

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

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# Contents

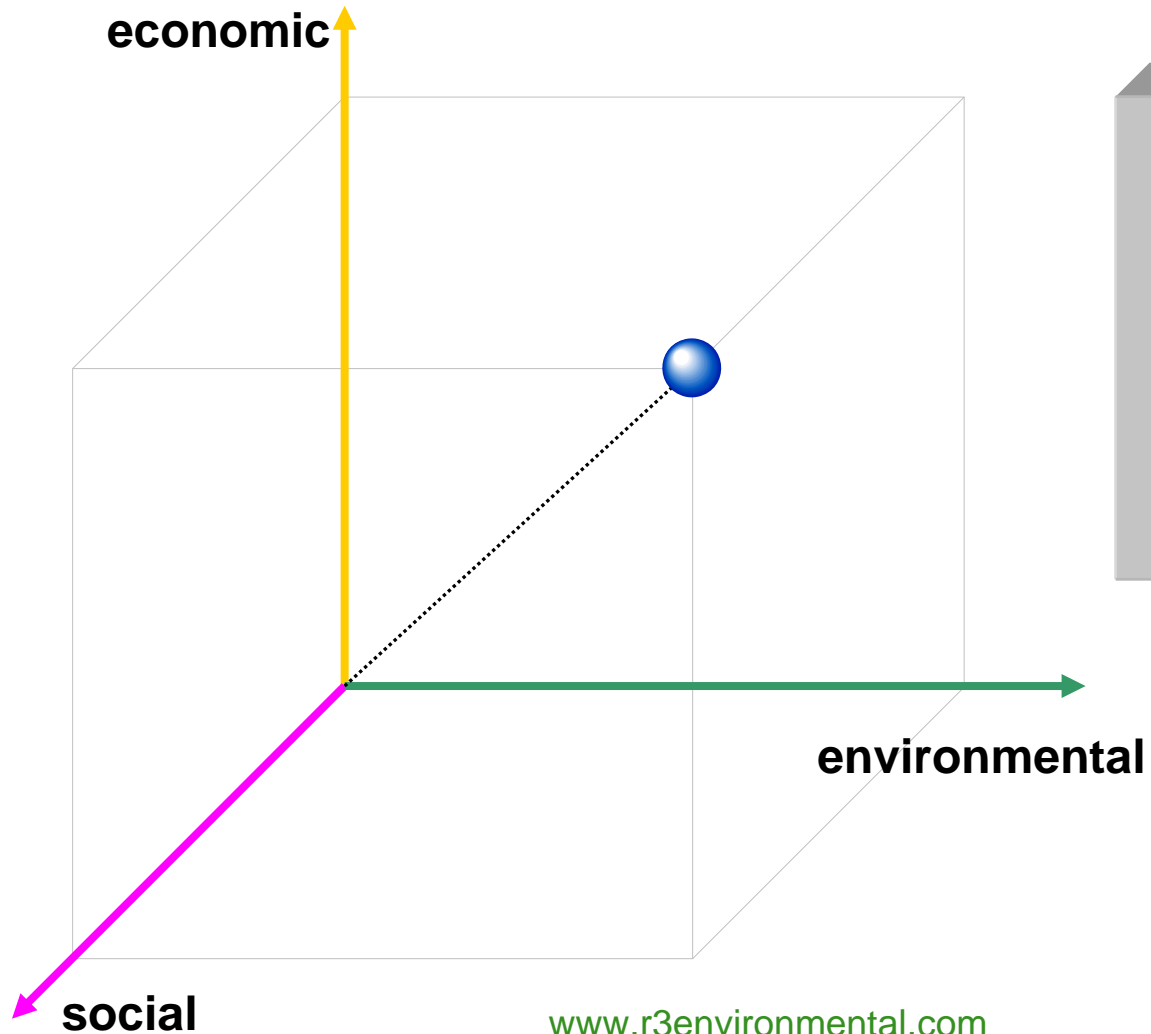
- What do we mean by sustainability?
- Defining sustainable remediation
- Applying sustainability
- Measuring sustainability
- SuRF-UK and NICOLE products
- Further information sources



