

CLASSIFICATION OF SOILS

IMAGE: © Bart Coenders



Site Remediation: waste classification to sustainability

There have been huge changes to site remediation practices over the last five years. **ADRIAN NEEDHAM**, Principal, Golder Associates (UK) Limited and **STUART ARCH**, Technical Director at WorleyParsons Environmental, explain.

Remediation technologies are now much more widely used in the UK since the implementation of Landfill Directive requirements in July 2004. At the same time, this was encouraged by the drive for soil re-use and recycling as part of a more sustainable redevelopment agenda. Co-disposal of different waste types was banned in 2004 with the costs of waste disposal rising as a consequence and exacerbated by increasing landfill-tax rates. Additional regulations on waste acceptance and pre-treatment of wastes before landfill disposal have only encouraged this move towards treatment rather than disposal. This change can be seen not only at high-profile projects such as London 2012, where extensive on-site treatment methods have been employed, but also at more mundane redevelopment sites. However, several regulatory hurdles remain in the sustainable management of soil arising from brownfield site redevelopment.

While much has happened over the last year affecting brownfield remediation, progress has been slow in some important areas. The old chestnut of Soil Guideline Values (SGVs) – what they actually represent, re-assessment of values and extending the number of SGVs – seems as if it may run as long as *The Mousetrap* in the West End. The change in staff at Defra dealing with contaminated land has ensured that the SGV issue is not going to be completed any time soon, with the likelihood that the *Way Forward* document, issued in 2007, is being completely discarded – or at least heavily revised. A statement is promised by

Defra in late spring 2008, so we wait to see where it takes us. Other countries including the Netherlands, Canada and the USA have found ways of achieving a resolution to generic assessment criteria (GAC) and contaminated-land appraisal, so it is disappointing that the UK government has been unable to develop an acceptable, practical solution since 2002 when the ICRL regime came to an end, despite much encouragement and support from industry.

CLASSIFICATION AND DEFINITION

Another initiative was the Definition of Waste document produced by the Environment Agency (EA) in 2006 that was rightly criticised for the important caveats it contained which largely neutered the usefulness of the document. After little apparent movement in 2006 and early 2007, discussions with the EA led by CL:AIRE have now resulted in significant progress being made, with the prospect of a practical procedure being agreed within a Code of Practice by early summer 2008. This will have an important effect on the identification of soil arisings as waste and when waste can be 'declassified' as waste. This should enhance sustainable re-use and recycling of soils instead of them being unnecessarily consigned to landfill disposal.

It is apparent that the classification of surplus clean soils as waste has been over-zealously regulated leading to the wasteful and unsustainable sentencing of clean soils to landfill. The improvement of the Definition of Waste process should lead to

more reasonable regulation, for example, where a contractor has several sites in an area and moves surplus clean soils from one site for use at another. This is a fundamental part of his business model with no intention ever to discard the surplus soils. These soils should never enter the waste regime and hopefully efforts to label such soils as wastes will soon be history. The process also needs to ensure protection of the environment from rogue traders committed to finding loopholes to dispose of 'real' wastes in an inappropriate manner.

Despite waste-classification procedures having been in place for several years, with some more recent guidance on the classification of waste soils and oily wastes, excessive expenditure on Waste Acceptance Criteria (WAC) leaching and additional tests is still frequently being seen. Misclassification of wastes continues and, with overall disposal costs at hazardous-waste sites often being at least four times that for non-hazardous wastes, errors can be costly. WAC testing is often wrongly perceived as the procedure of classifying waste soils into the type of waste – hazardous, non-hazardous or inert. These tests are time-consuming and expensive and should only be done after the waste soils have been classed using the 'normal' chemical tests on the soils carried out in the site-investigation stages. Only then, if the soil is classed as hazardous or if reclassifying non-hazardous waste as inert waste is sought, are WAC tests necessary.

