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Concrete Industry Sustainability Performance Report

Based on 2009 production

Our vision is that, by 2012, the UK concrete industry will be recognised as the leader in sustainable construction, by taking a dynamic role in delivering a sustainable built environment in a manner that is profitable, socially responsible and functions within environmental limits.

Progress towards this vision is demonstrated by:

- **Exceeding government target on responsible sourcing.** The concrete industry is the first industry to link its sustainable construction strategy to the responsible sourcing standard developed by the Building Research Establishment (BRE), BES 6001 - "Framework Standard for the Responsible Sourcing of Construction Products". This demonstrates the positive credentials of the UK concrete industry and enables designers to easily source certified materials and gain maximum credits in sustainability assessment tools such as the Code for Sustainable Homes and BREEAM.

- **Exceeding UK average reduction of greenhouse gases.** Cement is the main contributor to the greenhouse emissions for concrete. Emissions of greenhouse gases for the UK as a whole are 26.3% lower than 1990, the baseline year for the Kyoto Protocol[1]. Using the same baseline year the 2009 absolute emission of CO_2 from the UK cement industry was 58% lower than the cement industry emissions in 1990. This performance exceeds the performance of the UK as a whole and can be attributed to a combination of factors including reduced production, plant rationalisation, significant investment in modern manufacturing processes and fuel switching.

- **Exceeding energy performance targets.** The cement and ground granulated blast furnace slag (ggbs) sectors have outperformed their targets with Government under their Climate Change Agreements. At the last milestone year (2008) the cement industry had achieved a 33.7% improvement in CCA energy efficiency compared to its 1990 baseline and has exceeded its 2010 target of 30%. The ggbs sector has achieved a 19% energy reduction between 1999 and 2008, which exceeded its target of 18%.

- **Stakeholder Engagement Survey launched.** The industry is making great progress on the performance indicators and targets it has set. To help steer our continual improvement, feedback is essential. The stakeholder survey was made available online from August to October 2010 and the feedback received will shape future development of the strategy and future reports.

[1]Provisional UK performance based on data released 27th July 2010

Front cover: The Stirling Prize shortlisted Ashmolean Museum refurbishment uses structural concrete and concrete stairs and cores to provide durable and flexible exhibition spaces.
Above: Joseph Chamberlain College uses the thermal mass of concrete as part of its energy efficient heating and cooling strategy. Image courtesy of Bruce Clarke.

Introduction

Concrete is our most widely used construction material and is essential for the sustainable development of our housing, schools, hospitals, transport networks, energy infrastructure and our built environment.

In 2008 the UK concrete industry agreed a Concrete Industry Sustainable Construction Strategy. Since this pledge was made construction activity and the use of concrete and other materials has declined significantly due to the recession. However, the industry's commitment to sustainability has not waned. Against the 14 sustainability principles, in 2008 we reported against 14 indicators and established 12 targets. In this third report we have added another principle, two performance indicators and one target.

This third report also includes 2008 performance data to enable comparison. We recognise that we are in the early stages of industry-wide data collection and will continue to improve the metrics used; we are already focused on setting future targets.

In the last report we announced that the scope of the industry captured by the reporting continues to increase. In this regard, we are still working with the British Association of Reinforcement to align performance indicators and our aim is to include this data in our next report. This report does, however, include highlights on the reinforcement sector performance and 2009 performance on three of the principles (see page 15).

We are delighted to have made such good progress on our indicators in 2009. The construction industry has been particularly impacted by the difficult market conditions experienced this year. As a sector we have remained committed to our sustainability objectives, despite the difficult operating conditions and have achieved real progress. Although reduced production output has adversely impacted on our operational efficiency, we remain on course to meet our 2012 performance targets.

Our third report

This report presents the concrete industry's sustainability performance, based on production in 2009. The data is based on information supplied by the aggregates, cement, admixtures, fly ash, ground granulated blast furnace slag, precast and ready-mixed concrete sectors. The information is from survey responses from companies supplying an estimated 74% of concrete used in the UK.

The UK concrete industry plays a vital role in the construction of the built environment. The industry is represented by the trade associations and companies who have signed up to the Concrete Industry Sustainable Construction Strategy. This strategy includes the commitment to continual improvement, measurement and reporting of performance data for the industry.

The concrete industry represents nine production sectors that together provide ready-mixed concrete, precast concrete and concrete batched on-site.

