

Sustainable and Smart Brownfield Regeneration

A recorded version of this lecture is available at:
<http://tinyurl.com/39mccew>

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Desperately seeking SPOSH: Mapping Unacceptable Intake

An LQM/CIEH workshop at the University of Nottingham

Land Quality Management Ltd

Date and venue

This two-day workshop will be held on 3 & 4th July 2010 at the University of Nottingham. The workshop will run from 10am Day 1 through to 4.30pm on Day 2. Full joining instructions will be sent to each delegate prior to the course.

Workshop Content

Under Part 2A, a significant possibility of significant harm to human health arises from an 'unacceptable intake' of a contaminant. Toxicology has focused on defining intakes that are tolerable at some a minimal risk. Toxicological information must also underpin the evaluation of high or unacceptable levels of risk to human health from contamination.

Recent guidance recognises the need to move away from a single figure to define the point of departure events using the entire dose-response dataset for a contaminant. The contaminated land community has focused on how far into a Toxicity Dose-Response or Index Dose does an exposure have to be for it to be unacceptable. Such an approach ignores information above the point of departure available for each contaminant from toxicological and epidemiological studies.

This workshop will analyse the toxicological reviews underpinning the development of the new Environment Agency SGVs and the 2nd edition LQM/CIEH GAC to develop the electronic "LQM/CIEH Roadmap of Unacceptable Intake". The generic analysis can be applied to any substance.

Participants are not required to carry out any work prior to attending the workshop but a familiarity with Environment Agency guidance in the form of GAC will be presumed.

Working under expert guidance, groups of delegates will learn develop risk-response dose maps for three substances that illustrate the full extent of toxicological information reviewed to inform the GAC/GAC values. The final number of substances 'mapped' at this way will depend on how many delegates attend the workshop.

Outcomes will be peer reviewed and published to help the contaminated land community better evaluate risks to human health under Part 2A or similar regimes. This will accompany updated guidance on determination being prepared by CIEH.

How will you benefit from this workshop?

- By the end of the workshop you should be better able to:
 - Approaches the limitations of acceptances of the TD₀₁ and Index Dose for identifying unacceptable risks
 - Apply the full range of toxicological information about a contaminant to risk evaluation
 - Identify when substance specific toxicological expertise is required to inform a risk evaluation

Delegates receive a CRD Certificate of Attendance and a copy of the "LQM/CIEH Roadmap of Unacceptable Intake"

Who should attend?

Those working on sites suspected of posing a significant possibility of significant harm to human health:

- Local authority contaminated land officers
- Contaminated land consultants
- Land owners/ estate managers

Facilitators

The workshop will be facilitated by LQM staff renowned for their experience and knowledge - as well as their enthusiasm to improve the way land contamination issues are tackled.

Cost

Private Sector rate: £200 (including VAT)

Public Sector rate: £150 (including VAT)

VAT is chargeable at the prevailing rate.

*Applies to Local Authority, Health Authority, Environment Agency and SRFs, Health Protection Agency and

Discounts: We offer a 25% discount for 3 delegates, 10% discount for 4 delegates and 10% student for 5 or more delegates. Discounts apply only where full (private sector) rates are paid and when payment of delegate fees is undertaken in one transaction (e.g. one invoice issued).

Please note: Fees do not include overnight accommodation, meals or refreshments. Delegates are welcome for sole or split catering rates and four hotel B&B accommodation.

Payment must be received before commencement of the workshop. Cancellations will only be accepted up to 2 weeks before the workshop date and an administrative charge of 25% of the fees will apply. Payment may be substituting at any time.

LQM reserve the right to cancel a workshop, at least 7 days notice will be given. LQM cannot accept any liability for costs incurred as a result of such cancellation (e.g. train tickets) although if costs are not already paid for the workshop could be returned in full.

All workshops are undertaken in accordance with our terms and conditions. These can be viewed at www.lqm.co.uk

LQM/CIEH GAC Publication (2nd Edition)

Delegates will need access to the 2nd Edition LQM/CIEH GAC publication, published in July 2009, which presents generic assessment criteria (GAC) for 62 substances.

The usual price of the 2nd Edition is £195.00 (inc P&P). Each Delegate on this workshop can purchase ONE copy at the same time as booking on the workshop for collection at the workshop for only £75.00. (We can post this to you for an additional plus charge of £10.00). Alternatively you may bring your own copy to the workshop. A limited number of copies will be available for delegates to use during the workshop.

