

Sustainability Matters

Fourth annual report on the precast industry's progress on sustainability



**BRITISH
PRECAST**

March 2009

**MORE
FROM
LESS**

Introduction

This is the fourth report produced by British Precast as part of our 'More from Less' programme to develop a more sustainable precast concrete industry. It highlights the continuing commitment of British Precast and companies in the precast industry to managing impacts responsibly and achieving progress on a broad

range of sustainability issues; a commitment that is reflected in the number of companies that have now signed up to the Sustainability Charter and demonstrated in the practical actions being taken by Members and Associate Members as showcased in the 2008 Sustainability Awards, and quantified in the production of KPI data.

A message from the President

These difficult times for the UK building materials sector have brought sustainability into even greater focus and we should all be proud of the excellent example being set by the British Precast sector. When input costs rise to unprecedented levels and the future flow of orders comes under pressure our historic and current focus on the triple bottom line of economic, environmental and social factors helps us differentiate precast products from inferior alternatives. A changing pattern of demand, whether driven by legislation through planning or building regulations, or an increased focus on lower carbon solutions by consumers will only increase the opportunity for us if we continue to embrace our Sustainability Charter.

British Precast President, David Sarti, Chief Operating Officer, Marshalls plc



The Precast Industry

The precast concrete industry is an important national industry producing over 35m tonnes of products annually for the construction sector, worth approximately £2.5bn. There are around 800 precast factories located across the UK, which provide direct employment for 22,000 people and many more in upstream and downstream sectors.

Precast concrete products make a significant contribution to the built environment; they are widely used in public and private sector projects of many sizes, from housing and landscaping, through commercial buildings to highways and infrastructure.

Precast products are made to consistent high quality standards using a combination of skilled labour and automated processes. Mass produced products range from small hydraulically pressed items such as concrete bricks, paving and roof tiles, to larger extruded or wet-cast items such as pipes, piles and floor beams. Bespoke items include large wet-cast products such as cladding panels and structural units designed and manufactured to specific architectural and engineering requirements.

British Precast

British Precast is the trade federation for precast concrete manufacturers in the UK. Founded in 1964, its federated structure acknowledges that the precast sector is, in fact, a matrix of industries, each with its own characteristic markets and supply chains, technologies, standards and lobbying issues. British Precast exists to manage this matrix through a number of product groups and associations, each with its own agenda and devolved budget. Spanning all product areas are a number of overarching issues common to all members. The management of these issues – research, building regulations, design codes, health and safety, training, Government relations and sustainability – is the other role of British Precast and is growing in its importance.

British Precast is committed to the development of a more sustainable precast industry and is working to deliver on that commitment through its committees, Best Practice Awards and dedicated Sustainability Project. An increasing number of our members are recognising the importance of adopting more sustainable practices and are supporting our work in order to ensure a better future for the industry.

The range of precast concrete products includes:

Architectural cladding



Paving, landscaping and street furniture

Flooring including beam & block and hollowcore



Roof tiles

Cast stone and other decorative products



Piles and foundations

Masonry including blocks and walling



Structural including beams, columns and panels

Drainage including pipes, culverts and manholes



Railway products

Sustainable Construction Strategy for the UK Concrete Industries

The flexibility and versatility of concrete is at a premium in addressing the challenge of achieving more sustainable construction. This strategy, launched on 30th July 2008, is intended to assist the concrete industry to contribute to meeting that challenge, and was produced on behalf of the 10 off-site production industries that collectively supply aggregates, cement, ready mixed concrete, mortar and precast concrete products to the UK construction industry. British Precast was actively involved in the strategy development process and is now working alongside many others in the concrete industry to deliver on the strategy commitments.

Aligned with the Government's Sustainable Construction Strategy announced in June 2008, the strategy establishes a common vision for the concrete industry, and a set of strategic objectives and commitments which will benchmark industry performance and demonstrate continuous improvement for the future in delivering sustainable construction.

Speaking at the launch of the strategy, Jonathan Porritt, Founder Director of Forum for the Future, said: "I am delighted to have worked with the cement and concrete industry over the last year and am pleased at the progress it has made. The industry is now entering an exciting phase in its history, as it moves towards becoming more sustainable."

Martin Clarke, Chief Executive of British Precast, commented: "I believe this is a very important step forward for the industry because we have collectively agreed to put sustainable construction at the heart of our businesses. The discipline of monitoring and reporting against our common sustainable construction goals will help ensure that we achieve real changes in the environmental, social and economic performance of concrete in construction, which is what our markets want and our clients expect."



