Site assessment and remediation for real-estate development

The assessment, remediation and preparation of contaminated land for real-estate and industrial developments is one of RSK’s key specialisms. This may be as part of a redevelopment programme, the evaluation of operational liabilities or due diligence for a property transfer. RSK has expertise in preliminary risk assessments (formerly known as desk studies or phase 1 reports), site investigation and risk assessment in line with CLR11, remediation and geotechnical design.

We provide our clients with a comprehensive service spanning the investigation, remediation design and remediation contracting process. The services are designed to add value by ensuring that the solutions are specifically tailored to site conditions and the remediation design achieves the target as cost-effectively as possible.

We are also at the forefront of procedural development to ensure assessments are undertaken in a consistent and logical manner. Our specific procedures for land acquisition and development have been adopted by the National House-Building Council (NHBC) to support its Land Quality initiative. We are actively involved in research work with CIRIA and the NHBC.

Recent projects

Landfill gas remediation (1990 – ongoing)
RMC, Persimmon Homes, UK
RSK was commissioned to develop a remediation strategy for a former sand and gravel pit with an area of about 80 ha.

Hoyland phase 2 and 3 site investigation, William Saunders Partnership, UK
The site investigation for the phase 2 and 3 areas of Shortwood Business Park in Hoyland included a full site investigation, geotechnical assessment of a phase 3 area and further geotechnical assessment of a phase 2 area. The work also included surface settlement monitoring, desk reviews, consultation with BRE, rotary boreholes, trial pits, laboratory testing and reporting.

Geoenvironmental site investigation, Elite Homes North West Ltd, UK
The investigation of former sporting facilities for redevelopment for residential end use included a desk appraisal, a site walkover, service location, intrusive investigation using probe holes and rotary drilling, laboratory analyses, reporting and project management.

Washington quarry and landfill, CEMEX Properties Ltd, UK
RSK was commissioned to review historical data from the 1990s for a site that was considered to present such a significant ground gas risk that it could not be developed for residential properties. As part of the assessment of data collected over eight years, RSK introduced and utilised the traffic lights risk assessment system to the Environment Agency and local council. The organisations were very pleased that the site’s gas concentrations equated to a low risk, and that the high risk areas could be reduced to Amber 2 or lower through engineering methods. Consequently, the site could accommodate a development of several hundred houses and successfully form part of the original housing designation within the local plan.
Recent projects

Former landfill, North West England, Quinn Group Ltd
Consultancy support for a former landfill site, which requires remediation for a housing development. A remediation scheme to rehabilitate a former inert landfill for a residential end use – additional site investigation for detailed quantitative risk assessment and remedial action plan to assist with detailed planning application. Additional site investigation, additional gas and groundwater monitoring, laboratory analyses, detailed quantitative risk assessment and report.

Master services agreement, Belgium, Ireland, Netherlands (2006–2009), Dupont CRG
 Provision of strategic risk assessment, site investigation and remedial design support for several large chemical production sites across Belgium, the Netherlands and the UK. RSK developed the remediation design, gained final approvals and provided remediation procurement and project management services for the recovery of benzene, toluene, ethylbenzene and xylene from an light non-aqueous-phase liquid plume below a large chemicals complex in Flanders, Belgium.

Normandy landfill, Beirut, confidential client
Legal expert witness tribunal consultancy services to review ground gas monitoring and measurement information, risk assessments, provision of recommendations and application of UK best practice to facilitate closure of disputed remedial works by another consultant on a former landfill to enable future works on a large prestigious port redevelopment in Beirut to progress. This was communicated to an international team of solicitors and technical personnel from the Lebanon, the UK and the USA.

Site investigation and characterisation
We achieve cost, compliance, policy and liability goals because our project team understands the regulatory and commercial constraints for future developments.

Human health, controlled waters and ecological risk assessment
Our risk assessors provide high-quality, low-cost assessments based on site-specific issues and state-of-the-art methodologies that enable the optimum remedial solutions to be identified.

Contaminant fate and transport analysis
Our fate and transport analysis experience covers the full range of pollutants typically encountered in contaminated sediments.

Remedial action design
Our strategy is to achieve an environmentally protective, permanent clean-up for the lowest possible cost.

Remediation project management
Our remediation management services ensure the contract is delivered to specification, on time and to budget. We can also provide planning supervision CDM services to remediation contractors.

Community relations and risk communication
Our experts help to allay employee, public and media concerns before they become costly liabilities.

Stakeholder negotiation
We have extensive experience of presenting remediation strategies to critical stakeholders, including legislative agencies, financial backers and potential site purchasers.

“You provided exactly what we required, when we required it and provided it under our budget – very pleased.”

Malcolm Barrett, Dublin International Petroleum (Syria)
RSK’s geoscientific and environmental assessment work for real-estate and industrial developments regularly includes site assessments, environmental management and remediation work.

