

DRAFT

Rotherham local plan

Preparing a Soil Strategy Supplementary Planning Document



July 2022

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Rotherham
Metropolitan
Borough Council



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Introduction

Background and purpose

- 1** This Supplementary Planning Document (SPD) is designed to support developers when considering development proposals which involve works to soils. It enables developers, landowners and others with an interest in commenting on a planning application to understand how the Council considers development proposals and the standard of provision sought. References to Local Plan policy and explanatory text are provided in this SPD.
- 2** The references section provides details of and electronic links (where available) to relevant documents used in the preparation of this SPD. Appendix 1 provides additional information, advice and best practice methods.
- 3** The information can be used by developers, agents or consultants throughout the planning process. It will help applicants to prepare and submit proposals that are mindful of the impact of development on soils and their protection for biodiversity and geodiversity. It will also provide guidance for planning officers in making decisions to support the delivery of relevant Local Plan objectives and policies. The Council also operates a paid pre application advice service to help guide you through the process.

Status

- 4** This SPD has been prepared in line with national planning policy and relevant legislation and regulations. The National Planning Policy Framework (NPPF) identifies that SPDs add further detail and guidance to the policies in the Local Plan. They are capable of being a material consideration in planning decisions.
- 5** As required by The Town and Country Planning (Local Planning) (England) Regulations 2012 (as amended) consultation on a draft of this SPD took place between xx and xx. The accompanying Consultation Statement sets out further detail on this consultation, including who was consulted, a summary of the main issues raised and how these have been addressed in the SPD. It also contains an adoption statement, confirming that this SPD was adopted by Rotherham Council on xxxxx.

Policy context

National planning policy

6 The NPPF states that the purpose of planning is to contribute to the achievement of sustainable development – making economic, environmental and social progress for this and future generations. The natural environment is an essential element of sustainable development and design.

7 NPPF Paragraph 174 states that planning policies and decisions should contribute to and enhance the natural environment by:

a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils...

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability.

f) remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.

8 National Planning Practice Guidance (NPPG) - [natural environment](#) provides further detailed guidance on safeguarding soils which recognises that:

- Soil is an essential natural capital asset that provides important ecosystem services – for instance, as a growing medium for food, timber and other crops, as a store for carbon and water, as a reservoir of biodiversity and as a buffer against pollution.
- Defra has published a [Code of Practice](#) for the sustainable use of soils on construction sites which may be helpful when setting planning conditions for development sites. It provides advice on the use and protection of soil in construction projects, including the movement and management of soil resources.

Local Plan policy

9 Rotherham's Local Plan consists of the Core Strategy (adopted September 2014) and the Sites and Policies Document (adopted June 2018), alongside the Barnsley, Doncaster and Rotherham Joint Waste Plan (adopted March 2012). These are available from our [Local Plan Website](#).

10 Rotherham's Local Plan contains strategic objectives and policies that relate specifically to the conservation of the natural environment and the protection of soils; these objectives are supported by policies that set out expectations for the conservation and enhancement of the natural environment, including soils within the planning system. This SPD guidance provides additional detail to, and should be read in conjunction with, the following policies:

Table 1 Policies relevant to the preparation of a soil strategy

CS20 Biodiversity & Geodiversity	Soil resources, including the best and most versatile agricultural land, require protection from contamination, degradation and erosion. Policy
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	aims to restrict the loss of high-quality agricultural land from irreversible development.
CS21 Landscape criterion e.	Support for landscape enhancement, restoration, reclamation and other environmental improvements.
CS24 - Conserving the water environment	Sets out requirements to prevent pollution of watercourses
CS25 - Flood Risk	Sets out how risk will be reduced via identification of new areas of natural flood storage. Development proposals increase the risk of surface water flooding and it is important to mitigate these risks.
CS26 Minerals criterion d.	The use of surplus fill or soil making materials from mineral workings will normally be utilised in situ for restoration purposes.
SP32 Green Infrastructure & Landscape. Paragraph 4.153	Landscape scheme preparation shall be appropriate to the scale of the development and its impact and shall have regard to appropriate technical standards, including existing soil resources and the requirements for ground preparation.
SP 36 Soil Resources and its supporting explanatory text, paragraphs 4.182 – 4.186	Development proposals are required to demonstrate the sustainable use of soils during construction and operation stages. A Soils Strategy shall demonstrate there are feasible and appropriate methods, locations and receptors for the temporary storage and reuse of high-quality soils. Its aim is to preserve or enhance identified soil functions
SP 47 - Understanding and Managing Flood Risk and Drainage	Sets out how the Council will expect applicants to consider the use of natural flood storage/prevention solutions
SP48 Assessment of Mineral Extraction Proposals criterion f.	To minimise the impact on the best and most versatile agricultural land, submission of a soil strategy is required. The objective will be to restore agricultural land to its previous agricultural quality or better if reasonably practical. Notes that amenity or forestry after-use may be appropriate alternatives.