Sustainable Construction Strategy

FOR THE UK CONCRETE INDUSTRIES

We, the undersigned, agree to contribute to the fulfilment of the UK Concrete Industries' vision to be recognised as leaders in sustainable construction; to support the four strategic objectives and to deliver the eight commitments, as outlined in the Concrete Sustainable Construction Strategy dated 14 July 2008 and as summarised here.

We agree as companies to implement these fully or as trade associations to encourage our members to do so. We will communicate the strategy both internally and externally to try and ensure the commitments become a reality.

As instruments of change, trade associations will facilitate the collection of performance data from members, establish performance benchmarks, agree performance targets with their membership, take part in periodic target setting and reviews at association and industry levels, and contribute to a published annual performance report for the UK concrete industries.

Vision
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.

Strategic objectives

1. Agree and adopt a common framework.
2. Improve our environmental profiles.
3. Enable our clients to achieve sustainable construction.
4. Communicate our progress and solutions.

Commitments

1. To launch an annual Sustainability Performance Report for the UK Concrete Industries commencing in March 2009.
2. To set targets for Performance Indicators by the end of 2009.
3. To design an industry R&D Programme to reduce CO₂ and other impacts.
4. To design an industry Skills Transformation Programme aimed at positioning the industry to play a leading role in meeting the challenge of sustainable construction.
5. To provide clients with industry data for LCA (Life cycle analysis) models.
6. To develop sustainable construction solutions.
7. To provide clients with the knowledge and tools to adopt new solutions.
8. To demonstrate the benefits of concrete in the built environment.

[Signed] on behalf of [Company]	[Signed] on behalf of [Trade Association]
_____ Aggregate Industries	_____ BCA
_____ CEMEX	_____ QPA
_____ Hanson	_____ BPCF
_____ Lafarge	_____ CSMA
_____ Tarmac	_____ CAA
_____ Brett Group	_____ UKQAA
_____ Marshalls plc	[Signed] on behalf of The Concrete Centre
_____ Trent Concrete	_____ The Concrete Centre

National Precast Concrete Conference and Concrete Expo 2009

British Precast's Annual General Meeting, Conference and Best Practice Awards ceremony will take place on 12th May 2009 at Athena in Leicester.

It will be a daytime event which will include a short AGM followed by a seminar, a hot and cold buffet lunch and the Federation's annual awards ceremony presented by a guest speaker. There will also be an exhibition area where Associate Members will be showcasing their latest products and services.

The awards being presented in the afternoon will include projects, innovation, sustainability, and health and safety including the Concrete Targets 2010 award and Outstanding Contribution to Health and Safety.

For more information about the event, the awards, sponsorship opportunities or exhibiting, please contact British Precast on 0116 253 6161 or email info@britishprecast.org. The seminar, lunch, awards ceremony and exhibition are free to attend.

Spreading The Word



The fourth year of our More from Less sustainability programme has seen considerable progress made as highlighted throughout this report. Despite the severe recession that now grips UK construction, the precast concrete sector remains committed to a positive agenda.

In July 2008 we signed up to a series of commitments along with

other cement and concrete sectors. In forming the Concrete Industry Sustainable Construction Forum and four focused working groups we are committed to a very challenging four-year programme. Precast is leading the way in many aspects despite our tight resources. Communicating progress is vital. We are frequent speakers at home and abroad on sustainability topics.

Our own Little Green Book of Concrete was published in 2008 and is now out in US, German and Austrian editions. I was privileged to be asked to provide a keynote speech at the National Precast Concrete Association conference in Ottawa in September 2008.



There was particular interest in our members' Sustainability Charter which is a world first. We have a growing international network of sustainability-focused precasters in regular contact.



Martin Clarke signs up to CISCF commitments

This year we have extended our sustainability award scheme to our supply chain with a new Associates award.

All of our Associates have a role to play in driving forward our sustainability achievements. Congratulations to the first winners Lafarge Cement UK, Lafarge Aggregates, Inditherm and BASF.

Sustainability Programme

The overall aim of the Sustainability Programme is to demonstrate to key stakeholders that the industry is committed to sustainability and that measurable progress towards a more sustainable precast concrete industry is being achieved.

