



## Sustainability Performance Report

7<sup>th</sup> report: 2017 performance data

### Managing Directors Statement

In 2012 Lignacite Ltd committed to a 'Sustainable Strategy for Masonry'. This initiative has been the catalyst to enable us to respond to the construction industry's need for industry-wide reporting of sustainability performance as well as delivering on our commitment for continuous improvement.

We are now publishing this sixth performance report to stakeholders. This report provides company data for a range of key indicators, set against a benchmark of previous performance.

Communicating and informing our colleagues and customers is also a key objective for our strategy. As the UK construction industry's approach to sustainability develops it is essential that our own Strategy keeps apace. Lignacite Ltd a member of the Concrete Block Association and is signed up to the British Precast Sustainability Charter. We are subject to annual verification audits of manufacturing and data. This data is compiled into Key Performance Indicators (KPI's) to enable performance benchmarks to be set and annual reports published.

Member companies are required to set objectives and targets to continually improve their sustainability performance. This data collection and review will help block producers meet future sustainability challenges and increased digitalisation.

We have also reviewed and published our 'Sustainable Strategy for Masonry', ensuring that it continues to be 'fit for purpose' in meeting company and stakeholder requirements.

Carbon reduction is also a key part of our objectives and targets for the operation of our business and this is being tackled across a broad front. A major achievement in 2015 saw the introduction of a significant number of photovoltaic panels to the roof of our Brandon Factory, providing a valuable source of renewable energy and therefore lowering our reliance on primary fuels as well as improving our carbon footprint.

*A G F Eastwood*

Allan Eastwood  
**(Operations Director)**

*"Sustainable products,  
such as those  
containing coloured  
glass aggregate help  
to deliver on client  
expectations*



### Environmental Performance Declaration (EPD)

The Concrete Block Association, to which Lignacite Ltd is a member, has developed a generic Environmental Performance Declaration for aggregate concrete blocks. The concrete blocks studied in this EPD range in density from 750 - 2100 kg/m<sup>3</sup> with the value used in carbonation calculations set a 1425 kg/m<sup>3</sup>. This range of densities is compatible with the product densities available from Lignacite Ltd. The type of EPD is Cradle to Gate with all options declared - this equates to a cradle to grave EPD without the inclusion of module D. The modules considered in the Life Cycle Assessment are modules A1-C4 inclusive. This data increases the quality of environmental data available to specifiers and users alike



## Introduction



Concrete masonry blocks are the most widely used walling material and account for a substantial part of our built environment, essential for the construction of our housing, schools, hospitals, commercial buildings and transport networks.

In 2008 the majority of the UK concrete industry committed to the Concrete Industry Sustainable Construction Strategy. Lignacite Ltd is a full member of British Precast and are committed to the aims of its 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; these issues were identified by British Precast following consultation with the industry and examination of the priorities and concerns of its primary stakeholders.

This Report presents a range of performance indicators that represent the most significant sustainability aspects and support the Government Strategy for Sustainable Construction [1].



Our activities are controlled by certified management systems such as ISO 9001 and ISO 14001. Our approach to responsible sourcing has been examined by BSI and following a rigorous assessment, certification to BES 6001 - *Framework Standard for the Responsible Sourcing of Construction Products* was achieved with a 'Very Good' performance rating. However, this rating is not something we can take for granted, as our own performance is highly dependent upon the quality, environmental, and health and safety practices of our suppliers. So as a matter of priority we will continue to work closely with our supply chain to deliver the sustainability performance we demand.

## Looking forward

Lignacite Ltd is committed to its 'Sustainable Strategy for Masonry'. This forward thinking initiative was reviewed in 2016 to ensure its continued relevance. It is published on our web site and is consistent with the Concrete Industry Sustainable Construction Strategy. This provides the roadmap for our continual improvement and is indicative of our commitment to a sustainable built environment. Our Strategy is outlined below.

