RADIOLOGICAL AND NUCLEAR SERVICES
RSK has embedded a strong health and safety culture throughout its delivery network. We believe this focus should support the client’s focus on safety management during environmental, health and safety service provision. Our commitment to health, safety, environment and quality management is underpinned by our group certification to ISO 9001, ISO 14001 and OHSAS 18001 for our integrated health, safety, environment and quality systems: few consultancies have achieved this.

Our systems are verified independently by Achilles, which provides an independent review of our performance in this area.

**BEHAVIOURAL PERFORMANCE AND SAFETY**
All RSK employees complete an in-house behaviour performance and safety training course, which is managed and led by the radiological team. We also deliver this training to any of our clients.

**LABORATORY SERVICES**
RSK’s in-house UKAS- and MCERTS-accredited environmental and geotechnical laboratories can receive and analyse soil and water samples for the broad range of analyses required on nuclear facilities.

**TRAINING**
RSK provides tailored training solutions through several accredited courses, some of which are registered and/or approved by national and internationally recognised institutions.
RADIOLOGICAL SERVICES

RSK's radiological services involve practical and effective radiological engineering approaches to help solve complex radiological and environmental hazards across a wide range of disciplines. Our highly experienced and qualified staff provide professional support and advice ranging from the provision of site-specific waste management support through to large-scale ground investigations. Our radiological service provision is further supported by our long-standing joint venture with US radiological and decommissioning technical specialist Radiation Safety Control Services Inc. (RSCS).

RADIOLOGICAL SUPPORT SERVICES
RSK's radiological team has the experience and ability to provide clients with a wide range of radiological support services, including
- radiological and waste management technical consultancy and engineering
- delicensing support, land and building reuse, risk-based final site survey plans, etc.
- permitting, licensing (safety case) and technical support for existing or new-build sites
- radiological and health physics; technical and field support
- radiological and non-radiological waste management, including low- and intermediate-level waste streams
- material characterisation, clearance and exemption to support decommissioning
- radioactive source licensing (Europe and North Africa)
- data quality objective (DQO) process management during material characterisation
- use and data interpretation of in situ object counting systems (ISOCS).

KEY PROJECT EXPERIENCE

FUEL POND DECOMMISSIONING
Cleaning out and decommissioning of fuel ponds, multiple sites, UK, Magnox
For several years, RSK has been directly supporting the decommissioning of the fuel ponds at Magnox's Sizewell, Bradwell, Chapelcross and Hinkley sites. Our team has provided radiological engineering support to the physical aspects of the ponds' surface remediation, waste collection, characterisation and interim storage (~20 TBq were removed from the Bradwell ponds).

RADIOACTIVE SOURCE LICENSING
Confidential clients
RSK supports multiple clients with the complex process of obtaining radioactive material licences for radioactive sources used in industrial settings in numerous countries across Europe and North Africa. Our experts conduct the necessary radioactivity calculations to establish the risk of each source and identify the country-specific licensing requirements for each type of radioactive material to be used by the end-user. We offer support throughout the entire process to obtain the necessary permits, including communication and liaison with their country regulators.

RADIOLOGICAL WASTE MANAGEMENT
Waste management strategy, Bradwell, UK, Magnox
RSK developed a revised strategy for facility characterisation and waste management at the Bradwell nuclear power station. The strategy complies with UK regulations and supports the accelerated decommissioning schedule to take the site to the care and maintenance state. It builds on the Nuclear Industry Code of Practice, which incorporates the European Radiation Survey and Site Execution Manual (EURSSEM) and the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) approach. RSK worked with the Magnox waste management team to develop a paper of principle to use as a discussion paper with the regulators for the revised strategy. The project also delivered a strategy document that built on the paper of principle to provide detail on each stage of the revised strategy.

Intermediate-level waste processing and management, Bradwell, UK, Magnox
RSK currently provides radioactive waste engineering support to three high-profile radioactivity projects at Bradwell for fuel element debris (FED) retrievals, FED dissolution and an active discharge abatement plant. Our role on each project involves monitoring, characterising, controlling and sentencing of waste streams, and providing ongoing support to the project teams.

SITE CHARACTERISATION
Site-wide characterisation, Bradwell, UK, Magnox
Since 2009, RSK's project team has designed and implemented the characterisation of the site plant, equipment and buildings to enable Bradwell's accelerated decommissioning programme. Our revised strategy follows the EURSSEM, MARSSIM and Multi-Agency Radiation Survey and Assessment of Materials and Equipment Manual (MARSAME) approaches to provide 'defence in depth' data to support the accelerated deposition of material. A permanent site team is responsible for the characterisation programme, including survey packages, sampling and analysis plans, training of identified Magnox staff and data management and review.

Radiological characterisation of pipework, Dungeness, UK, Magnox
RSK provided specialist support to design and implement the radiological characterisation of steam pipework in the boiler houses and water storage facilities at Dungeness nuclear power station.
RSK provides clients with a comprehensive service designed to provide cost-effective and optimised engineering and risk-based solutions spanning the investigation, remedial design and remediation contracting processes.