Launched in March 2007, the programme comprises five measures designed to improve performance across the precast industry on sustainability:

- Key Performance Indicators (KPIs)
- Sustainability Charter
- Responsible Sourcing Certification Scheme
- Best Practice Forum
- Objectives and Targets for Improvement

Following the successful introduction of KPIs and the Sustainability Charter in 2007, the focus of attention in 2008 has been on supporting the development of a Responsible Sourcing Certification Scheme for precast producers. This is a way of providing assurance to purchasers and specifiers through an independent third-party

certification scheme that the sources from and processes by which a precast product has been made have been managed in accordance with an agreed set of sustainability standards. Progress on all three areas is reported in the following pages. This year will see the introduction of regular Best Practice Forum meetings to encourage companies across the industry to share and adopt best practice, and the setting of objectives and targets for improvement, which will provide challenging sustainability goals for the industry to achieve.

The programme was produced as a result of a collaborative research project between British Precast and Loughborough University. The project, which ran between 2004 and 2008, has succeeded in engaging with companies from across the industry and facilitating progress towards a more sustainable precast industry. In view of the success of the project, British Precast has recently embarked on another collaborative research project with the university to improve the sustainability of the precast industry through product stewardship. Further details are available at www.britishprecast.org and progress on this new project will be reported in future editions of this report.

Key Performance Indicators

These indicators provide an overview of the impact of the precast industry on society and the environment, and how that impact is managed. The figures reported here relate to the 2007 calendar year, and notes are included to indicate how performance has changed compared to 2006, the first year for which data was reported. The set of indicators is unchanged from 2006, but it is envisaged that it will be expanded in time to include more of the sustainability issues facing the industry.

Coverage

- Data has been provided by 25 companies relating to 122 production units and approximately 19.9m tonnes of production; there are believed to be in the region of 800 precast production units in the UK and the total production output for the industry in 2007 was estimated to be 38m tonnes
- Thus, despite some contraction in the industry in the course of the year; data has been reported for approximately 47% of the year's production, compared to 45% in 2006, and more companies have supplied data

The following statistics have been calculated from the data supplied:

Productivity

- The 25 companies reporting data employed 9,735 full time equivalent staff
- 1,842 tonnes of concrete was produced per employee compared to 1,648 tonnes in 2006

Quality and satisfaction

- 14.3m tonnes or 80% of reported production was covered by an ISO 9001 certified quality management system or a recognised Manufacturers Quality Assurance Scheme, which is broadly comparable to 2006

Energy, including climate change

- 52.9kWh of energy was used per tonne of concrete produced, of which 54.5% was gas, 20.7% electricity and 24.8% gas oil or diesel. This is equivalent to 13.5kg of CO₂ per tonne of concrete produced
- In comparison, the 2006 data was 54.9kWh and 13.9kg of CO₂ per tonne of concrete produced

Resource use – materials

- 0.175 tonnes of cementitious materials were used per tonne of concrete produced, of which 34% was fly ash and 11% was ground granulated blast-furnace slag
- Compared to 2006, this is an additional 35kg of cementitious material per tonne of concrete produced, but because greater proportions of alternative cementitious materials were used, 5kg less Portland cement was actually used per tonne of concrete produced
- Aggregate usage shows little change from 2006, with 0.754 tonnes of aggregates being used per tonne of concrete produced, of which 83.5% was primary aggregate and 16.5% secondary aggregate
- 2.5kg of packaging materials were used per tonne of concrete product produced, compared to 3kg in 2007. The proportions were unchanged with 82% being timber and 17% plastic

Resource use – water

- 156 litres of water was used per tonne of concrete produced, compared to 163 litres in 2006. The proportions changed

little with 70.4% coming from mains supplies and 29.6% from licensed non-mains sources

Note: water from other sources such as harvesting and recycling is not included in this figure.

