



Concrete Industry Sustainability Performance Report

8th report: 2014 performance data

Our Strategy

Vision

To be recognised as a leader in sustainable construction, by taking a dynamic role in delivering a sustainable, low carbon built environment in a socially, environmentally and economically responsible manner.

Strategic Objectives

1. Commit to our role in achieving a sustainable environment and contribute to construction industry and government initiatives.
2. Engage with the broader supply chain to inform good practice and continue to explore new ways of improving our sustainable production performance.
3. Communicate with clients to provide knowledge of concrete solutions to enable the design and construction of a sustainable built environment.

Commitments

1. Contribute to the delivery of a low carbon built environment.
2. Provide Life Cycle Assessment data compliant with codes and standards.
3. Develop a Material and Resource Efficiency Programme to inform best practice across the life cycle of concrete in the built environment.
4. Develop a low carbon freight initiative to support improvement in transport through the concrete supply chain to construction sites.
5. Develop a water strategy to support the measurement of sustainability performance and target setting.
6. Target continuous improvement of sustainable production performance and report annually.

The implementation and development of the Concrete Industry Sustainable Construction Strategy is overseen by the Sustainable Concrete Forum. Links to the website of the trade associations and founder members of the Forum are included on the back cover of this report.

Our Eighth Report

This 8th annual report provides an update and detailed record of progress against the strategic objectives and commitments. It summarises performance from 2008 to 2014 across a range of performance indicators. For more information about the Concrete Industry Sustainable Construction Strategy visit www.sustainableconcrete.org.uk

If you have any feedback or questions regarding the concrete industry sustainable construction strategy, or any of the indicators included in the report, please email info@concretecentre.com

Our Progress

An update from our Chairman



Andy Spencer, Chairman of the Sustainable Concrete Forum

Since the strategy was launched in 2008, the economic conditions experienced by all UK manufacturing sectors have been challenging. Whilst in 2014, there was an increase in construction output, this growth varied considerably by sector and geographical region. Infrastructure has seen the most growth and projects such as

Crossrail have impressed us all with their engineering excellence. In 2014 the final precast concrete tunnel segment was cast in Kent, before being transported into London by river barge and used to line the tunnels of Europe's largest infrastructure project. As commuters look forward to Crossrail's opening, the concrete industry is proud of the contribution its materials make to improving the quality of our lives and our built environment.



© Crossrail Ltd

The project on the front cover of this year's report, the Stirling Prize winning Everyman Theatre, Liverpool, also showcases the sustainable credentials of concrete construction. Alternative cementitious materials were used to reduce the embodied carbon of the project, exposed concrete and its thermal mass reduces

operational carbon and much of the masonry used in the building was recycled from partially demolished elements of the previous structure.

In addition to the sustainability benefits of our materials in-use, this 8th report presents the concrete industry sustainability performance, providing stakeholders with transparent data to show the journey and progress to delivering our 2020 commitments. In 2014, the Forum saw an increase in the number of companies joining the strategy, particularly from the precast concrete sector. This has brought a larger number of SMEs into the strategy, which we welcome.

As well as the indicators within the report, the Forum is also looking ahead to ensure that the industry is at the forefront of thinking on how the circular economy can be applied to long-service life products such as buildings and infrastructure. We are working with stakeholders on how the industry assesses its impacts and benefits with regard to natural capital and during the coming years we will be developing the strategy beyond the current 2020 horizon. This commitment to sustainability, and the data collection that underpins the strategy represents a considerable amount of work and I would personally like to thank each of the companies within the Forum for their support and input.

ACTION towards a Sustainable Built Environment

In this report, for the first time we have reported both energy efficiency and CO₂ production data using a rolling mix and a standardised or baseline mix. With such a wide range of concrete specification, the rolling mix cannot differentiate between the impacts of production and that of specification. This is the role of the standardised or baseline mix. This indicator fixes in time the proportions of constituent materials, and the proportions in the market of ready-mixed and precast concrete. Each year's performance is then standardised to the proportions recorded in the first year of reporting - 2008.

In the seven years since the industry published its first report there has been an **11 per cent improvement in energy efficiency and a 13 per cent reduction in carbon intensity in relation to concrete and materials production**. In 2014, this was 76.3 kg CO₂ per tonne of concrete, based on the standardised mix.

In 2014, the requirements for BES 6001 became more demanding with the release of version 3 of the BRE standard. Our data shows that **89 per cent of concrete tonnage produced is certified to this responsible sourcing standard**. The cement and GGBS sectors have already achieved the industry aspiration of 100 per cent certification.

The industry position as a **net consumer of waste** has hit a milestone in 2014. With the industry commitment to reducing waste to landfill, increasing the use of waste as a fuel source and including by-products such as fly ash and GGBS in concrete, the net waste ratio has surpassed 100. In 2014, **the concrete industry consumed 107 times more recovered and waste materials, by mass, than the waste it sent to landfill**.

The Concrete Initiative – “The Backbone of Sustainable Construction”

Launched in April 2014, The Concrete Initiative aims to promote the combined social, economic and environmental contributions of concrete to accelerating development and uptake of sustainable practice in the EU.

The commitments of the initiative very much reflect and support those of the UK Concrete Industry Sustainable Construction Strategy.