The individual sectors and companies had already established initiatives and reporting structures. The commitment to a comprehensive industry strategy and report has required coordination and further development of sector and company processes. In addition, industry performance indicators were developed to support the UK Government's sustainable construction strategy. In March 2009 the first *Concrete Industry Sustainability Performance Report* was published. Previous industry reports and links to sector and company performance reports are available at **www.sustainableconcrete.org.uk**

A list of the founder members of the Sustainable Concrete Forum are listed on the back cover of this publication.

Winners of Best Practice Award for Environmental Initiative

The concrete industry's Sustainable Concrete Strategy has won the prestigious 2010 Trade Association Forum (TAF) Best Practice Awards for Environmental Initiative. The awards recognise and celebrate best practice and reward the achievement of trade associations from all industry sectors.

The judges commented:

"The level of resources and commitment that has gone into the strategy, combined with the progress to date, left the judges in no doubt that the targets would be reached and that this strategy would be used as a template for other industry sectors"

Sustainable Consumption and Production

The concrete industry uses 20 times more waste than it produces.

Environmental Management

Percentage of production sites covers by a 'UKAS' Environmental Management System (EMS)	
2008 Performance	72.3%
2009 Performance	**80.4%**
2012 Target	85%

Environmental Management Systems (EMS) are a key tool in integrating continuous environmental improvements into business practices. At the industry level the established EMSs help to deliver performance improvements through to each individual site; a powerful, rigorous tool for driving the ongoing performance of the industry. Sites across the industry vary in their size and complexity from cement works to concrete batching plants. Industry coverage of 'UKAS' certified systems has increased from 72 .3% (1173 sites) to 80.4% (or 1207 sites). Although there has been a reduction in the total number of sites, this does represent an improvement in performance. We are working to increase this coverage to 85%, which based on the current number of sites equates to 70 additional sites.

At this site, a waste reduction programme was implemented so that dust from shotblasting processes was collected and used as aggregate.

Waste Minimisation

Kilogram of waste to landfill as a proportion of production output (in tonnes)	
2008 Performance	5.0 kg/tonne
2009 Performance	**4.4 kg/tonne**
2012 Target	Reduce by 15% from 2008 baseline. (4.3 kg/tonne)

Much investment and activity has contributed to an already excellent level of performance.

Improvements are targeted through:

- Increased use of by-products and secondary materials in the production process.
- Reduction of waste to landfill, with an aim to exceed the commercial and industrial waste target (of 20% reduction between 2004 and 2010) published by Defra in the England and Wales Waste Strategy 2007.
- Working with the wider construction industry to support innovations and initiatives to help in achieving the UK Government Sustainable Construction Target of a 50% reduction in construction waste to landfill.
- In 2009 the cement industry alone disposed of less than 46,000 tonnes of process waste whilst consuming over 1.2 million tonnes of waste and by-products derived from the operations of its own and other industries.

The concrete industry is a net user of waste and has increased consumption such that it now uses over 20 times more waste, by-products and secondary materials from other industries than the waste it sends to landfill.

For the companies providing data in this report the estimated total waste to landfill from the production of concrete and its constituent materials is just under 0.2 million tonnes. Meanwhile these companies diverted over 4 million tonnes of material from the waste stream and used them instead of primary materials.

Emissions (excluding CO_2)

Number of convictions for air and water emissions per annum	
2008 Performance	6
2009 Performance	**1**
2012 Target	0

The nature of emissions varies across the different sectors of the industry. Emissions are well managed by the sectors and monitored by regulatory bodies, with significant improvements being recorded. A common indicator used in monitoring emissions is convictions for non-compliance.

Each trade body is focused on best practice in emissions reduction. The target for 2012 is for all the sectors of the concrete industry to achieve zero convictions.

The cement sector is a key part of the concrete industry and through major investment has achieved significant environmental improvements. For example, particulate emissions from kiln sites have been reduced by 78%, oxides of nitrogen have reduced by 63% and sulphur dioxide emissions are now only around 15% of the 1998 level. (1998 is the baseline year from the cement sector plan agreed with the Environment Agency). For more information visit **www.cementindustry.co.uk**.

Stakeholder Engagement

Within each of the nine production sectors that make up the concrete industry supply chain, there is significant engagement with a wide range of stakeholders at all levels to improve the sustainability of the material and the built environment.

