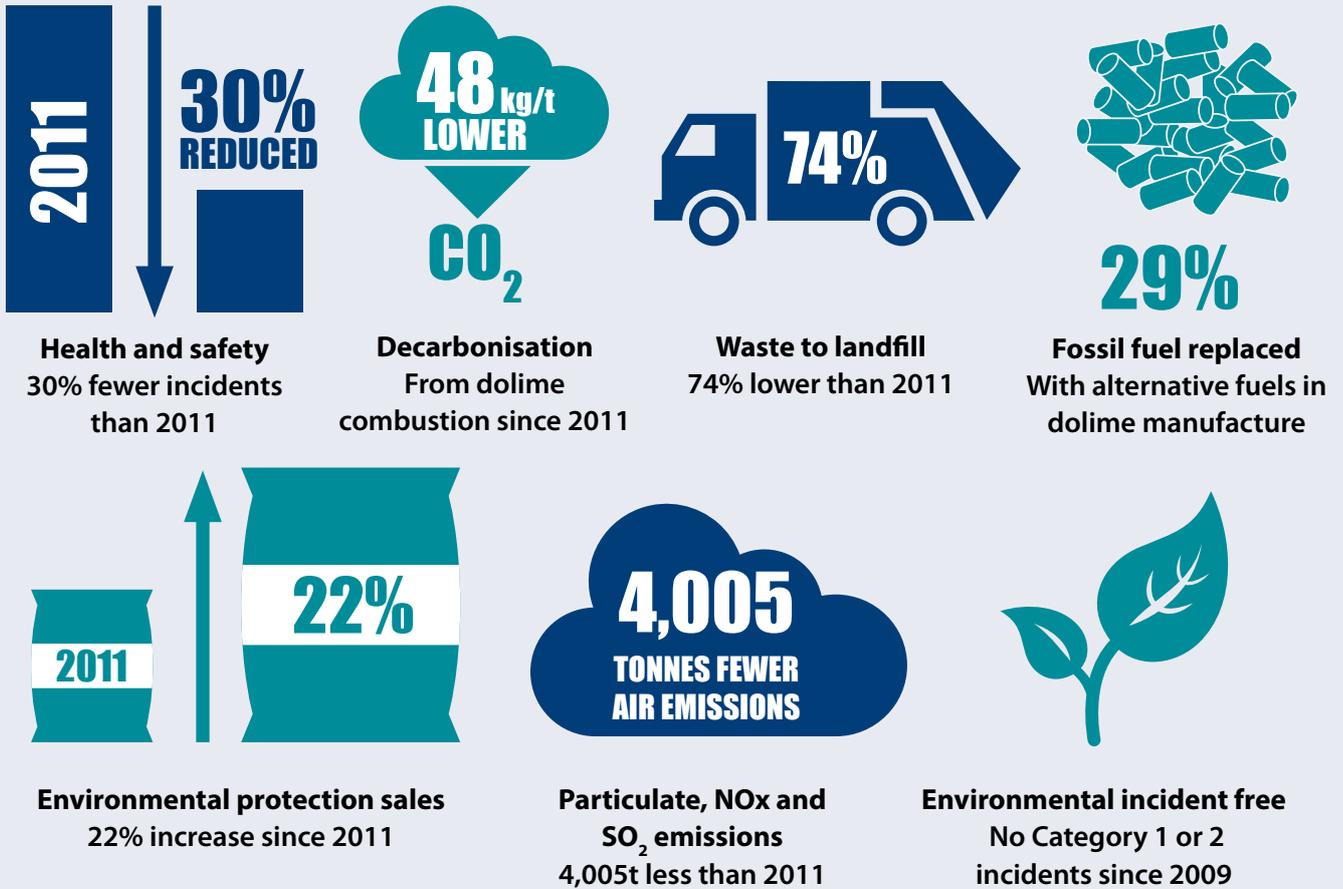




British Lime Association Sustainable Development Report 2021

SUMMARY OF PERFORMANCE



MPA STRATEGIC PRIORITIES

The British Lime Association (BLA) Sustainable Development Report aligns with the seven strategic priorities underpinning the MPA Vision for 2025: ‘to be valued as an essential and economically, socially and environmentally sustainable industry of significance to the economy and our way of life’.

