CL:AIRE Guidance Bulletin 3 - Definition of Waste Development Industry Code of Practice

PURPOSE OF THIS BULLETIN

This bulletin serves to provide the reader with a summary of the Definition of Waste: Development Industry Code of Practice (DoW CoP) (CL:AIRE, 2011), its purpose and application and a reminder of the importance and value of managing soil sustainably.

1.THE VALUE OF SOIL

Soil is a limited natural resource that provides many benefits. Healthy soil reduces the risk of flooding, helps with climate change abatement and pollutant attenuation and is relied upon for global food production (Naidu, et al., 2021). The soil organic pool of carbon (~2500Gt) accounts for approximately 80% of the total carbon in terrestrial ecosystems. However, its depletion because of poor soil management, improper storage and unsustainable treatment, in turn contributes to an increase in atmospheric carbon and a higher carbon footprint (Ontl & Schulte, 2012). A conceptual (unquantified) representation of the relative impacts of key construction project phases on the soil carbon stock for a previously undisturbed soil and a previously disturbed soil is presented in Figure 1 below.

Excavation and handling of soil can release the carbon stored in it as CO2 through oxidation as the carbon, previously protected in the soil, is exposed to oxygen. Furthermore, damage to the soil structure, through its handling, can destroy the stable aggregates of soil particles further reducing its protection. Sites under development, with bare or excavated soil, are likely to experience increased erosion. This can lead to the loss of soil carbon through the physical removal of soil particles from the site (Soils in Planning & Construction Task Force., 2022). Poor handling of soil disrupts the balance between carbon inputs and outputs in soil, leading to the loss of carbon from the soil.

Due to the diversity of soil types and scenarios, precise predictions of soil carbon loss cannot be made. However, based on the current understanding of how soil responds to improved management (Lorenz & Lal, 2015), it is possible to qualitatively illustrate the soil carbon loss / gain trends that could be seen at various stages of the construction process. Figure 1 shows that loss of soil carbon is likely to be caused by the excavation and re-spreading phases of the construction program. This is because these phases are the times of greatest disturbance. Following the re-spreading, as the soil begin to re-establish, it is likely that the soil carbon stock will increase as the soil recovers through biological activity. This process would be expected to be slow compared to how quickly the soil carbon was lost through the earlier disturbance. Additionally, depending on several factors such as the original and resultant health of the soil, subsequent treatments and final use; the soil may never achieve a return to its original soil carbon level.

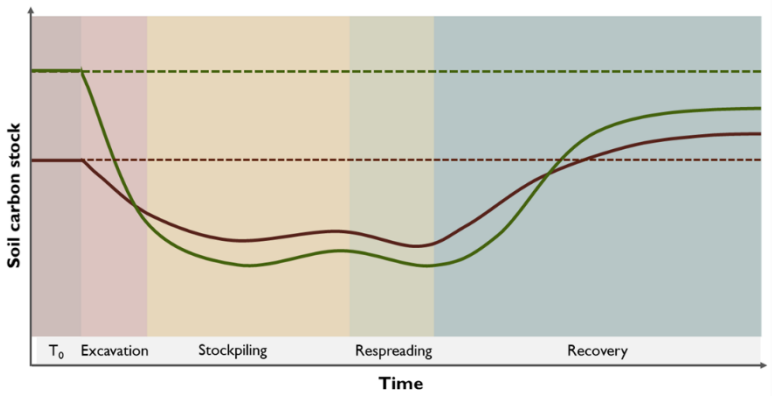

Figure 1 - conceptual (unquantified) representation of relative impacts of key construction phases on soil carbon stocks

Of the 222 million tonnes of waste generated in the UK, almost two thirds can be attributed to 'Soil' (~60 million tonnes) and 'Mineral Wastes' (~80 million tonnes). Landfill is still the most widely

adopted end treatment for these materials, and they account for over 60% of the annual tonnage UK landfills receive (Department for Environment, Food and Rural Affairs, 2022).

When we consider that the average UK gate fee for non-hazardous landfill is £28/tonne (WRAP, 2022), with the addition of landfill tax at £3.10/tonne and haulage costs, it is clear that the cost of disposal operations faced by the construction and development industry can be extremely high.