The industry recognises the importance of its local communities and continues to foster good relationships and understanding with those living close to its operations. For example the cement industry is actively seeking better ways to engage and communicate including using newsletters, liaison meetings, open days and site visits. The newsletters are often used to provide information for public consultation on developments at the works in addition to covering human interest stories about the company, and its interactions with the local community.

The formation of the industry strategy was influenced by a programme of stakeholder engagement. In 2010 the industry has also carried out an online survey, open to all stakeholders. The survey results and the levels of audience engagement in the survey will be assessed; thus informing a future strategy and further continuous improvement.

Quality and Performance

Percentage of production sites covered by a 'UKAS' certified 9001 quality management system	
2008 Performance	84.2%
2009 Performance	**87.5%**
2012 Target	90%

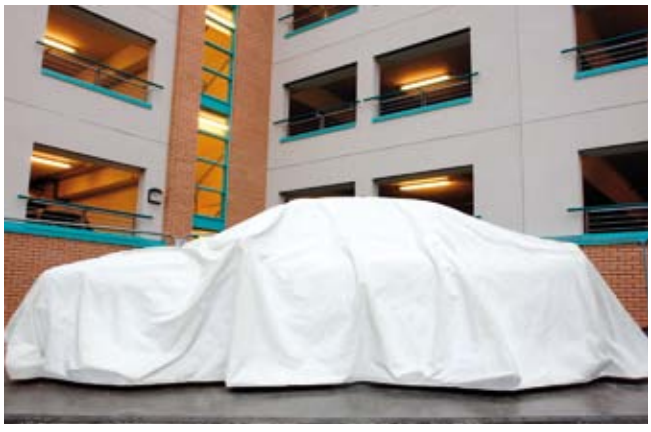
The majority of the concrete supply chain is certified by Quality Management Systems to ensure product consistency and performance.

Since the 2008 performance baseline the percentage of accredited sites has increased from 84.2% to 87.5%. However it is noted that the total number of production sites has reduced in the same period. The target is to increase the total number of concrete industry sites accredited to 90%, which, based on the current number of total sites, equates to 38 additional sites.

The industry is also improving the coordination of research and development in a number of key areas:

- A Life Cycle Analysis (LCA) approach to provide competitive concrete solutions for sustainable buildings.
- Case studies on the building life cycle to increase awareness of the sustainability benefits of thermal mass.
- Communicating the benefits of sustainable urban drainage systems (SUDS) solutions and water recycling.
- Transparent information on production and transport CO_2 emissions to demonstrate the industry's leadership position.
- New technologies and options to lower embodied CO_2 of concrete while maintaining performance.
- The use of recycled/secondary aggregates, where this provides the best sustainability option.

The objective of pan-industry activity is to increase the level of innovation and the development of more sustainable products and services.



A new car sculpture for Dundee absorbs rather than emits pollution. It is made from TX Aria — a new pollution-busting photocatalytic cement.

New indicator shows 81% of concrete production is responsibly sourced to BES 6001.

Responsible Sourcing

Percentage of production certified to BES 6001 responsible sourcing scheme	
2008 Performance	0% (BES 6001 was only published in Oct 2008)
2009 Performance (New)	**81.0%**
2012 Target (New)	The aim is to support the government target of 25% responsibly sourced products in construction projects.

The concrete industry is leading other construction materials. 2009 performance data shows that 81.0% of the production was certified to the BRE responsible sourcing standard BES 6001. This is a new performance indicator against which we will continue to report.