Booking

To book a place(s) on this workshop, please complete and return the booking form at the back of this brochure. Please note that our QA system requires all bookings on an official LQM booking form and that booking demonstrates acceptance of our terms and conditions and that no other terms and conditions apply.

For more information

More information about this workshop and our other courses is available on our website at www.lqm.co.uk/Training

Alternatively, contact us at:
Land Quality Management Ltd, Unit 8, Beeston Business Centre, Nottingham, NG9 2ND.

Tel: 0115 941 8000; Fax: 0115 967 3749

E-mail: admin@lqm.co.uk

LQM
LQM

This lecture focuses on regeneration; Its presumed legal context is therefore the land use planning regime.

For Part 2A, remediation to remove *unacceptable* risk is the end point.

This workshop will analyse the toxicological reviews underpinning the development of the 'new' Environment Agency SGVs and the 2nd edition LQM/CIEH GAC to develop the electronic "*LQM/CIEH Roadmap of Unacceptable Intake*". The generic analysis can be applied to any substance.



elementary environmental ethics (even *selfish* genes need to eat and drink)

- ¹⁸ Is it not enough for you to feed on the good pasture, that you must tread down with your feet the rest of your pasture; and to drink of clear water, that you must muddy the rest of the water with your feet?
- ¹⁹ And must my sheep eat what you have trodden with your feet, and drink what you have muddied with your feet?

Ezekiel 34:18-19



Sustainable...

**Neutral
to beneficial
across all time & places**



“Do no evil” is not enough

... doing more good than evil

Definitions

Regeneration: “the process of turning round deprived communities in decayed neighbourhoods” (Brown, 2003).

www.CABERNET.org.uk defines **brownfields** as “sites that:

- have been affected by the former uses of the site and surrounding land
- are derelict or underused
- may have real or perceived contamination problems
- are mainly in developed urban areas
- require intervention to bring them back to beneficial use.”

*“**Sustainable brownfield regeneration** is the management, rehabilitation and return to beneficial use of brownfields in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generations in environmentally sensitive, economically viable, institutionally robust and socially acceptable ways within the particular regional context.” (RESCUE 2005)*

Regeneration: “the process of turning round deprived communities in decayed neighbourhoods” (Brown, 2003).

7 habits of effective regeneration

1. People matter - absolutely
2. Places for people
3. Having a *shared* Vision is vital
4. There is *no I* in team
5. Build and they will come
6. Waste is a resource in the wrong place
7. Leaders serve others now and in the futures

Sustainable risk-based contaminated land management

- To ensure land is fit for its intended use OR that any proposed remediation will render it so for the optimal social, environmental and economic impact
- It involves identifying and applying the appropriate level of 'knowledge' and consuming only the necessary amount of resources

Downtown Detroit USA
The brownfield city

I looked at the earth,
and it was formless and empty;
and at the heavens,
and their light was gone.

I looked at the mountains,
and they were quaking;
all the hills were swaying.

I looked,
and there were no people;
every bird in the sky had flown away.

I looked,
and the fruitful land was a desert;
all its towns lay in ruins
before the LORD,
before his fierce anger.