An introduction to soils

11 Soil, like air and water, is one of the world's most important natural resources; because it lies beneath our feet and is often hidden by buildings and roads, we may not often think about how much it affects our lives and how much we depend on it.

12 Most of our food depends on soil - it is where we find the plants and many of the animals which make up our food, and it is home to billions of organisms. Soil also provides vital support for many of our buildings and structures.

13 Soil performs an important role in supporting ecosystem services. These describe how a natural ecosystem can perform 'services' such as the supporting of life of plants and animals, the cleaning of pollutants from water (filtering) and contribution to the natural cycles such as the hydrological, nutrient, nitrogen, carbon and oxygen cycles.

14 The main factors affecting the type of flora and its distribution are the soils (Ph levels and wetness), the prevailing climate and the relief or topography. There is a large combination of soil/climate/topographic conditions in the UK, and this gives rise to a wide range of plants.

15 Healthy soils are required for trees to perform ecosystem functions such as carbon sequestration, essential in reducing the impact of harmful greenhouse gasses, and mitigating impacts of climate change. Rotherham MBC declared a Climate Emergency on 30th October 2019 and soils have a role to play in tackling the Climate Emergency.

16 Once damaged, the 'soil system' cannot work properly and the delicate balance between all the parts that make up the healthy soil become disrupted. One implication could be that animal life in the soil becomes impossible to sustain and the complex web of interactions in the soil cease.

17 Habitat restoration is now an important part of nature conservation. Government planning regulations encourage restoration through a variety of measures, such as financing the restoration of existing damaged sites. It is important that those who undertake such projects understand the way that the soil system works, so their plans can have the most significant positive effect. Site restoration requires an understanding of the soil and ecological conditions in nearby surrounding landscapes to guide the correct course of action. Restoration projects should use the existing properties and distribution of soils to guide opportunities for habitat restoration.

18 There is increasing evidence of mismanagement of our soils - soil erosion, pollution either directly to the soil or by way of acid rain, intensive farming, and pollution to water bodies with a resulting loss of aquatic life.

Topsoil

19 Landscaping topsoil should be suitably drained and aerated and provide a sufficient source of water, nutrients, organic matter, soil fauna and flora to enable healthy, sustained growth by plants. The majority of fine, feeder roots and their associated mycorrhizal fungi that are important in protecting water supply and providing nutrients grow in topsoil, with a proportion of larger, structural roots providing anchorage and storing resources. Topsoil usually contains a higher quantity of organic matter, microbes and nutrients (e.g. nitrogen & sulphur) than subsoil and is therefore particularly

important to plant nutrition. Typical topsoil depths are 100-150mm for grassland species, and 300-450mm for herbaceous grasses and shrubs.

Subsoil

20 Landscaping subsoil has a number of key functions important to healthy plant growth:

- Absorbs surplus water percolating down from topsoil.
- Provides anchorage for roots of large shrubs and trees.
- Provides a reserve of plant nutrients (e.g. potassium, magnesium & calcium).
- Provides an 'ecosystem service' attenuating water during periods of high rainfall.
- Acts as a reservoir during dry periods.

Soil functions

21 Soils provide many important functions for plants, animals and humans. The most obvious is supporting the growing of crops, plants and trees in the wild, on the farm and in our gardens. It is a vital resource as a habitat for millions of soil organisms.

22 Soil acts as a filter, removing pollution from our drinking water and helping to regulate the flow of water through the landscape. Most rainwater ends up moving into the soil before it gets to plant roots, aquifers or water courses. Soil is also the foundation for buildings and roads. The type of soil affects how buildings are constructed.