# 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

<b>Environmental</b>	<b>Social</b>	<b>Economic</b>
<ul style="list-style-type: none"> <li>➤ impacts on air – including climate</li> <li>➤ impacts on soil</li> <li>➤ impacts on water</li> <li>➤ impacts on ecology</li> <li>➤ use of natural resources and generation of wastes</li> <li>➤ intrusiveness.</li> </ul>	<ul style="list-style-type: none"> <li>➤ impacts on human health and safety</li> <li>➤ ethical and equity considerations</li> <li>➤ impacts on neighbourhoods or regions</li> <li>➤ community involvement and satisfaction</li> <li>➤ compliance with policy objectives and strategies</li> <li>➤ uncertainty and evidence</li> </ul>	<ul style="list-style-type: none"> <li>➤ direct economic costs and benefits</li> <li>➤ indirect economic costs and benefits</li> <li>➤ employment and capital gain</li> <li>➤ gearing</li> <li>➤ life-span and ‘project risks’</li> <li>➤ project flexibility</li> </ul>

# Sustainable Management of Contaminated Land, CLARINET 2002



# 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

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*The sustainable remediation  
debate*



# There are a lot of wishes

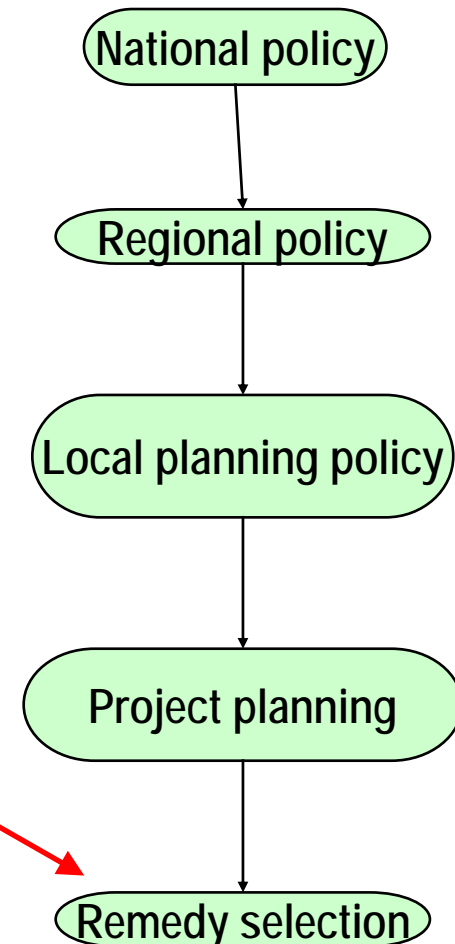
- For example
- FritzLang Solar Power Venting GmbH wants a sustainability sticker for their service so they can better compete in the market
- Trustme Consulting want a nice and easy sustainability tool to sell repeat services to clients
- The European Sceptical Society wants some form of sustainability 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?

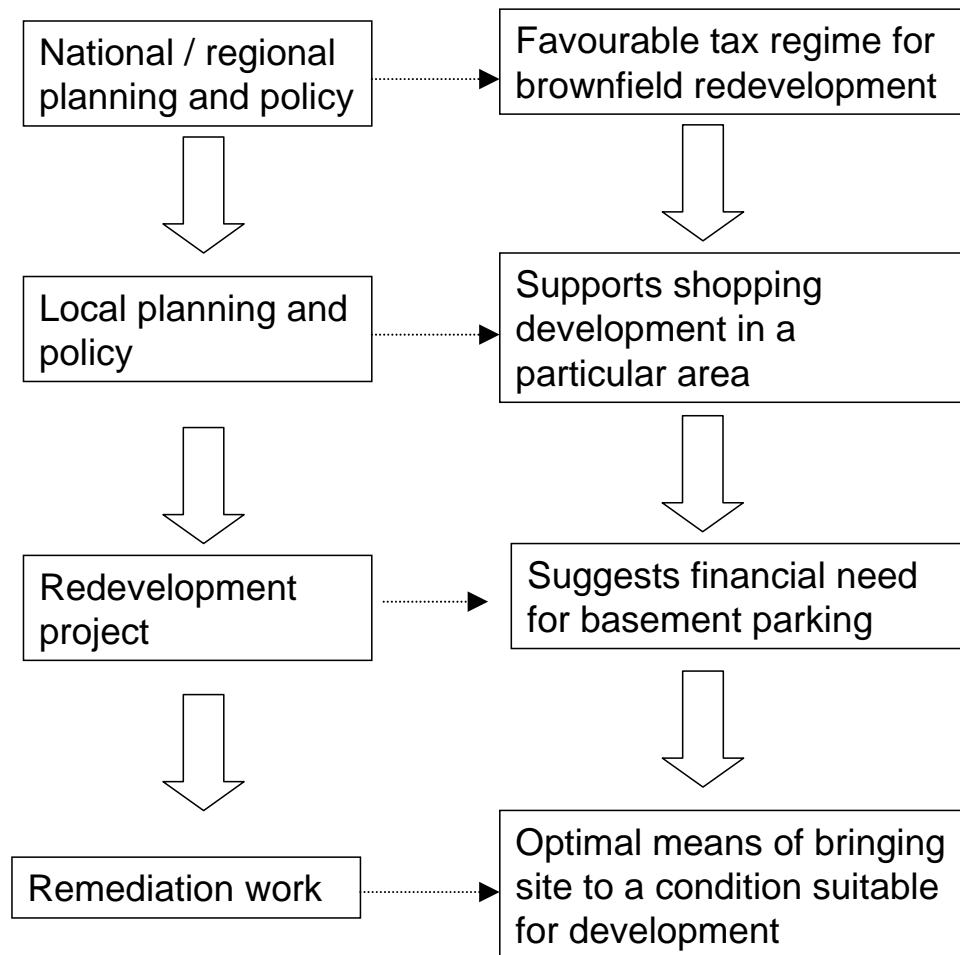
- The driver for the remediation is risk management
  - Sustainability and risk management are not antagonistic
- Surely what we all want is that we can find the most sustainable way to manage any particular contaminated site
- SuRF UK and NICOLE suggest: “sustainable remediation” is
  - *the practice 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?

