

Appendix 2 - Classifying Agricultural Soils for use in Woodland Creation Grant

Purpose

This Operations Note appendix aims to ensure that when assessing a potential new woodland creation site managers understand what soil types are present on the planting site, are able to accurately select the general FC soil type when applying for grants and use this information to inform species choice and the need for any cultivation.

It is not a comprehensive guide to undertaking soil surveys.

Agricultural soils have a different classification system to forestry soils, but applicants are likely to only have access to information on agricultural soil classification. This Operations Note sets out an approach for identifying the forest soil type from freely-available information on agricultural soil classification and confirming this by field survey.

An accurate knowledge of soil type is essential before appropriate species can be chosen for the site and operations begin; this Operations Note should be read in conjunction with [Operations Note 53 'Guidance on cultivation and UKFS compliance in England'](#) if any cultivation operations are considered necessary.

Note also that intensive agriculture can extensively modify natural soils. For example, extensive ploughing may have mixed soil horizons to such an extent that no horizons are discernible. The extent of any such modification can only be determined by site-based soil survey.

Overview of decision-making framework

This guidance sets out a process for classifying soil whether you are from an agricultural or forestry background. It details a five-step process to accurately determine your general soil type and any implications for woodland establishment.

Although most steps are desk-based, a manager should never rely on broad-scale soils maps such as those used in Soilscales or the Ecological Site Classification (ESC) decision support system developed by Forest Research. They are based on very coarse (large-scale) datasets and are for general guidance only. **The only truly accurate data is derived from site-based soil survey.**

Using this guidance

Step 1: (desk-based) Identify the agricultural soil type(s) from Soilscales

For identifying agricultural soils the most freely available source of data is 'Soilscales' from Cranfield University's [Land Information System \(LandIS\)](#) or from the [UK Soil Observatory website](#). When you enter the LandIS 'Soilscales' website you should navigate to your proposed planting site using the 'Soilscales map' tab. You will see a colour coded map of which soil types are shown as existing on the land. Clicking on a colour will show a description of that soil type and its characteristics. This can be a useful source of information on likely drainage and fertility issues.

'Soilscales' classifies soils into 27 soil types. The full list is detailed in the 'soil descriptions' tab on the Soilscales website and in Annex 1.

It is very unlikely we would allow planting on the following 4 soil types:

- 1. Saltmarsh soils
- 25. Blanket peat bog soils
- 26. Raised peat bog soils
- 27. Fen peat soils

If you have one of these types as listed on your site, including if you disagree with the classification, then you must accurately map its extent and location by undertaking/commissioning a soil survey.

If peaty soils are present on the site, you must follow the guidance set out in the *Decision support framework for peatland protection and the establishment of new woodland* to determine whether a site is suitable for planting and whether the design of the woodland needs to accommodate the protection of deep peat.

You may also wish to purchase a more detailed soil report from the [Landis Site Soils Reporter facility](#). However, you should note that although the report provides a more detailed breakdown of soil types and their characteristics, it is still based on the 1:250,000 national soil map.

Step 2: (desk-based) Cross reference to the FC soil type(s)

The Soilscales soil types share very few common descriptors with the FC soil types as described in [FC field guide 'The Identification of Soils for Forest Management'](#).

To identify which FC soil types are present on the site from the Soilscales agricultural soil classification, refer to appendix 1.

Caveats to desk-based soil classification:

- **Not all soil types cross-reference exactly.** For example, Soilscales type 10. *Freely draining slightly acid sandy soil* could be either FC soil type 1. *Brown earth* or FC soil type 3. *Podzol*. You should always confirm through site-based soil survey.
- **Soilscales soil types do not include ironpans.** After cross-referencing the soil type you should confirm you have the correct FC soil type by conducting site-based soil survey.
- **Ploughpans – these are not shown on any national soils maps.** Be aware of the possibility of plough pans, particularly on arable sites. You can only identify the presence of ploughpans by conducting site-based soil survey.
- **Generalised soil compaction through heavy agricultural use.** This information will not appear on national soils maps. Compaction may be obvious (deep rutting, very wet patches etc.) but needs to be confirmed through site-based soil survey.

Step 3: (site-based) Ground-truth the data through site-based soil survey

Once you have decided which FC soil type(s) you believe you have from the desk-based survey then you should confirm this through site-based soil survey. Particularly for larger schemes, you should consider employing an accredited soil surveyor to undertake a full soil survey.

When digging soil pits also check for ironpans – these soil types are relatively rare and only likely to be encountered in upland situations on non-agricultural land. But where they do occur they have implications for woodland establishment. If you discover a ploughpan then treat the same as an ironpan. Generalised soil compaction may also need ripping/tining.

Step 4: (grant-based) Select final generic FC soil type

To apply for the English Woodland Creation Offer (EWCO) you need to select which soil type each compartment has, based on a drop down list composed of 7 basic soil types.

