Dealing with soils on brownfield sites

Following changes made to Landfill Tax regulations in April 2018, activities such as the excavation and re-use of soil on site, or the import of soil material from other development sites, could be determined as 'an illegal deposit' and therefore liable for Landfill Tax. Consequently, and particularly when dealing with brownfield sites, developers need to ensure on-site soil and any imported soil is managed appropriately, with the necessary permits and exemptions in place. More details can be found at https://www.claire.co.uk/projects-and-initiatives/dow-cop

The Environment Agency provides guidance on Land Contamination Risk Management (LCRM) which can be found at https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm. This requires that:

- all sites are properly assessed and investigated for potential contamination hazards; and
- all sites are properly remediated and verified where necessary or appropriate.

Details of site investigation, remediation and verification will be required by Local Authorities/Building Control as part of the planning process and warranty provides such as NHBC.

So, to avoid problems further down the line, these are the steps to achieve verification of the on-site and proposed imported soils for a brownfield project:

Site assessment and soil survey

- **Desk Study / Research the history of the site -** In urban planning, brownfield land is any previously developed land that is not currently in use. Depending on its history and surrounding land-use it may be contaminated with substances that are, or potentially, hazardous to health or the environment. This is particularly relevant in areas with a long history of industrial production.
- **Commission a detailed soil survey /site investigation -** Undertaken by qualified soil scientists, amongst a raft of detail, the survey will identify the types of soil present, enable the assessment of contaminant concentrations on site and determine the suitability of re-use of soil in the proposed scheme. Soils should be suitable for use and contain no concentrations of chemical contaminants that would cause significant harm to human health or the environment.
- **Remediation Strategy** - If the site investigation identifies potential contamination risks, a remediation strategy will be required to identify the required remediation activities and how they will be implemented and verified.
- **Verification Report** – This should provide sufficient evidence that the remediation works have successfully completed.

Sampling and analysis

- The soil survey will lead to the **extensive sampling and analysis of the site soils and any imported soils** by laboratories accredited by **UKAS** (United Kingdom Accreditation Service), which evaluates certification, testing, inspection and calibration services against internationally recognised standards. Reputable laboratories work to the principles of **GLP** (Good Laboratory Practice Regulations 2004), which determines the Standard Operating Procedure (SOP) that must be followed for each analytical method employed. Regulatory bodies, including the Environment Agency, demand quality, reliable data, which is dependent upon the proper use of suitable sampling protocols, standards, services and equipment, trained and qualified personnel, effective planning, quality assurance and quality control. The Monitoring Certification Scheme (**MCERTS**) is the performance standard for laboratories undertaking the chemical testing of soil and applies the European and international standard BS EN SIO/IEC 17025. All testing and analysis should be carried out by fully accredited laboratories.
  N.B The sampling and analysis of our Landscape20 topsoil is undertaken by laboratories and methods accredited by UKAS, GLP and MCERTS.
- Soil sampling must follow a clear protocol to ensure samples are representative. British Sugar TOPSOIL samples its products in accordance with BS3882:2015, with reference to BS EN 12579:2000 and BS 5930:1999, as follows:
  - Sample points to be located at regular intervals and samples taken from the surface 1m and from the core of the stockpile.
  - A soil auger to be used to take a sample from the centre of the stockpile. A minimum of 10 samples, out of a total of 25, should be taken from the centre of each stockpile.
  - Sub-samples to then be combined to form one composite sample (2kg) to represent every 5000m^3 of topsoil produced.
  - Composite sample placed in a wide-necked amber glass jar, labelled with a sample ID name and reference number.
  - Sample despatched to soil scientists Tim O'Hare Associates LLP requesting the required suite of analyses.
- Once soils are sampled and analysed, the **laboratory report** should include:
  - Product physical characteristics
  - Horticultural properties, e.g., pH, drainage, aeration, fertility, organic matter, microbes
  - Potential contaminants (as detailed by BS3882:2015), e.g., Heavy metals, TPH, PAHs, BTEX, phenol, asbestos
  - Statement of methodology and UKAS, GLP and MCERTS accreditations
  - Clear interpretation of data, with conclusion and recommendations
  - Formal Declaration of Compliance to BS3882:2015, including date, source of soil, usage conformity

British Sugar TOPSOIL's own analysis specification, developed in conjunction with Tim O'Hare Associates LLP, the NHBC and Local Authority contamination officers, is extremely comprehensive, covering 70 different parameters. Our soil is sampled over 30 times each year and we hold historical data, which is readily available for scrutiny.

Carbon storage - The more recent focus on soil health and climate change has drawn attention to the levels of carbon stored in soils. Tim O'Hare Associates LLP is additionally measuring the soil organic carbon content of our Landscape20 topsoil every six months to give customers information on its carbon storage potential.

Soil Capping/Clean Cover System

Where low level contamination of site soil is identified and the site is suitable, a Cover System i.e., placing clean material over contaminated ground, may be approved as a suitable remediation strategy. All Cover Systems, whether simple (clean topsoil and subsoil only) or engineered (topsoil, subsoil plus clay layers, drainage layers etc), need appropriate design, installation and verification. A Verification Report for a clean cover system should confirm:

- Soil quality (topsoil and subsoil), including soil sources, chain of custody etc.
- Soil thickness, and, where required, the presence of a geotextile separator, marker layer, or a hard to dig layer
- Frequency of verification testing and sampling
- Testing frequency, analysis suite, as agreed with the warranty providers and other regulators in advance

British Sugar TOPSOIL's BS3882:2015-compliant Landscape20 general purpose topsoil can be used as a capping layer. NHBC, the leading warranty and insurance provider in the UK has recently included Landscape20 as an accepted product under NHBC Accepts scheme