Foreword

Welcome to the 2015 Brick Development Association (BDA) Sustainability Report. The BDA represents 99% of UK brick manufacturers and our role is to ensure clay bricks and pavers are recognised as the materials of choice. We are responsible for promoting the contribution that brick makes to the places and spaces that people live and work in today.

The brick industry developed its first sustainability strategy and set of sustainability key performance indicators (KPIs) in 2001. These were followed up in 2012 with a new set of sustainability KPIs and targets. This report provides an update of progress made to date in meeting these targets, and forms part of a cycle whereby a more detailed report will be published in 2016.

Since the recession, there has been a welcome resurgence in the industry with four mothballed plants re-opened in 2014, and a new manufacturing plant will be following in the not too distant future. It is estimated that around two billion bricks were manufactured throughout the UK in 2015.

The BDA has an active Working Party that meets on a regular basis to discuss sustainable production, and develop a strategic approach to improve the performance of the industry as a whole. This report highlights some of the work that the sector has been carrying out.

Key topics for consideration by the BDA during the next 12 months include the contribution that the sector can make to the circular economy, the implementation of an industry water strategy and action plan, and consideration of how engagement with stakeholders can be improved. Member companies have plans to carry out sustainability related projects and it is hoped this will translate to a further improvement in performance in the future and we look forward to reporting our progress in 2016.

Dave Manley, Chairman of the Sustainability Working Party
Executive Summary

This report reflects the activities of the members of the Brick Development Association, with respondents covering 95% of brick manufacturing capacity in the UK. Operating from 69 manufacturing sites, in 2014 members manufactured around 1.75 billion bricks and had a collective turnover of approximately £500 million. There have been significant strides forward on sustainable production; those achievements are outlined in this report, along with some of the environmental challenges for the industry in 2016.

Brick manufacturing is an energy intensive process. BDA members have therefore invested heavily in energy efficient manufacturing plant and are continually looking for opportunities to reduce their overall energy consumption. In 2014 the industry achieved a 5% improvement on specific energy consumption against its 2013 performance and is making steady progress towards its target of 713 KWh per fired tonne of output in 2016.

The participation of many brick production sites in the European Union Emissions Trading Scheme or UK Small Emitter Opt-out Scheme requires members to annually report carbon emissions and purchase sufficient allowances accordingly - a key driver to reduce carbon emissions within the sector. Significant work is being carried out to improve the accuracy of reporting on carbon in 2016 and data is also now being gathered on the use of renewable energy within the industry.

Water use is essential within brick manufacturing, but with resources coming under increasing pressure, the industry takes a responsible approach by monitoring the amount of mains and licenced non-mains water utilised, maximising diversification to non-mains water supplies and re-using water wherever possible. In 2014 members achieved a 31% reduction on its 2013 mains water use, exceeding the 2016 target. A water policy has been developed by the BDA and work is being carried out on developing a detailed strategy and actions.

The main material used in the production process is clay, which is extracted in a carefully managed way by companies in close consultation with stakeholders. In 2014 90% of production capacity was covered by the BES 6001 standard for the responsible sourcing of construction products. In 2014, most extraction sites had either a restoration plan, biodiversity plan, or geodiversity plan in place leading to many future positive impacts for wildlife and biodiversity. In order to make best use of materials, the brick industry has worked for many years to minimise waste. As a result the volume of waste per tonne of production is very low, equating to 0.75% in 2014, although the industry recognises that there are opportunities for further reductions.

In terms of continual improvement on sustainable production 93% of production capacity is covered by a certified environmental management system and 92% by a certified quality management system, and some members are now taking steps to implement an ISO 50001 Energy Management System. Investment by the sector in plant and machinery increased by a third in 2014 when compared to 2013 to £28 million.

Detailed information about objectives, targets and performance appears in the data tables at the end of the report.
ENERGY
Energy

Introduction

Energy use is of great importance to BDA members as brick manufacturing is an energy intensive process. Members are aware of the global impact of energy use and associated emissions on the environment, and have invested in energy efficient manufacturing plant and equipment to help maximise production levels for a given energy consumption level. Many also participate in a UK Climate Change Agreement (CCA) that includes energy efficiency targets. Managing energy efficiency is an ongoing process and companies continually look for opportunities to reduce their overall energy consumption.

KPIs & TARGETS

<table>
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<tr>
<th>KPI REFERENCE</th>
<th>OBJECTIVE</th>
<th>KPI</th>
<th>2016 TARGET</th>
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<tbody>
<tr>
<td>1a</td>
<td>To reduce specific energy consumption* tonne of output</td>
<td>SEC (KWh per fired tonne of output)</td>
<td>720 KWh/t</td>
<td>697 KWh/t</td>
<td>2013 performance - 762 KWh/t 2014 performance - 726 KWh/t SEC has shown a 5% improvement against 2013 performance, steady progress towards the 2016 SEC target</td>
</tr>
</tbody>
</table>

Performance

Productivity has a significant impact on energy efficiency.

From the data collated SEC appears to have reduced to pre-recession levels. There has been a 5% improvement in energy efficiency compared to 2013, indicating steady progress towards the 2016 SEC target.
The future

Maintaining increased brick production levels (and therefore energy efficiency) is key factor to further progress towards the 2016 SEC target. Additionally, improvements in energy efficiency may be brought about by requirements of large organisations (from 5th December 2014) to comply with the Energy Saving Opportunity Scheme. Although the sector already has undertaken considerable investment in energy efficiency to-date, this is designed to identify potential energy efficiency savings to implement and promote investment in energy efficiency.

Case Study

*Carlton Brick – energy efficiency improvements*

In 2013, Carlton Brick embarked on a project to reduce electricity consumption within their business. Three key areas for potential improvement were identified: including compressed air, factory lighting and general housekeeping on-site.

In conjunction with a site survey for compressed air leaks, a number of old, inefficient air compressors were replaced by a single energy-efficient compressor: producing compressed air based on actual demand through a variable speed drive.

Old fluorescent tube lighting

New LED lighting

Old, inefficient factory lighting was replaced with energy efficient LED and induction light fittings by Carlton Brick’s in-house electrical department.

General housekeeping improvements were made through a programme of staff awareness of reducing energy consumption opportunities (i.e. switching off equipment / lighting during periods of no use); work to the factory roof to maximise natural lighting indoors translucent sheeting; and inverter controlled motors installed on equipment to reduce energy consumption. Old fluorescent tube lighting (left) and new low bay light fitting (right) above.