Despite the challenges of 2020, the BLA was glad to see lime manufacturing recognised as an essential industry, enabling ongoing production. Lime is an essential product for the proper functioning of drinking water and wastewater treatment plants and is vital for the treatment and sanitation of sludge from these operations. Lime is used to clean emissions from waste incinerators, energy from waste plants, and other large combustion plants. Lime is also used in the manufacture of primary materials (e.g. steel, plastics) that are used to produce other goods that were deemed critical to combating COVID-19.



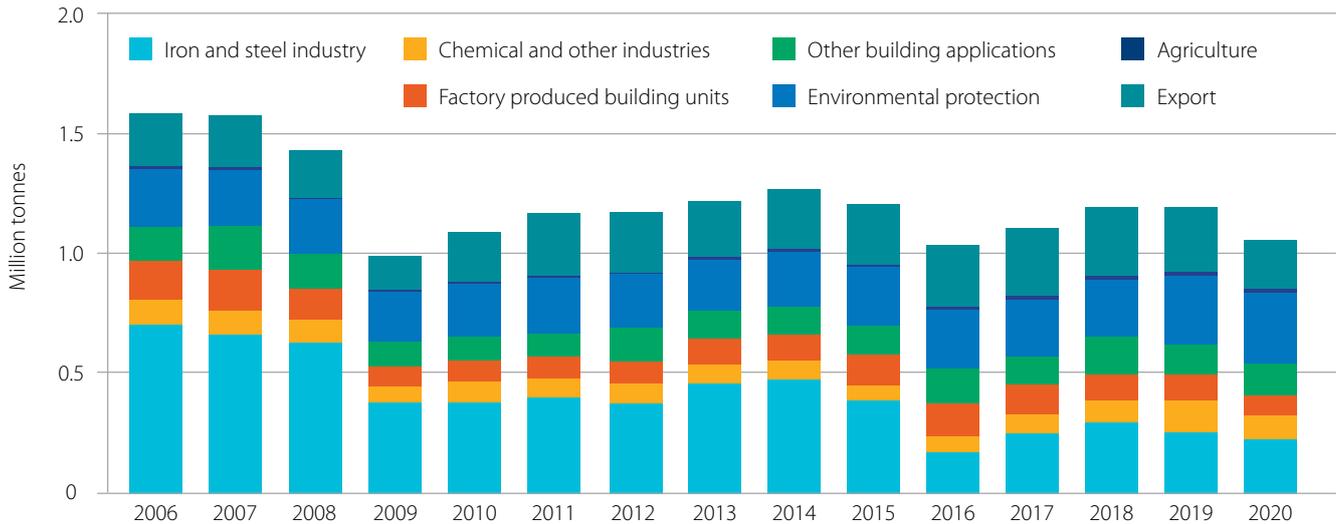
Communicating Industry Value



BLA Members continued manufacturing lime during the 2020 COVID-19 lockdown, as lime is fundamental to the essential industries identified by the Government – supporting the water, primary industry, chemicals, and waste sectors. The pandemic has highlighted the critical need for UK lime production to ensure national resilience at times of crisis.

Despite continued production, as with many sectors, the COVID-19 pandemic affected markets and sales fell, particularly in construction markets. BLA Members maintained export markets during these difficult trading conditions.

Environmental protection sales remained strong during 2020, and have increased 22% since 2011, demonstrating the importance of lime to clean air, pure water, and pollution prevention.



