SUSTAINABLE REMEDIATION FORUM UK MEETING

MEETING NOTES

18th March 2009

New Connaught Rooms, LONDON

Attending:

Natalyn Ala	Atkins Global
Stuart Arch	Worley Parsons
Alan Baker	EESI Contracting
Paul Bardos	R3
Brian Bone	Environment Agency
Genevieve Boshoff	Sirius
Richard Boyle	Homes and Communities Agency
Frederic Coulon	Cranfield University
Lisa Crews	Environmental Protection UK
Andy Cundy	Brighton University
Cheryl Davies	Delta Simons
Raymond Dickinson	MOD
Bridget Durning	Oxford Brookes
Kevin Eaton	ENVIRON
Chris Evans	Arcadis
Frank Evans	National Grid Properties
George Evans	Soilfix Limited
Jane Garrett	CL:AIRE
Euan Hall	Land Restoration Trust
Nicola Harries	CL:AIRE
Tom Hayes	Ecologia Environmental
Ian Heasman	Taylor Wimpey
Hosne Jahan	Environment Agency
Celia Kingston	ERM
Aleksandra Koj	Cardiff University
Joanne Kwan	CIRIA
Doug Laidler	SAGTA
Alex Lee	WSP
Stéfan Le Roy	Jacobs
Richard Lord	Uni of Teesside
Cecilia MacLeod	Arcadis
Talib Mahdi	Cardiff University
Hugh Mallett	Buro Happold Ltd
Nick Marks	London Borough of Newham
John Moritz	Cobbetts
Adrian Needham	Golders
Richard Owen	Arup
Guy Pomphrey	DEC
Warren Pump	URS
Garry Preece	Azko Nobel
Mike Quint	Arup
Mark Rolls	Homes and Communities Agency

Duncan Sanders	Davis Langdon LLP (for EIC)
Philippa Scott	Shell
Jonathan Smith	Shell
Mark Stevenson	URS
Christine Switzer	University of Strathclyde
Catherine Thums	Wardell-Armstrong
Philip Waine	DEFRA
Graham Whitaker	N H B C
Lucy Wiltshire	Honeywell
Mike Wilyman	Grontmij
Peter Witherington	RSK

Welcome

Nicola Harries (NH) (Project Director of CL:AIRE) gave a warm welcome on behalf of CL:AIRE to everybody and thanked them for giving up their time today. She explained that SuRF UK is an important initiative for CL:AIRE and thanked Housing and Communities Agency for providing the funding to allow them to do this. She also thanked the Steering Group for all their hard work, as the progress that will be shared today is due to many hours of their commitment. There is a very broad audience again of policy makers, regulators, consultants and contractors, researchers, and site owners. There is in excess of 50 people with many who have attended all four meetings demonstrating the interest in the subject. She went on to say that the meeting today will see the results from a meeting CL:AIRE hosted back in June 07 titled : "Sustainable Remediation" where a number of attendees today shared their ideas of what they thought sustainable remediation was and helped form an action plan for CL:AIRE to take forward. The progress will be demonstrated with the presentation of the final draft framework. NH finished off with reminding the forum that SuRF UK is aiming to assist the contaminated land/remediation & brownfield sector to seize this opportunity and embrace the framework and demonstrate to other sectors how collectively we have developed an effective robust framework to allow the assessment of sustainability of soil and groundwater remediation.

She handed over to Mark Rolls the chair for the day.

Format for the Day, Rules of Engagement and Commitment

Mark Rolls (MR) described the objectives for the day and how the day would proceed in line with the agenda. There would be a series of presentations and plenty of time for discussion and feedback.

MR explained that there was a good cross section of people present from practitioners, academics, NGOs and government, and many of the individuals had been to earlier meetings that CL:AIRE had organised.

MR explained that the meeting would be held under Chatham House Rules, that there should be a spirit of sharing but people should be respectful of commercial concerns. Everything discussed should be as transparent as possible and that people should be able to ask obvious and simple questions. It was also stated that any input and views given at the meeting was individuals input and not that of their companies. All information about this meeting and subsequent meetings will be put up onto the CL:AIRE website and any queries relating to SuRF UK should be co-ordinated through Nicola Harries at CL:AIRE.

MR handed over to NH to explain the Ice Breaker: Examples of most unsustainable remediation schemes. She reminded people that an email had gone out previous to the meeting to ask people to share with the rest of the audience the most "unsustainable" examples of remediation that they had encountered. A number of people shared examples. The best examples judged by the Steering Group won a prize.

Programme for the Day

A series of presentations were given which are included in Appendix 1. They included:

1. Nicola Harries (NH) of CL:AIRE presented on "Progress from last meeting"
2. Richard Boyle (RB) of HCA presented on "Conceptualisation of SuRF UK framework – How the framework fits into policy"

3. Frank Evan (FE) of National Grid presented on “Final Framework – presentation of framework with worked examples”
4. Jonathan Smith (JS) of Shell Global Solutions presented on “Summary of Final Draft Documentation”
5. Paul Bardos (PB) of r^3 Environmental presented on “SuRF Phase 2 including potential research areas”

Discussion and feedback provided after the presentations

There was extensive discussion at two points in the day. Initially after the first three presentations and then at the end of the day. These are summarised below:

It was agreed that communication and involvement of many different parties is important and good to see that SuRF UK are looking to engage with the planning community.

People felt that it was interesting to see reference to Code for Sustainable Homes (CSH) and to see how SuRF UK framework could be linked in. This was welcomed as it was felt that the Code for Sustainable Homes ignores the value of land. It is really important that when the CSH is updated that land is not ignored. Most development occupies a piece of land for 60-100 years, this needs to be reflected in the sustainability references. The status of land must be raised and given a measure/value. Important to understand how to value land not just economically. If only use economic measurement then this is nonsense and false accounting. There needs to be a value for good soil. Land often is valued as a negative but should not be, good soil is worth a lot as it is a finite resource.

It was felt that the industry should take the long term view when considering the sustainable use of soil. Metrics should be for long and short term use, with a value for the longer preservation of soil functionality. Important to get people to embed their decisions in their thought process. Carbon footprint is just one indicator. Important not to get sidetracked, it would be easy to follow easy route, important SuRF UK Framework does not do this. Resource utilization, impacts on the built environment and visual effects all need to be considered. Each project needs to identify what is important as it will be different for each, but useful to have a list of possible indicators.

An example was shared of some work that CABE Space has undertaken. The case study had looked at a case study looking at the value of an urban park through added value by society and public benefit. If the park had been valued by just its land value it had negligible value however when it looked at the extra parameters of societal benefit and public benefit the value was extremely great, therefore it shows the benefit of putting true values to land and not just economic.

Important to link to the planning process. If linked to the planning process then the use of the framework can be used to influence policy and Planning Policy Statements that are used at a local planning stage, Action Plans and input into planning authorities. At Planning Stage, neighbours are engaged with. It may be possible to use the framework to discharge planning conditions.

It was highlighted that the majority of the ice breaker examples demonstrated that the reason that they were examples of “Poor Sustainability Practice” due to lack of communication between stakeholders. It demonstrates that communication is key to bring together a sustainable strategic plan. Thames Gateway had developed a “Global Remediation Strategy” .

Vitally important that weighting factors are not applied. Balanced rational set of metrics are important to be established with sensible professional judgement. Got to have an ability to evaluate options with documented decisions. The framework document will give a sense of assurance and demonstrate that issues have been examined by various stakeholders.

Questions were asked about where will the framework go? What extent do the metrics influence the wider agenda? How do we use the framework to influence the discussion on the use of Brownfield as apposed to Greenfield or visa versa. Are the metrics going to be broad, scientifically driven or politically driven?

It was felt that when stakeholders were engaged that they should be fully briefed and technically versed. If they were not technically versed then it should be the responsibility of the professionals to ensure that stakeholders truly understand implications. This is true stakeholder engagement. Too often stakeholder engagement is superficial as too much technical terminology is used.

It was agree that the SuRF UK Steering Group should be delighted in the progress that has been made and to get the framework out even if 95% complete. Important not to try and perfect before getting out and being used.

The work that SURF US was referenced and asked what was different to the UK work. It was stated that the main difference at this stage is that US are promoting Green Remediation which is progressing well. It is more limited in scope, UK work is much broader.

There was discussion on weighting and skewing. Some felt that there needed to be some form of weighting which helped set boundaries.

The overarching message from the attendees to Government is that soil and land is important and must be robustly considered. SuRF UK to include this in the framework report. It is important to get this message embedded in the minds of policy people sooner rather than later as land and soil is finite and is the future and needs to valued and protected.

For sustainability to be a success people needed to not live in "SILOs" and to engage with each other as early as possible. It was suggested to use the framework as a platform to break down barriers between professionals who work in different areas on the same project.

It was agreed that a template would be developed with a list of criteria indicators which people could use as a checklist.

SuRF UK thanked everyone for their contributions to the work that the Steering Group had presented.

SUMMARY CONCLUSIONS

It was confirmed that SuRF UK needed to develop the indicators/metrics next. Key indicators should be identified initially.

Important that SuRF UK lobby government to ensure that policy makers are aware of the ambitions of SuRF UK and that policy starts to value soil in a robust and transparent way.

It was agree for SuRF UK to present the framework to the next National Brownfield Forum meeting where it was confirmed that CLG will be inviting their Planning Colleagues to attend.

SuRF UK will be sending the final draft framework document out to those individuals who indicated an interest in reviewing the framework before open public consultation.

SuRF UK will be requesting case study examples from those individuals who indicated interest in supplying these. The request would go out for good and bad case studies as you can learn a lot from bad case studies as well. The case studies should be descriptive rather than judgemental.

It was confirmed that there was an appetite for CL:AIRE to continue with the SuRF UK initiaitive.

SuRF UK should investigate potential research opportunity through EPSRC next SUE Call.

SuRF UK needs to co-ordinate with HCA the potential to reference the SuRF UK framework in the redrafting of the Code for Sustainable Homes.

SuRF UK to look at the possibility of linking the framework with BREEM.

SuRF UK will look at developing training stakeholders with potential online training pack for non technical and technical people.

It is important to have feedback loops within the framework document so that as the framework develops and evolves it gets updated.

CLOSE

Mark Rolls thanked everyone for their time and feedback and for providing their thoughts on how SuRF UK should move forward with this very important initiative.

APPENDIX 1 – PRESENTATIONS

SuRF UK Open Forum Meeting

AGENDA

18th March 2009

10.00 – 10.45	Registration & Coffee	
10.45 - 10.50	Welcome	Jane Garrett CEO, CL:AIRE
10.50 - 11.00	The format for the day, rules of engagement and expected commitment	Mark Rolls, Chair
11.00 – 11.15	Ice Breaker: Examples of most unsustainable remediation schemes	Nicola Harries, CL:AIRE
11.15 – 11.30	Progress from last meeting	Nicola Harries, CL:AIRE
11.30 – 11.50	Conceptualisation of SuRF framework - How the framework fits into policy	Richard Boyle, HCA
11.50 – 12.30	Final Framework – presentation of framework with worked examples	Frank Evans, National Grid & Jonathan Smith, Shell Global Solutions
12.30 – 1.00	Discussion	Mark Rolls
1.00 – 2.00	Lunch & Networking	
2.00 – 2.05	Award presentation	Nicola Harries, CL:AIRE
2.05 – 2.20	Summary of Final Draft Documentation	Jonathan Smith, Shell Global Solutions
2.20 – 2.35	SuRF Phase 2 including potential research areas	Paul Bardos, r^3 Environmental Technology Ltd
2.35 – 2.55	Discussion and Commitment	Frank Evans
2.55 – 3.10	WRAP UP	Mark Rolls, Chair
3.10 – 4.00	Coffee & Networking	

SUSTAINABLE REMEDIATION FORUM UK (SuRF UK)

Phase 1 Final

PROGRESS FROM LAST MEETING

Nicola Harries

CL:AIRE

RECAP

- Meeting held in June 2007 - to discuss idea
- Funding secured in January 08 from English Partnerships now HCA
- Steering Group set up to drive initiative forward
- Aims & Objectives and Mission Statement developed
- Subsequent meetings May 08, Nov 08 and today

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PROGRESS

- Thank you to all of you who have attended these Open Forums
- Over half have attended all 4 meetings
- Your contributions have been invaluable
- Aim to deliver draft framework report end of April 09
- Transparent process consultation all the way
- Notes, consultation responses (anonymised) & presentations to be uploaded onto the CL:AIRE website

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PROGRESS SINCE LAST MEETING

- Consultation period was extended to 5th January 2009 with an additional 9 people responding – 30 total.
- Additional consultees confirmed previous responses and agree SG moving in right direction.
- Constructive comments about SuRF UK Mission Statement.
- Frank Evans – will discuss in later presentation.

PROGRESS SINCE LAST MEETING

Mission Statement :

To "Develop a framework in order to embed balanced decision making in the selection of the remediation strategy to address land contamination as an integral part of sustainable development".

Explanatory words:

1) Working mission statement
2) Framework has specific meaning as a word
3) Balanced decision making in terms of Sustainable means Social - Economic - Environmental
4) Land Contamination has no statutory meaning and include decision making on groundwater issues associated with land contamination.
5) Development used in global sense not with narrow meaning of 'Building houses' and includes sustainable land-use

PROGRESS

- Consultation all the way
- Steering Group do listen to your comments & value your points raised:
  1. Engage with Planning Community : Meeting with RTPI arranged and liasing with CLG Planning
  2. Concentrate on remediation strategy and technology selection. Hopefully Richard's and Frank's talk will explain why we need to not only focus on remediation processes but this remains our main focus.

PROGRESS

- Engagement with Planning Community. Meeting already set up with RTPI
- Further Engagement with Local Authorities. Already presented to LACORS (Local Authorities Coordinators of Regulatory Services) and in discussion with EP UK. All want to review final framework.
- Further engagement with EA Policy, CLG & DEFRA needed
- Further engagement with NICOLE Sustainable Remediation Working Group & SuRF US

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PROGRESS – NEXT STAGE

- Voluntary – How to get buy in ?
- SuRF UK continuing to engage with relevant parties e.g EA (policy), DEFRA, CLG, HCA, Planning and Local Authorities.
- Indicators – Phase 2. Already started.