Resource use – waste

- 41kg of waste was produced per tonne of concrete produced, of which 12% was disposed of to landfill, 18% was recycled on site and 71% recycled off site
- This is an increase compared to 2006, but reflects more accurate data capture and reporting by companies

Pollution/emissions, including transport

- 14.5m tonnes or 81% of reported production was covered by an ISO 14001 or EMAS certified environmental management system, compared to 75% of reported production in 2006
- Three environmental incidents were reported to external regulatory authorities during the year, which is equivalent to one incident per 6m tonne of concrete produced and a significant improvement compared to 2006
- The majority of concrete was delivered by road, with the average delivery being 28 tonnes and the average delivery distance being 96 miles. These are modest improvements over 2006, but obtaining reliable transport data remains an issue

Health and safety

- 4.8m tonnes or 26.7% of reported production was covered by an OHSAS 18001 certified health and safety management system, which is a slight increase over 2006
- Health and safety data is collected separately through the Concrete Targets 2010 Scheme operated by British Precast; this HSE recognised scheme promotes improvement activities and sharing of information, both within companies and across the industry
- Over 15,000 employees in the industry were covered by the scheme in 2007
- The RIDDOR incident rate was its lowest ever in 2007 at 7.3 incidents per 1,000 employees, compared to 8.4 in 2006 and 19.6 for the base reporting year of 2000, and only 0.2 days were lost per incident compared to 0.36 in 2000

Employment policies including training

- 7,107 or 73% of reported employees were covered by formal training and development policies, and an average of 14.1 hours of training was provided per employee. Thus a similar number of employees were provided with a greater amount of training than in 2006

Respect for people and their local environment

- 39 factories operated formal local liaison schemes during the year, equivalent to one scheme per 4.25 factories, which is little changed from 2006

The precast industry is well established and its production processes closely monitored and managed. Consequently significant variations in the impacts of the industry year on year are unlikely. In fact, the consistency between the two sets of KPIs produced so far is an encouraging sign that a robust performance benchmark from which objectives and targets for improvement for the industry can soon be established. While those areas in which performance improvements were detected, such as energy and water use, although they were relatively small, they still indicate that companies in the industry are being managed responsibly and with sustainability in mind.

Sustainability Charter

The aim of the Precast Sector Sustainability Charter is to encourage member companies of British Precast to go beyond legislation and take voluntary actions to make their products and operations more sustainable. In order to meet this aim, a set of sustainability principles has been developed based on the key sustainability issues facing the precast industry, as identified by British Precast following consultation with the industry and examination of the priorities and concerns of its primary stakeholders.

Since the charter was launched on 29th November 2007, 18 companies have made a formal declaration to adopt the principles into their normal business and working practices; these companies are recognised as 'Charter Signatories'.

To ensure that signatory companies are complying with the spirit of the charter and taking voluntary actions to improve their performance on sustainability, British Precast has developed a set of performance requirements against which companies are to be audited; these are shown in the table opposite. 'Charter Member' status will be awarded to those companies demonstrating the required level of commitment across a broad range of issues, and will be reviewed bi-annually. The first round of audits is nearing completion and the results will be announced in 2009. Initial indications are that companies are finding the audit process a useful way of sharing knowledge and identifying potential areas for improvement, and that there are some clear sustainability 'champions' in the industry.



Current Charter Signatories:

- Aggregate Industries
- Bell and Webster
- Brett Landscaping and Building Products
- Buchan Concrete Solutions
- Carter Concrete
- Coltman Precast Concrete
- Cornish Concrete Products
- FP McCann
- H+H UK
- Hanson Building Products
- Litecast
- Malling Products
- Marley Eternit
- Marshalls
- Milton Precast
- Roger Bullivant
- Tarmac
- Trent Concrete

Responsible Sourcing Certification Scheme

The original intention of British Precast was to develop a stand-alone third-party certification scheme for precast products and producers during 2008, as a natural extension to the Sustainability Charter. However, in February 2008, BRE Global, the UKAS accredited certification arm of the Building Research Establishment (BRE), signalled its intention to develop an overall framework standard for the assessment of responsible sourcing that would be applicable to all construction products. Following consultation with its members, British Precast opted to work within this emerging framework standard.

BRE Environmental and Sustainability Standard BES 6001 was launched in October 2008, following extensive development and consultation with a wide range of industry stakeholders, including British Precast, many precast companies, and other companies and representative bodies from across the concrete industry. This standard now provides a direct route to certification for responsibly sourced construction products.

Rather than develop a certification scheme within the framework offered by BES 6001, British Precast decided that its members'

interests would be best served in the short term by producing a guidance document on the requirements of BES 6001. However, depending on the success of BES 6001, demand from the market place for responsibly sourced products, and demand from its members, the option to develop a certification scheme may still be pursued. In the meantime, an industry working group was established to produce the guidance document, working in conjunction with BRE Global and, latterly, in collaboration with other representative bodies from across the concrete industry.