Health and Safety



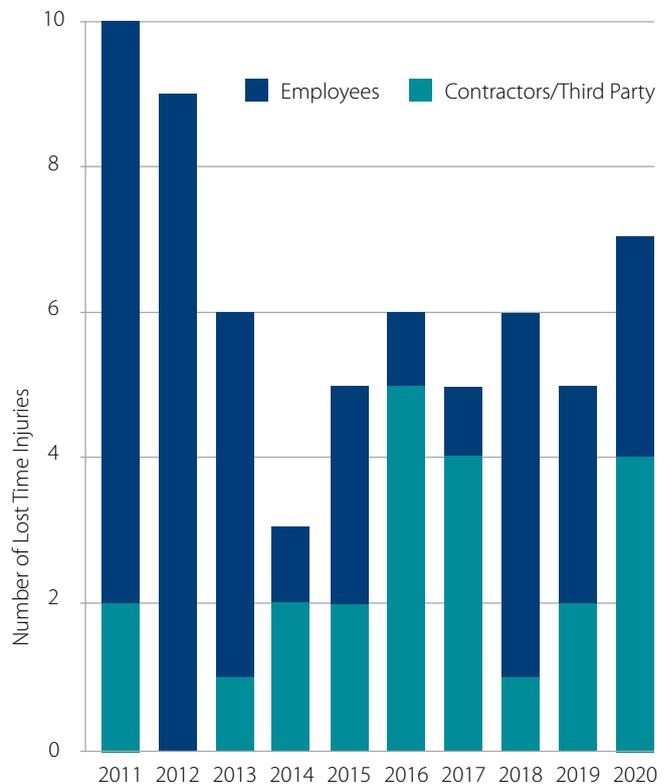
OBJECTIVE: EMPLOYEE AND CONTRACTOR HEALTH AND SAFETY

Treat the health, safety and well-being of employees, contractors and visitors as the number one priority in order to realise Vision Zero.

Health and Safety considerations have remained paramount throughout the COVID-19 outbreak and BLA Members adapted quickly to implement new hygiene practices required to safely continue production, whilst continuing to focus on good Health and Safety performance.

Despite these efforts, lost time injuries remain stubbornly high, although they are reduced compared to a 2011 baseline. BLA Members and Associate Members maintained active collaboration during 2020, albeit virtually, to share best practice, review incidents and drive towards the Vision Zero objective.

For example, during 2020, an e-learning tool on hand-injuries was published for BLA and MPA Members. The e-learning tool built on discussions and best practice identified during a face-to-face workshop held in 2019.



People



517 direct employees



15,675 employee training hours



£18k charitable donations made



16 local liaison meetings



74 visitors to lime plants

OBJECTIVE: LOCAL COMMUNITIES

Engaging fully with local communities and striving to be a good neighbour.

BLA Members appreciated the recognition and support from their local communities during the COVID-19 outbreak which has helped to continue delivering this essential and versatile material.

Adapting to the new circumstances, BLA Members continued to engage with their communities, virtually when necessary, and were able to welcome some visitors to sites during the first months of 2020. The adoption of safe working practices have meant that routine essential visits – such as safety or environmental inspections – were able to take place if absolutely necessary.

OBJECTIVE: EMPLOYMENT

Improving the profile and perception of the sector to attract employees and offer rewarding career opportunities.

The BLA accepted there had to be a changes to the academic Symposium showcasing UK research on lime – now being held virtually in October 2021. However, the wide availability of online meetings meant it was possible to engage with a much wider range of academics than would have previously been possible.

We are delighted that our efforts a have helped us identify new research and build new relationships - all of which will enhance the content of the Symposium on 13 October 2021.

Lime is used across a diverse range of markets and manufacturing involves quarrying, high temperature processing, emissions control and environmental management, bulk storage and transport logistics, as well as health and safety. The Symposium is free to attend and includes:

- 14 keynote and online presentations
- 9 video posters
- 14 academic institutions represented
- Presentations on innovations from UK lime manufacturers
- Live Q&A sessions
- Regular screen breaks:

You can find more information on the BLA Website: www.britishlime.org/news/Symposium2021.php



