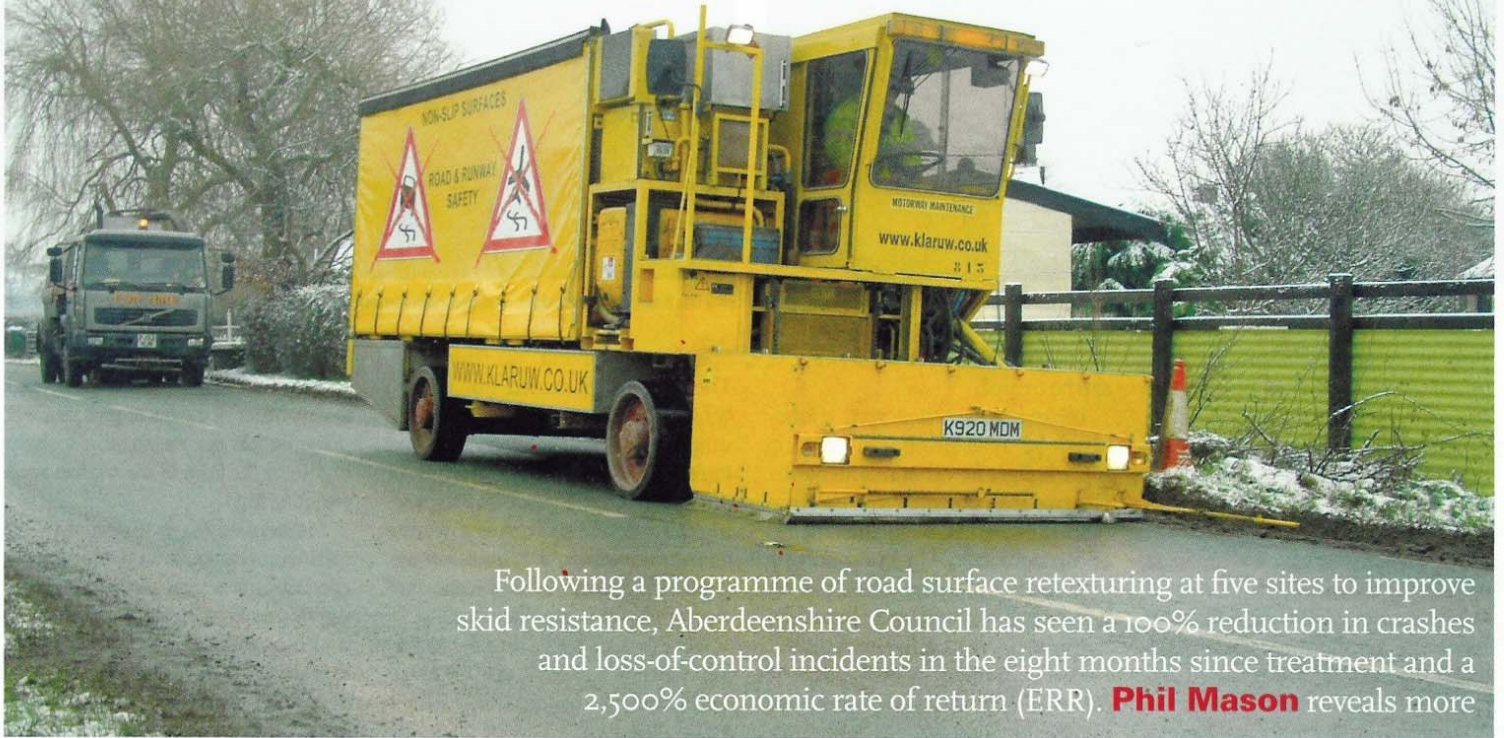


# Safety in numbers



Following a programme of road surface retexturing at five sites to improve skid resistance, Aberdeenshire Council has seen a 100% reduction in crashes and loss-of-control incidents in the eight months since treatment and a 2,500% economic rate of return (ERR). **Phil Mason** reveals more

In January, the Scottish Government and Road Safety Scotland launched the 2011 Country Roads awareness campaign to tackle the high proportion of road accidents which occur on Scotland's rural roads.

