

## Contaminated Land Network Newsletter – June 2019

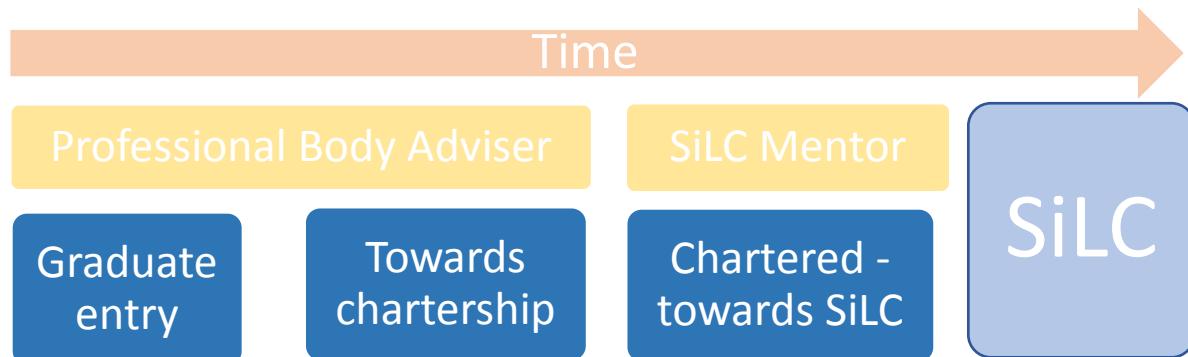
### Contents

SiLC Affiliate Scheme.....	2
A £1m rotating washing line! .....	3
With Hindsight... Knowns and unknowns .....	4
Landlord liability for waste on land .....	7
The alpine pennycress – a powerhouse plant solution for polluted plots.....	9
Member Profile: Keith Davidson .....	11
News.....	12
Forthcoming events .....	13
Future contributions .....	13
Sign up .....	13



Image from: The alpine pennycress – a powerhouse plant solution for polluted plots

## **SiLC Affiliate Scheme**



The SiLC Affiliate Scheme has recently been launched and details of the scheme including an application form are available on the SiLC website <https://www.silc.org.uk/affiliate-scheme/>

Becoming chartered is a prerequisite to applying for SiLC Registration. Thus, graduates with a specific interest in the brownfield sector who are looking to progress their careers in this direction need to plan for both becoming a full member of their chosen institution as well as becoming a SiLC.

The Affiliate Scheme is intended to help facilitate this and is aimed both at graduates and those who have already progressed their careers beyond graduation but have not yet become chartered. Under the scheme, Affiliates work towards full membership and chartered status of a relevant professional body, such as CIWEM, with the assistance of a professional body adviser.

Once they become chartered they can then progress towards SiLC/SQP registration with the assistance of a SiLC mentor. The scheme can be entered at any level. The aim is to provide an integrated process for those on the scheme with clear objectives utilising the Brownfield Skills Development Framework and to provide an early understanding of the purpose and benefits associated with becoming a SiLC including the NQMS and the role of an SQP.

Applicants are expected to demonstrate the following :

- That they are graduate members (or the equivalent) of one of the qualifying Professional Organisations;
- Have a genuine interest in the brownfield land sector;
- Be aiming to become a full member of a qualifying Professional Organisation and to join the SiLC Register; and
- Their commitment to the code of conduct of their host Professional Organisation and that of SiLC.

Members of the scheme will be designated as SiLC Affiliates, each with a SiLC Affiliate number, thereby demonstrating an individual's commitment to becoming chartered and, in due course, a SiLC. The annual membership cost of the SiLC Affiliate Scheme is £50 plus VAT and includes 20% discount on the attendance fee for the SiLC Annual Forum.

By **Jonathan Steeds**

BSc (Hons) CSci CEnv FCIWEM MCIWM SiLC Technical Director Environment, Engineering Design and Project Management, Atkins.

**For information on becoming a CIWEM member please see  
<https://www.ciwem.org/membership/>**

**For further CIWEM membership queries please ring us on +44 (0)20 7831 3110.**

## A £1m rotating washing line!



How much would you expect to pay for a rotating washing line? £25? £50, maybe £75 if you push the boat out a little? How about £1 million? That is what the insurers have had to pay out following the installation of one of these in September 2017.

