



British
Geological Survey

NATURAL ENVIRONMENT RESEARCH COUNCIL

Gateway to the Earth

BGS Geoscience in the Redevelopment of UK Brownfields: Knowledge Exchange and Innovation

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19th April 2018

SiLC Annual Forum



UK Research
and Innovation

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@BGSBrownfields

Who we are

UK Research and Innovation



Arts & Humanities
Research Council

EPSRC

Engineering and Physical Sciences
Research Council

E·S·R·C
ECONOMIC
& SOCIAL
RESEARCH
COUNCIL

Innovate UK



Research
England



BBSRC
bioscience for the future

MRC | Medical
Research
Council

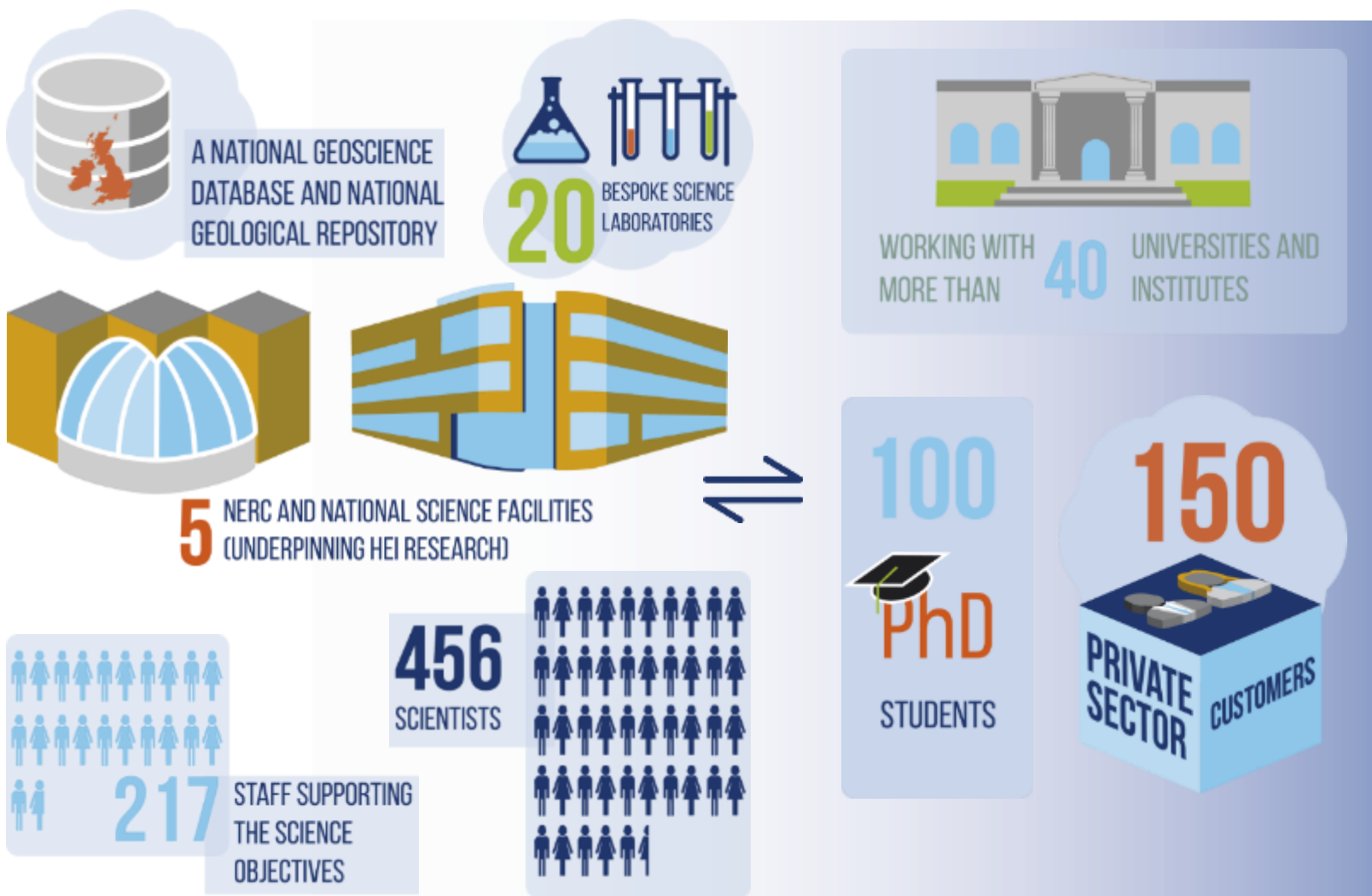


Science & Technology
Facilities Council

NERC
SCIENCE OF THE
ENVIRONMENT



Who we are



Who we are



What we do

SCIENCE PROGRAMMES



What we do

SCIENCE PROGRAMMES



**SCIENCE &
TECHNOLOGY
TRANSFER**



What we do

SCIENCE PROGRAMMES



OPERATIONS



SCIENCE & TECHNOLOGY TRANSFER



What we do

SCIENCE
PROGRAMMES

CROSS-
CUTTING
SCIENCE



OPERATIONS



SCIENCE &
TECHNOLOGY
TRANSFER



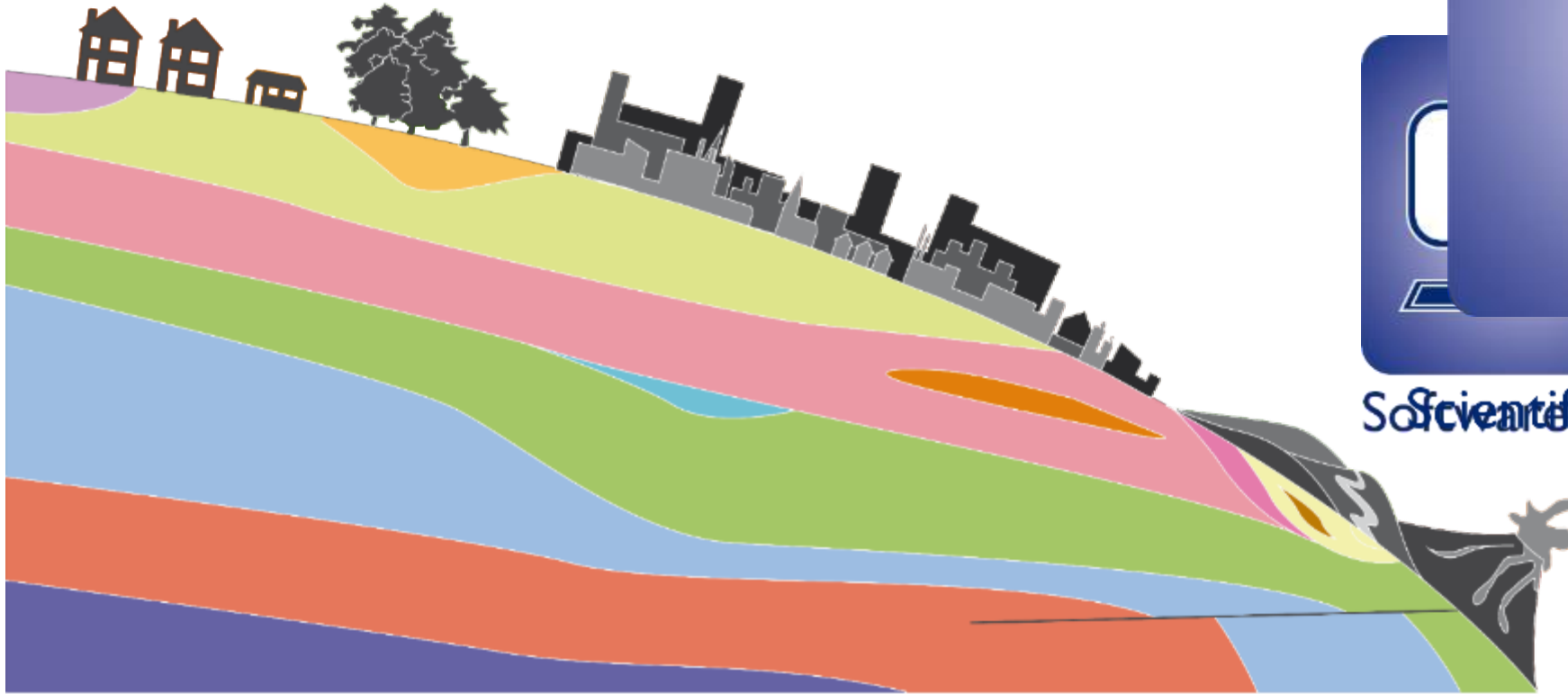
What we do





What is BGS geoscience?

Knowledge and understanding of the Earth's subsurface derived through the application of the scientific method



