Issue	3
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Dounreay

Biodiversity Action Plan

DSRL Commitment

DSRL is committed to minimising the impact of its activities on the environment and is required to comply with environmental legislation as the site is progressively decommissioned. It is our duty to take all reasonably practicable steps to prevent harm and protect the environment.

The Biodiversity Action Plan aims to inform DSRL's stakeholders about the legal requirements for protection and prevention measures relating to biodiversity at Dounreay, and how these are managed now and as we progress towards the Interim End State.

Mark Rouse
DSRL Managing Director

Dounreay
September 2020

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1 INTRODUCTION

Construction of the Dounreay Nuclear Establishment started in 1955 and the United Kingdom Atomic Energy Authority (UKAEA) built more than 180 facilities on almost 140 acres of land. After many years of successful operation, Dounreay has entered the decommissioning phase of its life. As Dounreay is now a decommissioning and environmental restoration site, construction, demolition and waste management activities are being undertaken to return the site to a 'brown field' status. During this process Dounreay Site Restoration Limited (DSRL) must comply with a number of legal requirements. In addition, the site has a duty to take all reasonably practicable steps to prevent harm and protect the environment.

The Biodiversity Action Plan (BAP) aims to inform DSRL's stakeholders of the biodiversity protection and prevention measures that are in place at Dounreay and how biodiversity is, and will continue to be, managed until the site achieves its Interim End State.

The BAP is a dynamic document and will be progressively revised and updated in line with the decommissioning programme.

2 LEGISLATION RELEVANT TO BIODIVERSITY AT DOUNREAY

Dounreay is a nuclear licensed site and as such DSRL is required to ensure that radioactivity cannot escape from the site under Licence Condition 34. This means that access to the site is restricted and access to controlled areas by wildlife is prevented as far as reasonably practicable.

The Environmental Authorisations (Scotland) Regulations 2018 (EASR18) require DSRL to ensure that radionuclides are not released into the environment or introduced into any organisms that will leave the authorised site.

Under the Health and Safety at Work Act DSRL has a duty to take all reasonable steps to protect employees, contractors and visitors from harm on its premises. Some species of bird are aggressive during the nesting period and attack people undertaking work at Dounreay. Therefore, DSRL use a general public NatureScot (NS) licence and a licenced contractor to undertake nesting bird controls, primarily targeted at gulls and terns to allow safe working, whilst also protecting the welfare and health of ground nesting birds. The objective of this strategy is to halt the growth of the gull populations attracted to the site by controlling their on-site breeding success such that their preference is to relocate to more natural environs in the area.

The Waste Management Licence for the site requires that waste operations are carried out so as to minimise the presence of insects, birds and vermin. Pest control and treatment programmes are undertaken to prevent infestation and ensure that no litter escapes beyond the site boundary.

Grassed areas on the Dounreay site are subject to regular maintenance for reasons of security and housekeeping, and weeds are controlled on tarmac and concrete areas by the use of herbicides. The Injurious Weeds Act requires landowners to prevent the translocation of invasive non-native species and the elimination of specific species of flora.

Different levels of protection are afforded specific habitats and species based on European and UK legislation, and National and Local Biodiversity Action Plans. DSRL is required to undertake Environmental Impact Assessments as part of the planning application regime, which include the identification of protected fauna and flora. This BAP identifies those protected species using the Dounreay site and the management arrangements in place to protect them.

Under the EASR18 Environmental Permit DSRL is required to monitor the surrounding environment beyond the Dounreay licensed site on a continuous basis for the protection of human health. The Dounreay environmental monitoring programme also affords a level of protection to non-human species by virtue of this requirement. Additionally, DSRL is required to periodically undertake a review of radiation dose to non-human species to determine whether the site's authorised discharges are having an impact on fauna and flora in its vicinity.

3 PROTECTED SPECIES AND HABITATS

Some species and habitats are protected by law and DSRL must ensure that its activities do not adversely impact these whilst other species need to be controlled. An ecological calendar of survey times and permit requirements is shown in Appendix 1.