Despite being located in a picturesque hamlet on the edge of the Yorkshire Dales, with rolling hills and tree lined rivers close by, the occupants had nowhere to dry all of their family's washing so the family bought a rotating washing line and the occupant went into the garden to install in. No sooner had he stabbed it into the ground, oil started welling up out of the ground surface. As such, just prior to going out, he isolated his oil tank and proceeded to go out for the day having assumed he had struck his own oil feed line.

One thing he had not accounted for was that, to the northwest of his garden, is a row of six tanks each serving a different property and he had struck one of his neighbours' oil lines. As such, nearly 400 litres of kerosene leaked out of this hole in the oil feed line so, when he came home, his garden was awash with kerosene.

He correctly contacted his home insurers who contacted us and, having noticed a groundwater abstraction well less than 7m from the point of loss, we recommended approximately £25,000 worth of emergency remedial works to try and protect the well and groundwater aquifer. We stated the costs needed to be agreed immediately although the loss adjusters/insurers took over three weeks to

agree to the works. In that time, the oil had migrated, presumably down the casing of the abstraction well, into the aquifer. The trouble is, this well supplies all six houses with their drinking water supply. The water was so contaminated with kerosene that all of the associated pipework and treatment system became impacted to the point whereby it all needed to be replaced.

As such, all six dwellings were evacuated although in the weeks prior to this happening, the residents had been (as they always had done), topping up their central heating systems and boilers with their tap water. Due to the concentrations of kerosene within this water, there was a real risk that the kerosene could erode the plastic and/or rubber radiator valves within all six properties.

Either prior to, or during the internal remedial works, one by one, leaks from the heating systems started occurring. Over the course of the next few months, nine leaks occurred in the majority of the six dwellings. As such, not only were all the water pipes replaced, all the heating system including boilers, radiators, heated towel rails and underfloor heating was replaced, not to mention floors, units and other miscellaneous items damaged by the leaks. All in all, the occupants were out of their houses for nine months.

As well as all of the internal remedial works, the external soil source was remediated through removal and disposal, a new abstraction well had to be drilled to facilitate a new water supply (along with an intermediate well between the old impacted well and the new abstraction well), and the groundwater around the old well had to be remediated. Given the water within this well is over 10m deep and at times contained free phase, this didn't prove easy and remedial works took several additional months. The works were made more difficult as the site is on a topographic ridge meaning that, as we were originally not permitted to drill more than the two additional groundwater wells, we were not sure which way groundwater was flowing until we were eventually permitted to triangulate groundwater flow direction some fifteen months after the loss occurred.

Once the new wells were installed around the old impacted well, they were sampled three times at monthly intervals. Given the lack of impacts during the three rounds of groundwater sampling, we were able to prove the impacts in the old abstraction well were not indicative of the wider groundwater and eventually got regulatory sign off in May 2019. We then proceeded to get all unused wells decommissioned so the insurance claim could eventually be settled some 20 months after the leak first occurred. Alternative accommodation costs were over £400,000 and remedial works totalled over £600,000 - quite an expensive washing line if you ask me!

**By Chris Speight**

BSc (J.Hons). MSc, FRGS, MCIWEM, C.WEM, FCIWEM, CGeog, CSci, CEnv  
Principal Consultant – Environmental Claims Management (North)

### With Hindsight... Knowns and unknowns

Ground contamination investigation can mean dealing with the invisible/hidden/denied and even the 'covered up'. A site may appear 'healthy' with no suggestion of contamination despite a long history of contaminative uses. There may never have been a complaint or report of contamination. Essentially, ground contamination investigations start with different degrees of ignorance.

Donald Rumsfeld - 2002: "*there are known knowns; there are things we know we know"*

"*...there are known unknowns; we know there are some things we do not know"*

*"but there are also unknown unknowns - the ones we don't know we don't know"*

It can be an interesting exercise to explore this using an evolution of the Johari Window analysis technique made famous by Donald Rumsfeld in his 2002 'known unknowns' speech about Iraq and weapons of mass destruction.