### Vision

It is our vision for Lignacite Ltd to be recognised as a leader in the masonry sector, delivering client solutions and by taking a dynamic role in delivering a sustainable, zero carbon built environment in a socially, environmentally and economically responsible manner.

### Strategic objectives

1. To continue to bring to the market innovative masonry products which satisfy customer requirements, focusing on the visual appeal and performance of masonry.
2. To maintain a high proportion of recycled and secondary materials as an alternative to primary materials in its products. This will be achieved by further investment in research and development and a strong commitment to its supply chain to bring such products to the market.
3. To develop masonry solutions which meet technical requirements and are manufactured based on responsible sourcing principles in accordance with BES 6001, thereby enabling our clients to achieve sustainable construction.
4. To have a strong focus on reducing our carbon footprint through a range of initiatives.
5. Communicate our progress and solutions.

### Commitments

1. To publish an annual Sustainability Performance Report to stakeholders. The first Report was published in 2012.
2. To set targets and objectives for performance improvement against the principal sustainability aspects described in BES 6001, and to review targets and objectives on an annual basis. These include targets for energy, carbon and water reduction.
3. To provide clients with industry data for product environmental performance, e.g. Environmental Product Declarations.
4. To develop sustainable masonry solutions.
5. To maintain an externally certified management system for responsible sourcing activities in accordance with BES 6001

## Action on Materials



### Resource efficiency

Use of alternative raw materials has been a key feature of our products since the inclusion of graded wood particles in the first Lignacite blocks produced in 1947.

Our target for 2017 was to use 25 to 30% of recycled and secondary materials in production of our products. These materials include recycled and secondary materials aggregates as well as partial cement replacements such as granulated blast furnace slag (GGBS)

These materials are used in most of our product ranges, although the quantities used in each range do vary – our Product Data Sheets give details.

A usage of 32% has been recorded which meets our target. This is in spite of a more challenging environment for sourcing recycled materials, partly due the upturn in construction activity, but also the decline in traditional industries that have been responsible for providing an abundant supply of such materials.

Going forward, a realistic target is to maintain use of recycled/secondary aggregates at between 25% - 30% of production output.

### Environmental Management

Controlling and managing the environmental impacts of procuring materials and manufacturing products is an essential requirement for sustainable development. The adoption of Environmental Management Systems (EMS), such as ISO 14001, is a best practice approach to identifying impacts, assessing their importance and providing a structured approach to controlling, reporting and managing performance improvement.

We maintain a BSI certified EMS and our indicator aim is to continue to maintain certification to this Standard.

### Quality and Performance

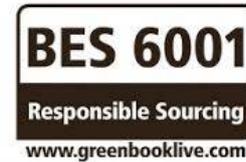
Product consistency, performance and being fit for purpose are crucial to sustainability and ensuring that materials are not rejected or potentially wasted, which is costly both economically and environmentally.

We have maintained a BSI certified quality management system to ISO 9001 for over 25 years and believe this continues to have a vital role and our indicator is to continue to maintain certification to this Standard.

### Responsible Sourcing

The demand for evidence of the responsible sourcing of building products and materials is ever increasing

together with the need to demonstrate compliance through a recognized responsible sourcing scheme, certified by a third party. We are certified to BES 6001 'Framework Standard for Responsible Sourcing' and currently maintain a 'Very Good' Rating.



BES 6001 was revised and Issue 3 published in 2014. The collective changes represent a challenge to maintaining certification but considerable work was undertaken in readiness for the implementation of the changes and we are pleased to maintain a 'Very Good' rating to the revised version of BES 6001.

### Actions taken to improve future resource use

In 2013, the ready-mixed concrete and precast concrete sectors partnered with the clay brick and block sector to launch Resource Efficiency Action Plans (REAPs); demonstrating their commitment to increasing the opportunity for recycling and using recovered materials, throughout the whole-life of these materials.