In addition to identifying the form and scale of site contaminants or other site concerns, i.e., stability, development methodology, etc., RSK’s role incorporates the site assessment and remediation requirements that are required to ensure approval from private and governmental bodies to allow further real-estate development. This work includes the monitoring of the site during and after construction to ensure any issues that may arise can be dealt with promptly to avoid negative impact.

RSK seeks to ensure that the conditions and legislations required for site development (in the UK, mainland Europe and the Middle East) are followed correctly and can manage and audit subcontractors that may need to be brought in to ensure guidelines are adhered to.

Our remediation business has the expertise and mobile plant licences to offer:
- physical in situ technologies: soil vapour extraction, air sparging and multiphase extraction
- in situ bioremediation: enhanced aerobic and anaerobic degradation using a wide variety of proprietary and non-proprietary amendments
- ex situ bioremediation using windrow turning and biopile techniques
- in situ and ex situ chemical oxidation
- light and dense nonaqueous-phase liquid recovery, which is enhanced using vacuum systems and/or steam injection.

In addition, the team has vast experience in the application of a wide variety of groundwater treatment technologies.

RSK has undertaken and continues to undertake a range of site investigations and geoscientific management and remediation projects that are based around both the commercial sector and private industry. These projects include recreational housing, office blocks, industrial developments and power facilities.

Recent projects

Site investigation, risk assessment, demolition supervision (2006 – ongoing)
George Wimpey Homes, East Midlands, UK
Site assessment of a former colliery in Nottinghamshire. The works included a preliminary risk assessment, intrusive ground investigations (for both geotechnical and environmental assessment), which resulted in the production of a detailed quantitative risk assessment, and a watching brief of demolition and asbestos removal.

Further work under way includes obtaining agreement from the authorities for the remediation proposal to enable development to proceed together with validation of all completed works for future real-estate development.

Geotechnical and engineering assessment of former colliery site, Barratt Homes, Chester, UK
Norton Park housing development – a geotechnical and engineering assessment of a former colliery site. Design and implementation of remedial works that will then pass regulations and approval for further real-estate development.

Site investigation, remediation, training and incident line work (1996 – ongoing), George Wimpey plc, UK
RSK is the retained environmental consultancy for George Wimpey plc (a large UK-based real-estate development company) and is involved with over 100 sites per year. Site investigation work includes phase 1 desk study reviews, phase 2 ground investigations (for both geotechnical and environmental assessment) and phase 3 remediation work. The sites involved are predominantly brownfield. The work completed by RSK addresses all the geotechnical, foundation and engineering requirements, including structural design work.
RSK supplies a wide range of site remediation and assessment services spanning the real-estate and commercial sector that are available for integration and implementation internationally. RSK’s previous site assessment, remediation and monitoring skills have been utilised by clients such as the UK National Grid and DuPont CRG (Ireland, Belgium, Netherlands).

RSK is one of the leading experts in the field of ground gas investigation, risk assessment and remedial design. We have recently worked with various national research bodies to develop and publish national guidelines for the assessment of ground gas regimes on development sites, including those for CIRIA and NHBC, the former endorsed by the UK Environment Agency. A key element of these new guidance documents is a traffic light system RSK has developed that classifies sites into three types and proposes passive protection measures for each:

- **Green** is a set level where no ground gas remedial measures are considered necessary.
- The two **amber** categories (Amber 1 and Amber 2) are established when the assessed ground gas regime requires remediation measures such as specialist membrane and gas ventilation. Amber 2 requires a validation certificate covering the installation to ensure that guidelines and procedures are followed, which can be supervised and managed by RSK’s specialist team.
- **Red** classification is when the ground gas regime is currently considered to preclude development for that type of development. However, further data collection and risk assessment by RSK specialists may prove that other developments (for example, of a commercial or industrial nature) are possible or that more advanced ground gas protection measures (for example, active systems) may be possible.

RSK’s initial strategy is to deal with contamination and, therefore, remediation issues at the source. This may prevent the need for the installation of ground gas protection measures and will enable development to proceed smoothly. However, if this is uneconomic or otherwise unfeasible, risk assessment by RSK specialists may prove that other developments (for example, of a commercial or industrial nature) are possible or that more advanced ground gas protection measures (for example, active systems) may be possible.

RSK’s initial strategy is to deal with contamination and, therefore, remediation issues at the source. This may prevent the need for the installation of ground gas protection measures and will enable development to proceed smoothly. However, if this is uneconomic or otherwise unfeasible, risk assessment by RSK specialists may prove that other developments (for example, of a commercial or industrial nature) are possible or that more advanced ground gas protection measures (for example, active systems) may be possible.

RSK’s initial strategy is to deal with contamination and, therefore, remediation issues at the source. This may prevent the need for the installation of ground gas protection measures and will enable development to proceed smoothly. However, if this is uneconomic or otherwise unfeasible, risk assessment by RSK specialists may prove that other developments (for example, of a commercial or industrial nature) are possible or that more advanced ground gas protection measures (for example, active systems) may be possible.

Great piece of work with considerable value for our business

Chris Quinn, BP