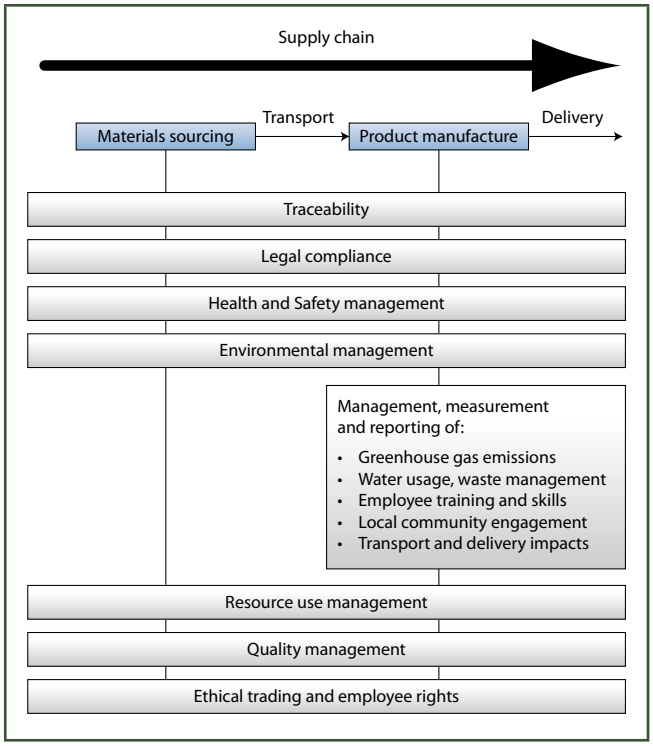
The concrete industry has taken steps not just to achieve but to exceed the UK Government Sustainable Construction Strategy target for 2012, set in June 2008, that at least 25% of construction materials should be supplied from suppliers with responsible sourcing certification by 2012.

The concrete industry is the first industry to link its sustainable construction strategy to BES 6001 and has produced a guidance document that supports the implementation of the standard. Designers can now easily source certified materials to help gain maximum credits in sustainability assessment tools such as the Code for Sustainable Homes and BREEAM. The ability to specify products certified to a responsible sourcing scheme is also an increasingly important aspect of CEEQUAL, the Civil Engineering Environmental Quality and Award Scheme.

BES 6001 provides a common benchmark for all construction products to demonstrate their responsible sourcing credentials. The scope of BES 6001 covers a wide number of activities as part of responsible sourcing (Figure 1) and supports continual improvement throughout the supply chain.

The concrete industry is supporting BES 6001 responsible sourcing standard as it is the most comprehensive standard available and measures the whole infrastructure of the supply chain.

Figure 1 - The activities of the supply chain covered by the responsible sourcing standard BES 6001.



Eco-reinforcement – responsible sourcing for the reinforcement sector

Eco-reinforcement is a certification scheme for responsibly sourced reinforcing steel to the standard of BES 6001. It provides a holistic approach to managing reinforcing steel products from the point at which constituent materials are harvested/recovered through manufacture and fabrication, through use, re-use and recycling.

To achieve accreditation by the scheme both the steel mill and fabricator must be certified. In 2009 41% of reinforcement steel produced by the sector* was accredited to BES 6001.

Eco-reinforcement accreditation is now recognised within the 4th edition of the National Standard Concrete Specification; aiding contractors and specifiers in the specification of sustainable concrete.

For more information visit **www.eco-reinforcement.org**

*Data collected from members of the British Association of Reinforcement.

Climate Change and Energy

An almost 18% reduction in CO_2 from comparable concrete mixes has been achieved from a 1990 baseline.

In considering energy efficiency it is important to recognise that concrete can play a role in reducing both embodied and operational energy. The superior thermal performance properties (thermal mass) of concrete as a construction material can provide considerable energy savings over the lifetime of a building. A recent embodied energy study showed that specifying a typical concrete commercial building can deliver savings equivalent to the embodied CO_2 of a lifetime of goods and services for a UK citizen; a saving of more than 1,000 tonnes of embodied CO_2. A separate study of housing found that the operational energy saving can offset the higher embodied CO_2 associated with concrete and masonry homes in just a decade of use. Both studies are available at **www.concretecentre.com**

Energy Efficiency

kilowatt per hour of energy used in production as a proportion of production output (in tonnes)	
2008 Performance	132.6 kWh/tonne
2009 Performance	**127.0 kWh/tonne**
2012 Target	Deliver the industry CO_2 target and achieve sector climate change agreement targets

Energy efficiency is a key element in achieving our CO_2 reduction target and we are committed to continually monitor and reduce energy consumption as an overall industry and achieve sector targets. The concrete industry has achieved a reduction of over 4% since 2008.

Different levels of energy are required to manufacture the different constituent materials of concrete. Cement manufacture is the most significant component of the energy embodied in concrete. Information is published by sectors and available from the sector trade body (web addresses are listed on the back cover of this report).

Both the cement and ground granulated blast furnace slag sectors have committed to voluntary Climate Change Agreements (CCA) with government. These are reported on every two years. Based on 2008 performance both sectors have exceeded their energy reduction targets. The cement sector has improved its CCA performance by 33.7% between 1990 and 2008, which exceeds its 2010 target of 30%. The ground granulated blast furnace slag sector has achieved a 19% energy reduction between 1999 and 2008, which exceeded its target of 18%. 2010 is the final milestone year of the Climate Change Agreements.