Consequently, there is both an environmental and economic case for a more sustainable and cost-effective approach to the management of excavated materials and the development of land. The DoW CoP, first written in 2008 and updated in 2011, seeks to address this need by setting out a best practice approach for this task.

2. BENEFITS OF A CIRCULAR ECONOMY OF SOIL

The DoW CoP outlines good practice for the development industry to use when assessing whether excavated materials must be managed as a waste. It confirms the actual definition of a waste and helps to ensure that soil material is managed in a responsible and sustainable manner throughout the construction and development process. This is done on a site-specific basis for a particular site end use.

The DoW CoP allows for excess soil materials on one site to be reused on other local construction sites. In this way, use of the DoW CoP creates the conditions for a circular economy of soil and aggregate (see fig. 2), giving rise to a range of benefits for its users:

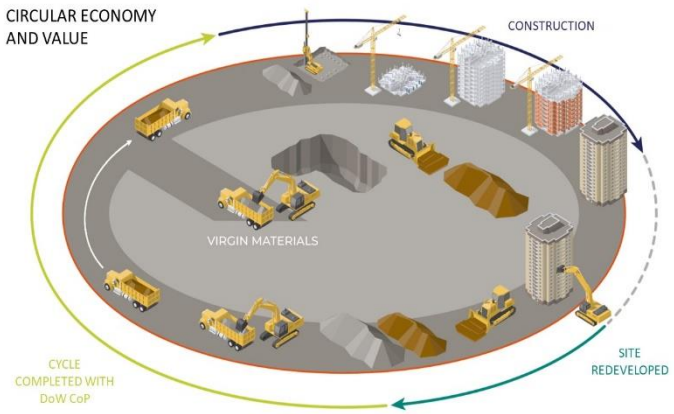

Figure 2 - Circular Economy Model

The DoW CoP is intended to help developers, contractors, and other stakeholders in the construction and development industry understand their obligations under the waste management regulations and to provide practical guidance on how to meet these obligations.

The code covers a range of topics related to soil reuse management, including waste minimisation, segregation, storage, transportation, and disposal. By following the requirement set out in the code, developers and contractors can help to reduce the environmental impacts of construction and development activities, and to ensure that soil and waste is managed in a safe and responsible manner. Use of the DoW CoP is therefore an indicator of an organisation's commitment to sustainability.

Economic

- Lower development costs, especially when compared with traditional disposal of materials.
- Reduced transport costs.
- Reduced importation of natural quarried products.
- Less expensive than applying for, working under and formally surrendering an Environmental Permit.

Environmental

- Promotes the use of materials in accordance with the waste hierarchy.
- Reduced natural resource consumption, e.g. quarried product and fuel.
- Reduced vehicle emissions and contribution to a reduced carbon footprint of the development process.
- Can support bio-diversity net gain.

Social

- Bringing brownfield land back into beneficial use
  - preserving greenfield land
  - creating communities on the developed land
- Reduced vehicle movements (resulting in less congestion, improved air quality and less disturbance).
- Stewardship of our Natural Capital represented by our inherited soil.

3. THE PRINCIPLES FOR THE USE OF MATERIALS AS NON-WASTE

By definition, materials are considered a waste if they are discarded, intended to be discarded or required to be discarded by the holder. Once discarded, they stay a waste until fully recovered. This is still the case even when the holder of the waste changes and a later holder has a use for it. Excess soil in a construction setting is usually considered a by-product. This mean it is an incidental material that is produced because of an industrial process (Official Journal of the European Union, 2018). By-products usually have some value but are not the focus of the production process.

There is no single factor that can be used to decide if something is a waste or when it ceases to be waste. When reusing soil materials, the following four factors, which are aligned with the definition of a by-product, are considered particularly relevant:

- Firstly, it is imperative to consider the aims and objectives of the Waste Framework Directive to ensure that they are not undermined. These are the protection of human health and the environment.
- Secondly, the material must be suitable for its intended purpose in all respects both its chemical and geotechnical properties.
- Thirdly, projects must be able to prove that the material will be used and that the use is not just a probability but a certainty. For example, if materials are stockpiled with no predefined destination and use, they are likely to be waste.
- Finally, materials should only be used in the quantities demonstrably necessary for that use.

