

# COAL DERIVED FLY ASH IN SINGLE USE DEPOSITS

## FROM WASTE TO SECONDARY MATERIAL

Preserving Coal Derived Fly Ash for Future Generations



>100 MILLION TONNES



PRIMARY SCREENING

>60 MILLION TONNES

>40 MILLION TONNES

Assumed Split Between Mineral and Cementitious Applications

### SECONDARY MINERAL APPLICATIONS



AUTOCLAVED BLOCKS



CONCRETE PRODUCTS



GROUTS



STABILISATION



SPECIALITY FILLERS



LIGHTWEIGHT AGGREGATE

### CEMENTITIOUS APPLICATIONS



BULK CEMENTS



PACKED CEMENTS



PRE-BLEND MORTARS



PRE-BLEND GROUTS



READY MIXED CONCRETE



CONCRETE PRODUCTS

# CEMENTITIOUS APPLICATIONS

1 tonne of coal derived fly ash replaces some 1.6 tonnes of limestone and shale used in clinker production

Will extend life of existing quarries

Limestone quarry extensions subject to various constraints

1 tonne of coal derived fly ash replaces some 860kg of CO<sub>2</sub>

UK is a net importer of cement, fly ash and slag

European standards: EN 450

Pozzolanic (cementitious) characteristics

Good flow due to particle shape

Durability: sulphate and chloride resistance

Allows for design life >60 years

Low heat for mass concrete pours in infrastructure



>40,000,000



Limestone/  
Shale Replacement  
>64,000,000



CO<sub>2</sub> Saving  
>30,000,000\*\*



# SECONDARY MINERAL APPLICATIONS

1 tonne of coal derived fly ash can replace up to 1.5 tonnes of primary sand in certain applications

