SuRF
SUSTAINABLE REMEDIATION FORUM UK

A Framework for Assessing the Sustainability of Soil and Groundwater Remediation

October 2025

CL:AIRE

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Preface

When the Sustainable Remediation Forum-UK (SuRF-UK) framework was first published in 2010 (CL:AIRE, 2010) it linked the management of land contamination to the concept of sustainable development and has since been widely adopted nationally and internationally. The framework provided the means of incorporating sustainability considerations in the land management process through the assessment of appropriate environmental, social and economic indicators in a simple but robust and flexible manner.

In the 15 years since the publication there have been substantial international and national policy developments that have emphasised the importance of sustainable solutions in all facets of society. In 2015 the United Nations published its Sustainable Development Goals that have reset the sustainability agenda and have been widely adopted and embraced by governments and the private sector. For the latter the adoption, tracking and publication of environmental, social and governance goals and performance has become a key component of business as well as a potential source of value. Issues associated with climate change such as more frequent and severe extreme weather events (Met Office, 2025) highlight the need for society to adopt the precautionary principle and both reduce greenhouse gas emissions and plan for future climate resiliency. In 2017 sustainable remediation was further codified in the International Organization for Standardization (ISO) 18504: Soil Quality - Sustainable Remediation (ISO, 2017) which drew heavily on the principles set out in the original SuRF-UK framework.

The 'planetary boundaries' framework proposed by the Stockholm Resilience Centre (Rockström *et al*., 2009) defines the safe operating space for humanity with respect to the earth system and is associated with the planet's biophysical subsystems or processes. A total of nine boundaries have been proposed, namely climate change, biosphere integrity, land-system change, freshwater change, biogeochemical flows, ocean acidification, atmospheric aerosol loading, stratospheric ozone depletion and novel entities. By 2023 six of the nine planetary boundaries were assessed as having been crossed including for novel entities (which includes synthetic chemicals and substances (e.g. microplastics, endocrine disruptors, organic pollutants)). The issues associated with the management of novel entities and emerging contaminants such as per- and polyfluoroalkyl substances (PFAS) and microplastics are already gaining significant traction and themselves pose significant environmental, social and economic challenges that only sustainable solutions can help mitigate.

The updated SuRF-UK framework and its associated guidance remains a benchmark for promoting sustainable, resilient, risk-based solutions to land contamination management. It acknowledges and can support consideration of all of these challenges and provides a framework for the future that is both robust and flexible enough to identify and incorporate future technical and policy developments.

Contents

1 Introduction

1.1 What is sustainable remediation?

Remediation of land contamination is designed to reduce risks to human health and/or the environment, and ensure a site is suitable for use. However, it also has the potential to cause negative environmental, economic and social impacts. Poorly selected, designed or implemented remediation activities may cause more negative impacts than the contamination that they seek to address.

In the time since the original SuRF-UK framework was published an internationally agreed definition of sustainable remediation has been agreed in ISO 18504:2017, which this version of the SuRF-UK framework adopts:

"**Elimination and/or control of unacceptable risks in a safe and timely manner whilst optimising the environmental, social and economic value of the work**".

While this definition focuses on remediation, this framework is equally applicable to the holistic management of land contamination as a whole - management that embraces the full life cycle of activities and risk management processes associated with investigation and remediation of contaminated land.

1.2 Why adopt sustainable remediation?

A significant number of potential benefits from adopting sustainable remediation have been identified both at site-specific and regional scales:

- Effective and timely management of risks to human health and the environment associated with soil and/or water contamination;
- Reduction in the environmental footprint of remediation works and encouraging good practice across a range of issues including greenhouse gas (GHG) emission reduction, promoting a circular economy and encouraging nature-based solutions;
- Minimising the impact of and/or providing additional added value from remediation works for society, including owners or occupiers of the site and surrounding communities;
- Avoidance of wasted effort and expenditure on unnecessary or unsustainable remediation;
- Positive impact on reputation and public relations, by demonstrating corporate environmental and social responsibility, including through corporate sustainability reporting requirements;
- Improving the robustness of remediation decision making; and
- Contributing to delivering the UN Sustainable Development Goals (UN SDGs), and Environmental, Social and Governance (ESG) commitments, which now form a cornerstone of many government and corporate policies.

1.3 Purpose and objectives of the document

This document presents a refreshed and updated framework for the sustainable management of soil and groundwater contamination in a manner compatible with broader sustainable development goals. It sets out SuRF-UK's recommendations on where material sustainability considerations should form an integral part of land contamination risk management (LCRM) (Environment Agency, 2025) decisions. It is an update to the framework published in 2010 (CL:AIRE, 2010).

Since 2010, SuRF-UK has published multiple supporting resources building on the original framework document. Each supports practitioners on their journey to understand and successfully implement sustainable remediation. These resources now provide much of the detail that was included in the original document and are signposted as appropriate in this revised framework. The resources include:

- Animation introducing sustainable remediation;
- Bulletins on various themes, including introducing concepts about sustainable remediation, linkages to climate change and resilience and environmental management systems;
- Supplementary Report 1 – A general approach to sustainability assessment for use in achieving sustainable remediation (SR1);
- Supplementary Report 2 – Selection of indicators/criteria for use in sustainability assessment for achieving sustainable remediation (SR2) mapped to the SDGs;
- Sustainable Management Practices (SMP);
- Qualitative tools to undertake sustainability assessments; and
- Case studies of sustainable remediation in practice.

All resources are freely available at www.claire.co.uk/surfuk with a more detailed summary in Appendix 1.

The framework was prepared for use in the UK, including within the planning and contaminated land regimes across England, Wales, Scotland and Northern Ireland with regulatory support from each of the respective environment agencies and government departments. The updated framework embodies the latest regulator recommended approach to LCRM.

However, given the flexibility of the framework it is considered that it can also be applied to remediation decision making within regulatory systems beyond the UK.

The framework has received broad regulatory support and global application in the years since it was first issued. It does not make recommendations on the sustainability of any specific remediation technologies or approaches but provides a framework for assessors to identify the optimum solution on a project-by-project basis.

1.4 Target audience

The intended audience for this document includes anyone involved with, or affected by, the selection, design, implementation, and monitoring and verification of soil and groundwater remediation strategies or schemes. This will typically include site owners and their consultants, remediation contractors, town planners, architects and urban designers, regulators, financial and fund managers and other interested parties, including site neighbours and local residents.

