APPENDIX 5

CODE OF PRACTICE FOR MINERAL DEVELOPMENT
SUPPLEMENTARY PLANNING GUIDANCE
TO THE MINERALS LOCAL PLAN

Introduction

A5.1 Proposals for mineral development generally require the prior approval of the Mineral Planning Authority.

A5.2 This Code of Practice provides general guidance on matters that prospective applicants will need to bear in mind when submitting applications for mineral development. Applicants are advised to discuss their proposals with the MPA in advance particularly if they are likely to depart from the advice it contains. The Code will be applied on the principle that the County and City Councils will not request more information than is required to determine applications and to ensure that working is carried out in accordance with modern restoration and environmental standards. The complexity of detail required will depend on the circumstances of each case. The Code of Practice supplements the policies and proposals of the Minerals Local Plan. Although it is not within the main body of the Plan, it has been approved by the Councils after public consultation as Supplementary Planning Guidance. The Code is subdivided into four sections.

1. Pre Application Considerations

2. Planning Applications

3. Site Design and Operational Considerations

4. Restoration and Aftercare

A5.3 In March 1995 the Department of the Environment published model planning application forms for mineral working and associated development and guidance notes. The forms comprise a Standard Minerals Application Form whose completion is compulsory for all applicants together with annexes 1 to 5 inclusive dealing with mineral extraction and processing (Annex 1), mineral exploration (Annex 2), underground mining (Annex 3), major surface disposal of mine or quarry wastes (Annex 4) and oil and gas operations (Annex 5). Where appropriate, completion of the relevant annex or annexes or submission of a supporting statement dealing with the matters identified in an annex will help the Mineral Planning Authority determine the planning application. Copies of the form and notes can be obtained from the County Council or Stoke City Council.

A5.4 The Code of Practice for Mineral Development is intended to complement the standard mineral application form referred to above. The range and depth of the information required to determine a planning application will vary with the complexity of the proposal and the sensitivity of the site. The provision of full details with the planning application will help the Mineral Planning Authority determine the proposals fairly, efficiently and expeditiously. The Code of Practice suggests matters additional to those referred to in national standard forms and guidance notes which may be relevant to the determination of specific planning applications and which the prospective applicant should, where relevant, address during the preparation of planning application documentation. Where the proposed development may have an adverse
Impact upon features of acknowledged importance, consideration should be given to the inclusion of mitigation measures to reduce the impact of the development or make compensatory provision e.g. creation of a similar feature elsewhere.

**PRE APPLICATION CONSIDERATIONS**

**A5.5** Prospective applicants are urged to discuss their proposals with Mineral Planning Authority officers at an early stage prior to the submission of a planning application. The applicant may also benefit from pre-application consultations with other parties who have an interest in the site such as, for example the Environment Agency, District Councils, the Highway Agency, statutory undertakers or local amenity groups. Indeed, in more complex cases, it may be beneficial to publicise draft proposals, perhaps in the form of a public exhibition held in the locality so that proposals can be refined to take account of any issues that may arise. During the design of proposals applicants will be expected to identify potential impacts arising from the proposals and demonstrate in the planning application how these will be avoided or mitigated.

**A5.6** Early consultations with English Nature, the Staffordshire Wildlife Trust and the Regionally Important Geological and Geomorphological Sites Group for Staffordshire would help establish the location of both statutory and non-statutory sites for nature conservation as well as information regarding protected species. Advice can also be provided regarding survey methodology to ensure that seasonal and other relevant factors are taken into consideration.

**A5.7** Regard will need to be paid at an early stage as to whether the proposed development will be likely to require the submission of an Environmental Statement under the terms of the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999. In broad terms an Environmental Statement is required where proposals impact upon particularly sensitive locations, and/or the environmental effects are complex and/or issues are raised which are of more than local importance. Similarly, early consultation, where relevant, is recommended with the highway authority to establish the need for, and scope of, the Traffic Impact Appraisal.

**A5.8** The applicant will usually carry out an existing site appraisal based on surveys and other research. This provides a baseline for the design and evaluation of detailed proposals. The relevant Development Plan and national planning guidance must be taken into account during the design of proposals. The planning history of the site may also be relevant.

**A5.9** The Code of Practice contains a range of issues and, in some cases, a number of options may be available to achieve the same objective. These may be matters for discussion and negotiation between the applicant/operator and the Mineral Planning Authority.