The guidance document is now available; copies can be downloaded from www.britishprecast.org. It indicates how compliance with the requirements of responsible sourcing in BES 6001 can be demonstrated for a wide range of products including aggregates, cements, precast concrete and ready mixed concrete using established practices and procedures in the concrete industry, and how higher levels of compliance can be demonstrated by adopting practices and procedures that are considered "best practice" across the construction industry. In addition, it provides background and guidance to be used by assessors in the process of confirming third-party certification against BES 6001.

Sustainable Principles and Performance Requirements

<i>Sustainability principle</i>	<i>Performance Requirement</i>
Develop products that improve the quality and sustainability of the built environment	Demonstrate interaction with users and specifiers in order to improve the quality and sustainability of the built environment
Liaise effectively with local communities to foster mutual understanding and respect	<ol style="list-style-type: none"> 1. Evidence of systems in place for logging feedback 2. Report on meetings held and/or attended 3. Evidence of charitable activity
Manage all waste streams effectively and minimise waste disposed of to landfill	Waste management plan and evidence of improvement
Measure, report and improve performance on sustainability issues	Report KPI data to British Precast and benchmark own performance* Internal environmental incident log and evidence of transport data analysis
Minimise pollution and emissions associated with production and transportation	Internal environmental incident log and evidence of transport data analysis
Operate in a responsible manner to protect employees, contractors and visitors	<ol style="list-style-type: none"> 1. Participation in the Concrete Targets 2010 scheme* 2. Operate health and safety management system/policy to agreed minimum requirements and commit to implementing a health and safety system complying with the requirements of OHSAS 18001
Operate in efficient and financially sustainable manner without compromising legal, quality or sustainability principles	Commit to implementing a third-party certified Environmental Management System (EMS) to ISO 14001, EMAS or, for SMEs, BS 8555*
Operate to highest ethical standards necessary to develop a skilled and competent workforce	Evidence of appropriate employment and training policies in place
Operate to the highest quality standards necessary to satisfy customers and consumers	Commit to implementing a third-party certified Quality Management System (QMS) to ISO 9001 or a recognised Manufacturers Quality Assurance Scheme
Protect and enhance the natural environment adjacent to or affected by precast production	Biodiversity Action Plans and knowledge of the Wildlife and Countryside Act, where appropriate
Recognise that competition encourages development of more sustainable products and practices	Demonstrate an awareness of the strengths and weaknesses of competing products and materials
Use energy more efficiently and reduce carbon footprint	Energy reduction plans and evidence of improvement
Use primary materials more efficiently and promote the use of secondary materials	Resource management plans and evidence of improvement
Use water more efficiently and minimise demand on mains water supplies	Water management plans and evidence of improvement
Work constructively with others to deliver sustainable policies and practices	Evidence of participation in relevant British Precast or product group committees and evidence of case studies and/or specific promotional/educational activities

* Mandatory performance requirements

Sustainability Best Practice Awards 2008

British Precast continues to promote and encourage best practice in sustainability and the annual Sustainability Best Practice Awards are part of our successful programme. This year, dozens of entries were received from our Full Members, whose projects covered such areas as minimising waste, recycling, reducing greenhouse gases and CO₂ emissions, working with the community and reducing energy use.

The winning entries from Aggregate Industries and Forticrete in the Site category, and Tarmac Topblock and Marshalls Landscape Products in the Corporate category, are featured here; these innovative projects demonstrate clear sustainability benefits and are examples of best practice that could easily be adopted by many other businesses across the industry.

The Winners



Aggregate Industries Working with the local community

Aggregate Industries has taken great strides to improve conditions for the local community that lives around their Hulland Ward site in Derbyshire.

The site, near Ashbourne, employs around 500 people and handles 800,000 tonnes of finished products and around 64,000 lorry movements a year. This raised many issues for the local community, including the amount and speed of lorries passing through the area, and the lack of clear signage for lorry turnings that created problems on the local roads.

Aggregate Industries decided to tackle the issues in three ways; improve the traffic situation, develop links with local schools, and support local charities.

To improve the traffic situation the company worked with the local parish council and Highways Department to undertake a detailed traffic survey. Hauliers were then asked to drive with more consideration through Hulland Ward village and the signage was also improved so that lorries were able to follow alternative routes, which has resulted in less disruption to the village.

The company developed links with local secondary schools and colleges by organising educational site visits, which are linked to geography and business studies. Links were also developed with tertiary colleges where students developed designs for the company's products at the Chelsea Flower Show.