CO_2 Emissions - Production

kilogram of CO_2 emissions as a proportion of production output (in tonnes) (1990 baseline is 103.1kg CO_2/tonne)	
2008 Performance	88.1 kg CO_2/tonne
2009 Performance	**84.8 kg CO_2/ tonne**
2012 Target	17% reduction from 1990 baseline. (85.4 kg/CO_2/ tonne)

Significant reductions have been achieved and data for 2009 shows an almost 18% decrease in CO_2 emissions from comparable concrete mixes from a 1990 baseline.

85% of the total CO_2 emissions associated with concrete production are from cement production. The cement industry now replaces 15% of the energy needed in the kiln with biomass and part-biomass fuels. The 2009 performance improvement has exceeded the 2012 target. While achieving the target in this period the industry is focused on maintaining this trend of continuous improvement and developing a longer term target.

The concrete industry target to reduce emissions of CO_2 from production is based on verified baseline data from the cement industry going back to 1990 (to match the UK Government's baseline).

Future improvements will be the result of action throughout the concrete supply chain, through the substitution of fossil fuels by waste-derived fuels in cement manufacturing and by the use of recycled and low carbon constituent materials (subject to their availability and maintaining product quality).

For information and useful data for carbon calculators relating to the CO_2 emissions associated with an 'average' tonne of concrete, visit **www.sustainableconcrete.org.uk** . The system boundaries for the collection of manufacturing data and product precede the strategy and currently differ. Consequently the figures in this report will be similar but not identical to those found on the website.

New performance indicator for transport emissions is a major step in the future management of their reduction.

CO_2 Transport

CO_2 emissions of delivery transport through the industry supply chain as a proportion of production output	
2008 Performance	Not reported
2009 Performance	**7.0 kg CO_2 per tonne**
2012 Target	Target to be set

The local supply network for concrete means that delivery distances are short and the fuel used during haulage (and the associated CO_2 emissions) is minimised. The average delivery distance of ready-mixed concrete to the construction site in 2009 is 11.5 km, and just over 136 km for precast concrete products. The average transport load for precast concrete (22.25 tonnes) is greater than for ready-mixed concrete (12.4 tonnes). The recession has resulted in sites being moth-balled and closed, which has had an impact on site distances when compared to the 2008 baseline. This data is based on the following modal distribution: 94% road; 6% rail; 1% water (figures rounded).

The average delivery distance by road for concrete raw materials is 42.5km and for all concrete products is around 30km. A number of concrete production sites are located within the quarry which minimises delivery transport. This benefit is not currently captured in this figure which are an average for all aggregate deliveries.
The development of common data collection methodologies has made progress and data is now being collected as part of transport contracts. 2009 performance is reported as 7.0 kg CO_2/t.

This is the second new performance indicator which has been added to this report and this data will provide a benchmark for further reporting. The 2009 baseline is likely to be a conservative figure and further work is being undertaken to improve the level of data collection.

The concrete industry has invested in more energy-efficient fleets to reduce associated CO_2 emissions.

Reduce, re-use, recycle

This case study truly demonstrates the ways that concrete can contribute to creating a sustainable built environment. Designed by architects AHMM, the five-storey Angel Building in London highlights how a building can be given a new lease of life.

Internally, much of the existing reinforced concrete frame has been retained which reduces CO_2 impacts linked to the production and transportation of new materials. This means that the overall embodied energy of the building is substantially less than if it had been demolished and a new structural frame built. It also costs considerably less. Truck movements for the concrete used in the new extensions to the building were also minimal, due to the concrete plant being just 2.5 miles away.

Throughout the building the exposed concrete is of a very high quality finish. A self-compacting concrete mix containing fly ash was specified in order to eliminate the need for traditional methods of compaction such as vibrating poker units, this reduces the potential for blemishes and honeycombing and improves the workability around difficult interfaces and cast-in elements. The use of fly ash is also an opportunity to utilise a by-product from another industry and reduce the embodied CO_2 of the concrete mix.

The retained concrete frame is wrapped with a highly-efficient glazed skin. The bespoke curtain walling works together with the exposed thermal mass of the concrete to passively control the internal environment and has contributed to the buildings 'Excellent' BREEAM rating. The building is highly energy efficient.