**A5.10** Mineral development often raises concerns of pollution. Planning and pollution control systems are separate but complementary. Close consultation between Planning Authorities and the Environment Agency is essential to avoid unnecessary duplication and conflicts of interest. In addition to the planning control there is parallel legislation dealing with waste management, including the requirement to obtain a waste management licence in the event that working or restoration involves the treatment, keeping or disposal of controlled waste in or on land as defined in the Environmental Protection Act 1990. This MLP deals only with mineral operations and makes no attempt to prescribe requirements more properly the responsibility of the Environment Agency. The land use planning aspects of waste generation, management and disposal will fall within the remit of the Waste Local Plan. In any event the Environment Agency should be consulted at an early stage in respect of restoration proposals using imported wastes.
A5.11 Waste from any mine or quarry is excluded from the definition of controlled waste by virtue of Section 75(2) of the Environmental Protection Act 1990 and is therefore not generally subject to the Waste Management Licensing system which came into force on 1 May 1994. However, the Department of the Environment have indicated their intention to issue a consultation paper regarding proposals to extend waste management controls to certain categories of mines and quarry wastes and review exemptions from the current Waste Management Licensing regime. These potential changes serve to illustrate the importance of maintaining close consultations with the Environment Agency at an early stage of mine/quarry design.

A5.12 Restoration considerations should figure prominently at the early stages of mine/quarry planning. In broad terms restoration may be to levels lower than original ground contours to reflect the removal of minerals, or to levels at or above original ground contours either relying on the natural bulkage of disturbed materials, other than the mineral being worked, or by the importation of fill materials. All mineral development permissions which allow for restoration with controlled wastes will be subject to conditions controlling both the mineral extraction, infilling and restoration operations.

**PLANNING APPLICATIONS**

A5.13 Reference has already been made above to the standard application form, annexes and guidance notes. The application may be supported by suitably scaled plans, drawings, cross sections, technical data or other material to clearly illustrate the existing situation, the proposals and projected impacts. The national guidelines give advice regarding the appropriate scale of plans. It is the applicant’s responsibility to complete the planning application documentation.

A5.14 The application must clearly describe the proposed development to which it relates. A plan at an adequate scale must always be included in the application showing the precise land to which it relates and its relationship with adjoining land to establish the proper planning context.

A5.15 The following list of matters to be included in a planning application submitted for mineral development attempts to be comprehensive, but there may be additional matters that may arise in particular circumstances. Some of the list of matters may not be required for all types of development. The items listed in the Code are in addition to those matters which may be specified elsewhere in MLP policies or proposals. National planning guidance may also be helpful.

A5.16 **Mineral Exploration** - Where exploration is proposed for a specified mineral and area the nature of the investigations e.g. boreholes, wells, seismic studies, excavations or others shall be clearly described. The number, location and depth of boreholes and excavations shall be provided, and under Section 199 of the Water Resources Act, the developer shall serve notice on the Environment Agency of any intention to construct or extend a boring for which a Conservation Notice may be required. Measures to suppress noise, dust and vibrations together with proposed hours of working shall be provided as well as arrangements for the satisfactory disposal of drilling wastes and contaminated water. The applicant shall provide restoration proposals including steps to be taken to ensure that the land is made safe after exploration.

A5.17 **Need for the Mineral** - Where need is at issue, then a reasoned justification in support of the development, a description of markets to be served and an appraisal of alternative sources of supply will be required. Full details shall be provided of any materials required to be imported to the site for blending purposes.
A5.18 Minerals, Soils, Hydrological and Hydrogeological Considerations - Adequate data including plans, borehole logs, trial pit results or laboratory test work may be provided to support a full assessment of the following matters:-

1. A detailed schedule of existing soil resources to be disturbed including the soil unit types, distribution and quantities of topsoils, subsoils and any soil making materials to be encountered during mining operations;

2. Relevant geological information which may include details regarding lithology, structure, chemistry, contamination, land stability and mining history;

3. Type, distribution, depth and volume of overburden to be moved;

4. Type, tonnage, and quality of saleable minerals to be extracted, including annual and/or weekly production rates. Where the proposal is an extension to an existing site, the tonnage and life of the remaining reserves with planning permission;

5. In the case of oil and gas, the total resources, projected volume of production and life of the field shall be provided where this is known;