The resultant payback period for all the energy efficiency investments have been calculated as two years. Based on 2012 electricity consumption levels, savings of around 14% are being realised, despite increased production on-site and other recently-installed electricity-consuming plant. Overall, these measures are helping Carlton Brick significantly reduce their Specific Energy Consumption on-site, and meet their CCA targets.
Carbon

Introduction

With the UK Government’s requirements for a low carbon, sustainable construction sector, carbon emissions are a key focus for BDA members. Many sites participate in the EU ETS (European Union Emissions Trading Scheme) or UK Small Emitters Opt-Out Scheme and so are required to report annually on carbon emissions and purchase sufficient allowances to cover these emissions. These requirements act as a key driver to carbon emission reduction for the sector.

There are three distinct areas which give rise to carbon emissions within our production process:

- Direct fuel emissions relating to fuels which are used on site e.g. gas or fuel oils
- Direct process emissions from the raw materials e.g. clay and the media used in our gas treatment plants
- Indirect emissions for e.g. off-site electricity generation.

Delivery of product is another source of carbon emissions which must be considered in terms of load size, vehicle routing and more efficient vehicles.

A verifiable generic Carbon Footprint has been produced for the UK brick manufacturing sector based on a representative sample of the UK brick manufacturing sites (Lucideon 2013). Additional work is also being undertaken to improve the accuracy of reported process emissions for the sector in order to report against the 2016 target.

KPIs & TARGETS

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<tbody>
<tr>
<td>1b</td>
<td>To reduce carbon emissions generated during the manufacture of bricks</td>
<td>carbon emissions per m² of brickwork*</td>
<td>30.79kg CO₂ emissions per m² brickwork</td>
<td>29.85kg CO₂ emissions per m² brickwork</td>
<td>The sector’s carbon footprint is monitored through the production of an industry carbon footprint report which is completed by Lucideon at the request of the BDA. The most recent results show that the generic carbon footprint is 252kg/CO₂ per tonne of fired brick. Additional work is being undertaken to improve the accuracy of reported process emissions. The results will be reported in 2016.</td>
</tr>
<tr>
<td>1c</td>
<td>To monitor renewable energy use</td>
<td>The provision of information on the use of renewable energy by BDA members</td>
<td>No target set</td>
<td>No target set</td>
<td>Renewable Energy: BDA members are collecting data on the use of renewable energy; one example of on-site renewable energy generation is Northcot Brick’s installation of a solar farm on-site for the generation of electricity (See case study)</td>
</tr>
<tr>
<td>1d</td>
<td>To collect information on transport utilisation by BDA members</td>
<td>The provision of relevant transport information</td>
<td>No target set</td>
<td>No target set</td>
<td>Limited data available. Overall seen as difficult to monitor transport utilisation</td>
</tr>
</tbody>
</table>

Performance

Renewable Energy BDA members have begun to report the use of renewable energy; one example of on-site renewable energy generation is Northcot Brick’s installation of a solar farm on-site for the generation of electricity (See case study).

Transport The complexity of obtaining accurate transport data from all members remains an issue for KPI reporting with only a limited number of companies actively monitoring transport deliveries in detail. Companies have different approaches to transport management, some use their own transport whilst others use subcontractors, and the way that delivery rounds and loads are managed also varies. This means that collecting accurate and comparable transport data for the sector can be challenging.
The data obtained indicates that although the overall number of deliveries has increased by around 13% compared to 2013, both the total and average distance of deliveries has reduced by 3% and 15% respectively. This would suggest more localised product delivery compared to 2013, thereby saving on carbon emissions from transport and underlining the contribution of the plants which reopened in 2014.

**The future**

With forthcoming discussions in December 2015, aiming to reach a global agreement on climate change actions; efforts to reduce carbon emissions (at a global, European and national scale) are likely to further impact BDA members. Carbon emissions reduction therefore remains a priority for BDA members.

The collection of transport data will be kept under review by the BDA Sustainable Production Working Party.

**Case Study**

*Northcot Brick – Solar Farm investment*

In recognition of rising electricity costs and looking to diversify their energy mix, Northcot Brick has invested in photo voltaic (solar) panels on their site. This renewable energy investment comprises 600 solar panels, generating a total of up to 150kW electricity (used on-site for production, with any surplus going to the grid).

The investment case considered both the savings made on electricity otherwise consumed as well as revenue generated through the Feed in Tariff scheme. Upon commissioning this gave an overall return on investment of 13% per annum and the measures will also help to reduce the embodied carbon in bricks produced on-site.
WATER
Water

Introduction

Water is essential to the brick manufacturing process and is sourced from both mains and non-mains supplies. Water resources are coming under increasing pressure due to the impacts of climate change and predicted population growth; efficient, sustainable use of water resources is therefore crucial to sustaining this limited, sensitive natural resource.

Brick manufacturers monitor the amount of mains and licenced non mains water utilised in the clay extraction and brick manufacturing process. A key aim is to maximise the opportunities for diversification to non-mains (including harvested) water supplies and re-use wherever possible, reducing reliance and use of potable water supplies in the manufacturing process.

KPIs & TARGETS

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</table>
| 2a            | To reduce the use of mains water during the manufacturing process         | Litres of mains water used per tonne of product manufactured        | 120 litres/tonne of product | No target set | 117 litres/tonne product  
                             |                                                                          |                                                                     | 31% reduction against 2013 performance. 
                             |                                                                          |                                                                     | The data obtained indicates that the target has been exceeded in advance of 2016. |
| 2b            | To monitor use of non mains water                                        | Litres of non mains water used per tonne of product manufactured    | No target set        | No target set | 45 litres/tonne of product  
                             |                                                                          |                                                                     | 7.5% increase on 2013 performance. |
| 2c            | To develop a water strategy, produce case studies and encourage the sharing of best practice on water management, recycling, and rainwater harvesting | Production of a water strategy Number of case studies developed       | No target set        | No target set | A water policy has been developed and work is being carried out on developing a detailed strategy and actions. |
| 2d            | To develop a rainwater harvesting assessment tool                         | Rainwater harvesting assessment tool                                | No target set        | No target set | A rainwater harvesting assessment tool is now available on the BDA website in the member’s area. |

For more information click here
Performance

Mains water use per tonne of product manufactured has shown a 31% reduction against 2013 performance and a 13% reduction against the 2011. This means that the 2016 target to reduce mains water during the manufacturing process has been achieved.