Isaiah 6:23-26

Smart growth

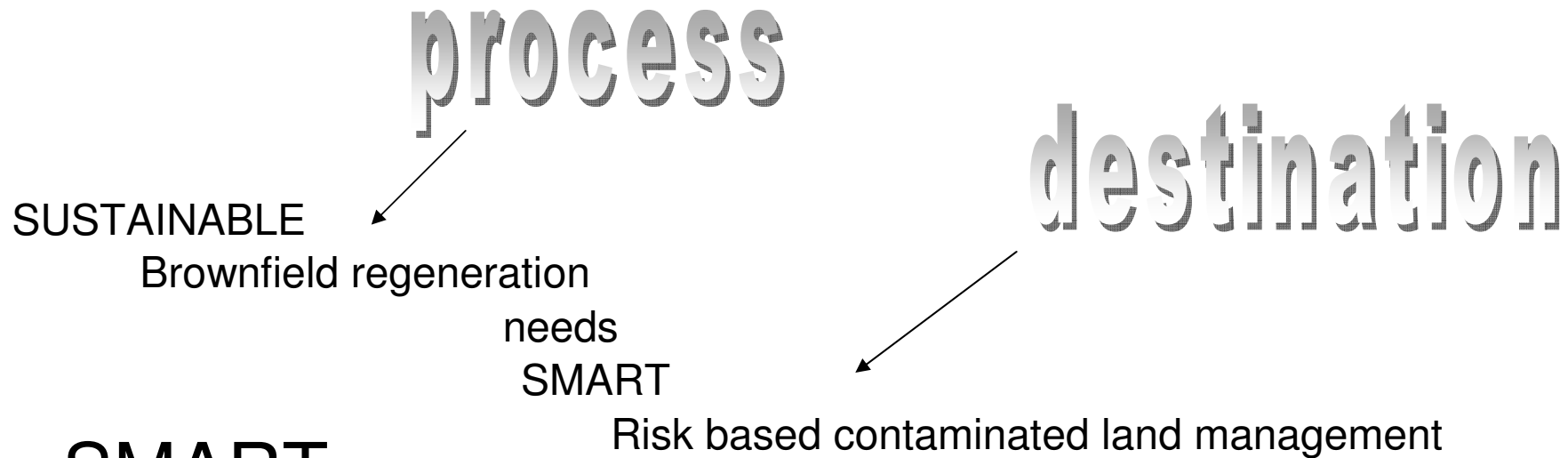
http://www.epa.gov/smartgrowth/about_sg.htm

Smart Growth Principles

Based on the experience of communities around the nation that have used smart growth approaches to create and maintain great neighborhoods [sic], the Smart Growth Network developed a set of ten basic principles:

1. Mix land uses
2. Take advantage of compact building design
3. Create a range of housing opportunities and choices
4. Create walkable neighborhoods
5. Foster distinctive, attractive communities with a strong sense of place
6. Preserve open space, farmland, natural beauty, and critical environmental areas
7. Strengthen and direct development towards existing communities
8. Provide a variety of transportation choices
9. Make development decisions predictable, fair, and cost effective
10. Encourage community and stakeholder collaboration in development decisions

Doing more good than evil



- SMART

- Successful: renders the land fit for use
- Measured: be able to prove it
- Appropriate: don't sweat the small stuff
- Respectful: your perspective is not the only one
- Temporary: life use is a cycle; what next?



An aerial photograph of an industrial or urban area. In the foreground, there are several large, multi-story buildings with flat roofs. In the background, several tall smokestacks are visible, emitting thick plumes of white smoke that rise into the sky. The overall scene suggests a complex of industrial or manufacturing facilities.

The argument for risk based contaminated land management is still going on

I believe it

- is a battle for smart contaminated land management
- is an essential component of sustainable brownfield regeneration
- requires us all to engage in ongoing learning
- is a prerequisite to emerging from the present credit crunch



“The best solution is remediation that eliminates and/or controls unacceptable risks in a safe and timely manner, and which maximises the overall environmental, social and economic benefits of the remediation work. We call this sustainable remediation”

SURF-UK, 2010

We call this sustainable remediation...

The best solution is remediation that
eliminates and/or controls unacceptable risks

what

in a safe

how

and timely manner,

when

and which maximises the overall environmental, social and economic

benefits

how

of the remediation work.