1.5 Overview of sustainable development

In 1987 the World Commission on Environment and Development (WCED), commonly known as 'the Brundtland Commission' defined sustainable development as "development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs" (United Nations WCED, 1987). Today sustainable development, often referred to as sustainability, plays a pivotal role in shaping global priorities and addressing interconnected challenges such as climate change, resource depletion, biodiversity loss, social inequality and economic instability through initiatives such as the 2030 UN SDGs (United Nations, 2015). The WCED definition of sustainable development forms the basis for much of the UK Government's policy on sustainable development (DEFRA, 2005) and how the UK is implementing the UN SDGs (UK Government, 2021 and 2024). The WCED definition of sustainable development is adopted in this framework document and has three elements, environmental, social and economic, that when actioned collectively optimise the overall benefit (Figure 1.1).

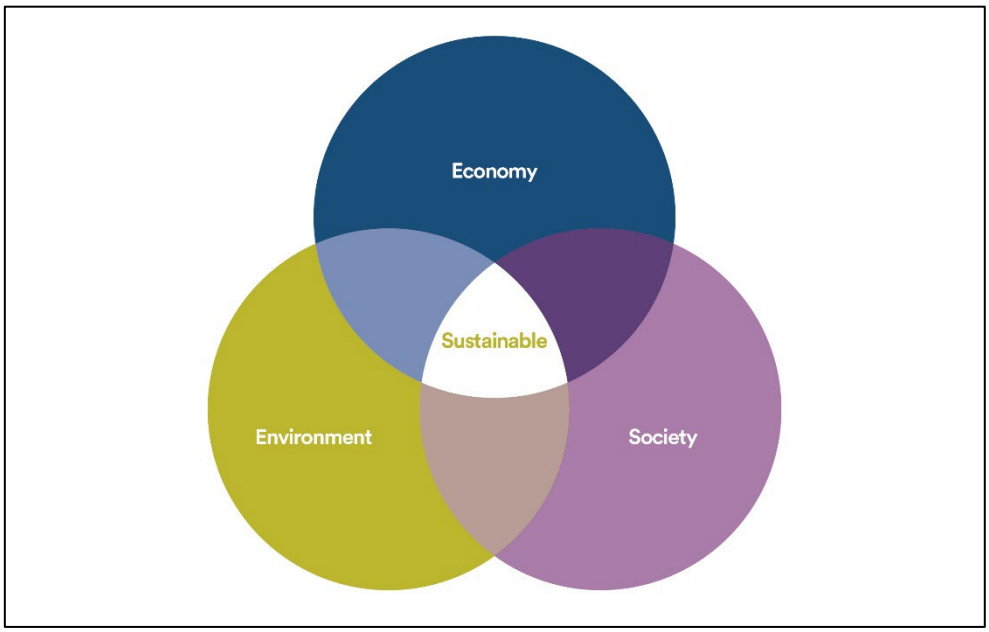

Figure 1.1: Sustainable development is a balance between environmental, societal and economic factors.

1.6 Role of remediation within sustainable development

Sustainable remediation aligns soil and groundwater remediation (and the broader management of land contamination) within sustainable development by advocating that contaminated sites are remediated in ways that optimise the environmental, social and economic outcomes. In the SuRF-UK document SR2 (CL:AIRE, 2020) the potential linkages between the environmental, social and economic indicators advocated by SuRF-UK for use in sustainability assessments were mapped to the UN SDGs with a number of potential synergies between the indicators and SDGs highlighting where remediation can make a contribution. Figure 1.2 highlights some of the most significant linkages.

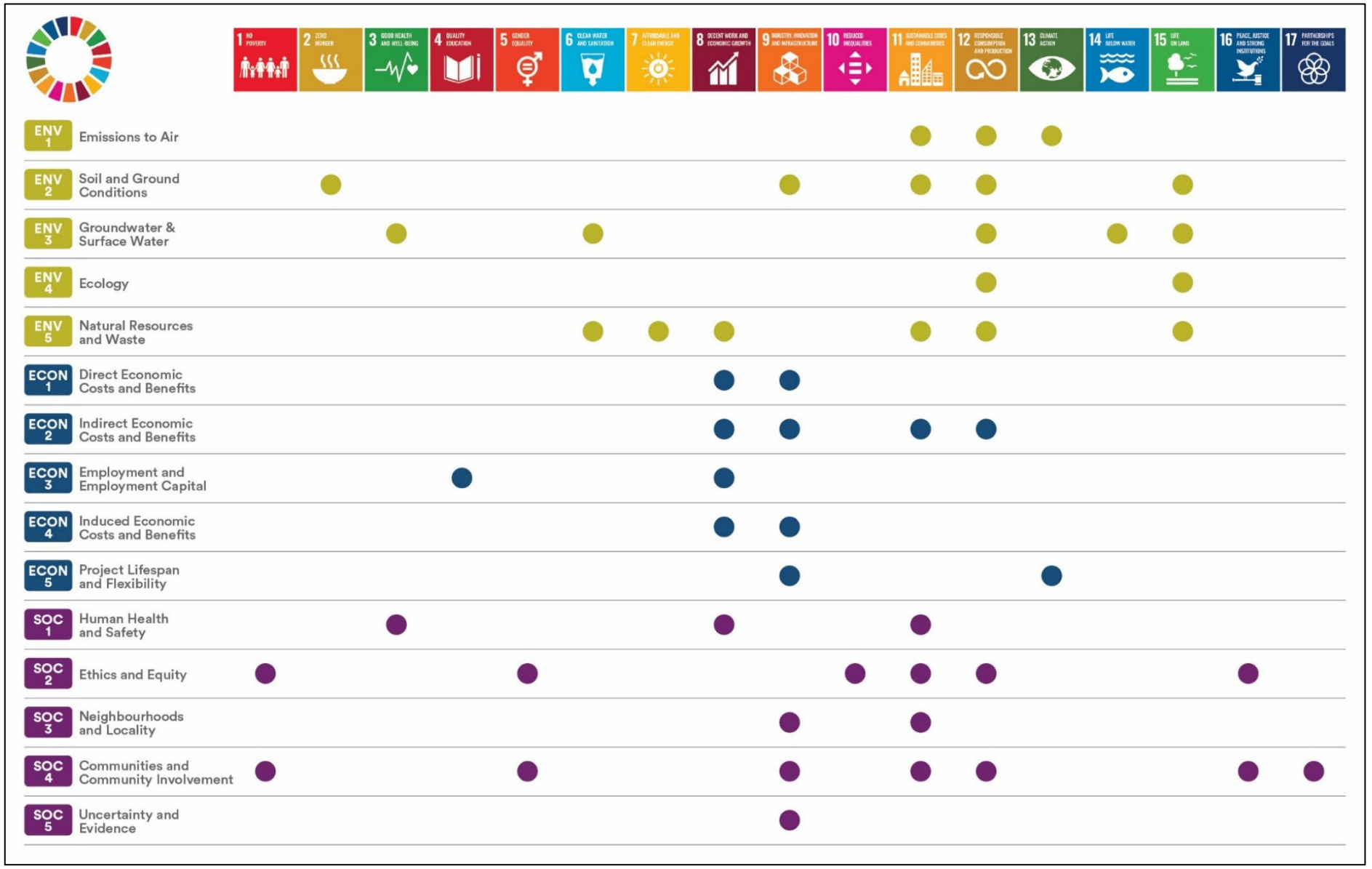

Figure 1.2: The relationship between UN SDGs and SuRF-UK indicators.