23 Soils form very slowly, maybe as little as 2 cm of thickness in 500 years and can be easily destroyed by development, so in human terms it is a non-renewable resource. Many of our soils are becoming damaged and are at risk; consequently, it is important that we understand our soils and make sure they are preserved for future generations.

24 A typical soil profile consists of variably defined topsoil and subsoil layers of different thickness over parent material, which is usually bedrock, but could be superficial deposits such as glacial moraine or alluvium.

Soils and development

- 25** Development often requires soils to be stripped, stored, shaped, and compacted to provide a base for construction. Unfortunately, these processes can seriously damage the functionality of soils in a number of respects including their ability to hold water, air and retain the nutrients needed to sustain future plant and crop growth.
- 26** When soils are considered as part of construction and design and precautions taken to protect them during development, the extent of their loss and damage is reduced and the quality and sustainability of development enhanced.
- 27** Site restoration requires an understanding of the soil and ecological conditions in nearby surrounding landscapes to guide the correct course of action.
- 28** It is important to understand the existing soil conditions and the kinds of vegetation and habitats the existing soils can sustain. Restoration projects should use the existing properties and distribution of soils to guide opportunities for habitat restoration.
- 29** Examples of good practice include choosing appropriate native plant species to encourage and enhance biodiversity and developing links between habitats in the landscape through the creation of Green Infrastructure corridors or “stepping stones”.
- 30** The Local Plan policy context establishes the need for the advice and support, contained within this Supplementary Planning Document, on the assessment, protection, handling, placement, and amelioration of soils to enhance the quality and sustainability of development.
- 31** Paragraph 4.184 policy SP36 Soils states:

“Proposals for development should demonstrate that there are feasible and appropriate methods, locations and receptors for the temporary storage and reuse of high-quality soils with appropriate consideration given to the height and duration of soil storage mounds to ensure these are viable alongside construction compounds and work sites. Loss of soil quality which is directly due to the inappropriateness of its handling prior to reuse will not be acceptable.”

Soil assessment

Policy Guidance Note 1

Where proposals are submitted that will impact on the quality of the soil, it is expected that a Soil Resource Survey (SRS) and a Soil Resources Plan (SRP) will be prepared to support the planning application.

Conditions will be applied to a grant of planning permission to ensure the requirements of the SRP are adhered to. Such conditions will depend on the size of the site and whether it is brownfield or greenfield. The SRS and SRP shall be prepared before site clearance, preparation or development is undertaken that may result in damage to in situ soils through compaction, contamination, excavations and vegetation removal.

32 For small scale developments, such as domestic extensions, where little disturbance to existing garden soils is proposed, consideration shall be given to the impact of their development on the soils. The Council will expect to see appropriate consideration of these matters by the applicant's contractor. This will be ensured through a pre-commencement condition.

33 Ideally, and specifically for major developments, the Soil Resource Survey (SRS) and Soil Resource Plan (SRP) shall be prepared by a Soil Scientist. However, where the expertise of a Soil Scientist is not available within an agreed timeframe; consideration may need to be given to other suitably qualified professionals, such as Environmental Scientist, Arboriculturist, Horticulturist or Landscape Architect, where expertise in the preparation of both a SRS and SRP can be robustly demonstrated.

34 So long as they conform to the [Defra Code of Practice \(2009\)](#), or any subsequent replacement, and are prepared by a Soil Scientist or other suitably qualified professional, it is appropriate to include a SRS and SRP as part of a:

- Geo-environmental assessment and/or
- Geotechnical assessment and/or
- Agricultural Land Classification Survey (ALCS).

The Soil Resource Survey (SRS) is the first step and delineates, characterises and quantifies all re-usable topsoil and subsoil resources on the site.

The Soil Resource Plan (SRP) shall set out the methods and equipment to be used for the protection, recovery, storage, re-use and disposal of all site topsoil and subsoil and shall include details of an auditable system of site monitoring by a qualified soil scientist or other suitably qualified person or persons to ensure correct implementation of the SRP to ensure that its use both on and off-site is in accordance with the principles contained in this guidance.

See Model Conditions in Appendix 1 for further information.

Soil protection

Policy Guidance Note 2

Development should be designed to protect the largest possible volume of the best *in situ* soils, that is, those soils that are likely to perform the greatest number of functions to enhance the quality and sustainability of development.