Non-mains water use per tonne of product manufactured has remained relatively constant since 2011, but has shown an increase from 2013.

The overall total (mains and non-mains) water used per tonne of product manufactured has shown a marked reduction, based on previous years’ performance and against the 2011 baseline.

Compared with 2013, the overall number of sites recycling water has increased by 13%; and the number of sites reported as having rainwater harvesting has increased by 16%.

The future

In conjunction with the water policy which has been developed, the BDA is producing an accompanying strategy and actions. This strategy will set out how BDA members will achieve policy aims and have an improved understanding of the quantity of water consumed, its source and the impact on local resources; to demonstrate measures that are implemented to reduce water consumption; to use available water sources in the most-sustainable manner and maintain water quality in the environment.
Case Study

*Wienerberger, Smeed Dean, Kent*

Wienerberger carried out a project at their site in Smeed Dean, Kent, to reduce reliance on mains water sources for use in brick manufacture together with the recovery of sands and recycling of water.

The Smeed Dean Factory features a combined water recycling and sand recovery system.

Water is a key component of the brick manufacturing process, especially at a soft mud site. Water is added to the raw material mix to make the clay malleable, it is then pressed into sand-lined moulds to form the bricks’ shape and texture. The moulds are reused in the manufacturing process, but must be cleaned and re-lined with sand before they accept another batch of clay.

At the site, water is sourced from an on-site borehole and supplemented by rainwater harvested from the factory roof which drains into the recycling water system. After use in forming bricks and washing moulds, the remaining water is pumped back to the starting pond via a series of settling weirs.

When first installed, the settling weirs needed to be cleaned of sediment regularly, however the addition of the sand filtration system means the weirs do not need to be cleaned as regularly and the mould sands are recovered for reuse in the manufacturing process.

As a result of the work, Wienerberger’s Smeed Dean factory is using less mains water than it would without this system in place, and the recovery of the mould sands has financial benefits.
MATERIALS
Materials

Introduction

Our principal material for manufacturing bricks is clay. Careful planning takes place prior to any extraction to ensure that as much material as possible is put to beneficial use, and that once extraction has finished, sites are restored (see Biodiversity).

The extraction of materials for the manufacture of bricks is carefully managed by companies and involves close consultation with local communities, mineral planning authorities, and other stakeholders to ensure that any negative environmental impacts are minimised and that positive outcomes are enhanced. Clay is a natural resource and it is important that the materials used and the products they are manufactured into are used as efficiently and effectively as possible throughout their lifecycle. A significant benefit of bricks is their longevity, as brick buildings are highly adaptable and can last for many decades, even centuries with relatively low maintenance requirements.

An understanding of being able to trace the provenance of construction materials is also becoming increasingly important. To demonstrate the traceability of the raw materials used in the manufacture of bricks, many sites are covered by BES 6001 framework standard for the responsible sourcing of construction products.

The industry has long been proactive in the substitution of raw materials and in 2005 commissioned Lucideon (formerly Ceram) to carry out an annual survey to monitor the usage of materials from alternative, recycled and secondary sources (MARSS) at the majority of the industry’s production sites. The 2011 survey covered manufacturing sites representing over 90% of UK production and on average, MARSS materials accounted for around 9% of the materials used in the manufacture of brick. This level of use is generally stable although the individual materials used have changed quite significantly over the period and the variation in MARSS content between individual product types is also very large.
KPIs & TARGETS

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<tbody>
<tr>
<td>5a</td>
<td>To maintain the high level of manufacturing capacity covered by BES 6001</td>
<td>The % of production capacity certified to the BES 6001 Responsible Sourcing standard</td>
<td>The continued maintenance of 90% of production capacity covered by BES 6001</td>
<td>The continued maintenance of 90% of production capacity covered by BES 6001</td>
<td>2014 - 90% of production capacity covered by BES 6001</td>
</tr>
<tr>
<td>5b</td>
<td>To monitor the proportion of raw materials derived from sources other than clay extraction, in the manufacture of brick</td>
<td>The provision of information on the proportion of raw materials derived from sources other than clay extraction</td>
<td>No target set</td>
<td>No target set</td>
<td>According to the latest MARSS report (Ceram, (now Lucideon) 2012, unpublished), around 9% of brick making materials are sourced from ‘alternative, recycled and secondary sources’. For further information, see the Clay Bricks and Clay Blocks Resource Efficiency Action Plan</td>
</tr>
<tr>
<td>5c</td>
<td>To ensure that valid and current Environmental Product Declaration are maintained for BDA member’s products</td>
<td>The provision of information on Environmental Product Declaration for BDA member’s products</td>
<td>No target set</td>
<td>No target set</td>
<td>A BRE verified EPD for generic brick was published at the end of 2013</td>
</tr>
</tbody>
</table>

Performance

The publication of a BRE verified Environmental Product Declaration for generic brick in 2012 and regular review of the use of MARSS materials (materials sourced from ‘alternative, recycled and secondary sources), are just two of the steps that the industry has taken collectively to measure and demonstrate the sustainability of the products manufactured. The importance of sourcing materials responsibly is also recognised, as illustrated by the fact that over 90% of the sectors production capacity is covered by BES 6001: Responsible Sourcing of Construction Products.

The future

When reviewing the impact of a manufactured product and its component materials, it is important to consider the whole lifecycle, including longevity. This is particularly the case with clay bricks which may have a higher embodied impact when considered at the point of manufacturing alone, but as bricks can last for many decades, even centuries, over the whole lifecycle - the benefits outweigh the initial impact.

Many product manufacturers are now considering how the circular economy applies to their business model and the BDA Sustainability Working Party will be reviewing the contribution that brick manufacturing can make over the next 12 months.
CONTINUAL IMPROVEMENT
Continual Improvement

Introduction

Brick manufacturers are constantly looking for ways to improve their performance, whether this relates to the extraction and manufacturing process, or the performance of products.

The majority of companies have a certified environmental management system in place, many have a certified quality management system, and now members are taking steps to implement an ISO 50001 Energy Management System.

