

## Introduction

This report covers the Environment Agency's regulation of Dungeness A and B sites and related environmental matters.

## Nuclear regulation

Phil Fahey is the lead regulator for the Dungeness A site. Andrew Stone is the lead regulator for the Dungeness B site, assisted by Eddie Osondu.

Phil, Andrew and Eddie work in the Nuclear Regulation Group (South). Officers from the Kent Area Environment Agency team also visit the site for general environmental protection matters such as groundwater, contaminated land, waste management and water abstraction.

We work closely with other regulators such as the Office for Nuclear Regulation (ONR) in areas of common interest.

## Attendance at site

We regulate radioactive waste disposals through environmental permits that contain limits and conditions aimed at minimising wastes and protecting the environment. We check compliance with the permit by making regular inspections. These are recorded on Compliance Assessment Reports which detail our inspections and any non-compliance(s) found; these are placed on our Public Register.

We visited Dungeness A on 2<sup>nd</sup> October and on 5<sup>th</sup> and 6<sup>th</sup> December 2018. We visited Dungeness B on 5<sup>th</sup> and 6<sup>th</sup> November.

Regular contact is also maintained with the sites by telephone and e-mail in addition to formal correspondence.

## Discharge reports

Both sites are required to report to us liquid and gaseous discharges to the environment and transfers of radioactive waste to other sites on a

regular basis. These reports are placed on the public register. Liquid and gaseous discharges from both Dungeness sites remain within the limits set by the Environmental Permits.

Gaseous discharges from Dungeness A are mainly constant. Aqueous discharges do tend to fluctuate more. This is due to different decommissioning projects being undertaken at site e.g. ponds drain and the issues encountered with the final delay tanks. The average activity discharge for caesium-137, tritium and "other radionuclides" (others includes radionuclides produced when the site was operating) over the last 18 months has been fairly constant. There have been only small rises in the average tritium and "any other radionuclides" discharges observed.

## Environmental monitoring

The Operators carry out monitoring of various environmental samples at periodic intervals and report the information to us. Dungeness B staff carry out the work on behalf of both sites. The programmes are slightly different to reflect the radionuclides that are being discharged, the historical discharges and the operational activities taking place at each site.

In addition to the Operators' environmental monitoring programme the Environment Agency participates in an independent UK-wide monitoring programme. The results of these monitoring programmes are published annually and are used to assess the dose received by members of the public in the vicinity of nuclear licensed sites. Radiation doses to people living around nuclear licensed sites from authorised releases of radioactivity were well below the UK national and European limit of 1000 micro Sieverts ( $\mu\text{Sv}$ ) per year in 2017.

Occasionally, radionuclides are detected in environmental samples at very low levels.

In quarter 3 2017 our environmental monitoring programme showed a very small amount of strontium-90 in the marine sediment sample from Rye Harbour. This was a very small amount of radioactivity at 4 Becquerels per kg (Bq/kg). This amount is just above the level of detection for the laboratory performing the measurements. In quarter 1 2018 the subsequent result from Rye Harbour was less than detectable levels (i.e. less than 2.1Bq/kg).

Similarly, small amounts of strontium-90 were reported by the Operators' programme in marine sediment in quarter 2 2018 at 3 locations (Lydd on Sea, Camber sands and Greatstone). The levels were smaller than our measurements in the range 1.41Bq/kg to 1.99Bq/kg (Lydd 1.41 in May and 1.99 in June, Greatstone 1.6 in April and Camber 1.97 in April). The laboratory that Dungeness B uses has a lower level of detection for strontium-90. We have now received the results of samples from quarter 3 (July/August 2018); strontium-90 analysis can take several weeks. The levels measured have fallen to a level below the detection limit again.

Strontium-90 is a fission product which emits beta radiation. Beta radiation is a form of radiation that can be blocked by a thin sheet of metal or plastic. Other beta emitters include potassium-40, which is a naturally occurring radionuclide.

Strontium-90 is present in the environment from a number of sources. Environmental samples will include a 'background' contribution from nuclear accidents and historic atmospheric weapons testing as well as from nearby discharges such as nuclear sites or hospitals. In hospitals it can be used for the treatment of cancers.

The amount of radioactivity found in marine sediment is very small, being just around the limits of detection. In comparison, 1 kilogramme of Brazil nuts can contain more radioactivity from natural sources (around 200Bq/kg). The human body contains around 4000-5000 Bq of the radioactive isotope potassium-40. These levels of radioactivity are not considered dangerous.