This concept had been used by NASA for decades before this and, indeed, it is thought that Rumsfeld heard the term 'unknown unknowns' from a NASA astrophysicist just prior to making his speech.

In the field of ground contamination, 'known knowns' are the blatantly obvious. If you can see a leaking oil tank, you will know what to analyse for in the soil and groundwater beneath. However, this 'in your face' evidence of contamination is frequently not the whole picture. Usually there are many 'unknowns' associated with a site.

'Known unknowns' refers to things you know you should look for, but may not have all the information you need to know exactly where to look. In Antony Francis' excellent 2010 book about Stepney Gasworks, there is a series of historical maps showing the evolution of the works. The changes between 1844, 1851 and 1860 alone are remarkable. If just the 1851 map information were missing then the locations of three holders, a purifying house and retorts would be missed. Yet most gasworks and other industrial sites have not been studied in such detail and may have been operational before the date of the first maps available.

Thus, while the location of the most recent process areas may be well mapped, it may also be known that other structures will have come and gone before the date of the first map, with no information available about precise location.



A composite drawing made from overlays of historical maps is helpful when using targeted sampling to address known process areas. This can be supplemented by grid and random sampling between. Even then, features can be

missed, such as a number of tanks found unexpectedly during remedial work at the former Greenwich Gasworks, near where the Millennium Dome (now the O2) was due to be built. Fortunately, the necessary risk assessment and remediation was able to be carried out in time for the Millennium celebrations.



A more common example of 'known unknowns' are old fuel tanks on former petrol station and motor engineering sites. It may be known that aged tanks were superseded by others over time, but how many remain still in the ground may not be known. One developer told me, in relation to a former motor engineering works "there always seems to be extra tanks that nobody knows about". On another site several tanks were anticipated, located and pulled out, but others were still encountered at a later stage. The eventual number found surprised all parties.

Whereas 'known unknowns' relate to potential sources of contamination that are anticipated, but not fully understood in the precise site situation, 'unknown unknowns' arise from

situations where there is no information indicating they should be considered.

Many in our industry will have tales of finding human remains, archaeological artefacts or unexploded ordnance. The fallout from such finds can be long and expensive.

Other 'unknown unknowns' can be 'one offs' but with similarly headache inducing impacts on a project. An example is a several hundred-hectare industrial site where the planned ground investigation reflected a seemingly thorough Conceptual Site Model developed after a comprehensive desk study and site walkover. However, during the investigation large piles of fly-tipped dye works wastes with extremely high cyanide content were discovered hidden deep in wooded areas of the site. These had not been found during the site walkover and couldn't have been predicted. This required a refocussing of the investigation and urgent remediation.



Donald Rumsfeld's speech didn't refer to 'unknown knowns' but I think this can apply to our work, where someone, somewhere, holds information about a site that is not recorded or available anywhere else. Sometimes, the old adage "it's not what you know but who you know" is very true. When I first started work in this industry in the early 1990s, it was a common aspect of desk study research to try to find someone with previous knowledge of the operational history of a site willing to be interviewed. On one power station site a former employee revealed that, in the past, considerable quantities of diesel were used for coal stockpile dust suppression. On another site that had been peppered with boreholes and trial pits in a series of investigations, a former

site manager who was 'just passing by' casually revealed the location of a long thin waste disposal pit hugging the length of one of the boundaries, only about 0.5m from several investigation locations that had been carefully sited to avoid undermining the boundary fence. Nothing had suggested this pit existed. These individuals held invaluable knowledge that one couldn't possibly have foreseen. Unfortunately, with the passage of time, being able to find former site workers or others who can recall pollution spills and covert waste disposal practices etc. that occurred before our regulatory regimes strengthened becomes more difficult.

The implications of not having a good understanding of the history of a site and a deficient Conceptual Site Model are well known:

- having to deal with contamination reactively is almost always expensive;
- it can result in spread of contamination (e.g. where an unknown underground tank is punctured);
- it will almost certainly delay development, can scupper development plans altogether or necessitate a different type of development (e.g. where the costs of reducing risks to acceptable levels for, say, houses with gardens, would make the development unprofitable);
- it may cast suspicion over other parts of a site, necessitating further investigation.