INDICATOR ASSESSMENTS

- >110 references to be reviewed by March 31st 2009
- About half of these have been "mapped" so far to understand their coverage of economic, environmental and social elements of sustainability, organised as 18 "headlines"
  - Rest to be finished asap
- 105 indicators suggested on Nov 18th have been mapped
  - Economic: 38
  - Environmental: 31
  - Social: 36

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HEADLINES

Environmental	Economic	Social
1.Impacts on air 2.Impacts on water 3.Impacts on soil 4.Impacts on ecology 5.Intrusiveness 6.Resource use and waste	1.Direct costs and direct economic benefits 2.Indirect costs and indirect economic benefits 3.Gearing 4.Employment / human capital 5.Life-span and “project risks” 6.Flexibility	1.Community involvement and community satisfaction 2.Human Health 3.Ethical and equity considerations 4.Impacts on neighbourhoods or regions 5.Fit with planning and policy strategies and initiatives 6.Uncertainty and evidence

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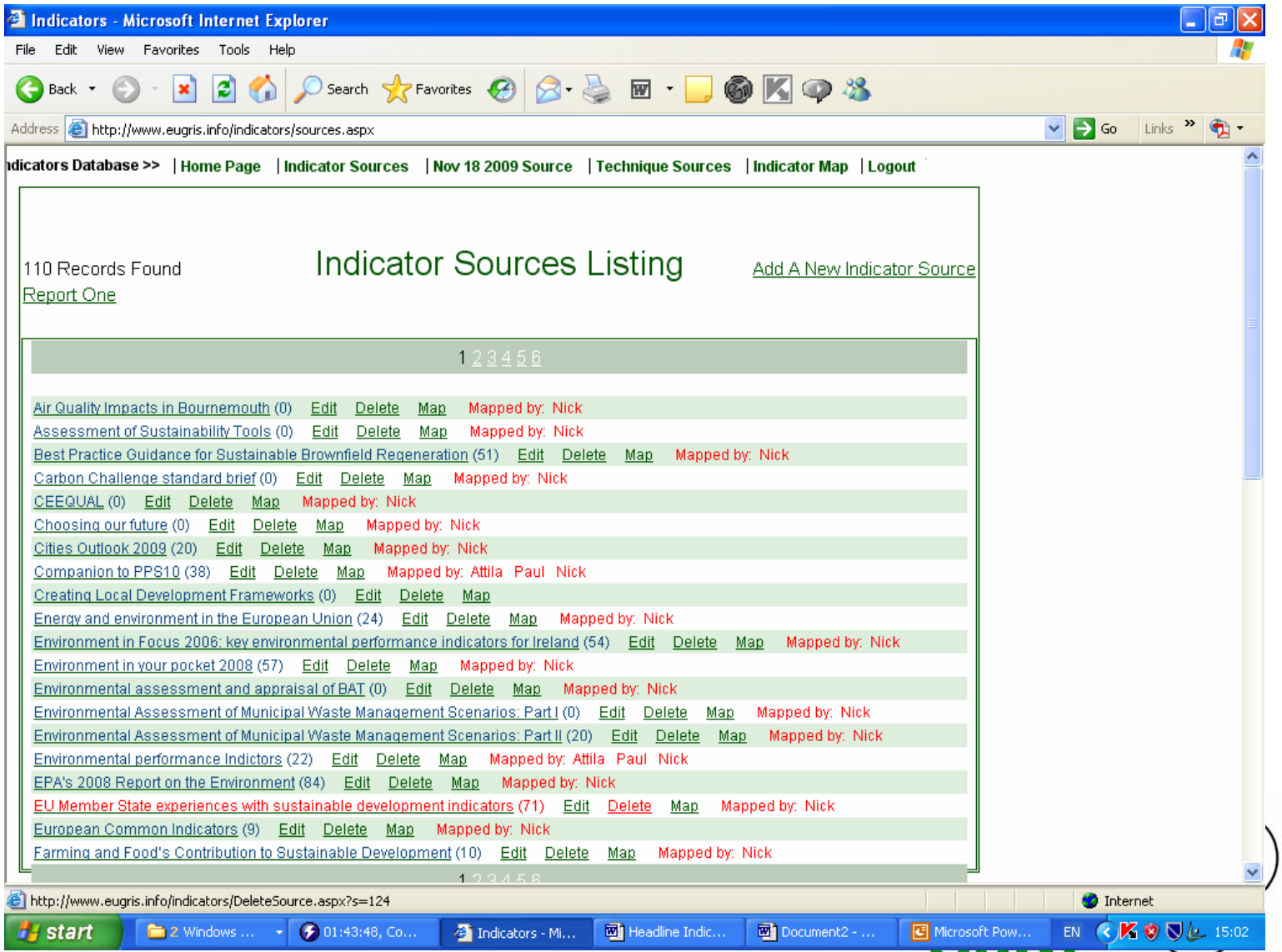
EXAMPLE MAPPING (work in progress)



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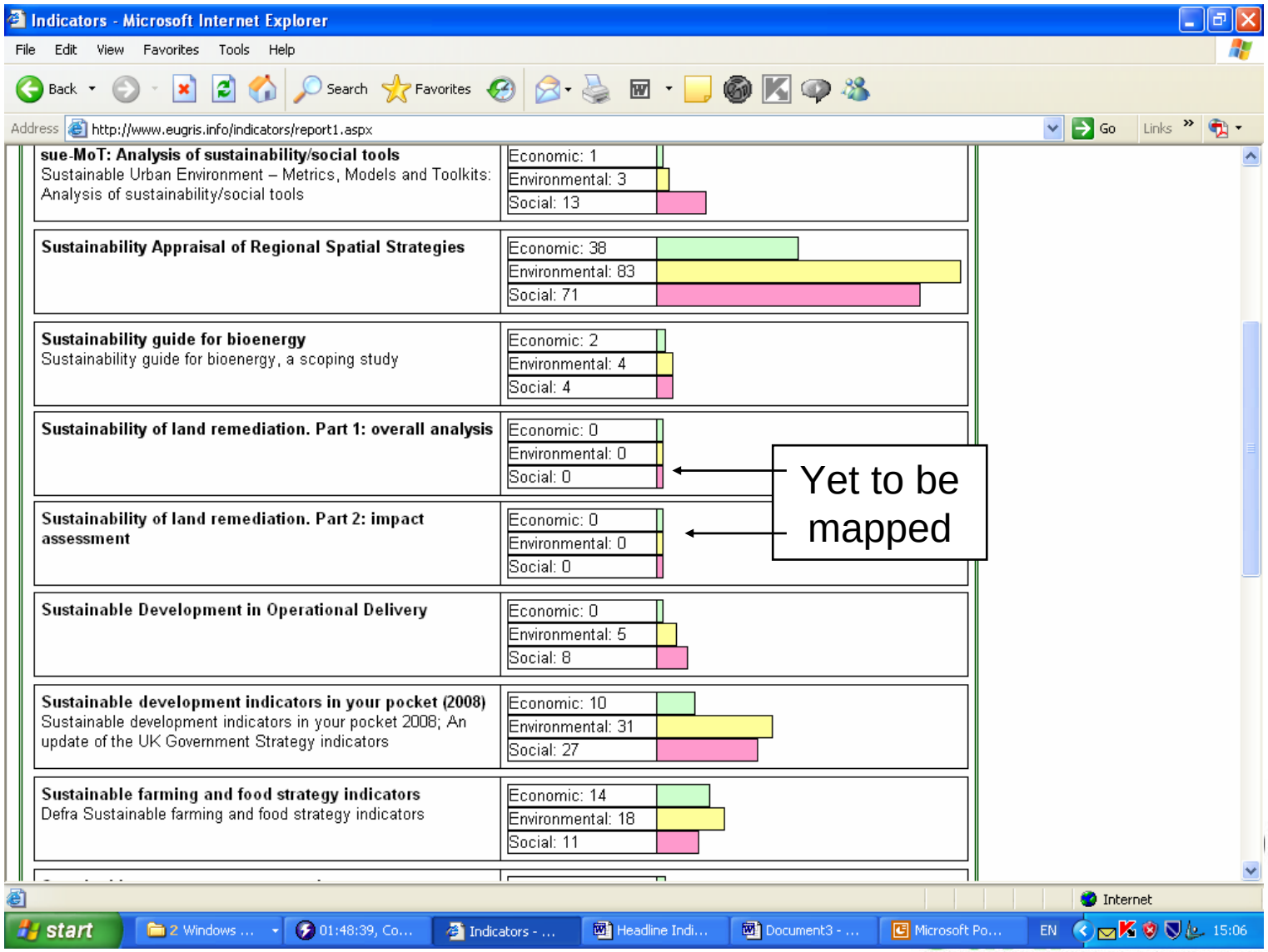
BASIC REPORTS EXAMPLE



NEXT STAGES

- Framework will be drafted up and circulated for final review initially to those of you who offered assistance back in May 08 and then “Open Consultation” through CL:AIRE e-alert system.

- Request for case studies to use the framework will go out to those individuals who offered assistance back in May 08. Others always welcome.

- Looking at ways we can upload case studies onto the website as examples.

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THANK YOU

Contact: nicola.harries@claire.co.uk

Conceptualisation of SuRF UK Framework
- How it can fit into Policy

Presented on behalf of **SuRF UK**

by

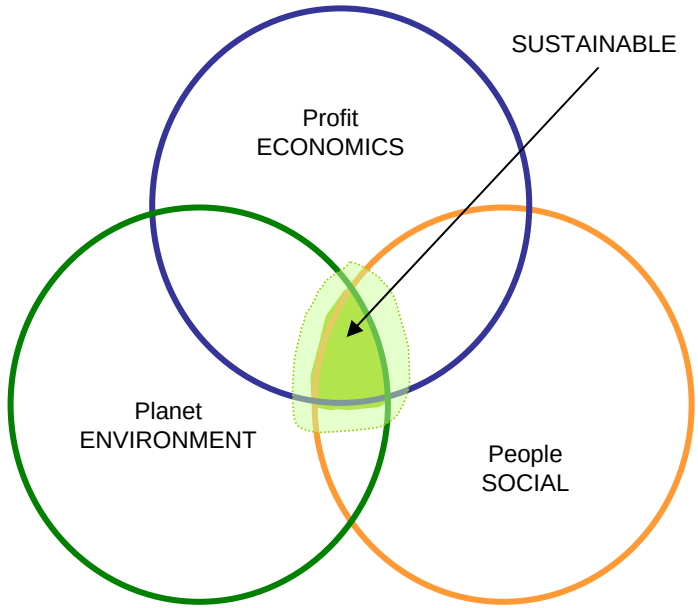
Dr Richard Boyle

Brownfield Technical Consultant

Homes & Communities Agency

Aims and Contents of Presentation

- Aims
  - Show how:
    - SuRF UK Framework is already considered at a higher level
- Planning Policy
  - Crash-course in planning
  - Contaminated land in planning
- Sustainable Policies
  - Code for Sustainable Homes
- Conclusions with an Example



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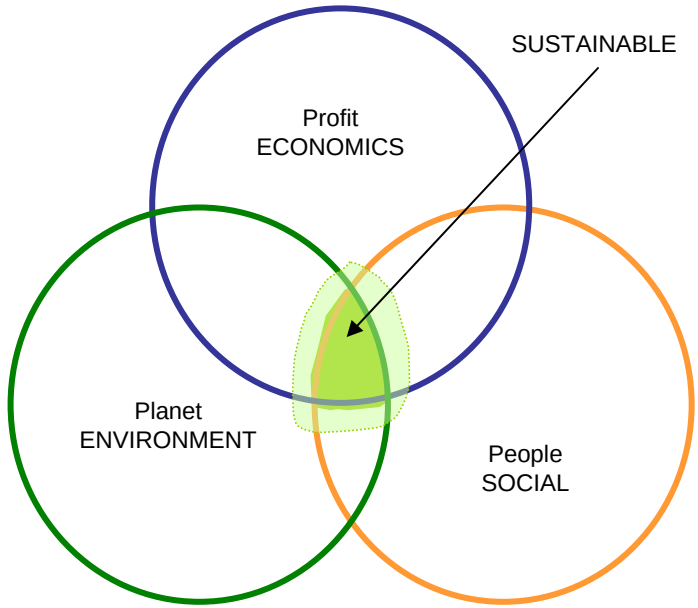
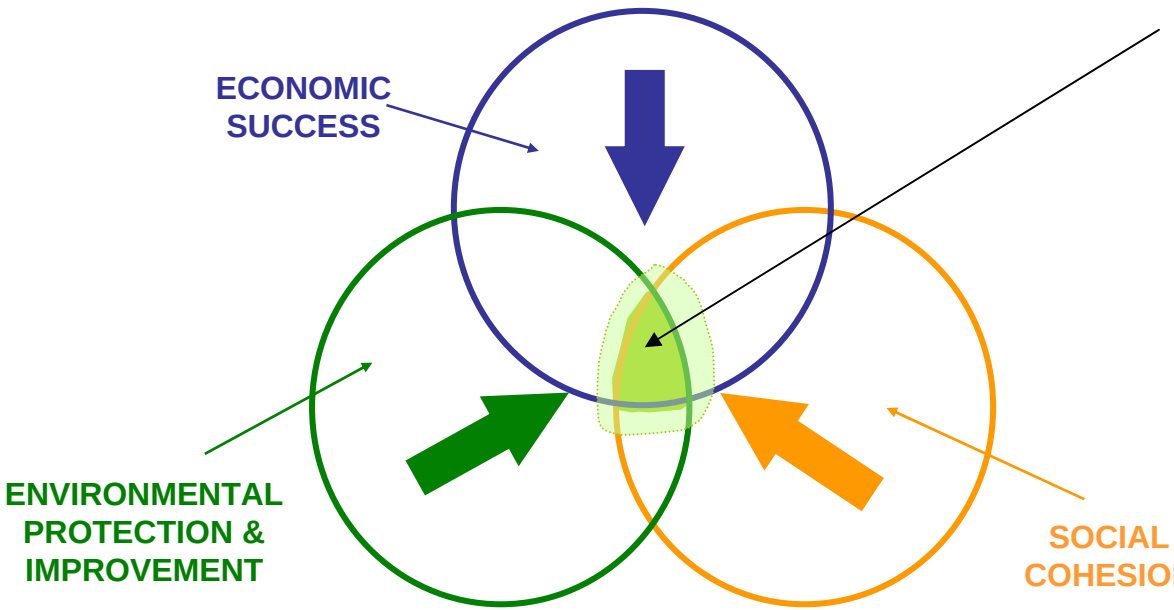
Planning Policy

- Planning Policy
  - Crash-course in planning



Planning Policy For Beginners (1)

- "Old" planning policy aimed to avoid **demonstrable harm**. The LPA needed to show that there will not be **unavoidable consequences** from any development.
- New planning policy still follows this line, but aims to encourage development to deliver **positive outcomes**.



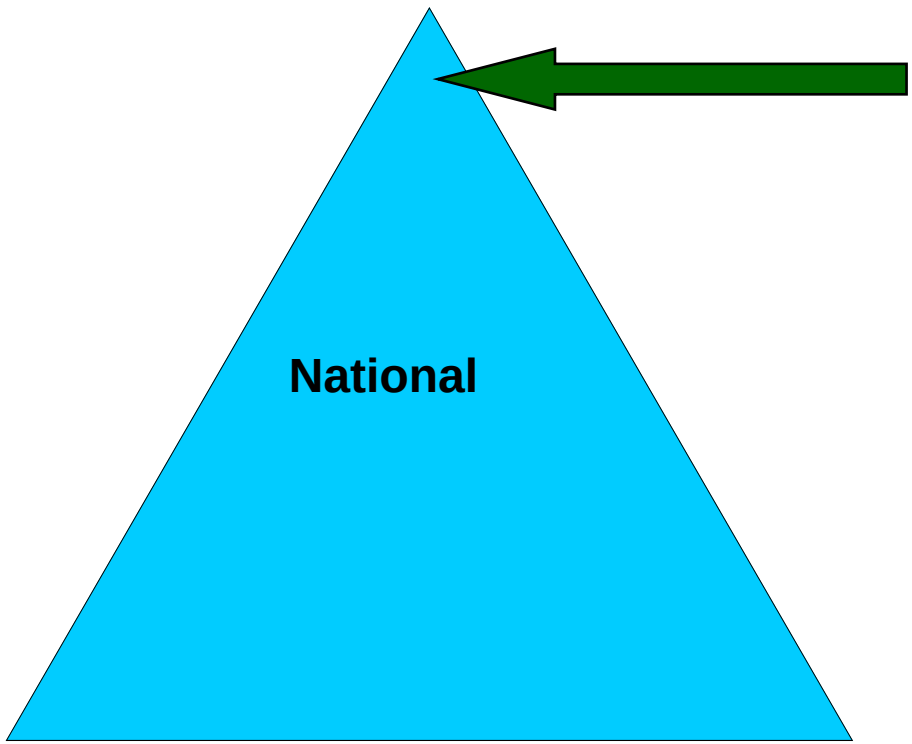
SUSTAINABLE PLANNING

Requires respect of all three agendas.