It is possible that the strontium-90 in sediment came from Dungeness A discharges and the environmental monitoring programmes need to provide assurance that any levels detected in the environment are not a cause for concern. The public and environment are protected by issuing permits to control the amount of radioactivity discharged from sites. We carry out modelling to predict how radioactivity discharged to the environment will disperse and to assess the exposure of the public and wildlife. The environmental permit issued to Dungeness A allows them to make discharges of strontium-90. These discharges are much lower than the levels that were discharged when the site was an operating station generating electricity.

We carry out routine compliance inspections to scrutinise how the site is complying with the environmental permit. The Dungeness A site operates well within its discharge limits.

Measurements of radioactivity in the environment by both the Operator and the Regulators can demonstrate to the public whether there any concerns from radioactive discharges from nuclear sites. If unexpected levels of radioactivity are discovered we can detect them and decide whether to investigate. The measurements also help us to verify the modelling of environmental dispersion that we carry out.

We will inform the SSG of any issues highlighted by the environmental monitoring programmes.

### Publication of RIFE Report

The annual "Radioactivity in Food and the Environment" (RIFE) report presents results of the national monitoring programmes conducted by the Environment Agencies and the Food Standards Agency. These monitoring programmes support our regulatory function and provide reassurance that public radiation exposures are within legal limits. The report was published on 25<sup>th</sup> October 2018 and can be found here:

<https://www.gov.uk/government/publications/radioactivity-in-food-and-the-environment-rife-reports>

This is the 23<sup>rd</sup> edition of RIFE containing information on radiation exposures (doses) to the

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public and radioactivity levels in the environment during 2017. It covers locations near to nuclear fuel production and reprocessing sites, research establishments, nuclear power stations, defence establishments, radiochemical production, industrial and landfill sites, and non-nuclear sites. It also reports on regional monitoring away from these sites, which provides data on background radiation levels.

The report for 2017 shows that total doses to the public, from permitted discharges and direct radiation around nuclear sites, remained well below the legal limit of 1000  $\mu\text{Sv}$  per year. The unit for measuring radiation dose is the Sievert (Sv); 1 Sv is a very large dose. A more convenient unit to use is micro Sieverts ( $\mu\text{Sv}$ ) and 1  $\mu\text{Sv}$  is one-millionth of a Sv (0.000001 Sv).

At Dungeness, results showed that total radiation dose (from all pathways and sources of man-made radiation) to the most exposed person were similar in 2017 to those reported in previous years:

21  $\mu\text{Sv}$  in 2017  
21  $\mu\text{Sv}$  in 2016  
14  $\mu\text{Sv}$  in 2015  
21  $\mu\text{Sv}$  in 2014

For comparison, a typical chest x-ray gives the patient a radiation dose of around 100  $\mu\text{Sv}$  and a dental x-ray around 5  $\mu\text{Sv}$ .

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## Current regulatory issues

### Dungeness A

We are in regular contact with the Head of Radiation Protection and Environment to ensure that we are kept in touch with progress on actions and any emerging issues at the site. We have been liaising recently with several projects such as the continuation of ponds decommissioning and ILW retrieval, processing and dispatch to Bradwell.

#### Catch up Inspection.

We held catch up meetings at site on 2<sup>nd</sup> October and 5<sup>th</sup> December where various decommissioning projects were discussed.

#### Event involving asbestos very low level waste.

Following the issue of a formal warning letter for the event outlined in the last SSG report, we have received an update on the actions we gave the Operator to prevent a reoccurrence. We are satisfied that the Operator is making progress to ensure all actions are closed out by the due date of the end of the year. The actions were as follows:

1. Ensure that environmental performance is adequately supervised especially in high risk or hazardous areas.
2. Review the number of supervisors at site. Ensure that there are adequate numbers and that they have the time to perform their supervisory duties.
3. Perform a programme of environmental compliance training for staff at site. This should include consequences of breaches to the company and staff involved.
4. Review the process for characterising solid waste to ensure it is fit for purpose. Ensure there are adequate checks of paperwork before waste is consigned. The review will need to include ensuring that procedures and training are adequate and fit for purpose.
5. Review the requirements for recording of training on procedures of staff at site.

#### Inspection on Asset management on 6<sup>th</sup> December 2018.

On 6<sup>th</sup> December we performed an asset management inspection with the Office of

Nuclear Regulation. This was a follow up to our previous inspection in February 2018. At that time there were no non-compliances noted from the inspection but we were not happy with all arrangements. The issues of degradation and water ingress now mean that large amounts of money needs to be spent to take down large assets.