Refer to annex 1 where each FC soil type is allocated to one of these 7 generic FC soil types:

- Brown earths
- Gleys
- Podzols
- Ironpans*
- Rankers/Rendzinas
- Littoral soils
- Man-made soils

*Note there is no ironpan listed in appendix 1. You should establish whether the soil is an ironpan through site-based soil survey. Bogs are excluded from the EWCO spreadsheet as it is highly unlikely we would allow planting on such sites.

Step 5: (grant-based) Select cultivation option, if required, referencing ON53

To apply for EWCO you also have to select which, if any, cultivation operation you intend to use on site.

This should be based on the guidance available in [Operations Note 53 'Guidance on cultivation and UKFS compliance in England'](#). Appendix 1 from that document summarises the suitability of cultivation operations for generic soil types.

Note the following when consulting Appendix 1 from ON53:

- rendzinas are not shown in Appendix 1 but you should use the recommendations for rankers. Both are very shallow soils and unlikely to need any cultivation other than perhaps scarification to provide weed-free planting spots
- littoral soils (soils composed mainly of parent geology e.g. pebbles, sand dunes etc. with very little structure) are also not included in Appendix 1, however, they are very unlikely to require any cultivation

Man-made soils, by their very nature, can only be classified by a site-based soil survey and any cultivation method determined by the results of each individual survey.

Annex 1: 'Soilscapes':FC soil type cross referencing table

'Soilscapes' classification	FC Soil Type	Generic soil type	Drainage characteristics
1 Saltmarsh soils	n/a	n/a	n/a
2 Shallow very acid peaty soils over rock	13p. Peaty ranker	Rankers/Rendzinas	Free draining shallow soil
3. Shallow lime-rich soils over chalk or limestone	12a. Rendzina	Rankers/Rendzinas	Free draining shallow soil
4. Sand dune soils	15d. Dunes	Littoral soils	Freely draining
5. Freely draining lime-rich loamy soils	12b. Calcareous brown earth	Brown earths	Freely draining
6. Freely draining slightly acid loamy soils	1. Typical brown earth	Brown earths	Freely draining
7. Freely draining slightly acid but base-rich soils	1d. Basic brown earth/12t Argillic brown earth	Brown earths	Freely draining
8. Slightly acid loamy and clayey soils with impeded drainage	1. Brown earth/7. Surface water gley	Brown earths	Impeded drainage
9. Lime-rich loamy and clayey soils with impeded drainage	7. Surface water gley (k calcareous)	Gleys	Impeded drainage
10. Freely draining slightly acid sandy soil	1. Brown earth/ 3. Podzol	Brown earths	Freely draining
11. Freely draining sandy Breckland soils	12t. Argillic brown earth	Brown earths	Freely draining
12. Freely draining floodplain soils	1. Typical brown earth (alluvial)/5. Groundwater gley	Brown earths	Freely draining
13. Freely draining acid loamy soils over rock	1u. Upland Brown Earth	Brown earths	Free draining shallow soil
14. Freely draining very acid sandy and loamy soils	3. Typical podzol/ 1u. Upland brown earth	Podzols	Freely draining
15. Naturally wet very acid sandy and loamy soils	5. Groundwater gley/7. Surface water gley	Gleys	Impeded drainage
16. Very acid loamy upland soils with a wet peaty surface	6. Peaty surface water gley/ 4b. Intergrade ironpan	Gleys	Impeded drainage
17. Slowly permeable seasonally wet acid loamy and clayey soils	7. Surface water gley	Gleys	Impeded drainage
18. Slowly permeable seasonally wet slightly acid base-rich loamy & clayey soils	7. Surface water gley/12t. Argillic brown earth	Gleys	Impeded drainage
19. Slowly permeable wet very acid upland soils with a peaty surface	5. Typical groundwater gley	Gleys	Impeded drainage
20. Loamy and clayey floodplain soils with naturally high groundwater	5. Typical groundwater gley (alluvial)	Gleys	Impeded drainage
21. Loamy and clayey soils of coastal flats with naturally high groundwater	5. Typical groundwater gley (alluvial)	Gleys	Impeded drainage
22. Loamy soils with naturally high groundwater	5. Typical groundwater gley/ 12t. Argillic brown earth	Gleys	Impeded drainage
23. Loamy and sandy soils with naturally high groundwater & a peaty surface	5. Typical groundwater gley (v alluvial) (h humose)	Gleys	Impeded drainage
24. Restored soils mostly from quarry and opencast spoil	2. Man-made soils	Man-made soils	n/a
25. Blanket bog peat soils	11. Unflushed blanket bogs	Bogs	Impeded drainage
26. Raised bog peat soils	10. Flat or raised bogs	Bogs	Impeded drainage
27. Fen peat soils	8a. Fen bog	Bogs	Impeded drainage