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The magazine of the Mineral Products Association

mineral

products today

Localism
can it deliver?



Surviving the storm
preparing for recovery

High energy
keeping the lights on

Novel cements
the quest to cut carbon

WELCOME

WELCOME to our new issue. It comes at a time when the mineral products industry faces some daunting challenges. As the feature on pages 10 and 11 shows, we are still emerging from a devastating recession and it's hard to escape the feeling that the next few years will be a hard slog for our sector.

We thought it would be interesting to ask four MPA members of varying size how the recession has affected them and whether what they have learned from the inevitable cutbacks has left them stronger for the future. As our feature demonstrates, the effects on this industry have indeed been severe with many

regrettable job losses.

It is notable that each of the four bosses we talked to say that it has been the toughest trading environment they have ever faced. The resilience of the industry is, however, very evident in the way they and all our other members have responded. It is that sort of attitude that leaves us well placed to support the recovery.

I would also point you to the latest MPA Health & Safety Awards (page 18) which I think show how far we have come in tackling the greatest of all our challenges. It is quite incredible that the scheme still manages to attract nearly 350 entries. The level of ingenuity that goes into finding new ways to protect our people from harm makes this industry an undoubted UK and indeed world leader. Well done to all concerned.

As always, we welcome input to the debate on these and other issues.

Patrick O'Shea
Chairman, MPA

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Campaign backing

PARENTS of two teenage boys killed in separate quarry trespass incidents are backing the MPA's nationwide Stay Safe campaign to prevent similar tragedies involving thrill-seeking youths.

Tracy Walker's 15-year-old son Ryan drowned in a disused quarry in Ashover, Derbyshire in June 2009 – one of four quarry deaths involving trespassing teenagers in 2009. He had been swimming with friends in the deep, ice-cold waters when he got into difficulties. In April this year, Steve Harris's 18-year-old son Jay was walking with friends in a quarry near Nuneaton in Warwickshire, when he fell 100 feet to his death.

Tracy Walker said: "Kids think that they're indestructible and nothing will happen to them, but look what happened to Ryan. He lost his life going into a quarry that looked like a tropical paradise. It was a lovely, sunny day but nobody knows the dangers of getting into the water."

Steve Harris said: "Jay was the life and soul to his friends - he was the glue that held them together and they're lost without him."

If something like this can happen to someone as charismatic and as loved as Jay, I can assure you it can happen to anyone."

You can join the campaign on Facebook.

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Cover: An industry committed to localism. See page 5. (Photo courtesy of CEMEX UK)

False impressions



LATEST figures showing improved sales for mineral products should not be taken as an indicator of sustained growth, says MPA.

Figures for the first nine months of 2010 show aggregates, asphalt, cement and ready-mixed concrete sales volumes up on 2009. Asphalt sales are nine per cent higher due to work on a number of large projects and spending by local authorities to try and deal with poor road conditions exposed last winter. Road works have also boosted aggregates demand which, with cement and concrete, also benefitted from improvement in house building in the first half of the year.

MPA stressed, however, that these increases are based on historically low levels of demand in 2009. "In spite of these welcome improvements we do not see any sustained

improvement in aggregates or construction markets," said MPA executive director Simon van der Byl. "Markets have been sustained by high investment in areas such as schools and hospitals which will decline significantly in 2011 and it is unlikely that the private sector construction market will make up the difference until 2012."

He added: "We have all seen references to the apparent high growth in construction which has underpinned economic growth in the last two quarters, but like most others in construction, we take these claims about high industry growth with a large pinch of salt."

Inputting to OFT

THE Mineral Products Association (MPA) is giving its full cooperation to an Office of Fair Trading OFT market study of the UK aggregates sector.

In announcing the study, OFT senior director of infrastructure, Heather Clayton, said: "In the present climate, well-functioning markets are even more important to help spur economic growth. Aggregates is an important sector in its own right but it is also part of the larger construction industry which plays a key role in the country's economy. Because the cost of aggregates is reflected in the price consumers and taxpayers pay for essential infrastructure, from housing through to roads and major capital building projects, it is important that the market is as competitive as possible."

MPA said it would be happy to cooperate fully. Its statement added: "Our frustrations with a plan-led system that is unfit for purpose are well known. We are nonetheless confident that the underlying mineral planning system will be proven to be sound and critical to the construction and manufacturing industries."

"The system has a proven track record of delivering a steady and adequate supply of aggregates over the last 35 years throughout



periods of recession and growth. The current system originated in 1975 as a result of Sir Ralph Verney's Royal Commission and has generally worked well since."

CSR disappoints

THE Government's Comprehensive Spending Review was disappointing for the mineral sector.

MPA says that the 21 per cent cut in public investment means less resources for transport networks, schools, hospitals and social housing. The Chancellor focussed heavily on the economic benefits arising from investment in infrastructure, but nonetheless cut spending on national road improvements by 44 per cent and capital budgets for local authorities by over 30 per cent.

A number of road and transport schemes were announced but the small print indicated that they would be unlikely to start for several years. MPA was relieved to see the Crossrail project approved but noted that Government's National Infrastructure Plan, published after the CSR, indicated that £200 billion will be needed over the next five years to fund infrastructure requirements - mostly from the private sector.

One unwelcome announcement for the MPA and industry in general was that the CRC Energy Efficiency Scheme has been changed from a revenue neutral scheme into a £1 billion pa tax.

Reserving judgement

MPA chief executive Nigel Jackson assesses the early performance of the UK's new Government.

WITH the lead-in time for a new quarry now stretching from five to 15 years, bosses in the mineral products industry have learned to be patient. Just a few months into the tenure of a new Government, most are prepared to wait a little while longer before making any firm judgements.

MPA chief executive Nigel Jackson shares the general concern about the sheer scale of cuts in capital investment for construction and he remains worried that the localism agenda could "institutionalise nimbyism". He does, however, welcome what he regards as a "profound change" in philosophy, style, ambition and expectation from the new Coalition.

"There is much that our members like the look of," he says. "A smaller state, the reduction in the national deficit, a sharper and more businesslike approach to managing the nation's affairs and, most of all, the opportunity to challenge historic thinking.

"We recognise that localism is a deeply held conviction of the Government and that it is woven into the entire policy agenda. We have no particular problem with that because ours is an essentially local industry that relies on local people, local markets and successful local engagement with communities.

