Developments in Sustainability Assessment within Contaminated Land Management, and Perspectives from SuRF-UK and NICOLE

Professor Paul Bardos (paul@r3environmental.co.uk)

Green Remediation, Copenhagen November 9-10 2009
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• What do we mean by sustainability?
• Defining sustainable remediation
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Sustainability – an overarching viewpoint

• Sustainability is an ethical concept about the way in which we treat the world in which we live
Defining sustainability…

'Development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (1987, Brundtland)
Wide-ranging in its scope

<table>
<thead>
<tr>
<th>Environmental</th>
<th>Social</th>
<th>Economic</th>
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<tbody>
<tr>
<td>➢ impacts on air – including climate</td>
<td>➢ impacts on human health and safety</td>
<td>➢ direct economic costs and benefits</td>
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<tr>
<td>➢ impacts on soil</td>
<td>➢ ethical and equity considerations</td>
<td>➢ indirect economic costs and benefits</td>
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<tr>
<td>➢ impacts on water</td>
<td>➢ impacts on neighbourhoods or regions</td>
<td>➢ employment and capital gain</td>
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<tr>
<td>➢ impacts on ecology</td>
<td>➢ community involvement and satisfaction</td>
<td>➢ gearing</td>
</tr>
<tr>
<td>➢ use of natural resources and generation of wastes</td>
<td>➢ compliance with policy objectives and strategies</td>
<td>➢ life-span and ‘project risks’</td>
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<tr>
<td>➢ intrusiveness.</td>
<td>➢ uncertainty and evidence</td>
<td>➢ project flexibility</td>
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Sustainable Management of Contaminated Land, CLARINET 2002

Risk Based Land Management

- Fitness for Use
- Protection of Environment
- Long-Term Care

2 Key Decisions:
- The Time Frame
- The Choice of Solution
CLARINET - 2002

- Risk based decision making in contaminated land management is consistent with sustainable development
  - Risk management provides a scientific rationale for the costs of remediation that society has to bear
- Not all remediation projects are necessarily sustainable
  - Considering the contribution of remediation work to sustainable development is an emerging challenge at least as great in its difficulty as the development of risk based decision making, and with the same capacity to profoundly change how we manage contaminated land in the future
• Risk based decision making in contaminated land management is consistent with sustainable development
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_The sustainable remediation debate_
There are a lot of wishes

• For example
  • FritzLang Solar Power Venting GmbH wants a sustainability sticker for their service so they can better compete in the market
  • Trustme Consulting want a nice and easy sustainability tool to sell repeat services to clients
  • The European Sceptical Society wants some form of sustainability assessment of what they feel are conservative assumptions used in risk assessment guidance
  • Big Multinational Land Corp wants some simple metrics that can fit into their global reporting
But what is the common ground? Where is the logical starting point?

• The driver for the remediation is risk management
  – Sustainability and risk management are not antagonistic
• Surely what we all want is that we can find the most sustainable way to manage any particular contaminated site
• SuRF UK and NICOLE suggest: “sustainable remediation” is
  – the practice of demonstrating, in terms of environmental, economic and social indicators, that an acceptable balance exists between the effects of undertaking the remediation activities and the benefits the same activities will deliver
• This is a unique decision for each project
  – There is no one size fits all “tool”, e.g. carbon footprint
  – There is no one size fits all list of half a dozen indicators
• A complete description / assessment of “sustainable remediation must address this definition in its entirety
Applying Sustainability?

- Is all remediation sustainable?
- Is it sustainable to use large amounts of fossil fuel to remove a small amount of TPH from a site?
- How should we manage contaminated sites together, for example for better river basin management?
- Are some remediation methods better than others for a particular site?
- Many decisions affect CLM sustainability before remedy selection
Thinking about sustainable remediation at the point of the remedy selection

National / regional planning and policy

- Favourable tax regime for brownfield redevelopment

Local planning and policy

- Supports shopping development in a particular area

Redevelopment project

- Suggests financial need for basement parking

Remediation work

- Optimal means of bringing site to a condition suitable for development
So the sustainability of remediation is a function of preceding decisions as well as remedy selection.
But what about if sustainable remediation thinking started before remedy selection?

National / regional planning and policy

Favourable tax regime for brownfield redevelopment

Local planning and policy

Supports shopping development in a particular area

Redevelopment project

Suggests financial need for basement parking

Remediation work

Optimal means of bringing site to a condition suitable for development

Points where sustainable remediation is considered

Decision includes sustainability of parking choices

Decision considers sustainability of remediation after parking choices have been made
An early influence can improve sustainability (and cost)

"Sustainability"

Represent basement parking decisions

Represents undercroft parking decision
Example Framework: SuRF-UK

Is the wider plan/project design set?

No

TASK: Use remediation design to influence sustainability of detailed plan/project objectives and design

MILESTONE: Establish a sustainable remediation strategy to embed within the plan/project design

Yes

MILESTONE: Plan/Project design set

TASK: Select most Sustainable remedial Option to deliver project objectives

MILESTONE: Complete Remedial Options Appraisal

Remediation and verification

Remediation Implementation only

Wider plan/project design
Measuring sustainability?

- From pragmatic point of view there is no universal sustainability measurement that gives an unarguable result
  - Making a case for action based on sustainability must be persuasive to different stakeholders, e.g. site owner, regulator, service provider, planning authority etc.

- So sustainability assessment is a process which depends on the project and the stakeholders
  - The project sets the context
  - The stakeholders set the scope of sustainability
    - If they can’t agree the scope, they won’t agree the results!

- NICOLE suggests a stepwise approach to set the scope by consensus – as far as possible - then use an agreed sustainability assessment approach will be most persuasive to most stakeholders

- “Sensitivity analysis” can be used as a tool to compare scenarios where stakeholders cannot reach consensus
  - E.g. To compare outcomes for different weightings of importance
Engagement

Ad hoc start

Agree S.A. client objectives

Options being considered

Parties involved?

Revise objectives

Indicators / Metrics?

Assign importance: e.g. L,M,H

Boundaries?

Tool(s)? / Tiered approach

Sustainability appraisal

Conclusions

Sensitivity (e.g. to H,M,L)

Verification

Changes in Circumstances

Wider? Core
SuRF-UK

www.claire.co.uk/surfuk

Out for review

Please feel free to get involved: nicola.harries@claire.co.uk

www.r3environmental.com
NICOLE *draft* guidance

- Available on [www.nicole.org](http://www.nicole.org) from early 2010
- Road map and checklists in consultation format
- Report of WG findings
Conclusions

• Benefits of sustainable remediation
  – More rationale use of money and resources
  – More intelligent remediation design
  – More equitable solutions
• Not that simple to use, but probably no more complex than risk based decision making either
• No simple “black box” tool / no one-size fits all
• Work by SuRF-UK and NICOLE provides practical ways forward
• Not driven by regulation…yet?
• Important to have a bottom up stakeholder view rather than a centrally imposed agenda
  – This applies to projects and to EU policy!
More information / acknowledgements

- SURF-UK: www.claire.co.uk/surfuk
- SURF-US: www.sustainableremediation.org
- CLARINET via the Common Forum: www.commonforum.eu/publications_clarinet.asp
- NICOLE (e.g. June 2009 meeting on sustainable remediation, Working Group on sustainable remediation) www.nicole.org
- US EPA: Green Remediation: www.clu-in.org/greenremediation
- Green Remediation Proceedings!: www.polytec.dk/GreenRemediation
Acknowledgements

• SURF UK Steering Group and Contributors
  – www.claire.co.uk/surfuk
• NICOLE Sustainable Remediation Working Group
• Many others