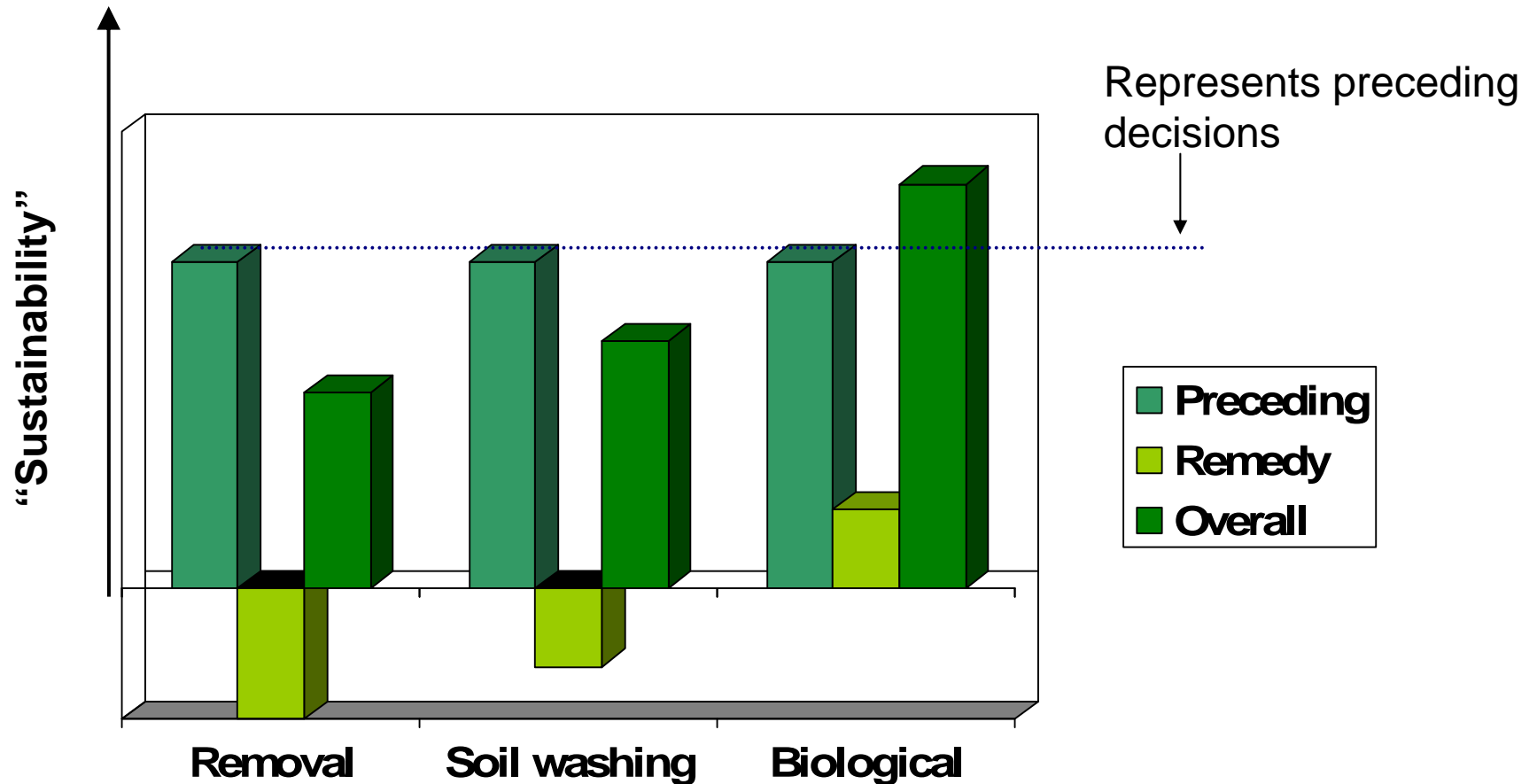
- Is all remediation sustainable?
- Is it sustainable to use large amounts of fossil fuel to remove a small amount of TPH from a site?
- How should we manage contaminated sites together, for example for better river basin management?
- -----
- Are some remediation methods better than others for a particular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



