A Deal for Ceramics
British Ceramic Confederation and Staffordshire Partners

**Importance of ceramics to the UK economy**
The ceramics manufacturing sector has huge potential. The global market for ceramics was $158 (USD) billion in 2014. UK-based ceramics manufacturers’ exports have grown 6% since 2011 to around £410 million in 2016 (£550m including materials suppliers).

The global ceramics market is expected to reach $286 billion by 2022 with the highest growth likely in the technical ceramics sub-sector.

Ceramics manufacturing is a core part of the supply chain for a number of strategically important markets for the UK economy.

The UK has a significant ceramics sector, clustered around Stoke-on-Trent that has the potential to make a bigger contribution to the national economy and UK exports. The UK ceramics supply chain already generates annual sales of around £2 billion and secures over £500 million in export sales. UK manufacturers have made real strides out of the recession with turnover and job growth both reaching 50% since 2010.

**Why do we need a Sector Deal with government?**
Ceramics and the application of ceramic technology are industries that require long term capital investment to remain competitive in world markets. Our design and product development expertise is recognised worldwide but we have yet to fully capture the advantage that this gives us internationally.
Our Vision for Ceramics

The Staffordshire Potteries will reassert itself as a global centre for ceramics based around design-led production, digital manufacturing, materials and technological innovation for the UK.

We will drive Stoke-on-Trent’s ambition to become a connected core city and secure the area’s higher value export-focused manufacturers. Our economic goals will underpin a wider cultural and economic renaissance of the Potteries.

The UK ceramics manufacturing sector must grow by 9% per annum to maintain its share of the global market over the next few years. It has succeeded in doing this over the last six years. Our ambitions go further. We aim to increase our share of the global ceramics market by securing 15% year-on-year growth. This marks a significant but achievable step change. By 2022, this would uplift the sector to £4bn in sales and £1.5bn of GVA for the UK economy each year.

Our vision and plans for competitive growth will benefit Stoke-on-Trent and the wider UK economy.

The Ceramics Opportunity

Ceramics Overview

£2BN in annual sales
22,200 direct FTE employees
£720M gross value added

£550M of export sales per year
A driver of energy efficiency
97% of business are SMEs
The ceramics manufacturing industry supplies into a wide set of end markets:

**Automotive**: ceramics are used as pump components, brake discs, catalyst support, particulate filters etc. Ceramics are used in spark / glow plugs, oxygen sensors, knocking sensors, parking sensors, fuel injection systems etc. Applications include ceramic sensors and vehicle armour.

**Aerospace**: ceramics are used as thermal barrier coatings in the hot part of engines and thermal protection systems in rocket exhaust cones, insulating tiles for the space shuttle, missile nose cones and turbine engine components. Ceramic cores are used in casting metallic turbine blades and silicon carbide (SiC/SiC) composites for use as turbine blades. Ceramic components are found in sensors, antennae, capacitors and resistors.

**Housing/Construction**: bricks and clay roof tiles have been used for centuries to protect homes from the elements and will continue to play a central role in meeting the UK’s housing needs. Resilient tiles and bricks do not emit volatile organic compounds and are fire resistant. Durable wall and floor tiles are available in a wide variety of sizes, colours and textures and are used both inside and outside. Clay drainage pipes remain an essential part of our municipal wastewater infrastructure. Meanwhile, washbasins, toilets, bidets and shower trays are found in homes and buildings the world over. Ceramic products are further poised to play a strong role in new off-site construction methods which will help speed up construction.

**Energy**: many renewable technologies rely on wear-resistant ceramic components (e.g. heat pumps / wind turbine bearings), heat resistant refractory products (essential for the fabrication of solar photovoltaic panels) and electro-ceramics (used in smart meters, temperature / flow regulators, heat sinks, piezoelectric energy harvesting and solid oxide fuel cells). The fuel pellets, control rods, high reliability seals and valves used in the nuclear industry are all ceramic. There is growing interest in ceramic-based energy storage systems.
Electronics, Computing and Digital: ceramic substrates, circuit carriers, core materials and many other components are used in the electronics industry. Ceramic heat-sinks provide the perfect climate for high-power electronics, while ceramics’ electrical insulation properties mean they are used in microchips, circuit boards and circuit breaker technology. Piezoelectric ceramic components are used in sensors, actuators, gas ignition and power transducers for high-power ultrasonic applications, such as transmitters and receivers in signal and information processing.

Defence: applications include engine components, missile radomes and personal/vehicular armour. As many ceramic materials are transparent to certain types of electromagnetic energy, they can also be used for infrared domes, sensor protection, and multispectral windows.

Process Industries: heat resistant refractory ceramics are essential for all high-temperature process industries, including steel, aluminium, cement, glass, the chemical industry, as well as ceramics itself.