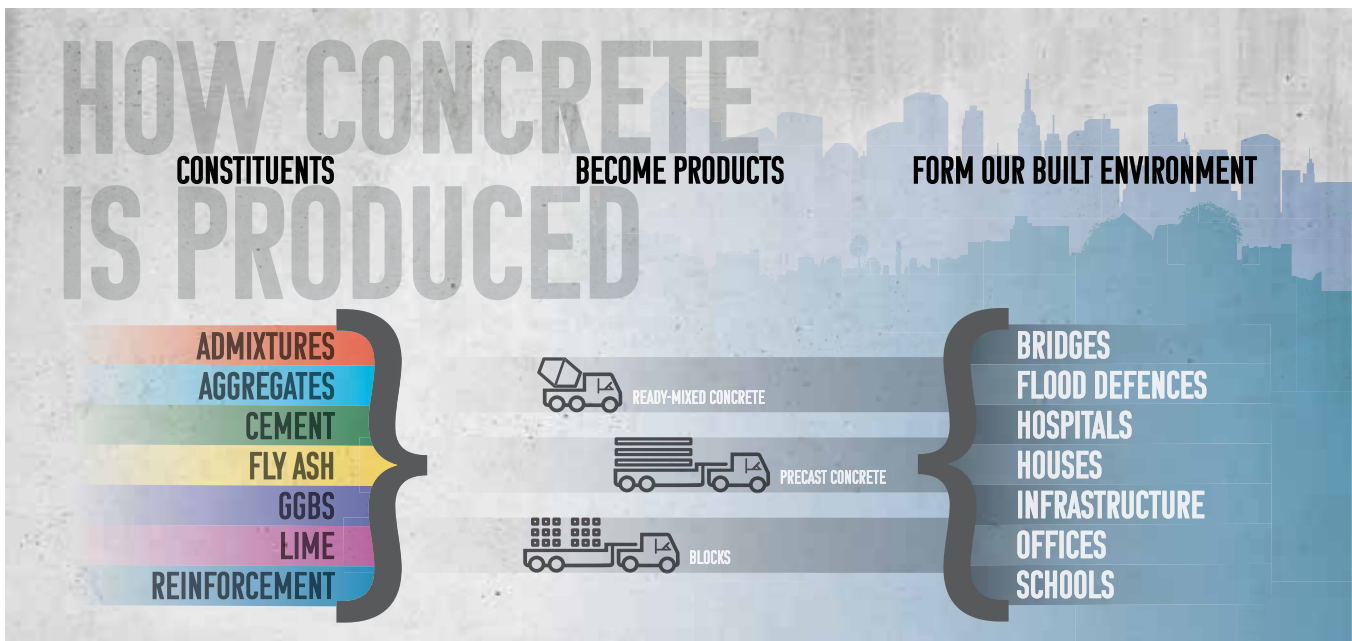
SOCIETY: Concrete enables safe, affordable and resilient housing and infrastructure

ECONOMY: Concrete construction drives economic growth, innovation and jobs

ENVIRONMENT: Concrete offers optimum whole-life performance

The initiative, established by CEMBUREAU (the European Cement Association), BIBM (the European Federation of Precast Concrete) and ERMCO (the European Ready-Mixed Concrete Organisation), is welcomed by the UK concrete industry, who are actively participating in this European-wide sustainability initiative.

For more information visit www.theconcreteinitiative.eu



Action on Materials

Concrete is a locally produced and responsibly sourced material

Our Strategy 2020 Commitment

- Target continuous improvement of sustainable production performance and report annually

This commitment requires the industry to manage its production processes and materials procurement as efficiently and responsibly as possible.

ISO 9001 'Quality' and ISO 14001 'Environmental' are management systems that are regularly updated to ensure that they stay relevant to changing requirements.

Responsible sourcing of materials is an essential aspect of production within sustainable development principles. The concrete industry has a very local supply chain with 95% of raw materials sourced from within the UK.

To demonstrate responsible sourcing the industry has adopted certification to BRE BES 6001. This standard in fact encompasses much more than materials procurement and is a broader measure of an organisation's adherence to sustainable development principles.

This 8th consecutive annual report provides details of the industry's progress towards its performance improvement targets for 2020.

- Provide Life Cycle Assessment data compliant with codes and standards

Information on the specification of concrete is published in The Concrete Centre guide *Specifying Sustainable Concrete*. This is updated regularly with information from the sectors and the latest best practice.

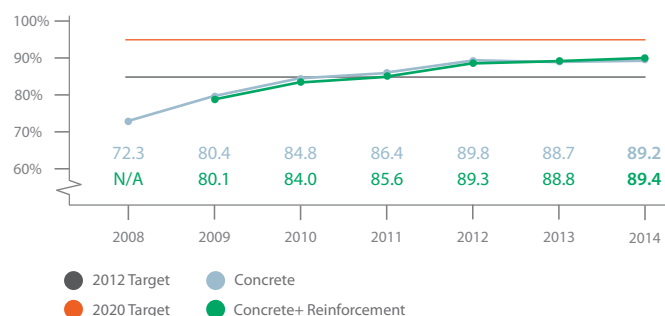
In 2013, the cement industry published its first verified Environmental Product Declaration (EPD). The admixture sector have also made available Model European EPDs. Nine generic certified concrete EPDs for a range of precast concrete products, including one for ready-mixed concrete and one for mortar, are currently in development and are on schedule to be launched at Ecobuild in 2016.

This project will also provide a consistent methodology to support the cost-effective production of product specific EPDs.

Product data templates for concrete are also in development. This is however an iterative process and further work will be necessary for common formatting across industry product sectors to enable project teams and their BIM tools to work more efficiently.

Environmental Management

Percentage of production sites covered by a certified ISO 14001 EMS



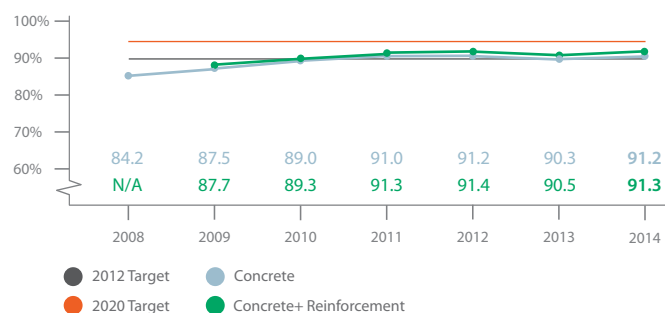
Controlling and managing the environmental impacts of procuring materials and manufacturing products is an essential requirement for sustainable development.

Environmental Management Systems, particularly when meeting the requirements of ISO 14001, are a best practice approach to identifying impacts, assessing their importance and providing a structured approach to controlling, reporting and managing performance improvement.

Our indicator shows the percentage of the total concrete production and constituent materials sites that are independently certified to ISO 14001. 2014 data shows that 89.2% of sites are certified. The 2020 target is 95%.

Quality and Performance

Percentage of production sites covered by a certified ISO 9001 QMS

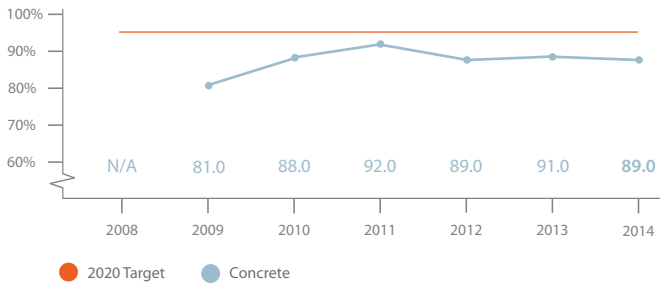


Product consistency, performance and being fit for purpose are crucial to sustainability and ensuring that materials are not rejected or potentially wasted, which is costly both economically and environmentally.

Quality management systems have a vital role and our indicator shows the percentage of the total concrete production and constituent materials sites that are independently certified to ISO 9001:2008. 2014 data shows that 91.2% of sites are certified which is an improvement towards the target for 2020 of 95%.