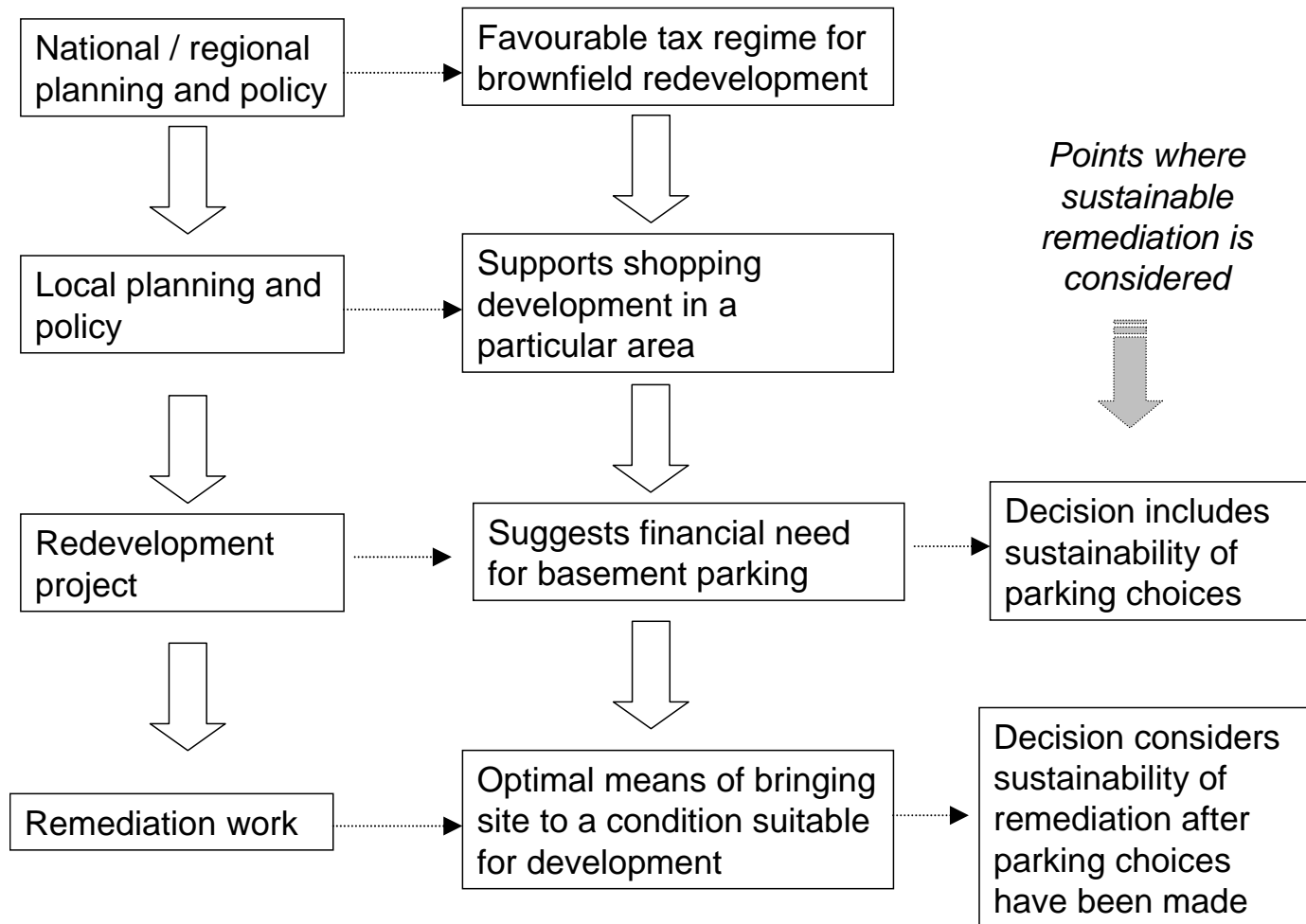
# Thinking about sustainable remediation at the point of the remedy selection



