

Summary of Concrete Performance Indicators



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.

This report summarises performance from 2008 to 2016 against 2020 targets for a range of performance indicators. The full version of the 10th report will be published in Summer 2018, and will be available from www.sustainableconcrete.org.uk.

Sustainability Insights

Performance proven – The 10 sectors that form the concrete manufacturing supply chain have worked together for 10 years on the Concrete Industry Sustainable Construction Strategy. It is this commitment to data collection, an agreed performance indicator framework and annual reporting that enables all stakeholders to have a transparent view of the concrete industry's sustainability performance.

Source smarter – Concrete and its constituent materials are produced by a UK supply chain providing ethically and responsibly sourced materials certified to BES 6001. The latest data shows that **90% of concrete is certified to BES 6001**. To find out more about specifying responsibly sourced concrete download *Specifying Sustainable Concrete*, published by The Concrete Centre.

Materials matter – Minimising waste and using resources efficiently is common sense in the production of concrete and the design of buildings. **The concrete industry is a net user of waste, using 116 times more waste and by-products than it produces.** To understand how to design material efficient buildings using concrete download *Material Efficiency*, published by The Concrete Centre.

Cutting carbon – Embodied carbon can be reduced by the energy efficiency of manufacture and a designer's specification of concrete. Operational carbon can be minimised through the use of concrete's inherent thermal mass and natural ventilation to avoid air-conditioning. **The industry has reduced the embodied carbon of a standardised mix of concrete to 73.7kg per tonne, a reduction of 28% from the 1990 baseline.** To find out more about specifying low carbon concrete download *Specifying Sustainable Concrete*, published by The Concrete Centre.

Long-lasting and long-life – Concrete is a robust and durable material that can be designed to achieve the longest of life-cycles. It is the obvious choice for long-lasting infrastructure projects such as Crossrail, and is able to provide a range of construction solutions to meet 150-year design life with the flexibility and adaptability to meet future occupant needs. The Concrete Centre has published a range of guides which aim to assist with the specification of concrete for a long-life, including *Whole-life Carbon* and *Concrete and BREEAM*.

For more information and links to a range of resources visit www.sustainableconcrete.org.uk.

Downloads of The Concrete Centre documents are available at www.concretecentre.com/publications.

Summary of performance indicators for 2016 report

Using 2015 materials proportions for RMC (30th January 2018)*.

Sustainable Consumption and Production **Action on Materials**

Sustainability Principle	Performance Indicator	Baseline Concrete		Performance Concrete				Performance Concrete + reinforcement				Target
		Year	Value	2013	2014	2015	2016	2013	2014	2015	2016	2020
Environmental Management	% of production sites covered by a 'UKAS' Environmental Management System (EMS).	2008	72.3%	88.7%	89.2%	93.0%	92.9%	88.8%	89.4%	93.1%	93.0%	95.0%
Quality and Performance	% of production sites covered by a 'UKAS' certified ISO 9001 quality management system.	2008	84.2%	90.3%	91.2%	93.8%	91.9%	90.5%	91.3%	93.9%	92.0%	95.0%
Resource Efficiency	% of additional cementitious materials (GGBS, fly ash, etc.) as a proportion of total cementitious materials used.	2008	30.0%	28.5%	26.2%	29.0%	27.2%	N/A				35.0%
	Recycled/secondary aggregates as a proportion of total concrete aggregates.	2008	5.3%	6.9%	7.5%	6.4%	7.7%	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.	2009	97.0%	N/A	N/A	N/A	N/A	95.4%	90.7%	93.2%	90.1%	
Responsible Sourcing	% of production certified to BES 6001.	2008	N/A	91.0%	89.0%	89.0%	90.0%					95.0%

Climate Change and Energy **Action on Carbon**

Sustainability Principle	Performance Indicator	Baseline Concrete		Performance Concrete				Performance Concrete + reinforcement				Target
		Year	Value	2013	2014	2015	2016	2013	2014	2015	2016	2020
Energy Efficiency	Kilowatt hours of energy used in production as a proportion of production output. (kWh/tonne).	2008	132.1	129.1	133.9	133.1	134.4	152.0	156.1	156.0	154.1	Deliver the industry CO ₂ target and achieve sector climate change agreement targets
	Energy intensity as a proportion of production output Standardised Mix (kWh/tonne)	2008	132.1	119.5	117.7	122.7	118.9	143.2	141.4	146.5	140.5	
CO ₂ Emissions - Production	CO ₂ emissions as a proportion of production output. Rolling Mix (kg CO ₂ /tonne).	1990	102.6	85.2	87.0	80.3	82.8	92.6	94.2	90.1	90.1	Reduce by 30% from 1990 baseline (72.2)
		2008	87.5									
	CO ₂ emissions as a proportion of production output. Standardised Mix (kg CO ₂ /tonne).	1990	102.6	78.3	76.3	73.8	73.7	86.0	84.2	84.0	81.7	
		2008	87.5									
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).	2009	7.2	8.5	8.8	8.4	7.3					Indicators and targets are still under review

*In some cases, in this report, 2016 data was unavailable before publication due to modifications to data collection procedures to comply with new competition law requirements. In these instances 2015 data was used. When the data is released and available the report will be re-issued.

