

# Dounreay Progress Report

## As of 24 April 2019

DSG(2019)P012

### Site decommissioning programme

DSRL has refreshed its vision and values, building on what was already in place.

**Vision:** To be recognised globally for decommissioning excellence, supporting the creation of sustainable alternative employment.

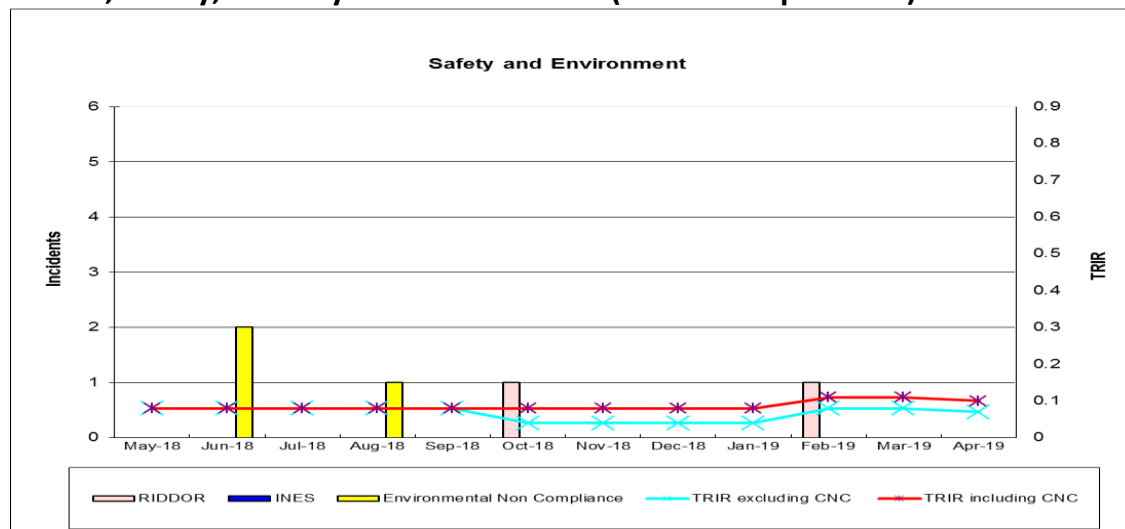
**Values:**

- Zero harm** We aim to achieve zero harm by putting safety, security and the environment first, always
- Respect** We aim to act with integrity and value the contribution of everyone in everything that we do
- Pride** We aim to be passionate about our work and are recognised for delivering decommissioning excellence
- Delivery** We aim to deliver on our commitments, holding ourselves and others to account
- Innovation** We aim to challenge ourselves to seek out creative and innovative solutions
- Confidence** We aim to work collaboratively and have the confidence of our colleagues, NDA, regulators and stakeholders

Work is underway to develop business targets for this year aligned to these values. The targets will be shared with the workforce and can be available to other stakeholders. In the meantime, delivery focus remains on the exotics and breeder removal programmes.

Significant effort is also being invested in the creation of an updated performance plan, setting out the latest programme with all activities required to deliver an interim end state. The first outputs from this work are expected to be shared with the NDA later this year.