Statistics show that three out of four road fatalities occur on Scotland's country roads, resulting in an average of 199 deaths a year.

Aberdeenshire Council is acutely aware of the safety challenges of looking after a large rural road network. With two primary routes on its patch, the A90 and A96, managed by Transport Scotland, the council is responsible for a significant 5,500km of A, B and minor roads, the majority connecting communities across the rolling Grampian countryside.

With this often-challenging combination of a large rural network and dispersed population, Aberdeenshire is still performing strongly on road safety. It achieved a reduction in road fatalities of just above 31% in the six years between 2004 and 2010.

Sustaining this downward trend gets more difficult when numbers are already relatively low – there

were 22 fatalities on Aberdeenshire's roads during 2010.

In addition, future targets for Scotland are the toughest in the UK. Going forward, the Scottish Government is looking for a reduction in deaths on the road of 30% by 2015, and 40% by 2020.

Further reductions will rely heavily on influencing driver behaviour. Scotland's Road Safety Framework to 2020, for example, shows that the two most common causes of fatal country road accidents are loss of control and inappropriate speed.

'The majority of accidents are down to driver error, but we can never let up on engineering of the road system in reducing risks,' says Mel Edwards, principal engineer for the road safety engineering unit, infrastructure services, at Aberdeenshire Council.

Maintaining the skid resistance of road surfaces above investigatory levels is a key element to 'engineered' safety. Like all UK road authorities, Aberdeenshire keeps a watch on pavement skid-resistance levels within its annual road condition survey.

Annually, SCRIM testing is car-

ried out of all A roads and one-third of B roads in one direction – the opposite way being surveyed next time round. Some lower-classification roads are also included if there is a particular concern.

When SCRIM figures below or near to investigatory levels are identified, the site is inspected to see if there is correlating evidence of loss-of-control incidents. An assessment is then made of the type of intervention needed. However, open channels of communication with the police and public regarding accident levels and near-misses can sometimes highlight an engineering issue not apparent from condition data.

Towards the end of 2009, Aberdeenshire had received complaints about crashes and loss of control incidents at a number of sites which raised concern.

Mr Edwards explains: 'After closer inspection of the sites in light of the comments and accident data, we decided to retexture the road surface to see if improved skid-resistance would help.'

Klaruw retextured all five sites – totalling around 18,000 square me-

tres – using the Klaruwtx190 (K190) all-weather, controlled bush hammering machine.

The process creates small cuts in exposed, polished aggregate using hundreds of tungsten carbide bush hammers. These independent, computer-controlled treatment tips are free to rotate and move within their housing, closely following the contour of the road surface. Clever engineering ensures that, while the impact heads adjust position vertically to accommodate irregularities such as surface deformation and wheel track rutting, treatment intensity remains constant.

Work was carried out between the end of January and early March 2010 on the B977 (Kintore to Dunecht) at Leylodge, at two sites in Cottown on the B994 (Kintore to Kemnay), and at Swailend and Oldmeldrum on the A947 (Aberdeen to Banff). Apart from the installation of black and white bollards around a bend in Old Meldrum, no other engineering work took place.

Prior to treatment, a total of 34 accidents – including damage-only – had been recorded across the five

## highway maintenance



Makes sense: Money saved by retexturing has freed-up more budget, enabling Aberdeenshire Council to conduct maintenance in other areas

sites in 2009, representing a cost of some £3m – based on the Department of Transport's estimates of the value assigned to the cost of road casualties and accidents. When it looked at early results post-treatment, the council was delighted.

Mr Edwards says: 'We analysed records for the first eight months to October 2010 which showed there had been no accidents. Clearly, the works have made a significant difference.'

After 12 months, informal figures from the council show there have been no further accidents at the sites.

As well as delivering real gains in safety, Klaruw's K190 process has also represented value for money, another important consideration for the council in using the process.

Based on figures for the five treated sites, K190 retexturing has achieved a nominal ERR of 2,500%. Some minor road improvement schemes struggle to reach even 100% ERR.