Primary sand supply subject to various constraints

Primary sand extraction has a greater CO<sub>2</sub> footprint

In some applications, sand might need to be ground

Coal derived fly ash offers improved yield per tonne for void filling

European standards: EN 450 and EN 13055

Pozzolanic (cementitious) characteristics

Low density

Good flow due to particle shape



>60,000,000



Sand Replacement  
>60,000,000



CO<sub>2</sub> Saving  
>240,000\*

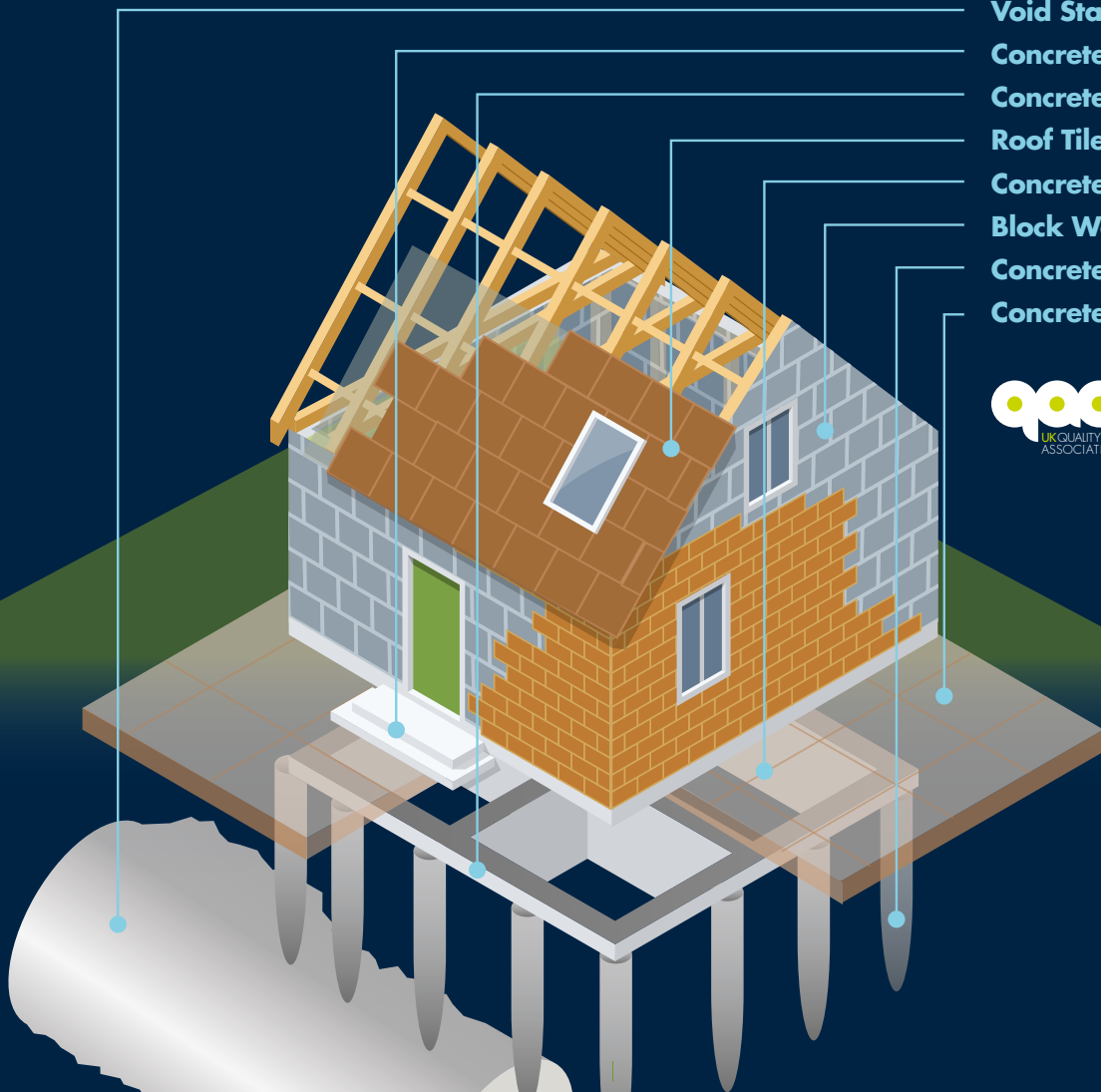
\* Assume 4kg/tonne CO<sub>2</sub> saving  
\*\* Assume 760kg/tonne CO<sub>2</sub> saving after drying and processing

# FLY ASH IN CONSTRUCTION

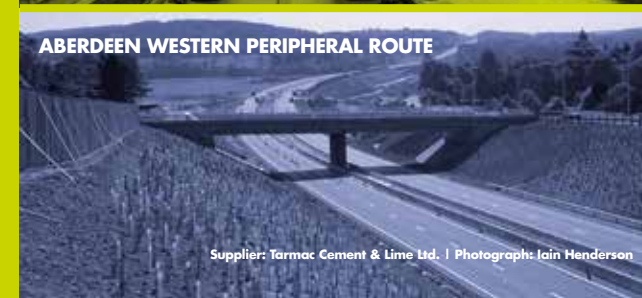
Coal derived fly ash makes a significant Contribution to housebuilding

## USAGE

Void Stabilisation  
Concrete Steps  
Concrete Foundations  
Roof Tiles  
Concrete Paving Slabs  
Block Work & Mortar  
Concrete Piles  
Concrete Rafts