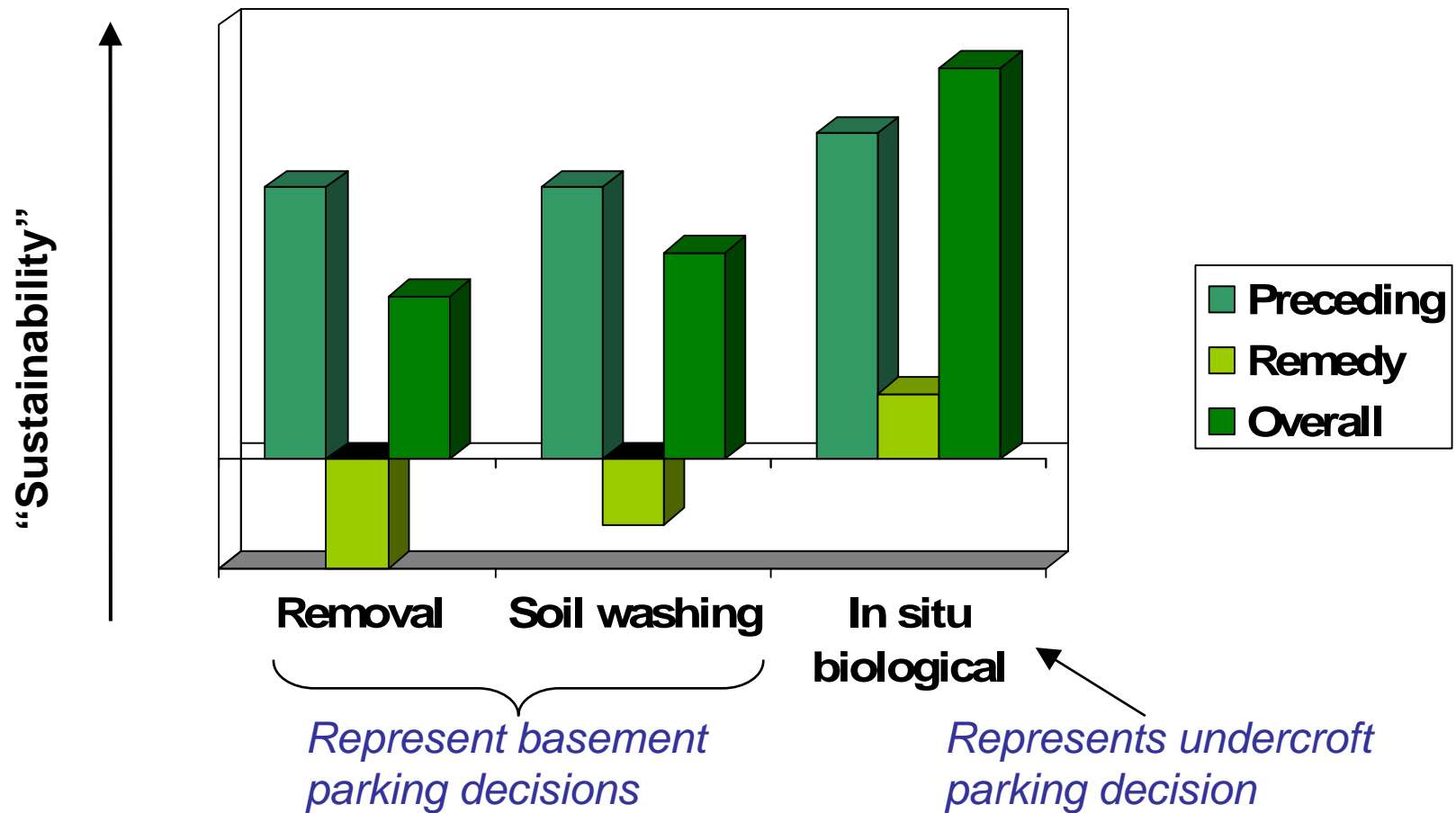
*So the sustainability of remediation is a function of preceding decisions as well as remedy selection*



