

New LLW Facilities Project – Stage 2

Summary of Environmental Impact Mitigation Measures for the Proposed New LLW Facilities

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Introduction

- 1 UKAEA has undertaken a transparent and consultative site selection process resulting in the decision to submit a planning application for new LLW disposal facilities on a site adjacent to the eastern boundary of the existing Dounreay nuclear licensed site. The proposed facilities consist of a series of six below-ground concrete vaults, required to enable the decommissioning and restoration of the Dounreay site. .
- 2 UKAEA has consulted widely on the proposals, both in the Best Practicable Environmental Option (BPEO) selection stage¹ and during the subsequent preparation of the planning application and its associated Environmental Statement². Some stakeholder views that have arisen during this process have influenced the design and location of the facilities on UKAEA-owned land³ at Dounreay:
 - (i) Transportation of LLW should be minimised
 - (ii) The facilities should be on or close to the existing Dounreay nuclear licensed site so as to minimise the spread of the site footprint.
 - (iii) The facilities should not be visually intrusive.
 - (iv) More emphasis should be put on the impacts of the facilities during construction and operation, rather than focusing on long-term (post-closure) safety⁴.
- 3 This note summarises how the design of the facilities has evolved to minimise, as far as practicable, the impacts on the local environment and, where possible, taking account of stakeholder feedback on the proposed development. All impacts have been assessed and mitigation measures detailed in the Environmental Statement (ES) and ES Addendum Report⁵. This summary does not repeat all the assessed impacts, but focuses on a number of key impacts and the associated mitigation measures

Choice of management option

- 4 During the option selection process, undertaken in the form of a BPEO study, two environmental impact factors influenced the option selection. Transporting LLW away from Dounreay was viewed negatively by most stakeholders. It was also recognised that building an above-surface facility would have a significant visual

¹ GNGL(04)TR75 April 2004 - Dounreay LLW Strategy Development - Best Practicable Environmental Option Study - Final report

² LLW(06)S2/61 March 2006 - New LLW Facilities Project – Stage 2 – Environmental Statement

³ The land was UKAEA owned during the consultation and this is how it is referred to but ownership has recently transferred to the Nuclear Decommissioning Authority

⁴ This statement recognised the relatively low hazard from LLW in the long-term due to radioactive decay.

⁵ LLW(07)S2/261 March 2008 - New LLW Facilities Project – Stage 2 – Environmental Statement Addendum

impact, both during the construction and operation phases, and also after its closure. The choice of a below-surface facility at Dounreay helps minimise the transport of LLW and visual impacts.

Environmental impact mitigation measures in the design process

- 5 In November 2005 UKAEA consulted on its initial proposals for new LLW disposal facilities. At that time, UKAEA was criticised for not taking sufficient consideration of its near neighbours' concerns. In addition to their expressed concerns about the potential planning blight associated with the proposals, the main criticisms were the visual impacts of a facility at the proposed location, the construction impacts on near neighbours in terms of noise, dust and visual impact, and criticism of having placed the facility well away from the existing licensed site, in an area regarded by some as "in the neighbours' back gardens".
- 6 UKAEA subsequently reviewed possible locations at Dounreay and the constraints on locating the facility,^{6,7} and changed the location to minimise as far as practicable the impacts to local receptors.
- 7 The initial location and final location of the proposed new LLW facilities are shown in Figure 1. The change of location takes the facilities over the brow of a hill to an area which is not easily seen locally, from either neighbouring residences or the main road (A836). It increases the distance between the nearest neighbour and the facilities from around 360 m to around 580 m. This is a similar distance to that of the existing licensed site from the nearest neighbour. Due to the topography and increased distance, the selected location will help minimise, as far as is practicable, visual, air quality and noise impacts on local receptors.
- 8 This choice of location has moved the facility as close to the existing site as possible, given safety constraints such as locating the facility away from major geological faults and placing the facility a suitable distance from the sea to take account of potential coastal erosion and sea-level rise in the far future. There is no suitable location for the facility on the existing Dounreay licensed site⁸. The final location therefore minimises the transport of the LLW as far as is practicable.
- 9 As well as moving the facilities to a location that is less visually intrusive, the facilities have been designed to help minimise visual impact. The grouting plant, a fairly large building, has been located on the existing licensed site to allow it to blend in with its surroundings. Lines of sight from nearby residences have been determined and used to limit the height of the development structures outside the existing licensed site, such as the spoil mound, so that the visual impact to nearest neighbours is minimised as far as practicable.

⁶ LLW(06)S2/55 March 2006 – LLW Facilities Stage 2 Site Selection Paper & LLW(06)S2/60 March 2006 – LLW Facilities Site Selection Workshop Record January 2006.

