

Working with Soil Guidance Note: Benefitting from soil management in development and construction

The British Society of Soil Science (BSSS) exists to promote the study, public understanding and application of soil science. This guidance note is written for development planning and control professionals, site owners and developers to help promote the protection of soils and the important functions they support within the planning system and the development of individual sites.

Soils in the Planning System

Soils are protected in development to varying degrees by UK national planning policies. However, specific 'calls to action' regarding soils are generally lacking, and therefore explicit requirements of developers relating to soils are relatively rare in the planning approval process. The result is that the nature of the soils on a site is often poorly understood before construction starts. This stems from a failure to appreciate the variability of soils within the landscape and what effect this has on their specific hydrology, habitat potential and sensitivity to damage in particular. The inappropriate use and management of soil resources is often responsible for costly programme delays, the failure of planting schemes and higher incidence of surface runoff. This can mean non-compliance with planning conditions related to biodiversity net gain, tree protection, landscape enhancement and storm water management for example. There is therefore a strong argument for considering the nature and management of existing soil resources on a site at the design stage of a development, in accordance with planning policy relating to other sustainability priorities.

Recommendations

With the above in mind, **BSSS recommends** that planning consents for the development of green field sites are conditional on **the production and implementation of a comprehensive and site-specific Soil Resource Survey and Soil Management Plan**, the results of which are a consideration at the design stage of a development.

The Soil Resource Survey and Soil Management Plan should:

1. be based on a detailed field survey of the soils of the proposed development site to bedrock or a depth of 1.2m.
2. be conducted by a professional soil scientist with the competencies set out in BSSS Working with Soil Professional Competency in Soil Science Documents 1 (Foundation skills in field soil investigation, description and interpretation), 4 (Soil science in soil handling and restoration), 5 (Soil science in land evaluation and planning) and 8 (Soil science in landscape design and construction) as appropriate.

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3. comprise a map at a suitable scale showing the distribution of each soil type present on the site and a detailed report describing the suitability and volume of each soil resource present for specific after-uses (as per the proposed development).
4. Site/soil specific management advice on stripping, stockpiling and restoration to ensure soils are protected.
5. Where semi-natural vegetation is to be established within a development, soils should be sampled and analysed for the major nutrients and advice should be given on the depth of topsoil to be reinstated and the suitability of each soils for different plant communities.

Mitigation against Flooding

Natural soils store large volumes of rainfall during storm events, which has a significant mitigating effect on flooding. Planning applicants are required to demonstrate that a built development will not increase risk of surface flooding, and any increase in runoff rates from built surfaces compared to baseline soils needs to be offset through sustainable urban drainage systems (SUDS). However, it is frequently assumed that baseline runoff from *non-built* surfaces (gardens, landscape areas and public green space) within the development are unaffected by construction. Compaction caused by soil handling activities and construction traffic can cause profound reductions in soil infiltration rates, but this extra surface runoff is seldom considered in SUDS design. The result can be that post-development surface flood risk is much higher than anticipated.

BSSS recommends that Soil Management Plans include considerations of the runoff from natural and re-instated soils post development.

Creation and Support of Habitats

Increasingly, planning permission for built development is conditional on the provision of specific landscape planting schemes and/or the inclusion of habitat creation (e.g. species-rich meadow grassland). However, while planning conditions regularly include detailed planting specifications, it is rarely recognised that the success of this planting is highly dependent on appropriate soil being used as a planting medium. Soil resources on large development sites are often variable: some may be heavy (clayey), hard to handle and difficult to reuse in landscaping, while others are loamy or sandy, well-structured and easy to handle. Soils may also be acid or alkaline with a high lime content. Some have been used for intensive agriculture and are very high in nutrients and weed burden, while others are low in nutrients and well suited to use in habitat creation. If soil resources are not properly assessed at an early stage of the planning process, and appropriately re-used, there is a high probability that targeted landscaping and habitat creation will fail (and therefore planning conditions associated with landscape and ecology will not be satisfied), increasing project costs and delaying development completion.

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BSSS recommends that the underlying soil conditions should be taken into account in the choice and establishment of semi-natural vegetation.

Soil Biodiversity

Soils that have remained undisturbed for lengthy periods of time develop rich and diverse below-ground flora and fauna. Old parkland soils provide good examples of this and support equally rich above ground insect, bird and bat communities. Soil fauna form the foundation of diverse food chains. Needless to say, such soils are increasingly rare and BSSS believes that every opportunity should be taken to protect and preserve them.

BSSS recommends that where biologically-rich soils fall within a proposed development, they should be protected from any disturbance as far as is possible and be assigned to a future use as urban greenspace.

Further Reading

The Construction Code of Practice for the Sustainable Use of Soils on Construction Sites¹ provides examples of good practice and highlights the need for detailed Soil Resource Assessment as part of a Soil Management Plan for the construction phase of built development.

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¹https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/716510/pb13298-code-of-practice-090910.pdf