Through membership of the Concrete Block Association, we are helping to shape REAPs for the concrete block sector. The REAPs have been developed to assist the supply chain in managing material efficiency from raw material extraction through to the demolition/deconstruction of buildings, and identifying and creating an actionable strategy for reducing waste and improving resource efficiency.

These Action Plans address a much wider scope and cover the main impact indicators of waste, water, carbon (energy usage and emissions), materials and biodiversity, over the lifecycle of a construction product as defined in EN 15804, as championed by the GCB's "Greening the Industry" campaign.

Progress on the action plans will be reported in future Sustainability Reports.

# Action on Carbon

## Overview of the Concrete Industry Commitment 2020

- ✓ **Contribute to the delivery of a low carbon built environment**

The performance indicators and targets within the concrete industry strategy are aimed primarily at reducing the embodied carbon dioxide in concrete. The industry 2020 target of a 30% reduction from a 1990 baseline is significantly ahead of the Green Construction Board (GCB) route-map.

There is increasing evidence in our built environment of the positive contribution concrete can make in reducing the operational carbon dioxide from buildings in use.

Best practice guidance is available from The Concrete Centre and there are regular events to share knowledge from exemplar projects.



- ✓ **Develop a Low Carbon Freight Initiative to support (by the Forum members) improvement in transport performance through the concrete supply chain to construction sites**

The industry is working with stakeholders to identify areas for improvement. There has been liaison with the rail freight industry with the aim of increasing the volume of our materials moved by rail. The REAP stakeholder process with contractors also identified areas where there may be efficiencies to be gained. In comparison to other materials, concrete has low transportation CO<sub>2</sub>, as it is a UK manufactured product using locally sourced materials. The consistency of the concrete industry indicator provides a generic figure that specifiers can use when making material comparisons.

## Energy Efficiency

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



The concrete sector can reduce its carbon emissions associated with the production of concrete and its constituent materials by improving energy efficiency or reducing consumption. The indicator (kWh/tonne) also referred to as 'energy intensity' reports energy consumption during the manufacture of concrete products. For comparison, during 2016, the precast sector (all product groups) reported the energy consumption to be 52.8 kWh/tonne.

Our performance in 2017 resulted in the production of a standardised tonne of our masonry blocks consuming 14.1 kWh of energy per tonne of concrete. This equates to energy use of 2.4 kWh/m<sup>2</sup> of blocks (100mm equivalent width) produced. Our indicator is to reduce energy used in production by 1% year on year against a 2012 baseline target of 22.3 kWh per tonne. This is an improvement in our performance compared to 2015 (14.8 kWh/tonne) , but a small increase ((0.4kWh/tonne) compared to 2016 performance.

To achieve energy reduction requires small incremental improvements across all areas of production as well as the offices in which our people are based.

One initiative has been to replace the lighting in our production facilities, including offices, with new LED Energy efficient lighting. This system senses movement in the area and after ten minutes the lights automatically switches off. This is predicted to show a saving of up to £100, 000 over the next 10 years combined with a reduction in energy intensity.

A larger capital project saw the installation of an array of solar photovoltaic (PV) panels on the roof of our Brandon factory. This has delivered a significant quantity of clean electricity as well as reducing our carbon footprint.

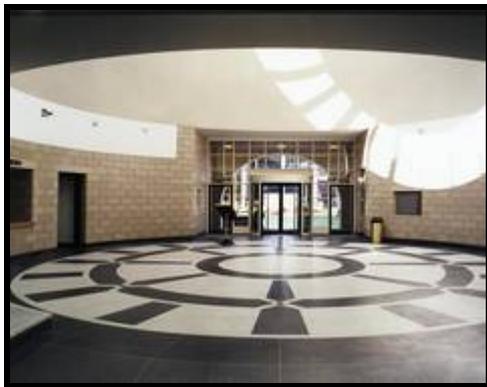


# Action on Carbon

The consumption of a largely fixed energy use against a lower output of product can cause fluctuations in this indicator. The cement component remains a major constituent of the embodied energy in concrete blocks. Concrete block production uses semi-dry mixes which usually require significantly less cement per tonne than wet cast mixes, meaning that the effect of the embodied energy from cement is reduced. Further improvements result from use of cement substitutes such as Betacarb, which is used in a number of our products.