Materials dealt with in accordance with the DoW CoP are considered unlikely to be waste by the Environment Agency and Natural Resources Wales (NRW) if they are used for the purpose of land development.

3. DEMONSTRATING GOOD PRACTICE

To show these four factors, a DoW CoP Materials Management Plan is produced, which ensures that the above matters are considered and that there are clear lines of evidence to prove them.

Good practice has three basic steps:

1. Ensuring that an adequate Materials Management Plan (MMP) is in place, covering the objectives and use of materials on a specific site.
2. Supporting the MMP with documentation to show that the objectives of preventing harm to human health and pollution of the environment will be met, such documentation includes:
   a. Site Investigation Reports;

   b. Remediation Strategy / Design Statement;
   c. Risk Assessment;
   d. Tracking System;
   e. Contingency arrangements; and
   f. Verification Plan.
3. Ensuring that materials are managed and used as set out in the MMP and later proving this in a Verification Report.

3.1 Qualified Person

A Qualified Person reviews the MMP and relevant project documents relating to the proposed use of materials. If satisfied, they will sign a Declaration and submit it to CL:AIRE. The Declaration serves as a notification to CL:AIRE and the regulators that a site is using the DoW CoP. A copy of the Declaration is also immediately supplied to the regulator and the person responsible for producing the Verification Report.

To act as a Qualified Person an individual must have certain attributes, which are fully outlined in the DoW CoP main document, including demonstrable project independence and competence.

3.2 Verification Report

Verification under planning in England refers to the process of checking that a proposed development complies with relevant planning regulations and standards. The planning system in England & Wales requires that new development proposals are subject to several checks to ensure that they are in line with relevant planning policies, and that they will not have a harmful impact on the environment or local communities.

Verification is a key step in the planning process, as it helps to ensure that new developments are safe, sustainable, and in line with the government's planning policies. As a process it may involve a review of the proposed development against relevant planning policies and guidance, a site visit to assess the impact of the development, and a review of any representations made by interested parties, such as residents or environmental groups.

The DoW CoP requires its own element of verification covering solely the reuse of materials. On completion of the project a Verification Report must be produced and given to CL:AIRE which provides an auditable trail to demonstrate that materials and wastes have gone to the correct destination and were managed as set out in the MMP.

The Verification Report must document any changes that may have been made to the MMP i.e., what alterations to the project have been formally made and/or contingency arrangements have been implemented. It is likely to go on to form part of the wider site verification detailed in the opening of this section.

4. APPLYING THE DOW COP

The DoW CoP is voluntary and applies to England & Wales. It can be applied to excavated material, both uncontaminated and contaminated, from manufactured and natural sources, which includes:

- Soil, both topsoil and sub-soil, parent material and underlying geology;
- Soil and mineral based dredgings (only if appropriate dewatering has taken place);
- Ground based infrastructure that is capable of reuse within earthworks projects, e.g. road base, concrete floors (permitted controls may apply);

- Reworked soil and stones;
- Source segregated aggregate material arising from demolition activities, such as crushed brick and concrete, to be reused on the site of production within earthworks projects or as sub-base or drainage materials; and
- Stockpiled excavated materials that include the above.

There are several development scenarios to which the DoW CoP can be applied.

4.1 Use on the Site of Origin

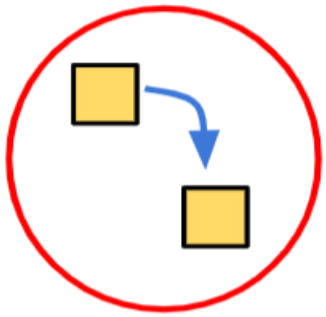

Figure 3 - reuse on Site of Origin

The Site of Origin for the purpose of the DoW CoP refers to a single readily identifiable site.

Excavated materials can be used directly within the development subject to them being suitable for use or following on-site treatment. The on-site treatment should be progressed under a suitable Environmental Permit[1] or Waste Exemption[2].