Responsible Sourcing

Percentage of production certified to BES 6001



The demand for evidence of the responsible sourcing of building products and materials is ever increasing with the need to demonstrate compliance with a recognised responsible sourcing scheme, certified by a third party. Our indicator shows the proportion of concrete production that is currently certified to BES 6001.

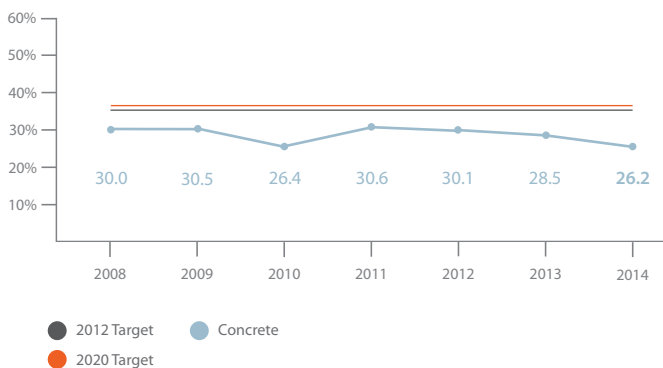
In 2014, an update to BES 6001 increased the requirements for certification. During 2014 certification of concrete products to BES 6001 was at 89% of the concrete tonnage produced. Of this certified production 87.5% achieved 'Very Good' or 'Excellent' rating.

The 2020 target is 95% and the aspiration of the concrete industry is to achieve 100%. The cement and GGBS sectors have already achieved 100% certification.

Resource Efficiency

Additional cementitious materials

The amount of additional cementitious materials as a proportion of total cementitious materials



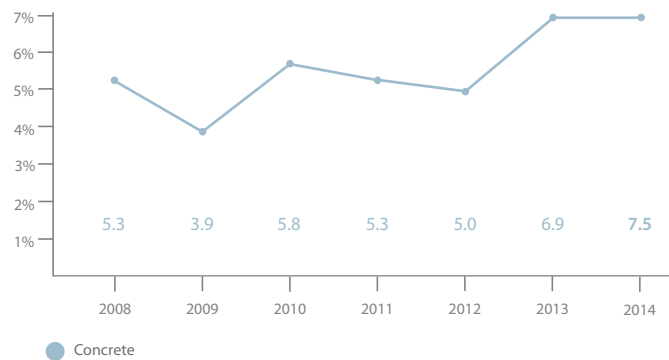
There are significant volumes of by-product materials such as ground granulated blastfurnace slag (GGBS) and fly ash that can act as part of the cementitious binder in concrete. These materials have a lower embodied carbon than cement and can also influence the appearance and performance of concrete.

This indicator is influenced by the types of concrete required for the market, which influences the appropriate replacement rates of cement. The 2020 target is 35%.

In 2014, 26.2% of the total cementitious materials used were additional cementitious materials.

Recycled/secondary aggregates

The use of recycled/secondary aggregates as a proportion of total aggregates used in concrete



Depending on the application and the type of concrete there is often an opportunity to incorporate recycled aggregates previously used in other projects and secondary aggregates that may be by-products from other processes.

The specification of recycled and secondary aggregates is a balance of resource efficiency, transportation CO₂ and the implications on mix design. Consequently, these aggregates should be used in concrete production where it is technically and environmentally beneficial to do so.

The proportion in concrete has risen slightly in recent years to over 7% by mass. In 2014 around 28% of all aggregates in GB were recycled or secondary, far above levels elsewhere in Europe.

Recycled concrete, as well as being used as an aggregate, is often used at the source of demolition, as part of sub-structures and external landscaping for a new development. For more information download *Specifying Sustainable Concrete* and *Concrete and BREEAM* from The Concrete Centre at www.concretecentre.com/publications

Recycled steel reinforcement

Steel reinforcement manufacturing BAR members used approximately 91% of recycled ferrous metal waste as a proportion of the raw materials consumed in their electric arc furnaces (EAF). The BAR members who are reinforcement fabricators used 95% EAF material in producing and supplying rebar for use in concrete.

Action on Carbon

Concrete uses its thermal mass to save energy and carbon

Our Strategy 2020 Commitment

• Contribute to the delivery of a low carbon built environment

The carbon emissions where the industry has most influence, are those associated with the production of concrete and its constituent materials. Performance improvement is therefore targeted at this 'embodied' carbon. This is shown in two forms; one using a 'standardised or baseline mix' that more closely reflects improvements in the industry and the 'rolling mix' that can vary depending on the proportion of different types of concrete supplied in any one year.

Concrete can also make a positive contribution to reducing operational carbon dioxide from buildings in use. The inherent thermal mass of concrete is integral to many passive and active cooling solutions that can improve the energy efficiency of our homes and buildings. The Concrete Centre provides best practice guidance on low carbon design further supported by regular events to share knowledge from exemplar projects.

In 2014, British Precast and the Mineral Products Association (MPA) also signed up to the Green Construction Board's Infrastructure Carbon Reduction Commitment.

• Develop a Low Carbon Freight Initiative to support improvement in transport performance through the concrete supply chain to construction sites

Concrete is a UK manufactured product that is locally sourced, thereby reducing the transport CO₂ of a construction project.

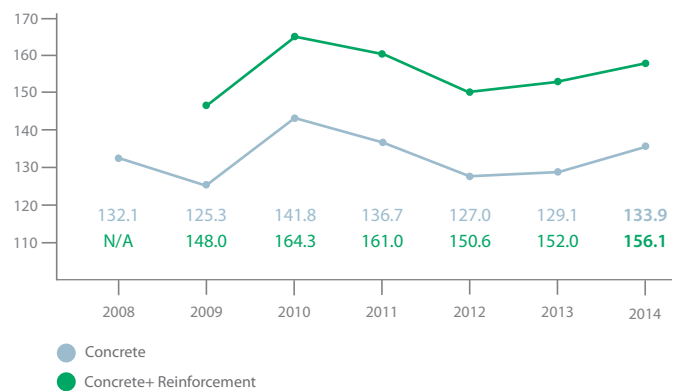
The most suitable form of transport for ready-mixed concrete will remain road haulage due to the very local nature of deliveries. For concrete's supply chain, in particular aggregates, cement and lime, rail transport can be an alternative mode of transport.

MPA and the Rail Freight Group have published a series of commitments in their document *A Commitment to the Future*. Available at www.mineralproducts.org

The Mineral Products Association (MPA) is the trade association for the aggregates, asphalt, cement, concrete, dimension stone, lime, mortar and silica sand industries, and as such the commitment applies to concrete and constituent materials sectors that are part of the MPA.