## Operational energy

As well as minimising the embodied contribution of our products, it is their performance over the full life cycle of building which will determine the sustainability of the built environment for future generations.



**Lignacite's high density facing masonry can be used to control internal heat gains in buildings.**

The use of passive design to maximise the inherent thermal mass properties of concrete blockwork can provide considerable energy savings in terms of reduced heating and cooling requirements over the lifetime of a building. Thermal mass relates to the ability of construction materials to absorb heat on hot days to help prevent overheating problems, without recourse to energy dependent cooling. Night time ventilation removes the stored heat. During the winter, the absorbed heat provides a buffer within the building to help maintain a constant ambient temperature without using additional energy. Changes to Part L thermal standards in 2014 requires increasing amounts of insulation to be installed to all new building types. It is predicted that the risk of overheating in buildings will increase and the need to consider heat cooling materials, such as concrete masonry, will be of increasing benefit

## CO<sub>2</sub> Emissions - Production



Our indicator for 2017 was to maintain carbon emissions, using a standardised concrete mix, by 5% against a 2012 baseline performance of 8.4kg/CO<sub>2</sub>/tonne. The performance in 2017 is verified at 4.0kg/CO<sub>2</sub>/tonne meaning that we are considerably ahead of the performance indicator set. We remain committed to reducing CO<sub>2</sub> emissions by investment in plant, process and the people involved in the production of our masonry blocks.

## CO<sub>2</sub> emissions arising from delivery of raw materials

In the past focus has been given to the emissions associated with the delivery of our product. Considerable progress has been made with reducing our CO<sub>2</sub> emissions due to activities such as maximizing the pay load of delivery vehicles, route planning, maximizing the opportunity for return loads and the continuing update of our vehicle fleet.



During 2017 much attention has been given to how we can better manage the emissions arising through delivery of our raw materials. This aspect is now measured and monitored and data independently verified – see Page 7. The Data collected includes number of deliveries, average delivery distances, tonnage for each delivery etc.

The challenges associated with sourcing an abundant supply of raw materials makes this a difficult area to set arbitrary targets. However collecting good quality data is the first step towards mitigation of CO<sub>2</sub> emissions arising from delivery of raw materials.

## Action on Waste

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



Our indicator is that no (0%) production waste is sent to landfill.

During 2017 all of Lignacite's production waste was reused on site or reprocessed as aggregate for use in other construction products, therefore no production waste was diverted to landfill.

## Action on Water

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



Our indicator for 2017 was to use water within the range of 38 to 48 litres/tonne and this has been achieved.

During 2017 water usage - mains water and ground water - was measured at 35.1 litres/tonne of product, a significant improvement on the 2012 base line performance when water usage was recorded at 48 litres/tonne.

A key feature of concrete block manufacture is the use of semi-dry mixes that are compacted and vibrated using powerful block machinery. This is necessary for the immediate demoulding of the product. A benefit of this production method is the use of very little water per tonne, compared to ready mix concrete. Typically ready mix concrete will use 60 to 80 litres of water per tonne compared to less than 36 litres of water per tonne for Lignacite concrete mixes.

## Action on Wellbeing

**Health and Safety**

**Reportable injuries per total number of employees per annum**



The Health and Safety of our employees and visitors to our sites is a top priority.

Our indicator for 2017 was to have no reportable injuries that result in lost time from work. Unfortunately one reportable injury occurred, so our target was not achieved.

Our Health and Safety objectives and targets are consistent with the overall concrete industry, where the ultimate objective is for 'Zero Harm'.

### Employment and Skills

We are committed to a fully trained competent workforce. All production operatives are covered by UKAS certified training and evaluation processes.

