BRICK
DEVELOPMENT
ASSOCIATION

SUSTAINABILITY REPORT

2023/24

2024

THE BRICK DEVELOPMENT ASSOCIATION

The Brick Development Association (BDA) is the national authority on clay bricks and pavers. The membership accounts for almost 99% of the clay bricks produced in the UK; the BDA members are commited to manufacturing products of outstanding quality and developing one of the nation's most productive and sustainable supply chains.

SCOPE OF DOCUMENT

The annual Sustainability Report serves as a valuable tool for assessing the performance of the UK clay brick sector. It provides a transparent overview of our environmental impact, social responsibility initiatives, and economic contributions.

By examining our progress and identifying key challenges, we can work towards a more sustainable and resilient future for the industry.

We make every effort to ensure the accuracy and quality of information contained in this report. However, we can take no responsibility for the subsequent use of this information, nor for any errors or omissions it may contain.

CHAIRMAN'S SUMMARY

Welcome to the latest Brick Development Association's Sustainability Report which has been compiled by the Brick Development Association's Sustainability Working Party.

This annual publication is an opportunity to review the collective progress being made by UK brickmakers to minimise our impacts and improve resource efficiency. It also focuses our attention on forthcoming challenges and the way in which we will approach them.

Our report helps us to reflect on the overall performance of the sector, identify the challenges we face and as a group find the right solutions.

It also provides our members with the building blocks to help meet the requirements of the 'Brickmakers Quality Charter' which gives our customers confidence that we are operating to the highest levels in terms safety, responsible sourcing, quality and employment practices.

As a sector we continue to invest in becoming more energy efficient and reduce our overall carbon emissions to support the UK in the delivery of its Net Zero ambition continuing to provide homes for future generations to come.

Dave Manley
Chairman of the Sustainability Working Party.

WELLBEING

OUR ASPIRATION

To ensure employee health, safety and wellbeing remains core to business operations across the sector and that health and safety performance continually improves.

THE CHALLENGE

Navigating a constantly evolving regulatory landscape and workplace practices, while prioritising employee health, safety, and wellbeing.

WHERE WE ARE NOW

For almost 25 years, UK brick manufacturers have come together as part of the wider ceramic sector Health and Safety Pledge Scheme, to improve health and safety performance through collaboration and sharing best practices. One example of this collective approach is the development of the sector Continual Professional Development (CPD) scheme for clay quarry managers.

There are many examples of excellent health and safety leadership within the brick sector. In recent years, the health and safety agenda has expanded, with companies increasingly focusing on mental health and wellbeing alongside physical health and safety.

In 2023, the brick sector started a project with the HSE and other industry stakeholders to evaluate brick sector respirable crystalline silica air monitoring and health surveillance data over the last 20 years. This research will help improve understanding about the risks associated with exposure and the actions that can be taken by companies to reduce this.

WHAT WE PLAN TO DO

- Show leadership and pro-actively work with others across the industry to deliver Pledge Phase 5.
- Continue to focus on the effective management of respirable crystalline silica.
- Explore further opportunities for collaborative working on health, safety and wellbeing, including the development of sector specific resources and training.
- Continue work to develop and deliver sector CPD for clay quarry managers.

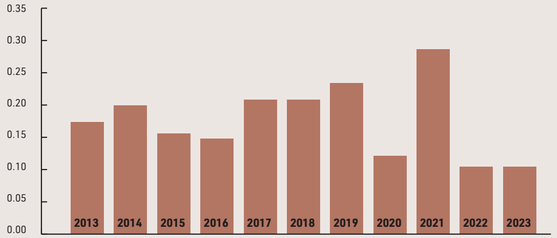
IN 2023...

The Accident Rate was **0.127,** slightly lower than the 2022 rate of **0.13 a**nd maintaining the 2021 rate which was **the lowest in the last 10 years.**

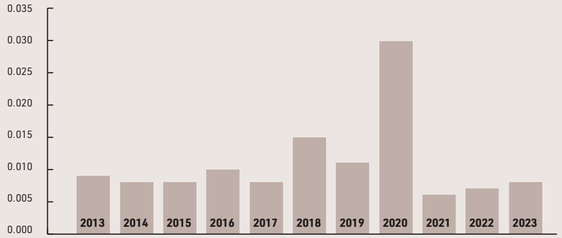
The Lost Time Injury Rate was **0.285, a decrease on the 2022 rate of 0.36.**