The inspection found that performance on asset management has improved. Asset management improvements have also been implemented throughout Magnox. An asset management database which lists all assets gives the corporate centre an overview across the fleet. This then can then inform funding decisions.

Potential changes in the decommissioning strategy for Dungeness A will affect how assets are managed at site. We will be liaising with the Operator and ONR closely on any future changes.

#### Application for permit variation.

In November 2018 the Operator applied for a variation to add 3 radioactive gaseous discharge routes to the permit. These are required for various decommissioning activities at site. The discharges from these facilities are expected to be low (less than 1% of the permitted limits for all 3 routes combined). As such, the present gaseous discharge limits and hence the overall radiological impact from the gaseous discharges allowed under the permit will not change. The gaseous discharges from Dungeness A will continue to remain well below the permit limits.

The Operator has also applied to add the off-site disposal of aqueous radioactive liquid waste to their permit. The latest nuclear site permit template allows the transfer of such wastes to an authorised disposal route. Radioactive liquid radioactive wastes for off-site disposal can now include both aqueous liquid wastes and non-aqueous liquid wastes.

We are in the process of determining the permit application (as of December 2018).

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## Dungeness B

### Combustion Plant

We were notified by the station in March that the routine programme of monitoring groundwater had identified diesel in samples from a borehole in the vicinity of East Tank Farm Road on the site. A small leak was identified on a fuel tank return pipe to an Essential Diesel Generator, which has subsequently been repaired.

We issued a Site Warning because there was a breach of the Environmental Permitting Regulations as there was an unauthorised discharge of diesel into ground and a failure to apply appropriate measures to prevent leakage from the primary containment system.

EDF has carried out an investigation and we have accepted the station's action plan to remediate and monitor the groundwater contamination. The actions are:

1. Continue removal of 'free phase' diesel.
2. Continue monitoring for diesel related compounds in groundwater.
3. Develop an action plan looking at the contingency actions in the event that diesel migration exceeds that expected from the risk assessment.
4. Consider installing an additional groundwater monitoring borehole to the north east of the spill location to identify any migration of diesel contamination toward Dungeness A site.

### Inspections

We undertook a gaseous radioactive waste inspection on 6 November 2018. We included a review of how the station manages radioactive discharges during the reactor outage and the plans to purge the reactor before returning to service. There were no permit breaches noted during the visit. We identified some areas for improvement and examples of good practice.

### Permitting

We have issued an updated CEAR (Compilation of Environment Agency Requirements) document which now aligns with the latest permit variation.

### Meetings

We attended a routine Regulatory Interface Meeting with EDF Energy Internal Nuclear Assurance (INA) group on 20 November 2018.

## Other News

### Implementing Geological Disposal

On 19th December 2018, BEIS published the policy paper *Implementing Geological Disposal: Working with Communities: An updated framework for the long-term management of higher activity radioactive waste*. This document sets out the Government's overarching policy framework for managing higher activity radioactive waste through implementing geological disposal and how it will work with communities to find a location for a geological disposal facility (GDF). Alongside this policy paper, the Government also launched a new national consent-based process in England to find a site to host a GDF. Radioactive Waste Management Limited (RWM) is responsible for implementing geological disposal and it will lead the siting process.

The Environment Agency will regulate a GDF jointly with the Office for Nuclear Regulation (ONR). The Environment Agency is responsible for making sure that the developer and operator of a geological disposal facility (GDF) in England meets the high standards we have set to protect people and the environment, both now and in the future. Our role is described in more detail at: <https://www.gov.uk/guidance/regulating-the-geological-disposal-of-radioactive-waste-environmental-protection>.

The Environment Agency will not be involved in the decision to select a potential site for a GDF although we will be available to provide information and advice to communities on environmental protection and the regulatory process.

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## Flood Alert



What it means  
Flooding is possible. Be prepared.

### What to do

- Be prepared to act on your flood plan.
- Prepare a flood kit of essential items.
- Monitor local water levels and the flood forecast on our website.

## Flood Warning



What it means  
Flooding is expected. Immediate action required.

### What to do

- Move family, pets and valuables to a safe place.
- Turn off gas, electricity and water supplies if safe to do so.
- Put flood protection equipment in place.

## Severe Flood Warning



What it means  
Severe flooding. Danger to life.

### What to do

- Stay in a safe place with a means of escape.
- Be ready should you need to evacuate from your home.
- Co-operate with the emergency services.
- Call 999 if you are in immediate danger.

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