CL:AIRE and its Activities

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CL:AIRE

Who is CL:AIRE?

- CL:AIRE is a not for profit organisation that works within the broad environmental and construction sectors promoting “Sustainable Land Reuse”
- Established in 1999
- Works with Industry, Government, Regulators and Academia on collaborative projects within the UK & internationally
- Focussing on improving efficiency and raising industry standards
- Knowledge sharing organisation
- Independent technical advisory group review all CL:AIRE deliverables
- Develop and publish guidance (CL:AIRE Library (claire.co.uk))
- Large library of resources published by others (www.claire.co.uk/wall)
- Popular website www.claire.co.uk

CL:AIRE

CL:AIRE Information Portal

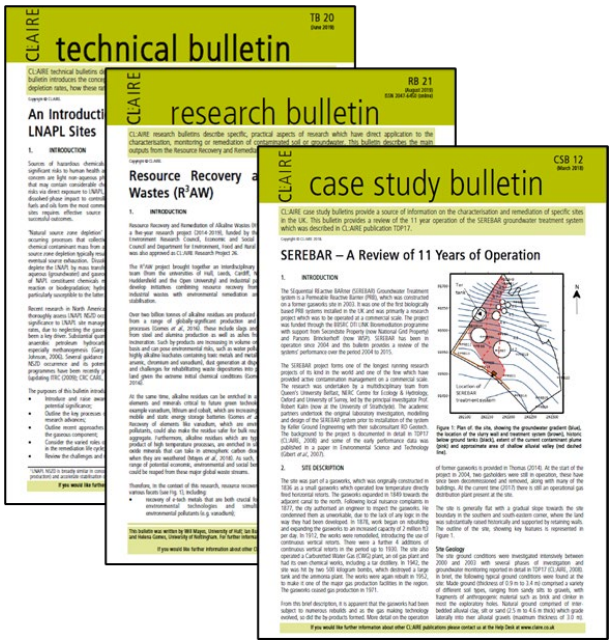
WALL

- Freely available extensive list of links to past and present water and land guidance documents
- People encouraged to recommend references that are missing

https://www.claire.co.uk/wall

CL:AIRE Publications

- CL:AIRE Technical Guidance
- Technical Bulletins
- Case Study Bulletins
- Guidance Bulletins
- Research Bulletins
- Treatability Bulletins
- Site Bulletins
- Technology Demonstration Reports
- Research Project Reports
- Project Bulletins



https://www.claire.co.uk/information-centre/cl-aire-publications

CL:AIRE

Network Capacity Building

- UK monthly ealerts, industry groups, UK National Brownfield Forum, online and regional forums
- Global Network Links
  - Australia and New Zealand
  - European
  - Latin America
  - North America
  - Asia
  - Sustainable Remediation Fora
  - Africa
- Social Media: CL:AIRE LINKED-IN, and LINKED-IN Group pages, Twitter

CL:AIRE

Reuse of Soil : Development Industry Code of Practice

DoW CoP
Sustainable Reuse of Soils
ACL:AIRE Initiative

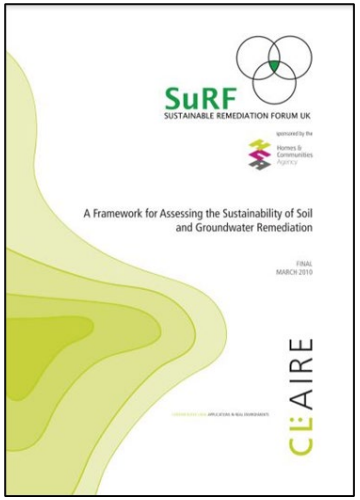
- Work in partnership with the regulators
- Voluntary approach to materials reuse on site
- Developed by industry, used by industry and endorsed by regulator
- Greater clarity leads to consistency and certainty
- Allows soils and materials reuse within fixed parameters
- Soil considered a valuable resource
- Improves efficiency and sustainability
- Qualified person approves that code of practice has been followed
- Published 2008 and then v2 2011
- International interest to replicate

www.claire.co.uk/CoP

CL:AIRE

Sustainable Remediation

- SuRF-UK established in 2007 – collaboration between industry, regulators, academics and consultants
- Published a framework for measuring sustainability when undertaking redevelopment & remediation in 2010
- Developed simple tools to help assess sustainability during site work & remediation
- 3 minute animation on what is sustainable remediation with subtitles in 16 languages
- All resources freely available at www.claire.co.uk/surfuk



CL:AIRE

SuRF International/ISRA

SuRF ANZ
SuRF Brazil
SuRF Canada
SuRF Colombia
SuRF France
SuRF Italy
SuRF Japan
SuRF Netherlands
SuRF Taiwan
SuRF UK
SuRF USA
NICOLE
NICOLE Latin America
NICOLA