### Health, Safety, Security and Environment (as at end April 2019)



- The DSRL/ONR Annual Review of Safety and Security was held in March. Positive feedback was received from the regulator on the year's performance.
- In March, DSRL received SEPA's final assessment for authorisations covering the site and waste vaults, with both deemed excellent. The assessment scores were the result of a year of compliant delivery and a programme of improvements to the site's systems and processes. DSRL has also committed to SEPA that it will enhance some of ageing environmental assets, including ventilation systems and drain discharge networks. This is due to happen over the next 2 years.
- The British Safety Council has given Dounreay an International Safety Award with Merit for the site's commitment to keeping its workers and workplace healthy and safe during 2018.
- In February, a scaffolder slipped on a ladder shortly after rainfall and caught their back on the railing. An investigation was undertaken and external contractors were also asked to review scaffolding arrangements at the site to ensure the latest best practice was being implemented.
- A part within an extraction system appeared to not operate correctly in one of the site's plants, allowing some air to blow in the wrong direction for a short period of time. An investigation is underway and DSRL is sharing information about this event with SEPA.
- An operator fell from a Mobile Elevated Work Platform (MEWP) basket while it was in operation. The individual was wearing a harness and lanyard. A site investigation is underway. Team leaders took part in a safety briefing with the Managing Director after the event to ensure everyone maintains focus and avoids complacency.
- The annual site demonstration exercise will take place on 15 May 2019. This will involve all personnel on site and will be witnessed by ONR.
- The UK Government is revising the regulations for the protection of the public and workers from radiation emergency at a nuclear facility. The revision implements the requirements of the 2013 Basic Safety Standards Directive which ensures continuous improvement in emergency arrangements and draws upon current international best practice. The proposed regulations were laid before Parliament on 27 March 2019 and are expected to come into force on 22 May 2019. Operators and local authorities have 12 months from this date to implement the new arrangements.

## **Site decommissioning**

### **Fuels**

- The NDA and US Department of Energy's National Nuclear Security Administration (NNSA) have completed the transfer of around 700kg of highly enriched uranium (HEU) from Dounreay to the US.

The HEU transfer was announced by the UK Government as part of its commitment to the 2016 Nuclear Security Summit held in Washington DC.

NDA CEO, David Peattie, thanked the staff from DSRL who coordinated the moves, counterparts from the US Department of Energy and the other agencies involved with moving the material, for their commitment and hard work.

He said: "The successful completion of the complex work to transfer HEU is an important milestone in the programme to decommission and clean-up Dounreay Site."

The HEU will be down-blended in the US to be used as fuel in civil nuclear reactors - for entirely peaceful purposes.

The US is sending a different form of the material to Europe, where it will be used as research reactor fuel and in the production of medical isotopes.

Lisa E. Gordon-Hagerty, DOE Under Secretary for Nuclear Security and NNSA Administrator added: "This joint effort highlights our strong cooperation and mutual non-proliferation goals".

## **Reactors**

- Dounreay and BD Nuclear have carried out successful trials in JGC's facility in Janetstown on equipment that will be used to drill into the PFR leak jacket. The holes will be used to deploy heaters which will melt the remaining pool of sodium to allow it to be extracted.
- The PFR in-reactor tool project has achieved a further milestone by completing the design, manufacture, factory acceptance and trials of another 4 bespoke tools which will be used to dismantle the reactor core.
- A 2-day drone survey of PFR turbine hall and steam generator building has been completed. The drone was flown inside the buildings to provide close images of internal structures for a report on the physical condition of the facility, saving time and money, and reducing the risk of working at height.
- A new 15" adaptor valve body has been designed using the existing 15" adaptor valve. This equipment is being used to remove 28 instrument liner tubes (ILT) from the rotating shield in PFR. The new design reduced the time it takes to remove each ILT from 7 days to 2 days.
- A neutron shield rod plug has been removed at PFR, steam cleaned and wrapped for disposal via the appropriate waste route.
- The DFR fuel storage pond decommissioning team has removed part of the NaK disposal plant (NDP) to free up space in the sphere, now that the NDP is no longer required. The



off-gas pipework and associated components were stripped out in glovebag conditions using manual tools.

- The NaK disposal plant strip-out work is now almost complete. The aim was to remove non-NaK wetted plant from DFR and this was undertaken safely.

### **Fuel Cycle Area**

- The D1200 team has decommissioned Lab 86, which was used for uranium analysis, and had 17 fume cupboards. It is the third lab completed in the financial year.



- The D1204 team achieved a milestone at the end of March when they removed mixer settler boxes from a medium active cell. They will now complete decontamination work and final strip out of the cell.
- The D1206 team has been trialling a replacement active filter change facility 'robot' in an inactive building. The robot removes and replaces used filters from the ventilation system. It was built by JGC using original drawings created in the 1980s. The work will enable the team to prepare for decommissioning of the facility.

