AGGREGATE INDUSTRIES

ALL ABOUT CAULDON CEMENT PLANT

A MEMBER OF HOLCIM

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About the plant

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About the plant - Summary

Cauldon cement plant is located between the villages of Cauldon and Waterhouses in Staffordshire and was the UK's first dry process cement manufacturing plant. The plant has been in operation since 1957 and facilitates the following:

- Capacity to produce up to 1 million tonnes of cement per annum
- The annual extraction of over 1 million tonnes of carboniferous limestone and 220,000 tonnes of shale from neighbouring quarries for use in the cement making process
- 125 directly employed staff and 30 indirectly employed
- In 2021 £13m was invested in new technologies, which will reduce annual CO2 emissions by up to 30,000 tonnes

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Operations at the plant

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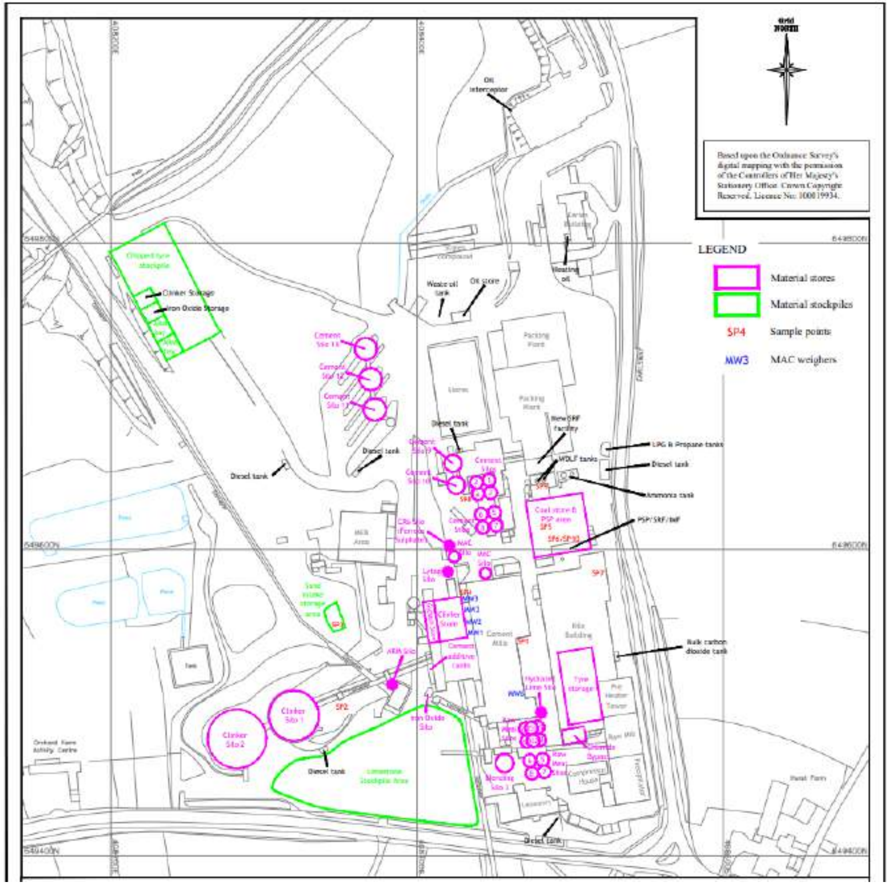
About the plant - The site layout



Operations at the plant - What you see

Weather conditions, coupled with the process inside the plant, result in very different visual outputs from the chimney stack. The following photos were taken whilst the kiln was in normal operation, showing that the visual effect can vary significantly depending on the weather.

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Managing our environmental impact

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Managing our environmental impact - History

We have been manufacturing cement at our Cauldon plant for over 60 years and during this time environmental standards have changed beyond all recognition with emission limits becoming much more stringent. Cauldon has always adapted to these higher standards through innovation and improvements to the plants. A few of our most significant changes are listed below:

1978 - First time alternative fuels were used, helping reduce carbon emissions from burning fossil fuel whilst also providing an alternative to landfill

1985 - The three old kilns were replaced with a single Pre-calciner kiln. This meant less fuel was needed to heat the kiln.