Energy Efficiency

Energy used in production as a proportion of production output - Rolling Mix (kWh/tonne)

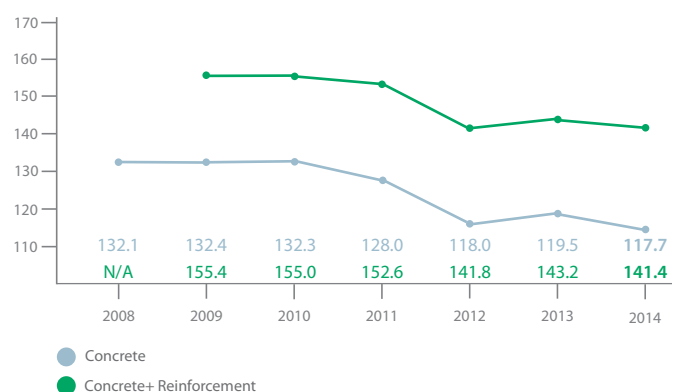


Reducing the carbon emissions associated with the production of concrete and its constituent materials can be achieved by improving energy efficiency and reducing consumption. The indicator (kWh/tonne) also referred to as 'energy intensity' reports energy consumption during the manufacture of concrete products added to proportional contributions from each of the constituent materials. This is effectively a measure of the average embodied energy of all concrete produced (by the Forum members).

The energy intensity figure for 2014 for the rolling mix is 133.9 kWh/t. The figure for concrete and reinforcement is 156.1 kWh/t.

To provide an indicator that more accurately reflects the performance of the industry, energy intensity is now also shown as a baseline or standardised mix. This shows the energy intensity per year, based on the concrete mix of the 2008 baseline year.

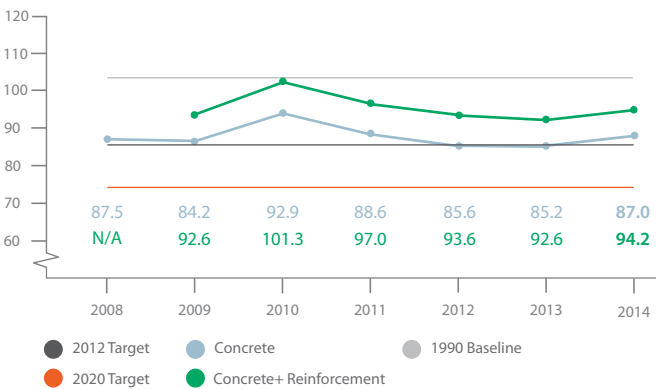
Energy used in production as a proportion of production output - Standardised Mix (kWh/tonne)



CO₂ Emissions – Production

The indicator for production CO₂ is carbon intensity or CO₂/tonne of concrete produced. Data from the energy use of concrete production and a proportional contribution from constituent materials are converted to carbon emissions using DEFRA factors with an adjustment for the process carbon emissions from cement. The resulting value of the indicator is influenced by both CO₂ emissions from production and changes in the average proportions of concrete represented by the data collected. These proportions are directly affected by the relative market demand for different types of concrete.

CO₂ emissions – Production (kg CO₂/tonne) – Rolling mix

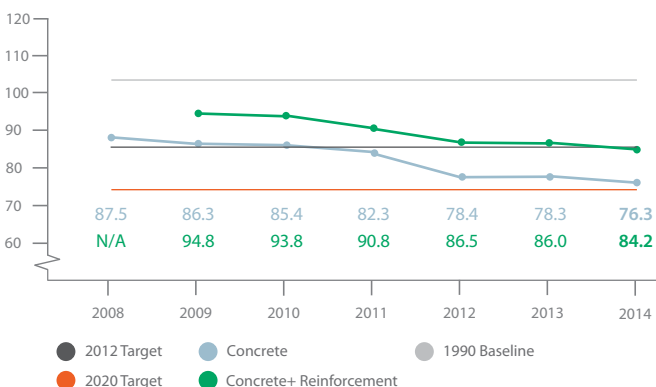


During 2014 the **Rolling Mix** value was 87.0 kg/tonne.

The **Standardised or Baseline mix** is based on the proportions of materials in concrete and the proportion between ready-mixed and precast concrete, as in the baseline year of 2008. By using these fixed mix proportions with each year's carbon values, this indicator provides an accurate reflection of the industry performance in reducing carbon intensity.

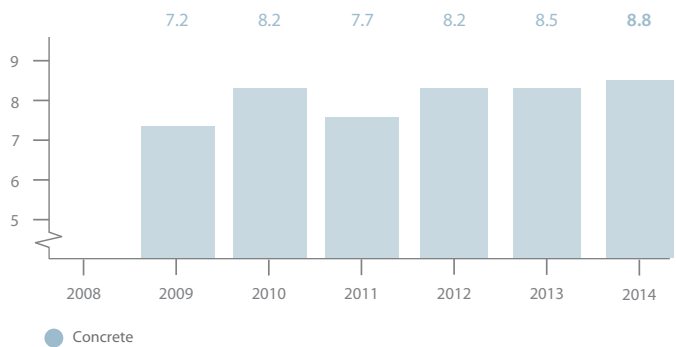
In 2014 the standardised mix had a carbon intensity of 76.3 kg CO₂ per tonne. This represents a 13% reduction since 2008.

CO₂ emissions – Production (Standardised mix) (kg CO₂/tonne)



CO₂ Emissions – Transport

CO₂ emissions of total delivery transport through the industry supply chain (kg CO₂/tonne)



This indicator of kg CO₂/tonne is calculated from the conversion of concrete data and proportioned materials delivery data using DEFRA carbon factors. The value is relatively consistent at around 8 kg CO₂/tonne with 2014 showing at 8.8 kg CO₂/tonne.

In 2014 the average delivery distance for all concrete was 43 km (or 26.7 miles). The average delivery distance for all raw materials for concrete was 54 km.

Within the concrete supply chain, some elements of transport are complex to measure, due to multiple modes of delivery, sub-contracted vehicles, return loads etc. Hence additional industry-wide indicators have not yet been defined. Progress is however being made on collecting sufficient industry data to replace the use of DEFRA carbon factors. This change will improve the accuracy of the current indicator, and better reflect specific industry performance.



Many quarries have on-site rail terminals enabling direct access to the rail network.

Action on Waste

Concrete is a net user of waste and provides material efficient structures

Our Strategy 2020 Commitment

- Develop a Material and Resource Efficiency Programme to inform best practice across the life cycle of concrete in the built environment

The nine sectors that contribute to the concrete industry sustainable construction strategy have each focussed on eliminating or minimising waste within their production processes, using the waste hierarchy criteria (as illustrated below) as a basis. This performance report addresses the collated data of each representing the cradle to gate metrics.