RSK services, which are designed to add value by ensuring that solutions are specifically tailored to site conditions, include:

- Geotechnical and environmental site investigations and characterisations using our in-house drilling contractor and laboratory facilities
- Environmental (groundwater, surface water and ground gas) and radiological monitoring programmes
- Geophysical and topographic surveys
- Detailed quantitative risk assessments for human health, controlled waters and ecological receptors
- Remedial options appraisals and the production of remedial strategies
- Remediation contracting using in-house turnkey contracting
- Community relations and stakeholder negotiations
- The provision of expert evidence at public inquiries
- The implementation of geographic information systems (GIS) and information management systems.

KEY SITE INVESTIGATION PROJECT EXPERIENCE

NUCLEAR NEW-BUILD SITES

Geoenvironmental site investigations, Wylfa Newydd, UK, Horizon Nuclear Power

RSK is a sole source contractor for intrusive geotechnical and environmental site investigations at the proposed Horizon new-build nuclear power station at Wylfa Newydd, Anglesey. We have carried out several detailed drilling investigations in some of the oldest and most complicated geology in the UK, including geotechnical, hydrogeological, geophysical and environmental investigations.

For our work at Wylfa Newydd, we won ‘Ground Investigation of the Year’ at the 2015 Ground Engineering Awards. Our projects were also highly commended in the 2012 awards in the ‘UK Project with a Geotechnical Value over £1 Million’ category.

Alongside the intrusive works, RSK has designed ground investigations for the new road alignment and highway improvements associated with the development.

Geoenvironmental site investigation, Hinkley Point C, UK, EDF

As an approved vendor for EDF, RSK has completed several fully intrusive geotechnical and environmental site investigations, including geophysical and health physics support of the proposed new-build Hinckley Point C power station. The investigations included areas adjacent to and within the licensed site boundary of the Hinkley Point B site and in the wider area encompassing proposed development areas, access roads and marine jetty areas.

Geotechnical investigation, Sizewell C, UK, EDF

Following its successes at Hinkley Point C, RSK has completed several targeted intrusive geotechnical investigations of a proposed new-build site adjacent to the Sizewell B power station to support site selection and design.
OPERATIONAL AND DECOMMISSIONING NUCLEAR SITES

Groundwater investigation and monitoring, Sizewell A, UK, Magnox
RSK has a long-term involvement with Sizewell A power station that has seen the installation of new monitoring wells, the decommissioning of old wells, significant laboratory analysis and assessment, mapping and clearance of the site’s drainage system in relation to the detection of hydrocarbons within the system and underlying groundwater. There was also biannual groundwater monitoring, sampling and laboratory analysis.

Periodic safety review and geotechnical investigations, Berkeley, UK, Magnox
As part of the Berkeley power station’s periodic safety reviews (primarily looking for radiological contamination, particularly tritium in the groundwater), RSK has installed groundwater monitoring wells, assessed and remediated existing wells, and undertaken laboratory analysis of soils and groundwater, and groundwater monitoring programmes. We have also completed geotechnical and geophysical investigations relating to the development of new ‘MiniStores’ for intermediate level waste and the effluent treatment facilities on-site required as part of the site’s decommissioning process.

Geotechnical support, Evaporator D project, Sellafield, UK, Costain Oil, Gas & Process
RSK provided specialist geotechnical site investigation and consultancy services to Costain Oil, Gas & Process during the construction of Evaporator D. The services covered the beach works investigation, emergency investigations into sinkholes and geotechnical assessments of the transport routes to the facility involving boreholes, dynamic probing, trial pits, in situ testing and laboratory analysis.

Contaminated land assessment, UK, Springfields Fuels (Westinghouse)
RSK completed intrusive site investigation and environmental monitoring to identify areas of radiological and chemical (solvent) contamination associated with a former Magnox fuel processing plant. The project provided characterisation and delineation of areas identified as being of potential concern with regards to the site’s decommissioning programme. The project also required management of the site’s GIS database to ensure appropriate control of the environmental data for the site.

Radiological assessment and modelling, Bradwell, UK, Magnox
As part of the Bradwell power station site’s development, the impact of a historical contamination event needed to be understood. RSK completed a detailed investigation of the north end of the site to determine the radiological baseline and current risk profile. An environmental monitoring programme of ground and surface water was also established.

Site investigation services, Dounreay and Hunterston A and B, UK
RSK provided extensive site investigation services for multiple clients at licensed nuclear facilities. These sites, Dounreay and Hunterston, included numerous challenges, including buried underground services, potential interfaces with licensed operational safety systems, and licensee-specific requirements. Work was performed successfully and safely at each site using ground radar, trial pits and other site investigation techniques to ensure there were no impacts on site services or systems.

NON-NUCLEAR SITES

Remediation options appraisal, UK, confidential client
RSK provided a radiological remedial options appraisal for a site containing radium-contaminated land for a confidential client. The project involved a radiological walkover survey of the site to delineate the radium contamination. This was followed by a detailed options appraisal to decide on the best approach to dealing with the contamination before the proposed divestment of the land.