2003 - Processed sewage pellets used as fuel. The harmless pellets are widely used in agriculture and this application help us reduce our carbon emissions

2009 - Solid Recovered fuel (SRF) used as a fuel helping us reduce our carbon emissions. These are the same fuels that will be used on a larger scale following the commissioning of the Alternative Fuels Facility

Managing our environmental impact - Emissions

What are they?

The main emissions from the Kiln Main Stack are Carbon Dioxide and Water Vapour, this is the steam you sometimes see if the weather conditions allow, much like the difference you would see when boiling a kettle in a cold or hot room. Other emissions are Oxides of Nitrogen (NOx), Sulphur Dioxide (SOx), Carbon Monoxide (CO), Particulates (Dust) .

What are the controls and limits?

All emissions are continuously monitored against limit values to show they are at safe levels. Our performance against these limits can be viewed on the Public Register held by the Environment Agency and discussed out our quarterly Community Liaison meetings.

Managing our environmental impact - History

2011 - The commissioning of our closed loop water system, dramatically reducing our use of freshwater.

2017 - Installation of Lime Abatement to reduce Kiln Main stack emissions

2021 - Paper Crumb and Alternative Fuels used to further reduce CO2 emissions, equivalent to approximately 782,452 trees growing for 1 year

Managing our environmental impact - Emissions

A cumulative effect of all of these changes now means that the manufacture of cement emits, on average, 0.22kg of dust per tonne of cement, down from 0.37kg in 1998. Furthermore we have also made significant strides in reducing the amount of dust that is emitted from the Kiln Main Stack. Prior to 2000, the limit on particulates (dust) from the Kiln Main Stack was 120 mg/m^3. Today, **Cauldon typically achieves less than 30mg/m^3**.

Turning to the smaller stacks on site, the limits on particulates (dust) within the Clinker Cooler have reduced drastically from 100 mg/m^3 to 10 mg/m^3 and at the Cement mills from 50 mg/m^3 to 10 mg/m^3.

Moreover, we have substituted some of our conventional fuels which were typically coal, oil or gas with alternative fuels which include processed sewage pellets, solid recovered fuel and waste derived liquid fuel). This means that **Cauldon now meets over 40% of its heat requirement from waste-derived and solid-recovered fuels** which helps lower our CO2 emissions, contributes towards a circular economy and helps to lower costs. We explore this in further detail on the following page.

Managing our environmental impact - Use of waste

We understand that the use of alternative fuels at our Cauldon Plant can create some concern, however we adhere to a strict Code of Practice set out by the Environment Agency.

In this code of practice there are 101 different waste types that can be used in cement kilns as non-fossil fuels or waste-derived (co-processed) fuels, however in reality we only use five different types of waste. Processed Sewage Pellets (PSP) - made from sludge that remains after sewage treatment which is heat-treated, making it as harmless as garden soil and are also used by farmers as a soil conditioner.

There is a slight residual odour so the material is stored and transported in a fully-enclosed system on the plant.

Solid Recovered Fuel (SRF) - derived from a mixture of paper, plastic and biodegradable waste generated from homes and businesses. The material is treated to dry it out off-site and produces a partly biomass fuel.

Chipped Tyres - made from scrap car tyres that are shredded.

Managing our environmental impact - Use of waste

Impregnated Material Fines (IMF) - derived from oil filters, where the metal parts are removed and the oil is spun out of the fabric. The material is then shredded to produce a partly biomass fuel.

Waste derived liquid fuel (WDLF) - a tightly specified blend of waste products with high energy content. It is made from materials found in everyday products such as paint, solvents and degreasers.

Paper Crumb (Alternative Raw Material) - derived from paper recycling, this alternative raw material is from the fines that can not be recycled as part of the process. This material is not used to generate energy but is instead used within the cement product.

Managing our environmental impact - Use of waste

If we wish to use any new fuels proposed they have to be communicated to stakeholders prior to use and their impact on the environment agreed by the Environment Agency. However, their use brings the following benefits:

Environmental

- Reduces the amount of fossil fuels used
- Reduces the overall emissions from the process
- Recovers energy from otherwise waste material
- Reduces the amount of material being thrown away in landfill sites

The business

- Buying energy, traditionally in the form of coal, is one of the main costs in making cement
- These fuels are used to heat the raw materials to temperatures in excess of 1450 Degrees C. This is the temperature needed to make cement clinker, and is hotter than lava!
- There is a major cost saving from using waste fuels, rather than coal

Managing our environmental impact - Net-zero

It is widely accepted that the consequences of global warming – severe weather events such as heat waves, storms and droughts – present us with the greatest challenge of our time.