The overall significance of soil and groundwater remediation to the sustainability of a scheme (e.g. a brownfield redevelopment) will vary depending on its relative significance to the scheme as a whole. The earliest influence on the sustainable development life cycle (Figure 1.3) considered in this framework is regional spatial planning. Remediation activities are often just one part of a wider redevelopment or land-management project, but one that is commonly overlooked during initial planning and sustainable development appraisals. SuRF-UK believes that consideration of remediation issues in wider sustainable development appraisals will result in projects that are 'better by design'. It must be recognised that on occasions decisions will be made that appear to be non-optimum with regard to remediation because other factors are more influential in optimising the overall (environmental, social and economic) benefits of a scheme. The framework allows reconsideration of overarching project principles and objectives through a feedback loop in instances where non-optimum remediation would result.

Figure 1.3: The sustainable development life cycle.

At a project-specific level, such as a brownfield redevelopment, the remediation process becomes more significant to the overall project sustainability, and during the remediation of operational land (i.e. where there is no change of use proposed) the sustainability of the remediation can define the entire project sustainability.

Some organisations may manage a portfolio of sites or other assets, some of which may need risk management action. In this case a sustainable remediation assessment may be an important component of strategic planning to form a robust and defensible assessment of which sites should be considered before others.

In addition, by identifying and quantifying relevant indicators and metrics, sustainable remediation assessments can assist with other issues of corporate governance. It can help realise hidden value through identification and quantification of some of the broader environmental (e.g. natural capital, biodiversity), social or economic benefits that would

otherwise not be considered or accounted for. This can include use of nature-based solutions[1] and an ecosystem services approach[2] to address contamination risks and create revenue streams by creating biodiversity or carbon credits.

[1] Nature-based Solutions (NbS) were defined by International Union for Conservation of Nature (IUCN) in 2016, as "actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits" https://iucn.org/our-work/nature-based-solutions

[2] Ecosystem services are defined as services provided by the natural environment that benefit people (DEFRA, 2007).

2 Legislative and Regulatory Context in the UK

In the UK, policies and legislation aim to prevent land and water contamination and ensure that where it occurs it is appropriately managed. Planning policies promote sustainable development and the UK approach to the management of historical land and groundwater contamination is founded on a risk-based 'suitable-for-use' philosophy. Under planning and contaminated land legislation, where remediation requirements should remove unacceptable risks to human health and the environment, these principles align with broader sustainable development goals by encouraging the safe redevelopment of brownfield sites and protecting environmental and public health[3]. For new contamination that occurs as a result of accidents, poor practice, or failure to comply with conditions in an environmental permit, other regulatory regimes typically require remediation to pre-event conditions. In all of these situations, appraising the sustainability of remediation options in the context of sustainable development is an essential part of identifying the optimum solution.

Overarching technical guidance on managing risks at sites affected by land contamination is provided in LCRM. LCRM makes reference to the importance of sustainability and how it supports a sustainable approach to the risk management of land.

The SuRF-UK framework operates within, and complements, the phased approach to risk assessment and management described in LCRM. As noted later in this document, key assessment points within the SuRF-UK framework align with LCRM 'risk assessment', 'options appraisal' and 'remediation and verification' stages.

In addition, the SuRF-UK framework extends into wider considerations not explicitly considered in LCRM that relate to integration of remediation with non-risk-based aspects of project design. These include, for example, whether efficiencies can be gained by integrating remediation with wider sustainable development intentions, such as:

- Site master planning and urban design to prevent creating new source-pathway-receptor linkages and enhance soil resource and soil health;
- Contribute to compliance with broader environmental management systems (ISO 14001 (ISO, 2015)) and quality management systems (ISO 9001 (ISO, 2015));
- Construction and remediation processes for waste minimisation purposes;
- Integration of a remediation scheme with renewable energy, such as ground source heating and cooling, or biomass production; and
- Integrating remediation work with provision of sustainable drainage and flood protection measures.

[3] The overarching objectives of the Government's policy on contaminated land and the Part 2A regime are:
(a) To identify and remove unacceptable risks to human health and the environment.
(b) To seek to ensure that contaminated land is made suitable for its current use.
(c) To ensure that the burdens faced by individuals, companies and society as a whole are proportionate, manageable and compatible with the principles of sustainable development. (DEFRA, 2012).

These are not intended to be prescriptive examples, but rather to illustrate the wide scope of opportunities for integration that can be unlocked by taking a more holistic project design approach.

Finally, effective management of land contamination requires other aspects of the remediation process to be subject to sustainability considerations such as resilience and adaptation to climate change, impact on nature and ecosystem services, better project risk management and overall improved environmental management systems. These can all be incorporated under the SuRF-UK framework.

3 The SuRF-UK Framework and its Structure

The SuRF-UK framework consists of a series of principles, processes, approaches and supporting information that collectively provide a means for incorporating sustainability principles across the life cycle of a remediation project. The SuRF-UK framework draws on existing methods to ensure a robust and streamlined framework for assessing sustainable remediation is compliant with legislative requirements, complementary to current UK good practice (e.g. LCRM), practicable to implement, and achieves industry-wide and regulatory acceptance.

3.1 Key principles of sustainable remediation

In the original framework, SuRF-UK identified a number of key principles that are associated with sustainable remediation, which should be considered by practitioners in the design, implementation and reporting of sustainable remediation schemes. These key principles still remain relevant:

Principle 1: Protection of human health and the wider environment. Remediation should remove unacceptable risks to human health and protect the wider environment now and in the future for the agreed land-use, and give due consideration to the costs, benefits, effectiveness, durability, resilience and technical feasibility of available options.

Principle 2: Safe working practices. Remediation works should be safe for all workers and for local communities and should minimise impacts on the environment.

Principle 3: Consistent, clear and reproducible evidence-based decision making. Sustainable risk-based remediation decisions are made having regard to environmental, social and economic factors, and consider both current and likely future implications. Such sustainable and risk-based remediation solutions optimise the potential benefits achieved. Where benefits and impacts are aggregated or traded in some way this process should be explained and a clear rationale provided.