In addition, the concrete industry resource efficiency initiative is informing the role of concrete downstream, to address opportunities to reduce waste associated with use, reuse and the potential end of life scenarios of our products.

In 2014, the concrete industry held stakeholder events with Build UK (then UK Contractors Group) to develop understanding of common issues, such as Carbon, Water, Waste and Responsible Sourcing.

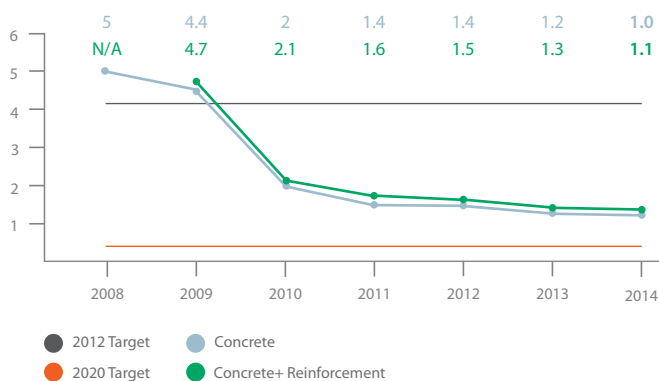
In addition, the ready-mixed concrete, precast concrete and masonry, and clay brick and block sectors, continue to work in partnership to deliver and communicate with stakeholders on the Resource Efficiency Action Plans (REAP) that were published in 2013 and the progress being made.

Read more on REAPs at www.sustainableconcrete.org.uk.



Waste Minimisation

Waste to landfill as a proportion of production output (kg/tonne)



The indicator for waste minimisation relates to waste disposed to landfill per tonne of concrete production and includes waste related to the constituent materials attributed by their proportion in the concrete.

During 2014, the industry achieved further improvement in performance with a value of 1.0kg of waste to landfill/ per tonne of concrete produced. This is an 80% reduction from the 2008 baseline.

The production volumes in 2009 are similar to that in 2014, however the waste to landfill for UK produced concrete and its constituent materials has reduced from nearly 200,000 tonnes to less than 50,000 tonnes.

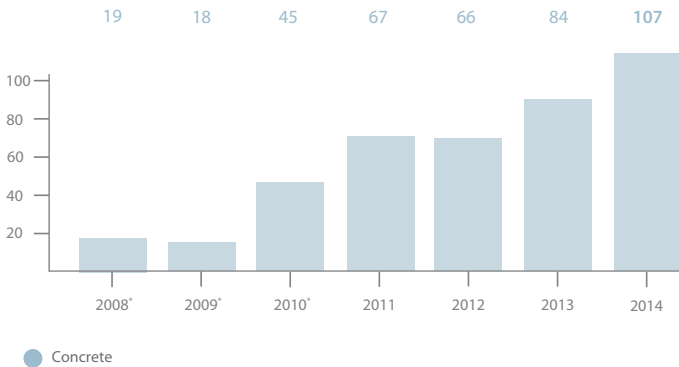
The 2020 target is a 90% reduction, which would represent 500g (0.5kg) of waste per tonne of concrete produced. Our longer-term aspiration is for zero waste to landfill.



A precast factory changed the procurement process, storage, handling and automatic mixing of epoxy resin used in the production of concrete rail bearers. This change resulted in the elimination of 30 tonnes of hazardous waste per annum and a significant reduction in the use and wastage of epoxy resin and related packaging.

Natural Resource Protection and enhancing the environment

The net waste consumption ratio



The graph shows the net waste consumption ratio which is:

Waste and by-products used in concrete manufacture and the materials diverted from the waste stream for use as a fuel source.

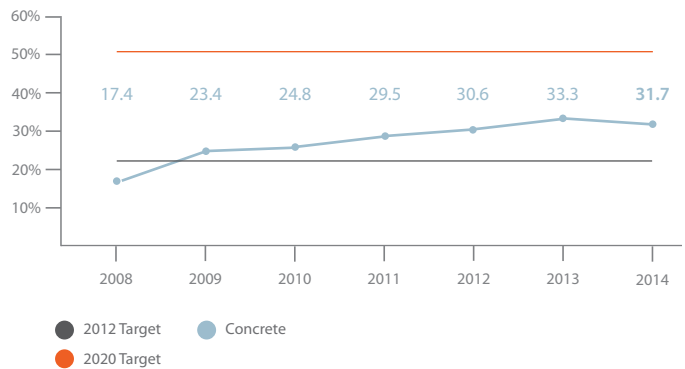
Waste to landfill generated by concrete production and its constituent materials.

In 2014, concrete is a net user of waste, consuming 107 times more recovered and waste materials than the waste it sent to landfill. If the industry achieves all three of the targets that impact this ratio, the net waste consumption ratio would rise to over 200.

* materials diverted from the waste stream for use as a fuel source are not included in the ratio until 2011.

Replacement of fossil fuels

Material diverted from the waste stream for use as a fuel source, as a percentage of total energy use



The industry requires high temperatures for production, primarily in cement manufacture, and this is an opportunity to safely burn alternative combustible materials as fuel instead of non-renewable fossil fuels. Where these alternative fuels are recognised as carbon neutral under EU Emissions Trading Scheme (EU ETS), this has the additional benefit of reducing the embodied carbon of cement.

The concrete industry indicator shows the proportion of energy derived from materials diverted from the waste stream as a percentage of total energy use. In 2014, 31.7% of total energy use was from waste-derived fuels. The 2020 target is to increase this to 50%.

Long-service-life Products and the Circular Economy



The circular economy model is often focused on small electrical goods that have high value or scarce raw materials, products that have a relatively short life-span. This is not the same for concrete and masonry.

The raw materials for concrete are abundant within the geology of the UK. The industry has a proven track record of waste minimisation and material efficiency. Concrete and masonry products are inherently durable and robust, and have a long service life. In addition, performance benefits such as fire resistance and thermal mass can contribute to the extension of the service life of a structure/building.

The concrete industry is developing guidance to advise on material efficiency of the design of buildings and infrastructure within a circular economy philosophy. This embraces designing for longevity, to enable re-use and to take into account the end of life scenarios to optimise material recovery whilst, at the same time, recognising demand for more materials to provide housing and infrastructure for a growing population.

Action on Biodiversity

Restoring quarries and providing product to protect and enhance biodiversity

Our Strategy 2020 Commitment

- **Support the Mineral Products Association (MPA) Biodiversity Strategy “Building on our legacy... realising our potential”**

Protecting and enhancing the state of nature and biodiversity is a key aim for the MPA and sites of mineral extraction are uniquely placed to make a difference, more than any other.