Where *in situ* soils are to be retained:

- Soil protection up to the point of completion of built development and implementation of landscaping should comprise a physical barrier and/or ground protection to prevent compaction and contamination.
- Soils to be protected may coincide with the Root Protection Area of retained trees or areas of proposed structural landscaping. In these cases, there should be concordance between the SRS and the Arboricultural Method Statement and Tree Protection Plan; these habitats may be subject to further conditions.
- Barriers and ground protection shall accord with the latest guidance and their positions shown on a plan submitted with the SRS.

In limestone plateau areas (see [Local Plan policies map 4](#)), it is possible that remnants of Glacial till (boulder Clay) still exist. SRP for developments in these areas should include information on how they will approach and deal with any rare material, erratic pebbles and cobbles which may be found. These can be very rare and include granite or lava from the lake district and should be collected and recorded due to their potential significant scientific value.

Soil stripping and storage

Policy Guidance Note 3

To ensure that soil stripping and storage do not cause an irremediable loss of functionality, the following principles shall be adhered to:

- Use of fit-for-purpose equipment that minimises compaction.
- Stripping to defined depths to avoid mixing topsoil and subsoil.
- Adherence to an approved stripping plan showing soil types to be stripped, haulage routes and phasing.
- Avoiding multiple handling and avoiding handling during or following wet weather.
- Soil should not become wet or waterlogged during handling
- Stockpiling for the shortest possible period and to a depth and method appropriate to the characteristics of the soil, including its wetness.
- Stockpiling different soil types separately.
- Ensuring the angle of repose for stockpiles is less than 40 degrees, or 25 degrees where stockpiles are to be seeded and maintained.
- Ensuring that stockpiles to be stored for over 6 months are seeded with a grass or clover mix to minimise erosion, reduce weed development and maintain biological activity.

All stages of soil stripping and storage as part of development should be overseen by a Soil Scientist or other suitably qualified person or persons, to ensure compliance with the approved SRP. Auditable site monitoring reports shall be prepared and submitted to the Local Planning Authority upon satisfactory completion of each stage.

Soil Placement

Policy Guidance Note 4

Soil placement should only take place where the receiving substrate is fit for purpose and under the supervision of a Soil Scientist or other suitably qualified person or persons. For example, where large container or root-balled tree planting is proposed, topsoil should not be emplaced onto compacted, poorly drained sub-soil, or soil compacted to bulk densities that will impede root growth.

The method of placement should be described in the SRS. One of the important functions of an SRS is to identify soils with different 'tolerances' in relation to handling and placement.

Over-specification of topsoil and under-specification of subsoil should be avoided.

Soil amelioration

Policy Guidance Note 5

The type and extent of soil amelioration should be specified by a Soil Scientist or other suitably qualified person or persons, within an SRP. Useful guidance and standards to be achieved in soil amelioration for landscaping purposes is provided in the Defra code and up to date British Standards.

Where soils are found to be degraded, every effort should be made to recycle constituents that can be used in the manufacture of soils to be re-used on site. Where soil manufacturing is proposed, full details of the process and product specification should be provided by a Soil Scientist, or other suitably qualified person or persons, within an SRP. It is essential that any amelioration of soils does not alter the pH balance of the natural soils unless it forms part of specific soil restoration proposals.

The SRP should demonstrate a clear understanding of soil types within Rotherham and identify the geographic specific approaches in these areas. Within areas where neutral clays are over colliery shale, soil amelioration may be acceptable but within those areas of Limestone plateau calcareous soils, the introduction of soil ameliorants is not acceptable.

Soil ameliorants such as compost and fertiliser should only be proposed if deficiencies of composition or structure are shown by the SRS or testing in accordance with the most up to date British Standards. Colliery restoration best practice includes the adding of significant quantities of organic matter and lime in order to counter acid regression.

Imported soils

Policy Guidance Note 6

Where existing soils or manufactured soils using local resources cannot be used and importation of topsoil and subsoil is proposed, the following information will be required:

- A soiling plan identifying the location of each soil profile
- Submitted specification providing details of proposed topsoil and subsoil types, profiles and extents.
- Evidence of Certification in accordance with the most up to date British Standards (currently BS3882), and
- An interpretive report, prepared by a suitably qualified practitioner, demonstrating that the proposed soils will be fit for purpose.