3.1 Breeding Birds

All wild birds, nests and eggs are protected by law during the nesting season, whilst many rarer species have a higher level of protection afforded to them. However, some species that may cause problems may be killed or otherwise controlled all year round in certain clearly defined circumstances, for which a licence is necessary. Arctic Tern, Great Black Backed Gull, Common Gull, Herring Gull, Oystercatcher and Starling have nested on the site in recent years.

DSRL use contractors licenced to undertake nesting bird controls primarily targeted at gulls and terns to allow safe working. This strategy simultaneously protects ground nesting species such as Oystercatcher which breed successfully on the site and are not aggressive towards people. The long-term strategy of the bird control programme is to halt the growth of gull populations by controlling their on-site breeding success such that their preference is to relocate to more natural environs in the area. The bird preventive measures include laying sheeting over potential nesting sites, and this has successfully diverted Arctic Tern from breeding on site to using the Dounreay foreshore instead.

During the nesting season, which is late February through to early August, a licenced contractor uses deterrent measures such as tethered kites which mimic birds of prey, acoustic sounders and lasers to deter birds from nesting in sensitive areas. However, birds quickly become accustomed to these deterrents and they are reinforced by flying non-hunting birds of prey at various points on the site. The non-hunting birds of prey are Falcons and Hawks which have been reared by humans and have no experience of hunting food themselves. They are trained to fly to a lure and do not attack wild birds, although wild birds perceive them as a threat and are deterred from staying. The areas targeted are all within the licensed site. Evidence gathered from the bird management programme shows that birds are relocating to adjacent areas beyond the site such as the Dounreay foreshore and surrounding area.

These targeted measures are not designed to eradicate the bird population on the site, and therefore it is important that decommissioning work is planned so that it can be undertaken outside the bird breeding season wherever possible.

3.2 Bat Species

All bats are protected by law, and it is an offence to intentionally or deliberately kill, injure or capture a bat, deliberately disturb a bat (whether in a roost or not) or damage, destroy or obstruct access to a bat roost. Pipistrelle Bats are a national BAP priority species, and these are the only species to have been found near to the Dounreay site, with groups of two or three adults roosting on the Castle outside the site boundary.

Bats tend to roost in roof spaces and unoccupied buildings and will colonise new or abandoned buildings given the opportunity. DSRL uses netting across doorways and windows on buildings due for demolition to exclude access for bats and birds. Just prior to demolition a bat survey is undertaken by a trained Environmental Adviser to ensure that no bats are present. If bats are found, then the demolition must be halted and DSRL will consult NS.

3.3 Otters

The Otter is a national BAP priority species which uses the Mill Lade as it runs through an engineered culvert at the site. Fresh droppings have been observed throughout the year indicating that regular use is made of this stream to move between inland areas and the Dounreay foreshore, most commonly at night. Despite its engineered nature, the Mill Lade provides a valuable habitat corridor and resting place with varied plant and aquatic communities typical of a clean and unpolluted condition. No breeding sites have been identified within the Dounreay site although these may well be present further up in the Mill Lade catchment.

There are measures in place on site to prevent disturbance of this wildlife corridor and ensure that privacy is afforded to the Otters by leaving the sides of the Mill Lade unmown. Controls are in place to ensure that inadvertent pollution of the stream is prevented, and these requirements are regularly reviewed by an Environmental Advisor.

3.4 Scottish Primrose

The Scottish Primrose is nationally scarce and is confined to Caithness, Orkney and North Sutherland. It is distinguishable from the more common Primrose by its blue, rather than the more common yellow, flowers.

Prior to the construction of the new Low-Level Waste facility an Environmental Impact Assessment identified that significant numbers of Scottish Primrose were present in the area. A programme was implemented to translocate the plant community to a fenced habitat protection zone further along the coast where it would not be disturbed. Subsequent monitoring has indicated that this translocation was a success and the numbers of translocated plants has remained stable in subsequent years.

3.5 Dounreay Beach

The beach outside of the Dounreay site is not designated as a protected site, although the nearby Sandside beach is a Site of Special Scientific Interest (SSSI). It supports plant communities on mobile sands, including a small group of rare Oyster Plant, and breeding colonies of Common Gull and Arctic Tern. The adjacent rocks attract feeding waders and wildfowl in both summer and winter.