Principle 4: Record keeping and transparent reporting. Remediation decisions, including the assumptions and supporting data used to reach them, should be documented in a clear and easily understood format in order to demonstrate to interested parties that a sustainable solution has or has not been adopted (with justification).

Principle 5: Good governance and stakeholder involvement. Remediation decisions should be made having regard to the views of stakeholders and following a clear process within which they can participate.

Principle 6: Sound science. Decisions should be made on the basis of sound science, relevant and accurate data, and clearly explained assumptions, uncertainties and professional judgement. This will ensure that decisions are based upon the best available information and are justifiable and reproducible.

3.2 The structure of the SuRF-UK framework

The stages associated with the SuRF-UK framework are illustrated in Figure 3.1 and then reproduced separately as Figures 3.2 – 3.4. The framework is structured to be sufficiently flexible that it can be applied across the project life cycle to various decision-making scenarios, and to different sizes of project or site.

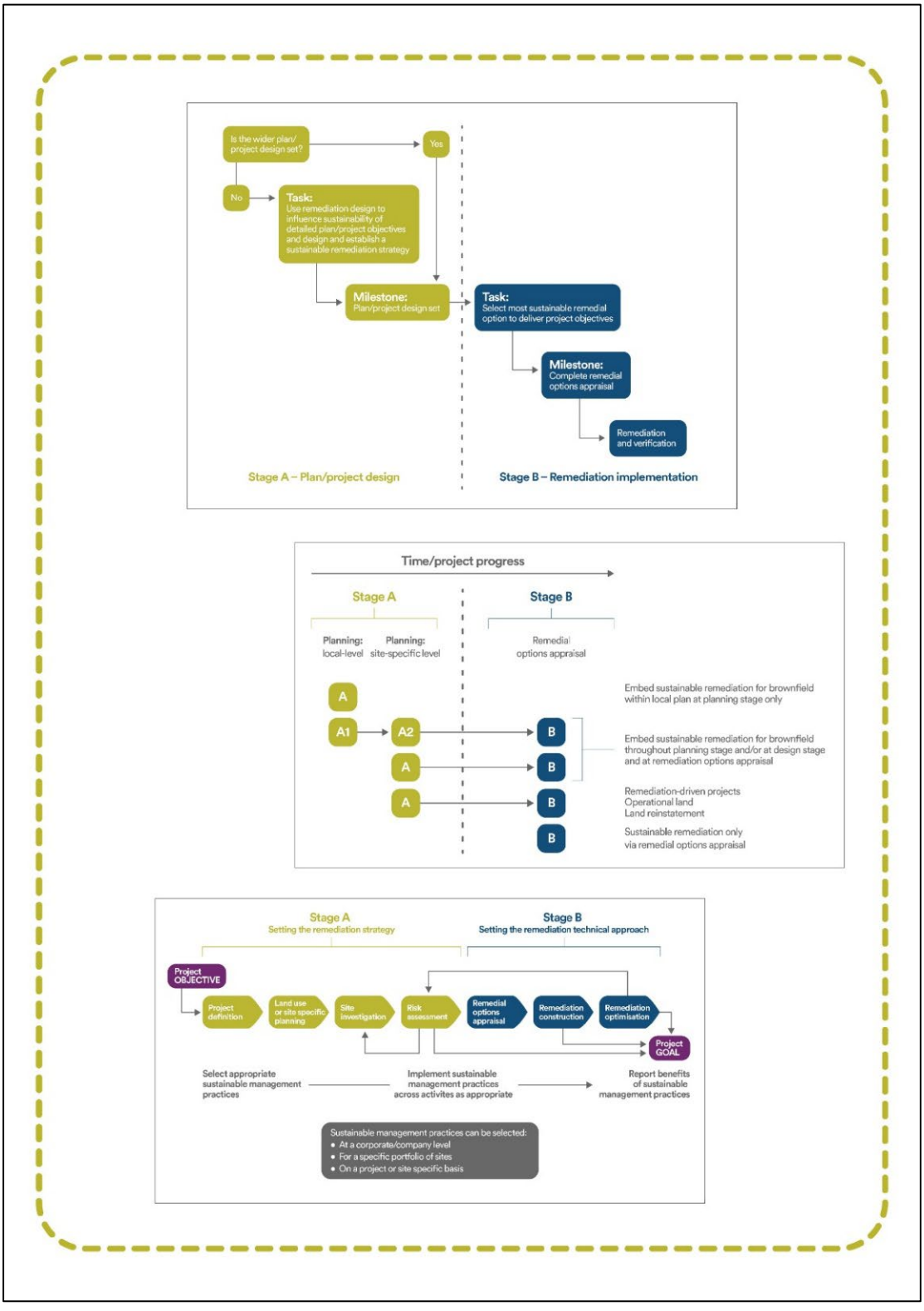

Figure 3.1: SuRF-UK framework stages.

At the heart of the framework (Figure 3.2) is recognition that sustainability can be considered at two fundamental stages; at Stage A – the project planning and/or design and Stage B - remediation implementation.