All imported soils shall be assessed in terms of potential contaminants, not only in terms of plant health, but also human health. Conditions will be attached to planning permissions requiring that any imported topsoil or subsoil, natural or manufactured, must be assessed for chemical or other potential contaminants in accordance with a scheme of investigation submitted to and approved in writing by the Local Planning Authority, in advance of its importation.

Contact information

If you have any questions regarding this Supplementary Planning Document, please contact Planning Policy:

Submit an enquiry to Planning Policy online:

<https://www.rotherham.gov.uk/xfp/form/535>

Email: planning.policy@rotherham.gov.uk

Telephone: 01709 823869

Website: <https://www.rotherham.gov.uk/localplan>

Post: Planning Policy Team, Planning, Regeneration and Transport, Regeneration & Environment Services, Rotherham Metropolitan Borough Council, Riverside House, Main Street, Rotherham, S60 1AE

For planning application and pre-application advice, please contact Development Management:

Submit an enquiry to Development Management online:

<https://www.rotherham.gov.uk/xfp/form/216>

Email: development.management@rotherham.gov.uk

Telephone: 01709 823835

Website: <https://www.rotherham.gov.uk/planning>

Post: Development Management, Planning, Regeneration and Transport, Regeneration & Environment Services, Rotherham Metropolitan Borough Council, Riverside House, Main Street, Rotherham, S60 1AE

References

[British Standards Institution](#). 1989. British Standard 4428:1989. Code of practice for general landscape operations (excluding hard surfaces).

[British Standards Institution](#). 1993. British Standard 7370:1993 Grounds Maintenance Part 4: Recommendations for maintenance of soft landscape (other than amenity turf).

[British Standards Institution](#). 2010. British Standard 3998:2010. Tree work – Recommendations.

[British Standards Institution](#). 2019. British Standard EN ISO 25177:2019 Soil quality – Field soil description.

[British Standards Institution](#). 2012. British Standard 5837:2012. Trees in relation to design, demolition and construction – Recommendations.

[British Standards Institution](#). 2013. British Standard 8601:2013. Specification for subsoil and requirements for use.

[British Standards Institution](#). 2015. British Standard 3882:2015. Specification for topsoil.

[Cardiff Green Infrastructure SPG: Soils and Development Technical Guidance Note November 2017.](#)

[Cranfield Institute: Interactive Soil Map](#)

[DEFRA. 2009. Code of Practice for the sustainable use of soils on construction sites](#)

[Department for Environment, Food and Rural Affairs. 2006. The Impact of Subsoil Compaction on Soil Functionality & Landscape.](#)

[Environment Agency Think Soils Manual 2007](#)

Foot, K & Sinnett, D. 2014. Forest Research Best Practice Guidance for Land Regeneration Note 3.

Foot, K & Sinnett, D. 2014. Forest Research Best Practice Guidance for Land Regeneration Note 5.

Hodgson, I.M. 1974. Soil Survey Field Handbook (3rd edition). Soil Survey Technical Monograph No. 5. Harpenden.

Moffat, A. 2014. Forest Research Best Practice Guidance for Land Regeneration Note 4.

[National Planning Policy Framework \(2021\)](#)

[National Planning Practice Guidance](#)

[Rotherham Local Plan Core Strategy \(2014\)](#)

[Rotherham Local Plan Sites and Policies \(2018\)](#)

Rudeforth, C.C.; Hartnup, R.; Lea, J.W.; Thompson, T.R.E and Wright, P.S. 1984. Soil Survey of England and Wales. Soils and their Use in Wales. Harpenden.

[Soil-Net](#) provides further information on soil functions and threats to soils in the UK.

Soilscapes viewer at <http://www.landis.org.uk/soilscapes/>

Soils Site Reporter at <http://www.landis.org.uk/services/sitereporter.cfm>

The British Society of Soil Science provides details of Soil Scientists at:

www.soils.org.uk

Watson, G. W., Hewitt, A.M., Custic, M. & Lo, M. 2014. The Management of Tree Root Systems in Urban and Suburban Settings: A Review of Soil Influence on Root Growth. *Arboriculture & Urban Forestry* 40 (4).

White, T & Doick, K. J. 2014. Forest Research Best Practice Guidance for Land Regeneration Note 19.