The onus is transferred to the applicant to provide the justification.

Planning Policy For Beginners (2)

England & Wales

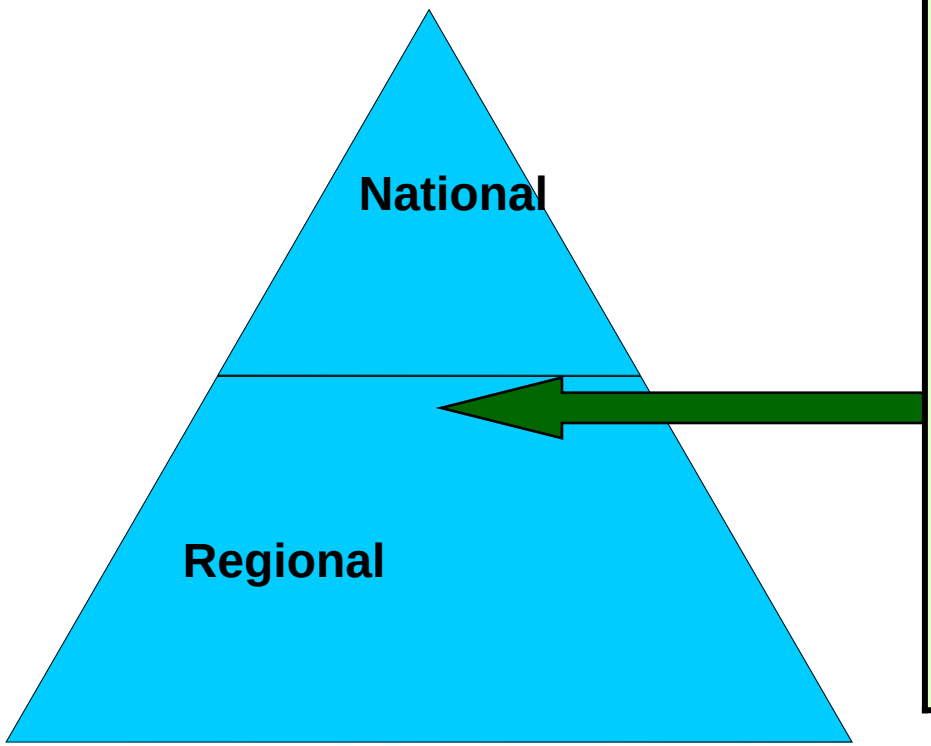


National Planning Policy

- Takes European influences (e.g. Directives)
- Set out infrastructure needs at the national level, e.g. Housing Green Paper stated 3 million houses by 2020, 60% (1.8m) on brownfield
- Supplemented by Planning Policy Statements (PPS) (former Planning Policy Guidance (PPG))
- “Short, clear, positive”

Planning Policy For Beginners (3)

England & Wales

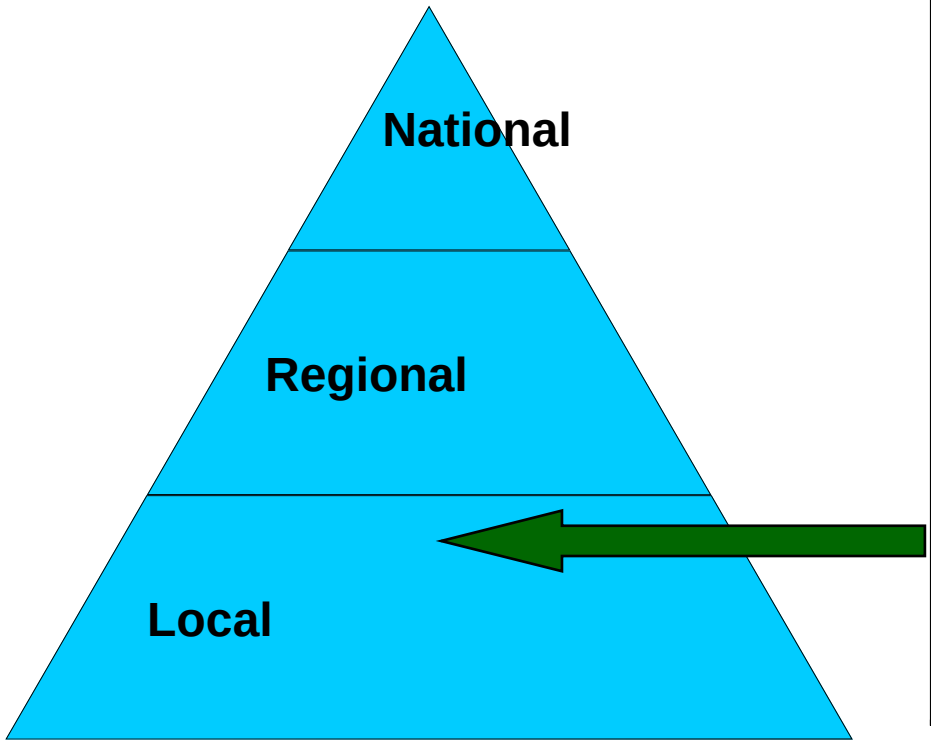


Regional Spatial Strategy

- Follows on from National guidance
- Set out broad planning visions to "highlight regional diversity and local distinctiveness"
- Sets out, amongst other things, how many houses and how much employment land are needed and where they should be placed
- Statutory, so requires formal public consultation, and needs sign off by Secretary of State

Planning Policy For Beginners (4)

England & Wales

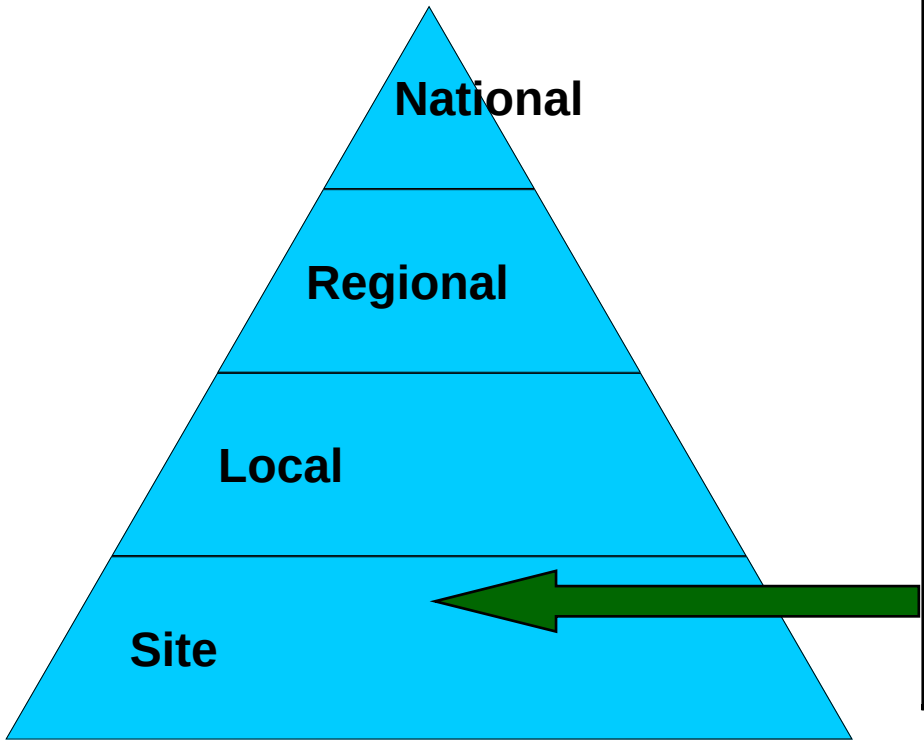


Core Strategies and Local Development Frameworks

- Visions for the future "Short, strategic, positive and up-to-date"
- Core Strategy and Local Development Frameworks overarching plans. May be supplemented by Area Action Plans. Additional plans:
  - SHLAA
  - Employment Studies
  - Local Brownfield Strategy
- Sites become "Allocated" for a particular use

Planning Policy For Beginners (5)

England & Wales



Site Master Planning

- Planning Application (Detailed or Outline) for desired end use. LPA more likely to grant if in line with Allocations.
- Applicant will have to set out how development will look and how it will built
- Applicant will also have to show development is sustainable
- Planning Consent, if granted, may have many Conditions

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Planning Policy For Beginners (6)

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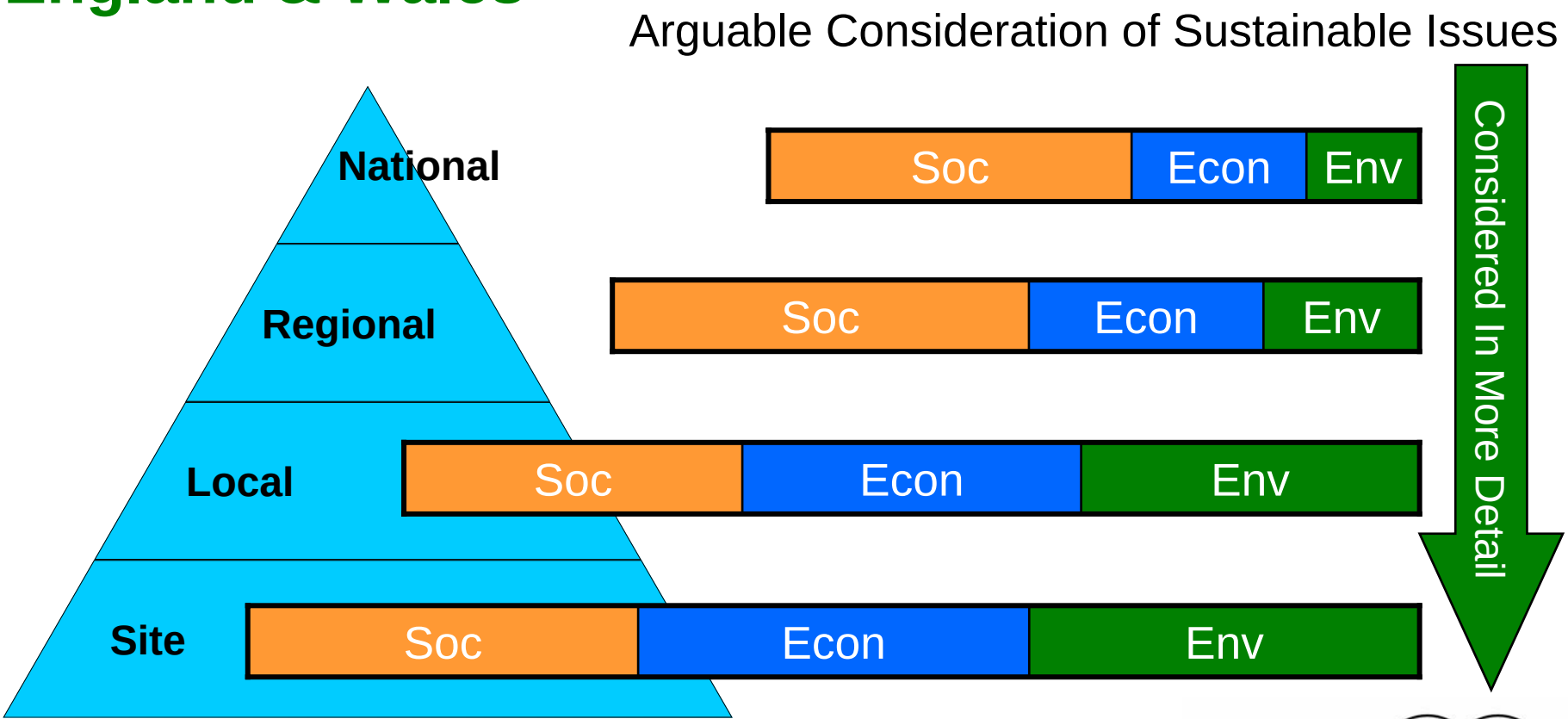

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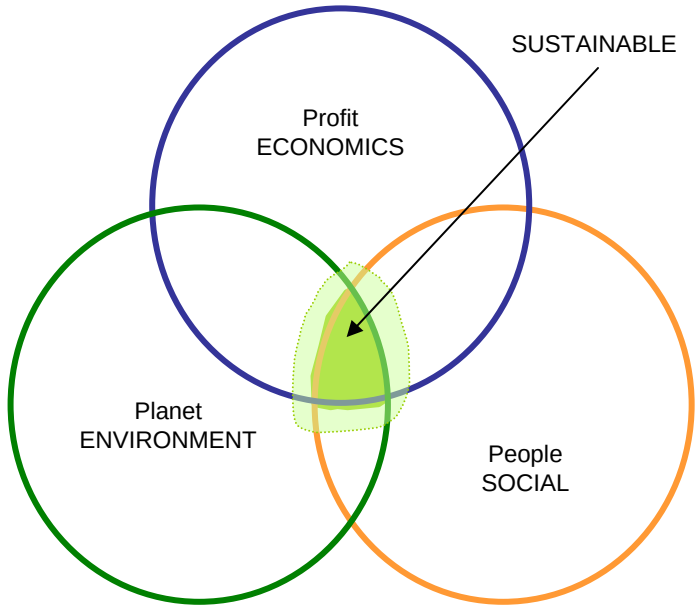
Contaminated Land and Planning Policy

- Outline:
  - Planning Policy related to contaminated land
- Aims:
  - How contaminated land is considered higher up the planning agenda
  - How it is becoming more important.