Data

Products



Scientific knowledge
Software Technology

Geology and hydrogeology



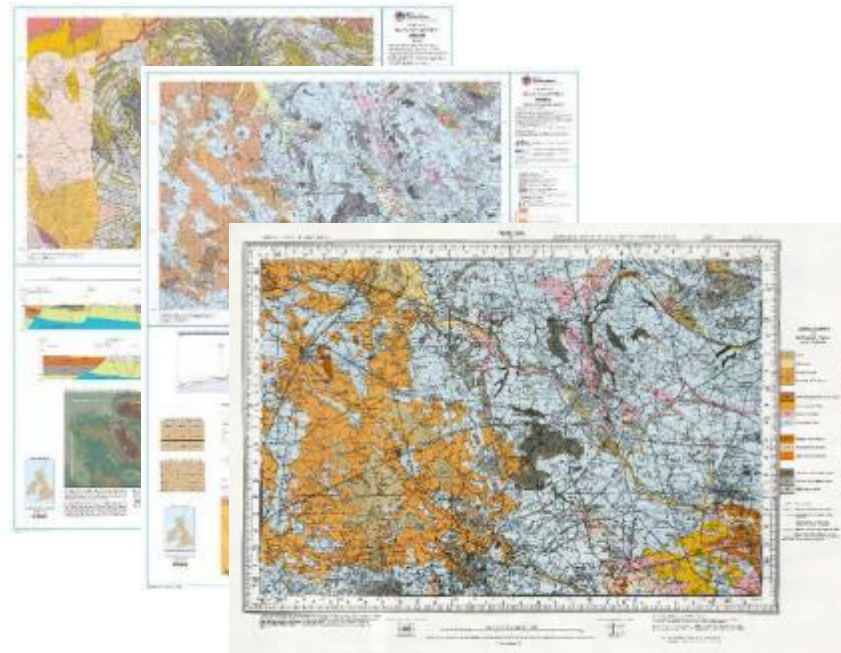
Further details

- Age range
- Lithological description
- Definition of upper boundary
- Definition of lower boundary
- Geographical limits
- Parent unit
- Previous names
- Stratotypes
- References

Geology and hydrogeology



Geological data




Geology and hydrogeology



Geological data



Maps

 Golden Associates		Project: Site Investigation		Borehole ID: GA06/22	
Site: Webster Road, Knowsley Industrial Estate		Client: Restkill Initial Supplies		Project No: 0558302	
Equipment & Methods: Terraz 2000		Drilled by: CC Ground Investigations		Ground Level: 38.22	
		Date started: 07/02/2019		Co-ordinates: 1136.78 5136.16	
		Logged by: CLB			
Site Investigation Report					
		STRAKTA RECORD			