DSRL has several monitoring obligations placed on it by the EASR18 Environmental Permit which requires access to the foreshore. The beach is inspected by an Environmental Adviser prior to undertaking monitoring activities to check whether there are nesting birds present, and if there are, monitoring is delayed until the birds have fledged.

4 MANAGEMENT OF GRASSED AREAS AND WEED CONTROL

The Injurious Weeds Act requires landowners to prevent the translocation of invasive non-native species and the elimination of specific species of flora such as Ragwort, which is harmful to animals and humans.

Grassed areas on the Dounreay site are subject to regular maintenance for reasons of security and good housekeeping, and weeds are controlled on tarmac and concrete areas by the use of approved herbicides.

5 MANAGEMENT OF WILDLIFE

The Waste Management Licence requires all waste operations to be carried out so as to minimise the presence of insects, birds and vermin. Control of insects, mice, rats, and all other vermin is carried out as required, with the waste storage and treatment facilities being inspected at least once every six months by a specialist pest control contractor.

There is an annual bird deterrent programme targeting gulls, which are aggressive to people, under licence from the NS. Rabbits are culled as required in order to control the rabbit population and minimise the disturbance of potentially contaminated land by burrowing, in line with the Nuclear Site Licence Condition 34 and EASR18. Rabbits external to the site are also used by the Environmental Monitoring Programme to analyse for radioactivity in the environment as required by the site EASR18 Permit.

6 ENVIRONMENTAL MONITORING PROGRAMME

European legislation (EURATOM Treaty Article 31 and 35) requires Member States to carry out continuous monitoring of the level of radioactivity in the air, water and soil and to ensure compliance with the Basic Safety Standards Directive. The UK is also a signatory to the OSPAR Convention which requires us to reduce the concentrations of radionuclides in the marine environment of the North-East Atlantic, so that by 2020 they add close to zero to historic levels.

DSRL runs an Environmental Monitoring Programme that samples the marine, aerial and terrestrial media at and beyond the Dounreay site as required by the site EASR18 Permit. This includes monitoring levels of radioactivity and ionising radiation in the environment and food caused by the

authorised disposal of radioactive gaseous and liquid wastes. Some of the terrestrial samples include regular analysis from high volume air samplers, rainwater, grass, root-mat, river water and soil. Some of the Marine samples include sediment, seawater, seaweed, salmon, salmon net store, crab, lobster and winkles. Rabbit, mixed berries, eggs and potatoes are also sampled once per year and contribute to this information. The programme is monitored quarterly by the Scottish Environment Protection Agency (SEPA).

The Dounreay site is now decommissioning and therefore radioactive discharges are much lower than when the site was operational. The scope of the site's environmental monitoring programme is aligned to the activities being undertaken. As decommissioning advances and the hazard from the site is reduced over time, the monitoring programme can be reduced in terms of its radius around Dounreay, the number of locations sampled, and the frequency of the sample collection and surveys completed.

7 ERICA DOSE TO NON-HUMANS

ERICA (Environmental Risk from Ionising Contaminants: Assessment and Management) is an assessment tool that is internationally recognised and enables the calculation of radiological dose, and therefore the calculation of risk to non-humans from gaseous or liquid discharges of radionuclides at a specified site. It works by calculating the anticipated dose rate of an animal to the observed (and predicted) discharges from the site and comparing it against a cut off dose rate of 10 µGray hour^{-1}. If the exposure is less than this number, the risk is found to be negligible. DSRL is obliged to regularly conduct such studies and calculations by the EASR18 Permit granted to the site. The most recent assessment was conducted in 2016 by independent assessors. It confirms that the maximum radiological dose that non-human species in the vicinity of Dounreay receive is at least four (and, depending on species considered, usually seven) orders of magnitude below the threshold of 10 µGray hour^{-1}. The 2016 report concludes that non-human species receive far less than the negligible dose threshold and are sufficiently protected from any radiological exposure by the procedures and protective equipment in place at Dounreay.