	<b>KNOWNS</b>	<b>UNKNOWNS</b>
<b>KNOWN</b>	<p><b>'Known knowns':</b> unequivocal evidence of contamination, e.g. a leaking oil tank or fly-tipped pile of asbestos insulation. Rarely the only issue to be addressed.</p>	<p><b>'Known unknowns':</b> the most typical situation - contamination is expected but spatial and depth distribution is unknown, e.g. location of early gasworks process areas on a site that was established before the first mapping available. Can be overcome to some extent by diligent research at desk study stage but sometimes the law of diminishing returns applies. The demand for 'cheaper and faster' desk studies can hamper thoroughness.</p>
<b>UNKNOWN</b>	<p><b>'Unknown knowns':</b> sometimes someone, somewhere, holds valuable information that is not recorded or available anywhere else, e.g. a former site employee who recalls a pollution spill or covert waste disposal. It is becoming increasingly difficult to obtain this sort of information as time goes by.</p>	<p><b>'Unknown unknowns':</b> contamination or phenomena that could not be predicted, e.g. human remains, unexploded ordnance, archaeological artefacts. Rare, but can have major implications for a project.</p>

Addressing ‘known knowns’ and ‘known unknowns’, is the everyday task of dealing with ground and groundwater contamination and generally the more we observe, compile, read, question and map, the more we will be able to understand these.

Unfortunately, the seemingly never-ending push for faster and cheaper desk studies works increasingly against a desire for thoroughness. The opportunity to discover ‘unknown knowns’ – the gems of information about pollution events etc. held by a former site worker or similar – can be few and far between. And, there will always be ‘unknown unknowns’ waiting to catch us out. Hopefully not too often though.

By **Nicola Slade**

BSc(Hons), MSc, MCIWEM, C.WEM, CEnv, SiLC,  
Contaminated Land Officer  
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### **Image references**

1. <https://medium.com/fluxx-studio-notes/life-advice-from-donald-rumsfeld-that-actually-works-4bc250ad4e30>

2. Council image

3.

<https://photobucket.com/gallery/user/SELondoner/media/bWVkaWFJZDoyMDk4NjA1/?ref=>

4. <https://www.nao.org.uk/wp-content/uploads/2008/07/n0708338.pdf>

5. Authors own.

*Please note: No copyright infringement was intended in using these images.*

### **Landlord liability for waste on land**

*Enhanced waste enforcement powers and changes to landfill tax legislation have raised the stakes when landlords grant leases to waste operators or discover illegally deposited waste on their properties. Keith Davidson, Mills & Reeve, and Craig Burman, Schofield Sweeney, consider the liability rules and provide some practical tips for commercial property landlords.*

### **When are commercial landlords most at risk?**

The wrath of waste legislation can impact landlords in a number of ways. The most common risks to landlords arise where

- a premises has been let for waste related activities, either with or without the landlord’s knowledge.
- waste has been “unlawfully deposited” by tenants.
- the tenant abandons a premises, leaving waste on site.
- waste is fly-tipped on the premises by third parties.

Enforcement powers were increased against landlords by the Waste Enforcement (England and Wales) Regulations 2018 (“the Waste Enforcement Regulations”).

### **Waste removal notices**

Section 59 of the Environmental Protection Act 1990 allows regulators to serve a waste removal notice on the occupier of land, requiring them to remove unlawfully deposited waste. Failure to comply can lead to prosecution and an unlimited fine.

A landlord in occupation who can prove they neither deposited the waste, or knowingly permitted or caused the waste to be deposited can appeal the notice and have it quashed.

Since 6 April 2018 a landlord can be served with a notice to remove waste under s59ZA when:

- there is no occupier.
- the occupier cannot be found without the regulator incurring unreasonable expense.
- the occupier (who is not the owner of the land) has failed to comply with a waste removal notice under s59.

A landlord can appeal on the same grounds as above, plus the additional ground that the landlord would have to enter the land unlawfully to remove the waste.

### **Restricted access to premises**

For the first time, regulators now have the power to restrict access to a waste site under section 109A of the Environment Act 1995.

A notice restricting access to a site can be served when:

- there is a risk of serious pollution or serious harm to human health.
- that risk arises from treatment, keeping, depositing or disposal of waste at the site; and
- the notice is necessary to prevent that risk continuing.