In 2012 the industry collaborated with the concrete sector to improve the resource efficiency of the supply chain. This resulted in the publication of the Clay Bricks and Clay Blocks Resource Efficiency Action Plan (REAP), one of a suite 3 linked REAPs which also include the Ready Mix Concrete REAP and Precast Concrete REAP. This collaborative working continues today with representatives from the clay brick, precast concrete and ready-mix concrete sectors meeting on a regular basis to implement the plans. Work has also been extended recently to include the UK Contractors Group, helping to maintain the momentum within this supply chain approach.

The sector continues to invest in technologies which help improve sustainability performance. In 2014, a number of projects were carried out across the sector including the installation of energy efficient factory lighting, the replacement of kiln car fleet, the implementation of water recycling and improvements to heat recovery systems.

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<tbody>
<tr>
<td>7a</td>
<td>For sustainability data to be representative of all BDA members</td>
<td>The % of BDA members that submit a sustainability data return</td>
<td>100% membership</td>
<td>100% membership</td>
<td>95% of BDA members have contributed to this sustainability update</td>
</tr>
<tr>
<td>7b</td>
<td>To maintain the high level of production capacity covered by a UKAS certified environmental management system</td>
<td>The % of production capacity covered by a UKAS certified environmental management system</td>
<td>No target set</td>
<td>No target set</td>
<td>The % production capacity covered by a UKAS certified environmental management system (EMS) has been maintained. 93% of production capacity covered by a certified EMS</td>
</tr>
<tr>
<td>7c</td>
<td>To monitor the % production capacity covered by a UKAS certified quality management system</td>
<td>The % of production capacity covered by a UKAS certified quality management system</td>
<td>No target set</td>
<td>No target set</td>
<td>92% of production capacity is covered by a certified QMS</td>
</tr>
<tr>
<td>7d</td>
<td>To monitor investment in plant and machinery by BDA members</td>
<td>The provision of information on financial investment in plant and machinery</td>
<td>No target set</td>
<td>No target set</td>
<td>Investment by the sector increased by one third between 2013 and 2014 to around £28 million</td>
</tr>
</tbody>
</table>
Performance

Companies in the sector have continued to show their commitment to continual improvement, with 93% of production capacity covered by certified Environmental Management Systems, 92% covered by Quality Management Systems, and 44% of production capacity covered by ISO 50001 Energy Management Systems. The sector is also continuing to invest in new plant and equipment, with investment increasing between 2013 and 2014 to around £28 million.

The future

Over the next 12 months, case studies will be issued which will highlight the work that the sector is doing to improve its sustainability performance, and the inaugural BDA Sustainability Award will be presented. The BDA Sustainable Production Working Party also has plans to explore how the sector can contribute to the circular economy, and develop a waste strategy, water strategy and associated action plans.
Case Study

Ibstock Brick – ISO50001 Implementation

Ahead of the Energy Savings Opportunities Scheme coming into force Ibstock Brick wanted to demonstrate it was not just complying, but ‘leading by example’ on energy management. The company were keen to adopt a solution which placed people at the centre of the project. The international standard ISO50001 provides a framework of requirements for organisations to continually improve and to integrate energy management into their overall efforts on environmental management. In 2013, Ibstock Brick started its journey towards ISO50001 accreditation.

The implementation of ISO50001 standards were firstly piloted at Ibstock’s “Centre of Excellence”. This allowed the company to develop a strategy, pilot key initiatives and set objectives and targets for the entire business.

A key factor in the project was that Ibstock took a “people first” approach to change. “By engaging and involving people across all functions we were able to work as a single team” said Group Quality, Environmental & Energy Manager Michael McGowan. “We focused on individuals to get them involved, tailoring training packages to the influence that they have within the business.”

The company carefully picked its Energy Champion - someone who was a common link, and able to communicate effectively with the whole team. Staff were engaged through a specially developed two year training plan, a pocket guide to help Save Energy at Home and Work, A Quick Reference Guide to ISO50001 and a Sustainability DVD.

In late 2013 and early 2014 the implementation was rolled out to Ibstock’s other 18 factories around the country. The company secured ISO50001 accreditation for all its sites in June 2014.
WASTE
Waste

Introduction

The brick industry has worked for many years to minimise waste generated and to manage any remaining waste responsibly. As a result the volume of waste per tonne of production is very low, equating to 0.75% in 2014.

Typical ‘wastes’ include fired brick waste, paper, wood, cardboard, plastic, refractories, abatement plant and obsolete plant and machinery. Wherever possible, materials are re-used or recycled. For example, the majority of raw materials that are used in the manufacture of brick, even after processing can be crushed and reused either within the same process or as a raw material for other products. However for some waste materials, currently the only option is disposal.

The industry recognises that there are opportunities to further reduce the volume of waste generated and to minimise disposal to landfill, and that any actions will lead to additional benefits in terms of carbon and water savings.

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<tbody>
<tr>
<td>4a</td>
<td>To reduce the quantity of waste per tonne of production disposed of to landfill by BDA members</td>
<td>Kilograms of waste sent to landfill (after recovery operations at waste transfer stations), per tonne of product manufactured</td>
<td>1.03kg / tonne production</td>
<td>0.48kg / tonne production</td>
<td>2014 - 1.12kg waste per tonne of production was sent to landfill in 2014. This is an increase from 0.99kg in 2013</td>
</tr>
<tr>
<td>4b</td>
<td>To monitor hazardous and non hazardous waste generated by BDA members</td>
<td>The provision of information on the quantity of waste generated (kilograms), per tonne of production</td>
<td>No target set</td>
<td>No target set</td>
<td>Waste arisings reduced per tonne of production between 2012 – 2013, but increased between 2013-2014. Closer analysis of the data indicates that this is due in part to improvement works on manufacturing sites which have lead to unavoidable waste arisings</td>
</tr>
<tr>
<td>4c</td>
<td>To develop a waste strategy, produce case studies and encourage the sharing of best practice on waste reduction and management</td>
<td>Number of case studies developed</td>
<td>No target set</td>
<td>No target set</td>
<td>A waste strategy has not been developed yet, however best practice cases studies are in production</td>
</tr>
</tbody>
</table>

For more information click here
Performance

The industry has worked hard to reduce the volume of waste produced and overall the long term trend demonstrates a significant drop in the volume of waste generated per tonne of production – in 2004 2.57 kgs waste were disposed of to landfill and in 2012 this had reduced to 0.79 kgs. The quantity of waste has increased slightly over the last couple of years. It is likely that this is a reflection of the number of onsite refurbishment projects that are taking place following the recession, however it cannot be assumed that this is the only explanation. Further work is required to explore this trend.