6. The distribution, depth and volume of the mineral to be won within the site;

7. Type, nature, and quantities of any waste material to be generated on site or disturbed by the proposed operations including the nature and severity of any contamination present;

8. Existing surface and subsurface drainage arrangements and flows;

9. Depth to the water table and existing variations in water table levels;

10. Where workings will intercept the water table, or be within influencing distance, or interfere with existing surface and groundwater flows within and outside the site, then a hydrological/hydrogeological assessment of the site shall be carried out, so that the implications of the working and restoration of the site on the existing water regime can be established and appropriate mitigation measures agreed;

11. Where it is proposed that any site be restored using potentially polluting wastes then an appraisal of the geology and hydrogeology of the site and its surroundings and of any sub-surface natural or man-made structures capable of providing pathways for the migration of leachate or landfill gas within and outside the site shall be undertaken and submitted to the Mineral Planning Authority;

12. A preliminary assessment of the effects of the proposals on surface hydrology, hydrogeology and water chemistry is appropriate where important or sensitive biological habitats have been identified close to the site, or within influencing distance of it, which may be affected;

13. The location of licensed (or unlicensed) water abstraction points in proximity to the proposed site to evaluate the potential impacts of the proposed operations on the said abstractions including appropriate mitigation measures;

14. the source of water to be used for dust suppression and wheel washing.
Commercially sensitive data on mineral quantity, quality and markets can in appropriate circumstances be submitted in confidence.

**A5.19 Landuse, Landscape and Ecological Appraisal** - Applications shall include, where appropriate:-

1. A description of the geological, geomorphological, landuse, landscape and ecological context of the site;

2. A detailed appraisal of the existing site identifying all significant landscape and nature conservation features including geology, geomorphology, contours or levels, landuse, derelict or degraded land, areas of landscape value, buildings or structures, rights of way within or in close proximity to the site, informal recreation facilities, woodland, hedges and hedgerow trees, or other means of enclosure, statutory and non-statutory sites of nature conservation value, protected species, grassland, heathland, streams, pools, wetland areas, watercourses, other semi natural habitats and significant flora and fauna;

3. Assessment of short, medium and long distance views into the site illustrated, where appropriate, by sight line sections from sensitive locations, photomontage or other illustrative material;

4. Proposals for retention and maintenance of any existing features for their intrinsic value and also for including trees and hedges to visually screen the site or potentially obtrusive features therein, or to integrate the site into its surroundings and for the creation of new screen planting and screen mounds for the same purpose;

5. Where new planting is proposed, details of locations, preparatory works, density, size, number, species, method(s) of protection, and programme of planting and maintenance of trees and shrubs;

6. Measures to minimise or mitigate for adverse landscape and ecological impacts, and

7. Proposals to temporarily stop up or divert existing public rights of way or replace existing facilities displaced by the proposed operations.

**A5.20 Archaeological, Historical or Architectural Evaluation** - As part of the pre-application research, applicants are advised to consult the County or City Council and the relevant District Council to help establish whether or not their proposals are likely to have any adverse impact on features of potential archaeological, historical or architectural interest. Advice can be obtained from the County or City Council regarding archaeological desk-top assessments, on-site field evaluations and suitably qualified and experienced contractors to carry out such work. MLP Policies 24, 25 and 26 deal with the requirements of an archaeological appraisal.

**A5.21 Assessment of Other Impacts** - Depending on the location of the site, and particularly critical elements of it (e.g. processing plant and haul roads) in relation to surrounding residential and other sensitive properties, the Mineral Planning Authority will require the submission of detailed surveys or assessments of the following, where appropriate:-

1. Proximity to residential development and other sensitive locations;

2. **Noise** - Existing ambient noise levels at surrounding noise sensitive locations in terms of the 1 hour LAeq where possible, or where the site is an extension to an existing site...
then the L90 level will be acceptable where pre-mining noise levels are not available; measures to minimise noise generation and attenuate its transmission; anticipated increases in noise levels at sensitive locations attributable to site operations after the introduction of such measures expressed as a 1 hour LAeq reading. Temporary, noisy activities such as soil stripping and replacement and the construction and removal of screen banks shall be evaluated separately for the purposes of the noise assessment.