There are a number of MPA initiatives to support the industry commitment to biodiversity. The MPA Restoration & Biodiversity Awards help recognise and showcase best practice. The National Nature Park online map highlights a nationwide network of quarries that have been restored for wildlife and which are accessible to the public.

The industry has developed other important partnerships with The Wildlife Trusts, Natural England, The Freshwater Habitats Trust, The Bumblebee Conservation Trust and The Bat Conservation Trust. All with the aim of understanding how the industry can further enhance its contribution to the natural capital of the UK.

More information is available at www.mineralproducts.org

- **Develop a water strategy to support the measurement of sustainability performance and target setting.**

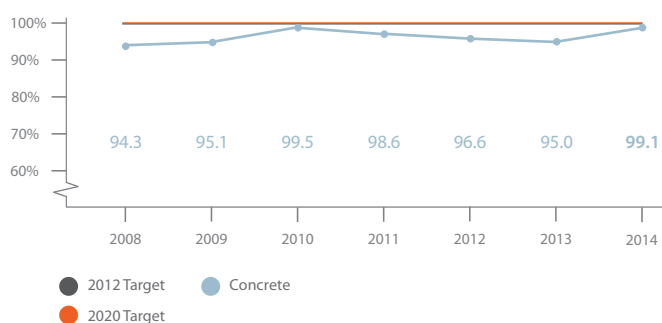
In 2014, the principles of the MPA Water Policy were agreed. The Policy sets out three aims:

- Minimising water consumption
- Prioritising use of the most sustainable water sources
- Protecting the water environment.

Through implementation of the Water Policy the mineral products industry will improve its understanding of the amount of water consumed and demonstrate where measures have been implemented to reduce consumption, use the most sustainable water sources and maintain water quality. This policy has stated a number of measures, and the schedule is to review baseline data for these measures in 2018. Based on the MPA Water Policy, the Sustainable Concrete Forum is developing specific indicators for the measurement of sustainability performance and target setting, as per the Concrete Industry Sustainable Construction Strategy 2020 commitment made in 2012.

Biodiversity

Percentage of relevant production sites that have site specific action plans



The concrete industry makes a significant contribution to biodiversity and nature conservation through the management and restoration of sites of mineral extraction.

The industry strategy prioritises its actions within quarries and the indicator reports on the proportion of relevant production sites that have an action plan relating to site restoration, biodiversity or geodiversity.

The value reported for 2014 is 99% of sites and our 2020 target is 100%.

Collaboration with stakeholders such as the RSPB and Nature after Minerals (NAM) have helped the industry realise that it can deliver nine priority habitats (out of 11) in the UK Biodiversity Action Plan. MPA data shows that over 6,000 hectares of priority habitat has been created to date on restored sites; and a further 6,000 hectares of priority habitat is committed to in restoration plans.

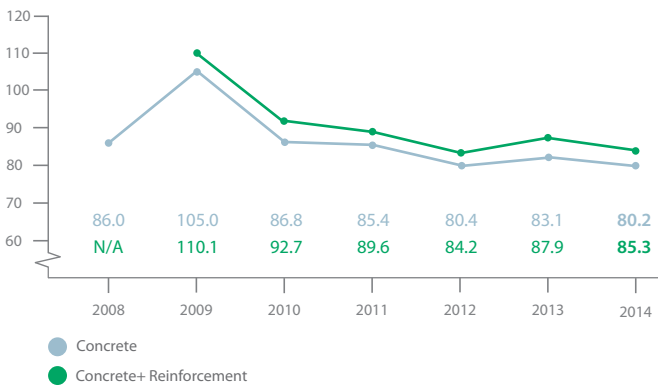


Operational and restored quarries provide habitats for rare and endangered animals such as peregrine falcons.

Natural Resource Protection and enhancing the environment

Water

Mains water consumption as a proportion of production output (litres/tonne)



Water is an essential ingredient for the hydration of cement and is an important resource for concrete and its materials supply chain.

The industry indicator reports mains water in litres per tonne of concrete used directly in concrete production added to a proportioned contribution from relevant raw materials production.

Performance data shows that water usage is gradually reducing, although water usage can vary seasonally and year on year as the amount of water retained in natural materials varies depending on weather conditions.

Water consumption is a complex issue in relation to minerals extraction as processing often involves water, but there is a high degree of recycling such that measurement of water 'consumed' is relatively difficult to establish accurately.

In 2014 the mains water per tonne consumption figure was 80.2 litres per tonne, the lowest figure since reporting started in 2008.



Permeable concrete and concrete block paving (shown above) can be used to reduce, attenuate and treat surface water as part of a sustainable drainage solution (SuDS). The water can then be used within the landscape to enhance biodiversity.

Image courtesy of Interpave - www.paving.org.uk

MPA Water Policy: Prioritising the use of the most sustainable water source



Various water sources are available for use in both the extraction and production processes of the products represented by MPA. The hierarchy of water sources, that forms part of the MPA water policy is shown.

MPA aim to understand the quantities of data used from each source and will promote with members the need and benefit of measuring the water abstracted from each source.

The aim is to be able to report the amount of water used from each source for extraction and production processes.

Based on this understanding, MPA aim to promote awareness of best practice that will encourage water to be used more efficiently and optimise use of the most sustainable sources. The aim is to set targets for industry-wide reduction in water use.

For more information visit www.mineralproducts.org

Action on Wellbeing

Protecting life and quality of life is a priority

Our Strategy 2020

The concrete industry strategy was developed to reflect the three pillars of sustainability: environmental, economic and social. In this section of the report we focus on people and their wellbeing.

- **The industry aim is to achieve zero harm**

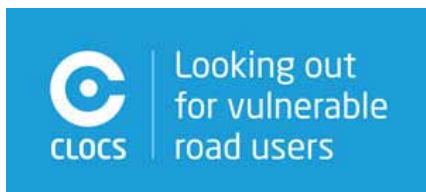
The concrete industry sustainable construction strategy supports the industry targets for Health and Safety set by the Mineral Products Association (MPA). From 2009-2014 the target was to reduce lost time incidents (LTI) by 50%, with the aim of zero harm.

Concrete industry data shows that between 2010 and 2014, the industry achieved a 48% reduction in LTI and in the same period achieved a 54% reduction in reportable injuries.

In 2014 a new five year target for the MPA started. This target has been adopted by the Concrete Industry Sustainable Construction Strategy. The target is to reduce lost time incidents, by a further 65% by 2019, from the 2014 baseline.

Key work is also underway within the MPA working groups, focusing on Occupational Health, Plant and Processes, Leadership & Workforce Engagement; all with agreed objectives to produce the necessary guidance and initiatives to improve in these areas.