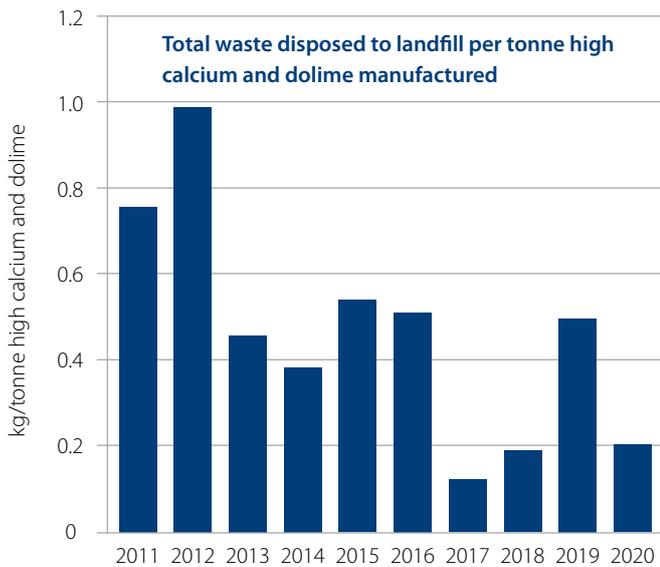
Resource Use



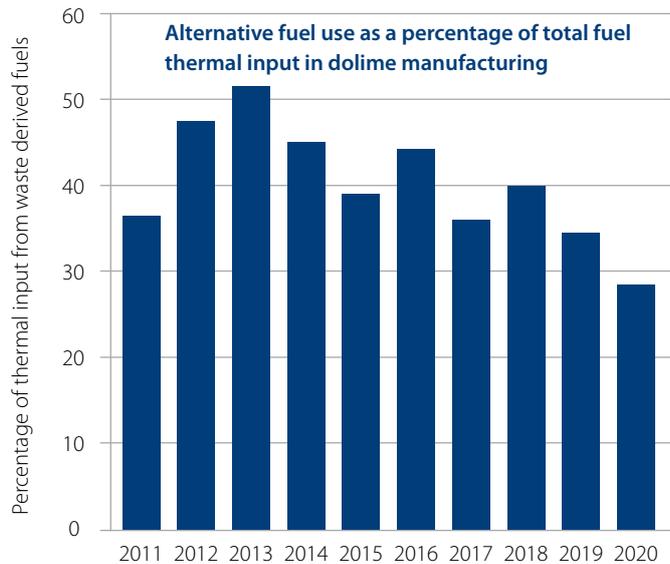
OBJECTIVE: WASTE

Minimising waste and maximising re-use and recycling.

All BLA Members and Associate Members continue to minimise the waste they send to landfill, seeking recycling and recovery routes where possible. Waste to landfill was low again during 2020 following an increase due to major onsite works in 2019.



OBJECTIVE: CARBON AND ATMOSPHERIC EMISSIONS



Dolime manufacturing has reduced its CO₂ emissions from combustion by using alternative fuels from biomass sources. These emissions have reduced by 7.5% compared to 2011 and are now around 588 kg CO₂/tonne dolime, compared to 636 kg CO₂/tonne in 2011.

Dolime producers continue to use waste derived fuels as an alternative to fossil fuels. As the mineral content of fuels is recycled into the dolime product, the specification of input materials is strictly controlled and the quantity of waste derived fuels used in any year will depend on market demand for different product types as well as on the availability of appropriate waste derived fuels.

The variety of dolime products available influences the quantity of process emissions, with highly calcined products resulting in higher emissions than products that are less calcined. In this way, CO₂ emissions from dolime manufacturing are dependent on market demands.

The option to use waste derived fuels is not available to high calcium lime manufacturers who rely on natural gas to maintain the high purity required by the product standards of their diverse markets. This means that clean burning alternative fuels, such as hydrogen or biogas, may be more suitable replacements.

The BLA are working on a project to demonstrate the use of hydrogen as a fuel for lime manufacturing, funded by the Department for Business, Energy and Industrial Strategy (BEIS) Energy Innovation Programme. Despite the COVID-19 lockdown, the project made significant progress during 2020, although the availability of sufficient quantities of hydrogen gas remains a challenge. The full scale demonstration is expected to be completed by March 2022.

You can find more details in the Sustainability section of the BLA Website – www.britishlime.org/sustainability/energy_innovation.php

Climate Change and Energy



OBJECTIVE: CARBON AND ATMOSPHERIC EMISSIONS

Reducing emissions in accordance with the MPA carbon route maps and Government objectives.

BLA Members and Associate Members manage carbon dioxide (CO₂) emissions in accordance with Emissions Trading Systems (ETS). Under an ETS, emissions of CO₂ from high calcium lime production are normalised to a standard purity high calcium lime content¹.

CO₂ emissions result from the combustion of fuels and the thermal decomposition of input materials during the high temperature manufacturing process – referred to as combustion and process CO₂ respectively.

A study commissioned the European Lime Association (EuLA) shows that up to 33% of the amount of process CO₂ emitted during lime production is captured permanently during use – an effect known as carbonation. Although there are differences between the different uses of lime, 95% of the carbonation reactions occur within the first year after manufacturing. You can find more information on this study on the EuLA Website - <https://www.eula.eu/politecnico-di-milano-literature-review-on-the-assessment-of-the-carbonation-potential-of-lime-in-different-markets-and-beyond/>

Natural Environment



OBJECTIVE: ENVIRONMENTAL PROTECTION

Minimising and mitigating operational impacts.

BLA Members and Associate Members are regulated by the Environment Agency under the Environmental Permitting Regulations. As such, the sector implements the best available techniques for environmental protection and manufacturers comply with strict emission limits.