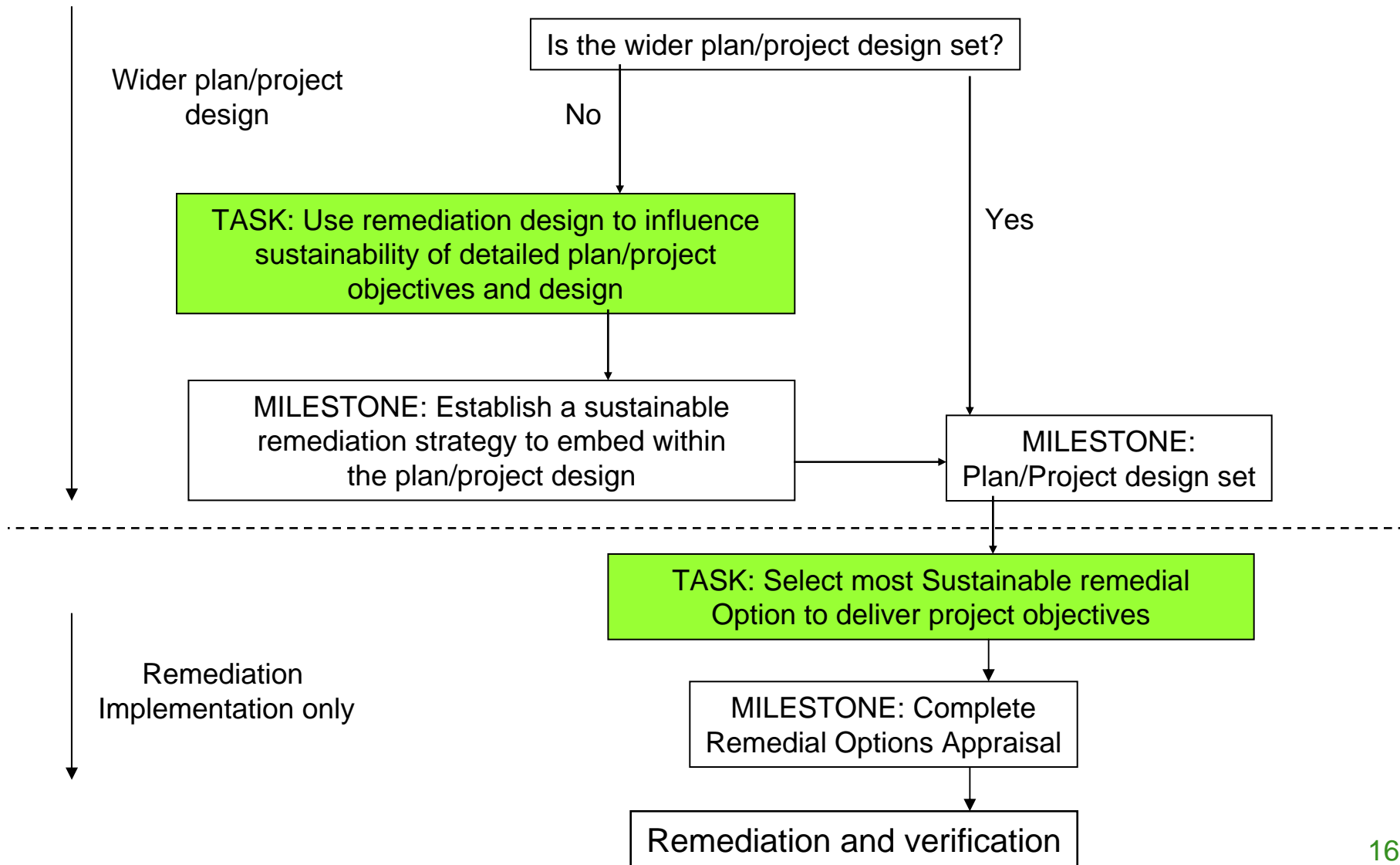
# But what about if sustainable remediation thinking started before remedy selection?