Radiological monitoring support, UK, Mersey Gateway
RSK provided radiological protection support to the Mersey Gateway project during the construction of the new bridge across the River Mersey. The site contains multiple legacy contamination hazards, both radiological and chemical, for which RSK is providing technical support to ensure the protection of the health and safety of the personnel on-site.
ENVIRONMENTAL, HEALTH AND SAFETY SERVICES

Whether a nuclear site is a potential new build, an amendment to an operational site or a site undergoing decommissioning, RSK’s environmental impact and design services cover all phases from feasibility studies through to post-application consultations and, if circumstances dictate, public inquiries. Our services include:

- aerial surveys and mapping
- archaeology and cultural heritage surveys
- ecological surveys
- environmental consents
- planning applications
- environmental impact assessments (EIA)
- environmental site supervision
- GIS advice
- landscape design and master planning
- landscape and visual impact assessments
- social impact assessments
- stakeholder engagement
- strategic environmental assessments.

Ecological surveys and project management
RSK undertakes ecological surveys and assessments of a broad range of habitats and species of fauna and flora. We offer ecological advice to meet a wide variety of needs.

Environmental permitting
RSK has an in-depth understanding of the environmental permitting regime. We assist companies to achieve their permitting requirements while enhancing their knowledge base and protecting their brand image and reputation.

KEY PROJECT EXPERIENCE

Engineering support services, UK, Horizon Nuclear Power
RSK holds key positions on the engineering support services and ground investigation frameworks for Horizon. Work packages we have successfully completed to date include:

- environmental impact, BREEAM, environmental mitigation and landscape design for the Wylfa Gateway Complex
- the development of materials and site waste management plans for the proposed construction
- the development of the integrated traffic and transport study
- radiological monitoring for environmental purposes
- staff secondments for project development and contaminated land roles.

Geophysical surveys, Sellafield, UK, Sellafield
RSK conducted geophysical surveys on the shield wall of the new Sellafield product and residues store building to determine and validate the concrete’s condition and quality.

Coastal erosion study, UK, LLW Repository
RSK has undertaken a coastal erosion study looking specifically at quaternary geology for LLW Repository.

EIA of CONSORT research reactor, UK, Imperial College London
RSK produced an EIA to aid Imperial College London in obtaining the necessary planning application from the Health and Safety Executive to decommission its CONSORT reactor. RSK conducted a peer review of the technical information held by the university on the use and management of CONSORT throughout its life cycle. The review covered all aspects of the potential environmental impacts from radiological and non-radiological risks from the decommissioning and demolition process. The review helped to develop an EIA to be submitted to the Health and Safety Executive.

Radiation protection and environmental, health and safety audit, Chernobyl, Ukraine, European Bank of Reconstruction and Development
The European Bank of Reconstruction and Development has twice commissioned RSK to conduct independent audits at the former Chernobyl power station. The audits assess the radiation protection and environmental, health and safety management of the construction works of the shelter and spent fuel storage projects. The auditors reviewed programme plans and procedures for staffing, organisation, health and safety, environmental, radiation safety and monitoring, waste management, regulatory permitting and regulatory compliance as they related to the construction of a new containment shelter and vent stack for Chernobyl’s unit 4. Our team audited against international best practice standards.
RSK works with clients to manage their NORM hazards through the effective use of practical radiological engineering approaches, which provide solutions to difficult radiological and environmental hazards. RSK offers experienced and qualified staff who provide clients with a full life-cycle NORM management programme.

Our wide range of services includes:
- NORM regulatory support and programme development
- Liability assessments during land purchasing
- Radiological and environmental protection advice in relation to NORM issues
- The development of conceptual site-specific radiological monitoring and contamination survey regimes
- Real-time radiological assessments of NORM contamination
- Radiological experts and a wide range of state-of-the-art monitoring equipment to carry out NORM surveys
- Detailed quantitative radiological risk assessments
- Full waste management strategies ranging from handling, packaging, processing and decontamination of radioactive material to volume reduction, stabilisation, transportation and/or disposal.

**KEY PROJECT EXPERIENCE**

**NORM contamination surveys of degassing stations, Iraq, Shell and BP**
RSK conducted NORM contamination surveys at multiple degassing stations across the Rumaila and Majnoon oilfields in Iraq. Our team performed extensive in-country assessments to determine the extent of NORM contamination within the equipment and on the ground of the degassing facilities.

**Detailed quantitative radiological risk assessment of NORM-contaminated ground, Iraq, BP**
RSK provided detailed quantitative radiological risk assessments of NORM-contaminated produced water pits locations in Iraq. Our team implemented a detailed in situ survey and sampling strategy across each location. A detailed risk assessment and radiological monitoring plan was created for each site that provided invaluable occupational and environmental protection.

**Radiological NORM survey, Dalgety Bay, UK, Fife City Council**
RSK provided radiological NORM support to Fife City Council in relation to liability issues on land purchases with a legacy of buried NORM waste. RSK’s refined and reliable survey methodology ensured the collection of high-quality radiological data across the site and identified any areas of potential contamination.