Please see Annex SW7 for supporting information, and the “Introduction” for Health and Safety considerations and advice on the use of the guidance.

1. Are the different soil unit boundaries being marked out prior to soil stripping and restoration in accordance with the agreed scheme
   Different soil types may require separate stripping/storage/restoration. Are the operators complying with the agreed scheme?

2. Are the soil resources being accurately audited and are additional soil resources available
   Auditing of soil resources enables the restoration objectives to be achieved and the most sustainable use to be made of the soil resources on site. Working the site may identify more soil resources/soil-forming materials available for restoration than were identified at the pre-/planning application stage.

3. Are there areas of the site that are fit for restoration
   It is important that restoration progresses in step with site working to prevent areas remaining unrestored and becoming derelict. Prompt restoration brings the land into aftercare and back into productive use.

4. Is soil/soil-forming material being used as daily cover
   On landfill sites, there may be a shortage of daily cover materials available, leading to the unsustainable use of soil/soil-forming materials.

5. Is landfilling in step with site working
   If landfilling does not progress at the same rate as mineral extraction, then restoration is delayed preventing the land from being brought back as quickly as possible into productive use.

6. Is the predicted “bulking factor” for soil/overburden proving to be correct
   If incorrect, this may mean that changes to the proposed landform/restoration depths of soil will be necessary.

7. Are the predicted settlement rates proving to be correct
   If incorrect, this may mean changes to the proposed landform will be necessary or increased/reduced surcharging.

8. Is daily cover being stored separately
   Materials for use as daily cover must be stored separately from soil/soil-forming materials.
For more detailed information see:
- The Reclamation of Mineral Workings to Agriculture (DoE 1996)
- Guidance on Good Practice for the Reclamation of Mineral Workings to Agriculture (DoE 1996)
- [Good Practice Guide for Handling Soils](#) (MAFF 2000)
- [MPG7 The Reclamation of Mineral Workings](#) (DoE 1996)
- [Town and Country Planning Act 1990 Schedule 5](#)

Cross references:
- AP 5, 6, 7, 8, 10
- SW 3, 4, 8
- RN 3, 4, 8, 9, 10
- AC 3
1. Are the different soil unit boundaries being marked out prior to soil stripping and restoration in accordance with the agreed scheme

To safeguard the long-term agricultural potential of land being worked for minerals, the operator will normally be required to undertake an ALC survey and produce a Statement of Physical Characteristics Report at the planning application stage. These will identify the ALC grade of the land, and the different topsoil and subsoil types. Schemes will also be agreed for the stripping/storage/restoration of these soil types, which will be described as soil units, some of which may be handled together, whilst others will need to be kept separate. For example, a sandy loam topsoil would normally need to be stripped/stored/restored separately from a clay loam topsoil. To undertake the soil handling operations in accordance with the agreed schemes for soil stripping and restoration, it is essential that the different soil units are identified, marked out on the land to be stripped, and the machinery operators are appropriately briefed and supervised.

2. Are the soil resources being accurately audited and are additional soil resources available

As part of the agreed schemes for soil stripping/storage/restoration, it is good practice for operators to maintain an audit of the different soil types in terms of their origin, type, and location for storage and for restoration. This enables the operators to confirm that the predicted volumes of the different soil units are correct, and if not, flag up at an early stage with the MPA any changes to the schemes of working and restoration that may be necessary to achieve the restoration objectives. The audit may also identify soil-forming materials that may be appropriate for use in the restoration, and enable the most sustainable use to be made of the resources on site. The location, soil type and volume of soil storage bunds must be accurately recorded on plans in the site office, and the bunds should also be marked with reference to their soil type. This is particularly important, as some soil may remain in store for a number of years, for example, at chalk and rock quarries, and changes in staff may mean that there is no certainty in identifying the different soil types within store.

3. Are there areas of the site that are fit for restoration

It is important that land is restored as promptly as possible to enable the rehabilitation process to begin within aftercare. Prompt restoration also helps to maintain good site discipline, prevents land becoming derelict, and enables the land to be brought back into active management and productive use as soon as possible. If progressive restoration is delayed while mineral extraction proceeds, soil will have to remain in store for longer periods, which may increase its deterioration, and larger areas of land may be needed to accommodate soil storage bunds. The condition of the soil, the land to be restored, and the forecast weather must be suitable for soil handling and restoration to take place.
4. Is soil/soil-forming material being used as daily cover

On landfill sites, there may be a shortage of daily cover, sometimes only during a relatively short period of operation, leading to the use of soil/soil-forming material. Such practice must be avoided, as it is not sustainable to use valuable soil resources needed for the restoration of the site in this way. Where significant volumes of soil are used, this may mean that the standard of restoration is compromised and that the restoration objectives cannot be achieved. It may also mean that soil has to be imported to replace that used, which may lead to a lower standard of restoration.

5. Is landfilling in step with site working

If landfilling does not keep up with mineral extraction, this leads to delays in restoration. It is important that land is restored as promptly as possible, to enable the aftercare process to begin. Prompt restoration also helps to maintain good site discipline, prevents land becoming derelict, and enables the land to be brought back into active management and productive use as soon as possible. If progressive restoration is delayed, while mineral extraction proceeds, soil will have to remain in store for longer periods, which may increase their deterioration, and larger areas of land will be needed to accommodate the storage bunds. It is important for there to be good lines of communication between operators and MPAs, enabling all parties to be aware of potential problems such as delays in restoration. This will enable agreement to be reached at the earliest possible stage for any changes in site working and restoration that may be appropriate.

6. Is the predicted “bulking factor” for soil/overburden proving to be correct

The proposals for the restored landform and restoration depths for soil will be based upon the predicted “bulking factor” for the overburden, mineral waste and subsoil. This factor is the % increase in volume of these materials once excavated and restored, compared to their volume in an undisturbed state. Typically these materials may increase in volume by around 10%, depending on the soil type, its moisture content and method of handling. For example, sandy soil may increase in volume by perhaps 5%, whilst clay soil may increase by 10-15%. It is important that operators recognise the issue and take it into account in their proposals. If the predicted “bulking factor” is incorrect, this should be recognised as early as possible, in order that any implications for the restored landform and soil depths can be discussed with the MPA at the earliest opportunity.

7. Are the predicted settlement rates proving to be correct

Sites to be restored following landfilling with putrescible waste need an allowance to be made for the settlement that occurs as the waste degrades. This occurs most significantly in the first 5 years following landfilling, and operators typically surcharge the
site with waste by 15-20% (Waste Management Paper (WMP) 26B Landfill Design, Construction and Operational Practice (DoE 1995) paragraph 6.13) to allow for this settlement, to achieve the agreed post settlement contours. Recent studies have found that settlement may be at least 20%. If settlement is found to be significantly different from the predictions, this should be highlighted as early as possible, to enable the operators to discuss any implications with the MPA, EA and the agricultural advisers, such as increasing/reducing the depths of waste landfilled, or amendments to the landform. Pre-settlement contours should also be suitable for the agricultural after-use, both to take account of the agricultural requirements at the start of the aftercare period, and also in the event that settlement is significantly less than predicted.

8. Is daily cover being stored separately

Daily cover must be stored separately from soil/soil-forming material to be used in the restoration, to prevent soil being degraded and contaminated. Soil/soil-forming material bunds must be properly marked and shown on the site plan, to ensure that they are not inadvertently used for site engineering or daily cover.