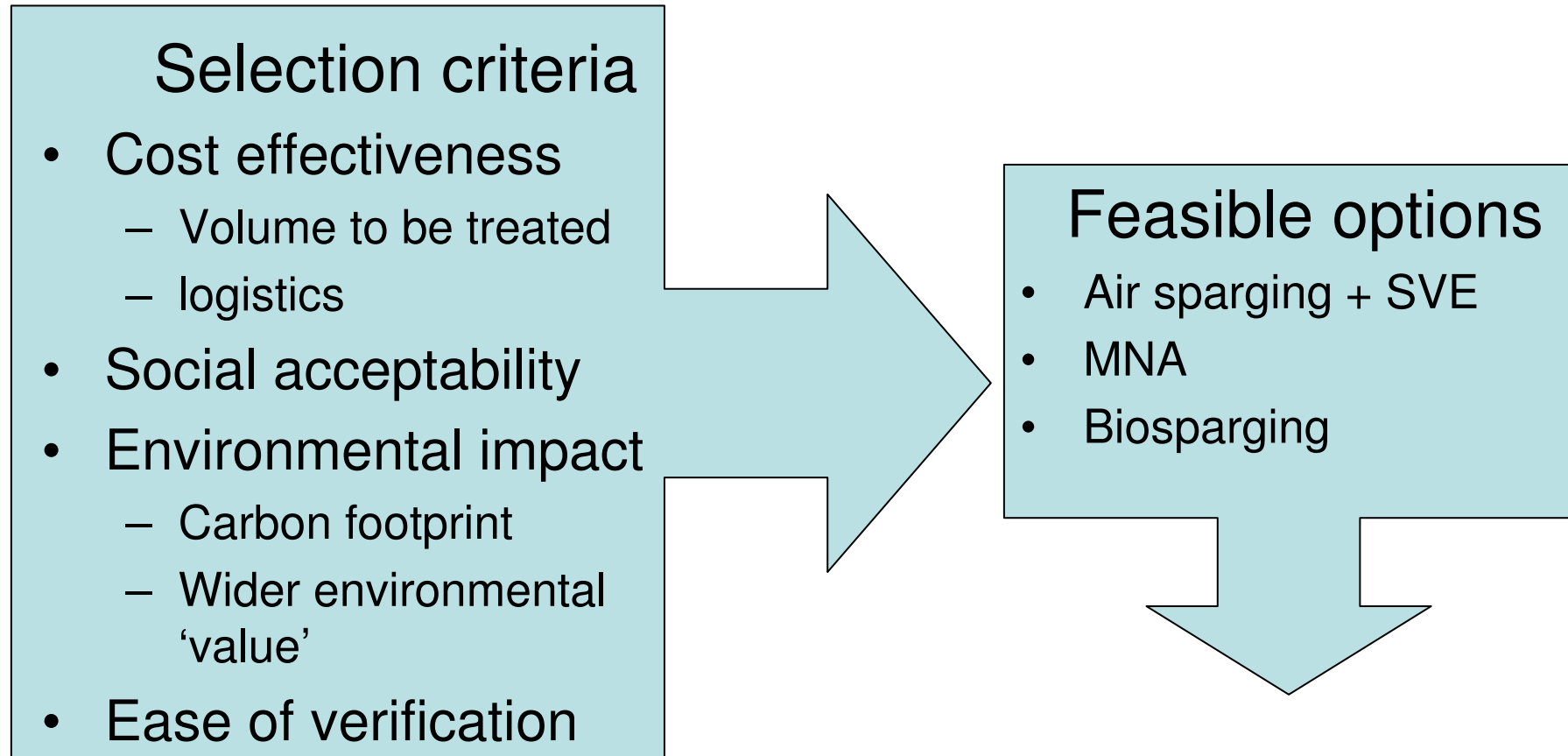


What is a sustainable remediation strategy?

A simple example

- A gasoline (petrol) spill has resulted in a BTEX plume in groundwater in a sand & gravel aquifer. The water table is at 3m (ca 10ft) below ground level; free product has been recovered.

Remediation Options Appraisal – Technical Feasibility

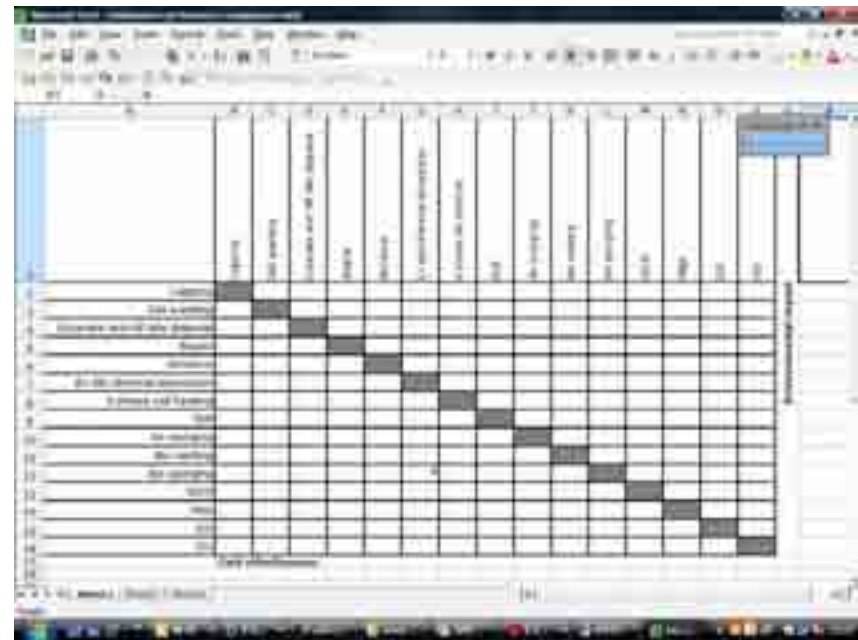


So, which one is sustainable?
Or at least the most sustainable?