Charities are supported through the company's staff accident reduction incentive scheme; for each of the three separate factories which have an injury free month, £250 is donated to a local cause nominated by an employee.



Forticrete Innovative use of recycled materials

The pioneering approach of Forticrete's Dewsbury manufacturing plant in the use of recycled materials for the production of concrete blocks has set a standard that is unrivalled in the industry. Over the past 12 years, Forticrete has reclaimed and re-used 2m tonnes of recycled materials, thereby reducing primary aggregate consumption and associated CO₂ emissions.

The vast majority of this material is reclaimed ash, which is excavated from huge deposit sites created during the industrial revolution, when there was no use or value in this by-product of coal. By extracting, processing and re-using the material, Forticrete has enabled many of these brownfield sites to be returned to use, with some buildings incorporating the very materials that were once dumped in the ground beneath them.

In addition, the company reclaims and re-uses clinker ash from railway sidings and former industrial sites, a variety of 'slags', and also recycles 30,000 tonnes of 'rejected' concrete blocks, bricks and pipes from its own and other manufacturers' operations every year.

Although Forticrete is not the first company to use reclaimed ash, their commitment to its use for the volume production of concrete blockwork and innovative approach to the development and use of a wide range of different materials is unique.

Since the first trials of the use of recycled ash materials, Forticrete's personnel in Dewsbury have been heavily involved in the substantial amount of trialling and product testing, in-house and via third parties, including approvals by the National Accreditation of Measurement and Supply (NAMAS). With the initiative's effectiveness confirmed, the use of these materials has become part of the culture at Forticrete.

This level of recycling - the company's Newlite product, for instance, is manufactured from 90% recycled material - has many benefits: the regeneration of brownfield sites, the effective and cost-effective replacement of quarried or manufactured aggregates, the provision of lightweight aggregate with a sustainable supply, and a huge reduction in CO₂ emissions.



Tarmac Topblock Takeback scheme

During 2007 Tarmac TopBlock launched a major initiative in conjunction with waste management company Hippowaste to recycle site waste. Under the scheme customers purchase 1m³ heavy duty plastic bags into which broken and off-cut blocks are sorted. When 10 of the Hippobags are filled they are collected and transferred to the nearest Tarmac recycling depot or plant for processing into recycled aggregate.

This simple, cost-effective scheme facilitates and encourages the recycling of block waste, reduces the need for virgin aggregates, helps customers to manage on-site waste, and reduces the amount of material sent to landfill. By offering traceability of the waste and collection by a fully certified waste handling company, Tarmac's scheme also directly assists with the audit trail for a site waste management plan, the subject of potential legislation in 2008.

To make customers aware of the service and for them to understand the detail, step by step guides on how the system works were distributed. There is also a factsheet available.

The scheme has sustainability benefits for both customers and suppliers and provides a valuable contribution to Government waste, recycling and landfill reduction targets for 2012 and 2015.



Marshalls Landscape Products Sustainability and carbon impact reduction

Committed to reducing the amount of greenhouse gases and carbon produced as a result of its operations, Marshalls Landscape Products invests in researching, developing and implementing new, environmentally friendlier, innovative mix designs, and sourcing materials responsibly.

The company maintains a strict policy of producing products intended for a long life with low maintenance. The products have a very low risk of pollution and, in the majority of cases, can be easily recycled at the end of the construction's useful life. The company's new 'eco-friendly' concrete block paving has a 39% smaller carbon footprint than its traditional counterpart, and work and investment continues to be dedicated to optimising the mix design of all products.

In partnership with the Carbon Trust, the company has carbon labelled all its domestic products using the standard developed by the Trust to calculate the embodied carbon emissions. From this an online carbon calculator was launched, enabling users to measure the CO₂ impact of hard landscaping products, and encouraging them to 'offset' the impact of the CO₂ with soft planting. It even recommends how many trees would need to be planted to give the desired offset, and provides links to organisations that specialise in this field.

Marshalls' plan for good practice in energy reduction has been rolled out across its manufacturing sites, where the use of energy and the production of the resultant greenhouse gases are carefully monitored. As a result of the measures, Marshalls continues to show a consistent reduction in kilograms of CO₂ produced per tonne of production year on year.