Appendix 1: Guidance for carrying out a soil assessment

35 Examples of model planning conditions that may be used are provided below:

1) No development shall take place until the following information has been submitted to and approved in writing by the Local Planning Authority:

A Soil Resource Survey (SRS) prepared by a qualified soil scientist, or other suitably qualified person or persons, in accordance with the 2009 DEFRA Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (or any updated version of this code) that delineates, characterises and quantifies all re-usable topsoil and subsoil resources on the site.

Reason: To ensure that usable soil resources are fully utilised within the development and any surplus soil is identified for off-site use.

2) No development shall take place until the following information has been submitted to and approved in writing by the Local Planning Authority:

A Soil Resource Plan (SRP) prepared by a qualified soil scientist, or other suitably qualified person or persons, in accordance with the 2009 DEFRA Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (or any updated version of this code) informed by a Soil Resource Survey carried out in discharge of this condition. The SRP shall set out the methods and equipment to be used for the protection, recovery, storage, re-use and disposal of all site topsoil and subsoil and shall include details of an auditable system of site monitoring by a qualified soil scientist or other suitably qualified person or persons to ensure correct implementation of the SRP and to ensure that its use off-site is in accordance with the principles contained in this guidance.

Reason: To ensure that all usable soil resources are appropriately recovered and protected, and not lost, damaged or sterilised during the construction process.

36 A pre-commencement condition For small scale developments, such as domestic extensions:

No development shall take place until consideration of the impact of their development on the soils by the applicant's contractor that delineates, characterises and quantifies all re-usable topsoil and subsoil resources on the site has been submitted to and approved in writing by the Local Planning Authority

Reason: To ensure that usable soil resources are fully utilised within the development and any surplus soil is identified for off-site use.

37 This technical guidance sets out the key considerations for developers bringing forward development sites. It sets out key issues to be considered. It is vital that this appendix is read alongside the guidance within the body of the SPD. Descriptions of soils within a Soil Resource Survey (SRS) shall conform to the criteria defined in the:

- Soil Survey Field Handbook or
- British Standard EN ISO 25177:2019.

Soil testing as part of an SRS shall accord with:

- BS 3882:2015 - Table 1 and
- BS 8601:2013 - Table 1 or any updated versions of these Standards.

Ideally, the Soil Resource Survey and Soil Resource Plan (SRP) shall be prepared by a Soil Scientist. However, where the expertise of a Soil Scientist is not available within an agreed timeframe; consideration may need to be given to other suitably qualified professionals, such as Environmental Scientist, Arboriculturist, Horticulturist or Landscape Architect, whose expertise in the preparation of both a SRS and SRP can be robustly demonstrated.

Geo-environmental or geotechnical assessments may show irremediable levels of soil contamination, negating the requirement for an SRS and SRP, but should not replace an SRS and SRP.

An ALCS may provide useful information about soils, but this is focused on functionality in supporting agriculture, not re-use for landscaping as part of development, so an ALCS should not replace an SRS and SRP.

Information provided by the Landis Soilscales viewer and the Soils Site Reporter should supplement, not replace assessment in accordance with the Code.

The Soil Survey Field Handbook and BS EN ISO 25177:2019 provide guidance on examining soils in the field and a photographic field guide to preparing soil pits and assessing the physical characteristics of soils is provided by the Environment Agency: Think Soils Manual.

SOIL PROTECTION

Barriers and ground protection shall accord with BS 5837:2012, or any updated version of this Standard, and their positions be shown on a plan submitted as part of an SRS.

Soils to be protected may coincide with the Root Protection Area of retained trees or areas of proposed structural landscaping. In these cases, there should be concordance between the SRS and the Arboricultural Method Statement and Tree Protection Plan, submitted in accordance with BS 5837:2012.

SOIL STRIPPING AND STORAGE

Where soil stripping and storage is unavoidable, strict adherence to an approved SRP shall prevent irremediable loss of functionality due to compaction, contamination, loss of structure, loss of organic matter and loss of biodiversity.

SOIL PLACEMENT

Only soils that have been handled in accordance with an approved SRP and/or where appropriate, tested, certified and found to be fit for purpose by a Soil Scientist, or other suitably qualified person or persons, in accordance with BS 3882:2015 and BS 8601:2013, or updated versions of these Standards, should be emplaced as part of development.

