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title: **The SuRF-UK framework for sustainable soil and groundwater remediation**

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It has long been assumed that contaminated land and groundwater risk management was intrinsically sustainable because, for example, it controlled risks from pollutants and facilitated the re-use of brownfield land so reducing greenfield development pressures. However over the past decade it has increasingly been recognised that this simple assumption may not always be true (SURF, 2009). The “sustainable remediation” debate centres on how to identify the optimum management strategy that maximizes the benefits while limiting the impacts of undertaking remediation.

The United Kingdom’s Sustainable Remediation Forum, SuRF-UK, is a multi-stakeholder initiative to develop a framework for sustainable soil and groundwater remediation, which involves incorporating sustainable development principles in remediation decision-making. Created in 2007 it has involvement and support from industry, service providers, government agencies and academia, and is independently led by CL:AIRE (www.claire.co.uk/surfuk). SuRF UK has developed a framework to allow balanced decision making in the selection of a sustainable remediation strategy to address land and groundwater contamination (CL:AIRE, 2009). This paper describes the SuRF-UK framework.

Sustainable remediation is part of a broader sustainable development agenda. Sustainable development is defined by “the Brundtland report” (UN World Commission on Environment and Development, 1987) as *development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs*. This is commonly applied as those actions that, taking account of environmental, social and economic considerations, optimise the overall benefit.

SuRF-UK has defined “sustainable remediation” as *the practice of demonstrating, in terms of environmental, economic and social indicators, that an acceptable balance exists between the effects of undertaking remediation activities and the benefits the same activities will deliver*.

A wide range of management goals often affect the scope of remediation work and its sustainability assessment, and these can impact the scope of possible remediation approaches in two ways. Firstly in terms of regulatory and planning controls on environmental risks, say to human health, water and the wider environment – these considerations relate to the desired end use of the site; secondly, practical boundaries such as the time and space available to carry out remediation, could also limit the range of possible interventions.

The decision points recognised by SuRF-UK as impacting on contaminated site management for a particular site are:

- High level decision making for policy and regional spatial planning by national government/regional agencies;
- Local level land-use planning and policy — by local authorities;
- Project based decision making that sets remedial objectives (e.g. related to risk management/development needs) for land owners and developers; and,
- Remedy selection and implementation including monitoring and verification implications.

The SuRF-UK assessment framework takes account of the social, environmental and economic benefits and impacts of remediation, and relies on a series of indicators to inform stakeholder discussions to identify the optimum solution. A tier of assessment methods are available to

inform the decision-making process, from simple qualitative methods, through semi-quantitative (e.g. multi-criteria analysis) to fully monetised cost-benefit analysis.

This paper will describe the SuRF-UK framework and show how it is applicable to both existing regulatory processes in the UK, and to emerging pan-European legislation set out in, for example, the draft EU Soil Framework Directive, which its February 2009 draft, required remedial costs to be proportionate to environmental and social benefits.

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