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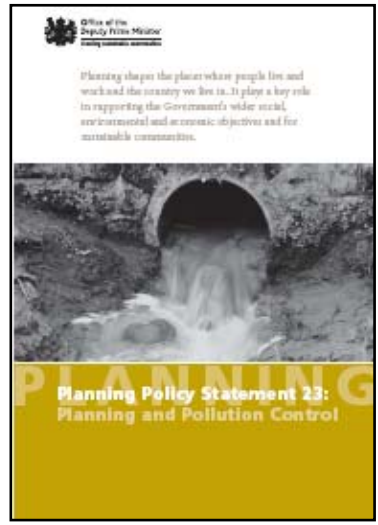
Contaminated Land and Planning Policy



- PPS23 “Planning and Pollution Control”
- Introduces the concepts:
  - “Precautionary Principle”
  - That “any consideration of the quality of land … is capable of being a material planning consideration”
  - Developer responsible for ensuring that there are no adverse risks from contaminated land
- SHLAA and LBFS (Employment Studies?) take into consideration contaminated land when assessing sites as to their suitability for particular types of land use
- Planning Consents normally have Conditions linked to contaminated land to reinforce that the developer is responsible for managing risks

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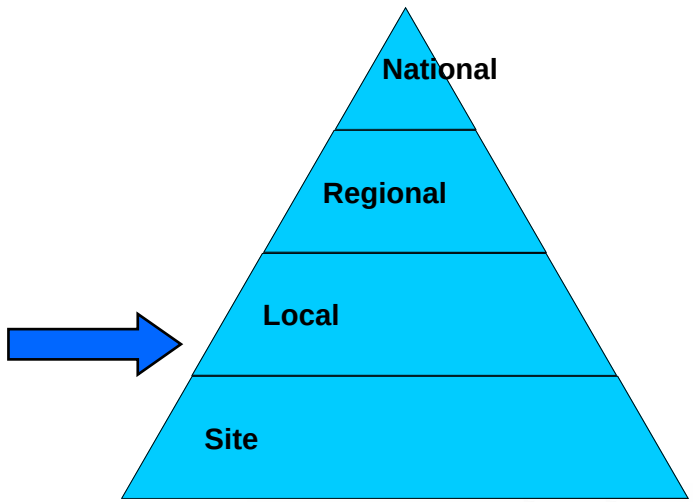
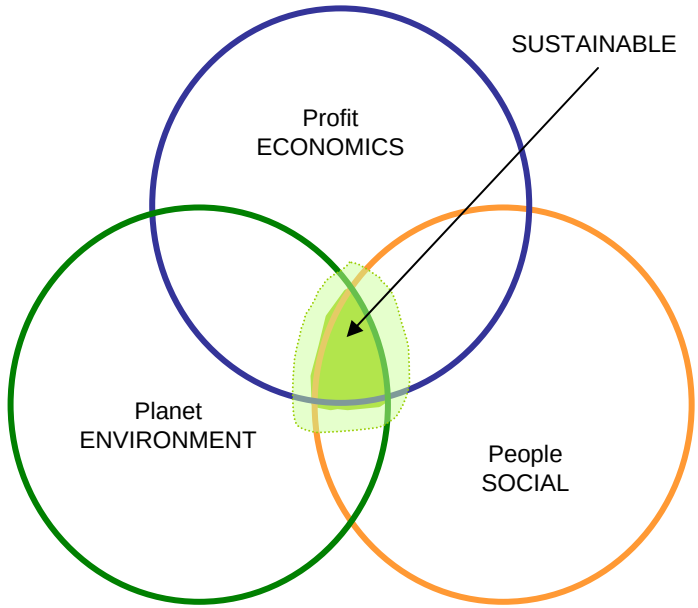
Contaminated Land and Planning Policy

- SHLAA and LBFS (Employment Studies?) take into consideration contaminated land when assessing sites as to their suitability for particular types of land use
- Wide range of topics are considered. The aim is to assess sites to indicate whether constraints are so great that they actually could prevent development, for example:
  - Land is probably too contaminated
  - Site in Flood Zone 3
- Both could potentially preclude use for
  - Environmental reasons
  - Cost reasons
  - Social reasons



Sustainable Policies

- Sustainable Policies
  - Code for Sustainable Homes
- Aim:
  - To consider how SuRF UK could fit



Code for Sustainable Homes

- In 2004, more than a quarter of the UK's carbon dioxide emissions came from the energy we use to heat, light and run our homes.
- Code for Sustainable Homes
  - Ensures that homes are built in a way that minimises the use of energy and reduces these harmful emissions.
  - 9 broad "Design Categories"
  - Rating system – one (★) to six (★★★★★★) stars
    - ★ (1 star) is the entry level – above the level of Building Regulations: Approved Document L (2006) – 'Conservation of Fuel and Power.'
    - ★★★★★★ (6 stars) reflects a "zero carbon home"
- Moving target – amended every October to take into consideration new advances in technology and developability
- Remediation has been thought about

C4SH
“Standard Brief”

Section 3 “Designing in Detail”

3.5	Remediation
	Aspiration **Any remediation or demolition on Carbon Challenge sites will have low impact on the environment and demonstrate environmental best practice.**
3.5.1	Stage 2 submission
	A remediation strategy will be required setting out proposals for all necessary demolition and remediation taking into account English Partnerships/the landowners requirements for low environmental impact. It should incorporate the necessary risk assessments and relevant regulator endorsement where appropriate. Prior to commencement, the appropriate licences, permits, statutory notifications or consents must be secured by the developer and copies provided to English Partnerships/the landowners.
3.5.2	Guidance
	Initial site assessment must prioritise potential contamination or instability, and any requirements for demolishing existing structures above or below ground. If contaminating substances or ground instability are indicated, a risk assessment procedure must identify any unacceptable risks exist and subsequent action required. NB Remediation is not the only way to manage contamination or land instability, and other methods to manage the site should be considered, e.g. breaking the pathway, removing the risk sources or locating sensitive receptors away from risk sources. If remediation is absolutely necessary, English Partnerships/the landowners requires the adoption of low carbon impact and resource-intensity technologies unless impossible due to issues of treatability, economic viability, practicality, timescale or where unacceptable residual risks would remain on completion. Similarly, if demolition or dismantling of existing structures is required then consideration should be given to the full range of techniques available, such as hand-working, use of mechanical plant and controlled demolition using explosives. Impact on the environment is paramount and the lowest impact method utilised unless practicality, cost

3.5	Remediation
	Aspiration **Any remediation or demolition on Carbon Challenge sites will have low impact on the environment and demonstrate environmental best practice.**

demonstrates a low or zero carbon footprint, maximises recovery and on-site reuse materials and avoids landfill disposal wherever possible.

Signposting:

- DTI / CIRIA best practice guide, Managing the Development of Previously Developed Land (2002),
- Environment Agency’s Contaminated Land Report 11 (CLR11) Model procedures for the management of Land Contamination,
- CIRIA Special Report 32 (SP32) Construction over abandoned mineworkings and Defra Circular 01/2006
- Defra Circular 01/2006 Environmental Protection Act 1990: Part 2A Contaminated land.
- English Partnerships: The Brownfield Guide, A practitioner’s guide to land reuse in England.

3.5.3 Completion stage submission

During remediation work, evidence must be provided to English Partnerships/the landowners of continuing compliance with the conditions attached to the licences, permits, statutory notifications or consents. Any changes in approach,

thereby disallowing disengagement, will not be acceptable to English Partnerships/the landowners.

3.5.5 Planning for the future

Where appropriate, a surrender application must be prepared and evidence of full acceptance by the relevant regulator must be demonstrated e.g. through providing English Partnerships/the landowners with copies of licence or permit

g out proposals for all necessary demolition an
s requirements for low environmental impact. I
gulator endorsement where appropriate. Prior

assessment procedure must identify any unacceptable risks exist and subsequent action required. NB Remediation is not the only way to manage contamination or land instability, and other methods to manage the site should be considered, e.g. breaking the pathway, removing the risk sources or locating sensitive receptors away from risk sources. If remediation is absolutely necessary, English Partnerships/the landowners requires the adoption of low carbon impact and resource-intensity technologies unless impossible due to issues of treatability, economic viability, practicality, timescale or where unacceptable residual risks would remain on completion.

that

je of long-risks,

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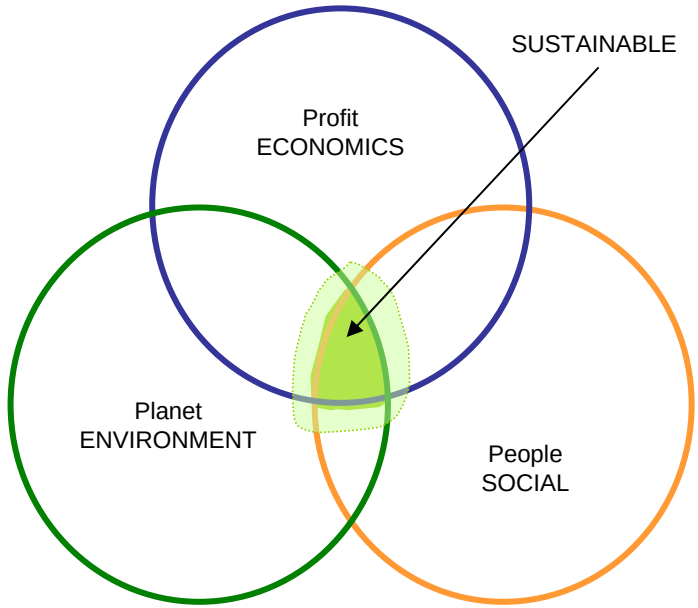
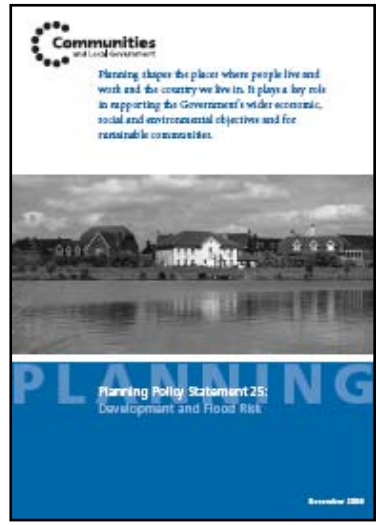
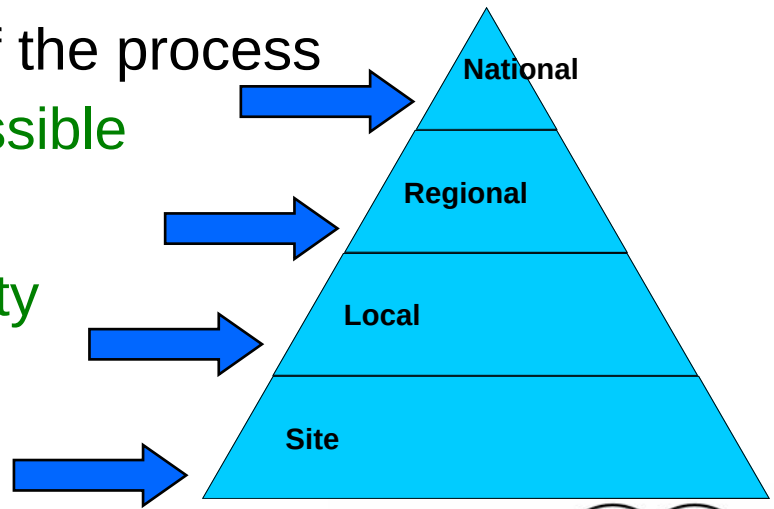
Conclusions with an Example



Flooding and Planning Policy



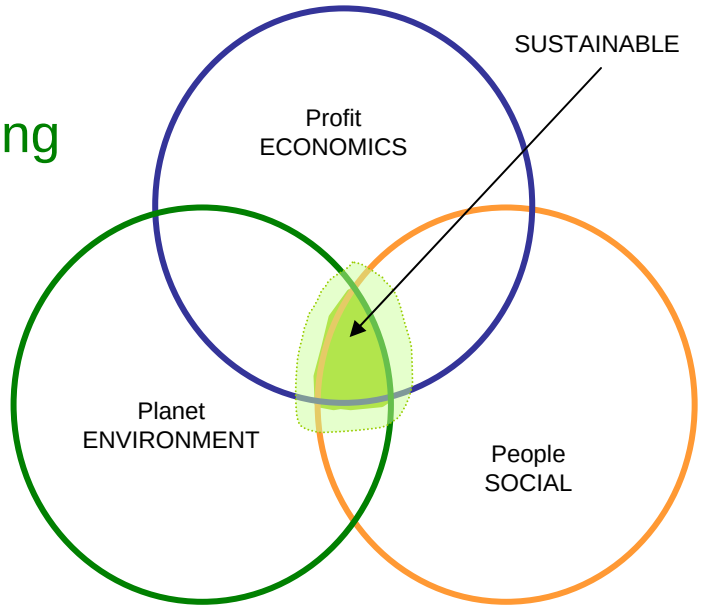
- Pragmatic and flexible approach is needed to control development in areas affected by flood risk.
- There is an inevitable clash between flooding and the regeneration agenda
  - Old urban areas requiring regeneration are often along rivers and are in areas of higher flood risk
- Flood risk is applied at every stage of the process
  - Aim is to avoid flooding where possible and manage it where unavoidable
  - FRA incorporated into sustainability appraisal



- Is this the framework to aim for?

Conclusions

- Planning Policy
  - Still maturing / evolving and is still being implemented around the country
- Sustainable Policies
  - Code for Sustainable Homes still maturing / evolving
- There is an opportunity!
  - Environmental issues, such as contaminated land and remediation needs, are considered higher up the planning “pyramid”.
  - How and when remediation is carried out is becoming more important.
  - There appears to be a direct comparison with flooding that we can follow.
  - We need to grasp the opportunity to make a difference!



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SuRF UK Framework: Final draft for comment

Frank Evans
Jonathan Smith
(SuRF UK Steering Group)

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Outline of Presentation

- Definition of Sustainable Remediation
- Generic SuRF-UK Framework
  - Overlaps with CLR11
  - Brownfield redevelopment
  - Unsustainable decisions
  - Operational land
  - Land restoration projects
- Terminology: Core & Non-core
- Brownfield redevelopment example
- Operational land example

What is Sustainable Remediation?

(Working) SURF-UK Definition:

…the practise 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.

Feedback on Definition

- 30 opinions/responses
  - 2 – Strongly Disagree
  - 0 – Disagree
  - 3 – No View
  - 16 – Agreed
  - 9 – Strongly Agreed

83% - Agreed

7% - Disagreed

Some views on definition

- 'the issue is optimising not balancing'
- Optimising' suggested as a term to include

- Caution: 'balance suggest equal weighting'
- Caution at word balance since implies trade-off

- 'acceptable' [is an important term to include]
- Caution at word acceptable

- Human health should be explicitly mentioned in the definition
- Include good governance and sound science

What is Sustainable Remediation?

…the practise 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.

1) Perhaps it should be an optimal balance?
2) Perhaps is should be a net benefit?

Recap on Framework needs

- Look of a framework: flow diagram
- Core and non-core aspects
- Operational and Brownfield land
- A fit with CLR11, but wider in scope/timescale
- Tierred approach
- Able to dovetail with Town & Country Planning, Code for Sustainable Homes
- Contracting arrangements
- Capture both…
  - Remediation implementation (options appraisal stage)
  - Consideration of remediation issues earlier in design/planning stage

Previous work: SURF Assessment Points?