In 2023, the RIDDOR Reportable Injury Rate was **0.008, an increase from 2022.**

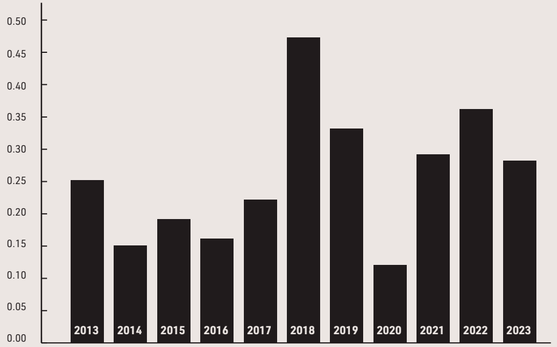
GRAPH TO SHOW ACCIDENT RATE 2013 - 2023



GRAPH TO SHOW UK BRICKMAKERS' RIDDOR REPORTABLE INJURY RATE 2013 – 2023



GRAPH TO SHOW LOST TIME INJURY RATE 2013 - 2023



THE FOLLOWING THREE KEY PERFORMANCE INDICATORS (KPIS) ARE MONITORED AND REPORTED ON EACH YEAR:

Injuiry Incidence Rate	=	Total Number of Incidents / Total Number of Employees
RIDDOR Reportable Injury Rate	=	Number of Injuries Reportable Under RIDDOR / Total Number of Employees
Lost Time Injury (LTI) Rate	=	Number of Injuries Reportable Under RIDDOR / Total Number of Days Lost

Health & Safety Pledge

CERAMIC INDUSTRY H&S PLEDGE SCHEME

The Pledge Scheme was set up almost 25 years ago to promote and support continual improvement in health and safety performance in the UK ceramics sector.

Vision: To work together (Industry, Ceramics UK, HSE and Trade Unions) to drive continual improvement in health, safety and wellbeing performance in the UK ceramics industry.

Objective: Driving continual improvement in health, safety and wellbeing performance of the UK ceramics industry.

THIS IS ACHIEVED BY:

- Engaging with industry and other stakeholders.
- Identifying priority workstreams.
- Developing and implementing a clear work plan.
- The identification of KPIs and the measurement, monitoring and reporting of performance

PLEDGE CONFERENCE AND AWARDS

Every year companies in the ceramics sector come together to celebrate success and share good practice at the Health and Safety Pledge Conference and Awards. There is strong representation from the brick sector at the conference and awards. In 2023 Ibstock Brick were awarded the Pledge Award of Excellence in recognition of their outstanding contribution to health and safety across the industry as a whole. The range of initiatives carried out across the health, safety and wellbeing agenda within their company and their willingness to share learning and support others in the sector shows that they are true leaders.

To learn more about the Health & Safety Pledge scheme and please visit **www.ceramics-uk.org**

PLEDGE PHASE 5 - PRIORITY WORKSTREAMS

TRAINING

OUR ASPIRATION

The brick manufacturing sector offers employment opportunities across a wide range of roles. The industry will continue to nurture and invest in the training and development of those who work in the sector so they can achieve their full potential.

THE CHALLENGE

One of the characteristics of the brick sector is that many employees stay in the industry throughout their careers, building a wealth of knowledge and experience over many years. It takes time and support for those new to the industry to build the knowledge and skills needed, requiring careful planning and support over the short, medium and long term.

WHERE WE ARE NOW

The industry is continuing to invest in the training and development of new and current employees, including apprentices.

WHAT WE PLAN TO DO

Training and development will continue to be high on the agenda, with the evolution of training programmes and opportunities to reflect changing industry needs, including the development and implementation of specialist apprenticeships.

HCTa Heavy Clay Technology Association

HCTa is the Heavy Clay Technology Association (HCTa). Its mission is to promote heavy clay technology on a UK and international basis and provide its members with opportunities to broaden their professional outlook, skills and qualifications.

HCTa aims to continually improve its provision of courses which provide technical meetings, events, education and training and local networking through local societies to the industry.

CQCG CLAY QUARRY COMPETENCE GROUP

The Clay Quarry Competence Group (CQCG) is an industry led forum made up of representatives from brick manufacturers and Ceramics UK, that supports the development and maintenance of competence for individuals in positions of authority in quarries, as defined in the Quarries Regulations 1999

The group is responsible for the development of the sector Competency Strategy and ensures there is a suitable Continual Professional Development (CPD) scheme and CPD opportunities available for those working in the heavy clay quarry sector.