Many contaminated soils are classed as non-hazardous waste, with WAC tests then being **cont...**

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cont.. irrelevant and unnecessary and can often cause problems if carried out. Compressed project schedules can lead to parallel testing with both 'normal' chemical tests and WAC tests, despite the extra costs. Then the situation can arise – and it does quite frequently – where the waste soils are classed as non-hazardous but the WAC leaching or additional tests show failure of the hazardous waste criteria. Confusion and delays then ensue, inevitably with additional costs, especially if all the laboratory test results are given to waste producers such as groundworks contractors, waste carriers or the landfill. The soils can then be required to be subject to additional treatment before acceptance, avoidable if more thought had been given to the waste-classification process.

THE ADVENT OF SWMPs

Revised guidance on classifying oily wastes, including contaminated soils, was issued last year by the EA. This received criticism from some quarters for being difficult to understand, as well as the methods for assessing the contents of the different types of petroleum oils being in some contention. However, it is generally accepted that the revised document is an improvement and workable.

To many, the sampling and classification of waste soils may seem an arcane element within a site-remediation project, but large costs can be at stake with substantial extra sums being incurred by the unwary and inexperienced. Informed practitioners know that if best practice and published guidance are followed, facilitated by their own data handling and software tools, waste volumes and categories can be reduced on-site by careful assessment, classification and zoning.

With the backdrop of increasing costs for landfill disposal, and more common use of

treatment processes in site remediation, it is interesting to see that construction, demolition and excavation (CD&E) waste arisings actually changed little between 2003 – 2005, being close to 90Mt. Of this, almost one-third, amounting in 2005 to 28Mt, was sent to landfill either for use as an engineering material or for disposal and the proportion recycled by crushers or screens changed little. The changes in landfill regulations between 2004 and 2006 did lead to a sharp reduction in the quantities of hazardous wastes being sent to landfill but even so in 2006, 75 per cent of all hazardous waste sent to landfill was CD&E waste, amounting to 640,000t. At a cost of about £100 per tonne for hazardous waste in the London area, including disposal fees, haulage and landfill tax, if applied across the country this would equate to an annual disposal cost of £64M just for hazardous waste from redevelopment sites. It is expected that figures for 2006 and 2007 will start to show an increase in recycling and a reduction in CD&E wastes being consigned to landfill sites.

From April 2008, site waste management plans (SWMPs), together with further rises in landfill tax and other fiscal changes in the 2008 budget, will further encourage construction waste re-use and recycling. SWMPs will apply to all construction projects over £300,000 in value, with more detailed requirements for projects over £500,000. It should be noted that it is the responsibility of clients to ensure that a SWMP is prepared, although it is expected that the principal contractor will generally prepare the plan and will be responsible for updating the plan throughout the project. Failure to meet these new regulations could lead to substantial fines for both the client and the principal contractor.

The increased focus on CD&E waste arisings is part of the government's drive towards more sustainable redevelopment. Remediation methods that use less energy, cause fewer emissions and produce less waste form an important element of this. Excavation and disposal (dig and dump) can fare poorly in comparative evaluations of sustainability because of high haulage requirements, emissions and mediocre recycling rates. On the other hand, a remediation technology may, at first sight, appear an impressive technical solution but energy consumption and emissions may be high. Comparing the sustainability of different remedial options should take into account not only environmental and economic considerations, but also the social dimension of sustainability, such as effects on local property values, employment and nuisance. The method of assessment then requires careful examination as it needs to facilitate the comparison of different alternatives on a balanced, equitable, and comprehensive basis. To achieve this, the method should be based on internationally accepted goals, themes and indicators. Advanced sustainable-development analysis tools focused on remediation methods are now available and enable the identification of optimal solutions for decision-making based on widely recognised principles of sustainable development.

Local authorities are increasingly seeking ways of ensuring that climate change and sustainability targets within their areas are being met. As a result, it will become increasingly attractive to developers or remediation contractors to have the ability to demonstrate the comprehensive sustainability credentials of a selected remedial scheme by means of a robust method of assessment and comparison.