The future

Over the next 12 months, the BDA Sustainable Production Working Party will be co-ordinating the development of a waste strategy for the industry. This will identify where waste is occurring in the sector and help realise some of the opportunities to reduce the volume of waste generated in the future.
BIODIVERSITY
Biodiversity

Introduction

Conserving and where possible enhancing the UK’s biodiversity is an essential requirement for sustainable development. Biodiversity and conservation have traditionally focused on protecting a small number of sites where rare or endangered habitats and species occur, but now the importance of safeguarding and enhancing areas outside of protected sites is widely recognised. The brick industry has an important role to play as extraction sites can be carefully managed to take account of and enhance biodiversity, particularly once extraction has ceased and sites are restored.

Clay extraction sites have a valuable contribution to make to the protection and enhancement of biodiversity now and in the future and the industry works closely with nature conservation bodies across the country to ensure beneficial action takes place.

KPIs & TARGETS

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<tbody>
<tr>
<td>6a</td>
<td>To provide information on site specific action plans that are in place at relevant sites</td>
<td>The provision of information on the % of relevant production sites that have site specific action plans</td>
<td>No target set</td>
<td>No target set</td>
<td>2014 - The majority of extraction sites have either a restoration plan, biodiversity plan, or geodiversity plan, and some have more than one type of plan. The planning permission associated with mineral extraction requires all sites to be restored once the minerals have been extracted</td>
</tr>
</tbody>
</table>

Performance

The planning permission associated with mineral extraction requires all sites to be restored once the minerals have been extracted, often leading to many positive impacts for wildlife and biodiversity. In 2014, the majority of extraction sites had either a restoration plan, biodiversity plan, or geodiversity plan, with some sites having more than one type of plan. This helps to ensure that negative impacts on the environment are minimised and potential positive outcomes for wildlife and biodiversity reach their full potential.

The future

The brick manufacturing sector is committed to improving UK biodiversity and habitat creation and will contribute to this through the management and restoration of industry sites, notably quarries. Concepts such as Natural Capital are becoming increasingly important and will be explored by the BDA Sustainable Production Working Party over the next 12 months.
Case Study

**Wienerberger Ltd.**

Wienerberger carried out a project at Warnham Quarry, Langhurstwood, which aimed to improve the overall biodiversity of the site.

The quarry site at Langhurstwood Road contains a mixture of mature and ancient woodland, and semi-heathland. The company worked with a land management consultant to create a Biodiversity Improvement Plan, under which the following actions are taken:

- Maintaining the semi-heathland by removing shrubs, thereby supporting a variety of wildflowers and insects
- Small areas of woodland were cleared to allow sunlight to reach the forest floor, creating patches of complete and dappled light. Many native trees have self-sown in these areas, including Hornbeam, Ash, Rowan and Birch
- The banks of the settlement pond have been planted with native trees, stabilising the soil and connecting the water with the surrounding woodland

The maintenance and evolution of these habitats is an ongoing process, with Wienerberger acting as steward of the site alongside extracting clay for brick manufacturing. As a result of the work, species recorded at the site include buzzards, roe deer, lizards, numerous species of damselfly, spider, grasshopper, beetles, bees and butterflies.

Native habitat encouraged to self seed and grow  
Variety of species recorded at the site

*Natural Capital can be defined as the world’s stocks of natural assets which include geology, soil, air, water and all living things. It is from this Natural Capital that humans derive a wide range of services, often called ecosystem services, which make human life possible.*
WELLBEING

[Heart icon]
Wellbeing

Introduction

It is essential that companies operate in a responsible manner and have regard for the wellbeing of employees and others who may come into contact with the business, for example the local community. This can be demonstrated through good health and safety performance, suitable investment in training, and participation in community liaison activities.

In 2014, just under 5,000 days of formal training was carried out across member companies.

Over 90% of employees in the brick manufacturing sector are covered by the Ceramic Industry Health and Safety Pledge. This longstanding industry programme consists of a number of initiatives, agreed with the Trade Unions and the Health and Safety Executive (HSE), which are designed to reduce the incidence of work-related injury and ill health. Phases 1 and 2 of the Pledge focussed on achieving quantitative targets to improve health and safety performance. Phase 3 is ongoing and the focus is on the maintenance and further improvement of performance, particularly in those companies that may require further support.

The Pledge Competency Toolkit has recently been issued and helps companies to assess and maintain the competence of staff with regard to health and safety.

Many activities that support the local community take place within companies as part of their everyday proceedings. Examples include educational visits by schools and universities to quarries and factories, which took place at 53 sites in 2014, and site tours for the local community and special interest groups, which took place at 25 sites, (and many of these sites hosted a number of visits). 15 sites sponsor community groups, for example the local junior football team, and 18 provide donations to charity. These activities demonstrate how important the local community is to many members, and how companies can help support communities in a positive way.
# KPIs & TARGETS

<table>
<thead>
<tr>
<th>KPI REFERENCE</th>
<th>OBJECTIVE</th>
<th>KPI</th>
<th>2016 TARGET</th>
<th>2020 TARGET</th>
<th>COMMENT ON PERFORMANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>3a</td>
<td>To ensure successful implementation of the ceramic industry pledge in BDA member companies</td>
<td>The % of employees covered by the Ceramic Industry Health and Safety Pledge</td>
<td>No target set</td>
<td>No target set</td>
<td>Over 90% of employees in the sector are covered by the Ceramic Industry Health and Safety Pledge</td>
</tr>
<tr>
<td>3b</td>
<td>To ensure the accident incidence rate of BDA members does not increase</td>
<td>The average number of accidents per employee</td>
<td>0.24 accidents per employee</td>
<td>0.24 accidents per employee</td>
<td></td>
</tr>
<tr>
<td>3c</td>
<td>To ensure the absence incidence rate of BDA members due to workplace accidents does not increase</td>
<td>The average number of days absent per employee</td>
<td>0.24 days absent per employee</td>
<td>0.24 days absent per employee</td>
<td>The objective to maintain health and safety performance has been achieved as the average number of days absence due to workplace accidents, and average number of injuries per employee have all reduced since 2011 (baseline year)</td>
</tr>
<tr>
<td>3d</td>
<td>To ensure the all injury incidence rate of BDA members does not increase</td>
<td>The average number of injuries per employee</td>
<td>0.009 number of injuries per employee</td>
<td>0.009 number of injuries per employee</td>
<td></td>
</tr>
<tr>
<td>3e</td>
<td>To monitor the % production capacity covered by a UKAS certified health and safety management system</td>
<td>The % of production capacity covered by a UKAS certified health and safety management system</td>
<td>No target set</td>
<td>No target set</td>
<td>26% of production capacity was covered by a UKAS certified health and safety management system in 2014</td>
</tr>
<tr>
<td>3f</td>
<td>To provide information about community liaison activities that take place at relevant sites</td>
<td>The provision of information on the % of relevant sites that have community liaison activities</td>
<td>No target set</td>
<td>No target set</td>
<td>92% of sites have community liaison activities taking place</td>
</tr>
</tbody>
</table>