Town & Country Planning Stages CORE ASPECTS		**Remediation: Design and implementation (CLR11 Stages)** NON-CORE ASPECTS			**Overlap with Code for Sustainable Homes**
Regional Spatial Planning	Local planning (site-level)	Risk Assessment	Options appraisal	Strategy implementation	? Needs further thought
Consider SURF when zoning land	SURF assess land-use options	SURF assess at risk assessment to aid effective data collation	SURF assess different remedial options	SURF assess tender returns Verify	

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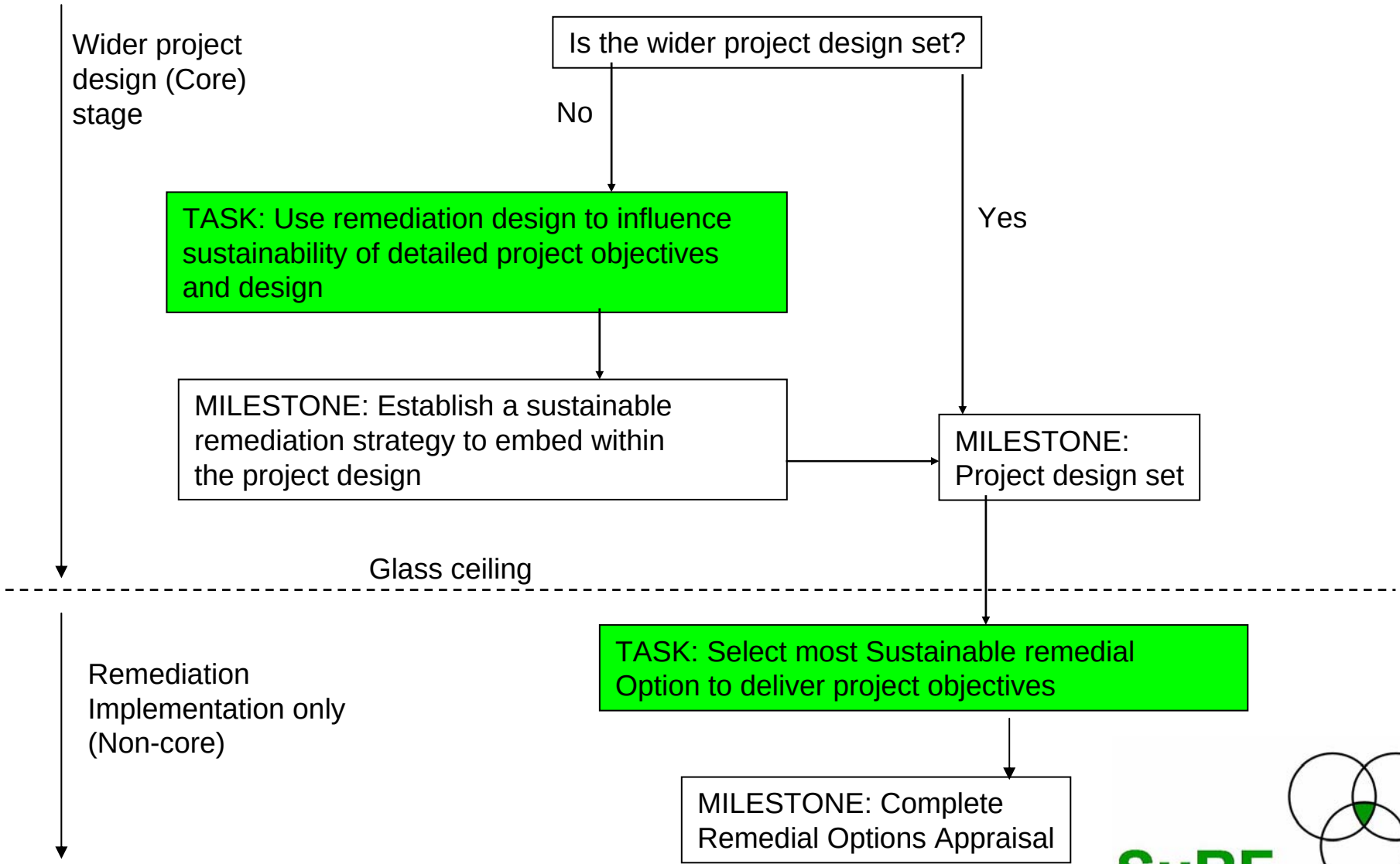
Generic SuRF-UK Framework



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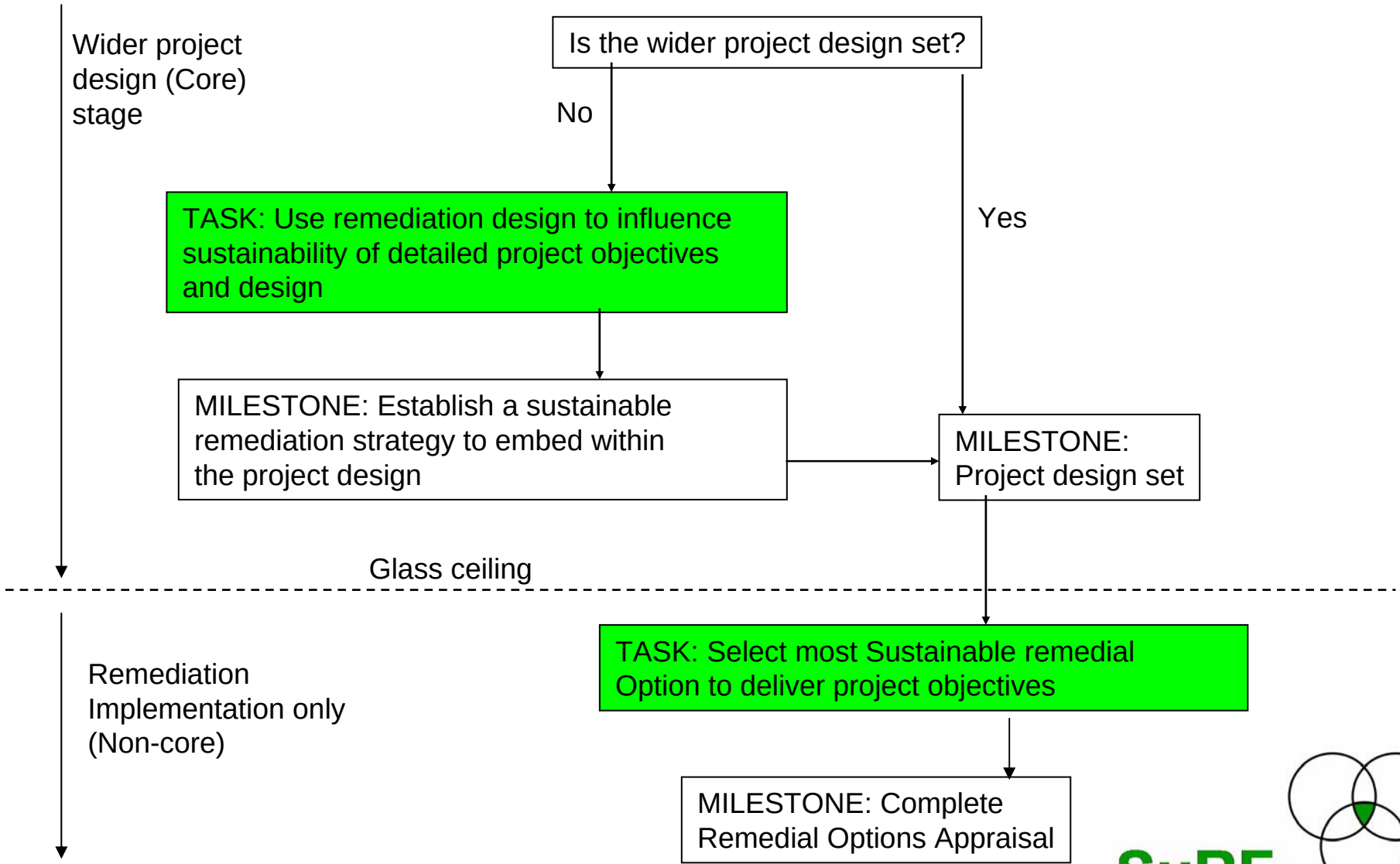
Generic SuRF-UK Framework

- At highest-level, there are two key stages in making sustainable remediation decisions
  - During the project design phase
  - At point of implementing the remediation aspects of the design

  - The project design phase normally is completed by a fixed milestone
    - This milestone represents a ‘glass ceiling’
      i.e. once complete there is little chance to go back up the process to influence the sustainability of the project.
    - After this milestone, only the remedial options can be influenced
    - This ‘glass ceiling’ is the point of separation between core and non-core

Generic SuRF-UK Framework



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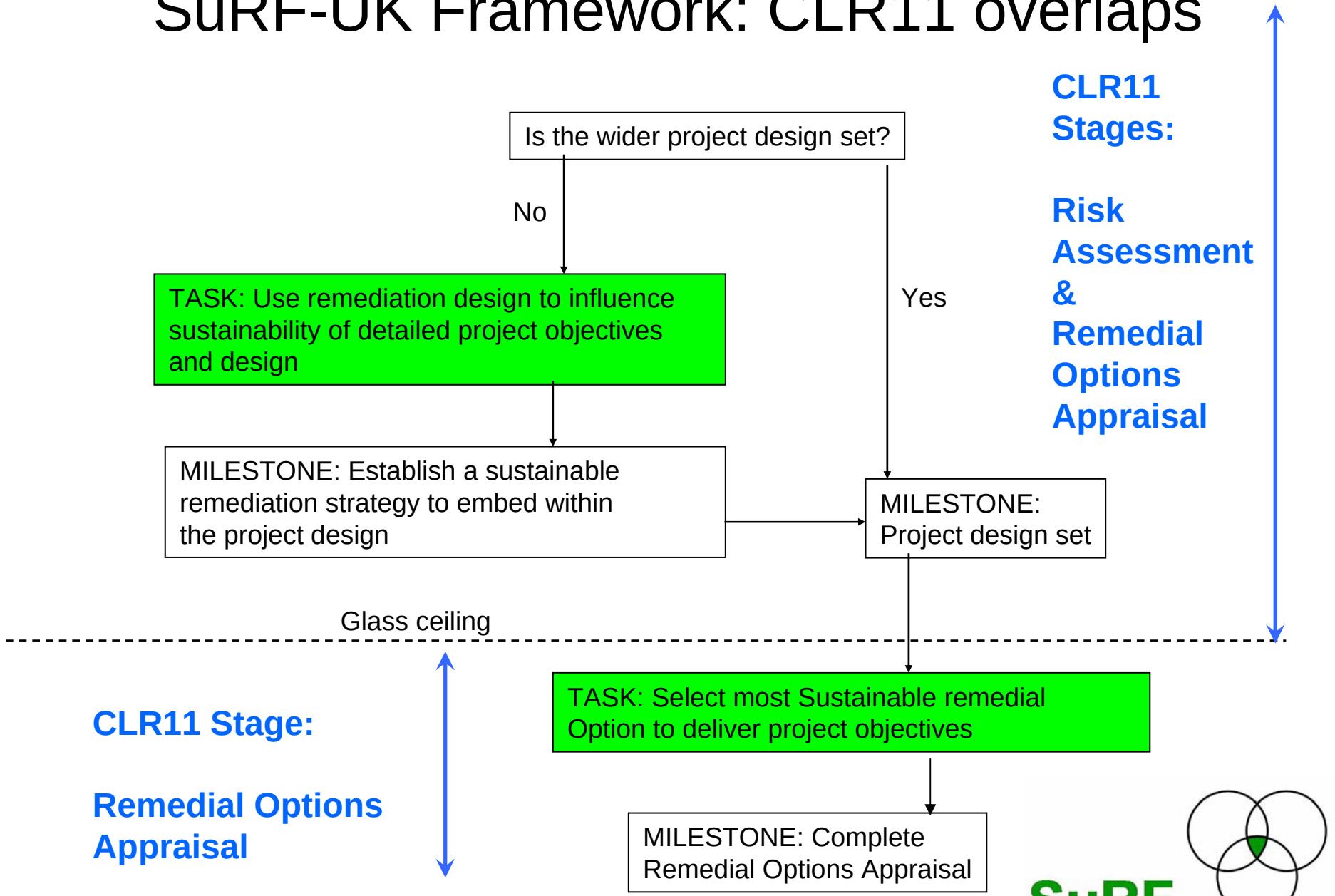
SuRF-UK Framework: CLR11 overlaps



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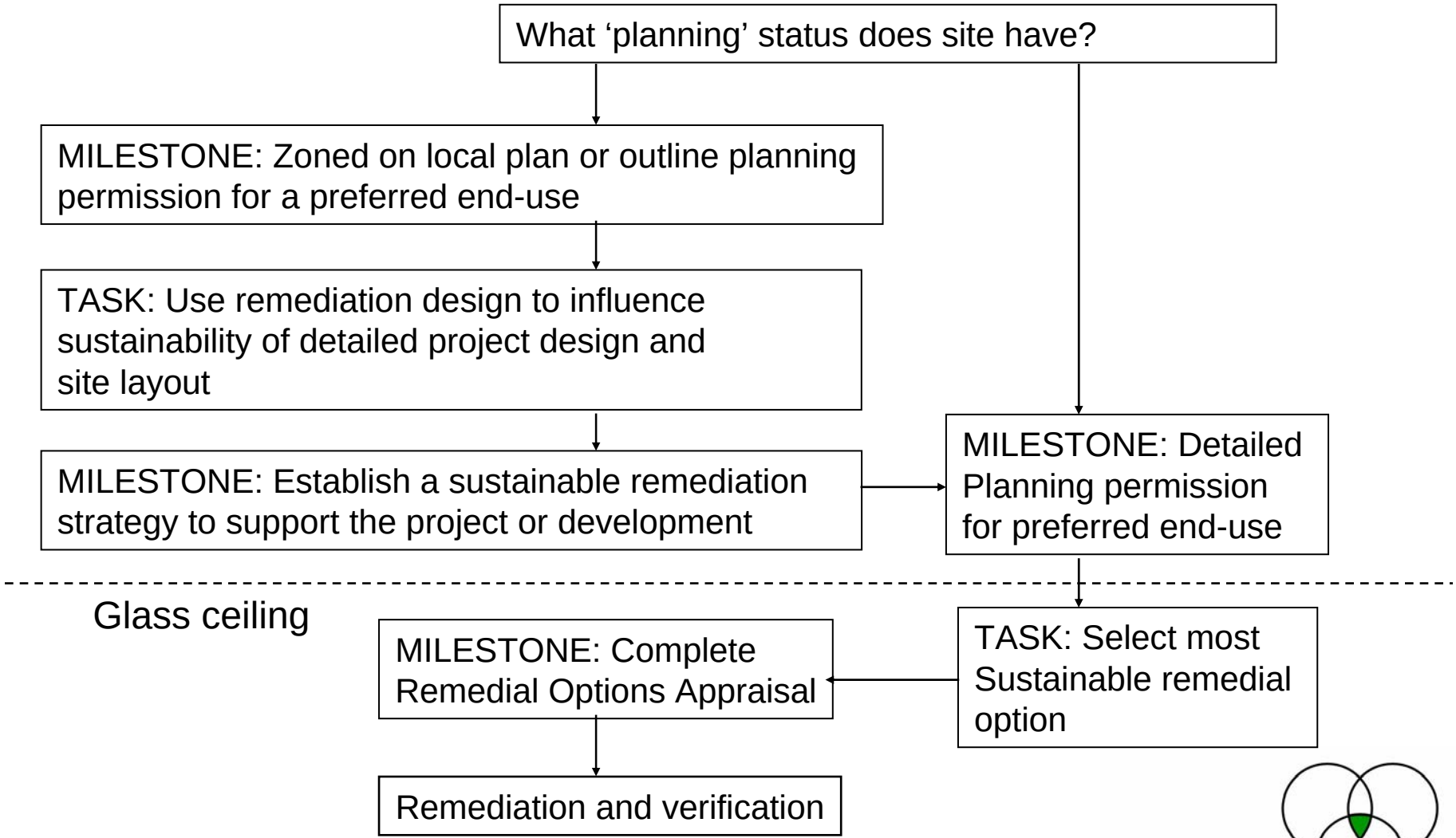
Site-specific Brownfield redevelopment



