



What to do in a radiation emergency

This guide provides advice and information on what to do in the unlikely event of a radiation emergency on the Rolls-Royce Submarines Ltd site in Raynesway, Derby. This information has been produced by Derby City Council in conjunction with Rolls-Royce Submarines Ltd. It is important, please keep it in a safe place where you can easily find it.



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1. Introduction

This leaflet gives advice on what to do in the event of a radiation emergency at the Rolls Royce Submarines Ltd (RRSL), Raynesway, site. The possibility of such an emergency is remote.

About the site

RRSL manufacture nuclear reactors and associated equipment for the Royal Navy's Submarine Fleet. The site has operated safely since operations began in the 1960s and is regulated by the Office for Nuclear Regulation (ONR) and the Environment Agency (EA).

Safety is the number one priority, and the risk of accidental radiation exposure is extremely low due to the design of operational plants, extensive implementation of engineering controls, comprehensive procedural controls and training of employees. Nevertheless, the Radiation Emergency Preparedness and Public Information Regulations 2019 (REPPPIR) require site operators and local authorities to put in place comprehensive emergency plans to deal with any emergency and protect the public and the environment.

REPPPIR requires the local authority to provide prior information to the public covering what to do in a radiation emergency (this booklet).

2. Contamination, direct radiation and radiation exposure

Contamination

Contamination can be tiny particles, dust, droplets or material that contain radioactive atoms (similar to ash from a fire). Contamination does not soak into your body and can be removed by washing, wiping or changing clothes.

Direct radiation

Radiation refers to the transfer of energy from one place to another. Radiation is capable of causing harm to people's health, depending on the type and amount of radiation dose received. The information contained here is relating to ionising radiation, which would be the type released in the unlikely event of a radiation emergency at Rolls-Royce Submarines Limited.

These are the main types of ionising radiation:

Alpha

Alpha particles are relatively big, heavy and slow, alpha particles cannot penetrate very far through materials and even by the dead layer of skin on the outside of our bodies. Alpha particles do not pose a significant hazard from outside the body but can be harmful if inside the body (eg, inhaled).

Beta

Beta particles are relatively light and can penetrate through exposed skin. They can present a hazard from inside or outside the body.

Gamma

Gamma rays are not particles but are like x-rays. These rays have no weight and can penetrate through the body, depositing some of their energy on the way. Exposure to gamma radiation can be significantly reduced by moving away from the source of radiation. Exposure can also be reduced by the use of thick, heavy shielding.

Neutron

Neutrons are a type of particle which behave similarly to gamma rays and may penetrate through the body, depositing some of their energy on the way.

The type of unlikely event which could lead to a radiation emergency at the Rolls-Royce Submarines Limited site is known as a criticality accident. A criticality accident emits a high level of gamma and neutron radiation but no significant amounts of radioactive material (ie, contamination). The threat from direct radiation falls away rapidly with distance and may be further reduced by the shielding effects of building structures.

What is radiation exposure?

The term radiation dose is used to describe the amount of energy absorbed from ionising radiation. The most common measure of radiation dose to people is measured in units called sieverts. A sievert is too large a unit for everyday situations and so in most cases the radiation dose will be given in millisieverts (mSv, one-thousandth of a sievert), which is the standard unit for expressing annual, occupational or medical radiation exposure.

At low levels radiation causes no immediate perceptible damage to people. However, any exposure to radiation is considered to be capable of increasing the lifetime risk of cancer.

Radiation exposures

People have always been exposed to low levels of radiation from natural sources. On average, people in the UK receive an annual dose of 2.7 mSv. Further guidance on radiation exposure is available from the [UK Health Security Agency website](#).

3. Perceived risk

It is important to remember that the Rolls-Royce Submarines Ltd site carries out many different processes, and it is possible that incidents could occur that are not of a radiological nature. These could result in the attendance of the emergency services. The site has on-site alarms, which can sound as part of regular tests and as part of site emergency exercises. Emergency vehicles also regularly attend the site for training and exercises.

4. Emergency alerts

In the unlikely event of an incident occurring at the RRS site, an emergency alert will be issued to the area of the detailed emergency planning zone (DEPZ). A map showing the DEPZ is shown on [page 5](#). The wording of the alert is as follows:

This is a message from Derby City Council. A radiation emergency has occurred at Rolls-Royce, Raynesway on [date/time]. If you have been given prior information of what to do in a radiation emergency, please follow this now. If you are outdoors in the immediate vicinity of the Raynesway site, including on Indurent Park, Alvaston & Boulton Cricket Club or Alvaston Park, stay calm and leave the area now, away from the site, and follow emergency services' instructions. For more information click [here](#).