Pairwise comparison

- Compare all technically feasible shortlisted remedial options against each other for all relevant dimensions
- I am currently working on ...
 - Social acceptability
 - Cost effectiveness
 - Environmental impact
 - Ease of verification



The screenshot shows a software interface for pairwise comparison. It features a grid with multiple rows and columns. The diagonal cells are shaded grey, indicating that each option is compared against itself. The off-diagonal cells are white, representing the pairwise comparisons between different options. The interface includes a menu bar at the top and a status bar at the bottom.

Pairwise comparison of technically feasible remedial options

- Construct matrix of technically feasible remedial options
- Copy the matrix
- Matrix is asymmetrical: different dimensions are compared in each half;
- ‘Play’ each option against all the others for each of the 4 dimensions
- Decide for each dimension whether option *A* is *better* or *worse* than option *B*
- Calculate Consistency Ratio (CR)
- If $CR < 0.10$
- If $CR > 0.10$ then the scores are not consistent

Shallow BTEX dissolved phase plume in sand and gravel aquifer

	A	B	C
A		A is 1/3 as acceptable as B	A is 1/9 as acceptable as C
B	B is 3* cost effective than A		B is 1/3 as acceptable as C
C	C is 9* cost effective than A	C is 3* cost effective than B	

Social acceptability

Cost effectiveness

illustration
scores can only be
1/9, 1/7, 1/5, 1/3, 1, 3, 5, 7, 9

	A	B	C	D	E	F	G	H	I	J
4										
5										
6		Air sparging	Bio sparging	MNA				0		
7	Air sparging		"1/5	"1/5	social acceptability					
8	Bio sparging	3		"1/3						
9	MNA	7	5							
10		cost effectiveness								
11										
12										
13										
14		Air sparging	Bio sparging	MNA						
15	Air sparging		3	3	ease of verification					
16	Bio sparging	5		3						
17	MNA	7	5							
18		environmental impact								
19										
20										
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22										
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24										
25										
26										
27										

Results of a simulated scoring workshop with Masters delegates (from full time consultancy and regulatory backgrounds)

RESULTS

- **Cost effectiveness:** MNA, biosparge, air sparge
- **Social acceptability:** MNA, biosparge, air sparge
- **Environmental impact:** MNA, biosparge, air sparge
- **Ease of verification:** Air sparge, biosparge, MNA
- So the 'winner' is MNA in *this particular* case with *these 'stakeholders'*

Remediation is not the only *fruit*

- Remediation
- Reclamation
- Reuse
- Refurbishment
- Redevelopment
- Regeneration
- Revitalisation
- Reinvention

