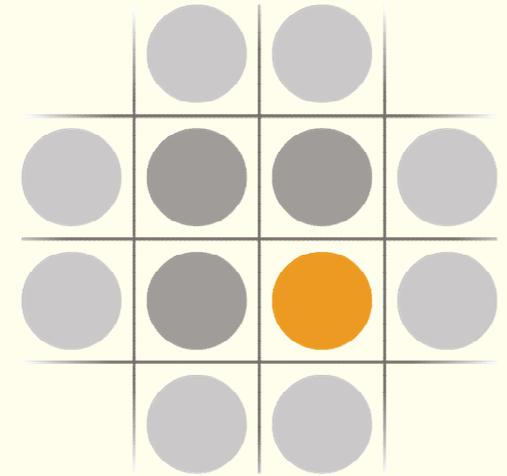


SoBRA

The Society of Brownfield Risk Assessment



The Climate Emergency: Practical Considerations in Brownfield Risk Assessment

22 June 2022, 09.30-16.15

The Priory Rooms, Birmingham and online

Timing	Session
9.30-9.50	Registration, tea & coffee
9.50-10.00	Introduction, Morning Chair – Simon Cole (SoBRA Chair)
10.00-12.30	Morning Session
10.00-10.20	<ul style="list-style-type: none"> The Climate Emergency: overview - Danielle King (RSK)
10.20-10.40	<ul style="list-style-type: none"> Climate change, what does that mean for Land Condition Assessment? – Jonathan Atkinson (Environment Agency)
10.40-11.00	<ul style="list-style-type: none"> Climate change in Controlled Waters risk assessment – James Wilson (Atkins)
11.00-11.20	<ul style="list-style-type: none"> Carbon Accounting – Adrian Johnson (Stantec)
11.20-11.40	<i>Morning tea and coffee break</i>
11.40-12.00	<ul style="list-style-type: none"> Flooding, drought and groundwater modelling: Lessons from other disciplines – Rachel Dewhurst (Stantec)
12.00-12.20	<ul style="list-style-type: none"> Climate change and sustainability in ground gas risk assessment and mitigation design – Amy Juden (EPG)
12.20-12.40	<ul style="list-style-type: none"> Climate change influences on vapour intrusion risk assessment – John Andrews (EPG)
12.40-13.00	<ul style="list-style-type: none"> NSZD in a climate emergency – James Rayner (Geosyntec)
13.00-14.00	Lunch & networking
14.00-16.00	Afternoon Workshops (Parallel Sessions)
	Workshop 1 – Groundwater modelling, flood modelling application
	Workshop 2 – Vapour and ground gas risk assessment
	Workshop 3 – Controlled Waters risk assessment
	Workshop 4 – Non-aqueous phase liquids and natural source zone depletion
	Workshop 5 – Carbon Accounting
16.00-16.15	Closing Remarks – Simon Cole (SoBRA Chair)

Danielle King - RSK

Biography

Danielle is the Head of Climate Change Strategy and Decarbonisation at RSK Group. She specialises in climate change risk and impact assessment, as well as the development of sustainability strategy and policy at the RSK Centre for Sustainability Excellence in Singapore. In addition to this, Danielle is a board member of the Scottish Energy Forum and plays an active role in the climate change community in both Scotland and Singapore. Underpinning both roles is her keen interest in climate change and environmental, social and corporate governance (ESG) disclosure as well as the energy transition. Danielle holds a Masters of Laws in International Energy Law and Policy through which she completed her dissertation on behalf of the Scottish Environment Protection Agency (SEPA).



Climate Emergency Overview

- Why considering climate change is more important than ever
- What the science says is projected to happen
- What the key impacts will be in the UK (including geographic variations)
- How we approach climate change risk assessment
 - Methodology
 - Timescales and scenarios
 - Uncertainties

This can be summed up as follows:

The scale and severity of risks associated with a changing climate are becoming increasingly evident as society seeks to find new and innovative ways of adapting to these. With this in mind, Danielle will share an insight into the projected changes to the climate and their potential impact, as outlined in the latest IPCC Sixth Assessment Report. She will further discuss the findings of the Third UK Climate Change Risk Assessment, with reference to geographic variations and recommended adaptation measures before providing detail regarding the deliver of a climate change risk assessment (with reference to methodology, scenarios, time-horizons and uncertainties).