For more information visit www.mineralproducts.org



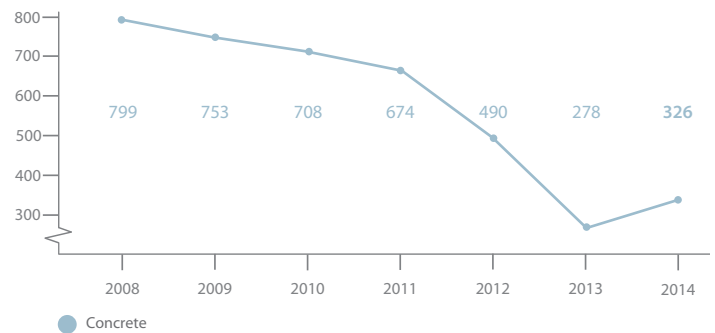
The MPA and its members have taken a leading role to improve vulnerable road user (VRU) safety and actively support the Construction Logistics and Cyclist Safety (CLOCS) initiative, which is designed to apply a consistent approach to VRU safety for construction vehicles and deliveries throughout the UK.

For more information about the Cycle Safe initiative to promote safety and minimise risk visit

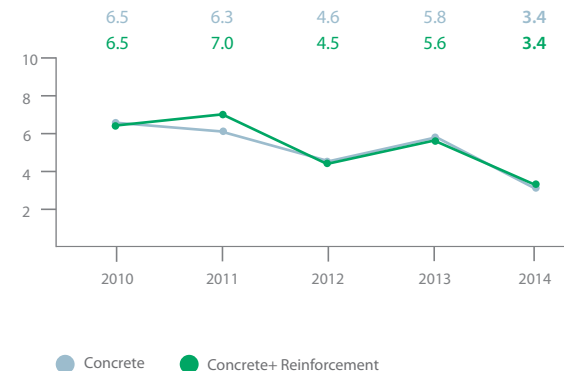
www.mineralproducts.org/feature_cycle_safe.htm

Health & Safety

Reportable injuries per 100,000 direct employees per annum



Lost Time Incidents (LTI) for direct employees per 1 million hours worked



Health and safety of its employees is a key focus of the concrete industry strategy. Two indicators are used to report performance. These are established benchmarks of health and safety:

- The number of Reportable Injuries* per 100,000 direct employees per annum
- Lost Time Injuries** for direct employee per 1 million hours worked

*A Reportable Injury is defined as any injury that is reportable under the Reporting of Injuries, Disease and Dangerous Occurrences Regulations 1995 (RIDDOR). In 2012 the HSE definition of reportable changed to from 3 days to 7 days. The concrete industry indicator will remain at 3 days.

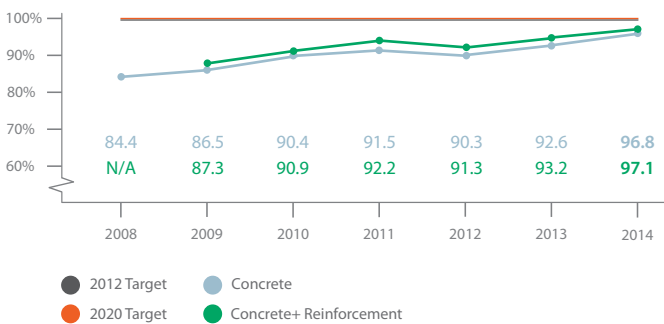
**A Lost Time Injury is defined as an occupational injury resulting in the absence of the injured party for one or more working shifts.

The reportable injury frequency rate for 2014, was 326 reportable injuries per 100,000 direct employees. This is a 59% reduction from the 2008 baseline.

The indicator for Lost Time Injuries has shown a significant reduction from 2013 to 2014 to 3.4 direct employees per 1 million hours worked. This represents a 48% reduction from the 2010 baseline.

Employment and Skills

Percentage of employees covered by certified training and evaluation processes



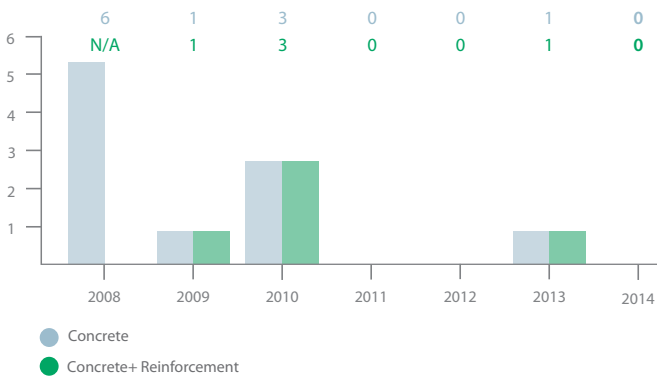
Having a skilled, competent and informed workforce is essential for the industry to remain competitive, safe and capable of meeting the objectives of the concrete industry strategy.

Measurement of competency can be challenging and the current indicator essentially measures the management of training by reporting on the proportion of employees whose training is monitored and managed within certified management systems such as ISO 9001, ISO 14001, BS OHSAS 18001 and others.

The industry figure for 2014 is approximately 97% for both concrete and for concrete + reinforcement. The 2020 target is 100%.

Emissions (Excluding CO₂)

Number of convictions per annum for air and water emissions

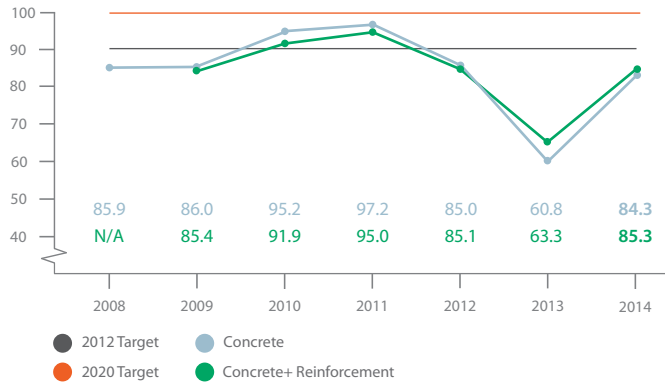


Our indicator relating to emissions excluding CO₂ reports the number of convictions for emissions to air and water within the industry per annum.

During 2014 there were no convictions. Our 2020 target is also for zero convictions.

Local Community

Percentage of relevant sites that have community liaison activities



It is often the case that concrete supply chain production sites have close links with the local communities through the employment of local people and the use of local materials. However, because of the potential impacts from vehicle movements, dust and noise, some sites may be regarded as more relevant for having more formal local community liaison activities.