Geology and hydrogeology



Geological data



Maps



Online viewers



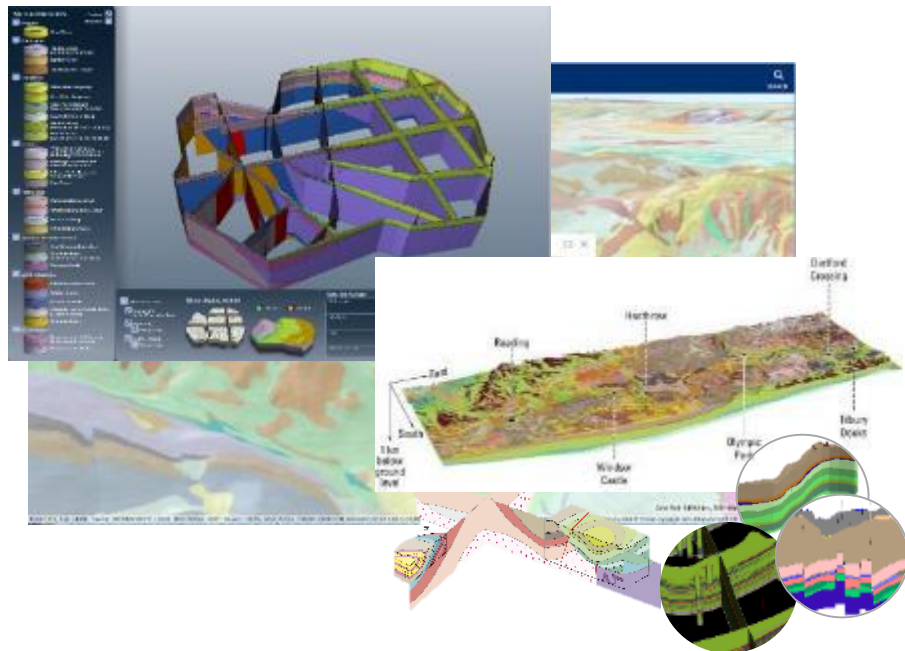
Maps



Memoirs



Boreholes



Geology and hydrogeology



Geological data



Maps



Online viewers



Maps
Memoirs
Boreholes



3D geology

Superficial deposits

Superficial thickness

Aquifer designation

Depth to groundwater

Groundwater vulnerability



Geology and hydrogeology



Geological data



Maps



Online viewers



Maps



Memoirs



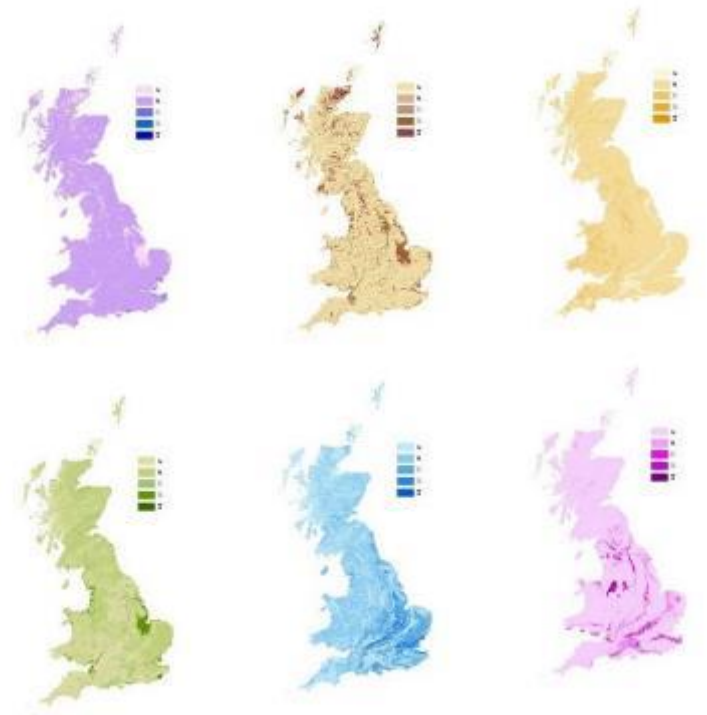
Boreholes



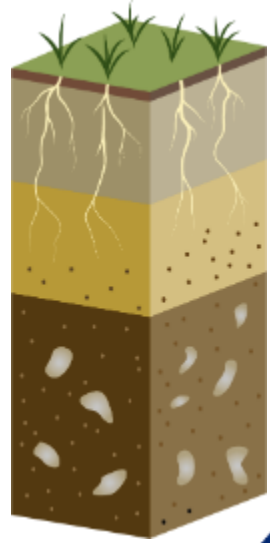
3D geology



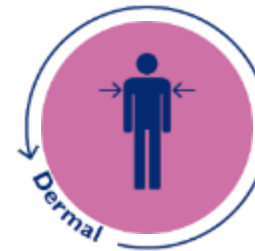
Derived data



Geochemistry



Routes



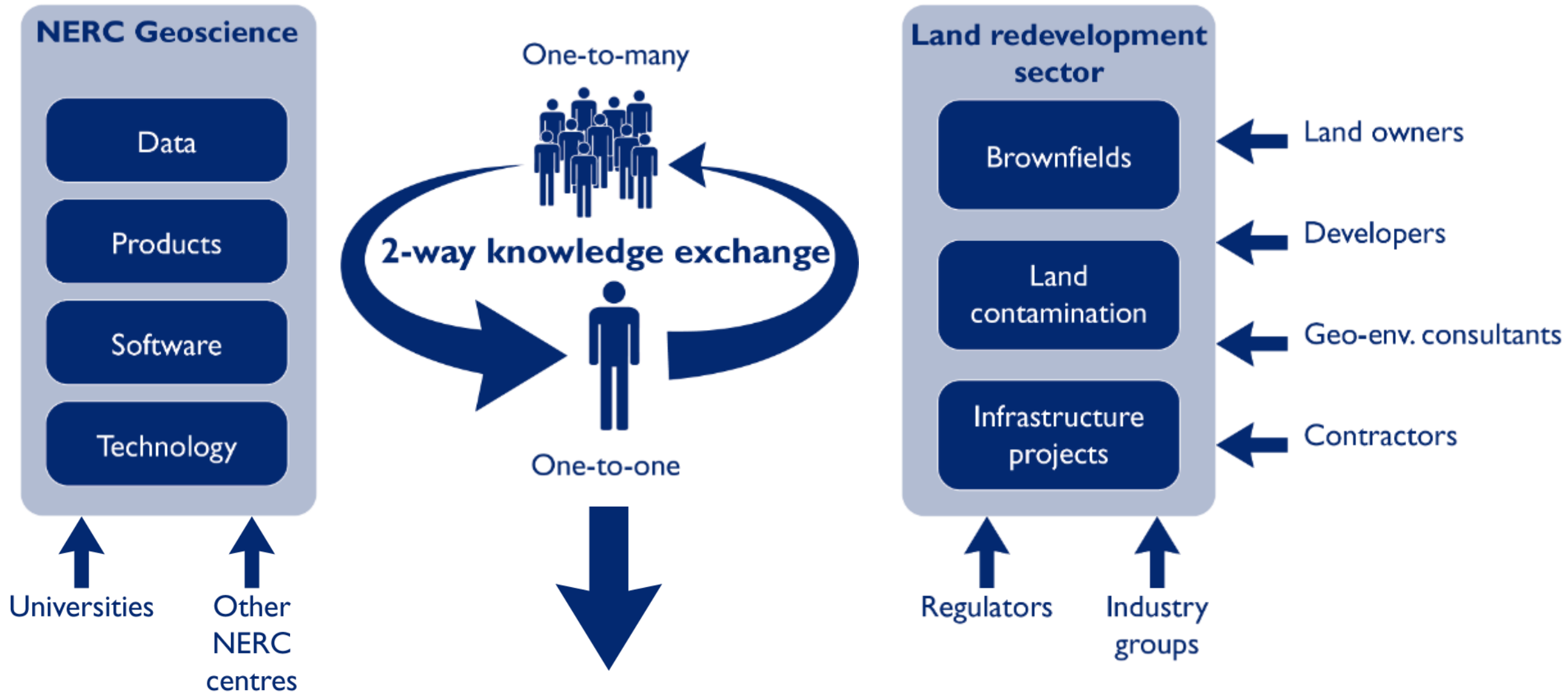
What factors affect the release of these chemicals?