⁷ LLW(07)S2/195 Issue 1, March 2008 – New LLW Facilities Project – Stage 2: Position Paper on Climate Change and its Impacts & LLW(07)S2/243 Issue 1, March 2008 – New LLW Facilities Project – Stage 2: Position Paper on Selection of the Proposed Location

⁸ LLW(07)S2/244 Issue 1, March 2008 – New LLW Facilities Project – Stage 2: Position Paper on Why the Proposed New Facilities are not on the Existing Licensed Site

- 10 The spoil created from the excavations will be placed in a mound adjacent to the vault location to minimise transportation of material, both away from the vaults during their construction and to the vaults during their closure. This material will be used for restoration of the ground at the site and for restoration of the existing licensed site, and will minimise the requirement to transport material from outside the Dounreay area.
- 11 Potential impacts to flora and fauna have also been assessed, and the facilities have been designed to avoid or minimise impacts as far as is practicable. For example, there is a population of Scottish Primrose found close to the coast and the position of the spoil mound has been altered to minimise disturbance to the colony.

Mitigation measures in the construction, operation and closure

- 12 The Environmental Statement (ES) identified that the most significant environmental impacts will occur during the vault construction stage, with no significant impacts during operation and a small number during vault closure and restoration of the area. A key undertaking will be that the mitigation measures identified in the ES Schedule of Environmental Commitments will be taken forward and incorporated into the design and construction contracts to ensure their implementation. The implementation and effects of the mitigation measures will be monitored and the results made available to the public.
- 13 Local stakeholder consultation suggests that the key impacts to near neighbours are visual, noise and dust impacts, as well as perceived property blight through the proximity to a LLW disposal facility.
- 14 Visual impacts have been primarily addressed through location and design as discussed in the previous section.
- 15 Impacts to air quality are mainly anticipated through the generation and spread of dust, particularly during excavation and construction. This will be minimised through implementation of best working practices, such as using construction equipment designed to minimise dust generation, ensuring vehicles are clean before leaving site, removal of dust-generating materials as soon as practicable, and cleaning and damping down of roads. The impact to receptors has also been minimised through increasing the distance of the facility from the nearest neighbours.
- 16 Noise impacts have also been minimised through location of facility as far from local receptors as is practicable. Noise will be further reduced through implementation of best working practices such as use of quiet plant, shrouding of equipment, switching machinery off when not in use, use of non-tonal reversing alarms, and use of temporary screening. It is also planned to carry out the excavations for the vaults without the use of blasting. A programme of noise monitoring at local receptors will be established to ensure noise levels do not exceed established limits during the construction and closure phases.

- 17 Transport impacts have been minimised through design and location as discussed in the previous section. Further reduction in the impacts will be established through the production and implementation of a Traffic Management Plan. This will include implementing measures such as staggering construction site working to avoid Dounreay peak traffic periods, using on-site materials where possible, and agreement of haulage routes.
- 18 The issue of local property blight has been minimised as far as is practicable by moving the location of the facility as far from nearest neighbours and as close to the existing licensed site as possible. The area will be restored to a near-natural condition at closure. In addition, note that the facilities are necessary to support restoration of the existing Dounreay site, making it available for other uses.
- 19 Other environmental impacts have also been assessed in the ES and measures proposed to minimise those impacts, but it is not intended to list all these within this summary report. For example, impacts on the coastal heath and Scottish Primrose have been minimised by leaving a coastal strip, which will be fenced off to avoid disturbance. Similarly the Scheduled Ancient Monument, Cnoc-na-h'Uiseig, will be fenced off to avoid disturbance. Any excavations will undergo archaeological monitoring as required to identify, record and, if appropriate, carefully excavate any archaeological remains of cultural heritage value. Disturbance to birds will be minimised through the timing of the commencement of construction operations and restoration of habitat when the facilities are closed. Impacts to local water bodies will be minimised through the implementation of the principles of Sustainable Urban Drainage Systems.

Summary

- 20 UKAEA has undertaken a transparent and consultative Environmental Impact Assessment and has endeavoured to minimise the environmental impacts of the proposed new LLW facilities as far as is practicable. A key consideration has been to move the proposed location to an area which helps minimise visual, air quality and noise impacts on local receptors. This location also moves the facility as close to the existing licensed site and as far away from near neighbours as is practicable. Other measures have also been proposed in the design and construction phases to minimise these impacts and others. The assessed impacts and the associated mitigation measures have been fully detailed in the Environment Statement and associated Addendum Report.

Figure 1. Illustration of the change of location of the proposed new LLW facilities from November 2005 (Scoping Location) to the current location. Some relevant distances are shown.