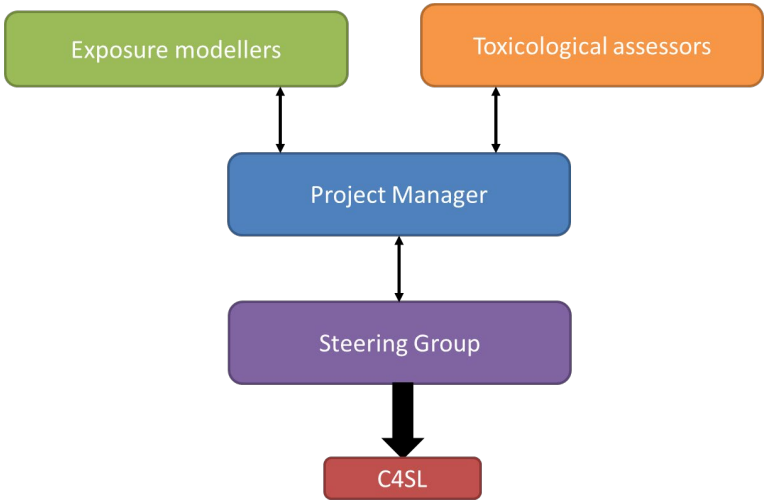
- Meet 2 times a year via teleconference
- CL:AIRE Secretariat
- Share ideas, collaborate on joint initiatives and support new affiliates
- Notes of meetings available on website

www.claire.co.uk/surfinternational
www.claire.co.uk/isra

CL:AIRE

Generic Soil Screening Values

- Collaborative industry initiative to develop 20 soil screening values for a range of contaminants.
- Delivered by a consortium of expert volunteer partners - toxicologists and exposure modellers.
- Overseen by a steering group including Government, regulators and industry group representatives.



www.claire.co.uk/c4sl

Free cyanide	1,2-Dichloroethane
Complex cyanide	Naphthalene
Nickel	Toluene
Vanadium	Ethylbenzene
Beryllium	Xylenes (*o*, *m*, *p*)
Chloroethene	1,3,5-Trimethylbenzene
Tetrachloroethene	1,2,4-Trimethylbenzene
Trichloroethene	1,2,3-Trimethylbenzene
1,1,1-Trichloroethane	Methyl tertiary butyl ether
Cis-1,2-Dichloroethene	Inorganic Mercury
Trans-1,2-Dichloroethene	

CL:AIRE

Reconstructing soils from waste: Developing a protocol for improved soil sustainability and carbon off-setting

H.K. Schofield, B.J. Reid, N. Willenbrock, M. Guerret and M.F. Fitzsimons

Reconstructed soils from waste (ReCon Soil)

Soils constructed from waste materials have already been demonstrated to be capable of supporting plant growth and nutrient cycling [8].

The ReCon Soil project aims to:

1)Reduce the quantity of soils sent to landfill by the construction sector using a circular economy approach,

2)Reduce pressure on natural soils and their associated carbon stocks through the development application-specific soil 'recipes' to reduce the need for translocation of natural soils.

3)Contribute to increased soil carbon capture through the incorporation of components capable of long-term carbon storage.

Applications for reconstructed soils

To ensure the long-term sustainability of reconstructed soils, appropriate recipes will be needed that account for the required soil properties for the intended application, whilst also giving due consideration to local material availability.

Example uses for reconstructed soils:

- Landscaping soils
- Structural/engineering soils
- Recreational facilities
- Land restoration and rehabilitation
- Controlled growing facilities

Summary of barriers and challenges

- Regulatory
- Organisational practices
- Materials quality
- Public perception
- Logistical and economic challenges

Reconstructed soil components

Inorganic components	Organic components	Mixed components
• Aggregate (e.g. gravel, sand, clay) • Fly ash • Volcanic rock (e.g. basalt, perlite, tuff)	• Composted green waste • Wood substrate • Composted bark • Manure	• Natural soils • Biosolids • Dredged sediments • Biochar

Fig 1. Established reconstructed soil at the Eden Project, Cornwall, UK.

Fig 2. Example soil constituents.

Acknowledgements and References

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[1] FAO and UNEP. 2021. Global Assessment of Soil Pollution: Report. [2] Bispo et al. (2017). Front. Environ. Sci., 5, 41. [3] Sanderman et al. (2018). PNAS, 115(7), E1700. [4] Deng et al. (2016). GECCD., 5, 127. [5] WRAP (2019). Project report RCY111-004. [6] DEFRA (2021).UK statistics on waste. [7] UK HMRC (2021). Changes to landfill tax rates from 1 April 2021. [8] Schofield et al. (2018) Sci. Total Environ., 630, 1228-1236. [9] Royal Society (2018) GGR report.

Thank you

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