The notice can stop third party access to a site and stop the importation of waste to the site for up to 72 hours. A magistrates' court can make a restriction order which extends the restriction notice for two further periods of six months.

### **Landlord criminal liability**

Landlords can also be criminally liable under the Environmental Permitting (England and Wales) Regulations 2016

- where it "knowingly permits" a tenant to carry out waste operations on land without the necessary environmental permits in place.
- where a landlord takes possession of a property containing illegally deposited waste the landlord will be storing the waste, which is an activity that needs an environmental permit.

Unlimited fines are now in place for most environmental offences, together with imprisonment for up to two years.

### **Knowingly Permitting**

The courts have given a wide interpretation to the phrase "knowingly permitting".

In Stone and Salhouse Norwich Limited V Environment Agency [2018] EWHC 994 (Admin) a landlord was convicted for knowingly permitting its tenant's abandoned waste mattresses to be stored, when it knew that the mattresses were left on the premises and failed to remove them.

In Walker & Sons (Hauliers) Ltd v Environment Agency [2014] EWCA Crim 100 the Court of Appeal said it's enough that the landlord knew the waste activity was being carried out, even if it did not know the full extent of the activity, nor that the activity was illegal.

### **Landfill tax liabilities**

From 1 April 2018 HMRC can impose landfill tax and civil penalties on landlords and their directors where there is a taxable disposal at an "unauthorised site".

The following persons can liable

- the person who makes the disposal
- any person who "knowingly causes or knowingly facilitates" the disposal to be made.

Section 41(6) of the Finance Act 1991 states that owners, occupiers, waste producers, waste brokers, waste hauliers and company officers can be jointly and severally liable if they:

- took any action with a view to the disposal
- was party to a contract for the sale of the waste or
- facilitated the transport or storage of the material

Landfill tax liabilities can greatly exceed any waste removal costs. The standard landfill tax rate is currently £91.35 per tonne, and a landlord could also be liable for interest, civil penalties and court fines.

### **Practical tips for commercial property landlords**

What can commercial landlords do to minimise their liability?

#### When leasing a premises

- Legal due diligence – check a tenant thoroughly. If a waste operator, check their technical competence, previous convictions, permit compliance record and waste duty of care procedures.
- Financial due diligence - assess whether an escrow account or guarantor is required.
- Include environmental provisions in the lease to include landlord audits, permit application review, receipt of documentation, notice of spills, clean up and waste removal obligations and indemnities.
- Reserve a right of access to inspect the tenant's activities.
- Consider environmental insurance options to protect against waste removal costs – e.g. be added as co insured on the tenant's environmental policy.

#### During the term

- Technical audits to assess compliance with the permit conditions or exemption limits.
- Review documentation and regulatory correspondence provided by the tenant.

#### After discovering unlawfully deposited waste

- Take positive steps to ensure the waste is removed and prevent further deposits.
- Seek legal advice before responding to or contacting the regulators.

By **Keith Davidson**, Mills and Reeve and **Craig Burman**, Schofield Sweeny.

### **The alpine pennycress – a powerhouse plant solution for polluted plots**

The alpine pennycress is a delicate-looking, biennial or perennial wild herb with flower varieties of white and purple. Although sometimes considered a weed, don't let this humble, seemingly mundane plant fool you - it is packed with environmentally restorative powers that have caused engineers and botanists alike to marvel at its ability to grow where other plants cannot, remedy poisoned soils and store heavy metals to the rival of high-grade ore mines.

The alpine pennycress, also known as *Thlaspi caerulescens* or *Noccaea caerulea*, owes its nomenclature (*Thlaspi*) to its seed vessels' resemblance to silver pennies (Johns, 2014). Found in several countries including, parts of Europe, Scandinavia and North America, it can be spotted in the fields and hills of the English Pennines, flowering between April and August in old lead mining areas where concentrations of heavy metals, lead, nickel or zinc are high (Yorkshire Dales National Park Authority, 2019).