For more information click here
Performance

The sector has worked together over a number of years to improve health and safety performance and share best practice. Over 90% of employees in the sector are covered by the Ceramic Industry Health and safety Pledge, the success of which is demonstrated by the fact that the average number of accidents, average number of days absence due to workplace accidents, and average number of injuries per employee have all reduced since 2011. In 2014, 26% of production capacity was covered by a certified health and safety management system, a figure that is likely to increase in the future.

The future

If companies are to fully understand the requirements of internal and external stakeholders, it is important that they take the time to engage, and that this is carried out in an appropriate way. This has been recognised by the BDA Sustainable Production Working Party as an important work area for the future.
Case Study

Ibstock Brick – Quarry Extension Community Engagement

In order to continue brick production at its Dorket Head Factory in Nottinghamshire, Ibstock needed to secure a local clay supply from its nearby quarry. The company gained planning consent for an extension which would ensure additional clay supplies. The company wanted to maintain its good relationship with the surrounding community and go beyond its regulatory obligations to mitigate environment impacts.

Throughout the process which led to the proposed quarry extension receiving authorisation by the local planning authority in 2014, Ibstock made a concerted effort to engage with the community. The proposed development had its own website for the community to access information at their convenience, the company held engagement events, and also provided 2000 homes in the area with booklets about the scheme.

Community engagement did not stop once the planning permission had been secured. One of the most innovative involvement strategies employed by Ibstock gained community participation in their efforts to improve the area’s biodiversity. The company teamed up with nearby Richard Bonington Primary School to plant 6,000 trees as part of its work to create a new area of biodiversity. The company is creating new natural habitats around the quarry to support ecosystems and enhance the surrounding landscape.

Children from Richard Bonington were invited to take part in the environmental campaign and, following a green-themed drawing competition, 60 pupils were selected to help plant the variety of trees. Artwork prepared by the pupils is also displayed around new footpaths surrounding the site.

In terms of company benefits, the initiative generated positive coverage in the local media and cemented strong relationships with the Dorket Head factory’s neighbours. Long term benefits for the local environment are improved biodiversity and access to natural capital.
Brick Development Association Members

Members contributing to this report

Carlton Brick Ltd www.carltonbrick.co.uk
Coleford Brick & Tile Ltd www.colefordbrick.co.uk
Bovingdon Brickworks Ltd www.bovingdonbricks.co.uk
Bulmer Brick & Tile Co Ltd bbt@bulmerbrickandtile.co.uk
Furness Brick & Tile Co Ltd www.furnessbrick.com
Forterra Building Products Ltd www.forterra.co.uk
Ibstock Brick Ltd www.ibstock.co.uk
Ketley Brick Company Ltd www.ketley-brick.co.uk
Matclad Ltd www.matclad.co.uk
Michelmersh Brick Holdings Plc www.mbhplc.co.uk
Northcot Brick Ltd www.northcotbrick.co.uk
Raeburn Brick www.raeburnbrick.co.uk
W H Collier Ltd www.whcollier.co.uk
Wienerberger Ltd www.wienerberger.co.uk

Copies of this document can be downloaded or viewed from the Brick Development Association website.

Please send questions or comments to:

The Brick Development Association
The Building Centre
26 Store Street
London
WC1E 7BT
www.brick.org.uk

British Ceramic Confederation
Federation House
Station Road
Stoke-on-Trent
ST4 2SA
www.ceramfed.co.uk
### ACTION Energy

<table>
<thead>
<tr>
<th>Sustainability Principal</th>
<th>Objective</th>
<th>Key Performance Indicator</th>
<th>2011 Baseline</th>
<th>2012 Result</th>
<th>2013 Result</th>
<th>2014 Result</th>
<th>2016 Target</th>
<th>2020 Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a Energy Efficiency</td>
<td>To reduce specific energy consumption per tonne of output.</td>
<td>Specific energy consumption (KWh per fired/tonne of output) fuels and metered electricity.</td>
<td>741.9 KWh / fired tonne of output</td>
<td>747 KWh / fired tonne of output</td>
<td>762 KWh / fired tonne of output</td>
<td>726 KWh / fired tonne of output</td>
<td>720 KWh / fired tonne of output</td>
<td>697 KWh / fired tonne of output</td>
</tr>
</tbody>
</table>

### ACTION Carbon

<table>
<thead>
<tr>
<th>Sustainability Principal</th>
<th>Objective</th>
<th>Key Performance Indicator</th>
<th>2011 Baseline</th>
<th>2012 Result</th>
<th>2013 Result</th>
<th>2014 Result</th>
<th>2016 Target</th>
<th>2020 Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>1b Carbon Emissions in Production</td>
<td>To reduce carbon emissions generated during the manufacture of bricks.</td>
<td>Carbon emissions per m² of brickwork.</td>
<td>31.35 ** kg CO₂ emissions per m² of brickwork</td>
<td>Total 30.16 * Combustion 19.90 Process 6.44 Electricity 3.82 *</td>
<td>Additional work is being undertaken to improve the accuracy of reported process emissions. The results will be reported in 2016.</td>
<td>30.79 * kg CO₂ emissions per m² of brickwork</td>
<td>29.85 * kg CO₂ emissions per m² of brickwork</td>
<td></td>
</tr>
<tr>
<td>1c Renewable Energy</td>
<td>To monitor renewable energy use.</td>
<td>The provision of information on the use of renewable energy by BDA members.</td>
<td>n/a</td>
<td>Limited data available.</td>
<td>Limited data available.</td>
<td>Limited data available.</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>1d Transport</td>
<td>To collect information on transport utilisation by BDA members.</td>
<td>The provision of relevant transport information.</td>
<td>n/a</td>
<td>Limited data available.</td>
<td>Limited data available.</td>
<td>Limited data available.</td>
<td>n/a</td>
<td>n/a</td>
</tr>
</tbody>
</table>