To ensure root growth is not impeded, bulk densities should be provided that accord with those reported in Watson et al. (2006) as follows:

- Sands & loamy sands: 1.80g cm⁻³ will restrict root growth.
- Sandy loams & loams: 1.80g cm⁻³ will restrict root growth.
- Sandy clay loams & clay loams: 1.75g cm⁻³ will restrict root growth.
- Silts & silt loams: 1.75g cm⁻³ will restrict root growth.
- Silt loams & silty clay loams: 1.65g cm⁻³ will restrict root growth.
- Sandy clays, silty clays, some clay loams (35-45% clay): 1.58g cm⁻³ will restrict root growth.
- Clays (>45% clay): 1.47g cm⁻³ will restrict root growth.

The most appropriate method of placement generally is loose tipping by machine as described in the DEFRA Code, during weather conditions that will not result in the soil becoming sticky, amorphous or self-compacting.

Some soils, such as well-structured sandy loams, are more 'tolerant' of handling than soils with high clay or silt content and lose less of their functionality on placement.

As a rule of thumb, topsoil and subsoil depths for different planting types should be as follows:

- Trees – 300mm topsoil over 600mm subsoil.
- Shrubs – 300 - 450mm topsoil over 300mm subsoil.
- Amenity grassland – 150mm topsoil over 150mm subsoil.

Over-specification of topsoil and under-specification of subsoil should be avoided. Topsoil functionality below 300mm is impeded and excessive depths can increase the risks of anaerobic soil conditions developing and resulting in planting failures.

SOIL AMELIORATION

The use of machinery to break up subsoil and relieve compaction does not guarantee good aeration and drainage thereafter and may result in significant damage to soil biota.

Ripping and other forms of machine cultivation should only be used as a last resort, where other less invasive forms of amelioration are not available or will not be effective. Ripping may not be effective for soils with high silt content, or soils with high clay content that are poorly structured. In all cases, the method and equipment to be used shall be specified by a Soil Scientist, or other suitably qualified person or persons.

Where more sensitive planting types such as large trees are proposed, the importation of well-aerated, freely draining subsoil may be more appropriate than machine cultivation in ensuring good soil functionality.

Policy Guidance Note 2: Soil Ameliorants refer to BS 3882:2015 and BS 8601:2013, or updated versions of these Standards.

The following documents provide useful guidance on soil amelioration in relation to landscaping:

- DEFRA Construction Code of Practice for the Sustainable Use of Soils on Construction Sites.
- The Impact of Subsoil Compaction on Soil Functionality and Landscape.
- Forest Research Best Practice Guidance for Land Regeneration Notes 3, 4, 5 and 19 (2014).
- BS 4428:1989 Code of practice for general landscape operations (excluding hard surfaces).
- BS 7370: Part 4: 1993 Grounds Maintenance Part 4: Recommendations for maintenance of soft landscape (other than amenity turf).
- BS 3998:2010 Tree work – Recommendations.
- BS 8601:2013 Specification for subsoil and requirements for use.
- BS 8545:2014 Trees: from nursery to independence in the landscape – Recommendations.
- BS 3882:2015 Specification for topsoil.

IMPORTED SOILS

Different planting types such as root-balled and container tree planting, bare root, transplant and whip planting, amenity grassland, sports pitches and wildflower grassland, have differing requirements of the soil. A 'one size fits all' or 'multi-purpose BS 3882 soil' is therefore unlikely to be appropriate in many cases, and particularly not for sensitive functions such as large tree planting, where optimal conditions of aeration and drainage to depth are critical to successful establishment; or sports pitches where regular, intensive footfall may result in damage to soil functionality.

Where large tree planting is proposed, soils meeting the 'sandy loam' textural range in the British Standards should be used as a default, but meeting British Standards alone, will not guarantee good functionality in this regard, particularly for soils that are at the top end of the textural range limits in terms of silt and clay content. Wherever possible, specifications that exceed British Standards and are designed specifically for their intended end use should be used.

The use of specialist soils for landscaping, such as Amsterdam tree sands, structural soils and 'hybrid' topsoil-subsoils should be supported by site specific product manufacturer's specifications that demonstrate fitness for purpose.

Policy Guidance Note 3: Importation of topsoil and subsoil refer to BS 3882:2015 and BS 8601:2013, or updated versions of these Standards