That is why we are committing to very challenging targets over measurable timeframes starting with a commitment to reduce our specific Net CO2 emissions to less than 500 kg of CO2 per net tonne of cement by 2025. This will be achieved through investment and innovation, including the increased use of waste derived fuels that have been previously mentioned.

Managing our environmental impact - Water reduction

At Cauldon we've used an exhausted shale quarry to provide water for the cement production process, meaning that we no longer draw freshwater from the nearby River Hamps, which is in an area that has been labeled as a UK Site of Special Scientific Interest and Special Area of Conservation, as well as an EU Special Area of Conservation. The use of the lake also acts as a flood control and containment facility, reducing the impact of flash flooding on the nearby village of Waterhouses.

Whilst this means that the only freshwater used at the plant is within the office areas we are still committed **to reducing this by a further 30%** by 2025, when compared to 2018 usage.

Exhausted shale quarry now

Managing our environmental impact - Compliance

Finally, and as you would expect a key part of managing our environmental impact is to ensure that we remain compliant with a wide array of environmental legislation, of which Cauldon is subject to the following:

- Environment Act
- Environmental Protection Act
- Pollution Prevention & Control Regulations
- Waste Incineration Directive
- Climate Change Agreement
- UK Emissions Trading Scheme (UK ETS)
- Water Resources Act
- Groundwater Regs
- Oil Storage Regulations
- Hazardous Waste Regs
- List of Wastes Regulations
- The Clean Neighbourhoods and Environment Act
- Landfill Regs
- Contaminated Land Regime

If you would like to learn more then the legislation can be viewed in full at www.legislation.gov.uk

Managing our environmental impact - Accreditations

To ensure that we remain compliant with this legislation we have strict management systems, of which many are externally accredited and audited. This is in addition to our comprehensive internal audit programme.

bsi. ISO 9001 Quality Management

bsi. ISO 50001 Energy Management

bsi. ISO 14001 Environmental Management

bsi BES 6001 Responsible Sourcing of Construction Products CERTIFIED

bsi. ISO 45001 Occupational Health and Safety Management

bsi ISO 44001 Collaborative Business Relationships CERTIFIED

PAS 2080
Carbon Management in Infrastructure Verification

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Our Sustainability Strategy

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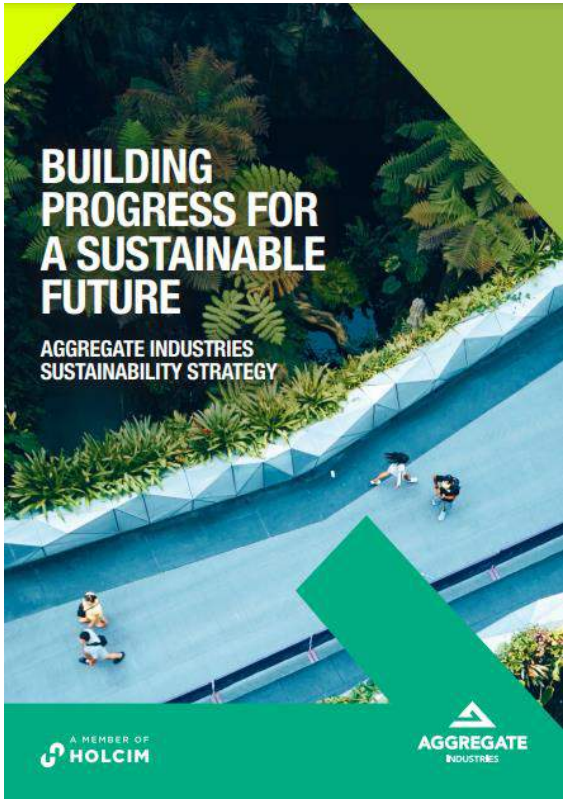
Our Sustainability Strategy

In April 2022 we launched our Sustainability Strategy, which sets out our commitment **“TO BE A UK LEADER OF INNOVATIVE AND SUSTAINABLE BUILDING SOLUTIONS”.** To achieve this the strategy is structured around 5 pillars:

- Climate
- Nature & Environment
- Circular Economy
- People & Communities
- Sustainable Products



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People & Communities

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People & Communities - Our staff

Our colleagues at Cauldon are the sites most important asset, and our main responsibility is to ensure that everyone returns safely to their homes and families everyday. We therefore strive to ensure that Health & Safety, combined with positive mental wellbeing is deeply rooted into the company's culture.

