Chester Lead Works

History of the Site
Chester has been associated with lead since at least Roman times, facilitated by its role as a port and because of the proximity of lead mines in North Wales.

The construction of the Chester Canal in the 1770s between the River Dee and Nantwich, and subsequently its extension through building of the Ellesmere Canal (1790s) opened up the area to the east of the city of Chester to the development of industrial premises. This included the lead works which were established by Walkers, Parker and Co in the late 18th century.

In 1800 the company opened the Shot Tower. This building remains today although without its original staircase (destroyed by fire in 1899). This was originally constructed to manufacture shot for British muskets and to supply the demand caused by the Napoleonic Wars. Shot manufacture ceased on the site in 1986.

The manufacture of lead shot using the 'drop process' was patented by William Watts (a Bristol plumber) in 1782. He had realised that if molten lead fell far enough through the air it would become spherical. This would be a significant improvement on the shape and quality of shot produced through casting – the typical manufacturing technique of the time, which was also highly labour intensive. Lead Shot Towers are a highly specialised form of industrial building designed for the process.

Significance of the Site
The Lead Shot Tower remains along with the core of the site. The Shot Tower is Grade II* listed (a particularly important building of more than special interest). The Shot Tower was erected less than 20 years after the drop process for manufacturing shot was patented by William Watts, a British national, and yet is the only historic shot tower remaining in Britain (the country of origin of the process). This process revolutionised the production of shot. The site is therefore unique in Britain and can be considered of both national and international importance.

The site is also of local importance since at 51.2m (168 ft) it is currently the highest structure in Chester (the Town Hall tower is 160ft tall) and a distinctive landmark in a once industrial landscape flanking the canal. It effectively stands testimony to Chester's place in the industrial revolution – a heritage with which the city is not traditionally linked (although Chester can also boast one of the first ten Boulton and Watt rotative engines in the World – delivered to a corn mill on the opposite bank of the canal to the lead works in the 1780s). Also, the lead works has been a significant business for Chester. For example, in 1890 and in 1910 Walkers, Parker & Co. Ltd was the largest individual business listed in the rate books.

The Lead Shot Process

The process involved pouring molten lead through a sieve or griddle (a plate with holes) at the top of the tower shaft so that the lead became discrete droplets. These then fell under gravity within the shaft. Towers were constructed to be sufficiently high so that the lead droplets would form perfect spheres in free fall because of surface tension

The falling spheres would solidify as they fell through the air. At the bottom of the tower shaft they fell into a vat (or kettle) of water which would both complete their solidification and also prevent them from being damaged from impact.

This briefing was originally produced as background to help inspire the interpretive sculpture 'Spheres of Reflection' (which reflects the lead shot process) now installed in Leadworks Lane pocket park.