

# Sustainable Remediation Indicators

## Environmental Indicators

ELEMENT	CATEGORY	ISSUES THAT INDICATORS MIGHT NEED TO CONSIDERED
Environmental 1	Impacts on air	Emissions that may affect climate change or air quality, such as greenhouse gases (e.g. CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O), NO <sub>x</sub> , SO <sub>x</sub> , particulates (especially PM <sub>5</sub> and PM <sub>10</sub> ), O <sub>3</sub> , VOCs, ozone-depleting substances, etc. <i>(Note: Does not include any odorous effects, bioaerosols, allergens or dust, as these are included in 'Social 3: Impacts on neighbourhoods or regions'.)</i>
Environmental 2	Impacts on soil and ground conditions	Changes in physical, chemical, biological soil condition that affects the functions or services provided by soils. May include soil quality (chemistry), water filtration and purification processes, soil structure and/or organic matter content or quality; erosion and soil stability, geotechnical properties, compaction and other damage to soil structure affecting stability, drainage, or provision of another ecosystem good or service. Impacts on geological SSSIs and geoparks.
Environmental 3	Impacts on water	Release of contaminants (including nutrients), dissolved organic carbon or silt/particulates, affecting suitability of water for potable or other uses, water body status (under WFD) and other legislative water quality objectives, biological function (aquatic ecosystems) and chemical function, mobilisation of dissolved substances. Effects of water abstraction included, such as lowering river levels or water tables or potential acidification. <i>(Note: Does not include any water abstraction use or disposal issues, as this is covered in 'Environmental 5: Use of natural resources and generation of wastes'.)</i>
Environmental 4	Impacts on ecology	Direct consequences for flora, fauna and food chains, especially protected species, biodiversity and impacts on SSSIs. Introduction of alien species. Significant changes in ecological community structure or function. Impacts of light, noise and vibration on ecology. Use of decontamination equipment that affect fauna (e.g. affecting bird or bat flight, or animal migration, etc). <i>(Note: Does not include effects on soil and aquatic ecosystems, which are covered in 'Environmental 2: Impacts on soil and ground conditions' and 'Environmental 3: Impacts on water', whilst impacts of light, noise and vibration on humans are covered in 'Social 3: Impacts on neighbourhoods and regions'.)</i>
Environmental 5	Use of natural resources and generation of wastes	Consequences for land and waster resources, use of primary resources and substitution of primary resources within the project or external to it, including raw and recycled aggregates. Use of energy/fuels taking into account their type/origin and the possibility of generating renewable energy by the project. Handling of materials on-site, off-site and waste disposal resources. Water abstraction, use and disposal.
Environmental 6	Intrusiveness	Impacts on flooding or risk of flooding, alteration of landforms that affect environment. <i>(Note: Does not include effects on built environment and protection of archaeological resources, which are covered in 'Social 3: Impacts on neighbourhoods or regions', whilst affects on ecology are covered in 'Environmental 4: Impacts on ecology'.)</i>

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## Social Indicators

ELEMENT	CATEGORY	ISSUES THAT INDICATORS MIGHT NEED TO CONSIDERED
<b>Social 1</b>	<b>Human health and safety</b>	Risk management performance of the project in terms of delivery of mitigation of unacceptable human health risks. Risk management performance in the short term, including: risks to site workers, site neighbours and the public from remediation works and their ancillary operations (includes hazardous process emissions such as bioaerosols, allergens, PM10 as well as impacts from operating machinery and traffic movements, excavations, etc).
<b>Social 2</b>	<b>Ethical and equity considerations</b>	How are social justice and/or equality addressed? Is the spirit of the 'polluter pays principle' upheld with regard to the distribution of impacts and benefits? Are the effects of works disproportionate to, or more beneficial towards, particular groups? What is the duration of remedial works and are there issues of intergenerational equity (e.g. avoidable transfer of contamination impacts to future generations)? Are the businesses involved operating ethically (e.g. open procurement processes)? Does the treatment approach raise any ethical concerns for stakeholders (e.g. use of genetically modified organisms)?
<b>Social 3</b>	<b>Impacts on neighbourhoods or regions</b>	Impacts to local community, including dust, light, noise, odour and vibrations during works and associated with traffic, including both working-day and night-time / weekend operations. Effect of antisocial use of site, and its impact of other regeneration activities. Impacts on the built environment, architectural conservation, conservation of archaeological resources. Effect of the project on local culture and vitality.
<b>Social 4</b>	<b>Community involvement and satisfaction</b>	Impacts of works on public access to services (all sectors – commercial, residential, educational, leisure, amenity). Inclusivity and engagement in decision making-process. Transparency and involvement of local community, directly or through representative bodies.
<b>Social 5</b>	<b>Compliance with policy objectives and strategies</b>	Compliance of the works with policies, regulatory standards and good practice as set out nationally, by local authority, at the request of community and/or in line with industry working practices and expectations.
<b>Social 6</b>	<b>Uncertainty and evidence</b>	How has sustainability assessment been carried out and what has it considered? Quality of investigations, assessments (including sustainability) and plans, and their ability to cope with variation. Accuracy of record taking and storage. Requirements for validation/verification.

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## Economic Indicators

ELEMENT	CATEGORY	ISSUES THAT INDICATORS MIGHT NEED TO CONSIDERED
<b>Economic 1</b>	<b>Direct economic costs and benefits</b>	Direct financial costs and benefits of remediation for organisation, consequences of capital and operation costs, and sensitivity to alteration (e.g. uplift in site value to facilitate future development, minimisation of risk or threat of legal action).
<b>Economic 2</b>	<b>Indirect economic costs and benefits</b>	Long term or indirect impacts and benefits, such as financing debt, allocation of financial resources internally, changes in site/local land/property values, and fines and punitive damages (e.g. following legal action, so includes solicitor and technical costs during defence). Consequences of an area's economic performance. Tax implications. Financial consequences of impact on corporate reputation. <i>(Note: Does not include factors considered under induced economic benefit).</i>
<b>Economic 3</b>	<b>Employment and employment capital</b>	Job creation, employment levels (short and long term), skill levels before and after, opportunities for education and training, innovation and new skills.
<b>Economic 4</b>	<b>Induced Economic Benefit</b>	Creating opportunities for inward investment, use of funding schemes, ability to affect other projects in the area / by client (e.g. Cluster) to enhance economic value.
<b>Economic 5</b>	<b>Life span and project risks</b>	Duration of works and issues that may affect works, including community, contractual, environmental, procurement and technological risks.
<b>Economic 6</b>	<b>Project flexibility</b>	Ability of project to respond to changing circumstances, including discovery of additional contamination, different soil materials, or timescales. Robustness of solution to climate change effects. Robustness of solution to altering economic circumstances. Requirements for ongoing institutional controls, such as changing regulation or its implementation.