What concentrations of potentially harmful elements are present in soil?

What is the bioaccessibility of these chemicals?

What is the normal background concentration of selected soil chemicals?

NERC Knowledge Exchange Fellowship

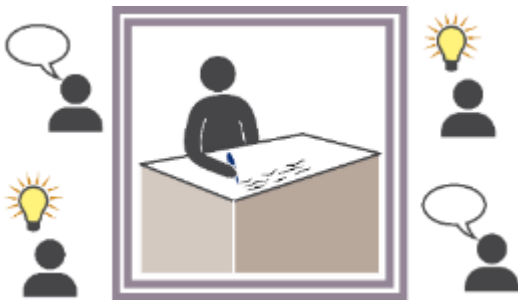


Knowledge exchange

Problems / key facts



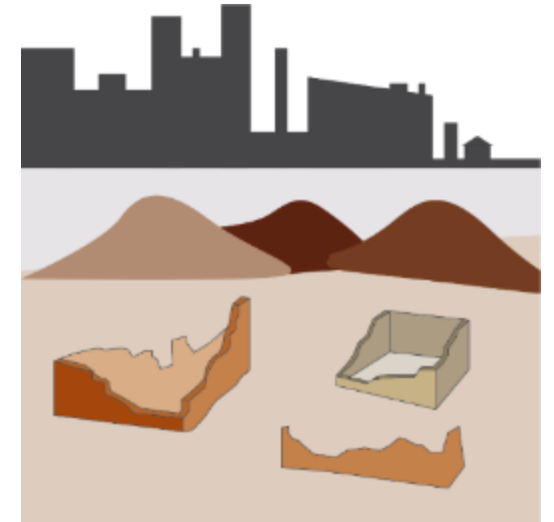
Lots of science we feel is under utilised



Examples of science designed without end-user input



Would like to see more benefits come from our science



UK brownfields rising back up the agenda



End-user led innovation is the right new way to do things

Knowledge exchange

Outcomes



- New opportunities to adapt and improve
- Behavioural change in BGS
- Improved utilisation of our science
- Measurable changes in decision making

Knowledge exchange

Actions / project plan



Workshops



Prioritise opportunities



Collaborative projects



Measure current
impact



Do work



Measure impact



Report as case studies
(internal and external)



Co-develop
Co-design
Co-deliver

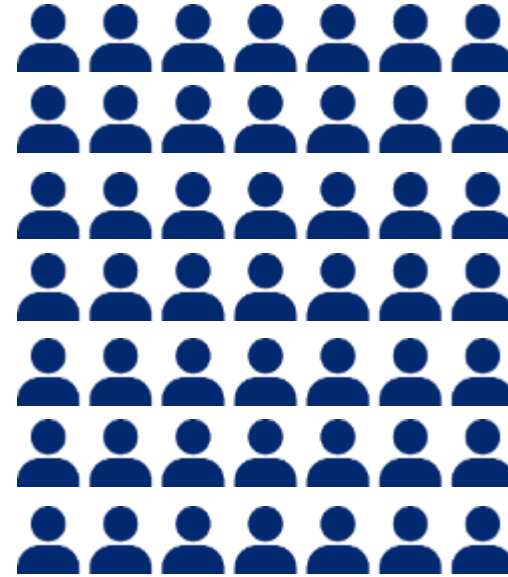
Workshops



Response rate to invitations very good



Inspired by new mandate to make improvements to existing offering and develop new things