## **Amazing ability**

The alpine pennycress is part of a group of plants classed as metal hyperaccumulators, unique plants that act as environmental vacuum cleaners, so to speak. They naturally extract toxic elements from soils- accumulating these elements in their aboveground biomass (e.g. stems, shoots and leaves) at concentrations 100 times or more than of other plants (Becker, 2000).

Studies on their molecular physiology reveal that several different genes within the plant contribute to its ability to hyperaccumulate toxins. At its roots, the plant can increase the solubility of metals in the soil to facilitate metal uptake. It uses transport proteins to draw metal elements into its roots and through its vascular system, ultimately storing minerals in its leaves and other plant parts (Negri & Hinchman, 1996; Becker, 2000; Macnair, 2007)

Interestingly, all plants absorb metal ions from soil, but the genes of hyperaccumulators, like the alpine pennycress, are fundamentally different to non-hyperaccumulating plants. Consider this example. A typical plant may accumulate around 100 parts per million (ppm) zinc and 1 ppm cadmium. At about 1,000 ppm of zinc or 20 to 50 ppm of cadmium a normal plant shows symptoms of toxicity. However, the alpine pennycress can store up to 30,000 ppm zinc and 1,500 ppm cadmium while showing few or no signs of poisoning (Becker, 2000)!

How it's able to this has been the subject of numerous studies. Clues lie in its genetic makeup. In contrast to normal plants, which regulate zinc absorption based on zinc levels already present in the plant, the alpine pennycress' zinc transporter genes are always active, acting almost independently of plant's present zinc levels. This enables it to transport zinc from the soil to its leaves at an extremely high rate. (Becker, 2000).



*Figure: The alpine pennycress is a marvel of science - recognised for its genetic properties which enable it to tolerate, clean up and store metal contaminates in soils (Image reference: Hanzlík, 2009).*

## **Environmental use and economic potentials**

The alpine pennycress' astounding natural properties lend itself to use in phytoremediation and biomining technologies (Becker, 2000; Comis, 2000). Phytoremediation describes the use of living plants and microorganisms for decontaminating soil and water. This 'green technology' is characterised as being better for the environment and more cost-effective than traditional decontamination methods of removing topsoil for landfill storage or soil washing with chemicals.

In addition to being used for decontamination, researchers have long been exploring the use of plants like the alpine pennycress for economically recovering heavy metals through biomining or "phyto-mining". Around 20 years ago, Agronomist Rufus L. Chaney found that ashes of alpine pennycress grown on a high-zinc soil in Pennsylvania produced 30 to 40 percent zinc- that's the level expected from high-grade ore (Comis, 2000). Nevertheless, many are still researching a commercially viable method of harvesting this potential money crop.

## **Concluding comments**

The alpine pennycress is a natural mineral extraction powerhouse and scientists are still scratching the surface of understanding its complex design and anti-poison capabilities. Truly, if the alpine pennycress were a human, it'd be worthy of a prize "metal" (or medal) for its environmental impact. But at the very least, a well-deserved promotion from being occasionally referred to as a weed would do!

By **Rebecca Alexandre**

MSc Hydrology and Climate Change  
BSc Environmental Engineering  
Flood and Environment Analyst

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## **Member Profile: Keith Davidson**



I'm an environmental lawyer at Mills & Reeve solicitors and founder of ELM Law, a specialist environmental firm.

Having two jobs provides a variety of work – environmental liability advice and solutions for contaminated land problems, compliance with the asbestos duties, waste duty of care breaches, regulatory defence, lease dilapidation claims for tenant oil leaks and environmental insurance.

Mills & Reeve have offices in Manchester, Leeds, Birmingham, London, Norwich and Cambridge. The property and corporate lawyers are great to work with.

ELM Law provides environmental support for other law firms, usually when high risk issues arise in transactions and development projects, or when clients get in trouble with regulators. I work with Craig Burman, former prosecutor for the Environment Agency.

My previous roles included head of the LexisNexis environment team in London and

Environment Commissioner for Greater Manchester on low carbon building projects.

I'm delighted to be the new legal representative on the Contaminated Land Specialist Panel and look forward to contributing to the excellent work of CIWEM.

## News

### Materials management seminar

Following our Materials Management Seminar in March a write up can now be found, alongside slides and presentation recordings for most presenters, on our website at <https://www.ciwem.org/events/materials-management-seminar>.