8 ECOLOGICAL SURVEYS FOR EIA

As part of the wider site restoration programme, DSRL has submitted an application for planning permission to cover all of the Phase 3 (demolition and site restoration) activities to be undertaken on the site to reach the Interim End Point (IEP) which is the planned end date, including the necessary landscape restoration work. This application was supported by an Environmental Impact Assessment (EIA), Flood Risk Assessment (FRA) and Drainage Impact Assessment (DIA). The landscape restoration plan satisfies the wider objectives for sustainable environmental restoration of the site. Outstanding actions placed on Dounreay by planning conditions for developments that have already been completed or are underway have all been met in full, with repeat surveys and monitoring programmes in place as required by the Highland Council.

The Phase 3 application was accompanied by an Environmental Impact Assessment for all the work that is planned, as well as considering the impact of the planned works on the wider environment in Caithness. This EIA was underpinned and informed by an Ecological Survey conducted by an independent contractor to ensure that planning decisions are informed with the most up-to-date information available. The surveys confirmed the continuing presence of many of the species

identified in this BAP, including Otters, Pipistrelle Bats and the various bird species identified above, Scottish Primrose and Oyster Plant on the Dounreay beach.

9 PLANNING CONDITIONS

DSRL is required to submit planning applications for any new building work such as the Low-Level Waste Facility. Planning permission has been granted for the next phase of work on the site which will cover building demolition, infrastructure removal, remediation of any contaminated land, and landscaping. Planning conditions have been placed on DSRL as part of this process, and any ecological actions that are required to be implemented as a result of this are included in the Dounreay Constraints Register.

10 INTERIM END STATE AND BEYOND

DSRL is decommissioning the Dounreay site to reach an Interim End State (IES) that requires the removal of all decommissioned buildings to floor level and the filling of any void spaces. It also requires any residual contamination to be below an acceptable level across the whole site, among other defined requirements. The production of a Site Environmental Safety Case is required to justify and prove this demonstration. A detailed guide to site closure is available here which explains the IES requirements and the timescale fully.

The remediation and landscaping required to reach IES will be part of the final decommissioning project. DSRL's preferred outcome at IES involves the removal of most site fencing, some buildings and floor slabs, as well as removal of some site roads. Remaining structures, such as the fence plinth, will be mounded over with soil. DSRL is currently commissioning research at the University of the Highlands and Islands to identify the best seed mixes for areas of open ground left after building removal.

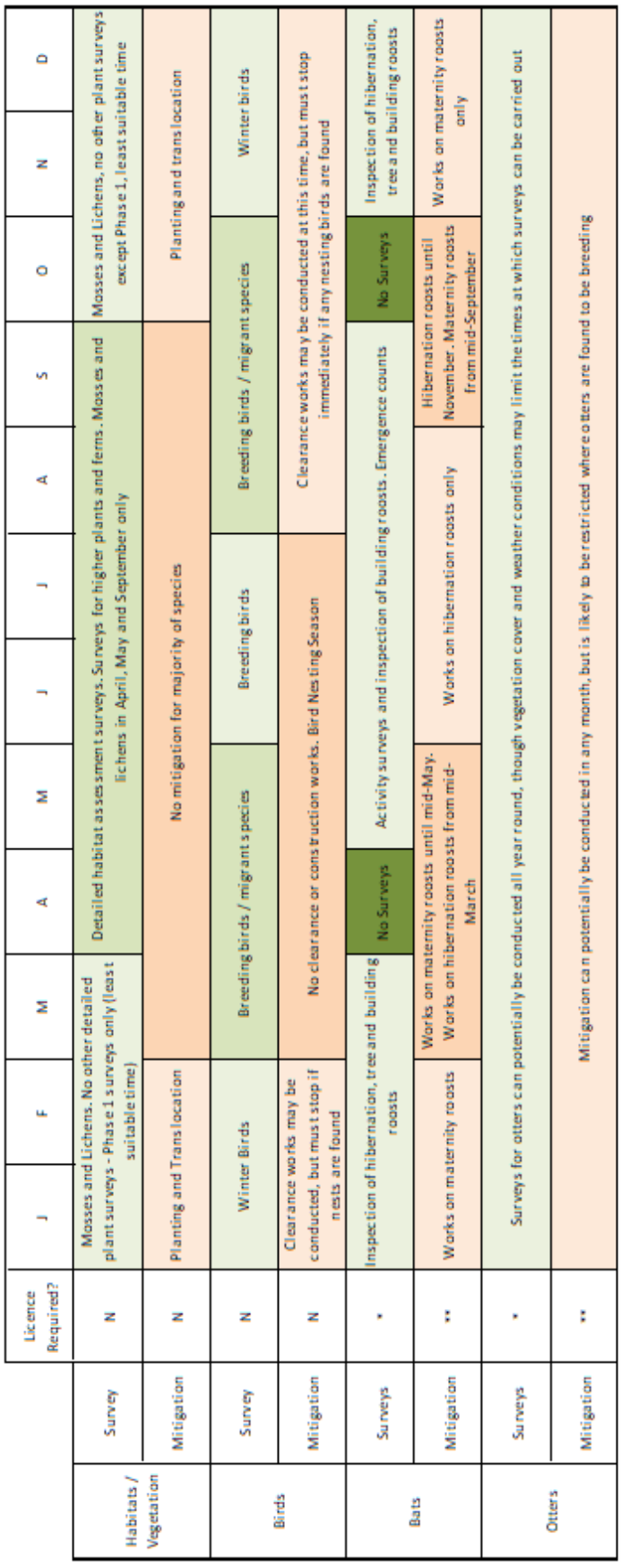
It is anticipated that most of the site will be seeded with wildflowers, leaving only small areas of amenity grassland, which will need to be mown regularly. There will be removal of security obstructions, flood relief channels, bridges and culverts on the Mill Lade, allowing faster drainage of the area, but with flooding risk further reduced by allowing areas of wetland to pool excess water when needed.