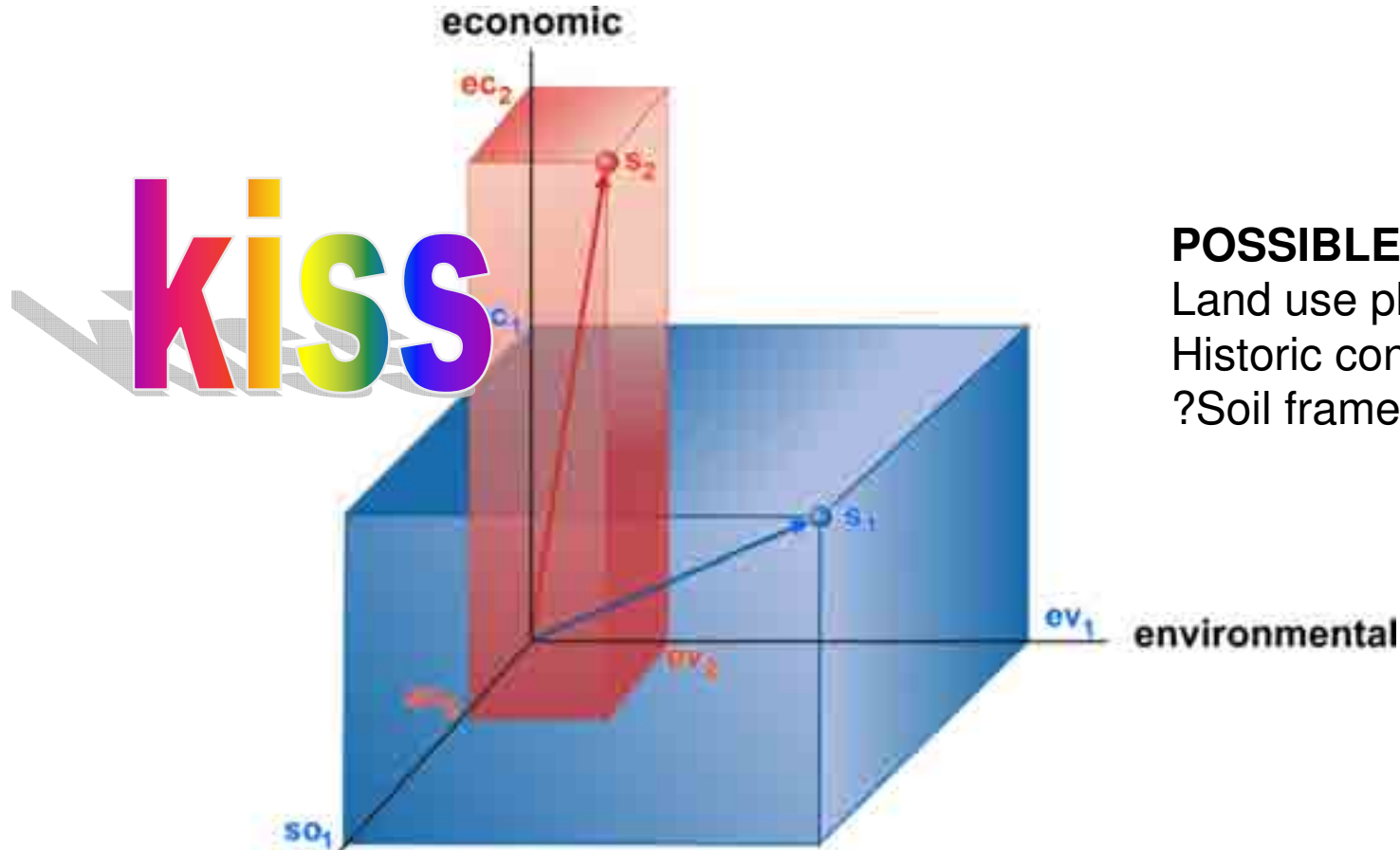
Smart regeneration

- Integrated approach to physical construction and socio-economic creation
- Remediation creates opportunity
 - Pumped water; excavated soil
- Previous use
 - Reuse foundations, infrastructure, buildings
- Demolition as quarrying
 - Reuse construction materials, fixtures

Embedding remediation into regeneration

“The best *site specific* solution is remediation that eliminates and/or controls unacceptable risks in an *integrated*, safe and timely manner, and which maximises the overall environmental, social and economic benefits of the *regeneration* work. We call this *smart regeneration*...”

- (After SURF-UK, 2010)