3. **Dust** - Measures to suppress the generation of dust and to ensure that its dispersal and deposition beyond the site boundary is reduced to an acceptable level. Available climatic data, ambient dust levels and projected levels of dust deposition arising from site operations shall be provided;

4. **Blasting** - Where blasting is proposed, the anticipated maximum peak particle velocity (ppv measured in mm/sec) and air overpressure (dB) at any residential or other sensitive property outside the site boundary, together with calculations showing how the ppv has been derived. The anticipated frequency of blasting per week, blasting periods and projected number of weeks when blasting will be required. Measures to suppress vibration from blasting or any other source and means of prior notification of blasting arrangements;

5. **Water** - Applications with implications for drainage, flood defence, groundwater or pollution control shall include the following:-

   (a) Details of any treatment facilities required or to be provided on the site including the size of any silt lagoons;

   (b) Provision for site sewerage facilities;

   (c) Measures to prevent the spillage or seepage of all oil and chemicals delivered, stored and handled on the site including details of pollution prevention measures such as bunding of fuel tanks, storage/maintenance of plant etc;

   (d) The arrangements for wheel washing and weighbridge drainage;

   (e) Details of any proposals to protect, divert or culvert any watercourses, culverts, drainage ditches or water areas within or bounding the site;

   (f) Details of the compensating works for any loss of flood storage capacity;

   (g) Details of any bunding or other appropriate measures to protect the mineral extraction working from flooding;

   (h) Where appropriate, upon cessation of underground mining, long term water management proposals to protect against the adverse environmental impacts of groundwater rebound or drainage of spoil or minerals deposited at the surface;

   (i) Where appropriate, details for the measurement and recording of water quality and groundwater levels.

6. **Monitoring** - Details of measures to monitor noise, dust, vibration, water levels and quality. The proposals shall specify the method and equipment to be employed, the location of monitoring points, duration and frequency of reading. Proposals shall also provide for submission of results to the Mineral Planning Authority if requested;
7. The projected effects of subsidence arising from underground working and areas to be left unworked to provide support.

8. The extent, quality and use of agricultural land to be disturbed and implications for existing agricultural holdings. Following a reconnaissance survey Provisional Agricultural Land Classification maps were published in the 1970s. Due to the nature of that survey these maps are not suitable for identifying land quality on an individual site for which an up to date survey is required. Detailed land classification information may be available from Ministry of Agriculture, Fisheries and Food where further survey work has been carried out.

9. Implications for existing or proposed services or utilities crossing or adjacent to the site;

10. The impacts of the proposals on the use and enjoyment of public rights of way within or in close proximity to the site;

11. Other environmental factors as appropriate.
A5.22 Working Proposals - Applications shall address, where appropriate, the following matters:-

1. Site layout, method of working, depth and area of excavation, excavation batters and standoffs, direction, phasing and programming of working.

2. In the case of underground working to include the position of all mine entries (including ventilation shafts etc.), the minimum and maximum depth of extraction and thickness of individual seams or deposits, method of extraction and disposal of waste materials. In appropriate circumstances, provision of an annual survey plan of site operations will help demonstrate compliance with the projected programme of working.

3. Anticipated overall life of operations; initial site development, excavation, backfilling and infilling with imported materials (where applicable), restoration and aftercare;

4. Existing and proposed site vehicular access arrangements to the public highway and method of transporting material within the site identifying the location of internal haul roads, including maintenance and signposting proposals together with any on and off site traffic management arrangements. In the case of oil and gas the method of transporting the hydrocarbon from wells to gathering, processing and storage facilities shall be provided;

5. Method and timing of soil stripping, movement, storage and replacement of topsoil, subsoil, soil making material and overburden or waste tips; location, levels, slopes, maximum height, method of construction, timing of construction and removal and treatment of storage mounds. Measures to protect undisturbed land or features;

6. Proposals for screening and landscaping the operations including bunds and advance planting;

7. Measures to ensure the stability of working faces, tips and associated structures;

8. Design, purpose, dimensions and external appearance of plant, machinery and buildings, including location, cladding, and colour. Estimated normal production rate and maximum production capacity of the processing plant. Traffic circulation and parking areas. The location of any off-site processing plant to be used;

9. Mobile plant and machinery to be used and location of plant yards and workshops;

10. Location, height, capacity and screening of stockpiles and other storage areas. Fuel oils and other polluting materials to be stored and measures to prevent pollution; and

11. Amount of waste generated on-site and method of disposal. Proposed waste management scheme including the location, form and capacity of arrangements for the temporary or permanent deposition of wastes and method and programme of placement and/or removal. The constraints that the physical and chemical characteristics of the waste may impose on revegetation and the control and disposal of drainage waters;