BLA Members and Associate Members commitment to high standards of environmental management are reflected by the low number of environmental incidents associated with the sector. No major incidents (Category 1 or 2) have been recorded this year². Since the Compliance Classification System was introduced in 2004, only a single Category 1 and two Category 2 incidents have been reported, all during 2009.

Changes to production and investment in abatement technologies have resulted in reductions in emissions to air from lime manufacturing, which were 4,005 tonnes lower in 2020 compared to 2011.

Emissions are known to vary with the market demand for different products and with changes to production facilities. These variations explain the changes in emission levels on a year by year basis.



- Aerated autoclaved concrete product manufacturing - as a key ingredient to activate production of voids and pores.
- Calcium silicate brick product manufacturing - as a key ingredient to combine with the silica.
- Soil stabilisation - as a soil modifier through its heat of hydration and in binding with clay minerals in the soil, enabling the use of other binders to deliver required characteristics.
- Earthworks - as a soil modifier to enable handling and placing of materials.
- Asphalt – as a multifunctional additive.

During 2020, the BLA confirmed a collaboration with Devon County Council and their local supply chain to deliver a road trial using hydrated lime as a multifunctional additive in asphalt. Devon's specifications already include the addition of hydrated lime as an anti-stripping agent in asphalt mixtures containing local quartzite aggregates. This trial, installed in May 2021, is aiming to look at the wider benefits of using hydrated lime in asphalts.

Built Environment



OBJECTIVE: SUSTAINABLE CONSTRUCTION

Influencing the design and procurement of the built environment with high quality and sustainable solutions.

Lime is used in multiple construction products:

- Mortars and renders - as a binder and as an addition to other binders to deliver required characteristics when being applied and when hardened.



RESOURCE USE								
	Units	2011	2015	2016	2017	2018	2019	2020
Waste sent to landfill for all lime manufacturing	kg/t	0.77	0.54	0.53	0.13	0.19	0.49	0.20
Proportion of alternative fuels in dolime manufacture	%	36	39	44	36	40	34	29

ENERGY AND CLIMATE CHANGE							
Units: kg CO ₂ /t	2011	2015	2016	2017	2018	2019	2020
CO ₂ emissions from calcination of standard purity high calcium lime (process emissions)	663	677	697	677	665	680	674
CO ₂ emissions from calcination of high calcium lime (process emissions)	673	688	708	687	674	678	675
CO ₂ emissions from combustion of fossil fuels used to produce standard purity high calcium lime	231	238	231	239	241	247	247
CO ₂ emissions from combustion of fossil fuels used to produce high calcium lime	234	242	235	242	244	247	248
CO ₂ emissions from calcination of dolime (process emissions)	708	711	779	759	772	840	831
CO ₂ emissions from combustion of fossil fuels used to produce dolime	636	503	532	543	528	569	588

NATURAL ENVIRONMENT							
Units: kg emission/t	2011	2015	2016	2017	2018	2019	2020
Emissions of NO _x from high calcium lime manufacture	0.25	0.09	0.14	0.11	0.19	0.15	0.13
Emissions of NO _x from dolime manufacture	12.77	16.15	16.19	16.91	17.71	11.50	15.97
Emissions of particulate matter from high calcium lime manufacture	0.05	0.05	0.06	0.07	0.05	0.06	0.04
Emissions of particulate matter from dolime manufacture	0.46	0.24	0.20	0.13	0.14	0.11	0.11
Emissions of SO ₂ from high calcium lime manufacture	0.14	0.03	0.05	0.02	0.01	0.04	0.02
Emissions of SO ₂ from dolime manufacture	4.92	1.20	0.96	1.29	3.41	1.98	1.29