The Angel Building successfully demonstrates how the inherent flexibility of concrete framed structures can provide the basic core for a building's renewal to meet current visual aspirations and performance requirements.

Project team

Client:	Derwent London
Architect:	Allford Hall Monaghan Morris
Structural Engineer:	Adams Kara Taylor
Main Contractor:	BAM Construction
Concrete contractor:	Getjar Limited

For more case studies, visit **www.thisisconcrete.co.uk**

Natural Resource Protection and Enhancing the Environment

The industry has met two material efficiency performance targets.

Materials Efficiency

The success of the concrete industry in finding ways to manage materials responsibly has been further demonstrated with the improvements identified by 2009 performance. Targets for two indicators have been exceeded and the industry is focused on maintaining this trend and providing customers with sustainable and cost-effective concrete.

Waste as a source of fuel

Material diverted from the waste-stream for use as a fuel source as a percentage of total energy use	
2008 Performance	17.3%
2009 Performance	**23.1%**
2012 Target	21%

The concrete industry recycles its own process waste and also uses by-products and secondary materials from other sectors as fuel. The cement sector is able to employ the high temperature of a cement kiln to safely use combustible waste materials as a replacement for fossil fuels. In particular, the use of carbon neutral biomass also helps to reduce CO_2 emissions.

2009 performance shows a 6% improvement from the 2008 baseline.

Additional cementitious materials

Percentage of additional cementitious materials (GGBS, fly ash, etc) as a proportion of total cementitious materials used	
2008 Performance	31.8%
2009 Performance	**35.7%**
2012 Target	33%

Concrete manufacture uses by-products from other industries, such as fly ash from power stations and ggbs from the steel industry. These reduce demand for primary materials and also reduce the embodied CO_2 of concrete when used as additional cementitious material.

The industry has used 35.7% of additional cementitious materials. This proportion represents an increase from the 31.8% reported for 2008.

Recycled/secondary aggregates

The majority of recycled and secondary aggregates are used as alternatives to the use of primary aggregates in local fill and related aggregates markets. Research shows that virtually all the recycled aggregates in the waste stream are already being re-used, and have replaced over 25% of primary aggregates.

The use of recycled and secondary aggregates in concrete varies by sector and is significantly higher in the precast concrete sector. In 2009, recycled aggregates accounted for 3.9% of the aggregates used in concrete.

The question of whether the diversion of larger volumes of recycled and secondary materials into concrete manufacture would produce a more sustainable outcome, taking into account transport, production and emissions implications, is difficult to answer in simple terms and depends upon the circumstances of individual contracts.

Generally, when transported by road, the use of recycled aggregates is only a lower carbon option when used within 10 miles (or 15km) of their source. For more information visit **www.concretecentre.com/publications** and download *Concrete and the Green Guide.*

A new factory has been opened that separates and recycles plasterboard waste and produces a material that can be used in cement manufacture.

Water

Mains water consumption (in litres) as a proportion of production output (in tonnes)	
2008 Performance	86.1 litres/tonne
2009 Performance	**105.2 litres/tonne**
2012 Target	This indicator is to be refined before a target is set

Water is an important resource and the concrete industry utilises rainwater harvesting schemes, and water recycling to reduce demand for mains water. Water is an ingredient of concrete and a cubic metre of fresh concrete contains 140 to 190 litres of water. The use of admixtures can reduce the water content by up to 30 litres per cubic metre. 90% of ready-mixed concrete already includes water reducing admixtures.

105.2 litres of mains water usage was recorded per tonne of concrete in 2009. This is numerically an increase from 2008, however this is not likely to represent an actual increase in water use but is due to an improvement in data collection and reporting.

In addition to mains water usage, we have started to collate data on controlled water usage. We are not reporting the data as it is currently distorted by water recirculation systems which could double count water as being used each time it passes through the process. We are continuing to liaise with the sectors to improve the data prior to the next report.

Site Stewardship and Biodiversity

Percentage of relevant production sites that have site specific action plans	
2008 Performance	94.3%
2009 Performance	**95.1%**
2012 Target	100%

Effective site stewardship requires clear goals for site restoration and often includes management of biodiversity, geodiversity and heritage. Seven hundred sites of special scientific interest (SSSIs) in the UK are established on either current or previous sites of mineral extraction.