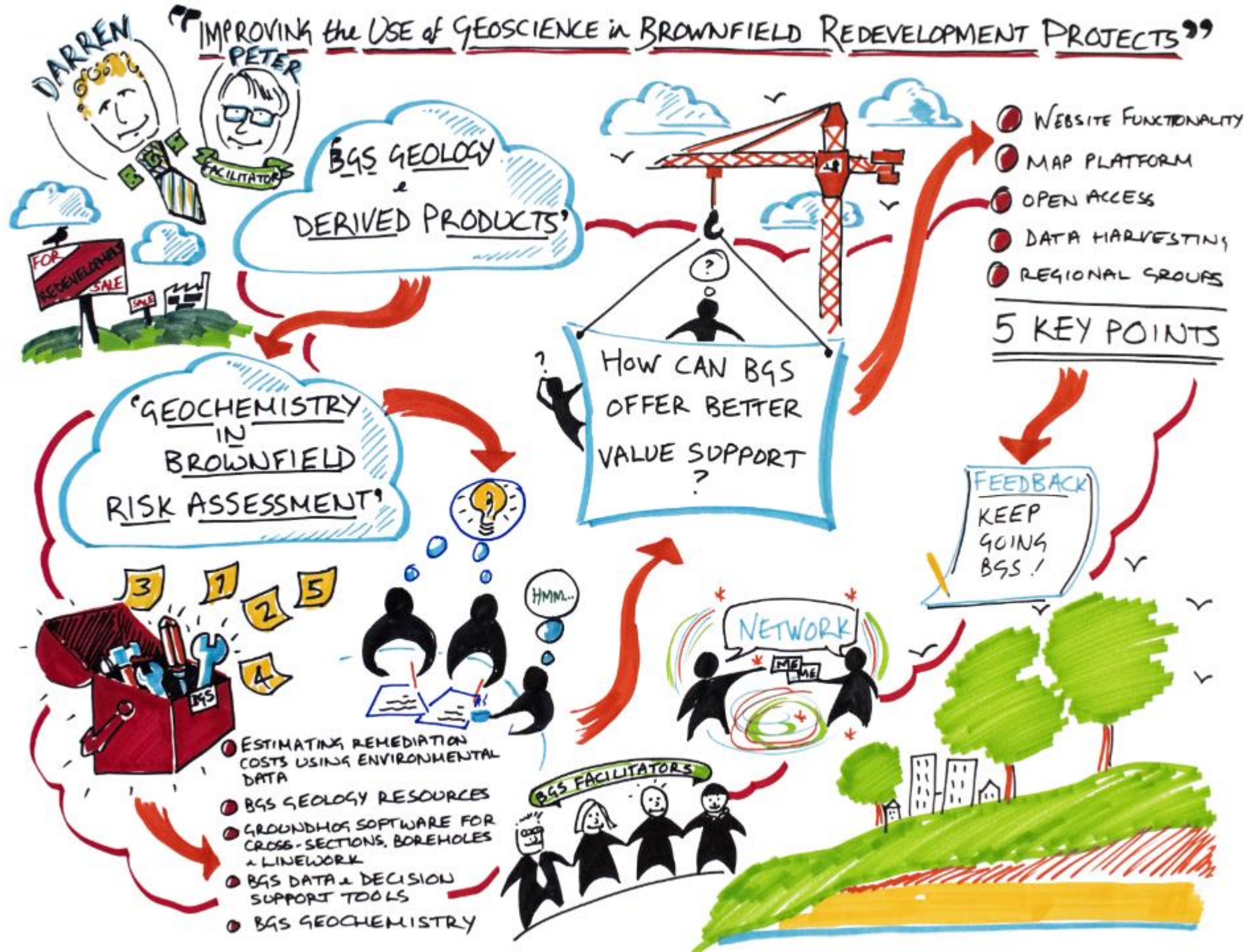


70 participants involved



Genuine enthusiasm from those involved, both BGS staff and industry

"IMPROVING the USE of GEOSCIENCE in BROWNFIELD REDEVELOPMENT PROJECTS"



Outputs

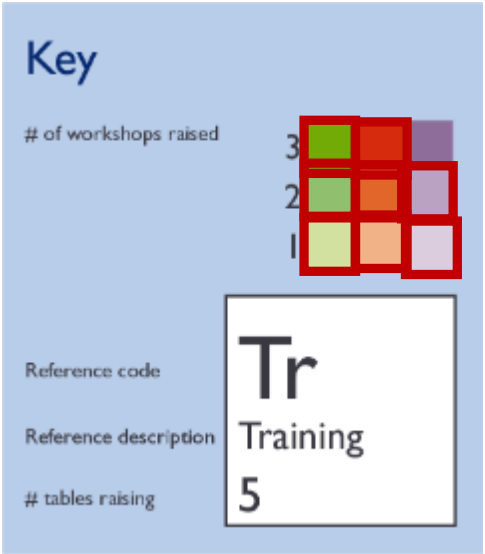
BGS Geoscience and Brownfield Workshops

Industry recommendations arising from table discussions at workshops:

- London
- Birmingham
- Leeds

Cross cutting themes
Commercial awareness | Marketing | Data ingestion | Payments

Awareness			Accessibility			Innovation			
Tr Training 5	We Webinars 4	Co Conferences 3	W Website 10	Wa WebApps 1	Pu Purchasing 2	Gw Groundwater data 2	Ra Radon 1	Gr Ground risk tool 1	Ag Artificial ground 10
Tu Tutorials 1	Cm Communications 5	Cs Case studies 2	D Data portal 8	3P 3rd party data 2	Bm Business models 3	U UXO tool 1	Di 1:10k digital maps 1	N NBCs for Scotland 1	La Landfill 1
						Un Uncertainty 1	Fi Field research 1	3D GroundHog & BIM 2	Le Lexicon 1



Feedback

I am very encouraged to find that BGS are so keen to make their data/services work for their audience. It was refreshing to find a genuine quest to understand what each stakeholder needs/aspires to. So often these kind of event turn out to be marketing in stealth!