The site will be left in an optimum condition for re-use, whether for recreational or industrial purposes.

11 PROGRAMMED ACTIVITIES

Activities Undertaken	Periodicity
1. Maintain a bird control programme	Annual
2. Survey for bat presence prior to demolition of buildings	As required
3. Survey Dounreay beach for ground nesting birds prior to access	As required
4. Pest and vermin control	Continuous
5. Environmental Monitoring Programme	Annual
6. ERICA Assessment	As required

APPENDIX 1 ECOLOGICAL CALENDAR OF SURVEY CONSTRAINTS



		Licence Required?	J	F	M	A	M	J	J	A	S	O	N	D
Habitats / Vegetation	Survey	N	Mosses and Lichens. No other detailed plant surveys - Phase 1 surveys only (least suitable time)			Detailed habitat assessment surveys. Surveys for higher plants and ferns. Mosses and lichens in April, May and September only						Mosses and Lichens, no other plant surveys except Phase 1, least suitable time		
	Mitigation	N	Planting and Translocation			No mitigation for majority of species						Planting and translocation		
Birds	Survey	N	Winter Birds		Breeding birds / migrant species		Breeding birds			Breeding birds / migrant species			Winter birds	
	Mitigation	N	Clearance works may be conducted, but must stop if nests are found		No clearance or construction works. Bird Nesting Season					Clearance works may be conducted at this time, but must stop immediately if any nesting birds are found				
Bats	Surveys	*	Inspection of hibernation, tree and building roosts			No Surveys	Activity surveys and inspection of building roosts. Emergence counts					No Surveys	Inspection of hibernation, tree and building roosts	
	Mitigation	**	Works on maternity roosts		Works on maternity roosts until mid-May. Works on hibernation roosts from mid-March			Works on hibernation roosts only			Hibernation roosts until November. Maternity roosts from mid-September		Works on maternity roosts only	
Otters	Surveys	*	Surveys for otters can potentially be conducted all year round, though vegetation cover and weather conditions may limit the times at which surveys can be carried out											
	Mitigation	**	Mitigation can potentially be conducted in any month, but is likely to be restricted where otters are found to be breeding											

Table 1. Calendar of permitted survey and mitigation times throughout the year, avoiding periods of species sensitivity the disturbance. * Where survey techniques involve the capture, handling or disturbance of protected species then only licenced persons can undertake surveys. Licenses must be issued by, or approved by, Scottish Natural Heritage. ** Where mitigation involves the killing, capture, injury and/or disturbance of protected species and/or the damage, destruction or obstruction of their habitats, a development license must be obtained from the Scottish Governments Environment and Rural Affairs Department. Licenses will be granted only to persons who have proven competence in dealing with the species concerned.