"But living with a well-run existing mineral operation is one thing. Accepting plans for potential new sites is quite another; they tend

to attract heavy opposition from communities no matter how much pre-consultation has taken place.

"Our understanding is that the new Government's approach to localism in planning is largely based around housing, although it appears to recognise that minerals are different. Whilst it may be right in its assertion that local communities can be incentivised to support housing development, it's unlikely to work for quarries.

"Our view is that the 'bottom up' approach risks compromising the steady and adequate supply of essential minerals that the nation needs and that an alternative needs to be devised that is built on a strong and effective national policy framework with rigorous minimum landbank requirements that are monitored and enforced."

As a former developer, Jackson knows only too well that whilst it can typically take two to four years to secure a permission, it takes much longer to find sites, secure them and "warm them up" in what he regards as a moribund plan-led system which he says has completely failed to deliver sound plans across the whole country.

He is also frustrated by spiralling costs levied by fee-recovering regulators and by archaeologists making unreasonable and disproportionate demands (see page 14). Together, he feels they are in danger of 'breaking the camel's back'.



Jackson fears that the Aggregates Levy Sustainability Fund may be under serious threat as part of the cuts and would regard that as "tragic" given its potential to ameliorate the effects of local quarries. MPA is still pressing for as much as half of the fund to go directly to local communities so that they effectively receive a royalty for the duration of the operation. "This could fundamentally shift the paradigm of ritual opposition to one of negotiation and support, and help deliver on localism," he insists.

Beyond all else, Jackson wants to see the "unproductive" bureaucratic costs embedded in the public sector and in the quangos that it feeds redirected into capital investment in UK's infrastructure. He will miss no chance to remind those in power that every £1 invested in construction yields £2.84 to feed the recovery and protect jobs.

"The new Government is not short of ideas and is prepared to make tough decisions", he says. "Continuing to invest in construction is one decision that would help rather than hinder recovery - we are part of a sector that really can deliver and support the economic growth we so badly need."

"Plans for new sites tend to attract heavy opposition no matter how much pre-consultation has taken place"

Can localism deliver minerals?



Localism is one of the coalition Government's flagship policies. Forget target-driven regional government, power is now shifting to local communities. From top-down, we are moving to bottom-up. But if communities now have much greater influence over the planning agenda, will councils be able to find places for quarries and other essentials through which the mineral products industry gives the nation what it needs?

THE Prime Minister's own constituency of Witney is one of those currently locked in the localism debate as Oxfordshire County Council sets out to find a way forward within a new "bottom-up" planning regime that is still in its formative stages.

Oxfordshire has emerged as an early test for the new Government's approach to the issue. The county council's initial thinking on how to satisfy the local need for sand and gravel through to 2026 was thrown into confusion by the announcement soon after the election that targets set under the Regional Spatial Strategy for the South East were being abandoned.

By that time, an action group known as PAGE (Parishes Against Gravel Extraction) had

already been set up covering eight parishes near Wallingford to the south east of Oxford. Its aim was to ensure that potential new sand and gravel sites in the area did not ultimately find their way into the county's long term minerals and waste development framework.

Then, from David Cameron's own doorstep, came AGGROW (Anti Gravel Group of Residents in Oxfordshire West). It aims to apply similar pressure on behalf of 11 parishes around Bampton to the west of Oxford.

"While we think that localism is a fair principle, the shift towards bottom-up planning based on the views of local communities risks institutionalising 'nimbyism and parochialism' to an extent that may make strategic decision-making impossible."

Can localism deliver minerals? > continued from previous page



Under the old system, Oxfordshire had been asked to provide 2.1 million tonnes a year of sand and gravel. With localism having shifted power to local level, the county is now reassessing the figures but has identified three basic options involving: existing sites; new sites; or a “dispersal” approach using a combination of both with some additional sites.

The industry has some sympathy with the view that Oxfordshire was given an unfair slice of the overall apportionment for the south east as a result of other counties resisting what had been allocated to them. But it is anxious that the county's new figure is soundly based on historic production figures.

MPA executive director Simon van der Byl says: “While we think that localism is a fair principle, the shift towards bottom-up planning based on the views of local communities risks institutionalising ‘nimbyism and parochialism’ to an extent that may make strategic decision-making impossible. There have to be effective checks and balances including a strong national policy framework and rigorous monitoring of key indicators. It is vital in both the national and local interests that minimum landbanks of sites with planning permission are rigorously maintained in every county and UDA.”

In contributing to the current debate initiated by the Department for Communities and Local Government (DCLG), MPA will be pressing for continued recognition of the long-held principle stressing the imperative

to maintain an “adequate and steady supply of minerals” to meet the needs of society and the economy.

For its part, the industry can point to a restoration and biodiversity record that is widely recognised as one of the best in the world for an extractive industry. Its record on land restoration is exemplary and its contribution to UK biodiversity targets is being highly acclaimed by the likes of the RSPB and Natural England. With up to 25 per cent of the UK aggregates market now supplied from recycled sources, it is also the European leader on that front.

“We understand the localism agenda and we are used to working with local communities, especially in rural areas where we are a significant employer,” says Simon van der Byl. “We have a responsibility to work with communities constructively and transparently but it will be very difficult to do so effectively without an appropriate planning structure.

“Our initial discussions with DCLG have been constructive and helpful and we hope that it will be possible to come up with a new approach that works, so that localism delivers the minerals that we all need.”

Local landbanks

Landbanks are the mechanism through which local authorities and the industry estimate the length of aggregate reserves in individual areas. This extract is based on currently available figures and shows areas for which sand and gravel is the main local aggregate and which have less than the recognised seven-year reserve of permissions.

Hertfordshire CC	5.5 years
London	1.4 years
Oxfordshire CC	3.8 years
Hampshire, Southampton & Portsmouth	2.9 years
Surrey CC	3.9 years
West Sussex CC	5.7 years
Wiltshire CC	3.4 years
Worcestershire CC	4.7 years
West Midlands County	4.7 years
Yorkshire - East Riding	4.2 years

Figures are for 2008 other than Wiltshire, Worcestershire and W Midlands which are 2007. Yorkshire E Riding also has a 3.3 year landbank of crushed rock.

The industry’s record on land restoration is exemplary and its contribution to UK biodiversity targets is being highly acclaimed by the likes of the RSPB and Natural England.