Jonathan Atkinson – Environment Agency

Biography

Jonathan is a technical specialist at the Environment Agency in a team of Groundwater and land contamination specialists. He has been involved at national technical specialist level on a number of projects related to soil remediation and waste management as a regulator.

Having spent most of his youth in places like Africa, Chile and Fiji, after his degree in Environmental Sciences at Plymouth and postgrad Diploma in Soil and Water Engineering at Silsoe, Jonathan continued his travels by doing Voluntary Service Overseas in Asia and Africa. He then worked in KCC Waste Disposal Dept, which evolved into the Waste Regulation Authority. He joined the Environment Agency when it was formed in 1996. He has worked on risk assessment of developed closed landfill sites, landfill engineering and environmental control enforcement on permitted sites, and a variety of contaminated land projects. He is a Council member of the Institution of Environmental Science and on steering groups for a number of soil related projects/reports with professional bodies and industry NGOs such as CLA:IRE, SOBRA and CIRIA.

Climate change, what does that mean for Land Condition Assessment?

Jonathan will cover current EA projects that are Climate Change related in the land quality community, any implications for permits and what collaboration is needed with industry to take things forwards.



James Wilson - Atkins

Biography

James is an environmental consultant with 16 years' experience working for contractors, consultancy and regulators. He has expertise in planning and project managing site assessments, contaminated land ground investigations, remedial design, and remedial action implementation. James has project experience for public and private sector clients that includes infrastructure, energy, brownfield redevelopment, environmental due diligence, petroleum retail, data centre operation, Local Authorities and Planning Authorities.

James is a member of the SoBRA Controlled Waters and Climate Change sub-group.



Considering climate change in controlled waters risk assessment

The SoBRA controlled waters and climate change sub-group was established to develop guidance to ensure climate change is considered and applied consistently across the industry. This presentation will launch the first sub-group report will include:

- Overview of the UK regulatory guidance with respect to land contamination and climate change
- Summary of why inclusion for effects of climate change in the assessed stages of land contamination controlled waters risk assessment is an important consideration
- How the effects of climate change should be incorporated in the hydrogeological conceptual site model (CSM) and whether additional Source-Pathway-Receptor (S-P-R) linkages may need to be considered
- Identifying model parameters that may be affected by climate change within controlled waters DQRA
- Signposting towards useful data sources

Adrian Johnson - Stantec

Biography

Adrian is a Chartered Civil Engineer and Technical Director at Stantec. Over his 29 years of professional experience, he's worked primarily in the water sector, specialising in sustainable development, climate change and carbon management.

Adrian has supported various water company delivery programmes and led consultancy and research commissions on topics ranging from carbon accounting and renewable energy appraisal to natural capital and climate change resilience. He is experienced in developing and implementing plans, governance processes and tools in these areas. For example, Adrian worked with Thames Water to deploy a programme-wide strategy for carbon management, as well as to identify priorities for flood resilience and climate change adaptation. He recently assisted Southern Water to develop its net zero plan and climate change risk assessment. Other clients include Scottish Water, Yorkshire Water, South West Water and Irish Water. Adrian developed UKWIR's whole life carbon guidelines and chairs the Technical Advisory Panel for PAS 2080: Carbon Management in Infrastructure.

Adrian is a Fellow of the ICE and a Member of CIWEM and of the UK's Green Construction Board Infrastructure Working Group.

Carbon accounting: insights from its practice in the UK water industry

This presentation will use the case of the UK water industry to discuss the scopes, boundaries and issues arising for the quantification and reporting of greenhouse gas emissions in the light of public commitments made to achieve 'Net Zero'. Latest thinking in assessing operational, capital and whole life carbon emissions will be discussed together with their relevance to the management of brownfield sites. The presentation will consider some of the technical challenges of converging on a standard carbon accounting approach.



Rachel Dewhurst - Stantec

Biography

Experienced Principal Hydrogeologist with a demonstrated history of working in the civil engineering industry. Skilled in Chemistry, Geology, Groundwater Modeling, Remediation, and Environmental Engineering. Strong research professional with a PhD focused in Geology from University of Bristol.

Rachel is currently serving as Treasurer on the SoBRA Executive Committee.



Flooding, drought and groundwater modelling: Lessons from other disciplines

When assessing climate change in water security, water supply and infrastructure projects, changes in infiltration, recharge and flooding are essential components to future proofing supply. Fluvial, pluvial and groundwater flooding represent one end of the spectrum while increases in temperature, vegetation growth, irrigation needs, and rainfall pattern erode “normal” picture of rainfall recharge resulting in drought at the other end. This presentation will consider some of the ways that climate change predictions can be implemented in relatively simple models, and the impacts of those on the brownfield risk assessment process.