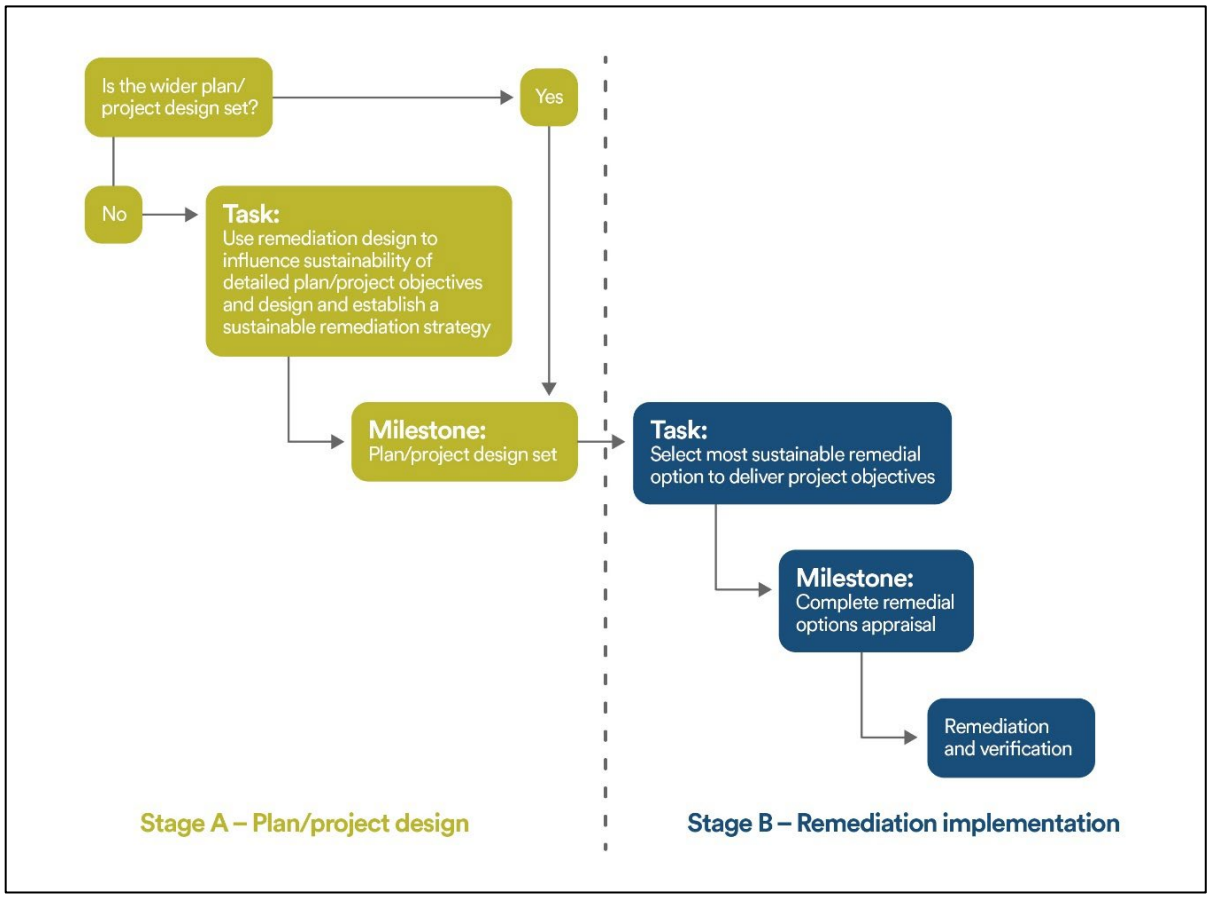

Figure 3.2: Fundamental stages of SuRF-UK framework.

Within Stage A there is the opportunity to embed a sustainable remediation strategy into the wider project planning and/or design. This stage is considered a relatively flexible stage, permitting several design iterations in an effort to integrate the optimum remediation strategy into the wider project and can conceptually be applied within any scale of site (local plan, industrial mega-site or small site) or any type of project (brownfield redevelopment and/or operational site remediation).

Stage A also recognises that a sustainable approach is founded on a robust conceptual site model and appropriate site-specific risk assessment that will ultimately determine the scale of remediation and the range of technologies or strategies that will be considered in Stage B. As noted in SR1 (CL:AIRE, 2020) the use of site-specific risk assessment at Stage A will enhance the optimisation of remedial objectives by directing risk management goals to the specific context of a site rather than relying on generic (and invariably conservative) assumptions.

Completion of Stage A delivers an agreed and final project design or plan that includes the required remediation objectives and scope. At the completion of Stage A there is typically a point of limited return (the break-point) where the requirement for remediation is established. This occurs because, for example, contracts, regulatory agreements, conditions of a permit or a planning consent are finalised.

Once Stage A is completed the main influence that can be achieved by a sustainable remediation assessment is at Stage B where together with (and often following) a technical assessment to identify feasible remedial technologies, a sustainability assessment is undertaken to identify the optimum remediation solution that will facilitate delivery of the project design. The Stage B milestone is a completed remedial options appraisal, which results in selection of a preferred remediation solution that can be sustainably implemented and subsequently verified.

Figure 3.3 illustrates how the framework can be applied to different remediation scenarios by using one or both stages. Further, Stage A can be split into Stages A1 and A2 within a brownfield land assessment that is taken through design stages, firstly at regional-scale planning, and then at a site-specific level. In many circumstances, a practitioner does not have an opportunity to influence the design work. They may only be asked to implement a selected remediation strategy, in order to deliver the design requirement. This represents a Stage B of the framework process. Feedback from practitioners and published case studies suggests that Stage B has provided the greatest opportunity for utilisation of the framework - at a site specific rather than regional or community plan level.

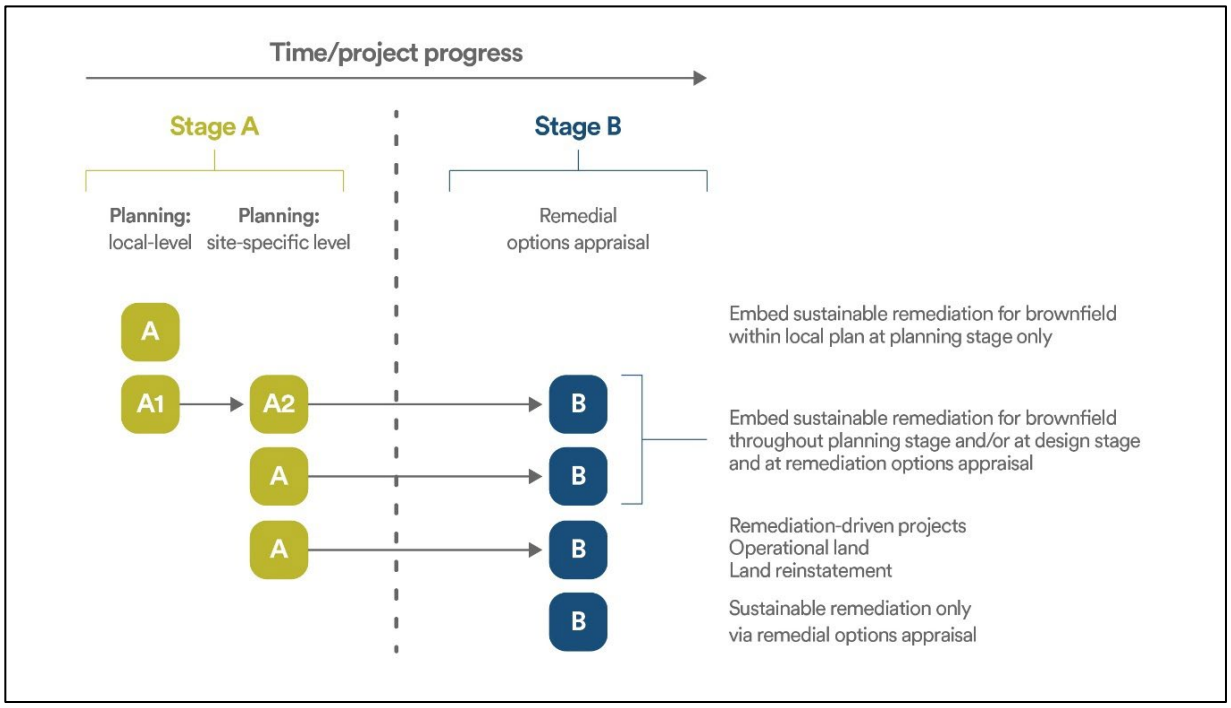

Figure 3.3: Incorporation of SuRF-UK framework stages in different scenarios.