# *An early influence can improve sustainability (and cost)*



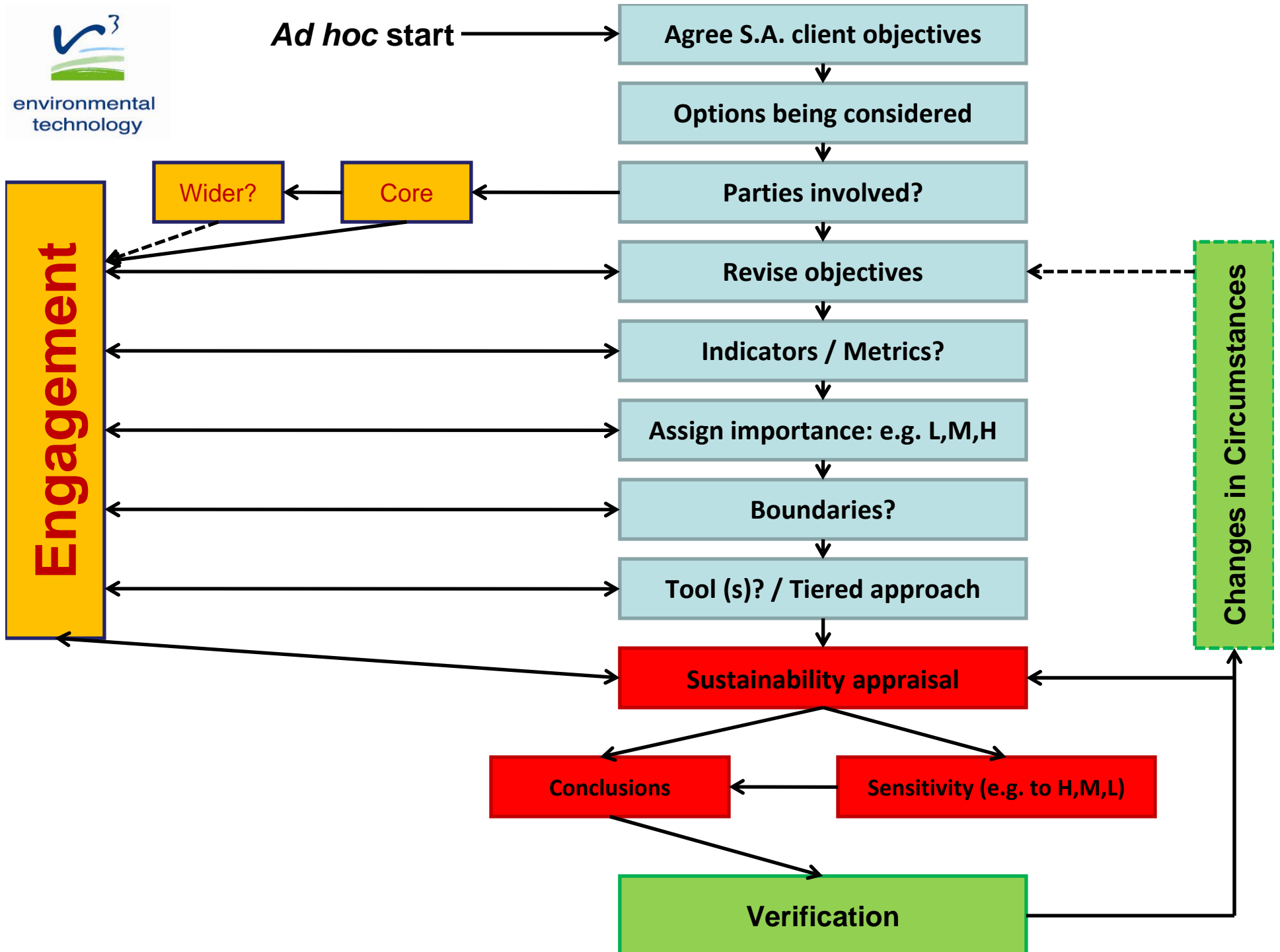
# Example Framework: SuRF-UK

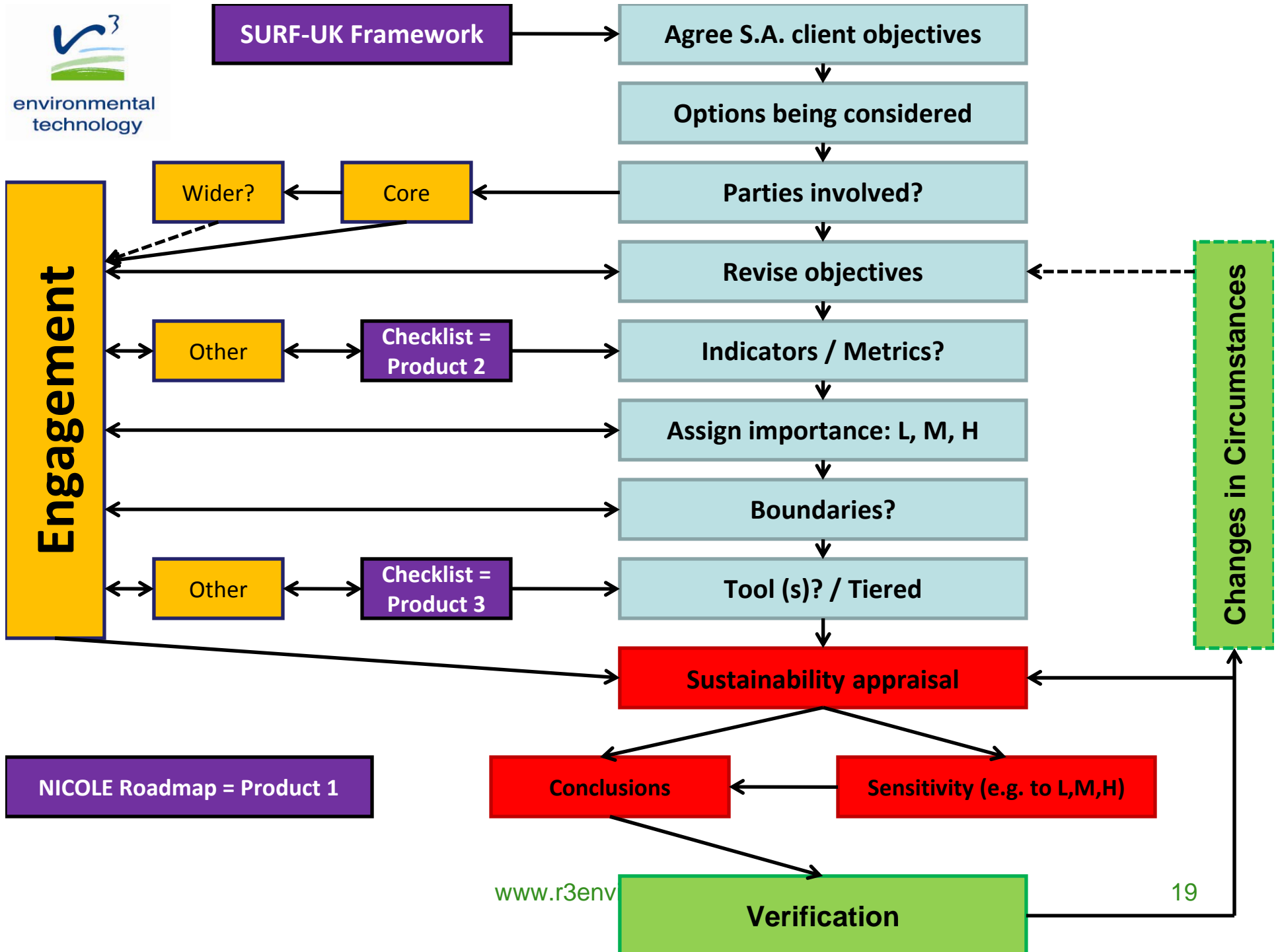




# Measuring sustainability ?

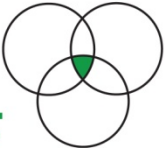
- From pragmatic point of view there is no universal sustainability measurement that gives an unarguable result
  - Making a case for action based on sustainability must be persuasive to different stakeholders, e.g. site owner, regulator, service provider, planning authority etc
- So sustainability assessment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





# SuRF-UK

[www.claire.co.uk/surfuk](http://www.claire.co.uk/surfuk)



**SuRF**  
SUSTAINABLE REMEDIATION FORUM UK

sponsored by the  
 Homes & Communities Agency

A Framework for Assessing the Sustainability of Soil and Groundwater Remediation

DRAFT COPY  
SUBJECT TO PUBLIC CONSULTATION  
MAY 09

CL: AIRE

CONTAMINATED LAND: APPLICATIONS IN REAL ENVIRONMENTS

**Out for review**



**SuRF**  
SUSTAINABLE REMEDIATION FORUM UK

sponsored by the  
 Homes & Communities Agency

A Review of Published Sustainability Indicator Sets:  
How applicable are they to contaminated land remediation indicator-set development?