IN 2023...

There were **90 apprentices** in the sector, around **10% lower** than previous years.

BIODIVERSITY

OUR ASPIRATION

To proactively support and enhance biodiversity through good site management and the restoration of quarries.

THE CHALLENGE

As a natural resource, clay should be extracted and used responsibly. The majority of clay brick manufacturers are landowners and are able to help offset the impact of quarrying on their sites and contribute positively to biodiversity, during extraction and also after through quarry restoration activities. The sector continues to work together to understand the contribution it makes to natural capital.

WHERE WE ARE NOW

The National Planning Policy Framework sets out sustainable development principles for the minerals sector and the framework for mineral safeguarding and extraction. Minerals can only be worked where they are located geographically and every quarry is carefully managed throughout the extraction process, and restored upon completion, in accordance with planning requirements.

The maintenance and enhancement of natural capital is a key priority for the sector and, by implementing quarry biodiversity and restoration plans, the brick sector helps to enhance local wildlife and biodiversity.

In 2023, the sector spent time preparing for the implementation of Biodiversity Net Gain, a significant change to development planning requirements that aims to leave the natural environment in a measurably better state than before. Understanding and implementing this approach to development has been a new challenge for companies but there also opportunities.

WHAT WE PLAN TO DO

- Continue close collaboration with conservation and wildlife organisations to inform effective biodiversity planning and management.
- Contribute to Government natural capital and biodiversity net gain approaches, where the sector has an important role to play.
- Help to support biodiversity by providing specialist products like Bat boxes, Swift bricks and Bee bricks that are built into homes and buildings.

IN 2023...

86% of sites are covered by a site-specific restoration plan (a 2% increase versus 2022), with 51% having a biodiversity plan, and 12% with a geodiversity plan.

WATER

OUR ASPIRATION

To use water as efficiently as possible in the manufacturing process and reduce our reliance on mains water supplies.

THE CHALLENGE

Water is needed in the brick manufacturing process to help shape bricks before they are dried and fired. The brick sector recognises the different environmental pressures on water resources and has continued work to reduce reliance on potable mains water supplies and maximise efficiency of water use where it is required.

WHAT WE PLAN TO DO

- Monitor progress against the sector's Water Policy.
- Share best practice on the responsible use of non-mains water

WHERE WE ARE NOW

Through improved monitoring and understanding of quarry de-watering, more information is being collected about rainwater collection in clay quarries. This water can then be put to beneficial use in factories, rather than using mains water.

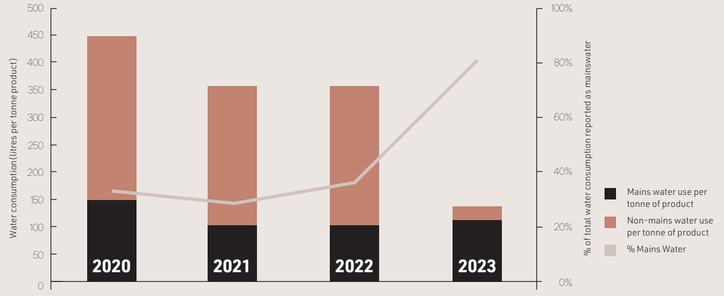
In 2023, total water consumption per tonne of product reduced by around 50% versus 2022, seemingly driven by a reduction in non-mains water use (likely attributable to weather conditions / non-mains water availability, as well as changes in production at specific sites).

IN 2023...

Total water used per tonne of product has **decreased by almost 50%** in 2023, compared with 2022.

In 2023, there was a **9% increase** in the volume of mains water used compared to 2022, with a significant reduction in non-mains water use.

WATER: MAINS, NON-MAINS WATER USE PER TONNE OF PRODUCT (2020 - 2023)



WASTE

OUR ASPIRATION

To reduce the amount of waste produced on-site during the manufacturing process and downstream in the supply chain and to minimise disposal to landfill.

THE CHALLENGE

Investment in plant upgrades and machinery refurbishment can lead to short-term spikes in the amount of waste produced in a year. For some materials such as emissions abatement waste, there are limited options other than disposal. It is important that the sector also considers further opportunities to reduce waste at source; for example, single use plastic transit packaging on outgoing goods.