## FLY ASH WITHIN INFRASTRUCTURE PROJECTS...

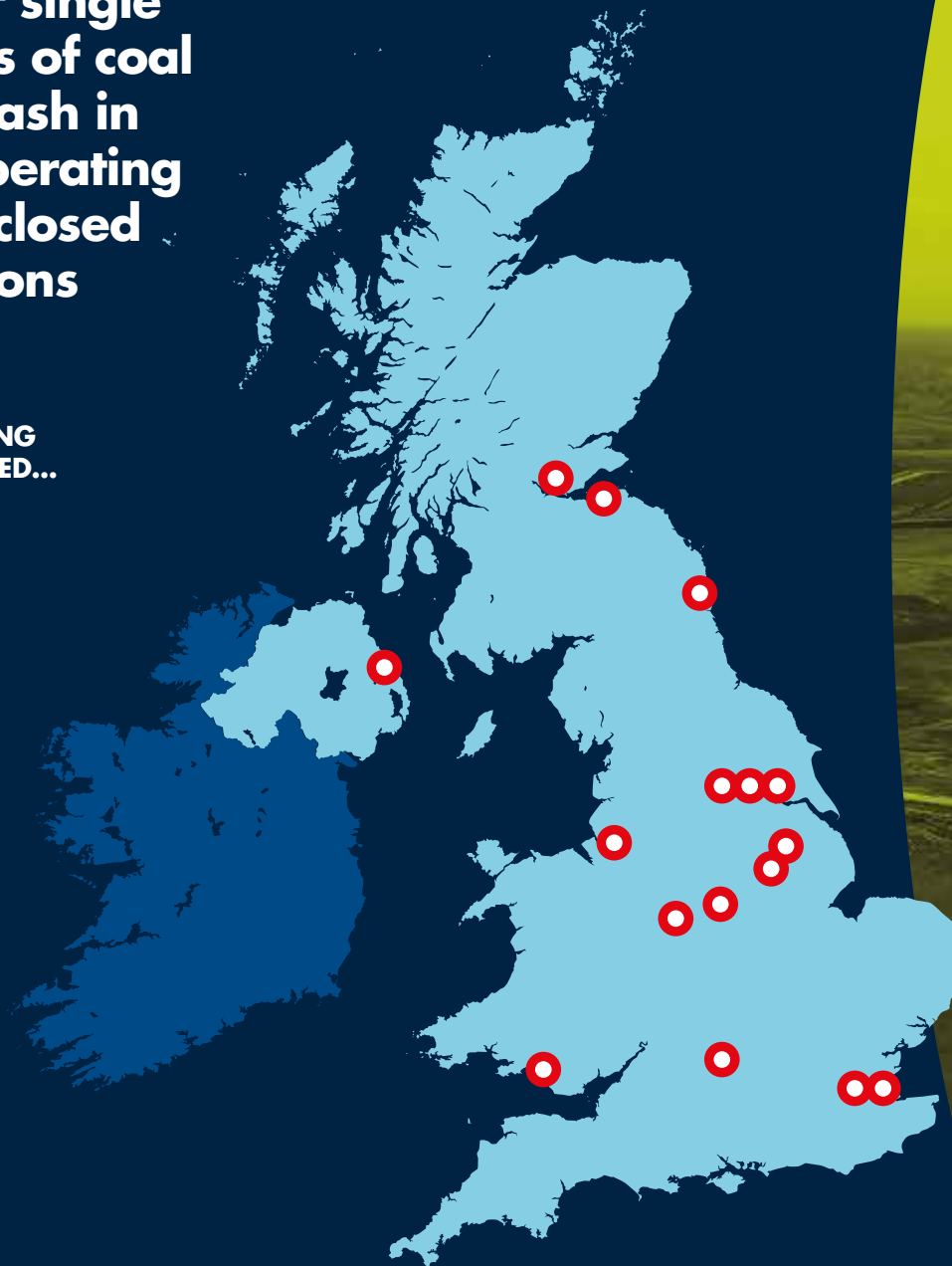


# THE RESERVES

Locations of single use deposits of coal derived fly ash in currently operating or recently closed power stations

CURRENTLY OPERATING  
PLUS RECENTLY CLOSED...

Longannet  
Cockenzie  
Kilroot  
Lynemouth  
Ferrybridge  
Eggborough  
Drax  
Fiddlers Ferry  
West Burton  
Cottam  
Ratcliffe-on-Soar  
Rugeley  
Didcot  
Aberthaw  
Tilbury  
Kingsnorth



# STRATEGIC SECONDARY MINERAL RESOURCE

Minerals Plans should recognise coal derived fly ash in single use deposits as a potential source of secondary minerals, the role it may play in supply, and to safeguard this for the future

Planning Practice Guidance should be amended to reflect properly the availability and potential of coal derived fly ash in single use deposits as a secondary mineral resource