### **Waste**

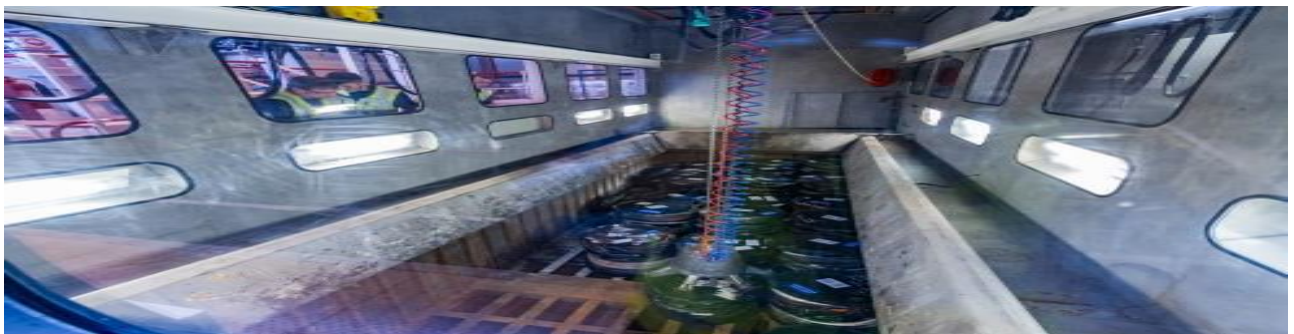
- Dounreay has teamed up with waste and recycling specialists to trial an alternative treatment option for waste metal. The site team worked with EDF Cyclife and Low Level Waste Repository Ltd (LLWR) to safely transport 4 large objects, weighing a total of 66 tonnes, to a specialist facility for recycling during March. It was part of a feasibility study considering a different low level waste metal treatment route for recycling bulk metal items, rather than disposing of them in vaults adjacent to the site.



It builds on similar projects delivered elsewhere in the industry and was developed as part of Dounreay's collaboration with a National Waste Programme established to

deliver the UK's low level waste strategy. The strategy aims to apply the waste hierarchy to reduce the amount of material produced and sent for disposal, make best use of existing disposal assets and ensure fit-for-purpose waste management routes are available.

- An extensive year long programme to verify that waste currently in low level waste stores is compliant with the D3100 waste acceptance rules has now been completed, and disposal to the vaults restarted at the end of March 2019.
- Following replacement of a half-height ISO loading facility hoist, WRACS is back fully operational and has recently completed the historic backlog of drums created while the supercompactor was being replaced between 2012 - 2016.



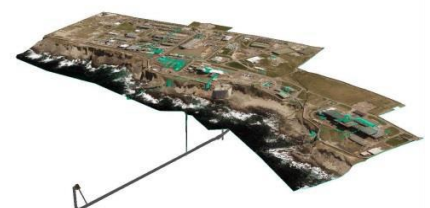
### **Construction**

- A key enabling project has been completed allowing work to begin to construct an extension to Dounreay's Cementation Plan. Around 19,000 tonnes of mixed waste material have been excavated and disposed of. They have also removed former building foundations, drains and the former low active drain and pipe bridge foundations to the DMTR complex.



### **The Interim End State Delivery Team**

- Dounreay continues to look at an unconstrained review of the site end state. As part of this review the Interim End State department ran 2 end state workshops with representatives from across site as well as representation from the NDA. The output was a list of credible end state options which aim to balance potential land use, administrative controls and land conditions. Going forward the credible options will be assessed in accordance with the NDA value added framework and strategy management system.
- A 3D model of the site and its sub-structures is being created, which will help to manage the closure of the site. The model will show how groundwater and contamination interact with the land, with future activities being able to be overlaid onto it.