The minerals sector is actively involved in site stewardship and biodiversity initiatives, including encouraging exemplar restoration projects.

The minerals industry is supporting the Nature After Minerals initiative of RSPB and Natural England, designed to encourage greater awareness and understanding of the opportunities for habitat creation and biodiversity; see **www.afterminerals.com**. For more information on these and other heritage, restoration, biodiversity and geodiversity initiatives, please refer to the Sustainable Development Reports on the **www.mineralproducts.org** website.

This previous site of mineral extraction has been transformed into a focus for public remembrance, now a home to the National Memorial Arboretum, Staffordshire.

Image © Driftwoodimages.net

Creating Sustainable Communities

The concrete industry is a significant employer and has a responsibility to protect its workforce and enhance local communities.

Health and Safety

Reportable injuries per 100,000 direct employees per annum	
2008 Performance	799
2009 Performance	**753**
2012 Target	From 2009-2014, reduce lost time incidents by 50% with an aim of zero harm.

While the Health and Safety (H&S) indicator set in 2008 focused on reducing reportable injuries to employees, going forward the industry targets will relate to the reduction of 'Lost Time Incidents' with the overall objective of 'Zero Harm'.

The timeframe for the concrete industry target of 2009-2014 is aligned with the Health and Safety Executive. The revised indicator provides a more sensitive measure, demonstrating a more refined target, made possible by significant improvements already made by the concrete industry.

In 2010, the measurement of injuries will change from reportable injuries to lost time incidents. In order to maintain continuity of reporting until all sectors have changed over the 2009 data is reported as reportable injuries.

Employment and Skills

Percentage of employees covered by 'UKAS' certified training and evaluation processes	
2008 Performance	84.4%
2009 Performance	**86.5%**
2012 Target	100%

The concrete industry is a significant employer in the UK, often supporting rural communities that have limited alternative employment opportunities.

The current indicator of performance in workforce skills is based on the Training & Competence section of certified Quality and Environmental Standards. This requires that relevant skills gaps are identified for all employees, the creation of a plan to address these, and the auditing and certification of this process to ensure the training is delivered and that it is effective.

Although 2009 performance is 86.5%, an improvement from the 84.4% baseline in 2008, current market conditions are such that this does not represent up-skilling of the workforce alone.

Graduates of an industry-run management diploma at a presentation ceremony; a great example of the industry up-skilling its workforce.

Local Community

Percentage of relevant sites that have community liaison activities	
2008 Performance	85.9%
2009 Performance	**86.0%**
2012 Target	90%

Each of the sectors within the concrete industry are active in local communities to maintain positive relations, through formal liaison groups and community initiatives.

Although many production sites in the concrete supply chain are situated on industrial parks or are physically shielded (by geography) from local communities, the industry recognises the importance of mitigating any potentially adverse effects from, for example, transport movements and noise.

Individual sectors regularly engage with local schools to support teachers with initiatives that encourage engagement with local wildlife, health and safety issues and support science and geography classes. This activity is both fun and educational, creating an understanding of a local industry and the role the products play in our everyday lives.

In 2009 the cement and aggregates sectors welcomed just under 19,000 visitors to their sites.

Visit by local school children to concrete plant in Barrington.

Industry Awareness Campaigns

Cycle Safe

Every year, around 16,000 cyclists are killed or injured in road accidents. The industry has invested in safety features for vehicles, including training for its drivers and awareness events for cyclists in partnership with cycling groups and local organisations.

MPA Stay Safe

The Stay Safe campaign is run to raise awareness amongst younger children, teenagers, parents, teachers and youth workers about the dangers of entering quarries uninvited and unsupervised. The quarry industry works closely with local communities, the emergency services, the media and other relevant stakeholders to communicate our message... "Stay Safe...Stay Out".

Sustainable concrete resources

This and previous reports are available to download from **www.sustainableconcrete.org.uk**

The site also provides links to company and trade association performance reports as well as guidance on the sustainable design and construction of concrete.