Finally Figure 3.4 illustrates the relationship of the SuRF-UK framework to the UK LCRM framework and the approach for identifying and implementing Sustainable Management Practices (SMPs) for sustainability benefits across the life cycle (CL:AIRE, 2021).

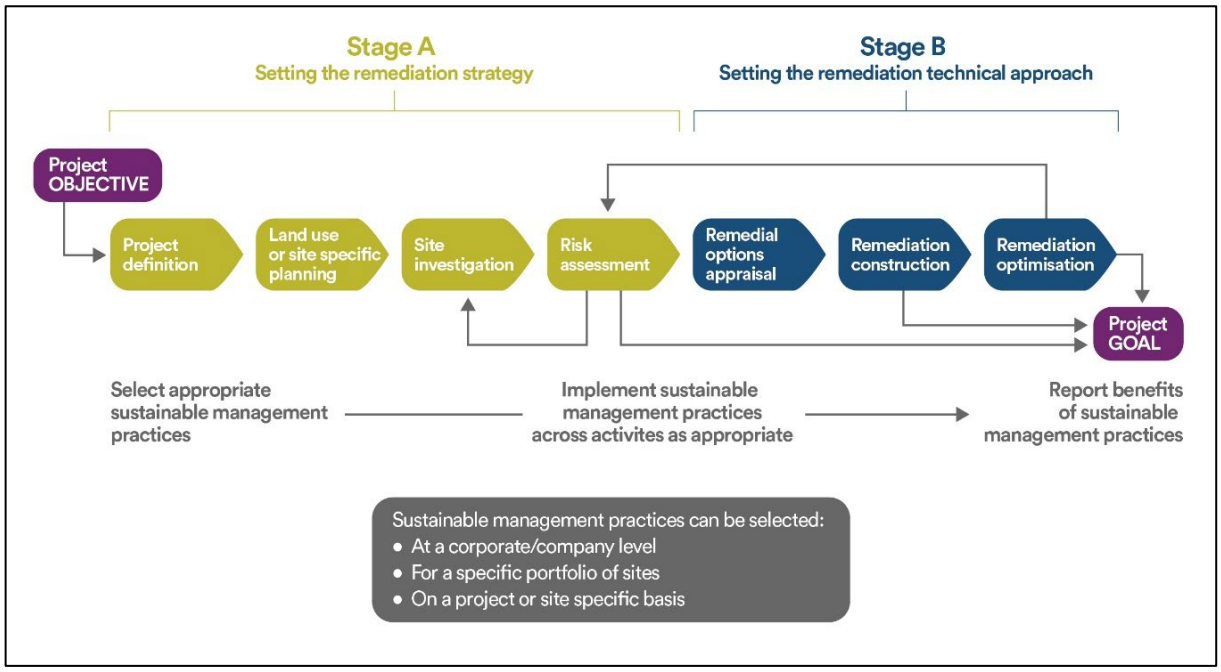

Figure 3.4: The relationship of the SuRF-UK stages with LCRM.

As noted in Section 2, LCRM describes a process for managing land affected by contamination which has three distinct stages: risk assessment, options appraisal, and remediation and verification. Figure 3.4 and Table 3.1 summarise the relationship between the SuRF-UK guidance and the LCRM stages. Whilst developed for use in the UK, the LCRM and SuRF-UK processes can be applied to regulatory regimes globally where they accept risk-based decision making.

Table 3.1: Summary of how site-specific SuRF-UK assessment points align to the LCRM risk management procedures for land affected by contamination.

LCRM Stage	Risk Assessment	Options Appraisal	Remediation and Verification
LCRM Outcome of stage	Robust conceptual model, risks and uncertainties identified Decision of need for remedial works, based on site-specific risk assessment	Remedial options reviewed Preferred strategy identified	Remedial action complete and verified Possible long-term monitoring
SuRF-UK framework Stage A: Plan/project design	Use remediation knowledge in plan/project design to influence sustainability of detailed project objectives, to either • Manage unacceptable risks through design and refined assessment • Look ahead and consider likely remedial options when developing risk assessment • Consider and implement appropriate SMPs that reflect the sustainability goals of the project		Not applicable
SuRF-UK framework Stage B: Remediation selection and implementation	Not applicable	Integrate with technical options appraisal to select optimum remedial option to deliver project objectives	Consider and implement appropriate SMPs that reflect the sustainability goals of the project

3.3 The relationship of the SuRF-UK stages with SMPs

The original SuRF-UK framework recognised the importance of other sustainability considerations across the project life cycle. Since the publication of the original framework SMPs have been recognised as a means for incorporation of sustainability considerations in activities within the framework. In summary, SMPs are intended as "relatively simple, common-sense actions that can be implemented at any stage in a land contamination management project to improve its environmental, social and/or economic performance" (CL:AIRE, 2021). SMPs can be used to improve the benefits (e.g. resource efficiency, cost) or reduce the negative impacts (e.g. spillages, complaints) of a project, leading to project 'sustainability gains', without requiring a formal sustainability assessment at site-specific level. SMPs may also be used where sustainability gains are sought at a programme of work level using generic criteria or standards that can apply to a range of project types. SuRF-UK published updated guidance on SMPs in 2021 that provides further detail and an example MS Excel spreadsheet (CL:AIRE, 2021). Table 3.2 provides examples of SMPs across the LCRM project life cycle.

Table 3.2: Examples of SMPs across the LCRM project life cycle.

LCRM Stage	Risk Assessment	Options Appraisal	Remediation and Verification
SuRF-UK assessment	Ensure site characterisation: a. Sets clear objectives to ensure that data collection is focused and fit for purpose. b. Installs monitoring wells in an appropriate way to prevent preferential pathways. Ensure site assessment has: a. Developed a conceptual model, with uncertainties identified, and review when additional information becomes available.	Remedial options assessed: a. Optimum remedial strategy identified (i.e. Source-Pathway-Receptor, only treatment, or a combination, to achieve risk-based remedial goals). b. Consider ways to maximise positive benefits to local communities.	Ensure remediation: a. Evaluates carbon footprint for major activities and implements a GHG emissions reduction plan. Ensure verification: a. Is designed to ensure efficient data collection, focused on demonstrating whether remedial objectives are achieved. b. Verifies sustainability assessment.

