Gloucestershire returned to production in May.

State-of-the-art

The upturn in work on the national road network has also prompted Hanson Contracting to invest in six new state-ofthe-art pavers. The Atlas Copco Dynapac machines have a number of environmental and safety benefits including Euro Tier 3 engines, which reduce carbon emissions and noise while increasing fuel efficiency and reliability. They also have balloon lighting



which floods the work area with more consistent levels of light without impacting on oncoming traffic, vital for efficient night working.

Breedon Aggregates too has made substantial investment to give it flexible, high capacity mobile operations which will allow it to supply increasing demand in Scotland and the south of England.

"We have bought both secondary and tertiary mobile crushing facilities to complement our existing primary crusher," said Alan Morrison, Finance Director at Breedon Aggregates.

"They will predominantly be focused on producing high quality, high polished stone value (PSV) chippings for use in both high performance asphalt production and surface dressing applications."

FM Conway made some difficult decisions at the height of the recession: in 2008 it bought a £10 million facility – now its Erith asphalt plant – which manufactures materials predominantly from recycled road planings. This investment was repeated in 2013 when it developed a second £10 million asphalt plant near Heathrow.

"These sizeable investments were undoubtedly seen as risky by our peers," said David Smith, Development Director at FM Conway.

"However, we had confidence that they would allow us to take advantage of new opportunities once the economy began to recover – and this approach has been vindicated in the remarkable growth we've experienced in recent years."

INNOVATION

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One way to improve quality and durability is to design out known risks to end performance. **Rick Ashton**, Market Development Manager at Total UK, explains:

EXTENDING MADER DURABILITY

IF WE CAN remove the known risks that offer the likelihood or possibility of an historic failure mode, we can develop confidence in a structure's resilience or durability. Polymer modified bitumen (PMB) offers this opportunity in ways traditional penetration grade bitumen cannot.

The careful use of selected polymers and additives in bitumen can extend the effective temperature range of asphalt so it remains solid at high temperature (reducing deformation) yet flexible or elastic at low temperature (reducing cracking).

Over the last 30 years innovative research and development at Total Bitumen has resulted in the continuous development of a portfolio of cross-linked PMBs, known as the Total Styrelf[®] range.

Cross-linking involves adding a chemical

catalyst to the PMB to link the polymer strands into a '3D network', which gives the product a much more cohesive structure.

This means that the effects of oxidative ageing are reduced, retention of elasticity (or elastic recovery) is maintained across an extended service period and storage stability is improved.

Cross-linking the PMB protects the asphalt; postponing brittleness and so reducing failure modes such as fretting or fatigue cracking in harsh environments which in turn adds resilience to cold weather cracking as the asphalt ages.

Sustainability is inextricably linked to durability and it is these qualities that can help clients looking for long-term confidence in material performance, and therefore allow engineering risk reduction for more predictable asset management.

THEORY INTO PRACTICE

A long-term trial by the Laboratory (LAVOC) of the Ecole Polytechnique Fédérale de Lausanne in Switzerland demonstrates the enhanced performance of cross-linked PMB.

Sections of a mountainous highway, the CH-N9, were constructed with the same asphalt mixture but using 16 different binders including penetration grades, modified penetration grades and various PMBs.

Asphalt cores recovered from the test facility showed that 80 per cent of the Total Styrelf[®] binder's elasticity as still intact after 14 years' service. The main failure mode observed in other test sections at this point was cracking through the effects of thermal cycling and ultra violet light as well as oxidative binder hardening due to the exposed mountain location.



After 20 years, the only test section remaining serviceable and not replaced was that using Total Styrelf[®], concluding that cross-linked PMB enhances elasticity and the retention of early life characteristics.



A COLLABORATIVE research project into the use of lower temperature asphalt (LTA) in pavement



construction has been carried out by the Transport Research Laboratory on behalf of Highways England, Mineral Products Association (MPA) and Eurobitume UK.

The report (PPR 742) was commissioned to demonstrate the viability of using LTA materials on the UK's strategic road network, with a number of objectives:

• To observe impartially a live demonstration of a LTA material being laid alongside a comparable hot mix one;

• Visit sites where LTAs have previously been laid to assess in-service performance; and

• Gather and collate information on international expertise with LTAs, the extent of their use, and performance.

The research supports the use of LTA mixtures in routine construction and maintenance of road pavements – provided appropriate quality control measures are in place. Testing of laboratory prepared samples of LTA gave comparable properties with those of hot mix asphalt for compactability, deformation resistance, stiffness, fatigue and fracture resistance. The report proposes that a roadmap is used, in line with current European thinking, to encourage the wider use of LTA mixtures on the UK's strategic road network.

Other work (PPR 698) assessed the use of radio frequency identification (RFID) tags and their ability to survive being added to materials at asphalt plants, where they will be subjected to risk of both mechanical and thermal damage.