## Particles

- Between February 2019 and May 2019, two particles were recovered from the Dounreay Foreshore. The first was detected on the East Foreshore in February 2019 and was classified as Significant while the second particle detected in April 2019 on the West Foreshore and was categorised as Relevant.
- Between February 2019 and May 2019, two particles were recovered from the Sandside beach. These were detected in February 2019 and March 2019 respectively. Both were categories as minor.
- Analysis of the unusual particle recovered from the Dounreay foreshore in 2016 is ongoing. The particle has undergone laser ablation at the University of Southampton, to determine its carbon content. The particle has now been returned to the Dounreay site and is undergoing gastrointestinal analysis.

## Commercial

- Dounreay has announced the award of 6 decommissioning services framework contracts, bringing together the capabilities of 28 companies and their supply chains. These frameworks are initially for 4 years with the possibility of extending for a further 3 years. They will allow the site into a new phase of decommissioning historical facilities including shaft, silo and low level waste pits. The organisations appointed are:
  - AECOM E&C UK, MW Hargreaves, Kier Infrastructure and Overseas, Morson Projects, NIS, NSG Environment, Squibb Group, Westinghouse Electrical Company UK.
  - Dounreay Decommissioning Framework (DDF) Alliance: Cavendish Nuclear, BAM Nuttall, KDC Contractors, JGC Engineering and Technical Services.
  - Dounreay Wood Alliance (DWA): Wood, Quila Nuclear Engineering, GD Energy Services, Orano Projects.
  - Jacobs UK, Atkins.
  - Nuclear Decommissioning Ltd (NDL): James Fisher Nuclear, REACT Engineering, Shepley engineers, WYG Engineering, JBV Demolition, RPS Consulting Services.
  - Nuvia: Graham Construction, Oxford Technologies, Thompson of Prudhoe
- LINC opportunity 4 was launched towards the end of last year, inviting small and medium sized companies to develop a sample tracking, despatch and monitoring system which would automate a lot of manual systems currently used by the Interim End State team to free up working time. Affilius Ltd was awarded a contract to develop a system which will use barcode readers, tablets and PC based database software tailored to our

requirements. This is expected to be complete by end of April.

- In February 2019, local company Blargoans was awarded a framework agreement for contingent resource provision alongside national companies Capita Business Services, Carbon60, Morson Human Resources and Rullion Ltd. The multi-million pound framework provides the site with agency supplied workers.
- Dounreay awarded a contract to PCT Group Sales Ltd in March 2019 for the design, procurement, manufacture, testing, installation and commissioning of an overhead crane for the unshielded waste store extension to the Dounreay Cementation Plant. The crane is designed to lift and manoeuvre 6 cubic metre rigid concrete boxes weighing up to 50 tonnes and half height ISO containers weighing up to 35 tonnes.

## General

### Staffing (as at end of March 2019)

|                       | FTE Target | FTE Actual /Forecast |
|-----------------------|------------|----------------------|
| <b>Current - DSRL</b> | 1,079      | 1,144.7              |
| <b>Current – ASW</b>  |            | 142                  |

- 7 new starts, 3 resignations.
- Dounreay’s executive team was reshaped from 1 April so that it is in a strong position for the next phase of decommissioning. Two new starters joined the team:
  - Lesley Sewell, Business Services Director
  - Barrie Cran, Assurance Director

Graham Cameron is acting Organisational Excellence Director until an appointment is made.

- Jane Mackenzie has been appointed Head of Commercial Services. She will take up the role in July when Stephen Adamson will leave to take up another position with the parent body organisation.
- The site said farewell to David Lowe, Deputy MD and Andy Beckwith, Fuels Director, both having completed their secondment to Dounreay.
- Eight health physics surveyor trainees have started their 2-year training programme on site. The trainees will complete a NVQ Level 2 diploma in radiological protection, combined with on the job training delivered by a newly formed Dounreay and Nuvia partnership. Five of the trainees are employed by DSRL and 3 with Nuvia.
- The site is recruiting for business and administration apprenticeships (applications closed on 26 April).