“We understand the localism agenda and we are used to working with local communities, especially in rural areas.”

In tune with localism

There are a variety of ways in which the minerals industry is already attuned to the principles of localism.



LOCAL PRODUCTS

While some minerals travel further, sand and gravel is essentially a local product produced by local people to satisfy local needs. It is rarely delivered beyond 30 miles from source and has strong sustainability credentials.



LOCAL JOBS

Directly and indirectly, the mineral products industry provides over 60,000 jobs. The majority of them are in rural areas where work is often scarce.



LOCAL BIODIVERSITY

The industry is a major contributor to local biodiversity targets and has been praised by Natural England for its “inspirational” work. No fewer than 700 Sites of Special Scientific Interest (SSSIs) were originally mineral operations.

Funds for communities

The Aggregate Levy Sustainability Fund (ALSF) has been one mechanism through which the industry has already delivered benefits to communities in areas affected by quarrying.

But MPA insists that the fund could be achieving an awful lot more than it is at present. It is concerned that, in the first eight years of the fund, local communities received just 11 per cent of total ALSF spending. It is, says the association, a major missed opportunity to ameliorate the effects of quarrying.

MPA is pressing both DEFRA and the Treasury for the portion of the fund spent on local communities in quarrying areas to be at least 33 per cent and ideally up to 50 per cent of the total.

Says MPA chief executive Nigel Jackson: “We believe enabling local people to be more involved in influencing ALSF projects of direct benefit to them will help make the link between the need for aggregates and the benefits that arise in both the built and natural environment. It gives them a stake in their local quarry.”



LOCAL INVOLVEMENT

The industry’s commitment to communities is substantial, with some 240 liaison groups operating at aggregates quarries in the UK. In a typical year, quarries welcome over 12,000 visitors and are highly supportive to schools.



High energy

Some experts are predicting that the lights could go out in the UK in a few years time unless we plug a looming energy gap resulting from closure of ageing coal and nuclear power stations. With the spotlight now firmly on construction of wind farms and on new nuclear plants, the mineral products industry has a big part to play.

LOOK around for an industry that is busy while others are struggling and you will quickly discover that wind is on the up. And if the Government's target for renewable energy to satisfy 15 per cent of our energy needs by 2020 is to be met, it will become a lot busier still.

The reality is that, although between 2008 and 2009 the amount of electricity generated from renewable sources overall grew by 20 per cent, that meant going from just 5.6 per cent to 6.7 per cent. The proportion of all UK electricity produced by wind power still stands at only 2.5 per cent.

There is much to do to enable the wind industry to realise its potential and the Government has now committed £60m to provide port infrastructure for the offshore sector. The demands to be placed on the supply chain are bound to grow. For mineral products, it is one customer sector that does have considerable potential at a time when projects like road building offer little. While 235 onshore and 12 offshore wind farms are operational in the UK, many more are

either under construction or in the planning process.

In the long term, it has been calculated that onshore farms could generate up to 20 per cent of the UK's electricity requirements, while the potential for offshore wind farms is even greater at up to 50 per cent. It has been estimated that the most recent round of offshore development zones will provide the construction industry with over £100 billion of new work. Even a modest seven-turbine onshore farm typically generates a need for 7,000 tonnes of concrete for foundations and may consume perhaps 20,000 tonnes of aggregate for roadways.

At the same time, the Government is also putting its weight (though no subsidies) behind a £40 billion new nuclear build programme. About 20 per cent of the UK's electricity is currently provided by 23 reactors at nine plants, but all bar Sizewell B in Suffolk will have closed by 2023. At the head of the queue for new build is EDF's Hinkley Point in Somerset which aims to have its new reactor operational by 2018.

