Refurbishment of the Portora Sluice Gates, Enniskillen
Northern Ireland

KJ McCUSKER, URS, Belfast, UK
GA COOPER, URS, Belfast, UK

SYNOPSIS  URS was commissioned in 2005 by the Department of Agriculture and Rural Development – Rivers Agency, on behalf of the funders ESB, to design and install new gates at the Portora Sluice Structure.

The Portora Sluice Structure was completed in 1956 by Cementation Ltd and is located in County Fermanagh, Northern Ireland. It is essential to balancing the environment and flood protection requirements in Upper Lough Erne, including the town of Enniskillen. It plays a vital role in sustaining a navigable waterway in Upper Lough Erne. The Portora Sluice Structure comprises four gates each weighing 14 tonnes, which regulate water levels thus reducing flooding and providing huge benefits to the local area. The Portora Sluice Structure also plays an important role in relation to the generation of hydroelectric power at two large installations downstream.

In 2005 an Emergency Report highlighted significant health and safety hazards with the structure, including the possibility of the sluice gates falling under their own weight and the resulting impact on operational safety. Subsequent refurbishment works were commissioned by the Department of Agriculture and Rural Development – Rivers Agency, including:

- Replacing the 4 No. 13.17m long by 4.26m high existing sluice gates
- Mechanical and electrical refurbishment works to gear boxes and control systems and repainting the structure.

This paper describes the practicalities and health and safety issues surrounding the refurbishment works, the design of the replacement sluice gates and how the strict tolerance levels were achieved. In addition, this paper explains how the new gates were successfully installed in the structure, in under four months to enable it to continue to play a vital role in controlling winter water levels in Lough Erne.