Associate Members' Sustainability Champions 2008

Four Associate Members of British Precast have been awarded the title of Sustainability Champions 2008 after developing projects that reduce their industrial impact on the environment and the communities we live in, while enabling their precast manufacturing customers to become more sustainable.

Lafarge Cement UK, with two winning entries, BASF Construction Chemicals, Inditherm and Lafarge Aggregates UK each won the accolade in British Precast's Associate Member Sustainability Best

Practice Awards 2008, which were started this year to reward excellence in projects that focus on social, economic and/or environmental benefits.

These five innovative projects tackled energy management, improving the efficiency of the supply chain, and reducing waste and pollution, with the potential to make a huge positive impact on the precast sector's environmental and sustainability targets.

The Winners



BASF Construction Chemicals Energy Management

BASF's 'Energy management' project demonstrates that the use of the company's products can save three times more greenhouse gas emissions than the entire amount caused by the production and disposal of them.

To achieve this and other ambitious environmental targets, BASF continues to develop innovative technologies and materials for sustainable climate protection, spending around €400m, or one-third of its total research and development budget, in the areas of energy efficiency, climate protection, resource conservation and renewable raw materials.

To emphasise the strategic importance of climate protection, BASF believes it is the first global industrial company to appoint a 'climate protection officer', whose role is to co-ordinate BASF's long-term climate protection strategy.

In areas such as construction, automobiles and industrial production, BASF products help its customers to save more than 250m tonnes of CO₂ worldwide.

And in the field of concrete, BASF has developed concepts for greater sustainability in the production of precast elements and manufactured concrete products, optimising processes and the use of energy.



Inditherm Accelerated concrete curing technology

Heating solutions company Inditherm has developed and patented a flexible carbon polymer technology that provides a highly efficient method of delivering heat with completely uniform temperature characteristics. The technology is used for applications as diverse as warming premature babies, patients undergoing surgery, chocolate manufacturing processes, football pitches and construction projects.

The technology is based on a flexible polymer sheet which is impregnated with carbon in a manner which gives completely homogeneous electrical properties. This allows it to develop heat very efficiently when a low voltage is applied to it.

It maintains completely uniform heating over a large surface area, has high thermal transfer characteristics by conductive heating, is completely safe due to low voltage operation, and has environmental advantages due to low power consumption.

The concrete manufacturing process can benefit from this technology through faster curing times, reduced cement and additive content, and reduced energy costs, which can directly contribute to a reduction in environmental impact and improvements in sustainability in the precast industry.



*Lafarge Aggregates
Recycled glass sand*

Lafarge Aggregates have used their expertise in recycled aggregates to create Envirosand, made from locally sourced waste glass packaging. It outperforms regular quarried sand, has a lower bulk density and is free-draining so can be used in the rain. The production of Envirosand helps meet the UK's recycling targets by diverting glass from landfill and recycling it into a product that is clean, non-toxic and inert while preserving stocks of primary aggregate. Because it is sourced and produced locally, it minimises the amount of truck movements and road congestion.

It has been used successfully in several precast applications, and as the demand for sustainable construction solutions rises, this usage will almost certainly increase.

Following on from the development of Envirosand, Lafarge Aggregate's team produced Equinesand, a recycled glass sand designed especially for use in equestrian ménages, which presents a cost-effective, sustainable alternative to the silica sand traditionally used. Based on the same principles of production as Envirosand, Equinesand undergoes further, rigorous testing to ensure it is shard free and safe for equestrian use.



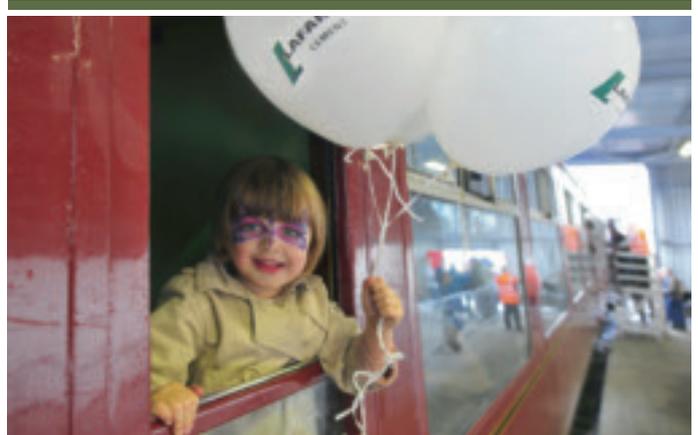
*Lafarge Cement
Waste management and recycling*

Lafarge Cement's 'Waste management and recycling' has a three-pronged approach: minimising the creation of waste as part of its process; utilising society's waste and by-products material in its processes; and helping to reduce product wastage for customers.