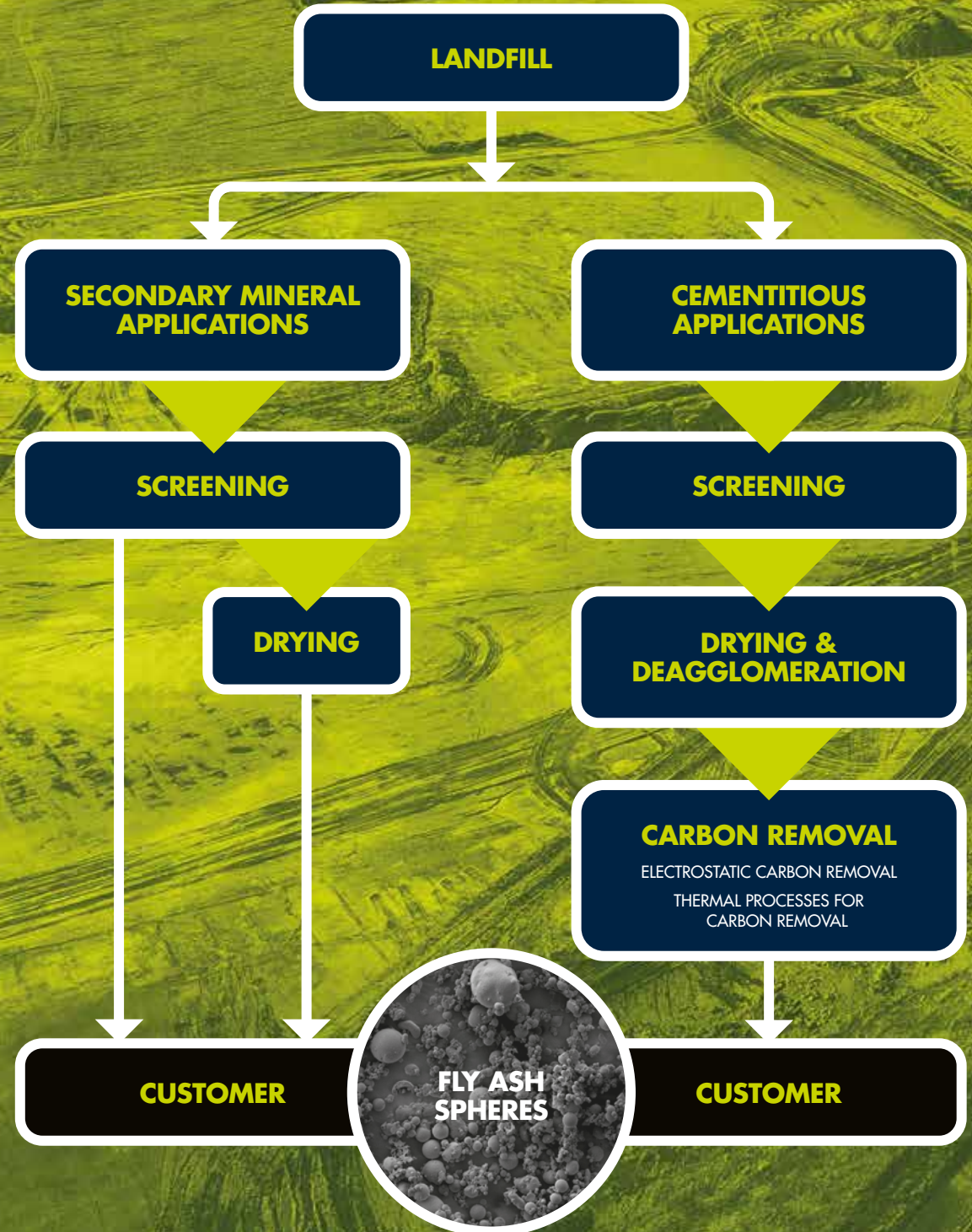
All are consistent with:

- The circular economy
- Sustainable construction
- Low embodied carbon cements, mortars and concretes