12. Existing topographical contours, limit of working areas and contours on completion of excavation;

13. Whether working will be wet or dry and, if applicable, methods of dewatering;
14. Where infill materials will be imported to the site, or contaminated materials arise during operations then state the type of material to be tipped or dealt with, its source, nature and quantity, its form i.e. solid or liquid and whether any degradable, toxic or dangerous materials are involved. The process by which the material will be handled, stored, treated or dealt with shall be clearly explained;

15. Proposals to store hazardous materials on site;

16. Measures to protect, divert, temporarily suspend or close existing rights of way;

17. Means of water supply and disposal of waste water;

18. Location of lagoons, means of disposing of silt, tailings or other materials and/or their use in the restoration process;

19. The method of collection, treatment and disposal of water arising on the site, site drainage arrangements, including flow balancing requirements and discharge. Details shall be submitted of all proposed watercourses to be provided during site operations and on restoration;

20. Arrangements for the monitoring, recording and reporting of groundwater qualities and levels;

21. Measures and programme to protect and/or divert services (overhead power lines, pipelines etc.);

22. Proposed hours of working;

23. Fencing and security proposals;

24. Artificial lighting;

25. Anticipated employment levels;

26. Measures to protect and manage retained natural features and habitat, including features retained for their geological/geomorphological interest, trees, hedgerows, water areas;

27. For protected species the creation of alternative habitats, breeding areas, and in the case of badgers, alternative setts;

28. Translocation of other notable plants or animals where habitats will be worked;

29. Measures to be taken to make efficient use of the mineral; the sale/consumption of the mineral only for appropriate uses; the minimisation of the production of waste; encouraging the re-use/recycling of the mineral and its products where appropriate;

30. Proposals for making safe any disused mine shaft or adit known to be located on the site or encountered during operations. In the case of proposed underground working, the treatment of the mine opening on cessation of operations;
31. The position of landfill gas and leachate monitoring and control facilities which have landuse implications, if relevant, together with facilities for monitoring and treatment of settlement; and

32. Proposals in respect of oil and gas development to include the number and location of wells, pipelines, ancillary and gathering facilities including screening, landscaping and design.

A5.23 Traffic - The generation of traffic is perceived as one of the major problems for many mineral sites and, wherever possible, the County and City Councils will seek to maximise the use of non roadborne options. Traffic considerations are likely to include the following:

1. Where non-road transportation options are proposed, full details shall be provided of the transportation arrangements and facilities;

2. Anticipated number and classification of vehicles associated with mineral operations;

3. An assessment of the highway capacity, structural integrity, and safety implications; also of the environmental impact, in terms of noise, dust, fumes and vibration on the surrounding highway network, communities and sensitive environmental areas. Early consultation with the relevant highway authority is recommended to determine the area of assessment;

4. Expected area of distribution of sales and proportion of sales to different areas;

5. Detailed site access arrangements to the public highway, including road widths, sight lines and kerb radii, means of construction, drainage arrangements; internal access and haulage roads, location and surfacing; wheel cleaning equipment and sheeting bays, location and specification etc;

6. Details of surveys carried out to assess road safety implications and the structural integrity of the public highways leading to the site;

7. Proposals for any necessary off-site highway works and traffic management measures including, where appropriate, other measures to mitigate negative traffic effects and an expressed willingness to secure these by means of legal agreement;

A5.24 Restoration and Aftercare Proposals - Detailed restoration proposals are required with all applications for mineral development. Whilst it is acknowledged that on long term sites, it might be difficult to determine the precise afteruse of the land some 10 to 20 years hence, it is nonetheless essential that applicants demonstrate the nature and viability of their restoration proposals at the outset. High quality restoration will only be achieved by detailed planning at the application stage and by careful control and monitoring throughout the working, restoration and aftercare periods. The items below summarise the main points which will need to be included, where appropriate, with the application. It should be noted that restoration proposals which involve a material change from the initial use will involve a separate planning application to the District Council.