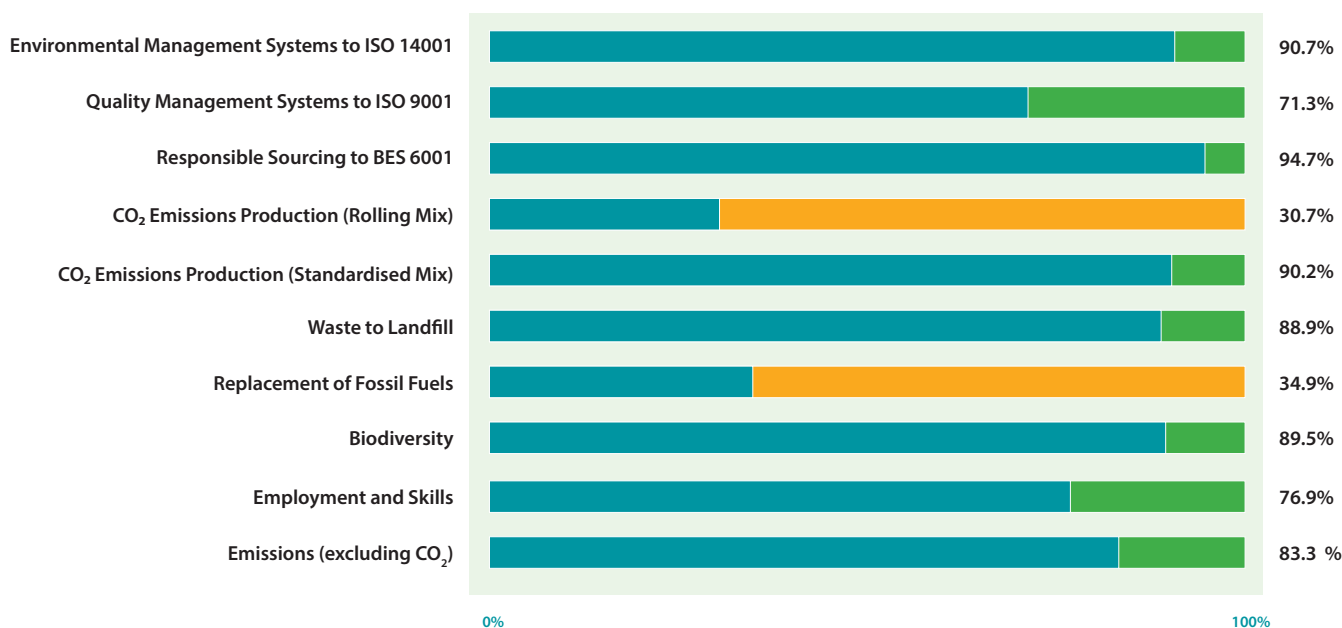
Natural Resource Protection and Enhancing the Environment **Action on Waste/Biodiversity/Water**

Sustainability Principle	Performance Indicator	Baseline Concrete		Performance Concrete				Performance Concrete + reinforcement				Target
		Year	Value	2013	2014	2015	2016	2013	2014	2015	2016	2020
Waste Minimisation	Materials diverted from the waste stream for use as a fuel source, as a % of total energy use.	2008	17.3%	33.3%	31.7%	32.5%	28.7%					50%
	Waste to landfill as a proportion of production output (kg/tonne).	2008	5	1.2	1.0	1.1	1.0	1.3	1.1	1.2	1.0	90% reduction from 2008 baseline (0.5)
	Net waste consumption ratio.	2008	19	84	107	99	116					
Water	Mains water consumption as a proportion of production output. (litres/tonne).	2008	86.0	83.1	80.2	74.3	78.1	87.9	85.3	78.3	81.8	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.	2008	94.3%	95.0%	99.1%	99.4%	99.4%					100%

Creating Sustainable Communities **Action on Wellbeing**

Sustainability Principle	Performance Indicator	Baseline Concrete		Performance Concrete				Performance Concrete + reinforcement				Target
		Year	Value	2013	2014	2015	2016	2013	2014	2015	2016	2020
Health & Safety	Reportable injuries per 100,000 direct employees per annum.	2008	799	278	326	431	647					
	Lost Time injuries (LTI) for direct employee per 1,000,000 hours worked.	2008	6.5	5.8	3.4	4.3	3.9	5.6	3.4	4.3	3.8	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.	2008	84.4%	92.6%	96.8%	95.4%	96.4%	93.2%	97.1%	95.8%	96.6%	100%
Emissions (excluding CO ₂)	Number of convictions for air and water emissions per annum.	2008	6	1	0	0	1	1	0	0	1	Zero per Annum
Local Community	% of relevant sites that have community liaison activities.	2008	85.9%	60.8%	84.3%	100.0%	87.1%	63.3%	85.3%	100.0%	87.9%	100%

Progress to 2020 targets based on 2016 performance



The graph above is based on a 2008 baseline year.

For the latest updates on the data, visit www.sustainableconcrete.org.uk.

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

- 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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Front cover: Precast concrete cladding at Victoria Gate, Leeds. © Jack Hobhouse.