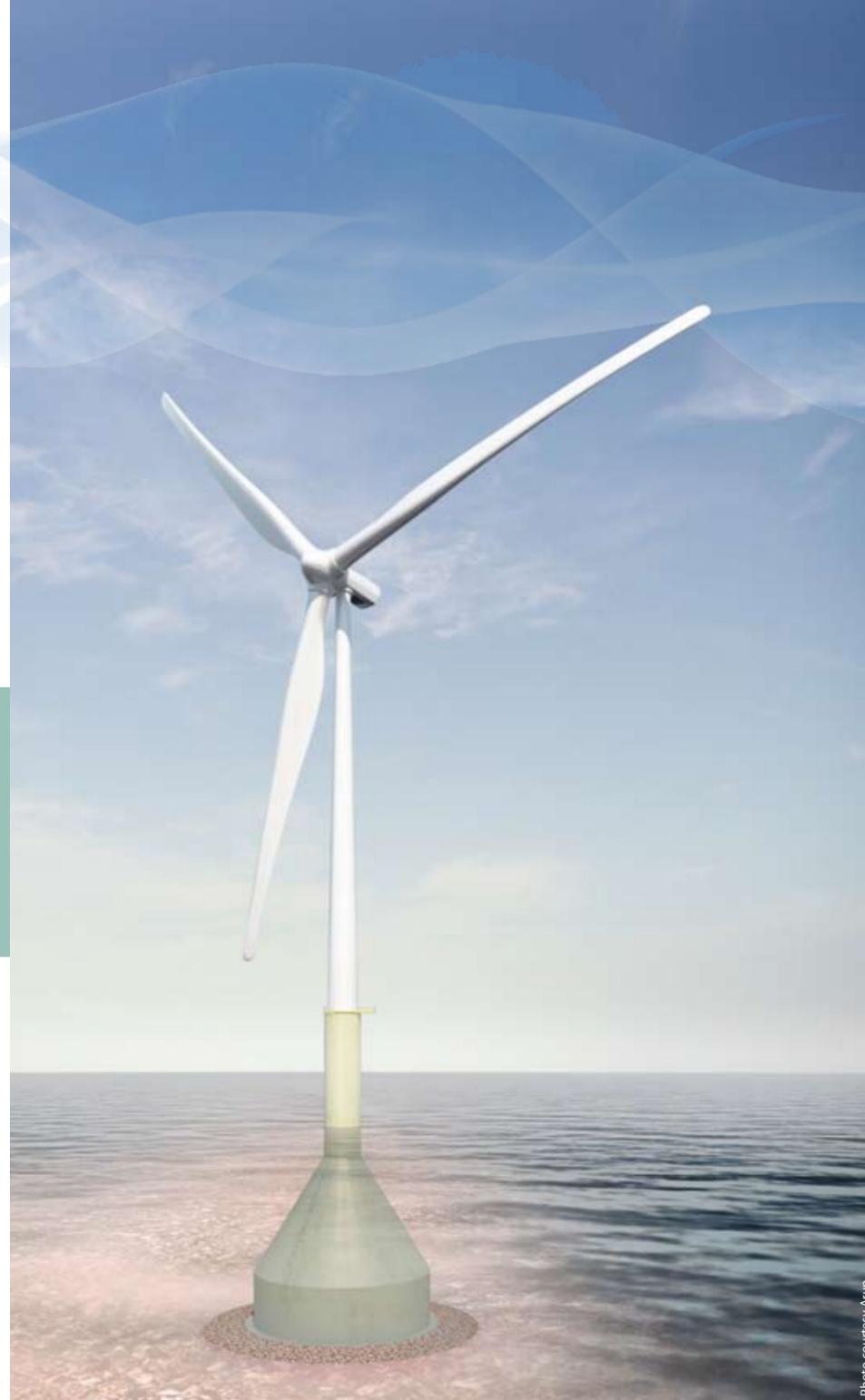


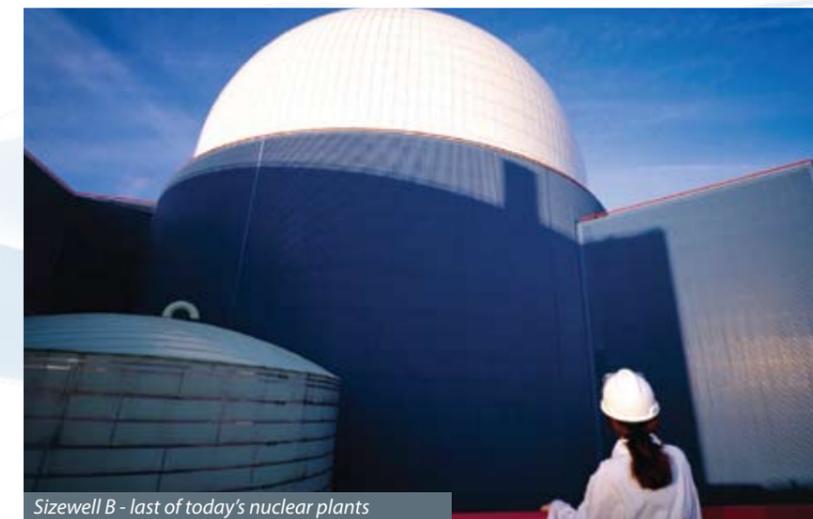
Photo courtesy Arup

Not too far behind is the E.On and RWE npower joint venture Nuclear Power with plans for a new reactor at Wylfa on the Isle of Anglesey, which it aims to have operational by 2020. Three of the remaining sites are in Cumbria and one each in Lancashire, County Durham, Suffolk, Essex and Gloucestershire.

If renewable and new nuclear should fail to meet expectations, it seems likely that the energy gap will be filled by new gas-fired power stations (that would also, of course,

also result in benefit for the construction industry and its suppliers).

But in the immediate future, it is wind and other renewables that are being expedited. In July, the Department for Energy and Climate Change awarded £5 million of grants to seven companies designed to boost the UK supply chain to the industry. The challenges are all the greater given the need to develop different methods of working that drive down costs while accommodating erection



Sizewell B - last of today's nuclear plants



Great potential - gravity concrete foundations

Photo courtesy Concrete Society

Concrete offers a practical, economic, low-maintenance and sustainable solution

of much larger turbines (up to 10 megawatts) in deeper waters of maybe 60 metres. Foundations are a particular issue.

While "monopiles" driven into the seabed have been the norm, deeper water and an often more hostile environment means that concrete suppliers are now looking at a growing market for massive concrete gravity foundations - large cellular caissons ballasted with rock or sand.

Concrete offers a practical, economic, low-maintenance and sustainable solution. Of particular significance is the fact that its high damping properties minimise vibration, which helps to combat structural failure.

The fact that concrete gravity foundations can be potentially built onshore and floated into position using barges or tugs is another attraction. The challenge of placing all the

elements of much larger turbines and their foundations in an often hostile environment is exercising a lot of brains.

One consortium has even come up with a complete concrete turbine structure that is deployed as one assembled unit, inclusive of generators and rotor. In order to eliminate unwanted wind loading on the blades during installation, they are collapsed in a "nesting" position close to the tower.

The concrete sector is working closely with the civil engineering and renewable energy industries to develop new solutions and MPA. The Concrete Centre is running a conference on the offshore wind programme on 2 December 2010 (see www.concretecentre.com/events).

You can also download a copy of its report "Concrete Gravity Base Foundations for Wind Towers".

Surviving the storm

The prospect of a double-dip recession is still worrying many people. But in the meantime, the mineral products industry is at least able to draw breath after two particularly tough years. We asked four MPA members just how bad it has been and what they have learned from a painful cost-cutting exercise.

THE mineral products industry shuddered when it felt the first chills of recession in the spring of 2008. But the full icy blast that followed later in the year and continued through 2009 was nonetheless an experience that operators large and small will never forget.

David Glenn is managing director of Cotswolds-based Huntsmans Quarries which has 50 employees and one quarry. "We certainly felt it as we went into recession but then things went over a cliff edge in October 08 and what followed was a bit of a nightmare," he says.

"The winter of 2009-10 didn't help but the market improved in February though with input costs either rising or static, margins are perilously thin. With Government cuts, I can't say that I am confident about the immediate future... but I am an optimist and we are continuing to invest.

Huntsmans saw its turnover slide by 20 per cent in 2009 and responded by taking its costs down by 25 per cent.

The response from those who remained was all that David Glenn could have hoped. "One of the secrets of our survival lay in flexibility,"



"We certainly felt it as we went into recession but then things went over a cliff edge..."

David Glenn - Huntsmans Quarries

he says. "We had tipper drivers switching to ready-mix trucks and general plant or manual work. Drivers equally came in on Saturdays to make tiles. From me downwards, everyone piled in to do what was needed."