WHERE WE ARE NOW

The volume of waste per tonne of brick production of product manufactured is low and the total waste sent to landfill per tonne of production since 2014, has generally been on a downward trajectory. Even though low volumes of waste are produced at manufacturing sites, companies are continuing to explore opportunities to reduce the amount of waste generated in the supply chain and options to promote the circular economy.

WHAT WE PLAN TO DO

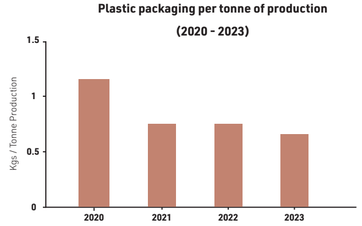
- Monitor compliance with the sector's Waste Policy.
- Continue to work together to improve understanding about the use of single use plastic packaging in the sector and to explore options and take action to reduce or eliminate its use.
- Establish the contribution that the brick and paver industry can make to the circular economy.

SINGLE USE PLASTICS

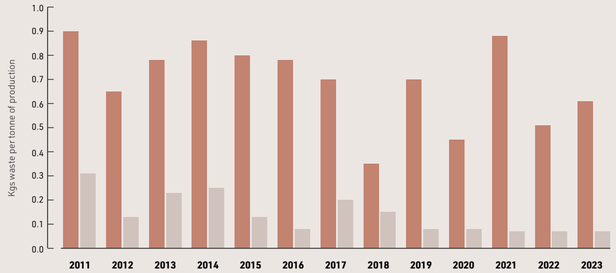
The sector Single Use Plastic Packaging Working Group is now well established and members have taken strides into achieving the shared challenge to eliminate or substantially reduce the sectors consumption of single use plastic packaging. Following a period of sharing best practice and innovation on the reduction and elimination of single use plastic packaging, the group has worked with Changing Streams to benchmark sector progress and improve understanding about work taking place in other sectors. A sector Roadmap has also been developed which sets out priority actions and further collaborative work will take place to implement this.

IN 2023...

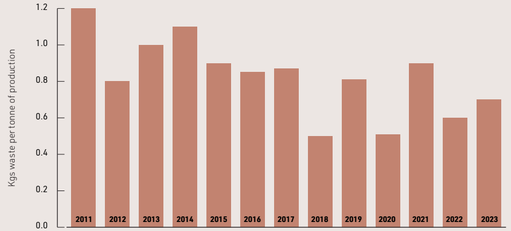
Plastic packaging per tonne of production has **reduced by 14%** versus 2022, with a general longer-term trend in a reduction in plastic packaging use also seen.



DISPOSAL OF HAZARDOUS AND NON HAZARDOUS WASTE TO LANDFILL



WASTE TO LANDFILL PER TONNE OF PRODUCTION



OUR ASPIRATION

To use resources as effectively as possible; demonstrated through the assessment and understanding of clay bricks' role in a circular economy, supported by a robust methodology and evidenced through case study examples.

THE CHALLENGE

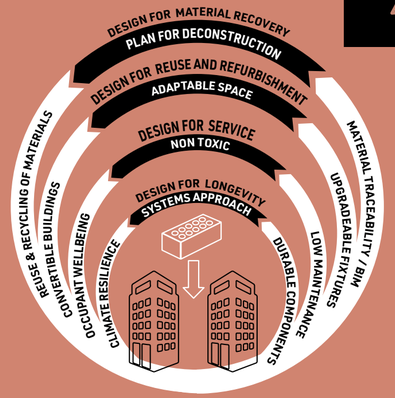
Clay is the principal material used in the manufacture of clay bricks. The transformation of clay into a ceramic product provides inherent durability, strength and long-lasting performance.

Clays are responsibly and locally sourced by companies, and whilst a small quantity of alternatives (Materials from Alternative, Recycled and Secondary Sources - MARSS) are used, further research is needed for clays to be further substituted to ensure the performance characteristics are not compromised.

Clay bricks lend themselves to the design of buildings along circular economy principles, where their long service-life and adaptability are key features, for a truly sustainable building. Nevertheless, application of the circular economy model to long-life construction products, like clay bricks, needs more development as to-date activities have tended to focus on high-value, short-life consumer products such as electronic goods. The sector is also embracing Modern Methods of Construction by producing products such as brick slips and utilising modular building techniques to lower overall resource consumption.