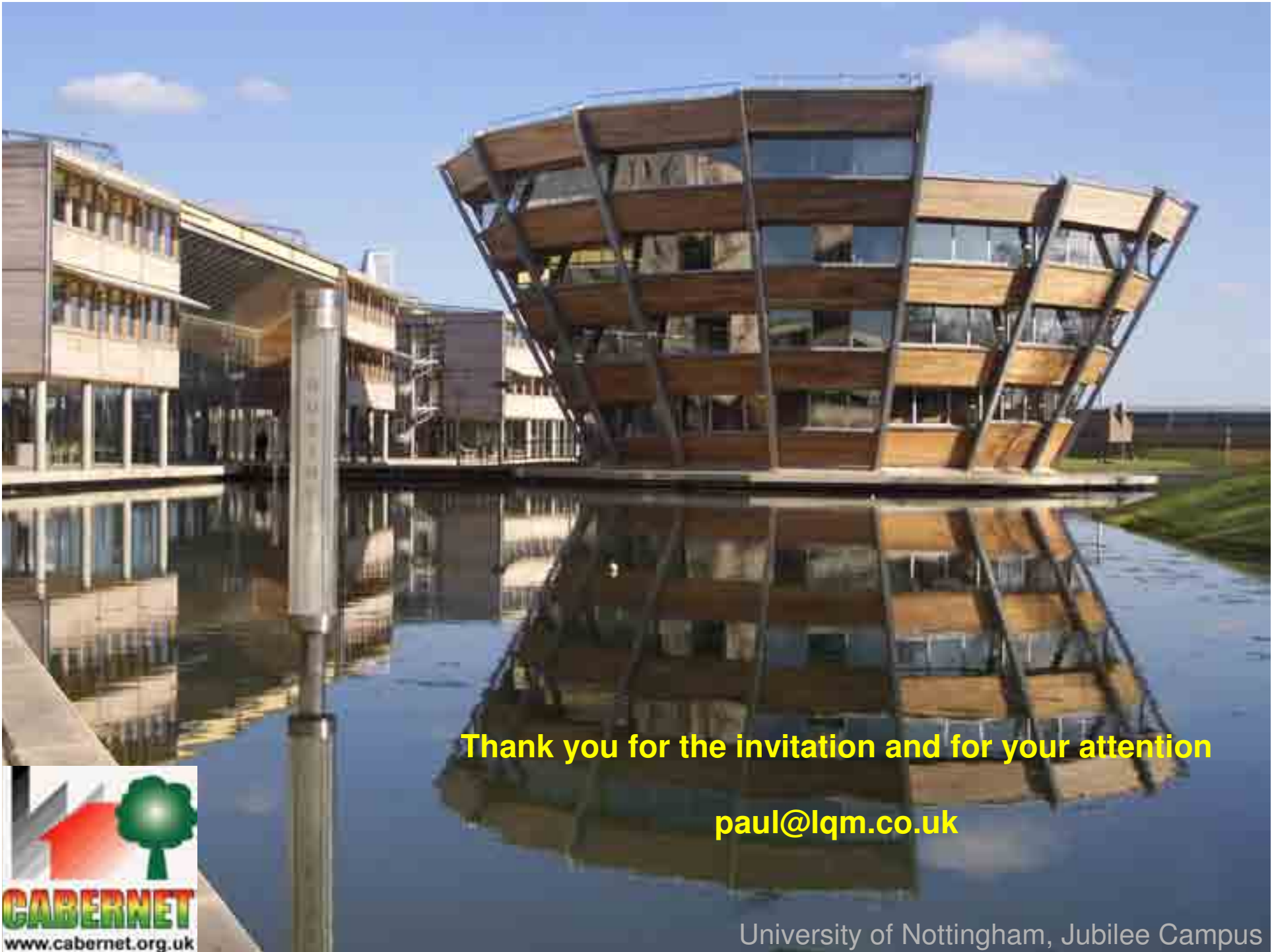


POSSIBLE POLICY HOMES

Land use planning permitting
Historic contaminated land
?Soil framework directive

POSSIBLE MECHANISMS

Constitutions
Primary legislation
Secondary legislation
Standards
Codes of practice



Thank you for the invitation and for your attention

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University of Nottingham, Jubilee Campus

Masters in contaminated land management by 100% Distance Learning

Nottingham Masters in Contaminated Land Management:
we've taken it to a completely distance learning mode of delivery



The screenshot shows the program page for the MRes in Contaminated Land Management at the University of Nottingham. It features a purple header with the university logo and the text 'School of Geography' and 'MRes in Contaminated Land Management'. Below this is a central image of a 'CONTAMINATED LAND' warning sign. The main body of the page contains text describing the program as a 'A two year part time industrial funded course aimed at UK, European and International companies, institutions and individuals'. There are two columns of text providing details about the program, including a list of modules and a list of optional activities. The URL 'www.nottingham.ac.uk/geo/mres' is visible at the bottom.

Gains skills and knowledge while you work

◆ Modules

- ◆ Site investigation
- ◆ Risk assessment
- ◆ Remediation strategies
- ◆ Sustainable urban regeneration

◆ Mode of delivery

- ◆ Searchable pre-recorded lectures: learn when you can
- ◆ Interactive web-based workshops, tutorials and seminars

◆ Optional (no extra cost)

- ◆ Week Study tour – USA (fees cover flights & accom.)
- ◆ Two week-long study periods at Nottingham