There is a great and rich resource here, both of data and software

Good industry event for understanding what BGS does and the resources available

It's been great that BGS have been able to facilitate the discussions we've been involved in today and hope that it will change and influence the way the industry undertakes its objectives

Excellent two way exchange of information

I was expecting a sales pitch and found it refreshing that the session was a genuine feedback / interactive session

Interesting and enjoyable day. I learnt some useful tips about accessing BGS data

Next steps



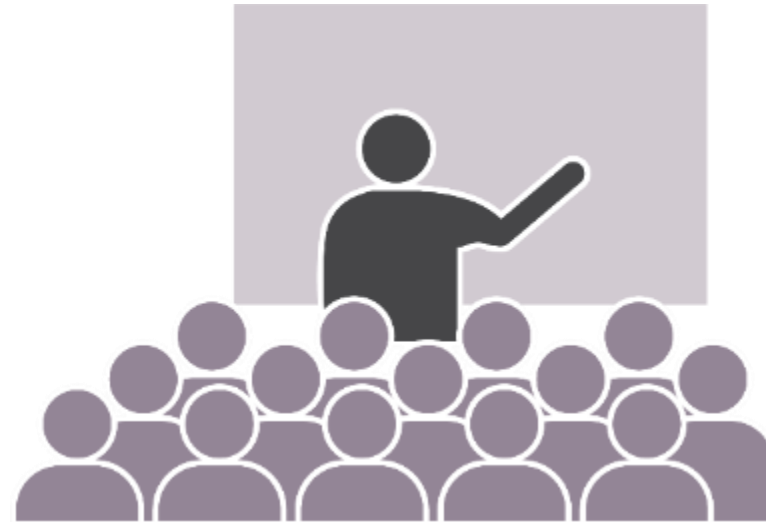
Awareness – training



Access – data portal



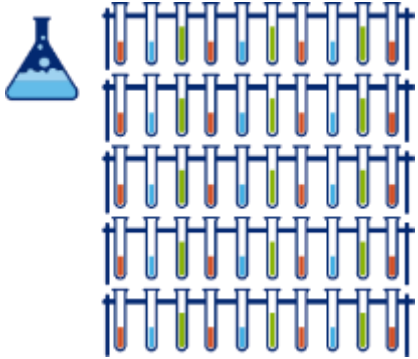
Products – remediation cost calculator



Dissemination

Innovation

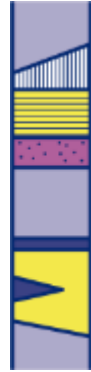
Solid phase aquifer properties



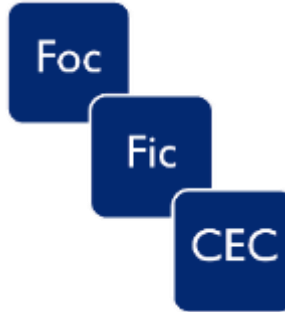
Geochemical
analysis of over
500 samples



Conducted for use in
groundwater risk assessment



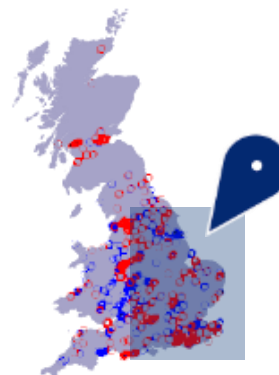
Over 60 formations
across the major
lithostratigraphical
groups



elemental analysis
and a range of other
parameters



Joint EA and
BGS project



○ Below median
○ Above median

Opportunities



Open report to be published soon...



Solid samples still available for further analysis



Additional samples been collected since

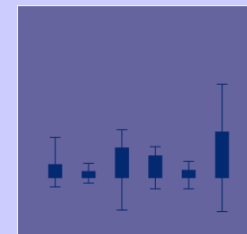


Make the database publicly available

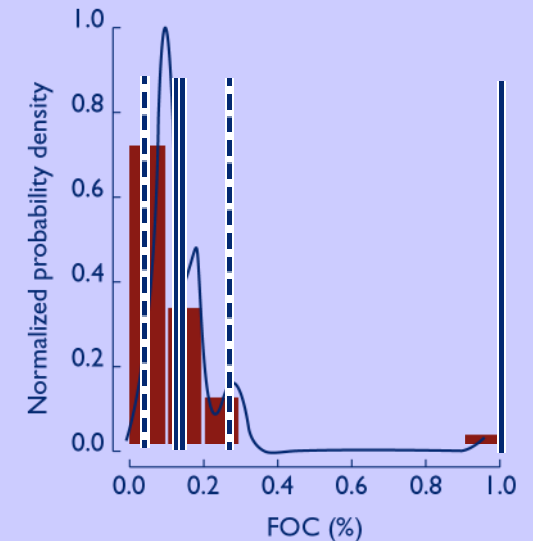


Add data from industry

Foc for Cretaceous (Chalk)