WHAT WE PLAN TO DO

- Continue sector-specific engagement around the circular economy and production of case studies, to encourage decision-making based on whole-life product performance.



KEY STATISTICS

150 Where installed and maintained correctly, clay bricks can have a service life in excess **of 150 years.**

99% of clay brick production is covered by **BES 6001 'Responsible Sourcing' certification.**

CLIMATE CHANGE

OUR ASPIRATION

In order to reduce the impact on climate change the sector is working to:

- Improve energy efficiency in the manufacturing process and, reduce associated carbon emissions (from energy use) generated during manufacturing.
- Use clay resources as effectively as possible and reduce embodied carbon.

THE CHALLENGE

Brick manufacturing - firing clay bricks to over 1000°C - is energy-intensive. Once a kiln is up to temperature it will run most efficiently if production levels are maximised. Energy efficiency and CO_2 emissions are therefore linked to market demand for clay brick.

Whilst incremental efficiency improvements are important, more fundamental 'step-changes' in decarbonisation require new manufacturing technologies, such as fuel switching. Research and development is key in ensuring that technical challenges are overcome. Clays also generate process emissions, which are technologically difficult to abate.

WHERE WE ARE NOW

The clay brick Environmental Product Declaration (EPD) shows that over the product's whole life-cycle, including construction / in use / end of life of a building, overall carbon emissions are low per year of service life.

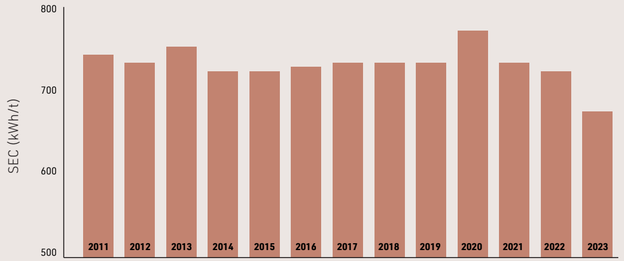
KEY STATISTICS

Around **95%** of the sector's overall electricity use is procured from **certified renewable energy sources** or generated on-site.

Almost **100% of production** is covered by a **certified Energy Management System** (EnMS), ISO 50001.

In 2023 there was a **6% improvement** in energy-efficiency (versus 2022), likely attributable to product adaptation and **investment in new production plants.**

SPECIFIC ENERGY CONSUMPTION PER TONNE OF PRODUCT



CARBON EMISSIONS

THE CHALLENGE

Carbon emissions from clay brick production are made up from a combination of:

- Direct emissions from fuel consumption (primarily natural gas).
- Indirect emissions from electricity (although the majority of electricity is now procured as certified renewable or generated by companies on-site).
- Process emissions (from clays / additives) which are released during product firing.