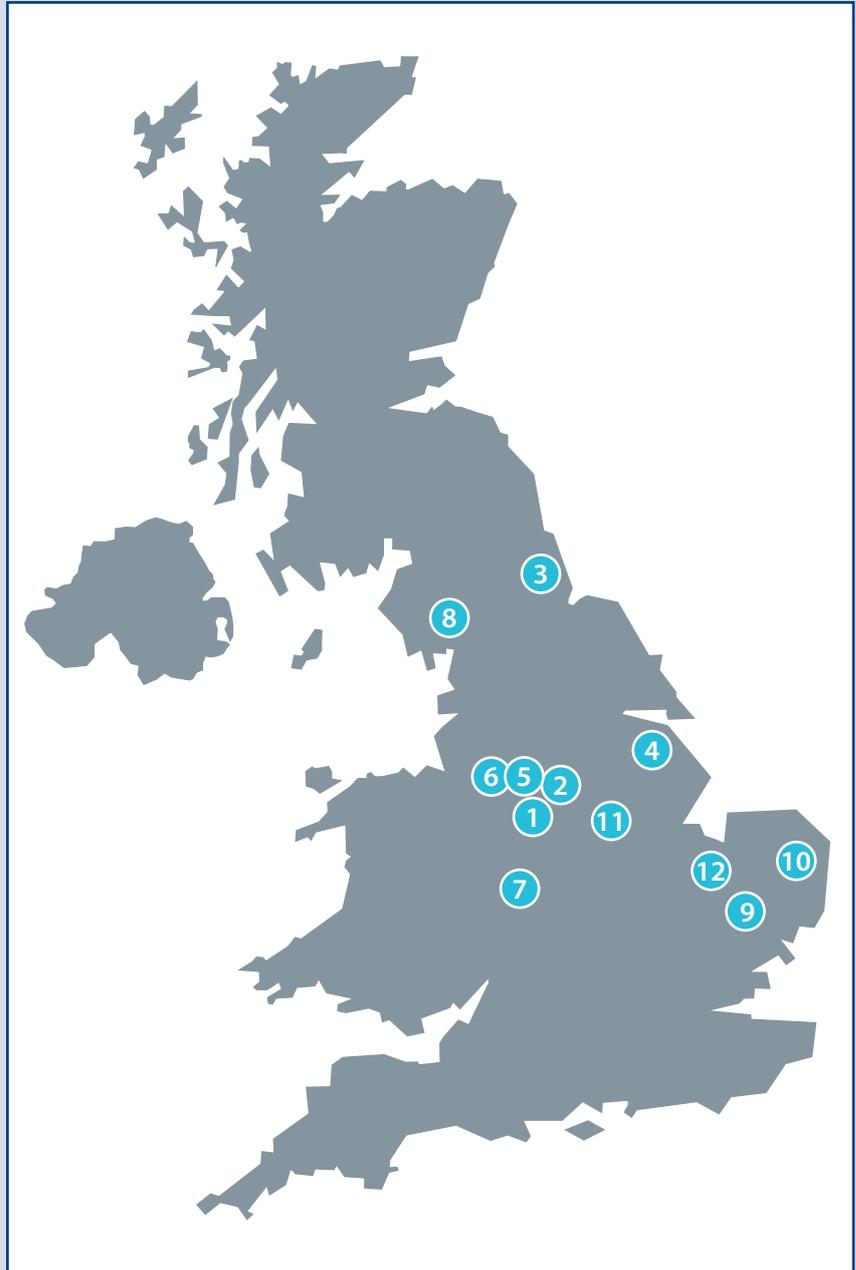
LIME PLANTS

BLA Members

Factory/Site Owner	Location
	Buxton ①
	Whitwell ②
	Thrislington ③
www.lhoist.co.uk	
	Melton Ross ④
	www.singletonbirch.co.uk
	Tunstead ⑤
	Hindlow ⑥
www.tarmacbuxtonlime.com	

BLA Associate Members

Factory/Site Owner	Location
	Birmingham ⑦
	www.mineralstech.com
	Shapfell ⑧
	www.tatasteeleurope.com
	Bury St Edmunds ⑨
	Cantley ⑩
	Newark ⑪
	Wissington ⑫
www.britishsugar.co.uk	



Front Cover: Hydrated lime containing asphalt being installed by South West Highways; overseen by Dr Helen Bailey (Driven Company Associates Ltd.)

NOTES

- Standard purity stated for lime (94.5%) is sourced from the EU Commission Decision of 27 April 2011 "determining transitional Union-wide rules for harmonised free allocation of emission allowances pursuant to Article 10a of Directive 2003/87/EC of the European Parliament and of the Council", Page 37 Available: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:130:0001:0045:EN:PDF>
- Environment Agency's Compliance Classification Scheme (CCS):
 - Category 1 incident defined as "a non-compliance which would have the potential to have a major environmental impact".
 - Category 2 incident defined as "a non-compliance which would have the potential to have a significant environmental impact".
 - Category 3 incident defined as "a non-compliance which would have the potential to have a minor environmental impact".
 - Category 4 incident defined as "a non-compliance which has no potential to have an environmental impact".

BLA is part of the Mineral Products Association, the trade association for the aggregates, asphalt, cement, concrete, dimension stone, lime, mortar and silica sand industries.

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