Amy Juden – Environmental Protection Group

Biography

Amy is an Associate at Environmental Protection Group where she specialises in ground gas risk assessment. She is a Chartered Geologist and is enthusiastic about providing efficient and innovative risk assessment and remediation solutions for complex contamination problems.

Amy was awarded the Best Young Brownfield Professional at the 2019 Brownfield Briefing Awards, is a member of the SoBRA working group for quantitative human health risk assessment for asbestos in soils and serves as Treasurer of the Geological Society Contaminated Land Group. She has been working in the geoenvironmental industry since 2012.



Climate change and sustainability in ground gas risk assessment and mitigation design

Future effects due to climate change should be considered during ground gas risk assessments. At some, but not all, sites climate change may affect future risk from ground gas emissions. This talk will explore the issue of assessing climate change effects on ground gas risk drawing on recently published sources, and an EPG study into the effects of flooding on gas migration from landfill sites.

Consideration will be given to how climate change should look at site specific conditions, rather than use of generic statements or hypothetical events that are unlikely to affect a site.

The talk will also look at sustainability issues, overly conservative assessment and specification of unnecessary protection measures with reference to a case study in assessing climate change effects.

Dr. John Andrews – Environmental Protection Group

Biography

John is an Associate at EPG Ltd (part of the STRI Group) specialising in vapour intrusion and ground gas risk assessment, with over 21 years contaminated land consultancy and 9 years organic chemistry research experience. He is accredited with SOBRA for vapour intrusion and registered for permanent gases, human health and controlled waters and is currently a member of the SOBRA sub-group for the development of soil vapour GAC. John was active in both the steering group for the development of CIRIA C682:2007 The VOCs Handbook and the committee for BS10176:2020 Taking soil samples for determination of volatile organic compounds.



The climate emergency: implications for vapour intrusion risk and assessment

Overuse of fossil fuels has created the global climate emergency. Inhalation exposure risks to inhabitants of individual buildings may arise due to the presence of hydrocarbon and chlorinated VOC in the sub-surface.

The presentation will discuss how predicted changes to our natural environment may affect vapour intrusion risk. Will changes in our built environment designed to combat climate heating exacerbate or mitigate vapour intrusion risk?

These discussions will probe the mechanisms of vapour intrusion and the changes that might be required to assess vapour intrusion risk. With the spotlight firmly on sustainability how might our approach to vapour intrusion investigation and risk assessment minimise our carbon impact?

James Rayner - Geosyntec

Biography

James Rayner is a contaminant hydrogeologist specializing in the development of advanced conceptual site models and evaluation of fate and transport, including pioneering data analysis and modelling techniques to assess effectiveness of natural attenuation to manage complex environmental liabilities. James has contributed to several research and industry collaboration initiatives with the US Department of Defense Strategic Environmental Research and Development Program (SERDP), Contaminated Land: Applications in Real Environments (CL:AIRE), Society for Brownfield Risk Assessment (SOBRA) and Network for Industrially Coordinated Sustainable Land Management in Europe (NICOLE). James has published several industry guidance documents, including CL:AIRE sponsored guidance regarding non-aqueous phase liquids (NAPL) and natural attenuation.



How might NSZD respond to climate change?

Naturally occurring biodegradation, vaporisation, volatilisation and dissolution are key processes controlling natural source zone depletion (NSZD) rates for petroleum hydrocarbon light non-aqueous phase liquids (LNAPL). NSZD is a sustainable risk-management option for LNAPL that uses environmental monitoring to demonstrate receptors are protected and source depletion rates will achieve remediation objectives over periods of years to decades. NSZD rates are susceptible to multiple environmental factors and effects of climate change may therefore be significant to long-term NSZD performance. While existing research has focused primarily upon characterising NSZD processes and monitoring technology development, the estimation of long-term NSZD behaviour represents a gap that only a few recent studies have begun to address. The ability to forecast NSZD performance is required to ensure risks will be effectively managed in the future, including appraising potentially adverse effects of changes in subsurface dynamics. Potential stressors on NSZD due to climate change will be presented, alongside emerging methods to predict long-term performance and uncertainties required for decision-making at LNAPL impacted sites.