- Cavendish Dounreay Partnership continues to develop proposals to support DSRL staff at the end of site decommissioning. A number of discussions have been held with NDA and it is expected that a desktop exercise looking at future opportunities, which will take around 2 years to complete, will commence shortly.

## Heritage

- More than 40 people attended a talk by Dounreay's Heritage Officer James Gunn at the Caithness International Science Festival. The audience stayed behind for an hour to view objects James had brought along and to ask questions. John Cormack, who was in the audience, worked at Dounreay from 1956 to 1993 and has given James some memories to record.
- Dounreay has now completed the removal of all site archives to Nucleus for long term storage. Over 22500 boxes of documents have now joined the extensive historical photo library already held in the facility.

## Visits / Events:

- Representatives of the Interim End State Delivery team chaired a Nuclear Industry Group on land quality at Harwell.
- FCA representatives attended a Nuclear Decommissioning Knowledge Capture workshop hosted by the Institution of Mechanical Engineers at ONR's headquarters in Bootle last week. The event was organised by Dounreay's Gordon Tait.
- In February, Dounreay welcomed pupils and teachers from Stromness Academy, Orkney, for an opportunity to see engineering design work in action.
- In March, Sam Usher and Ali Coghill delivered a presentation to an international audience on the development, implementation and optimisation of waste management at Dounreay at the Waste Management Symposium in Phoenix, Arizona.
- Women's Network members Maryrose Bailey and Natalie Bain recently went to talk to P7 pupils at Pennyland Primary School. They shared their own career experiences and invited the class to think about how STEM affects their own lives and could influence their future career choices.





- Stephen Adamson presented at an energy supply chain conference in Glasgow in March 2019. It was attended by over 200 companies from the nuclear, renewables and oil and gas sectors. The conference provided a rare opportunity to promote nuclear decommissioning as an attractive option to organisations who are used to delivering complex engineering solutions. Stephen made a specific point of encouraging Small and Medium Enterprises to get in touch via Dounreay's LINC scheme.

**Dounreay Site Restoration Limited**

24 April 2019

## GLOSSARY

| Abbreviation |  |
|--------------|--|
| BCP          | Baseline Change Proposal   |
| DACR         | Days Away Case Rate  |
| DCP          | Dounreay Cementation Plant   |
| DFR          | Dounreay Fast reactor  |
| DIT          | Dounreay Improvement Team  |
| DMR          | Dounreay Modification Report   |
| DMTR         | Dounreay Materials Test Reactor                                      |
| DPF          | Dounreay Planning Framework  |
| DSRL         | Dounreay Site Restoration Ltd  |
| EIA          | Environmental Impact Assessment                                      |
| ES           | Environmental Statement  |
| IFBS         | Irradiated Fuel Buffer Store   |
| IFC          | Irradiated Fuel Cave   |
| INF          | Incident Notification Form   |
| LLLETP       | Low Level Waste Effluent Treatment Plant                             |
| LLW          | Low level waste  |
| LTA          | Lost Time Accident   |
| mSv          | milli Sieverts   |
| NDP          | NaK Disposal Plant   |
| OJEU         | Official Journal of the European Union                               |
| ONR          | Office for Nuclear Regular   |
| PBO          | Parent Body Organisation   |
| PCP          | Project Control Procedure  |
| PFA          | Pulverised Fly Ash   |
| PFR          | Prototype Fast Reactor   |
| PFR          | Prototype Fast Reactor   |
| PSR          | Preliminary Safety Report  |
| RAMT         | Radioactive Material Transport                                       |
| RIDDOR       | Reporting of injuries, Diseases & Dangerous Occurrences Regulations. |
| RSA          | Radioactive Substances Act   |
| SEPA         | Scottish Environment Protection Agency                               |
| SID          | Sodium Inventory Destruction Plant                                   |
| STA          | Sample Tank Annex  |
| TRIR         | Total Recordable Incident Rate                                       |
| WRACS        | Waste, Receipt, Assay, Characterisation and Supercompaction          |