4 Applying the SuRF-UK Framework

As noted elsewhere in this document, since publication of the original SuRF-UK framework, detailed guidance on application has been provided by SuRF-UK. In the context of the revised framework the intention in this section is to emphasise three key areas that are considered integral to sustainability assessment and that should be considered part of the framework. The three key areas are:

- **Project framing** to define sustainability boundaries and objectives
- **Tiered approach** to implement a sustainability assessment
- **Methodologies** employed to carry out a sustainability assessment

4.1 Project framing – sustainability boundaries and objectives

The important early stages of setting objectives and goals, identifying stakeholders and defining the assessment boundaries and scope is referred to as 'project framing'. A number of activities are required in this process, and have been described extensively in SR1 and SR2 (2020), SMP report (2021), SuRF-UK Bulletin 5 (2022) and SuRF-UK Bulletin 7 (2023).

The key aspects considered are shown in Figure 4.1.

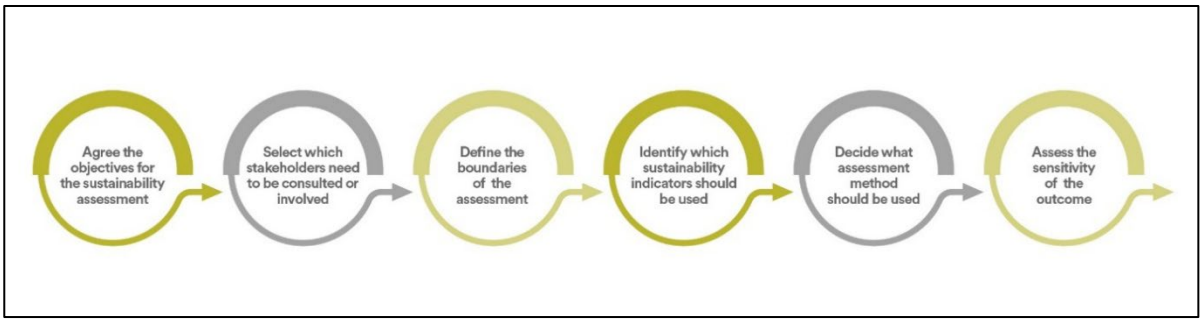

Figure 4.1: Key aspects of project framing.

The performance and documentation of the process of project framing is considered a key requirement of a sustainability assessment. A spreadsheet has been developed using MS Excel which is downloadable from www.claire.co.uk/surfuk and can be used to guide and record the process of framing and Tier 1 qualitative sustainability assessment.

4.2 A tiered approach to implement sustainable remediation

In general, decisions should be based on the simplest sustainability assessment approach appropriate to the situation, if the information it provides is seen as robust and acceptable by the various stakeholders involved in the decision-making process. SuRF-UK recommends a tiered approach to supporting decision making in relation to sustainable remediation.

At its simplest and lowest tier is a qualitative narrative-based approach that is adequate to support a justifiable decision (e.g. checklists and documented conversations between stakeholders). The next tier would be a more analytical approach such as a semi-quantitative multi-criteria analysis (MCA). The top tier relies on more complex quantitative assessment approaches, for example, monetised cost benefit analysis (CBA), life cycle assessment or natural capital assessment. The process of using a tiered approach to supporting sustainable remediation decision making is shown in Figure 4.2.

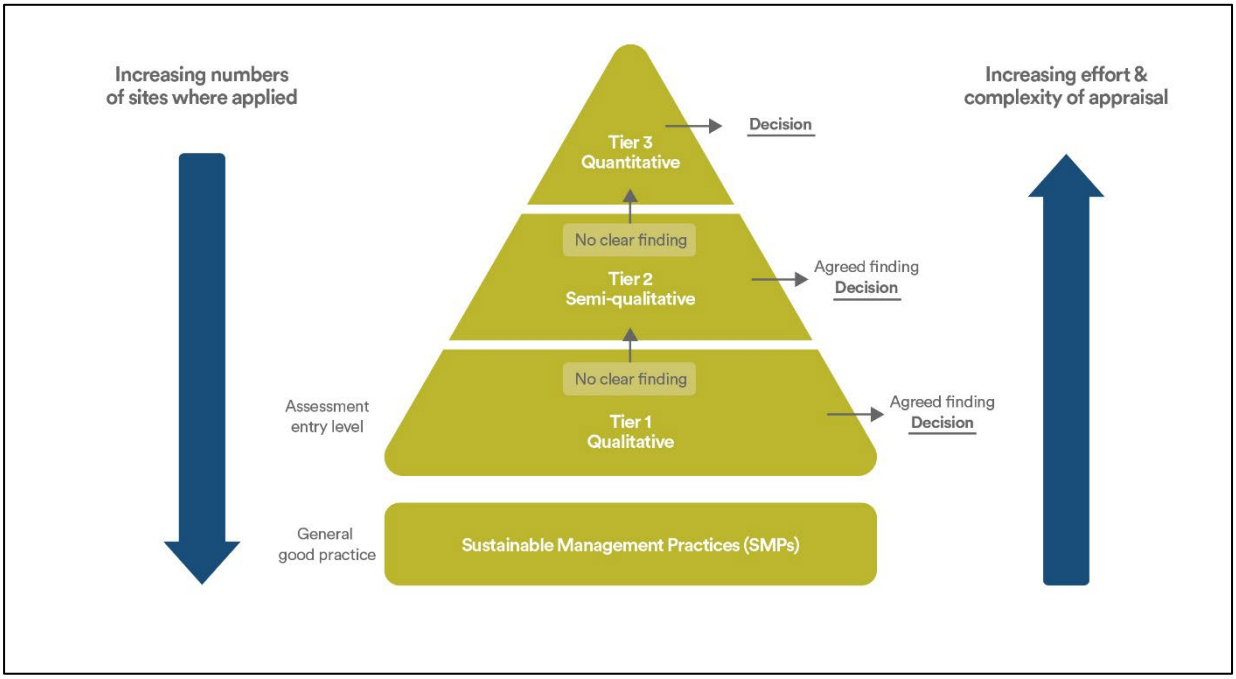

Figure 4.2: Tiered approach to assessing the sustainability of remediation.