n = 61

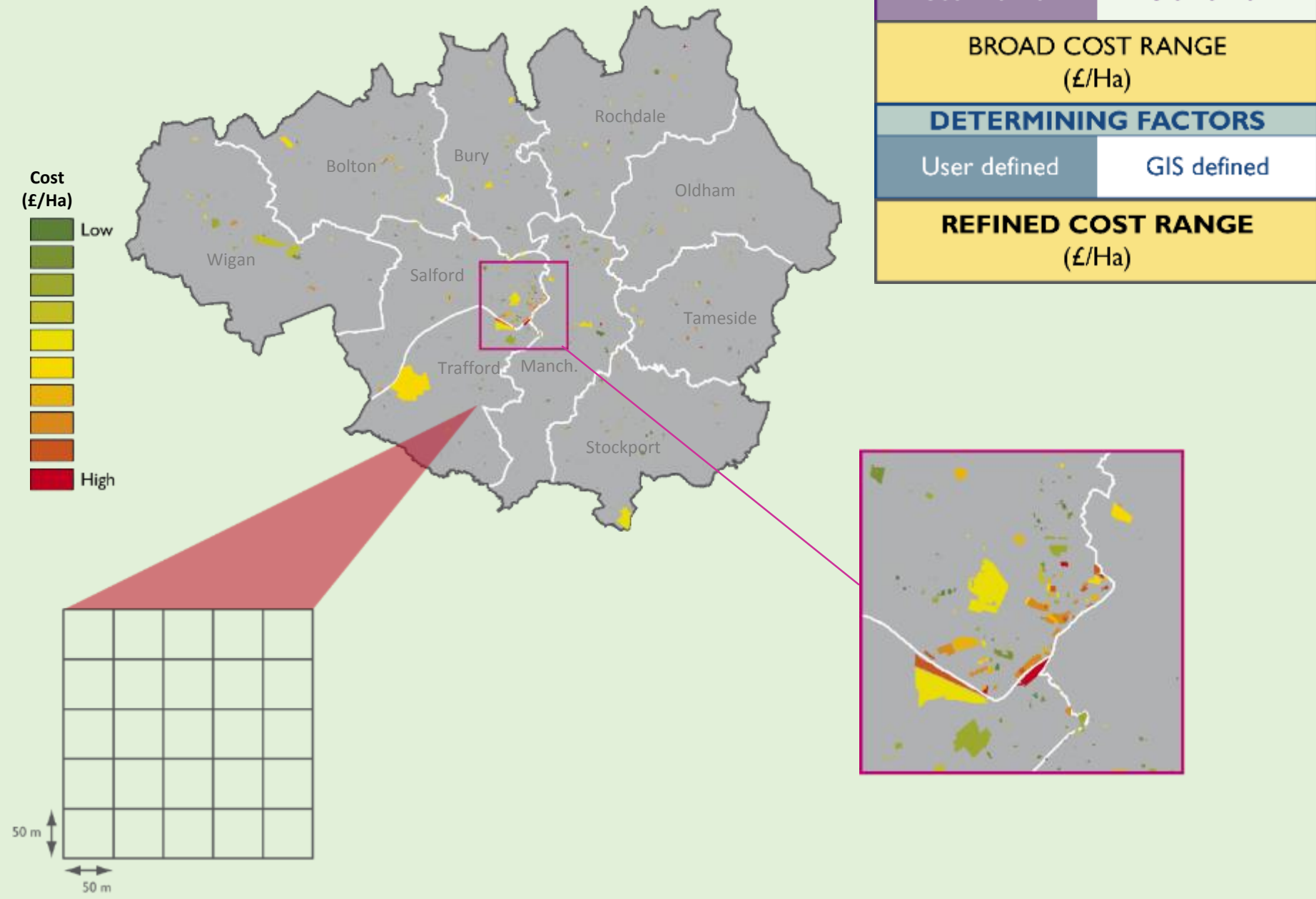


Innovation

Remediation Cost Calculator



- GIS prototype for estimating remediation cost for brownfields in Greater Manchester
- Based on historical and proposed landuse
- Requires multiple environmental datasets
- Map output used to prioritise ground risk for redevelopment projects



Innovation

GroundHog Desktop



Associations created

View Error Messages

Conclusions

- BGS has a great geoscience offering
- A lot is being used
- There are improvements to made:



Awareness



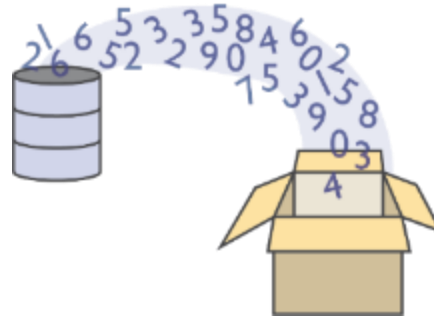
Access



Innovation



Commercial awareness



Ingestion of data



Business models

We have a plan, lets work together to deliver it



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Thank-you

Do you have any questions?



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