On the job training is supported by tool box talks and specific training where this is a company or legal requirement.

Training hours are recorded and divided by the number of employees, to arrive at an 'average training hours per employee'. An average of 4 hours/ employee was recorded in 2017 against an indicator of 5 to 10 hours/employee.

### Emissions (Excluding CO<sub>2</sub>)

**Number of convictions per annum for air and water emissions**

Our indicator relating to emissions excluding CO<sub>2</sub> is for zero number of convictions for emissions to air and water per annum. During 2017 no convictions occurred.

### Local Community

Community engagement is achieved by various means, including a number of sponsorship donations, liaison with the local authority etc. A bi-yearly newsletter is circulated to local residents. Complaints are recorded and reviewed through the Company's Environmental Management System. One complaint was recorded during 2017, and action was taken immediately to resolve the issue. Local sourcing and use of local business is encouraged wherever possible.

## Verification of Data

A key improvement initiative is to obtain external verification of data used to set objectives and targets. Independent Data Verification has been achieved through *NR Richards Associates Limited*, a respected construction focused organization in the field of environmental and sustainability performance.

The data presented in the table below indicates our performance during 2017, with previous year's performance shown alongside where available.

| Aspect                            | Units of Measure                      | Independently verified Company data |                     |                     |
|-----------------------------------|---------------------------------------|-------------------------------------|---------------------|---------------------|
|                                   |                                       | Year 2015                           | Year 2016           | Year 2017           |
| Energy Use                        | kWh / tonne of production             | 14.82                               | 13.66               | 14.07               |
| Energy Use                        | kWh / m <sup>2</sup> of production    | 2.44                                | 2.31                | 2.42                |
| Energy Use                        | Total kWh / year                      | 2,744,070                           | 3,143,169           | 3,143,169           |
| Carbon dioxide emissions          | Kg / tonne of production              | 5.21                                | 4.01                | 4.04                |
| Carbon dioxide emissions          | Kg / m <sup>2</sup> of production     | 0.86                                | 0.68                | 0.70                |
| Carbon dioxide emissions          | Total kg CO <sub>2</sub> / year       | 963,828                             | 922,827             | 1,018,852           |
| Transport (raw materials to site) | Tonne / delivery                      | 19.1                                | 26.9                | 28.5                |
| Transport (raw materials to site) | Average delivery distance (Km)        | 51.4                                | 82.2                | 82.3                |
| Mains water usage                 | Litres / tonne of production          | 3.49                                | 2.22                | 2.94                |
| Mains water usage                 | Litres / m <sup>2</sup> of production | 0.59                                | 0.38                | 0.51                |
| Non-mains water (borehole)        | Litres / tonne of production          | 31.5                                | 27.7                | 33.4                |
| Non-mains water (borehole)        | Litres / m <sup>2</sup> of production | 5.19                                | 4.69                | 5.76                |
| Total water (mains & non-mains)   | Litres / tonne of production          | 35.09                               | 29.97               | 36.4                |
| Total water (mains & non-mains)   | Litres / m <sup>2</sup> of production | 5.78                                | 5.06                | 6.27                |
| Own Waste recycled on site        | Kg / tonne of production              | 11.99                               | 10.03               | 12.99               |
| Own Waste recycled on site        | Kg / m <sup>2</sup> of production     | 1.98                                | 1.69                | 1.69                |
| Training and development          | Hours / employee / year               | 15.31                               | 5.20                | 3.98                |
| Local Community Relations         | Number and type of contacts           | Various initiatives                 | Various initiatives | Various initiatives |

## References

- 1) **Strategy for Sustainable Construction, BIS, 2008.**  
Download from [www.bis.gov.uk/files/file46535.pdf](http://www.bis.gov.uk/files/file46535.pdf)
- 2) **BREEAM New Construction - non-domestic buildings, Building Research Establishment, July 2011.**  
Download from [www.breeam.org](http://www.breeam.org)



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