Concrete Industry Sustainable Construction Targets

	Sustainability Principle	Performance Indicator	2008 Performance	2009 Performance	2012 Target
Sustainable Consumption and Production	Environmental Management	Percentage of production sites covered by a 'UKAS' Environmental Management System (EMS)	72.3%	80.4%	85%
	Waste Minimisation	Kilogram of waste to landfill as a proportion of production output (in tonnes)	5.0 kg/tonne	4.4 kg/tonne	Reduce by 15% (4.3 kg/ tonne)
	Emissions (excluding CO_2)	Number of convictions for air and water emissions per annum	6	1	0
	Stakeholder Engagement	The industry sectors have successful and wide ranging stakeholder schemes in place. An industry wide measure is being developed to aid future industry reporting.			
	Quality and Performance	Percentage of production sites covered by a 'UKAS' certified 9001 quality management system	84.2%	87.5%	90%
	Responsible Sourcing	Percentage of production certified to BES 6001 responsible sourcing scheme	0% (BES 6001 was only published in Oct 2008)	81% New	The aim is to support the government target of 25% responsibly sourced products in construction projects. New
Climate change and energy	Energy Efficiency	Kilowatt hours of energy used in production as a proportion of production output (in tonnes)	132.6 kWh/tonne	127.0 kWh/tonne	Deliver the industry CO_2 target and achieve sector climate change agreement targets
	CO_2 Emissions - production	Kilogram of CO_2 emissions as a proportion of production output (in tonnes) (1990 baseline is 103.1 kg CO_2/tonne)	88.1 kg CO_2/ tonne	84.8 kg CO_2/ tonne	17% reduction from 1990 baseline. (85.4 kg/CO_2/ tonne)
	CO_2 Emissions - transport	CO_2 emissions of delivery transport through the industry supply chain as a proportion of production output.	Not reported	7.0 kg CO_2 per tonne New	Target to be set

Performance improvement achieved

	Sustainability Principle	Performance Indicator	2008 Performance	2009 Performance	2012 Target
Natural Resource Protection and Enhancing the Environment	Materials Efficiency	Material diverted from the waste-stream for use as a fuel source as a percentage of total energy use	17.3%	23.1%	21%
		Percentage of additional cementitious materials (GGBS, fly ash, etc) as a proportion of total cementitious materials used	31.8%	35.7%	33%
		Recycled/ secondary aggregates as a proportion of total concrete aggregates	5.3%	3.9%	The implications of setting a target are currently being evaluated.
	Water	Mains water consumption (in litres) as a proportion of production output (in tonnes)	86.1 litres/tonne	105.2 litres/ tonne New	This indicator is to be refined before a target is set
	Site Stewardship and Biodiversity	Percentage of relevant production sites that have site specific action plans	94.3%	95.1%	100%
Creating Sustainable Communities	Health and Safety	Reportable injuries per 100,000 direct employees per annum	799	753	From 2009-2014, reduce lost time incidents by 50% with an aim of zero harm.
	Employment and Skills	Percentage of employees covered by 'UKAS' certified training and evaluation processes	84.4%	86.5%	100%
	Local Community	Percentage of relevant sites that have community liaison activities	85.9%	86.0%	90%

British Association of Reinforcement

As announced in the last report, The British Association of Reinforcement (BAR) has signed up to the concrete industry sustainable construction strategy and is committed to the submission of performance data. The process of implementing common benchmarking and performance indicators has made considerable progress. In the interim, the data below represents the reinforcement steel sector's performance reported against BAR indicators.

BAR members represents 80% of reinforcement mills, 70% of fabricators and 100% of mesh producers.

Sustainability Principle	Performance Indicator	2009 Performance
Environmental Management	Percentage of production sites covered by a 'UKAS' certified 14001 environmental management scheme	36%
Quality and Performance	Percentage of production sites covered by a 'UKAS' certified 9001 quality management scheme	100%
Responsible Sourcing	Percentage of production sites certified to BES 6001 responsible sourcing scheme	41%

To ensure the successful implementation of the Concrete Industry Sustainable Construction Strategy the industry established the Sustainable Concrete Forum and associated Working Groups.

Founder members of the Forum are:

- Aggregate Industries
- British Precast www.britishprecast.org
- Brett Group
- Cement Admixtures Association www.admixtures.org.uk
- CEMEX
- Cementitious Slag Makers Association www.ukcsma.co.uk
- Hanson
- Mineral Products Association www.mineralproducts.org
- Lafarge Aggregates
- UK Quality Ash Association www.ukqaa.org.uk
- Lafarge Cement
- Marshalls plc
- Tarmac
- Trent Concrete

The Sustainable Concrete Forum and its member Associations maintain records of which member companies have supplied data.

www.sustainableconcrete.org.uk

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