This means it is beneficial to the environment, community and customers, including the precast industry.

By tackling one of its major wastes, cement kiln dust, by reusing it in the cement making process, the company reduced the amount of waste disposed of from 193,000 tonnes in 1993 to just 14,000 tonnes in 2006. Meanwhile, investment in dust filtering and abatement equipment and better process management has led to Lafarge reducing dust emissions by over 70% at its seven UK cement works, which has helped improve air quality at the sites. The company also reuses and recycles its defunct equipment and buildings where it can.

Lafarge is also the largest user of waste, such as bone meal, used tyres and fuel ash, in the cement-making process, resulting in less fossil fuels being used, and now sells its cement products in plastic packaging, which is 39% more environmentally-friendly than traditional paper bags, with more options for storage and virtually no cement wasted.



*Lafarge Cement
Sustainability approaches towards product supply chain*

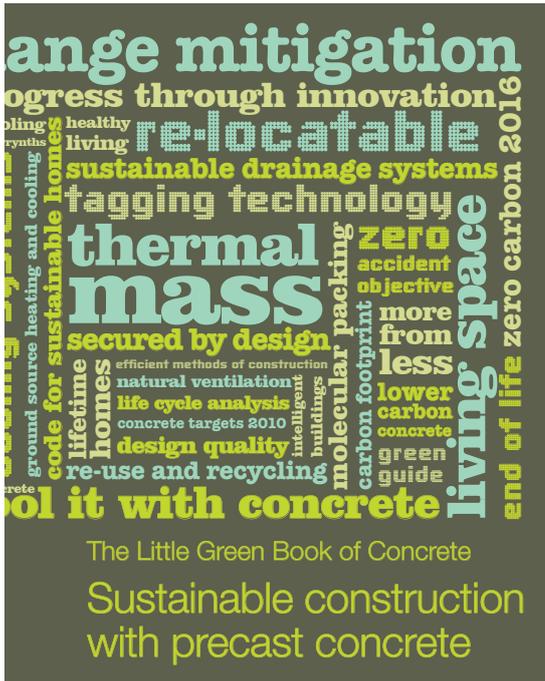
'Sustainability approaches towards product supply chain' focuses on maintaining robustness in its role as a supplier while minimising the environmental impact.

Again this takes a three-pronged approach: investment to ensure a reliable service to its customers; commitment to use sustainable methods to supply product; and mechanisms to ensure reliability of supply to customers.

A recent investment of £100m purely on its supply chain has led to the development of a rail infrastructure which enables cement, fuel and materials to be transported in rail wagons rather than in lorries on the road. The company now moves around 27% of its total product volumes by rail to 12 of its 14 depots, which means a reduction in pollution of over 750,000 tonnes of CO₂ and, of course, less congestion on the roads.

As part of this project Lafarge Cement has also installed mechanisms to ensure reliability of supply to its customers. These measures look at delivery times, order completion and correct paperwork, and has led to 94% of bulk orders being delivered on time this year.

Little Green Book of Concrete



Since our Little Green Book of Concrete was published in August last year, 40,000 copies have been distributed worldwide.

The Little Book provides the architect, designer, engineer, client, financier, insurer and environmentalist with a summary guide to the sustainability credentials of precast concrete. It explains how the industry is becoming more resource efficient and environmentally aware and how its products can contribute to achieving greener construction.

It is relevant to all concrete producers and will be of interest to clients, designers, merchants and contractors as well as precast industry staff. For copies and enquiries, please email:

info@britishprecast.org.

Comments and Further Information

British Precast welcomes your views on this report and our approach to developing a more sustainable precast industry. You can give us your comments by writing to Abdullahi Aliyu at British Precast or email him at abdullahi.aliyu@britishprecast.org.

Further information is published in the sustainability section of our website and in our publications *Moving the Industry Forward* and *Annual Report*.

Print Commitment

At British Precast we aim to be sustainable in everything we do, and that includes our print. All our publications are printed on recycled paper that has a minimum of 50% post-consumer waste content and is FSC certified and we only use vegetable based inks. We audit all our printers to ensure they have ISO 14001 or equivalent standards and have their own sustainability strategy.

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