* *2012 electricity carbon intensity factor of 0.45706 used, as published by DEFRA-DECC. Source: www.ukconversionfactors.carbonsmart.co.uk
** 2011 electricity carbon intensity factor of 0.44917 used, as published by DEFRA-DECC. Source: www.ukconversionfactors.carbonsmart.co.uk

### ACTION Water

<table>
<thead>
<tr>
<th>Sustainability Principal</th>
<th>Objective</th>
<th>Key Performance Indicator</th>
<th>2011 Baseline</th>
<th>2012 Result</th>
<th>2013 Result</th>
<th>2014 Result</th>
<th>2016 Target</th>
<th>2020 Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>2a Water Efficiency</td>
<td>To reduce the use of mains water during the manufacturing process.</td>
<td>Litres of mains water used per tonne of product manufactured.</td>
<td>133L per tonne of product manufactured</td>
<td>163L of water per tonne of product manufactured</td>
<td>168L of water per tonne of product manufactured</td>
<td>117L of water per tonne of product manufactured</td>
<td>120L per tonne of product manufactured</td>
<td>n/a</td>
</tr>
<tr>
<td>2b Non Mains Water</td>
<td>To monitor use of non mains water.</td>
<td>Litres of non mains water used per tonne of product manufactured.</td>
<td>58L per tonne of product manufactured</td>
<td>44L of water per tonne of product manufactured</td>
<td>42L of water per tonne of product manufactured</td>
<td>45L of water per tonne of product manufactured</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>2c Water Strategy</td>
<td>To develop a water strategy, produce case studies and encourage the sharing of best practice on water management, recycling, and production of water strategy.</td>
<td>Production of case studies developed</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>A water policy has been developed and work is being carried out to develop a strategy and actions.</td>
<td>To develop a water strategy for the industry, guidance notes on best practice, and at least three industry case studies on water</td>
</tr>
</tbody>
</table>
### BDA Sustainability Key Performance Indicators and Targets

#### 2015 SUMMARY REPORT DATA TABLES (2014 DATA)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>To develop a rainwater harvesting assessment tool.</td>
<td>The % of employees covered by the ceramic industry Pledge (or recognised equivalent).</td>
<td>n/a</td>
<td>Over 90% of employees in the sector are covered by the ceramic industry Pledge.</td>
<td>Over 90% of employees in the sector are covered by the ceramic industry Pledge.</td>
<td>Over 90% of employees in the sector are covered by the ceramic industry Pledge.</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>To ensure the accident incidence rate of BDA members does not increase.</td>
<td>The average number of accidents per employee.</td>
<td>0.24 accidents per employee.</td>
<td>0.20 accidents per employee.</td>
<td>0.21 accidents per employee.</td>
<td>0.19 accidents per employee.</td>
<td>0.24 accidents per employee.</td>
<td>0.24 accidents per employee.</td>
</tr>
<tr>
<td>To ensure the absence incidence rate of BDA members due to workplace accidents does not increase.</td>
<td>The average number of days absence due to workplace accidents per employee.</td>
<td>0.24 days absence due to workplace accidents per employee.</td>
<td>0.25 days absence due to workplace accidents per employee.</td>
<td>0.21 days absence due to workplace accidents per employee.</td>
<td>0.22 days absence due to workplace accidents per employee.</td>
<td>0.24 days absence due to workplace accidents per employee.</td>
<td>0.24 days absence due to workplace accidents per employee.</td>
</tr>
<tr>
<td>To ensure the all injury incidence rate of BDA members does not increase.</td>
<td>The average number of injuries per employee.</td>
<td>0.009 number of injuries per employee.</td>
<td>0.01 number of injuries per employee.</td>
<td>0.008 number of injuries per employee.</td>
<td>0.007 number of injuries per employee.</td>
<td>0.009 number of injuries per employee.</td>
<td>0.009 number of injuries per employee.</td>
</tr>
<tr>
<td>To monitor the % production capacity covered by a UKAS certified health and safety management system.</td>
<td>The % of production capacity covered by a UKAS certified Health and Safety system.</td>
<td>n/a</td>
<td>22.5% of production capacity covered by a certified H&amp;S system.</td>
<td>22.5% of production capacity covered by a certified H&amp;S system.</td>
<td>26% of production capacity covered by a certified H&amp;S system.</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>To provide information about community liaison activities that take place at relevant sites.</td>
<td>The provision of information on the % of relevant sites that have community liaison activities.</td>
<td>n/a</td>
<td>34% of sites have an active liaison committee; 29.5% of sites have formal lines of communication in place; 59% of sites have informal lines of</td>
<td>77.6% of sites have community liaison activities</td>
<td>92% of sites have community liaison activities</td>
<td>n/a</td>
<td>n/a</td>
</tr>
</tbody>
</table>
### BDA Sustainability Key Performance Indicators and Targets

