

WASTE RECEIPT, ASSAY, CHARACTERISATION AND SUPERCOMPACTION (WRACS) FACILITY – UPDATE

The Dounreay site includes a Waste Receipt, Assay, Characterisation and Supercompaction (WRACS) facility. The purpose of the WRACS facility is to provide a site wide service for processing compactable Low Level Waste (LLW), within 200 litre drums, from facilities at Dounreay and its neighbouring site, NRTE Vulcan.

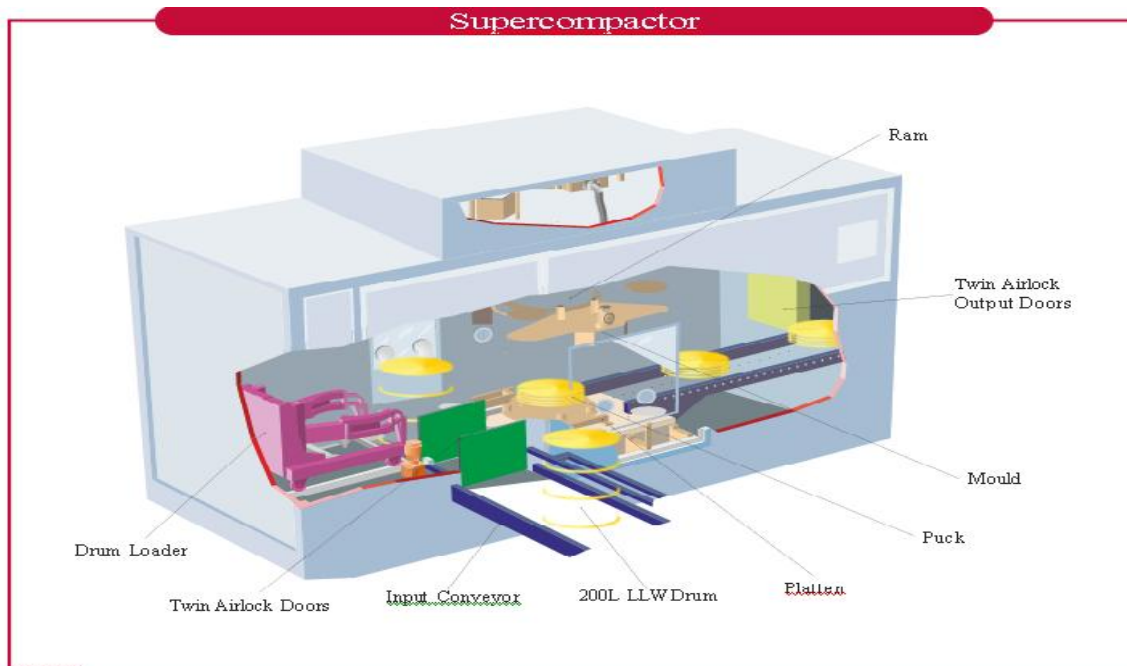
Following various quality checks on the installed assay systems to confirm the waste meets the solid LLW criteria, the drums are supercompacted, achieving on average an 80% reduction in waste volume. Once compacted, the waste is loaded into ISO containers and stored, ready for final disposal in the new low level waste disposal facility.



The Supercompactor is a key piece of equipment that has supported the site's waste management activities for some 22 years, undertaking over 80,000 drum compactations. During 2011, an increased breakdown failure rate prompted management to instigate a maintenance review. None of the breakdowns that initiated the review had any safety significance but they had interrupted operations to the extent that alternative drum storage arrangements had to be enacted. These alternative storage arrangements are part of a pre-planned contingency, recognised within the LLW storage facilities safety case, for instances when interruptions occur. The aim of the maintenance review was to ensure that, where possible plant, equipment and components associated with the WRACS facility:

- could remain serviceable,
- provide optimum performance, and
- that spare parts are available, and obsolete parts issues identified.

Prior to the completion of the maintenance review, the Supercompactor sustained a catastrophic failure in August 2011 to one of its main support pillars/members, which rendered the unit beyond economic repair. Investigation of the failure identified the cause to be from a stress fracture in the steel during the casting/production of the steel. The stress fracture was not observable and would only be detected by destructive analysis. DSRL holds spares as recommended by the manufacturer (Fontijne- Grotnes), but these tend to be consumables and components more likely to fail over the lifetime of the plant. As such, support pillars are not a recommended spare holding. Even the manufacturer does not hold such major items; they are only made to order.



Once it became clear that the Supercompactor was not going to resume in the short-term, additional capability for LLW drum storage was arranged and safety documentation prepared to allow its implementation. Storage arrangements are now in place that will allow continued characterisation at WRACS until supercompaction can resume; thus there is no impact on decommissioning operations. All appropriate compactable LLW will be compacted prior to disposal once the replacement Supercompactor is brought on line. Waste is being stored for compaction, once the new unit comes on line, it will be retrieved from storage and will be supercompacted.

Supercompaction is still considered the Best Practicable Means (BPM) treatment process for drummed LLW. And on that basis, a Business Case was approved, which justified the replacement of the WRACS supercompactor with a new unit. Following development of the Business Case, DSRL became aware of a potentially surplus supercompactor belonging to the Atomic Weapons Establishment (AWE). The AWE supercompactor had been tested by the manufacturer (Fontijne-Grotnes) and packaged in readiness for shipment to AWE when AWE made the decision not to proceed; it currently resides in storage in Holland. DSRL have assessed its suitability, and deem it adequate for its needs. More recently, the AWE supercompactor has been acquired and is now a DSRL asset.



Currently, work is progressing in planning the decommissioning and removal of the existing supercompactor out of WRACS in readiness for the ex-AWE supercompactor to be shipped to Dounreay, installed and commissioned. Whilst DSRL has no supercompaction capability it continues to characterise the 200 litre drums of LLW in WRACS. Once characterised the drums are stored in ISO containers at Dounreay awaiting supercompaction.