SURVIVING

Surviving has also, he says, been made easier by the way the company is structured and by a 60-year resource base. Where, eight years ago it was essentially an aggregates business, now it has a portfolio of added-value products that include both natural and reconstituted walling stone and conservation slates, ready-mixed concrete, agricultural lime and a Lego-like concrete walling system. It also has a profitable bagging and recycled aggregates operation. It adds up to quite a span for a small business.

With plans also to make cat litter from an outcrop of Fullers Earth, David Glenn believes that innovation has helped. "But beyond all else, I count myself very lucky to have support and mentoring from John Milner (company

chairman) and Gwyn Williams (non-executive director), who both have long experience in the industry. Wise heads count for more than anything at difficult times."



"The simple truth is that you cannot buck a trend that involves such a massive loss of volume..."

Terry Last - Tarmac

The contrast in scale between Huntsmans and Tarmac as one of the industry's major operators could not be greater. Tarmac's volumes tumbled around 30 per cent. "As someone who has been in the industry for over 40 years it's the worst recession I have seen in terms of both the scale and speed of decline," says chief executive officer Terry Last.

COST-CUTTING

"I always tell my team that there is no point being gloomy but the simple truth is that you cannot buck a trend that involves such a massive loss of volume. We have cut back hard and we have turned our attention to new added-value activities but there is only so much you can do when your volumes are so far down."

Tarmac responded with a hefty cost-cutting programme which included losing around 20 per cent of its workforce and reducing capacity.

"My feeling is that the prospects are bleak for some years ahead," says Terry Last. "We have seen a slight recovery over recent months but I don't think we can rule out a double dip. I am particularly fearful of the effect the Government's spending review will have on infrastructure spending. It has been suggested that the private sector will

compensate but my assessment is that it won't do so in any more than a modest way."

He adds: "My message to the Government is that maintaining spending on infrastructure is a good means of priming the pump on the economy. It is an established fact that every £1 invested in construction generates getting on for £3 in total economic activity."

His concerns are shared by Bill Brett, chairman of the Canterbury-based Brett Group, the UK's largest independent construction and building materials business. Its operations are focused on landscaping and building products, aggregates, concrete and construction. Whilst maintaining its market position, chairman Bill Brett says the company has seen its main markets decline by some 40 per cent over two years and although some picked up marginally in the middle of this year, he doesn't expect any recovery for at least two years.



"We have faced the toughest trading environment ever. Where we go from here depends upon the speed of the general economic recovery"

Bill Brett - Brett Group

"In common with the rest of our industry, we have faced the toughest trading environment ever," he says. "While volumes seem to be stabilising, where we go from here depends upon the speed of the general economic recovery."

In the depths of the recession, the group has continued to invest in developing the business while reducing its borrowings. "Internally it has been about reducing capacity and our cost base together with cash management," says Bill Brett. "Sadly,

our workforce has reduced by about 30 per cent. What alarms me most is that building products is a long-term business, and the severity of the market reduction has forced the industry into short-termism, which is not serving the interests of any of our stakeholders."



"What I didn't expect was that things would go through the floor"

John Myers - Myers Group

As an industry veteran and chairman of the Huddersfield-based Myers Group, John Myers has seen his share of economic downturns.

"I had been a prophet of doom for some time and had been predicting a recession," he says. "Back in 2007 we made a decision to cut our group workforce by ten per cent. What I didn't expect was that things would go through the floor to the extent that they did."

TOUGH

With operations spanning ready-mix, builders merchants and dimension stone, the group was well spread, but has seen its concrete volumes slide by a third. "We basically looked at everything we did and asked if it was really necessary but it was tough and the winter of 2009-10 would have been much more serious had we not built up a strong capital base over our 50 years of trading.

"The informal arrangements we previously enjoyed with our bank are now gone, but we mustn't complain as we still have a healthy working relationship.

"Things have now levelled off and even picked up a little but the Government's October spending review could bring some nasty shocks. We have put off spending decisions until 2011 and will see what materialises."

Cement ... but not as we know it

We take for granted the inherent strength of structures like the Humber Bridge (pictured). The fabric of our world depends upon traditional Portland cement. But it comes at a cost to the environment because the huge heat and chemical change that are essential in making cement also results in carbon emissions. The industry is working hard to reduce them - but are there any long-term alternatives?

IT is hard to think of cement as anything other than basic. While the contribution it makes to our world is far from ordinary, the product that makes it all possible remains (for most of us) a nondescript grey powder.

The prospect of "novel" cements may then be a little hard to take seriously. Until, that is, you explore the work underway within the industry and beyond to advance the cause of carbon reduction. There remain some daunting hurdles to be crossed but there is ultimately the prospect of an entirely new breed of cements that embody a fraction of the carbon that is of necessity locked into traditional Portland cement.

In the meantime, the industry has already taken great strides in developing second generation cements that are more sustainable. They involve use of Portland cement as an activator for mineral additions such as fly ash from power stations and slag from the steel industry, both of which would otherwise be landfilled.

Added to that is the increasing use of alternative waste-derived fuels instead of finite fossil fuels, plus heavy investment in

new energy-efficient technology. As a result, MPA Cement members in the UK managed to achieve CO₂ emissions in 2009 that were 7.7 million tonnes lower than in 1990. The question now is whether a further generation of novel cements can do still better.

To put the quest for low-carbon cements into perspective you need to appreciate that the industry worldwide is responsible for five per cent of all CO₂ emissions (two per cent in the UK). The 10 million tonne annual

"There is a future for new or novel cements but there really is a long way to go."



Volcanic heat is essential to today's process

cement output from the UK's 14 plants is but a tiny fraction of the three billion tonnes manufactured worldwide. With growth in China and India both spiralling, the prediction is for global output nearer five billion tonnes by 2020 with obvious CO₂ consequences.

Cements have been around since Roman times, but while the technology has changed greatly, the process still relies on the same basic raw materials and on volcanic heat (around 1,450°C) to bring about the fundamental chemical change. Therein lies the CO₂ problem.

On the plus side, this traditional cement is made from abundant natural raw materials and is relatively low cost per tonne produced.

Most importantly, concrete made from it is highly durable – it literally puts the backbone into our built environment.

The big question is therefore: can science give us a new generation of cements that use less, or no limestone, and less energy? And when can we expect to see them? The short answer is that they are already here, but don't hold your breath on when you can expect to see them in everyday use. Research is still largely confidential but is well underway.