The event was organised with the Contaminated Land Specialist Panel and we are grateful to our sponsors for allowing us to run the event free of charge. Our sponsors were:

- [Hydrock](#)
- [Mills & Reeve](#)
- [Vertase FLI](#), and
- [Analytical i2](#).

Angela Haslam, Environment Agency, has provided the following two news updates. (Underlined passages are hyperlinked.)

### Guidance- Land contamination: risk management

We have just published an update to the Model procedures for the management of land contamination (CLR11), which was archived as part of the smarter guidance project in 2016.

The updated guide is called [Land contamination: risk management](#) (LCRM).

We produced LCRM to resolve the problem of CLR11 being in the National Archive. Archived content can be used for historical reference but it does not represent Environment Agency or government guidance – it cannot be used or relied upon as such. CLR11 is now 15 years old and has never been updated.

The scope, purpose and framework introduced by CLR11 remains the same. The technical language, terminology and content has been updated, explained and retained where necessary. LCRM:

- represents up-to-date government guidance on land contamination risk management and is fully compliant to be published on GOV.UK
- complies with new [accessibility laws](#) that we must meet – it must be:
  - accessible for people with disabilities - for example, be usable with assistive technology such as screen readers
  - navigable, concise, clear and understandable to all
- is web-based, easier to manage, maintain and keep up to date
- is now more user focussed, shorter and easier to understand
- is clear on what you have to do and where to find out more – we have retained the same referencing system as part 3 of CLR11, for example INFO-RA1
- has to be aimed at people that might be doing this for the first time as well as experienced professionals
- is available online to use on all devices (laptop, mobile phone, tablet – currently 30% of our content is viewed on a mobile or tablet)

We have improved the remediation process. The emphasis is now on developing and producing a single remediation strategy. To accommodate this, some of the latter stages and tiers have been revised and reordered. Stage 2 now focusses on options appraisal whereas stage 3 is all about remediation and verification. This does not impact upon:

- the framework introduced by CLR11
- any ongoing or planned land contamination projects

## **Feedback sought**

We are looking for feedback on the technical content and structure for a period of 6 months. We want the new content to be acceptable to both industry and regulators. Details of how to respond are given at the start of the guide.

CLR11 will be permanently withdrawn after the feedback. This will avoid any confusion over which guidance to use. LCRM should now take precedence over CLR11.

CL:AIRE who currently host CLR11 have published a [news item](#). They will continue to host CLR11 for the next six months until we have addressed any feedback.

## **SuRF-UK**

The Sustainable Remediation Forum-UK has now produced a free animation explaining what sustainable remediation is and outlining the main principles. It is available at [www.claire.co.uk/surfuk](http://www.claire.co.uk/surfuk).

It has been received really positively internationally with other sustainable remediation fora and subtitles are available in multiple languages.

## **Forthcoming events**

### **Brownfield Redevelopment: Midlands 2019**

- 3<sup>rd</sup> July
- Wolverhampton
- CIWEM members are entitled to 10% off this conference with code CIWEM10.
- <https://events.environment-analyst.com/73460/brownfield-redevelopment-midlands-2019?ls=ciwem>

### **Land Remediation Expo**

- 11<sup>th</sup> & 12<sup>th</sup> September
- Birmingham

- <http://www.contaminationexpo.com/land-remediation/>

### **Brownfield Remediation conference**

- 26<sup>th</sup> September
- London
- <https://events.environment-analyst.com/72751/brownfield-remediation-2019>

### **Brownfield Redevelopment: North**

- 13<sup>th</sup> November
- Leeds
- CIWEM members are entitled to 10% off this conference with code CIWEM10.
- <https://events.environment-analyst.com/73679/brownfield-redevelopment-north-2019?ls=ciwem>

## **Future contributions**

If you have any articles or events you would like to share with the network in the next newsletter (December), or before, please contact [sarah.anderton@ciwem.org](mailto:sarah.anderton@ciwem.org).

## **Sign up**

You can receive this newsletter directly if you have signed up to be a member of the Contaminated Land Network. To sign up, email [sarah.anderton@ciwem.org](mailto:sarah.anderton@ciwem.org).