If you are outside within the detailed emergency planning zone:

Receipt of the emergency alert should be the activation for evacuating the area (if you are outside within the DEPZ). Please follow the instructions given to you by police, including on where you are being evacuated to. Anyone outside including on Indurent Park, Alvaston & Boulton Cricket Club, or Alvaston Park, should evacuate the area calmly by moving away from the site. Exit routes are shown on the map on [page 5](#).

If you are exiting Alvaston Park:

- please use the Meadow Lane exit, or
- one of the footpaths which exit towards London Road.

If you are exiting Indurent Park:

- please leave via the exit to the north.

If you are exiting Alvaston & Boulton Cricket Club:

- please use the main entrance/exit and walk south down Raynesway.

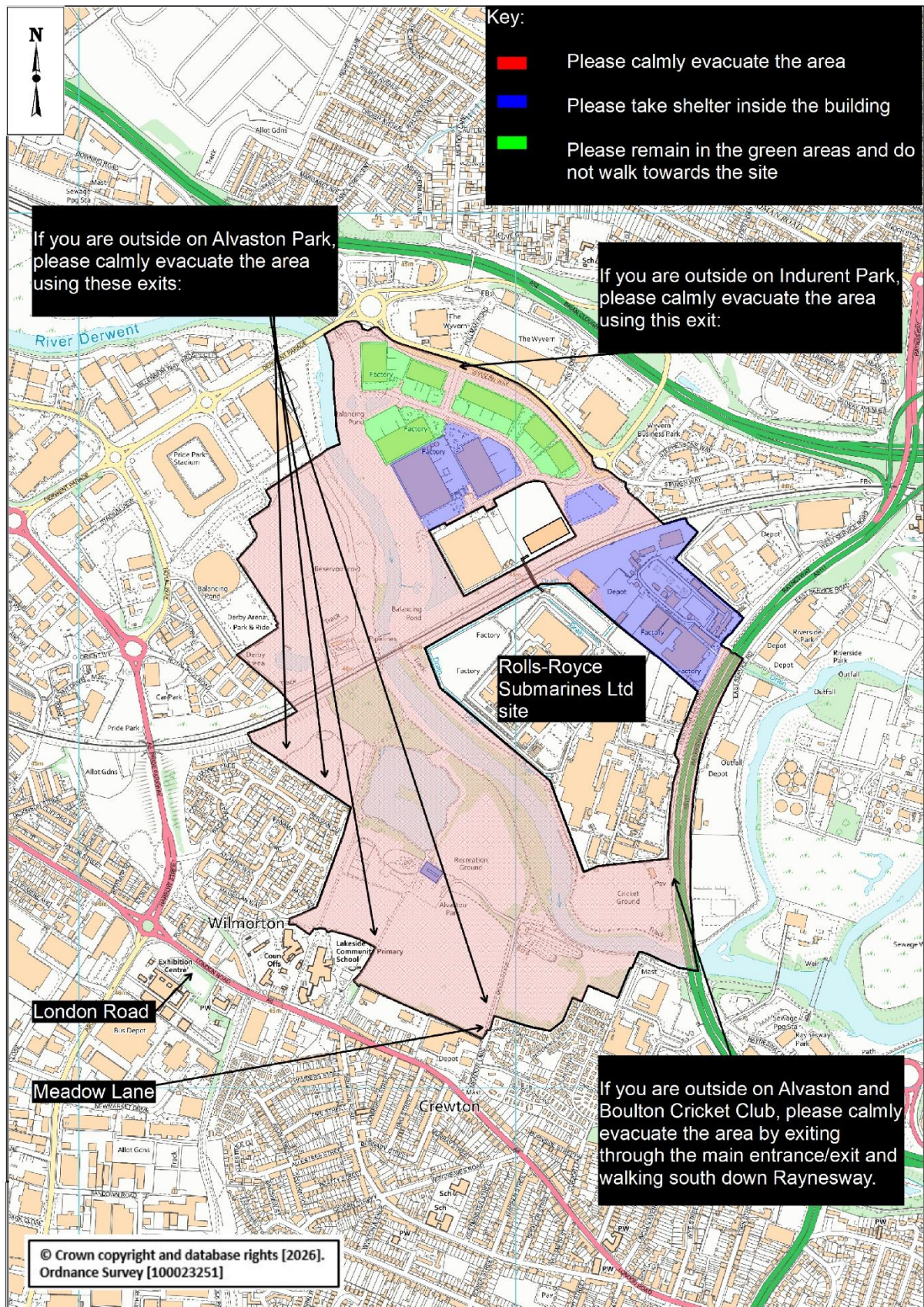
If you are exiting any other area of the DEPZ:

- please walk calmly away from the site.