Dr Pal Chana, executive director of MPA Cement, is cautious. "Some of these novel cements are showing early potential but it is important to remember that they have yet to be produced in the sort of volumes needed for the global construction industry," he says.

"To produce cement in the billions of tonnes needed for the construction industry takes huge amounts of investment and rigorous testing. Establishing fitness-for-purpose for any cement is neither a simple nor a linear undertaking and the more unfamiliar the cement type the more exacting will be the validation process.

It goes without saying that any material that plays quite such a crucial role needs to be safe, but also long-lasting and without need of excessive maintenance."

Confidence building is then one central issue for any new cement and it is likely that early uses would be non-structural.

The other major barrier could be cost given that Portland cements benefit greatly from economies of scale. It is unlikely that any new cement could compete on a cost per unit basis until it achieved acceptance that justified production in industrial quantities.

"There is a future for new or novel cements," says Pal Chana. "But there really is a long way to go before they can make substantial inroads into the market.

"In the meantime, it is critical that we continue to reduce carbon through every other route and that Governments of the world support the development of carbon capture technology."

Next generation?

The challenge of identifying novel cements with genuine long-term commercial potential is being taken up worldwide. Alternatives are being investigated in Australia, China, Japan and the Netherlands

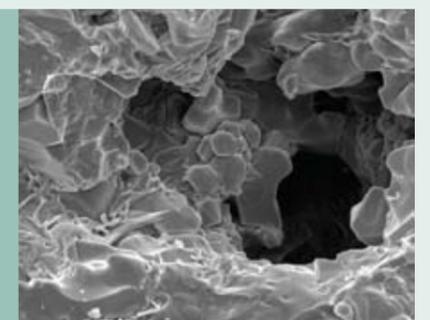
The UK is, however, amongst the front runners with *Novacem*, a project led by engineers at Imperial College that uses magnesium silicates rather than calcium carbonate as its main feedstock. Magnesium silicates provide the main component in talcum powder.

Without getting into the details of the

chemical process, the crucial factor is that the heat required is relatively low, which means that biomass fuels can do the job. Whereas manufacturing a tonne of conventional cement emits 0.8 tonnes of carbon, the equivalent for *Novacem* is claimed to be minus 0.11 tonnes. An industrial sized pilot plant should be operational in 2011.

Other novel cements at varying stages of development include:

- **CALERA** – a mixture of calcium and magnesium carbonates, and calcium and magnesium hydroxides.



Strength to match – cement's microstructure

- **CALIX** – produced in a reactor by rapid calcination of dolomitic rock in superheated steam.

- **GEOPOLYMER CEMENT** – uses wastes from power stations and the steel industry plus concrete waste to make alkali-activated cements.



Photo courtesy Oxford Archaeology

Are archaeologists killing the goose?



All our yesterdays

The artist reconstruction of a Saxon village at Yarnton in Oxfordshire (shown in our main picture and above with children poring over a model) is one of a host of projects where quarrying industry enthusiasm has resulted in valuable discoveries.

The story uncovered as a result of work by Oxford Archaeology with cooperation from Hanson and funding from English Heritage is said to have revolutionised our understanding of Neolithic and Bronze age farming in river valleys.

Discoveries spanning 6,000 years of continuous occupation include: a longhouse thought to have been built

4,000 years BC; Neolithic bread; a small cemetery of 35 burials in crouching positions; evidence of cereal growing in Roman times; and a Saxon settlement with more organised fenced fields.

Meanwhile (pictured above right), archaeologists in Northumberland, working with Tarmac at Cheviot quarry uncovered a 5,000 year-old settlement with six buildings, extensive pottery and a burial pit.

The company commissioned a series of investigations that produced spectacular discoveries including three phases of settlement dating from the Neolithic, the late Bronze Age and Dark

Age periods. There had previously been very little archaeological or documentary evidence for what the area was like during the time between the Roman and Anglo Saxon periods.

Important funding in this case came from the Aggregates Levy Sustainability Fund (ALSF).

Handling investigations ahead of extraction, contractor Archaeological Research Services uncovered remains in an area equivalent in size to two football pitches including at least six buildings, hundreds of pieces of pottery and a human burial pit.

No industry invests as much in archaeology in the UK as mineral products. Operators accept the responsibility to foot the bill for historical investigations provided they are reasonable, proportionate and consistent from county to county. But MPA members in some areas are complaining that the level of work they are being asked to fund ahead of a planning permission is unreasonable and is sometimes making the mineral unviable.

QUARRYING has a habit of producing archaeological finds that give us a better understanding of our history. It is the nature of the business that excavating for minerals also provides an opportunity to uncover remains that provide a fascinating insight into our past.

But disturbing ground also creates a risk of destroying valuable archaeology, and the minerals industry has long accepted its responsibility not just to cooperate but to fund advance investigation work. In some cases, it may show that the potential loss is too great for specific areas to be quarried. In others, the experts need to maintain a watching brief as work progresses.

Archaeological costs have, however, spiralled over the years and there is now growing frustration amongst MPA members that the demands being placed upon them have reached a point where the operator may have no choice but to walk away. As MPA planning director Ken Hobden puts it: "There is a danger that some archaeologists

are killing the goose that is laying their golden eggs."

Gloucestershire-based Moreton C Cullimore is typical of the operators now demanding a more realistic and consistent approach from archaeologists. As an operator in an area that is particularly rich in historic remains preserved in thick clay, chairman Roger Cullimore accepts that archaeology will often add to his production costs. But after a recent request that equated to £7,000 an acre for investigations on a site for which he doesn't yet have permission, he believes things have gone too far.

It is the latest of a several occasions where the level of archaeological work being demanded is incurring what he regards as excessive and unsustainable costs. "We have a good track record on archaeological issues and much of that is on a voluntary basis," he says. "The situation now is that we are being asked to pay a great deal of money for what is ultimately shown to be of little archaeological benefit."

Across three different counties, the company has been asked to pay for trial trenches ranging from five to ten per cent of the total area on sites judged to be of comparable archaeological interest.

At a 120-acre site in Wiltshire, costs of over £150,000 have so far been incurred on investigation work, so far covering only a third of the total required area.

The concerns are echoed by Tony Rowley at CEMEX UK who says that planning authorities are not working to the spirit of the guidelines and are being "over cautious" in demanding extensive site investigations where the archaeological interest has already been proven to be insignificant. CEMEX is, he says, more than willing to carry out further investigations where preliminary assessments show this to be necessary.