1. Details of proposed afteruse(s);

2. Method, phasing and programming of restoration, providing for progressive restoration wherever practicable and including any proposals for permanent pumping to artificially depress the water table;
3. Materials to be used for restoration, including infill materials and soils. Where it is proposed to import materials the anticipated source, nature and quantity shall be indicated;

4. Where it is proposed to import biodegradable or other potentially polluting wastes for restoration purposes, sufficient information to assess in planning terms the adequacy of the site to safely accept the material must be submitted, which may include provision of an hydrogeological survey, together with proposals to monitor and control gas and leachate;

5. Method of overburden replacement and treatment prior to replacement of soils. In certain cases a specification for the backfilling and compaction of all or parts of the site may be required;

6. Proposed final contours, and typical gradients and levels on completion of regrading and/or backfilling and after settlement;

7. Replacement of subsoil, topsoil and, where necessary, the importation of soil or soil making materials; types and thicknesses; methods of emplacing soils including ripping requirements or alternative arrangements such as loose tipping;

8. Where appropriate, cultivation techniques, including ripping, harrowing, stone picking, fertilising and seed bed preparation;

9. The provision of conditions to assist in the re-establishment of flora and fauna which existed on the semi-natural parts of the site before the commencement of operations;

10. Full details of geological/geomorphological features to be retained, tree, hedgerow and other planting or other habitat creation techniques i.e. ground preparation, location, number, size and species of trees, method of planting and protective measures;

11. Placement of fences or other means of enclosure, gates and stiles;

12. Site drainage including provision of under drainage and where necessary as a temporary arrangement, surface water drainage;

13. Position, extent and depth of water features and watercourses, together with details of the proposed source of water for creating new water features;

14. Stocking lakes/ponds with fish and plants;

15. Proposals for the removal of buildings, plant, equipment, stockpiles, roads and hardstandings;

16. Reinstatement of public rights of way and provision for additional public or other access;

17. Remedial measures to prevent ground contamination after extraction and processing of oil or gas cease, where relevant;

18. Proposals for the aftercare of the sites restored to agriculture, forestry, nature conservation or amenity use, for an appropriate period dependent on the afteruse proposed. Post restoration land management or aftercare shall include provision for
annual inspections, soil testing, application of lime, nutrients or other necessary soil ameliorants, cultivation, weed control, protection from pests and livestock, checking of tree stakes and replacement of failures, cropping and stocking and installation of drainage and water supplies. The schemes will be monitored and amended with the agreement of the Mineral Planning Authority, in response to site specific circumstances.

19. Provision, in appropriate cases, for transferring land restored to amenity and/or nature conservation uses to County or District Council control, or such other body as may be agreed.

A5.25 Other Matters - All planning applications must provide particulars of the applicant’s interest in the land and minerals within the site and indicate adjoining land within their ownership or control and other party’s land and/or mineral interest(s) in the site. The applicant must notify other persons with an interest in the land and/or minerals when the planning application is submitted.

A5.26 Finally, the applicant must pay the appropriate planning application fee. Further details of the requirements and responsibilities can be obtained from the Mineral Planning Authority.

SITE DESIGN AND OPERATIONAL GUIDANCE

A5.27 The following Code is intended to assist in the development of site design and operational matters having regard to current technologies and national guidance. It incorporates the standards by which proposals will be assessed. Not all parts will be relevant in all circumstances.

A5.28 Time Limits - Applicants will be expected to specify how long it will take to carry out the proposed development or components thereof e.g. site preparation, excavation, backfilling, restoration and aftercare. In the case of built development the projected life of the facility may be required. Time related aspects of development will be controlled by planning conditions wherever practicable. In particular a time limit will normally be imposed on the duration of winning and working minerals operations at the site together with the specification of the period within which restoration will be completed. Permission will be subject to commencement within a specified date of the grant of planning permission and the operator will be obliged to give prior written notification of the commencement of development and specific aspects of the development such as the commencement of soil stripping.

A5.29 Site Working Scheme - A site layout plan must clearly indicate the uses to which the component parts of the site will be put and identify areas to be protected from development. Phasing plans shall show the progression of site operations through the life of the development. Site operations shall be designed to minimise the area of the site to be disturbed at any one time and have regard to the desirability of minimising energy requirements and, where practicable, restoration shall take place progressively. Development will only be permitted in accordance with the submitted application details and plans as amended by conditions attached to the permission or by any subsequent approved amendment or permission. Work shall not be undertaken in a manner prejudicial to the stability of adjoining ground and buildings or structures there upon.

