

Dounreay Low Level Waste Facility, Thurso

Vaulting ambition realised in UK industry first

£14m

/ Project value

February 2011

/ The build commenced

October 2013

/ The build was completed

An essential element in the largest nuclear site closure in Europe, the D3100 Dounreay Low Level Waste Facility project was an UK industry first for the disposal of low level nuclear waste. Completed on time over 32-months, and on budget to a value of £14m, we excavated a total of 243,000m³ of rock during the construction of two below ground concrete vaults – each with a volume equivalent to between 370 and 450 double decker buses.

The brief

Subjected to Nuclear Decommissioning Authority (NDA) approval, the contract consisted of the design and construction of two sub-surface vaults for the disposal of solid low-level radioactive waste from the Dounreay site clean-up. The development would act as a pivotal piece of the infrastructure needed to complete the decommissioning of the former nuclear research site.



“Without these new facilities, we could not complete the clean-up and closure of the site, so today’s handover is a major step forward in our work to decommission this site and return it to the Nuclear Decommissioning Authority in a condition that is safe for future generations.”

Roger Hardy
Chairman of Cavendish Dounreay Partnership

“The restoration of Dounreay is a massive undertaking and it is tremendously gratifying to play our part in this initiative. The challenges involved in designing and constructing the vaults have been considerable, and we would like to recognise the efforts of all the GRAHAM personnel and our supply chain partners who have worked hard to deliver this important project.”

Leo Martin
Managing Director Civil Engineering at GRAHAM

The challenges

Within this highly restricted environment, it was imperative that we established the associated regulatory requirements and gained all of the necessary authorisations to construct, operate and close the Low Level Waste Disposal Facilities. Approval was achieved through the creation of a fit-for-purpose Pre-Construction Safety Report (PCSR) and Pre-Commissioning Safety Report (PCmSR). Key points of both included the establishment of a Safety Case Team, a Fault Schedule and a HAZOP 2 Study to embed a common understanding of design, the safety case and other requirements among the client, the Design Team and the Safety Case Team.

The solution

The focus of national media scrutiny, the high-profile D3100 Dounreay Low Level Waste Facility was constructed to protect future generations from any harmful effects associated with low level waste. Facilitating the safe disposal of up to 175,000m³ of the by-product, the £14m scheme centred on the design and construction of two sub-surface, reinforced concrete vaults. Incredibly, vault excavation required over 70 tonnes of explosives. Slope stability and maintenance was provided using inclined rock anchors and rockfall mesh, while drainage systems and a water treatment area were developed as innovative solutions to deal with non-radioactive liquid discharges. Infrastructure works, inclusive of access roads and perimeter security fencing, were additional strands of this site. In total, 7600m³ of concrete, 1330 tonnes of reinforcement and 260 tonnes of structural steel were manipulated in the creation of each vault.

Outputs & Benefits

- / **Award Winning:** Gold 2014: Considerate Constructors Scheme
- / **Prominent Project:** The decommissioning of Dounreay is Europe's largest nuclear site closure project
- / **Safety First:** Completed in over 450,000 RIDDOR free "man-hours"
- / **Added Value:** We proposed various alternatives to add value including omitting ramps down into the vaults
- / **Compliance:** Remits included gaining Radioactive Substance Act Authorisation, Preparation of Nuclear Safety Case, CAR and PPC Licenses
- / **Local Supply Chain:** 68% of the sub-contractor spend was through local Thurso based firms
- / **Milestone Dividend:** The handover of the vaults in May 2014 resulted in a £300,000 payment to good causes in Caithness by the NDA



For more information on how we're delivering lasting impact:

+44 (0) 28 9268 9500

info@graham.co.uk

graham.co.uk

GRAHAM