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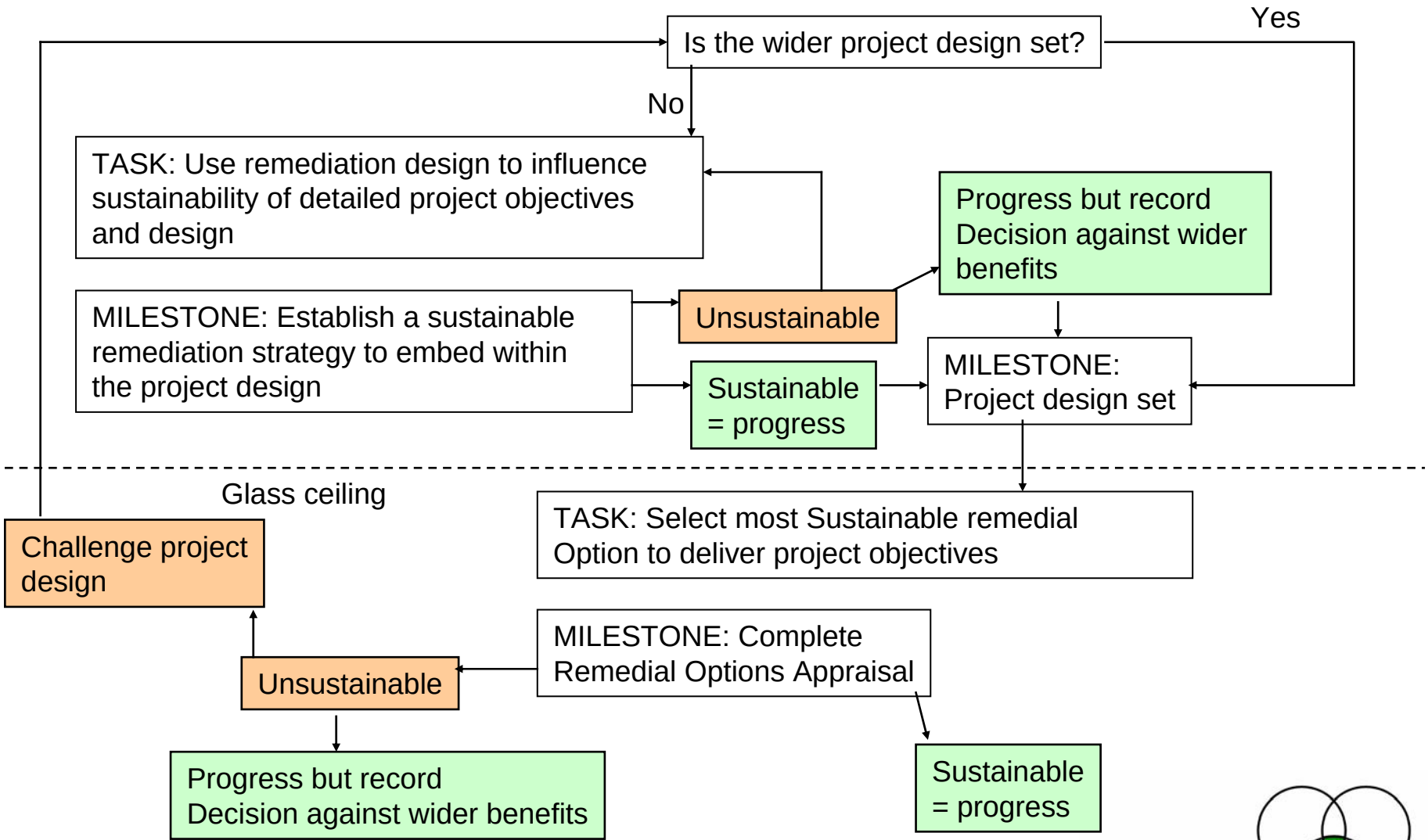
SuRF-UK: Unsustainable decisions



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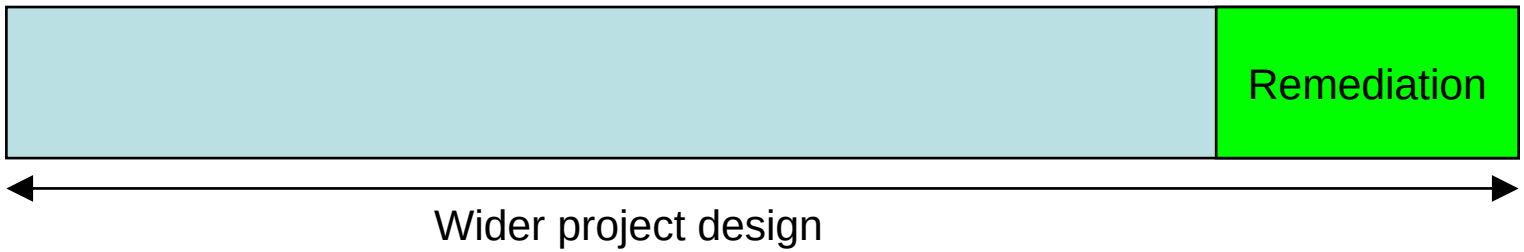
Type of remediation project

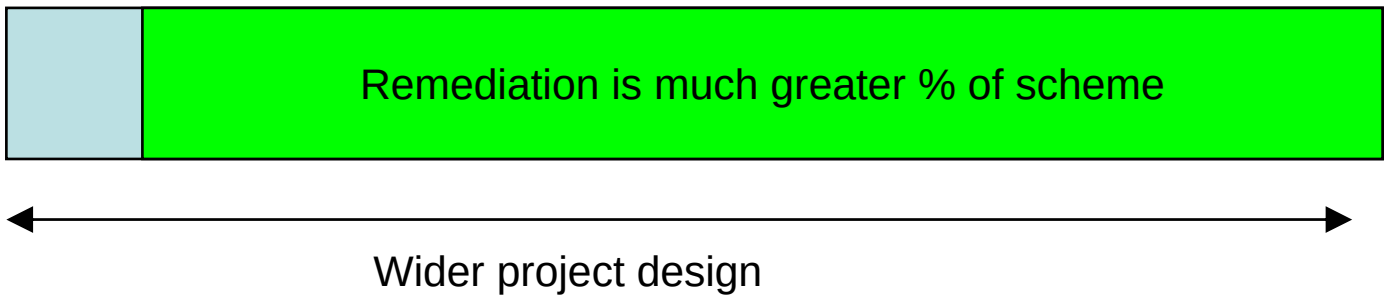
- Brownfield Redevelopment
  - Remedial strategy is only part of wider project-design
  - Given lifetime impacts of the project, the remediation stage is only likely to represent a small % of sustainability benefit and impacts
  - Unsustainable remediation schemes may progress due to wider project benefits
- Operational land
- Large restoration schemes
  - The need to remediate is the project driver
  - The remedial strategy is the wider project design
  - Lifetime impacts are limited to the remediation stage and represent majority % of the sustainability benefits and impacts

Type of remediation project

Brownfield Redevelopment



Operational land and Large restoration schemes



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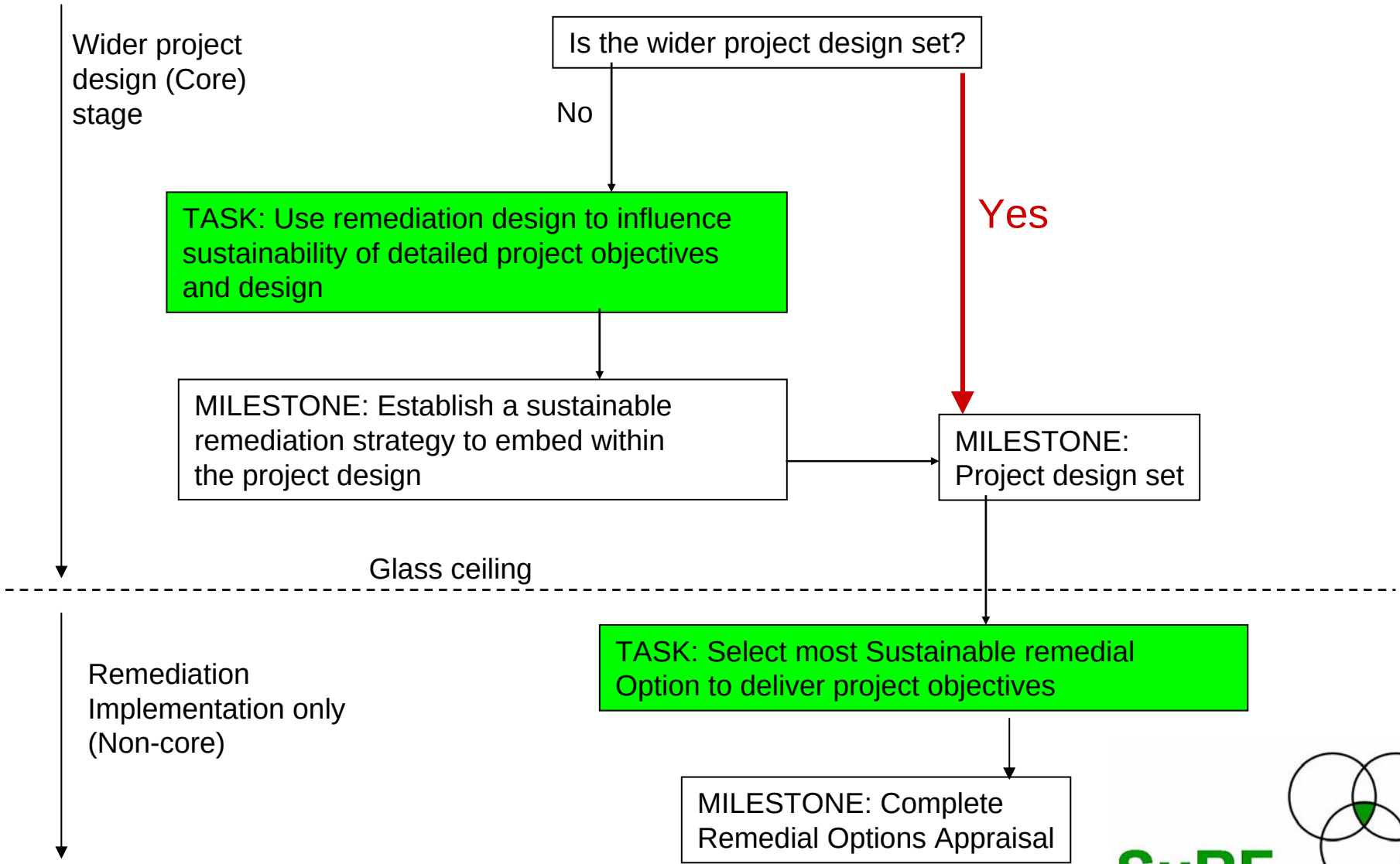
Operational land & land restoration schemes



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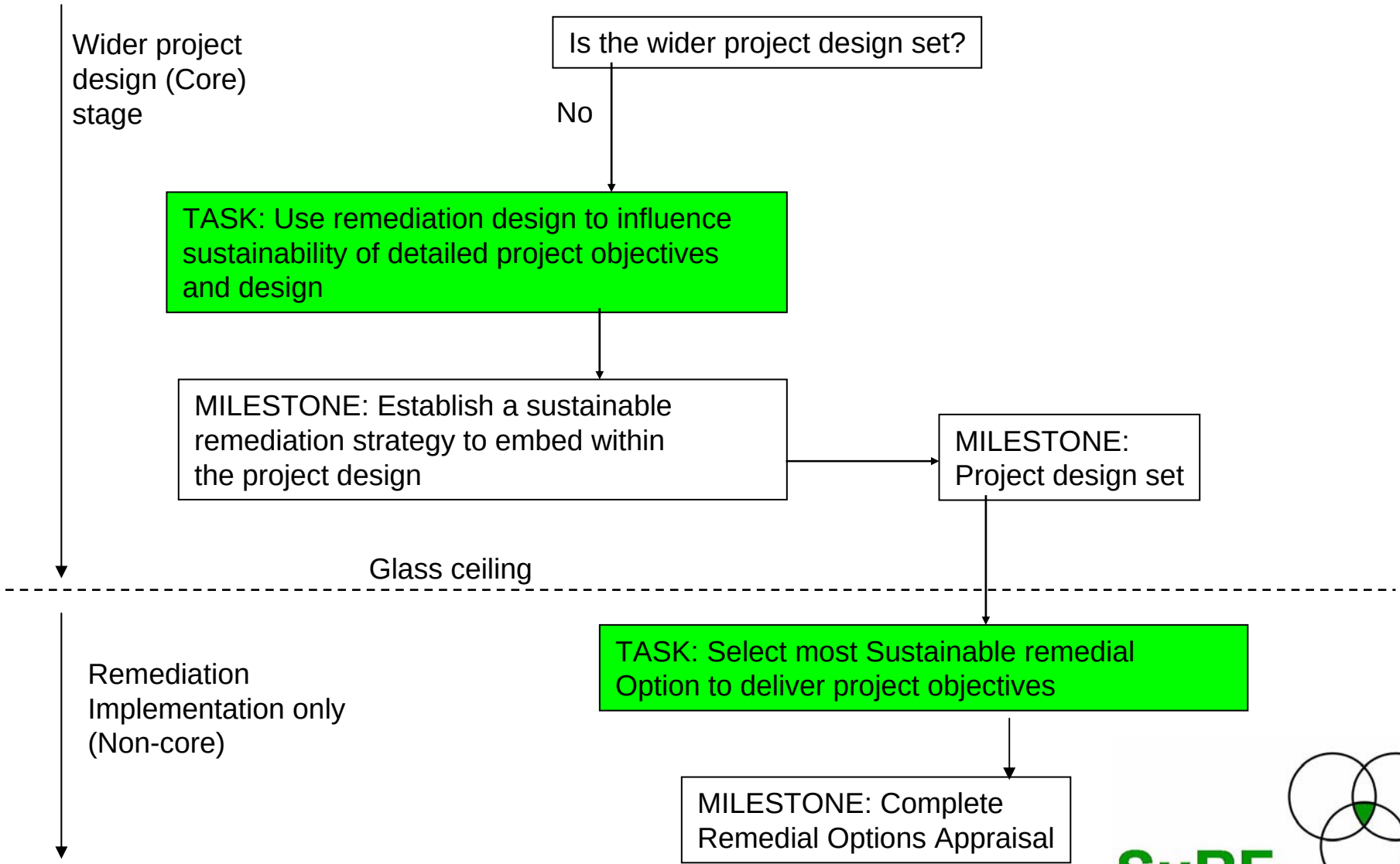
Operational land & land restoration schemes