There was also a review (PPR 708) of joint repair treatments for thin surfacing materials. The latest collaborative project between the three organisations, scheduled to be completed at the end of 2015, will investigate next generation asphalt surfacings and bitumen ageing mechanisms.

All three Transport Research Laboratory reports can be downloaded from the TRL website: www.trl.co.uk

SHARING BEST PRACTICE



Better Roads Ahead: Going the Distance was the theme for the latest AIA Sharing Best Practice event, which took place in November at Doncaster Racecourse and saw more than 80 delegates from across England take part.

IT WAS the fourth interactive event organised by the AIA, in partnership with APSE (Association for Public Service Excellence) and ADEPT (Association of Directors of Environment, Economy, Planning and Transport), and gave delegates the opportunity to share experiences and learn from local authority case studies.

Former BBC TV North Transport Correspondent Alan Whitehouse chaired the day, and he welcomed keynote speaker John Dowie, Director of Strategic Roads at the DfT, to open proceedings.

John's presentation, 'Roads Reform and the Supply Sector', was warmly received and he reiterated that ministers are hearing the messages from the AIA with regards to the local road network.

Gary Bartlett, Chief Highways and Transportation Officer at Leeds City Council, then presented a local authority perspective



Keynote speaker John Dowie, the DfT's Director of Strategic Roads

GOING THE DISTANCE AT AIA'S BEST PRACTICE EVENT



We are delighted with the response we received on the event.

before AIA Director David Weeks spoke about 'Gearing up the Supply Chain' to deal with increased demand.

The morning session was concluded with presentations on different aspects of highways asset management from Steve Smith of Oxfordshire County Council and Krisen Moodley, Associate Professor at Leeds University.

Following lunch, which provided the opportunity for delegates to network and informally share best practice, Paul Phillips, Research and Development Director at Aggregate Industries, talked about material developments for the networks of the future.

Andy Mudd of APSE then looked at resource efficiency before Barrie Mason of North Yorkshire County Council concluded the presentations with a case study of how asset



management allowed his council to deliver the extensive improvements needed prior to the English stages of the 2014 Tour de France. "We are delighted with the response we received on the event," said AIA Chairman Alan Mackenzie.

"More than 65 per cent of those who attended took the time to fill in a feedback form and every one of them said they would attend a similar event again and that they would recommend it to a colleague, which speaks volumes."

The presentations from the 2014 event are available to view at **www.asphaltuk.org**

SHARING BEST PRACTICE EVENT 2015

Given the positive feedback, the AIA will be running another Sharing Best Practice event this year. It will be held at the National Motorcycle Museum in Birmingham on Tuesday November 3. Places for this free event are limited, so please let us know if you would like to be added to the invitation list: Tel: 0207 222 0136; email: info@asphaltuk.org

DATA IS THE KEY TO PROTECTING VALUE

Lafarge Tarmac's Technical Manager **Tim Smith** sets out why the highways sector must embrace data if it is going to contribute to a truly circular economy.

AS AN INDUSTRY, we have an increasing awareness that we need to move away from the traditional, unsustainable, model of 'make, use, dispose' and work harder to create a circular economy. This alternative approach requires resources to be kept in use for as long as possible; extracting the maximum value from them before recovering and regenerating materials at the end of their service life.

The use of data (and the information it provides) in the construction and management of infrastructure exponentially increases our ability to regenerate and recover materials. Having access to material and asset data allows a better understanding and traceability of a material's performance characteristics, including detailed records of its constituents and quality, making it easier to maintain and reuse.

Circular economy

This kind of information is key when designing for the longevity, service, reuse and recovery of materials such as asphalt because it helps to ensure that recycling is maximised and the value of the component materials is not lost.

Asphalt is a material that supports this move towards the circular economy because it can be 100 per cent recycled as asphalt. We are currently seeing increasing volumes of planings from the existing local and strategic road networks being recycled and re-used. However, there is more that can be done, and key to this is having a greater understanding of the construction detail and composition of a



greater proportion of our network.

The way roads are constructed differs depending on the volume and type of traffic and level of skid resistance required which, in turn, will determine the composition of the asphalt in terms of aggregate type and grading and the amount of filler and binder used.

Maximise opportunities

Creating this detailed database of the make-up of UK highways will require a data revolution. One which will involve more coring and surveying of existing roads, as well as recording information when roads are built, or resurfaced so that an overall picture is created of the materials that are in place on both the local and strategic road network.

This will not only support efforts to drive more effective asset management but also maximise opportunities to re-use and apply the principles of the circular economy to our roads.

Technology is developing rapidly, which will support these efforts and arm our industry with a huge amount of data, providing significant opportunities to drive whole life thinking, improve maintenance and consider the impact of roads. However, an essential component in making this data truly effective is partnership working. Interpreting and maximising the use of the information locked away in clouds of data requires genuine closer and earlier collaborative working across the supply chain to unlock its potential.

This, in turn, will support a drive to a more circular, resource-efficient model of specifying, designing and delivering roads that consider the durability, service and in-use performance as well as – critically – end of life re-use.

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