Challenges of planning significant reservoir safety improvements within an historic estate

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SYNOPSIS Chatsworth House is undertaking reservoir safety and improvement works on a series of historic reservoirs located within the Grade I Registered Historic Park. Two of the four reservoirs fall under the Reservoirs Act and have safety recommendations pertaining to the size of the spillways and the discharge of the design events.

The Cavendish family purchased the land Chatsworth House now occupies in 1549 and has been modifying the house and landscape ever since. The earliest surviving reservoir, Swiss Lake, dates from 1710. The four reservoirs are still actively used to provide water for the famous fountains and garden water features along with the fire fighting system, toilets and hydroturbine.

Arup is working closely with the estate to develop low impact, cost effective solutions to achieve the improvements required, whilst minimising the impact on the historic and ecologically diverse landscape within the estate.

This paper covers some of the challenges of working with an historic estate, delivering major reservoir improvements with low impact solutions, whilst ensuring minimal construction cost.