



CARRICKFERGUS CASTLE, NORTHERN IRELAND



Carrickfergus Castle is a Norman castle in Northern Ireland, situated in the town of Carrickfergus in County Antrim, on the northern shore of Belfast Lough.

Besieged in turn by the Scots, Irish, English and French, the castle played an important military role until 1928 and remains one of the best preserved medieval structures in Ireland.

For more than 800 years, Carrickfergus Castle has been an imposing monument on the Northern Ireland landscape whether approached by land, sea or air. The castle now houses historical displays as well as cannons from the 17th to the 19th centuries.

FACTS

Material: [LECA LWA \(10-20mm\)](#)

Interesting Fact: The pneumatic blowing delivery of Leca LWA speeded up the delivery process significantly, with up to 1 m³ of Leca LWA being delivered per minute.

Delivery Method: Pneumatic Delivery

Main Contractor: Adman Limited

Recently, reparation works were organised to strengthen the ancient structure. This required substantial backfill for the ancient walls.

This unique engineering project had issues which required remedy, including limited access to the site, delicate groundworks with the adjacency to the local river and the delicacy of a heritage structure which is over 800 years old. Furthermore, with a vertical rise of 4m to the entrance – alternative solutions such as gravel or type 1 fill was a negative solution due to excessive weight and delivery limitations.



Leca LWA was selected due to its natural lightweight properties as a lightweight back fill for retaining walls, its water management properties and its unique ability to be pneumatically blown through a piping system – reducing the need for bulk bags being delivered throughout this delicate and historical castle. The engineers on site required up to 50m of piping to reach the area of the works.

The pneumatic blowing delivery of Leca LWA speeded up the delivery process significantly, with up to 1 m³ of Leca LWA being delivered per minute. Due to the height differentials and access obstacles leading to the area of the works including an up-pedestrian ramp/Steps and grass verge.



The pneumatic delivery also posed no problem as the blowing facility can be blown up to 20m vertically, where it has been used for roofs and down into basement structures.

For this project, permission was granted to stockpile the Leca LWA outside the castle on the local car park. From this stockpile, the Leca LWA could be easily loaded up on the pneumatic delivery truck.

When the groundwater or surface water level is high, it can be good practice to partially reduce the weight of the fill structure to ease the pressure on the surrounding area. The structure shall be designed with consideration to buoyancy connected with rising water levels within the structure, a particularly relevant factor for Leca® Lightweight Expanded Clay Aggregate structures located in vicinity of a water body or flood area.