'Relevant' sites are defined by the industry as mineral extraction sites in the cement and aggregates sectors and also other specific operations that members consider to have a potential significant impact on the local community. Any production site that receives complaints would also be considered a 'relevant' site.

In 2014, 84% of relevant sites undertook regular community liaison activities such as liaison groups or council meetings, open days, public meetings, community newsletters, social, recreational and educational activities involving the local community.

www.sustainableconcrete.org.uk

Copies of this report can be downloaded from this concrete industry website. There is also more information about the concrete industry sustainable construction strategy as well as useful links to relevant guidance, literature and sector trade associations.

For comments relating to this report please email info@concretecentre.com

Concrete Industry Sustainable Construction Targets

Sustainable Consumption and Production **Action on Materials**

Sustainability Principle	Performance Indicator	Baseline Concrete		Performance Concrete			Performance Concrete + reinforcement			Target	
		Value	Year	2012	2013	2014	2012	2013	2014	2012	2020
Environmental Management	% of production sites covered by a 'UKAS' Environmental Management System (EMS).	72.3%	2008	89.8%	88.7%	89.2%	89.3%	88.8%	89.4%	85.0%	95.0%
Quality and Performance	% of production sites covered by a 'UKAS' certified ISO 9001 quality management system.	84.2%	2008	91.2%	90.3%	91.2%	91.4%	90.5%	91.3%	90.0%	95.0%
Resource Efficiency	% of additional cementitious materials (GGBS, fly ash, etc.) as a proportion of total cementitious materials used.	30.0%	2008	30.1%	28.5%	26.2%	N/A			33.0%	35.0%
	Recycled/secondary aggregates as a proportion of total concrete aggregates.	5.3%	2008	5.0%	6.9%	7.5%	N/A			No targets have been set as increasing recycled content is not always indicative of sustainable performance	
	% of recycled scrap as a proportion of total constituent raw materials used.	97.0%	2009	N/A	N/A	N/A	94.0%	95.4%	90.7%		
Responsible Sourcing	% of production certified to BES 6001.	81.0%	2009	89.0%	91.0%	89.0%					95.0%

Climate Change and Energy **Action on Carbon**

Sustainability Principle	Performance Indicator	Baseline Concrete		Performance Concrete			Performance Concrete + reinforcement			Target	
		Value	Year	2012	2013	2014	2012	2013	2014	2012	2020
Energy Efficiency	Kilowatt hours of energy used in production as a proportion of production output. Rolling Mix (kWh/tonne).	132.1	2008	127.0	129.1	133.9	150.6	152.0	156.1	Deliver the industry CO ₂ target and achieve sector climate change agreement targets	
	Kilowatt hours of energy used in production as a proportion of production output - Standard Mix (kWh/tonne)	132.1	2008	118.0	119.5	117.1	141.8	143.2	141.4		
CO ₂ Emissions - Production	CO ₂ emissions as a proportion of production output. Rolling Mix (kg CO ₂ /tonne).	102.6	1990	85.6	85.2	87.0	93.6	92.6	94.2	Reduce by 17% (85.4)	Reduce by 30% (72.2)
	CO ₂ emissions as a proportion of production output. Standardised Mix (kg CO ₂ /tonne).	102.6	1990	78.4	78.3	76.3	86.5	86.0	84.2		
CO ₂ Emissions - Transport	CO ₂ emissions from delivery transport through the industry supply chain as a proportion of production output. (kg CO ₂ /tonne).	7.2	2009	8.2	8.5	8.8				Indicators and targets are still under review	

Natural Resource Protection and Enhancing the Environment **Action on Waste/Biodiversity**

Sustainability Principle	Performance Indicator	Baseline Concrete		Performance Concrete			Performance Concrete + reinforcement			Target	
		Value	Year	2012	2013	2014	2012	2013	2014	2012	2020
Waste Minimisation	Materials diverted from the waste stream for use as a fuel source, as a % of total energy use.	17.4%	2008	30.6%	33.3%	31.7%				21.0%	50.0%
	Waste to landfill as a proportion of production output (kg/tonne).	5	2008	1.4	1.2	1.0	1.5	1.3	1.1	Reduce by 15.0% (4.3)	Reduce by 90.0% (0.5)
	Net waste consumption ratio.	19	2008	66	84	107					
Water	Mains water consumption as a proportion of production output. (litres/tonne).	86.0	2008	80.4	83.1	80.2	84.2	87.9	85.3	The current water strategy programme will result in targets being in place by 2018.	
Site Stewardship & Biodiversity	% of relevant production sites that have specific action plans.	94.3%	2008	96.6%	95.0%	99.1%				100%	100%

Creating Sustainable Communities **Action on Wellbeing**

Sustainability Principle	Performance Indicator	Baseline Concrete		Performance Concrete			Performance Concrete + reinforcement			Target	
		Value	Year	2012	2013	2014	2012	2013	2014	2012	2020
Health & Safety	Reportable injuries per 100,000 direct employees per annum.	799	2008	490	278	326					
	Lost Time injuries (LTI) for direct employee per 1,000,000 hours worked.	6.5	2010	4.6	5.8	3.4	4.5	5.6	3.4	From 2014-2019, reduce lost time incidents by 65% with an aim of zero harm	
Employment & Skills	% of employees covered by 'UKAS' certified training and evaluation process.	84.4%	2008	90.3%	92.6%	96.8%	91.3%	93.2%	97.1%	100%	100%
Emissions (excluding CO ₂)	Number of convictions for air and water emissions per annum.	6	2008	0	1	0	0	1	0	Zero per Annum	Zero per Annum
Local Community	% of relevant sites that have community liaison activities.	85.9%	2008	85.0%	60.8%	84.3%	85.1%	63.3%	85.3%	90.0%	100%

The data is sourced from the following sector associations, and we are grateful for their co-operation:

- British Association of Reinforcement (BAR) www.uk-bar.org
- British Precast www.britishprecast.org
- British Ready-Mixed Concrete Association www.brmca.org.uk
- Cement Admixtures Association www.admixtures.org.uk
- Cementitious Slag Makers Association www.ukcsma.co.uk
- Mineral Products Association www.mineralproducts.org
- MPA - Cement www.cementindustry.co.uk
- UK Quality Ash Association www.ukqaa.org.uk

We acknowledge the founders and members of the Sustainable Concrete Forum:

- Aggregate Industries www.aggregate.com
- Brett Group www.brett.co.uk
- CEMEX www.cemex.co.uk
- Hanson UK www.hanson.co.uk/en
- Marshalls plc www.marshalls.co.uk
- Tarmac www.tarmac.com

www.sustainableconcrete.org.uk

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