CL: AIRE

CONTAMINATED LAND: APPLICATIONS IN REAL ENVIRONMENTS

Please feel free to get involved: [nicola.harries@claire.co.uk](mailto:nicola.harries@claire.co.uk)

# 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](http://www.claire.co.uk/surfuk)
- SURF-US: [www.sustainableremediation.org](http://www.sustainableremediation.org)
- CLARINET via the Common Forum:  
[www.commonforum.eu/publications\\_clarinet.asp](http://www.commonforum.eu/publications_clarinet.asp)
- NICOLE (e.g. June 2009 meeting on sustainable remediation, Working Group on sustainable remediation) [www.nicole.org](http://www.nicole.org)
- US EPA: Green Remediation: [www.clu-in.org/greenremediation](http://www.clu-in.org/greenremediation)
- Green Remediation Proceedings!: [www.polytec.dk/GreenRemediation](http://www.polytec.dk/GreenRemediation)
- Bardos P., L Bakker, H.Slenders,, P. Nathanail (in publication). Sustainable Remediation. Book chapter in: Swartjes F.A. (Ed.), Book on Contaminated Sites. From Theory Towards Practical Application, Springer Publishers

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  - [www.claire.co.uk/surfuk](http://www.claire.co.uk/surfuk)
- NICOLE Sustainable Remediation Working Group
- Many others