4.2 Direct Use of Clean Naturally Occurring Soil and Mineral Materials on another Development Site (Direct Transfer)

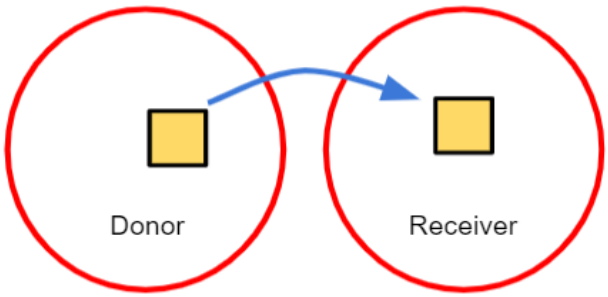

Figure 4 - Direct Transfer

Clean, naturally occurring soil and mineral materials can be directly transferred from one site to another development site for use, without the need for waste legislation being applied (i.e., the receiving development site does not require an Environmental Permit or Waste Exemption).

The materials must be sourced from either greenfield sites not subject to past contaminative use, or from brownfield sites where the natural soil has been delineated, extensively characterised and proven to be clean and naturally occurring.

Such materials must be capable of direct use without the need for treatment in line with the key factors described in Section 3.

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[1] An Environmental Permit for soil treatment in England is issued by the Environment Agency (by NRW in Wales), which allows an organisation to carry out soil treatment activities to clean up contaminated soil for example using bioremediation or thermal treatment.
It sets out the conditions that the permit holder must comply with to ensure that the soil treatment activities are carried out in a way that minimises harm to the environment and human health. This may include requirements for monitoring and reporting on the effectiveness of the treatment, as well as controls to prevent the spread of contaminants into the air, water, or soil.

[2] An Environmental exemption for soil in England & Wales allows certain activities related to soil to be carried out without the need for an Environmental Permit. Exemptions are granted by the Environment Agency & NRW, and are designed to allow small-scale, low-risk activities to be carried out without the burden of the permitting process., while still ensuring that these activities are carried out in a way that does not harm the environment or human health. However, even if an activity is exempt from the need for an Environmental Permit, it may still be subject to other environmental regulations, such as those related to waste management or water quality.

4.3 Cluster Projects & Fixed Soil Treatment Facilities

The Cluster approach is designed to aid the remediation and or development of several sites that are in relatively close proximity by sharing a treatment facility located on one of the sites - the Hub. Excavated materials from Donor sites are sent for treatment at the Hub site as waste and upon successful treatment are returned, used at the Hub site or sent to a Receiver site without the need for waste legislation to be applied. The Hub site treatment activities are regulated under the Environmental Permitting regime.

Fixed Soil Treatment Facilities are set up on a permanent basis and accept waste from a variety of waste producers.

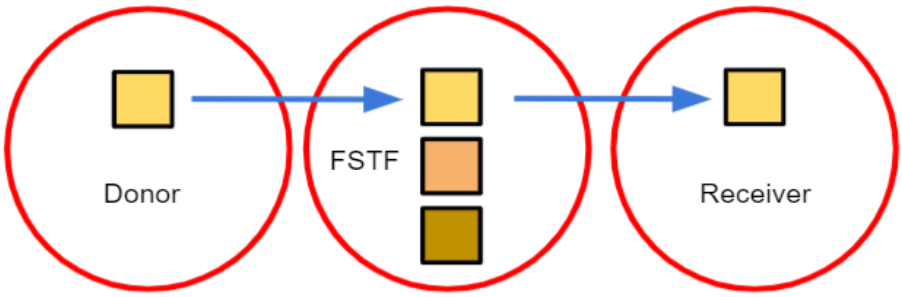

Figure 5 - Cluster Fixed Soil Treatment Facilities

Excavated wastes are taken to a fixed Soil Treatment Facility under waste legislation along with characterisation documents for both the site and materials. The wastes are treated, as needed, at the Soil Treatment Facility and are tracked from acceptance, through treatment, to subsequent stockpiles.

Potential receiving development site operators need to provide the Facility operators with their derived suitable for use criteria. A fixed Soil Treatment Facility may perform the role of a Hub site within a defined Cluster project as described in the earlier section. Operators of Soil Treatment Facilities may not always have a predetermined plan for where treated wastes will ultimately be used in relation to development sites.

Acknowledgements

This guidance bulletin was prepared by CL:AIRE staff from information contained in The Definition of Waste: Development Industry Code of Practice (CL:AIRE, 2011).

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