**2015 SUMMARY REPORT DATA TABLES (2014 DATA)**

<table>
<thead>
<tr>
<th>ACTION Waste</th>
<th>Sustainability Principal</th>
<th>Objective</th>
<th>Key Performance Indicator</th>
<th>2011 Baseline</th>
<th>2012 Result</th>
<th>2013 Result</th>
<th>2014 Result</th>
<th>2015 Target</th>
<th>2020 Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>4a Waste Minimisation</td>
<td>To reduce the quantity of waste per tonne of production disposed of to landfill by BDA members.</td>
<td>Kilograms of waste sent to landfill (after recovery operations at waste transfer stations), per tonne of product manufactured.</td>
<td>1.21 kg waste per tonne of production sent to landfill</td>
<td>0.79 kg waste per tonne of production sent to landfill</td>
<td>0.89 kg waste per tonne of production sent to landfill</td>
<td>1.12 kg waste per tonne of production sent to landfill</td>
<td>1.03 kg waste per tonne of production sent to landfill</td>
<td>0.48 kg waste per tonne of production sent to landfill</td>
<td></td>
</tr>
<tr>
<td>4b Waste Minimisation</td>
<td>To monitor hazardous and non hazardous waste generated by BDA members.</td>
<td>The provision of information on the quantity of waste generated (kilograms), per tonne of production.</td>
<td>n/a</td>
<td>0.97 kg hazardous waste generated per tonne of production 10.12 kg of non hazardous waste generated per tonne of production. Overall: 11.08kg waste generated per tonne of production.</td>
<td>0.26kg hazardous waste generated per tonne of production 6.27kg of non hazardous waste generated per tonne of production. Overall: 6.53kg waste generated per tonne of production.</td>
<td>0.83kg hazardous waste generated per tonne of production 6.71kg of non hazardous waste generated per tonne of production. Overall: 7.53kg waste generated per tonne of production.</td>
<td>n/a</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>4c Waste Strategy</td>
<td>To develop a waste strategy, produce case studies and encourage the sharing of best practice on waste reduction and management.</td>
<td>Production of a waste strategy. Number of case studies developed.</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>The development of a waste strategy will take place in 2015.</td>
<td>To have developed a Waste Strategy</td>
<td>n/a</td>
</tr>
</tbody>
</table>
### BDA Sustainability Key Performance Indicators and Targets
#### 2015 SUMMARY REPORT DATA TABLES (2014 DATA)

<table>
<thead>
<tr>
<th>Sustainability Principal</th>
<th>Objective</th>
<th>Key Performance Indicator</th>
<th>2011 Baseline</th>
<th>2012 Result</th>
<th>2013 Result</th>
<th>2014 Result</th>
<th>2016 Target</th>
<th>2020 Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>5a Responsible Sourcing</td>
<td>To maintain the high level of manufacturing capacity covered by BES 6001.</td>
<td>The % of production capacity certified to the BES 6001 Responsible Sourcing standard.</td>
<td>n/a</td>
<td>90% of production capacity covered by BES 6001</td>
<td>90% of production capacity covered by BES 6001</td>
<td>90% of production capacity covered by BES 6001</td>
<td>The continued maintenance of 90% of production capacity covered by BES 6001</td>
<td>The continued maintenance of 90% of production capacity covered by BES 6001</td>
</tr>
<tr>
<td>5b Materials</td>
<td>To monitor the proportion of raw materials derived from sources other than clay extraction, in the manufacture of brick.</td>
<td>The provision of information on the proportion of raw materials derived from sources other than clay extraction.</td>
<td>n/a</td>
<td>Around 9% of the brick making materials are sourced from ‘alternative, recycled and secondary sources’.</td>
<td>Data not yet available</td>
<td>n/a</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>5c Environmental Product Declaration</td>
<td>To ensure that valid and current Environmental Product Declaration are maintained for BDA member’s products.</td>
<td>The provision of information on Environmental Product Declaration for BDA member’s products.</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>A BRE verified EPD for generic brick was published at the end of 2013</td>
<td>n/a</td>
<td>n/a</td>
</tr>
</tbody>
</table>

#### ACTION Biodiversity

<table>
<thead>
<tr>
<th>Sustainability Principal</th>
<th>Objective</th>
<th>Key Performance Indicator</th>
<th>2011 Baseline</th>
<th>2012 Result</th>
<th>2013 Result</th>
<th>2014 Result</th>
<th>2016 Target</th>
<th>2020 Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>6a Site Stewardship and Biodiversity</td>
<td>To provide information on site specific action plans that are in place at relevant sites.</td>
<td>The provision of information on the % of relevant production sites that have site specific action plans.</td>
<td>n/a</td>
<td>96% of extraction sites have action plans</td>
<td>92% of extraction sites have action plans</td>
<td>77% of extraction sites have restoration plans, 17% have biodiversity action plans, 7% have geological diversity plans. 4 sites don’t have a formal plan in place, but sites will be restored as part of planning permission.</td>
<td>n/a</td>
<td>n/a</td>
</tr>
</tbody>
</table>

#### ACTION Continual Improvement

<table>
<thead>
<tr>
<th>Sustainability Principal</th>
<th>Objective</th>
<th>Key Performance Indicator</th>
<th>2011 Baseline</th>
<th>2012 Result</th>
<th>2013 Result</th>
<th>2014 Result</th>
<th>2016 Target</th>
<th>2020 Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>7a Data Collection</td>
<td>For sustainability data to be representative of all BDA members.</td>
<td>The % of BDA members that submit a sustainability data return.</td>
<td>n/a</td>
<td>79% response rate.</td>
<td>100% response rate.</td>
<td>95% response rate.</td>
<td>100% of BDA members to submit sustainability data</td>
<td>100% of BDA members to submit sustainability data</td>
</tr>
<tr>
<td></td>
<td>Environmental Management</td>
<td>To maintain the high level of production capacity covered by a UKAS certified environmental management system.</td>
<td>n/a</td>
<td>99% of production capacity covered by a certified EMS</td>
<td>93% of production capacity covered by a certified EMS</td>
<td>93% of production capacity covered by a certified EMS</td>
<td>The maintenance of 95% of production capacity covered by a UKAS certified environmental management system.</td>
<td>n/a</td>
</tr>
<tr>
<td>---</td>
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<td>-------------------------------------------------------------------------------------------------------------</td>
<td>-----</td>
<td>--------------------------------------------------</td>
<td>-------------------------------------------------</td>
<td>-------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>-----</td>
</tr>
<tr>
<td>7b</td>
<td>Quality Management</td>
<td>To monitor the % production capacity covered by a UKAS certified quality management system.</td>
<td>n/a</td>
<td>95.1% of production capacity covered by a certified QMS</td>
<td>91% of production capacity covered by a certified QMS</td>
<td>92% of production capacity covered by a certified QMS</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>7c</td>
<td>Investment</td>
<td>To monitor investment in plant and machinery by BDA members.</td>
<td>n/a</td>
<td>Total investment £22.5 million</td>
<td>Total investment £20 million</td>
<td>Total investment £28 million</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>7d</td>
<td></td>
<td>The provision of information on financial investment in plant and machinery.</td>
<td>n/a</td>
<td></td>
<td></td>
<td></td>
<td>n/a</td>
<td></td>
</tr>
</tbody>
</table>