Healthcare: high-tech ceramics have always been associated with medical devices. They are used for hip replacements, heart valves, dental implants / restorations, bone fillers and scaffolds for tissue engineering. Ceramic nanoparticles are also now used in cancer treatment.
The Importance of Ceramics to Stoke-on-Trent & Staffordshire

Around 8,700 people work in the ceramics sector in Stoke-on-Trent and Staffordshire, a concentration of just over 22 times greater than the national average. These jobs pay well compared to other local jobs and the spending power of the sector’s employees is significant in local communities. Ceramics manufacturing contributed around £285 million of GVA to Stoke-on-Trent and Staffordshire’s economy in 2014.

The ceramics sector is recognised by the Midlands Engine Strategy. The ceramics cluster is one of a number of priority sectors that with the right support can help address the region’s innovation challenge.

The aim of this deal is to build a strong, healthy, and resilient world capital of ceramics which drives broader local and national placemaking efforts to revitalise our local communities.

Stoke City FC is a Premier League football club that has ‘The Potters’ used in its branding: a strong message of the city’s connection to the ceramic sector.

Strong leadership at a city-wide and regional level and investment will stimulate the ceramic sector’s economic contribution, and increase innovation, creativity and cultural engagement. Our plans will simultaneously support and advance key agendas around housing, employment, health and wellbeing, environmental sustainability and education.
Our Emerging Big Idea: An International Institute for Ceramics

The ceramics industry needs a focal point like those available to other sectors where innovation, knowledge and learning can be shared to improve productivity and growth. Building on the assets we have locally we believe that there is the potential to create an International Institute for Ceramics. Our discussions have reached the point where we need government support to develop the proposal in more detail.

Our plan will benefit the sector as a whole but by being located in Stoke-on-Trent it will also have a catalytic impact on the city which prides itself on being the world capital of ceramics.

The concept would bring together the expertise of Lucideon – a world leading research facility, alongside Staffordshire University’s teaching and apprenticeship activity and ceramics collection, with a commercially run advanced materials innovation centre, with a wrap around conference and training facility, supported by new hotel capacity. The city’s excellent connectivity would make it accessible nationally and internationally.
Our Supplementary Asks and Commitments

We are developing supplementary asks across four priority areas which will support the ceramics sector and its supply chains across Stoke-on-Trent, Staffordshire and nationally.

1: Our People Priorities
The sector will redouble efforts to open up employment avenues for younger people and will work with training providers to implement practical initiatives to address the technical skills challenge.

The ceramics industry will engage in school-age careers advice, establish a sector-wide commitment to work placements and get more involved in enterprise-activities in the school curriculum.

The sector is determined to replicate the successes of excellent businesses investing in management and innovation leadership to accelerate away from a low wage, low margin trajectory.

The ceramics sector and local public partners will work together to tackle the basic skills challenge and better promote opportunities for employees to update their skills.

2: Our Innovation Priorities
The sector is determined to invest in innovation to improve its know-how in the design, manufacture, performance, functionality and cost effectiveness of existing and new products / processes.

The UK ceramics sector will work more closely with our research base to secure early mover advantage over international competitors in the research, development, demonstration, deployment and exploitation of innovative ceramic based materials.

The ceramics sector needs to drive up levels of innovation, investment and implementation to maintain and strengthen its competitive position globally.

The sector is eager to work with government, Stoke-on-Trent City Council and other stakeholders to identify collaborative opportunities to support new energy innovations which reduce cost and secure environmental dividends.

3: Our Trade & Image Priorities
Our brands are internationally recognised and offer a real opportunity to demonstrate the quality of British products and design. We are keen to work with government to secure genuine free trade.

The Potteries is committed to further developing export promotion and assistance for ceramics manufacturers.

Make It Stoke & Staffordshire will work with Midlands Engine and local businesses to secure more of the lucrative market for ceramics inward investment, harnessing the area’s internationally recognised reputation. This will include a focus on promotion and investment on securing higher-tech ceramic jobs onto the Ceramic Valley Enterprise Zone sites.

The city has bid for UK Capital of Culture for 2021 to provide a focus and platform against which Stoke-on-Trent can reinvigorate pride, remould its reputation and secure a more prosperous future for residents.

4: Our Regulatory Priority
The ceramics sector will continue to work with government to agree a better deal for the sector which ensures a more level playing field with our international rivals, particularly on energy-related matters.
Next Steps

This document sets out an exciting vision for the sector and how, with the support of government and partners we can develop a proposition which will deliver growth and long term prosperity for the sector and the Potteries.

Our ask of government is to support us on this journey by helping us with expertise and some financial support to accelerate the delivery of our aspirations and make a tangible impact on productivity in the sector and its home.

As a partnership we will work together to maximise the potential of the sector.

Thanks

This document has been compiled by the British Ceramic Confederation with the support of its members, the Stoke-on-Trent & Staffordshire Local Enterprise Partnership and its constituent members for which we are grateful.