Overlaying is often considered first in remedying road surface skid-resistance by most engineers. Surface dressing as well as high-friction dressings, either thermoplastic-based screeds or two-part epoxy resins with bauxite, are well-proven materials for restoring anti-skid properties.

However, there is sometimes an over-reliance on these solutions when the road surface needs improvement in skid resistance but is otherwise in sound condition. If there are no co-existing surface weaknesses to correct, then retexturing, at around one-fifth of the cost, is a simple and effective alternative.

It means that, for the same mon-

ey, many more square metres of road can be treated.

Looked at another way, money saved by retexturing can free up more budget for other maintenance. For example, potential savings from retexturing 30,000 square metres of carriageway, rather than applying high-friction dressing, could pay for 7,000 pothole repairs – based on nominal figure of £60 per pothole.

Rachel Kennedy of AECOM, one of the council's framework providers of transportation and environmental consultancy, says: 'Retexturing extends the life of the carriageway so, in these times of budget reductions, it is a useful option for asset management. Historically, in the north-east of Scotland, road aggregate has some of the highest PSV, as the stone chips used are predominately from good granite quarries. This makes retexturing a particularly good option.'

Aberdeenshire Council has gained other advantages in using Klaruw's process. K190 bush hammering is not weather-dependent, and can be carried out in wet conditions. This was a major benefit in getting works under way as soon as possible – in January and March – not least to reassure residents that action was being taken.

'It would have been difficult to put material down at that time of year and we would probably have been waiting for better weather in May, June and July,' Mr Edwards points out.

Needing no site preparation or post-treatment work, retexturing was quick and easy to implement.

Apart from traffic management (TM), which uses a simple Stop/Go system, treatment does not involve

operatives working on the road. The process is carried out by two vehicles, the K190 bush hammering unit in front, and a sweeper behind to remove the very small amount of arisings from the process. Progressing at a speed of six metres a minute as 'moving works', it minimises disruption and leaves treated sections of road ready for immediate use.

Mr Edwards says: 'It makes a tidy job. There's minimal set-up, fewer people on the road, and less fumes and pollution in terms of plant. Together with the Stop/Go traffic management, this also simplifies health and safety issues.'

Reduced environmental impact has been another benefit of retexturing. By simply recycling the existing pavement rather than applying material, it uses no new material, saving on finite resources, and produces negligible waste. The K190 process is not plant-intensive, and uses no hot processes, producing a very small carbon footprint, overall.

As a result of the council's close communications with residents living close to the five treated sites, the local community is also becoming expert in the features and benefits of retexturing.

Safety officers explained how the process works as part of meetings with local councillors and members of the public to keep them informed on planned treatment.

On a wider scale, the council is fully committed to promoting road safety awareness and facilitating ideas and public involvement. It gives presentations to county safety groups, police organisations, road-user groups and other stakeholders, to show techniques and good prac-

tice, and to encourage feedback and share ideas. Klaruw has been invited to a number of events to give its CPD presentation on retexturing to help highlight the role of innovative road engineering.

Ms Kennedy says: 'Engaging with community groups and road safety specialists is a vital part in developing awareness of road safety issues. It also provides engineers with local knowledge which may not be evident from surveys and statistics.'

'Going forward, engineers need to be more aware of the positive impact that community engagement can bring,' she adds. 'Society has more expectations of professionals to deliver solutions quickly and effectively.'

As one of a number of interventions set out in the council's five-year joint road safety plan with Moray Council and Aberdeen City Council, retexturing is likely to play a more integral role by answering the tough cost and sustainability issues of future road safety implementation. In terms of budgets, costings for treatment will be much easier to forecast compared with the volatility of material prices under the influence of international supply and demand.

In addition to the overriding need to reduce casualties, rural roads, as well as sharing intelligence and good practice, are among the priorities highlighted in Scotland's Road Safety Framework to 2020. In demonstrating a 100% reduction in crash and loss-of-control incidents plus a 2,500% ERR from retexturing at rural sites, Aberdeenshire Council is helping on both counts.

• **Phil Mason** is regional manager with the retexturing specialist, Klaruw