An ideal sustainability assessment approach allows assessors to evaluate the environmental, social and economic factors in a transparent and robust manner, using data and knowledge that are readily available and easily communicated to interested parties. It is possible to make a valid management decision at any tier of assessment, however the decision to move from a simple assessment to a more complex assessment may result from a number of circumstances, such as:

- A legal requirement (e.g. regulatory, contract at point of divestment etc);
- Assessment at a low tier does not allow a clear management decision to be made, and more detailed assessment is expected to bring greater clarity to the assessment; and
- The organisation undertaking the assessment requires the output to be reported in financial terms and defaults to a monetised CBA to meet its own financial reporting requirements.

As with tiered risk assessment, the higher the tier of analysis, the greater the potential for quantification of key indicators as part of the assessment, but equally the greater the resources, data and effort required to undertake the assessment. The assessment should normally be undertaken at the lowest tier that allows a robust management decision to be made, though based on experience it may be decided to commence at semi-quantitative assessment rather than start at qualitative.

Further information is available in Appendix 1, SR1 (CL:AIRE, 2020).

4.3 Methods for assessing sustainable remediation

SuRF-UK considers that the specific tool used for a sustainable remediation assessment is less important than the process and thought that goes into the assessment. An assessment that considers environmental, social and economic factors from various stakeholder perspectives and which supports a management decision based on a clear and documented process is likely to be more acceptable than one which uses a sustainability assessment tool as a ‘black box’ and which fails to properly consider or justify input data and assumptions (Smith, 2019). Sustainability assessment tools should help evaluators undertake an assessment and make a

management decision, not be the assessment. The following paragraphs provide a brief overview of some common methodologies and tools.

Tier 1

Qualitative sustainability assessment is used at Tier 1 to compare sustainability in a relative sense across different potential remediation options. It works with simple numeric or category rankings, for example: 1,2,..n, or 'best', 'better', 'worst'. It is a relatively simple approach which can cover a broad scope of sustainability issues. In the majority of cases a Tier 1 assessment will identify the 'most sustainable' of the options being compared, in a way that is relatively easy for all stakeholders to grasp. In 2014 SuRF-UK developed guidance on qualitative sustainability assessment and tools for supporting its use at stakeholder meetings, called 'SuRF-UK Briefcase', available from www.claire.co.uk/surfuk.

Tier 2

Semi-quantitative methods are often adopted at Tier 2 and are generally based on MCAs which combine scores (indicating scale of impact) and weights (indicating the perceived importance of the criterion) across multiple effects. Scores may be based on direct quantities (metrics), for example a carbon footprint, a direct costing etc; or some form of expert view or opinion. Weights can be derived according to preferences expressed by different stakeholders, albeit often a fairly narrow range of stakeholders. Further information on MCA is summarised in SR1 (CL:AIRE, 2020).

Tier 3

Tier 3 assessments are primarily cost benefit or cost effectiveness assessments, where rather than using scores and weights, some form of valuation is applied to individual considerations, and the overall considerations aggregated on the basis of perceived value. Cost benefit assessments can be highly contentious, especially in a brownfield/remediation context, and therefore there has been some interest in the use of combined MCA-cost benefit approaches. Quantitative methods based on footprint or life cycle assessment methodologies have been used to compare remediation options. However, these may not provide a complete sustainability assessment if they relate only to a limited number of the project sustainability indicators but can still contribute to an overall evaluation. For complex sites, where achieving sustainability is a major project driver, a Tier 3 analysis may integrate two or more quantitative assessments, for example from, social impact assessment (Institute of Environmental Management and Assessment, 2022), natural capital assessment (DEFRA, 2025), life cycle assessment (Environment Agency, 2000) or cost benefit assessment (HM Treasury, 2025).

4.4 Summary

Sustainable remediation assessment enables us to manage unacceptable risks to human health and the environment sustainably. It provides the land contamination management sector with a framework to incorporate sustainable development principles into remediation projects and deliver significant value for affected parties and society more broadly.

The SuRF-UK framework consists of a series of principles, processes, approaches and supporting information that collectively provide a means for incorporating sustainability principles across the life cycle of a remediation project. This revised and refreshed version of the SuRF-UK framework has been updated to:

- Incorporate and adopt the ISO definition of sustainable remediation;

- Re-emphasise the links between sustainable remediation and broader UN SDGs; and
- Update the framework itself such that it reflects all the guidance prepared by SuRF-UK since the issue of the first framework.

It is hoped that consistent application of the updated SuRF-UK framework and associated guidance and tools will facilitate even wider achievement of sustainable remediation.

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Appendix 1 – Summary of SuRF-UK Resources

Animation introducing sustainable remediation	A 5 minute long YouTube video that presents an overview of the principles and practice of sustainable remediation.
Supplementary Report 1 – A general approach to sustainability assessment for use in achieving sustainable remediation (SR1)	SR1 was published in 2020 and describes a general approach to sustainability assessment that consolidates a range of guidance issued by SuRF-UK since 2011. It provides guidance on how to carry out sustainability assessments for remediation design, strategy setting and remediation technology selection. The document reviews the key steps involved in practical application of the framework and contains a number of useful appendices including an aide memoire and guidance on completing Tier 1, Tier 2 and Tier 3 assessments.
Supplementary Report 2 – Selection of indicators/criteria for use in sustainability assessment for achieving sustainable remediation (SR2)	SR2 was published as a complementary volume to SR1. SR2 focuses on the use of indicators and metrics for sustainability assessments and in particular the nature and rationale for 15 SuRF-UK headline indicator categories, and an approach to indicator selection and use including linkages to the UN SDGs. SR2 is supported by a downloadable MS Excel spreadsheet based checklist of possible individual indicators/criteria provided as an appendix.
Sustainable Management Practices (SMP)	SuRF-UK published guidance on Sustainable Management Practices in 2014 and this was revised and updated in 2021. The SMP document provides an overview of the nature of SMPs, their application across the life cycle of a project and two case studies. The document is supported by a downloadable MS Excel spreadsheet that enables the user to identify and select SMPs for a project (as well as encouraging and enabling the use of custom SMPs).
A qualitative tool to undertake sustainability assessment	The Tier 1 sustainability assessment MS Excel spreadsheet tool was developed by AECOM in collaboration with the SuRF-UK Steering Group and provides a standardised record for the completion of a Tier 1 qualitative sustainability assessment consistent with SR1 and SR2.
SuRF-UK Bulletins	SuRF-UK has published a series of bulletins on various themes, including introducing concepts about sustainable remediation, linkages to climate change and resilience and environmental management systems.
Case studies of sustainable remediation in practice	SuRF-UK published case studies of examples of sustainability assessments carried out using the SuRF-UK framework.

All resources are freely available to download here: www.claire.co.uk/surfuk