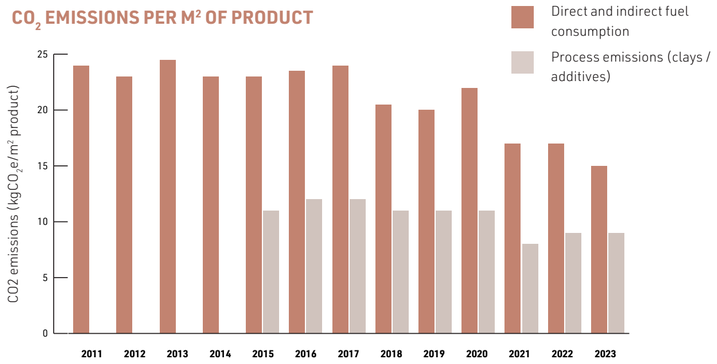
WHAT WE PLAN TO DO

- Companies in the UK clay brick sector, both individually and collaboratively (and supported by various innovation and funding opportunities) are developing projects to help reduce energy consumption and carbon emissions.
- The industry has already predominantly switched from higher CO_2 emitting fuels (like coal) to natural gas.
- Other low-carbon fuels, like hydrogen or electric-firing will be needed in the future to contribute to the UK Government's net zero 2050 emissions target for the UK.
- BDA members are already actively involved in work or projects to explore on-site technical challenges with the adoption of alternative fuels. These include firing with hydrogen and bio-energy. These are recognised as key future technologies for the industry, and any rollout will need to be coordinated with national energy infrastructure decisions.
- Process emissions are more-challenging to abate, although companies are actively exploring ways to substitute materials and also adapt products.
- Most BDA companies are signed-up to the 'British Ceramics: Towards Net Zero' initiative to assist in the roll-out of best practice and support collaboration amongst the industry and key stakeholders.
- The UK Emissions Trading Scheme continues to be a key driver for industry improvement, covering 99% of clay brick sector emissions.
- The broader UK Ceramics Industry has published an Industry Decarbonisation Roadmap - https://www.ceramics-uk.org/knowledge-1/decarbonisation-roadmap - which sets out the sector's ambitious plans to decarbonise through to 2050, working in collaboration with Government / other stakeholders.

WHERE WE ARE NOW

- There has been an 8% reduction in total kg CO_2/m^2 of product (versus 2022) likely attributable to overall sector brick weight reduction, procurement of renewable energy, continued shift to lower-carbon fuels, and investment / roll-out of new production plant.
- Process emissions have tended to stay a constant, reflecting the current technical challenges to abate them, however product light-weighting and material substitution are contributing to their gradual reduction.
- Total carbon emissions (from fuel use and process emissions) have been calculated at 24kg per m^2 of brickwork in 2023 (as an average of all clay bricks).

CO_2 EMISSIONS PER M^2 OF PRODUCT



INDUSTRY VALUE

OUR ASPIRATION

To demonstrate the industry's ongoing commitment to investment in plant, machinery and new technologies.

THE CHALLENGE

Capital investments are made on the basis of long-term planning / investment cycles, typically spanning ~40 years for a brick manufacturing plant. There are around 40 brick manufacturing sites in the UK and it is imperative that investment is focussed where it is needed to support the industry's future.

WHERE WE ARE NOW

Despite challenges such as Covid and uncertain market conditions, members have increased investment in 2023 to over £88M, not only an improvement on 2022 but more than double the investment in 2024 and higher than 2019 levels. This has included significant investments in new 'state-of-the-art' factories; illustrating the sector's long-term commitment to UK manufacturing and helping deliver continuous improvements, particularly in energy-efficiency and carbon reduction in the sector's transition to a net zero future.

The sector's commitment to continual improvement is illustrated by the impressive statistics on implementation of formal management systems; with the production process almost in its entirety covered by certified environmental, quality and energy management systems.

WHAT WE PLAN TO DO

- Continued investment in factories, plant and machinery.
- Investment in technology and innovation to aid the transition to net zero.

KEY STATISTICS

Over £88m of investment in 2023 taking investment over last decade to around £550m.

The sector employs around **3,600 people directly**, with more in the supply chain.

Almost 100% of production was covered by certified Quality, Energy and Environmental Management Systems.

COMMUNITY

OUR ASPIRATION

To be a positive and proactive contributor to the local communities in which we operate.

THE CHALLENGE

The geographic distribution of clay construction product manufacturing operations in the UK, largely reflect locations where suitable mineral reserves are situated, with clays often sourced from company owned quarries located near to their manufacturing plant.

Companies are often located in close proximity to residential and other areas, therefore the sector's proactive engagement with local communities is especially important.

WHERE WE ARE NOW

Community engagement by brick companies continues to be high, with educational visits and site tours hosted by manufacturers to build a better understanding of clay quarrying and brick manufacturing. Quarry excavation can often uncover exciting historical finds, which allows specialists group like archaeologists to better understand our past.

WHAT WE PLAN TO DO

- The sector will continue to facilitate community engagement with local communities across the UK.

KEY STATISTICS

All UK brick manufacturers are involved in **community liaison activities** and, many with active liaison committees.

Other ways in which companies support local communities include the **sponsorship of local groups and events**, **employee volunteer programmes** and **charitable donations.**

PROJECT 80

The UK Government has set a target to bring all its greenhouse gas emissions to net zero by 2050. The construction industry will make a big contribution to this with the Government set to introduce new building standards known as the 'Future Homes Standard' (FHS), in 2025. While the new standards are not due to be implemented until 2025, Project 80, an initial development of 12 homes in Birmingham, have been built to meet the Future Homes Standards three years ahead of schedule. The development is believed to be the first of its kind in the country and through the use of latest technologies, economic considerations, and modern building techniques, aims to achieve up to 80% less carbon emissions than a standard newbuild development.