Furthermore we are committed to ensuring that we have an inclusive working environment at all sites where everyone is welcomed and appreciated for who they are, no matter their gender, ethnicity, sexuality or any other characteristic.

In doing this we hope that it makes the Cauldon Cement Plant somewhere that they want to work, and a place that they would recommend to others.

People & Communities - Local communities

We recognise that our local community are integral to the past, current, and future success of our cement plant. We are committed to not only continuing our past successes but to also learning from where we could have done better.

The only way that we can do this is through a mutually collaborative relationship, that is built upon trust, respect, and transparency. Whilst the pandemic has significantly hindered our ability to engage face to face as we would have liked we have continued to virtually meet our Community Liaison Group on a quarterly basis (more on this on the following slide).

We do however recognise that our neighbours may from time to time want to contact us directly to discuss a particular matter or concern. This is something that we welcome and full details on how to do this can be found on our dedicated Cauldon webpage.

People & Communities - Community Liaison Committee

The community liaison group is borne out of our Section 106 planning agreement and is the plants primary mechanism for engaging with all of our external stakeholders. Whilst the Section 106 only requires us to meet on a bi-annual basis, we recognised that this is not enough and instead we meet quarterly. The membership of the group is diverse to ensure that all stakeholder views are heard with the current membership listed below.

Officers:
PPC Compliance Officer-Environment Agency- Midlands Region
Principal Planning Regulation Officer -Staffordshire County Council

Elected Councillors:
Staffordshire Moorlands District Council
Waterhouses Parish Council
Cotton Parish Council

Elected Representative of local residents and local businesses:
Cauldon Church Warden
Headteacher, Waterhouses CE Primary Academy
Waterhouses Medical Practice

Employees:
Lafarge Cement-Industrial Director, Plant Manager Cauldon
Geocycle & Circular Economy Lead - UK
Lafarge Cement- Capital Projects Manager
Lafarge Cement- Environment Manager

Other appropriate persons:
Aggregate Industries-Estates Surveyor - Midlands
Aggregate Industries- Caldon Low Quarry Operations Manager
Lafarge Cement- Production Manager/ Operations group for Geocycle Facility

Secretarial Support:
Lafarge Cement- Admin Assistant

People & Communities - Volunteering & donations

Furthermore, we recognise that there are sometimes ways in which we can support our local communities which can take a variety of forms including educational visits, supporting projects through staff volunteering, or the donation of materials or money. Whilst the pandemic again somewhat hindered our ability to do this during 2021 the plant was still able to support nine local projects and make monetary donations of over £6,500.

If you would like to request a donation from the plant then please complete the form which can be found by requesting access to the form here, filling it out, and a member of staff will be touch with you directly soon after.

People & Communities - Educational visits & open days

We also host educational visits for local schools, and on a three yearly basis run a community open day which includes activities for children, tours of the plant, and gives the opportunity for our neighbours to speak directly with colleagues working at the plant.

We understand that this is something that is valued by our local community and regrettably our 2021 open day had to be cancelled due to Covid-19 restrictions at the time. We have however just delivered an open day on Saturday 17th September 2022.

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Contact Cauldon

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Contact Cauldon

Cauldon is a large site and as such management of different areas is split between people. Key contacts for community liaison are Stuart Hutchings, who heads up our cement operations at Cauldon, and Hannah Clark, Lafarge Cement's Environment Manager.

Stuart Hutchings

Industrial Director - Cement UK
Plant Manager - Cauldon

Hannah Clark

Environmental Manager - Lafarge Cement Cauldon

For any concerns, please contact Hannah Clark at hannah.clark@holcim.com or call the site on 01538 308000