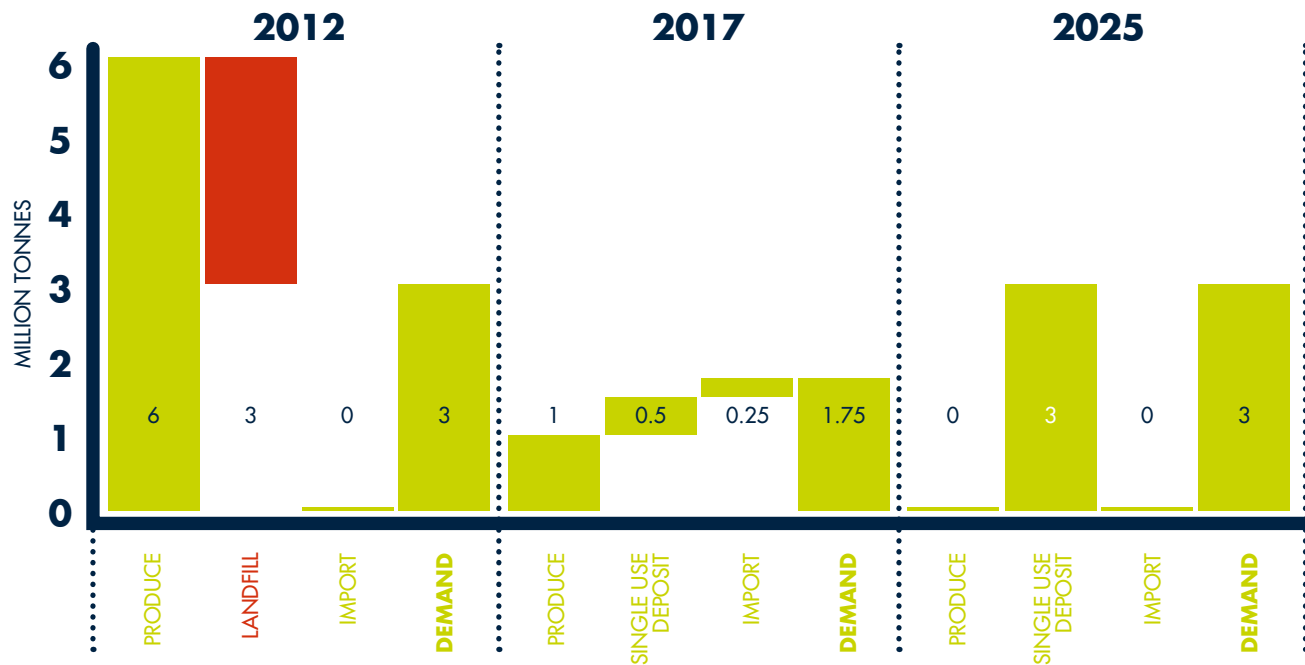


# PROCESS FLOW FOR SECONDARY MINERAL AND CEMENTITIOUS APPLICATIONS

Commercially proven technologies exist for Drying, Deagglomeration and Carbon Removal



# FLY ASH CONSUMPTION



**In 2012**, some 50% of Fly Ash generation was landfilled. This has now become a future mineral resource defined as coal derived Fly Ash in single use deposits.

**Since 2016**, there has been a net extraction of Fly Ash from single use deposits to help meet demand as coal fired power generation declines. This is augmented by imports.

**By 2025**, all Fly Ash demand likely to be sourced from single use deposits.

# UKQAA MEMBERS

- Aggregate Industries
- Breedon Cement Ltd
- CEMEX
- DRAX Power Station
- EPUKI
- LKAB Minerals
- H+H UK Ltd
- SSE
- Matrix Materials Ltd
- Power Minerals Ltd
- Charah
- Tarmac Cement & Lime Ltd
- Uniper UK Ltd
- Cenin Ltd
- Fairport Engineering Ltd
- Forkers Ltd
- M&J Drilling
- Omya UK Ltd
- ST Equipment & Technology Ltd



## UK Quality Ash Association

Wrens Court, 46 South Parade,  
Sutton Coldfield, West Midlands. B72 1QY  
www.ukqaa.org.uk | enquiries@ukqaa.org.uk