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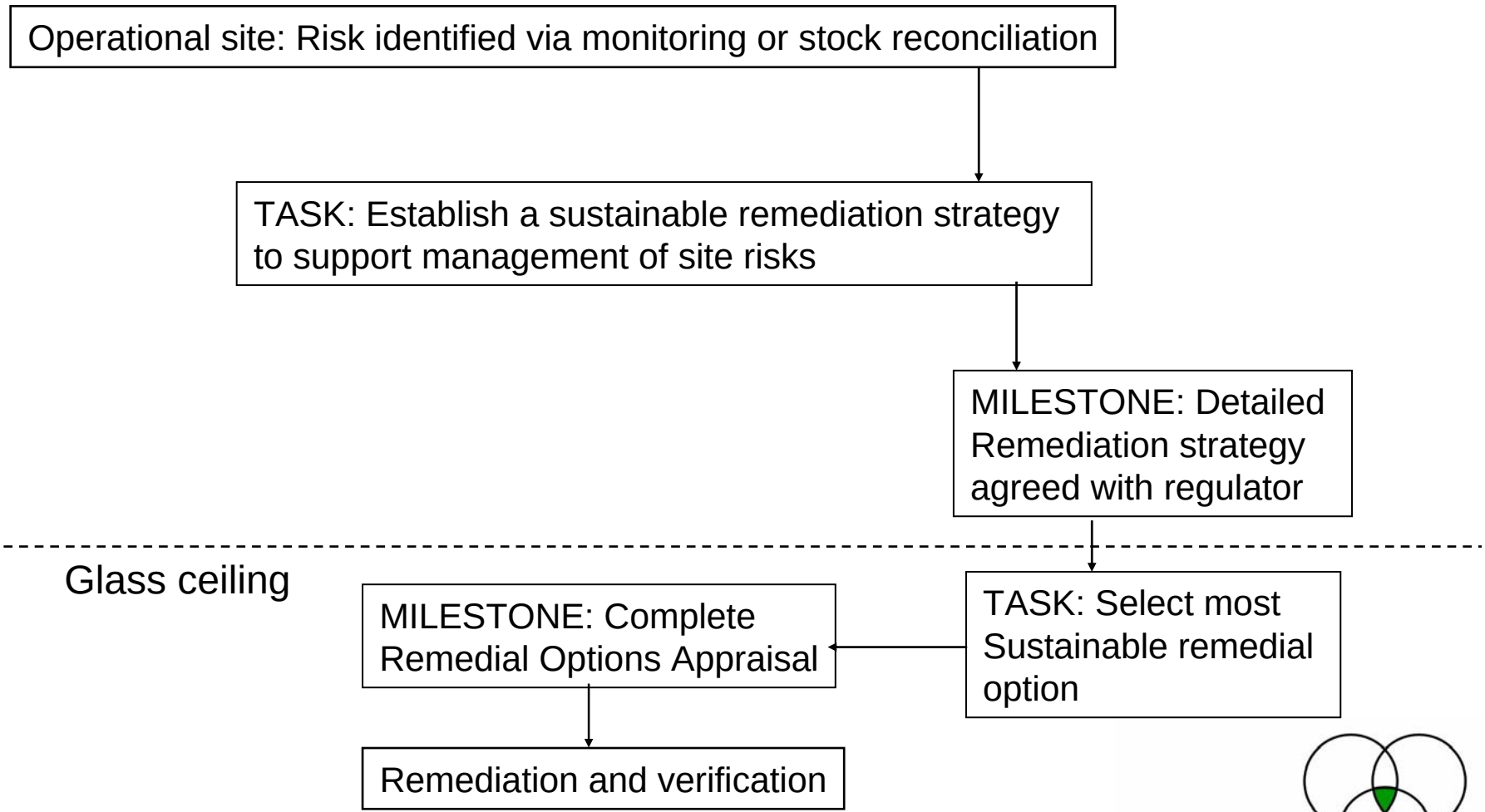
Site-specific: Operational Land



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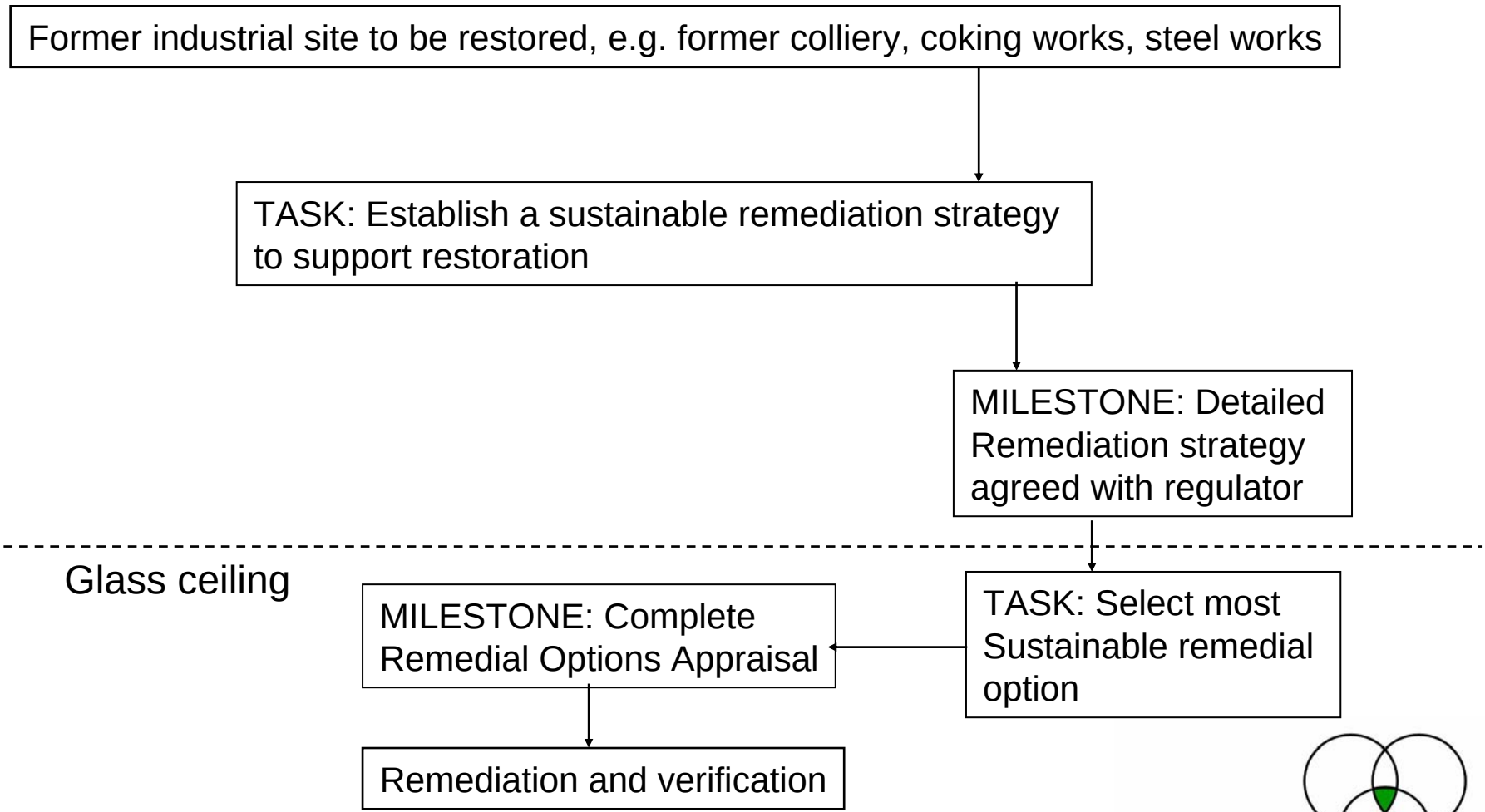
Site-specific: Large Restoration Schemes



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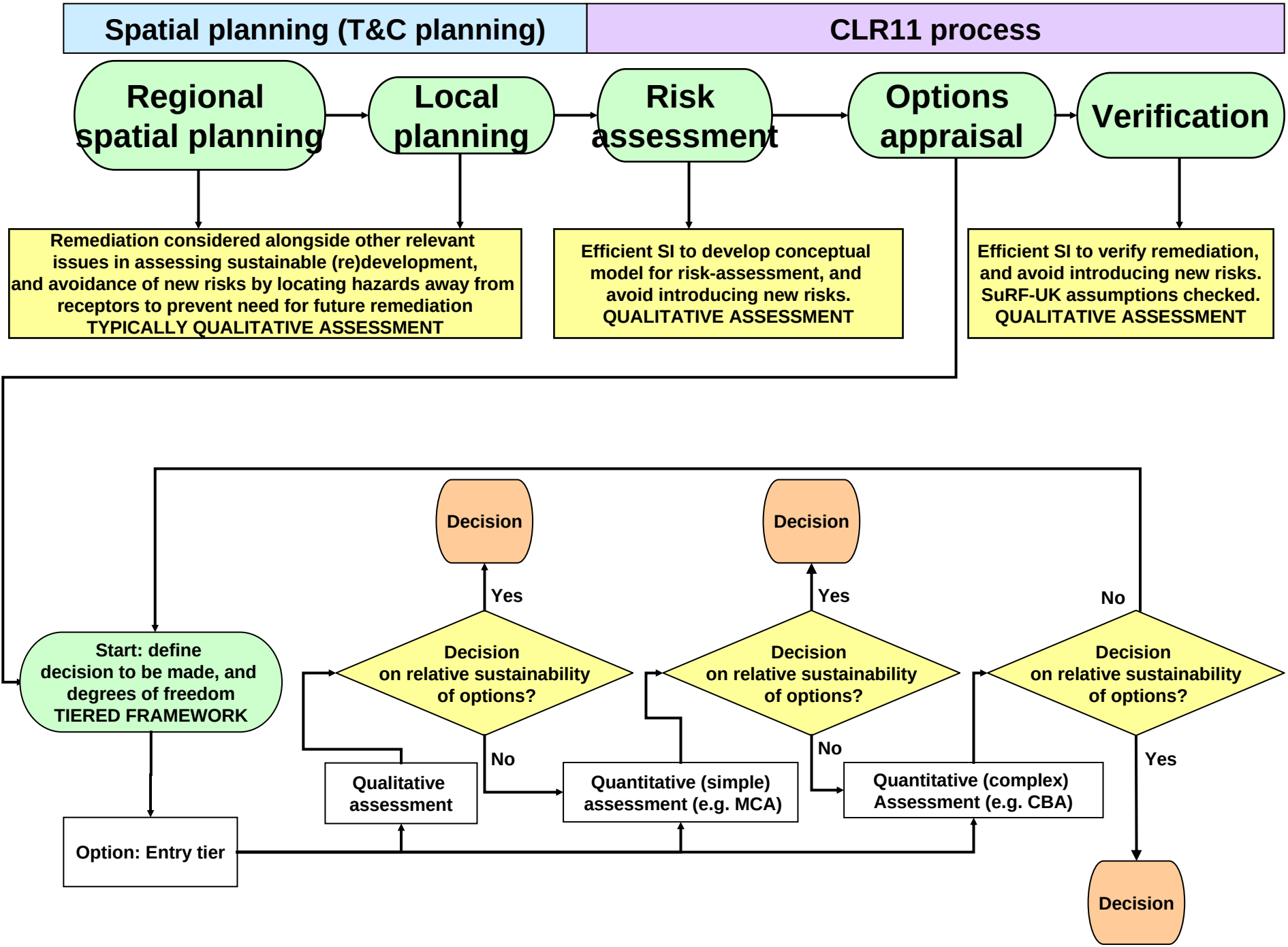
Terminology (replace) Options

Core	Non-core
Indirect	Direct
Preceding decisions	Remedy selection only
Development-stage	Remediation-Stage
Project	Remediation
Project-Design stage	Remediation stage

Glass ceiling – explains concept – is it right term?


Spatial planning (T&C planning)
CLR11 process
Regional spatial planning
Local planning
Risk assessment
Options appraisal
Verification
Remediation considered alongside other relevant issues in assessing sustainable (re)development, and avoidance of new risks by locating hazards away from receptors to prevent need for future remediation TYPICALLY QUALITATIVE ASSESSMENT
Efficient SI to develop conceptual model for risk-assessment, and avoid introducing new risks. QUALITATIVE ASSESSMENT
Efficient SI to verify remediation, and avoid introducing new risks. SuRF-UK assumptions checked. QUALITATIVE ASSESSMENT
Start: define decision to be made, and degrees of freedom TIERED FRAMEWORK
Option: Entry tier
Qualitative assessment
Quantitative (simple) assessment (e.g. MCA)
Quantitative (complex) Assessment (e.g. CBA)
Decision on relative sustainability of options?
Decision on relative sustainability of options?
Decision on relative sustainability of options?
Yes
No
Yes
No
Yes
No
Decision
Decision
Decision

Examples

- Brownfield Redevelopment
- Operational site

Example 1: Petrol station remediation

- Core objective
  - Use: continued storage and sale of fuels
  - Remediate to manage risks associated with fuel release
- Approach
  - Use cost-benefit assessment to help design
    - Remedial strategy
    - Remediation technology selection
  - Straight to C-B Analysis
    - Considered a range of Env, Econ and Soc costs and benefits, but was not a complete SuRF-UK assessment

Decision points

- C-B assessment used to inform:
  - Location of compliance point in fully-licensed aquifer
    - Closest borehole abstraction ~ 3 km
    - River ~ 200m
    - EA objective to protect resource potential
      - 50m, 100m, GW valuation-based
  - Technology selection
    - Single technique to achieve remedial goal(s)
    - Treatment trains (engineered rem + polishing phase)

Remediation options considered

Option No.	Option
N1	Do Nothing
MNA	MNA
S1	In-situ Bio Stimulation using slow release oxidant
S2	Total Fluids Extraction
S3	ISCO
S4	Dual Phase Extraction
S5	Air Sparge and SVE to reduce site product concentrations
S6	Excavation and Landfilling

Option No.	Option
P(S)1	Edge of site Air Sparge and SVE barrier system
P(OS)2	Off-site Bio-Stimulation using Slow release Oxygen Technique along plume transect
P(OS)3	Off-site (plume) Air Sparge and SVE barrier system
P(OS)4	Off-site (Plume) Total Fluids Extraction - Groundwater Interception
R1	End of pipe treatment

Example: External Costs

	CO_2 (tonnes)	NO_X (tonnes)	PM (tonnes)	HGV (miles)
N1	-	-	-	-
MNA	5.2	0.2	-	-
S1	9.6	0.3	-	-
S2	93.6	98.3	9.0	-
S3	7.8	0.2	-	-
S4	68.9	0.9	21.0	-
S5	68.9	2.3	47.0	-
S6	45.5	0.4	-	24 192.0
P(S)1	441.7	11.2	71.0	-
P(OS)2	5.2	0.8	-	-
P(OS)3	220.9	5.6	71.0	-
P(OS)4	271.9	7.0	43.0	-
R1	33.0	0.9	285.0	-

Additionally included

- Aquifer value
- Property value
- Internal cost

Excluded (pre-SuRF-UK!)