As part of the project, Ibstock has supplied its Chesterton Memorial Mixture brick as a facing brick, to help the homes meet the stringent FHS standards. The wirecut, red multicoloured perforated brick is ideal thanks to its F2 graded durability qualities that ensure long term reliability, and weather resistance capabilities, including frost, to help with insulation goals. Furthermore, the brick possesses a low soluble salt content (S2) and has water absorbance of just 7%, with these qualities contributing to Project 80's performance and environmental goals. The bricks are developed at Ibstock's Chesterton factory, circa 1hr from the Project 80 site, considering off-site environmental considerations also. All of this is achieved with no compromise to aesthetics despite performance and environmental considerations. Interestingly, feedback from the development includes challenges surrounding 'full-fill' PIR insulation, which bricklayers found tricky at times, with small deviations in cavity width having an impact on installation. This has led to the use of a partial-fill 100mm PIR board now being explored as an alternative alongside modifications to heating and ventilation for future FHS building standard developments, proving the success of the project and importance of brickwork within it.

The final result of Project 80 sees the completed houses look like traditional brick construction dwellings, thanks to the flexibility and performance of Ibstock's trusted Chesterton Memorial Mixture bricks. Their adaptability has ensured that differing methods of construction and the materials used have been harnessed fully to generate the desired results of the project regarding thermal efficiency. With the consideration that from 2025 new homes will have to meet more stringent building fabric requirements; utilise a low carbon form of heating and hot water, and generally, emit 75-80% less carbon than homes built under current regulations, it is impressive to see a company founded in the 1800's has a portfolio that is able to not only meet, but surpass today's building requirements and trailblaze for the industry in its journey to becoming more environmentally sustainable.

SHREWSBURY FLAXMILL MALTINGS

Historic England's flagship restoration of Shrewsbury Flaxmill Maltings, the world's first cast iron-framed building, is a testament to traditional craftsmanship.

Originally built in 1797 as a steam powered flax mill, the building was repurposed as a maltings from 1897 to 1987 before falling into dereliction.

In 2005, Historic England bought the site and partnered with Shropshire Council and Friends of the Flaxmill Maltings, to secure a £20.7 million grant from the National Lottery Heritage Fund in 2017 for the restoration of the Grade I listed Main Mill and the Grade II listed Kiln and its repurposing as a vibrant business hub and heritage destination.

Croft Building & Conservation worked on a comprehensive programme of repair, reuse and retrofitting, combining modern sustainable practice with traditional materials and over 80 skilled craftspersons.

The original five story Main Mill building, which had a frame comprising three rows of cast iron columns with beams extending between them and brick arches between the beams forming the floors, had serious structural flaws and required significant strengthening measures.

Embedded timber had also rotted causing walls to delaminate compromising the structure and so a thirteen-step plan to safely remove the timber and reinstate the brick elevations was developed.

The walls were thermally upgraded with wood fibre insulation and finished with lime plaster and the existing masonry was repointed with lime mortar to ensure that the moisture wicked away. Craftsmen were retrained in these traditional specialised methods.

The Main Mill was originally built with 'great bricks' which were approximately one-third larger than standard bricks to reduce the burden of the 18th century brick tax. These were cleaned off and re-laid in lime mortar.

Northcot made 90,000 bespoke oversized bricks in two sizes (75 & 93mm) for three different blends, all hand thrown and kiln fired using traditional methods and weathered to match both colour and texture of the originals. Their size (93mm) required significant hand throwing skills from a team of experienced master brickmakers.

The new bricks were used primarily for the reopening of 110 Flax Mill era windows, (bricked up or made smaller when it was a maltings) and for repairing gaps in the floorplates, which were created when the maltings machinery was removed. Special brick squints were made for the splayed window reveals to reduce dust and waste.

Whilst reinstating former window openings, Georgian brick pavers were discovered and skilfully re-used to form the window cills.

New bricks were also used to repair the roof line and where the Main Mill joined the Engine Houses, Jubilee Tower and Kiln structures.

To help reverse declining craft skills, a heritage skills programme, supported by the Andrew Lloyd Webber Foundation, was delivered on site through work placements, site tours and training at all levels for students to industry professionals. Partners included Shrewsbury College, Telford College, Prince's Foundation Building Craft Programme.

Training sessions included bricklaying placements and hands-on experience in traditional brick making for college students.

Published by the Brick Development Association. (BDA).

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