Please see Annex AP9 for supporting information, and the "Introduction" for Health and Safety considerations and advice on the use of the guidance.

1. **Does the application state the equipment to be used for soil movement**
   a. *is a clear indication given in the planning documents as to the equipment to be used*
   b. *are the soil stripping and soil reinstatement operations to be undertaken using the same equipment*
   c. *what ancillary machinery is intended to be used for soil bund construction or regrading*

2. **If using backacters and dumptrucks**
   a. *does the application specify the techniques to be used*

3. **If using motor-scrapers**
   a. *does the application specify the techniques to be used*

4. **Is the proposed machinery acceptable**
   a. *is it a proven technique*
   b. *is it capable of undertaking the task within the time constraints*
   c. *is it compatible with other aspects of the planning application (e.g. noise control)*

### COMMENTS

For more detailed information see:
- **Good Practice Guide for Handling Soils** (MAFF April 2000)
- **Evaluation of Mineral Sites Restored to Agriculture** (LRA 2000)

Cross references:
- RN 5, 6
- SW 4
1. Does the application state the equipment to be used for soil movement

   a. is a clear indication given in the planning documents as to the equipment to be used
      The machinery proposed for soil stripping operations should have been agreed in advance by the mineral operator and MPA and must be specified in the planning application. The choice will be based on factors including the ALC of the site and the Statement of Physical Characteristics Report. Other factors include haulage distances, the cost and availability of machinery, the scale of the operation, the soil types to be stripped, the ground and climatic conditions under which the work will be carried out and the need to avoid compaction. The effect of all these considerations can change over the time it takes to prepare, submit and consider a planning application. However, the type of machinery to be used for handling soil and the method of its use should be tailored to site specific circumstances.

   b. are the soil stripping and soil reinstatement operations to be undertaken using the same equipment
      The equipment and techniques to be employed should be specified for each soil type for both soil stripping, storage and replacement operations. It is common for equipment to be brought onto the site to undertake a specific task and then be removed to a different site. Some mineral operators favour a particular machinery combination, as this may also be required for the extraction of the underlying mineral. However, the type of equipment must be agreed prior to the grant of permission.

   c. what ancillary machinery is intended to be used for soil bund construction or regrading
      Bulldozers fitted with a blade may be used for soil movements for short distances, such as soil removal from haul roads and storage into nearby mounds. They can be used to form heaps of soil to be picked up by other machinery. They are also used for grading soil as it is placed; however, excessive trafficking can cause soil structural damage. Graders, which are commonly used to keep the haul roads in good condition, are not suitable for soil handling except in exceptional circumstances such as for sealing areas prior to the winter period.

2. If using backacters and dumptrucks

   a. does the application specify the techniques to be used
      This soil handling method uses backacters in combination with dumptrucks (articulated or rigid bodied) (see Good Practice Guide for Handling Soils (MAFF April 2000) Sheets 1 - 4). An excavator is used to strip soil and load it into dumptrucks for transportation to replacement areas or to storage. The earthmoving operator should outline in their scheme how they will ensure they run only over mineral or overburden, and not over subsoil or topsoil. Loading machinery should stand on the lowest material available (i.e. overburden rather than subsoil, subsoil rather than topsoil). The guidance can be relaxed if the
loading machinery is proposed to be relatively small and mainly static (e.g. a tracked 360° excavator or backacter, which may be situated on topsoil or subsoil if this is operationally more convenient). There is a trend towards less compaction as one moves from motor-scraper restorations to conventional dumptruck restorations and then to loose-tipped restorations. Recent research has demonstrated that deterioration in structure is least in subsoil when it is loose-tipped and untrafficked. The planning application must therefore specify the intended equipment and the method of its use.

3. If using motor-scrapers (see also Annex RN6)

   a. does the application specify the techniques to be used
      The motor-scraper is capable of undertaking all soil handling operations - lifting soil transporting it and laying it either on a stockpile or on the area being restored (see Good Practice Guide for Handling Soils (MAFF April 2000) Sheets 5 - 12). Soil handling using motor-scrapers may represent the cheapest method of moving soil for shorter distances. Their main drawback is that they usually have to spread 3-4 layers of soil to reinstate a 1.2 metre deep agricultural soil profile, and as each spreading involves travelling over the previously laid layer with a full load, this inevitably leads to compaction. This compaction also arises in the formation of soil bunds using motor-scrapers. Such equipment can achieve high quality restoration on some sites, but because of the greater risk of compaction, it should not be used for the restoration of BMV agricultural land, where loose-tipping techniques are preferred.

4. Is the proposed machinery acceptable

   a. is it a proven technique
      Clear guidance is given in Good Practice Guide for Handling Soils (MAFF April 2000) and the report Evaluation of Mineral Sites Restored to Agriculture (LRA 2000), as to the specific stripping and replacement techniques which have proven least damaging to the soil. Generally, these involve loose-tipping techniques using backacters and dumptrucks, whereby none of the replaced soil is trafficked. Some equipment such as draglines, are suitable only for loading dumptrucks or for direct movement of overburden, and their use for direct movement of soil is unlikely to be feasible. However, there will be difficult conditions, perhaps due to topography, where innovative approaches will be required and it will be for the applicant to demonstrate the need to deviate from good practice.

   b. is it capable of undertaking the task within the time constraints
      The choice of machinery should enable the task to be completed within the time constraints and should be serviceable.
c. is it compatible with other aspects of the planning application (e.g. noise control)
   The noise and dust created by different types of machinery needs to be considered in relation to, for example, the site location, Public Rights of Way and surrounding properties.