- PR and reputation
- Legal / enforcement expenses
- Other social (e.g. disruption)
- Employment
- Resource use (water, aggregate)

Outcome

- Compliance point location
  - 200m to river; 100m for GW resource
- Benefits of LNAPL source removal outweigh costs
  - LNAPL and UZ source removal by DPVE and SVE to target of 50mg/l TPH in groundwater
- Further active remediation has C/B >1
  - Do nothing (the minimum C/B)
  - Oxidant release - biostimulation
  - MNA
    - MNA the preferred solution taking account of un-costed elements, such as reputation and risk of enforcement action
- MNA analysis report accepted by EA in Feb 2009

Discussion

SuRF-UK: The project deliverables

Jonathan Smith

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Content

- Project objectives
- Legislative and CLR 11 context
- SuRF-UK framework
- SuRF-UK Phase 1 report
  - Content
  - Style
  - Timescales

Reminder: framework requirements

- Practical and reasonable
- Applicable at range of scales / planning points
  - spatial planning (regional and site),
  - remedial objective setting,
  - technology selection
- Tiered approach to analysis
  - Qualitative (data from published sources)
  - Quantitative (range of simple to more complex tools)
- Accepted by key stakeholders and consistent with regulatory requirements
  - Draw on existing EA methods - no desire to reinvent wheels
  - Awareness of SuRF-US where policy and regulatory frames are compatible

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Legislative context

Sustainable development in remediation:

- Planning Policy Statement 1 and 23 - underpin sustainable development through planning and development process
- Env. Act 1995 (s4) requires environment agencies to '*contribute to the goal of achieving sustainable development*'
- Env. Act 1995 (s39) – environment agencies required to '*take account of the likely costs and benefits*' in enforcing powers
- Env. Prot. Act 1990, Part IIa – Test for reasonableness, best practicable technique (Part IIA Stat. Guidance C51)
- EU Water FD – achieve good status unless ..infeasible ..disproportionate cost ..and the preferred solution is considered best balance of social, economic and environmental costs [i.e. sustainable]
- Draft EU Soil Protection Framework Dir. (Feb 2009)– '*Remediation shall consist of actions on the soil...due consideration to social, economic and environmental impacts…*'

SuRF-UK aims to be suitable for:

- Planning decisions
- Voluntary remediation
- WRA91 Works Notice enforcement
- Contaminated land regime: Part IIa / Part III

- Local and regional-scale development decisions

- EU Soil FD (as currently drafted)

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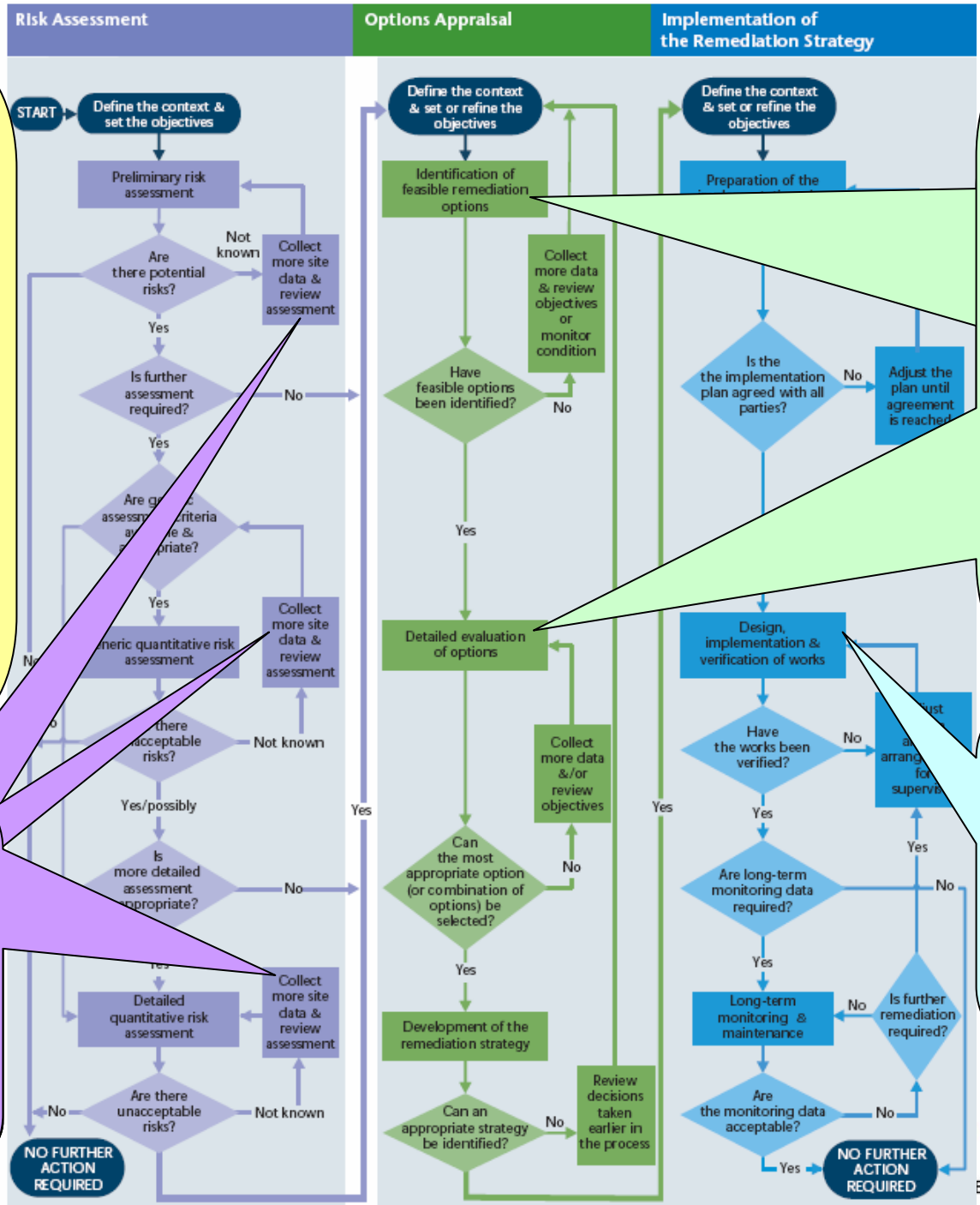
Pre-CLR11 recommendations

Spatial planning considerations (Strategic, Local plans) should consider the impact of remediation alongside other relevant factors in order to identify sustainable use(s) of land, including options to minimize remediation and locate new hazardous activities away from human populations and aquifers etc;

National scale: Generic risk-assessment criteria should include an evaluation of the sustainability of achieving those generic standards

1. Site characterisation should be designed to maximise efficiency of data collection, and be focussed on improvement of conceptual site model.
2. Site characterisation should not introduce new hazards or pathways for transport of contaminants



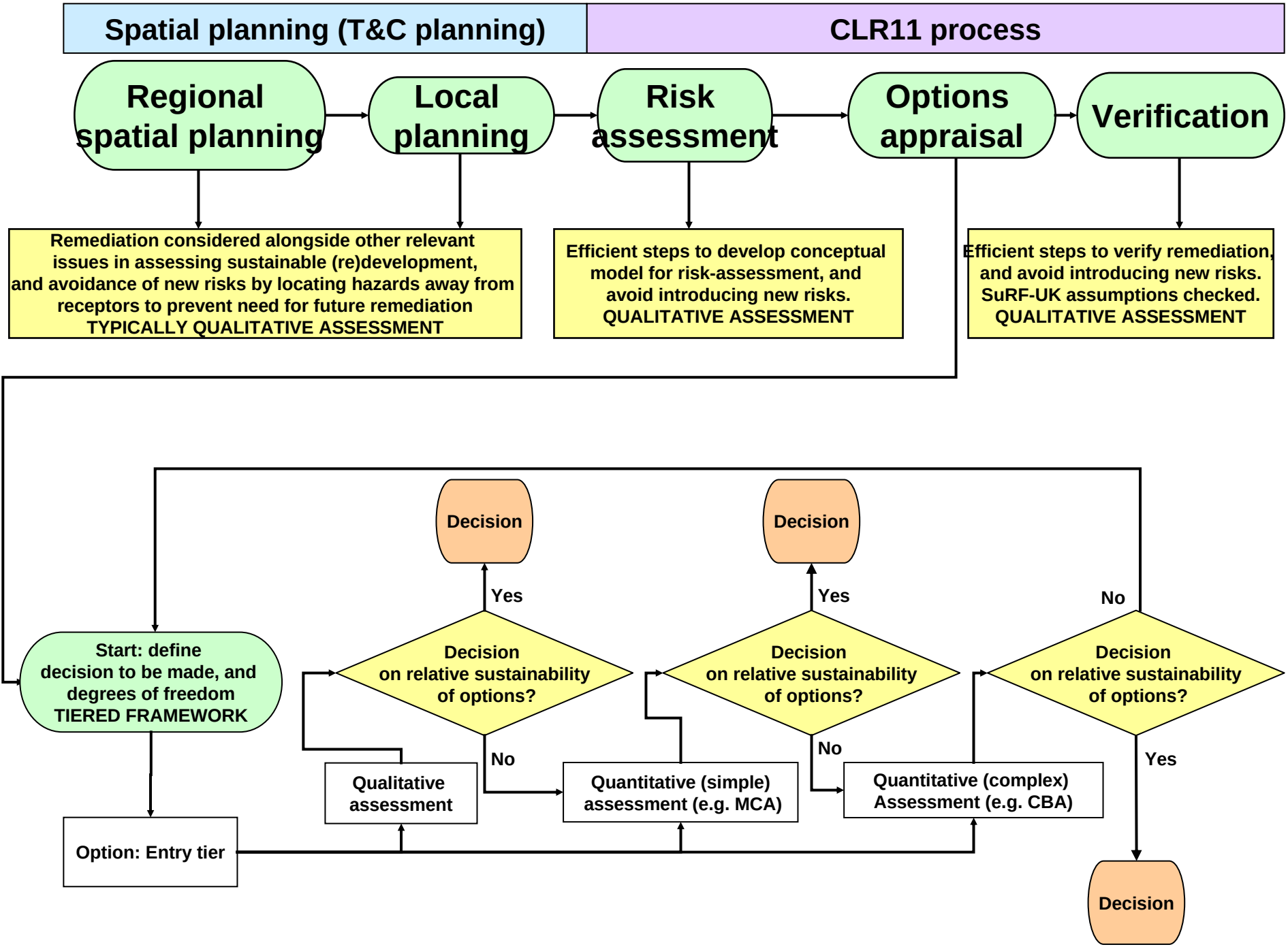
Options Appraisal should include:

1. An assessment of the relative sustainability of undertaking source treatment, pathway interception or receptor modification to manage unacceptable risks.
2. A sustainability assessment of different remedial technologies / techniques to achieve risk-based goals

1. Verification should be designed to maximise efficiency of data collection.
2. Verification should include post-treatment analysis of the assumptions made in the options SuRF-UK appraisal stage

SuRF-UK report: Content

- Introduction
- Legislative context
- Relation to existing guidance
- The SuRF-UK framework
- Indicators for Sustainable Remediation
- Interactions with other sustainable development initiatives
- References and supporting information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Decision on relative sustainability of options?
No
Yes
Decision

SuRF-UK report: Style

- Approximately 20 page report
  - Clear and concise
  - Supported with flowcharts and figures
- Hyperlinked to other data and information sources
- Freely available as a PDF file

SuRF-UK report: Timescales

- Final draft report due April 2009
  - Will allow consistent inclusion of Sust. Dev. criteria in remedial decision making using existing tools
    - e.g. EA reports P238, P278, P279, P316
- SuRF-UK Phase 2 to follow
  - Improved metrics related to remediation activity

SuRF-UK report: Supporting deliverables

- Conference presentations
  - *Sustainability Live* (May 2009)
  - NICOLE Sustainable Rem. conference (June 2009)
  - NW Brownfield Regeneration Forum
- Trade magazine articles
  - *Sustainable Communities*, April 2009
- Other project funding
  - CONCAWE - €100k for collation of data on SD metrics for petroleum HC remediation techniques

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SuRF-UK: The project deliverables

Jonathan Smith

SuRF
SUSTAINABLE REMEDIATION FORUM UK

SuRF Open Forum Meeting – March 18th 2008

Phase 1 Final

Prof Paul Bardos
r3 environmental technology ltd
www.r3environmental.com

Outline

- Future work
- Academic Questionnaire

Ambitions for future work

- Implementation of the framework
- Develop a template for sustainability based decision making and reporting
- Guidance for what is considered (indicators)
- Tool box (sustainability assessment tools)
- Case studies
- On-line availability
- Support (at least morally) academic research

Future work in detail (1)

- Implementation of the framework
  - Encourage case studies
  - Develop supporting tools
  - Develop framework for training and continuing professional development
  - Linkage with international developments: SURF US, NICOLE and Soil FD
- Template for decision making and reporting
  - Checklist of “inputs” – information / indicators
  - Tiered approach
  - Specification of key outputs to be reported

Future work in detail (2)

- Guidance on indicators
- Under development, considering:
  - >100 references currently under review, and being “mapped”
  - Use this as a basis to decide next steps
  - Key issue will be managing complexity

- Tool box
  - “Open access” catalogue of assessment tools supplied by you (proprietary)
  - Review of different techniques (approaches)
  - Link to case studies
  - Issue may be *verification / validation* of tools?

Future work in detail (2)

- Case studies
  - "open access" catalogue of case studies supplied by you
  - Use a standard template
    - Project solutions?
    - Decision making?
  - Link to EURODEMO+ to be considered
  - Need for *verification / validation*?
- On-line implementation desired
- Academic research
  - The future?
  - SURF UK want an open approach: "bottom up" collection of ideas – from you

Academic Research Questions

- What is your view on the wider needs for sustainable remediation research?
  - e.g. measurement approaches, metrics, valuation approaches, green technology development etc
- What are your specific research interests and how do they link to these wider needs?
- How could an end-user statement from SURF-UK assist you in making grant applications?
- How could SURF-UK help you with dissemination and making introductions?
- Any other comments?

Academic Questionnaire Responses so far

- Five Reponses received
- 1 Research needs
  - Methods / metrics research
    - Most feel work is needed / some feel there is a problem of industry uptake or skills shortages
  - Sustainable “extensive” remediation technologies
- 2 Your interests
  - “Soft” / “gentle remediation” / skills / sustainability “measurement”
- 3 End-user statement
  - Generally seen as desirable to (a) demonstrate need and (b) provide a “benchmark”
- Help from SURF-UK
  - Networking, a major conference, dissemination, involvement of SG members in research proposal development
- Other comments
  - UK should have been in the SNOWMAN 2 proposal (incl biofuels on contaminated land); provide a link to European and international work

Phase 1 Output = Framework