Ken Hobden is frustrated by the inconsistency and believes the time has come for a more level playing field across different areas. "Archaeologists in some

areas are demanding that an unreasonable amount of investigative work is carried out in support of planning applications and sometimes also as part of a watching brief after permission has been granted," he says.

"They are often allowed to act on their own without working through their planning colleagues on whom the planning system relies to apply the tests of reasonableness."

The problem is not a new one and has already been addressed through the setting up of the Minerals and Historic Environment Forum, bringing together archaeological professionals and the industry under the chairmanship of English Heritage.

A guide has been produced that includes valuable practical advice on how best to achieve a reasonable and consistent approach. But it is, says Ken Hobden, too often being ignored.

"The big issue is whether quarrying will subsequently destroy a site of national

significance," he says. "The pre-determination evaluation is aimed solely at establishing with an acceptable degree of certainty that no nationally significant sites exist within the area proposed for excavation.

"Some archaeologists are treating that as absolute rather than acceptable certainty and therein lies the added cost."

"The significance is that the presumption of preservation in-situ applies to nationally significant sites and no others. Such sites are the only ones that are 'show stoppers' and the only ones, therefore, that the planning authority needs to know about before determination."

In a bid to tackle the issue, the Minerals and Historic Environment Forum has initiated a series of workshops aimed at planners and archaeological professionals. Ken Hobden hopes that the move will help to achieve clarity.

INVESTMENT

New site



THE Wiltshire-based Hills Group celebrated its 110th anniversary with a move outside its traditional heartland which saw the opening of a greenfield quarry at Woodsford near Dorchester in Dorset.

As part of the site preparation works, the ground level was lowered by two metres and screening bunds built along two boundaries. The plant itself is of a low-level design with a maximum height below

eight metres. Noise reduction has been achieved with use of rubber-lined chutes and polyurethane screens.

The development also includes a concrete plant. The total 163-hectares site has a 4.2 million tonne reserve.

Based on a target output of 175,000 tonnes per year, the operational life will be around 24 years. Low-level restoration will return the land to agricultural use.

ENERGY

Power performer

HANSON UK is aiming to achieve major savings in its electricity consumption as a result of an efficiency drive covering its quarrying and asphalt operations.

The project involves both procurement and operational staff and revolves around improved purchasing from suppliers and better day-to-day operational management. It builds on initiatives over the past seven years that have resulted in a 15 per cent saving on power bills.

A 2008 partnership with the Carbon Trust designed to save electricity at six large sites was followed by a larger scale project

looking at everything from transport and internal road gradients to use of compressed air and moisture content of aggregates.

A recent initiative has seen the development on an electronic metering and reporting system which can check electricity use at individual sites on the following day and spotlight erratic consumption. At one concrete plant in Kent, the system resulted in the fitting of an automatic shut-off on a compressor, contributing to an overall reduction in power usage for the site of 40 per cent.

CONCRETE

Resourceful

THE concrete sector now uses more waste than it produces. The fact emerges from a new resource efficiency guide from MPA The Concrete Centre which says that in the last two years the industry has used more than nine million tonnes of waste, by-products and secondary materials from other industries.

The publication describes the resources and waste issues of using concrete at different stages of its manufacture, design and construction, providing guidance to designers and specifiers on optimising performance.

The guide demonstrates that concrete is a low-waste solution for the construction industry. Characteristics such as sound insulation, fire-resistance and robustness mean that it can be used to improve the overall material efficiency of a building and so lower its associated waste production. For example, by using concrete walls and floors, the designer can reduce or even eliminate the use of additional materials and finishes. And its thermal efficiency can significantly reduce the need for heating and air conditioning.

Material Efficiency: optimising performance with low waste design solutions in concrete can be downloaded, free of charge, from www.concretecentre.com/publications.



Photo courtesy Oundle School, Northamptonshire

ANNIVERSARY



Ragstone success

PAT Gallagher's dream of owning a farm was also the beginning of an adventure which saw his family business become a major producer of Kentish ragstone. Twenty years on, Gallagher is celebrating a notable landmark for its highly successful operation at Barming near Maidstone.

The farm bought in 1987 sat on extensive reserves of the south east's only substantial

deposit of limestone. The quarrying operation began "with bundles of enthusiasm and very basic machinery to root out the ragstone".

Major innovation and investment have followed to establish a state-of-the-art operation that produces 700,000 tonnes of stone a year. The company has restored 40 of the 74 acres quarried, creating pasture that is better than the original.

ACCREDITATION

Driving up standards

TARMAC is the first quarrying and construction materials company to gain the Achilles BuildingConfidence certification, an independent scheme that validates corporate health and safety and environmental claims.

Certification provides external verification of quality management systems and commitment to greater supply chain transparency. The company has asked its key suppliers to gain the accreditation as a means of supporting its drive to raise overall industry standards.

Adrian Cook, executive director of procurement, says: "Until now, a lack of independent accreditation has meant that the construction industry has had to rely too greatly on anecdotal information from sales teams about track records on health and safety, environment and CSR."

COMMUNITY



Helping hand

CEMEX UK has launched a volunteer programme that entitles every employee to eight hours paid time-off each year to help local communities or organisations.

The initiative works on two levels – volunteering on an individual basis to support projects in employees' own areas, or working as a group and contributing

INVESTMENT

Thames spend

MARINE aggregate specialist J Clubb has invested £2million in rebuilding its Thameside processing plant near Gravesend in Kent.

The firm has had a plant on the 11-acre site for more than 30 years, but the latest spend has trebled capacity to one million tonnes, increased the operational life substantially and boosted environmental performance.

Water used to separate sand and gravel is recycled, and the plant's automated crushing machinery will only operate when it has a full load of stone so that power isn't wasted crushing half loads. The company has also installed latest energy-efficient motors which will slash the plant's power consumption per tonne by at least a third.

HEALTH & SAFETY



Safety awards

INDEPENDENT and smaller companies made a strong showing in this year's *MPA Health and Safety Best Practice Awards*, held in October in association with the Institute of Quarrying.

The Sir Frank Davies Trophy for companies with less than 1,000 employees went to the A-one+ Consortium, while the John Crabbe Memorial Trophy, for outstanding excellence was won by Midland Quarry Products.