All exits are shown on the map on [page 5](#).

For more information during an incident, please keep up to date with messages on [Derby City Council's website](#) and Derbyshire Constabulary's Facebook page.

Map showing the detailed emergency planning zone, the areas for evacuation, the areas for shelter and the areas where no action is necessary



If you are a business within the DEPZ:

In the unlikely event of a radiation emergency, businesses within the DEPZ will take different actions, depending on how close they are to the RRSL site. If you operate a business which is based within the DEPZ, please use the map on [page 5](#) to establish what action your staff and any visitors/contractors at your premises should take. Those businesses closest to the RRSL site would be expected to remain in shelter (shaded blue on the map on [page 5](#)). The businesses located further away from the site (shaded green on the map on [page 5](#)) need to take no action, other than ensuring that staff and any visitors/contractors are advised not to walk towards the RRSL site.

Receipt of the emergency alert should be the activation for evacuating the area (if you are outside), sheltering in place, or informing staff, visitors and contractors at your business premise that an incident has occurred and to not walk towards the RRSL site. A follow up call will be made by Derbyshire County Council's emergency planning team to each business within the DEPZ, to ensure you have received the emergency alert and are taking appropriate action. You may subsequently be advised to carry out different actions, for example, to evacuate. If an evacuation is required, please follow the instructions given to you by police, including on where you are being evacuated to. Evacuation is most likely to affect those people working immediately adjacent to the site.

Advice for those taking shelter (shaded blue on the map):

- keep all the doors and windows closed
- move away from windows
- turn off air conditioning
- find a safer place inside such as a corridor or windowless room or a room facing away from the site
- keep up to date with messages on [Derby City Council's website](#) and Derbyshire Constabulary's Facebook page.
- keep the mobile phone with you that you have been contacted on by the local authority.

Advice for those evacuating (shaded red on the map):

- leave the building you are in as soon as possible and use a door that leads away from the site
- use your building evacuation plan if you have one
- wear appropriate clothing
- tell other people and help those who need it
- use security and other staff to lead people to a safer place
- follow the instructions and advice of the police and those helping them.

Advice for those businesses located outside of the shelter and evacuation zones:

- ensure all staff and contractors know not to walk towards the RRSL site
- be prepared to evacuate or go into shelter if you are asked.

5. Road closures

In the event of an emergency, it is likely that a number of roads may need to be closed to assist evacuations and the work of the emergency services. Please do not ignore road closed signs, they are there for a reason and for your safety.

6. People outside the affected area

In the extremely unlikely event of a radiation emergency having a wider-scale impact than is considered reasonably foreseeable, a further area has been identified. This area, known as the outline planning zone (OPZ), covers a minimum of one kilometre from the centre of the site, beyond the DEPZ. There are no pre-planned actions to take in the OPZ. If required, the emergency services will notify members of the public within the OPZ of any actions to take.

If you are within the outline planning zone (click [here](#) to see a map) when an incident occurs, please do not enter the detailed emergency planning zone until you are told it is safe to do so. For further information, please follow [Derby City Council's website](#) and Derbyshire Constabulary's Facebook page.

7. Food, water and medicines

It is safe to use food stored indoors, for example in homes or shops, medicines stored in their normal packaging and mains tap water unless told otherwise.

8. Event organisers – Alvaston Park

If you are an event organiser, hosting an event on Alvaston Park, please take this prior information into account when planning your event. The urgent protective action for anyone on Alvaston Park at the time of an incident at the RRS Limited site would be to evacuate the area via the London Road exits. Derby City Council have more detailed information about the risk from the site, which you should consider when finalising the layout of your event. If you have any queries, please email emergency.planning@derbyshire.gov.uk or spacehire@derby.gov.uk.

9. Where can you get further information outside of an incident?

For further information about emergency plans and the planning arrangements for Rolls-Royce Submarines Limited please contact Derby City Council:

Tel: 01629 538364

Email: emergency.planning@derbyshire.gov.uk

Website:

www.derbyshireprepared.org.uk/risks-derbyshire/major-industrial-accidents

For more information on the basic conceptions of radiation, please refer to the UKHSA guidance, which can be accessed [here](#).

10. Version control

This prior information has been produced based on the information contained within the RRSL Neptune Licensed Site and Nuclear Fuel Production Plant – Consequences Report, dated September 2022, version 2.0, which can be accessed [here](#). This consequences report was reviewed in September 2025, and no material change was found.

This prior information will be reviewed at least every three years, or sooner if required.

Prior information version number	Date of publication	Consequences report (date and version number)
4.0	April 2026	Version 2.0, dated September 2022