MPA chief executive Nigel Jackson praised the "high level of positive involvement in the scheme from independents and SMEs". He also highlighted the record 347 entries as demonstrating the level of commitment right through the industry.

Judith Hackitt, chair of the HSE, said that MPA and the quarrying sector was "an excellent example of how the relationship between industry and regulator has matured and evolved into partnership."

A full list of awards is available from www.mineralproducts.org.

Photographed above: Judith Hackitt presents the John Crabbe Memorial Trophy to Simon Willis of MQP.

INVESTMENT

Ennstone acquired

BREEDON Holdings, owner of building materials companies Ennstone Thistle and Ennstone Johnston, has been acquired by Marwyn Materials, an AIM-listed company formed to make acquisitions in the sector.

Following a successful share placing, Marwyn Materials will inject £54m into Breedon Holdings to reduce debt and develop the business, which has a strong presence in the Midlands and Scotland. The group is being re-named Breedon

Aggregates, reviving a name long associated with the British aggregates industry, with its roots in Breedon Hill and Cloud Hill quarries in the East Midlands.

Simon Vivian, Marwyn Materials chief executive, said: "It is a tribute to Ennstone's employees that the group has remained profitable in the teeth of the worst recession in living memory. We intend to build on that achievement by taking full advantage of the economic recovery."

AWARDS

Euro success



MPA members Lafarge Aggregates and Hanson UK picked up top prizes in this year's European Aggregates Association's Sustainable Development Awards.

Hanson won the overall "Social Pillar" category for a submission demonstrating how it responded to repeated injury incidents involving falls from mobile plant at its Criggin quarry in Shropshire. An in-company survey of 260 items of mobile plant resulted in the identification of defective designs which were rectified. The

work subsequently inspired MPA's "Safer by Design" initiative which took the issue right across the industry.

Lafarge's success came with a *Restoration Best Practice Special Awards* for its contribution to the National Memorial Arboretum at Alrewas in Staffordshire (pictured above). The site with its 150-plus military and other memorials, has been created on land restored following quarrying and includes diverse wildlife habitats. It has attracted 700,000 visitors since it was dedicated in October 2007.

MARINE

Safeguarding the seas



BRITAIN'S marine aggregate industry is making an important contribution to the drive to make the seas around our shores a better place for nature.

Although licensed dredging areas account for only a third of one per cent of the UK shelf, the increasing monitoring work being undertaken by members of the British Marine Aggregate Producers Association (BMAPA) - including high resolution studies of habitat - is providing a much bigger picture for marine conservation interests and an opportunity to ensure

adequate safeguards.

Data gathered is helping to define Special Areas of Conservation including sand banks and biogenic reefs with the result that sites in the Thames estuary, off the Norfolk coast and Humber will be submitted for European designation this year.

BMAPA is also participating with other interest groups in four regional stakeholder projects to achieve consensus on recommendations to government for areas to be protected as UK Marine Conservation Zones.

HEALTH & SAFETY

Safer still

MPA has launched a new initiative to help members in their ultimate quest to achieve "zero harm".

The package provides the means to carry out a health and safety self-audit of sites. A range of resources is also being developed

that will then enable operators to address issues raised through the audit.

The project has been initiated by a task force from the MPA Health and Safety Committee which has cherry-picked the best features from a variety of existing corporate schemes. Future extensions of MPA's audit package could embrace environment and quality.



PUBLIC SAFETY



Cycle safe

A NEW MPA campaign is being planned aiming to help prevent accidents involving collisions between industry lorries and cyclists.

Cycle Safe builds on an existing initiative from CEMEX UK and recognises the hazards that arise in cities in particular when cyclists are manoeuvring in close proximity to large vehicles where the driver may not be aware of them. In London alone, 15 cyclists died in 2008 and eight involved a goods vehicle. Many casualties occur at junctions, the most dangerous being when lorry drivers turn left unaware of cyclists alongside them.

The new campaign will take the message nationwide and will aim to raise awareness amongst both lorry drivers and cyclists as well as cycling organisations, police and local authorities who can influence the latter. Their key message will be to look out for each other and allow space.



What comes after minerals?

IS it a quarry or is it a nature reserve? The question could be asked about mineral products sites right across the UK, but few more so than Aggregate Industries' Croft Quarry in south Leicestershire (pictured). Alongside the two million tonnes of aggregates it generates in a typical year is a mosaic of valuable wildlife habitats including heath grassland, wet grassland, field ponds, nearly two miles of hedgerows, mature woodland plantations and running water.

Part of the site has been designated as a Site of Special Scientific Interest (SSSI) for a nationally rare type of short grass and for diverse acid grassland flora. Elsewhere, there are important species of butterfly like the grizzled skipper and small square-spot. The company manages part of the site as a wetland corridor and there is also a nature trail that is popular with the local community.

Croft is amongst a host of worthy trail-blazers for a new MPA biodiversity initiative designed to help members take full advantage of the huge potential that exists to boost wildlife while also earning due credit - and softening the image of the industry.

MPA has estimated that if all the nature areas created by the industry were combined, the total area would equate to a small National Park. The new initiative will go beyond what is already being achieved through

partnership with Natural England and the RSPB via the Nature After Minerals project. It will also include a biodiversity awards scheme that is currently being judged for a 2011 presentation.

Sharing best practice will be an important feature, as will the provision of expert advice and tools to add to members' biodiversity achievements. MPA also hopes to be represented in the UK Biodiversity Action Plan process and will press for biodiversity issues to be taken into account in the Development Plan process.

The new impetus recognises the fact that planners and conservation bodies are changing their thinking on how the restoration of mineral sites can significantly enhance biodiversity. Moving away from small-scale projects, they are working together to achieve a vision of 'large-scale

mosaics' of priority UK Biodiversity Action Plan (BAP) habitats.

RSPB Land Management Advisor, Nigel Symes, says that animals, birds and even insects are on the move due to issues including climate change. "It is, therefore, critically important to link up what has become a fragmented landscape. When this is achieved on a large scale the overall effect is greater than the sum of the parts."

FACT

A new RSPB paper reveals that over 100 per cent of Biodiversity Action Plan targets could be achieved for 9 out of 11 priority habitats through mineral restoration.

If all the nature areas created by the industry were combined, the total area would equate to a small National Park