A5.30 The Mineral Planning Authority will normally expect all natural mineral wastes arising from the development to be accommodated within the quarry itself. The material may be used to raise the quarry floor and/or reclaim areas to make them more suitable for some form of afteruse. For mine waste, the Mineral Planning Authority will normally expect the natural waste materials to be stored underground wherever practicable.
A5.31 Adjacent to highways a strip of land shall remain undisturbed between the highway and the limit of excavation, and the full extent of the undisturbed strip, should be determined by ground stability considerations as described in paragraph 3.98 and MLP Policies 30 and 36. Limits of excavation shall be located at an appropriate distance away from the tree trunk or hedgeline having regard to BS5837 (Guide for Trees in Relation to Construction, Sections 7, 8, 10 and 11). Other quarrying operations adjacent to trees and/or hedges shall be located at an appropriate distance having regard to the said British Standard.

A5.32 The layout of the working shall allow vehicles to manoeuvre, park, queue and load all within the site.

A5.33 Working Hours - The normal working hours relating to new or extended sites will be 7 a.m. to 7 p.m. Mondays to Fridays and 7 a.m. to 1 p.m. Saturdays, with no working on Sundays, Bank and Public Holidays, unless for particular site specific reasons, or conditions specify otherwise. Operators of existing permitted sites with less restricted or unrestricted hours of working are urged not to operate outside these hours, if practicable.

A5.34 Economic or technical reasons may require working to take place outside the above times. For example the drilling of a deep borehole may require to take place for 24 hours per day for 7 days per week. Such cases will be assessed on their merits following a full and detailed evaluation of environmental impact.

A5.35 Noise - Mineral Planning Guidance Note 11 (MPG11) provides the most up to date guidance on the control of noise at surface mineral workings. Developers shall establish existing background noise and projected levels arising from the proposed development. The proposed operations will be assessed in relation to noise sensitive properties or areas such as dwellings, schools or places of recreation. Proposals which will result in site generated noise levels exceeding a day time limit of 55 dBLAeq1h (freefield), a night time limit of 42 dBLAeq1h (freefield) or which increase ambient noise levels by more than 10dB(A) at the curtilage of any noise sensitive property will be considered closely in relation to existing background levels and the likelihood of complaints. There may be a need to modify the nominal limit in the light of local circumstances. MPG11 indicates that because of the nature of opencast coal mining then, exceptionally, a nominal daytime limit at the nearest noise sensitive dwelling within the range of 55-60 dBLAeq1h (freefield) is justified at present but that this special dispensation was reduced in 1998 to 55 dBLAeq1h (freefield) in common with all other mineral operators. Where high pitched or whining noises will be significant components of the total noise generated then tonal noise corrections might be required. Open spaces used for quiet relaxation are noise sensitive and MPG11 considers a limit of 65 dBLAeq1h (freefield) at the perimeter of the area during the normal working day is reasonable, and 55 dBLAeq1h (freefield) at other times.

A5.36 Temporary, noisy activities such as the construction of screen mounds shall be evaluated in relation to the guidance within MPG11 which states that such operations shall only take place for 8 weeks within each year.

A5.37 Guidance regarding other noise aspects of mineral development not covered by MPG11 may be found in PPG24 Planning and Noise.

A5.38 Noise arising from mineral operations shall be controlled by appropriate site design and working methods. The potential for disturbance from noise may be minimised by siting intrusive operations away from noise sensitive locations or behind screening features, avoiding excessive gradients on haul roads and selection of appropriate "quiet" plant or machinery. All vehicles, plant and machinery should be efficiently maintained and fitted, where appropriate, with
effective silencers and acoustic housings, and shall be operated at all times using the best practicable means to minimise the generation and transmission of noise to locations outside the site.

A5.39 When proposals are submitted for new sites or for extensions to existing sites the Mineral Planning Authority will expect the operator to make provision for the regular monitoring of noise levels at the site by the operator and that such monitoring information be made available for inspection by the Mineral Planning Authority if necessary. Detailed monitoring requirements will be decided on a site specific basis.

A5.40 Dust - Operations such as the removal or replacement of soils or overburden, movement of vehicles, blasting or treatment, preparation and stocking of minerals could give rise to dust problems outside the site unless effectively controlled. Provision shall be made in any proposal for mineral development to minimise the deposition of dust outside the confines of the site to an acceptable level in accordance with a detailed scheme to be agreed with the Mineral Planning Authority. These measures might include limiting the area of mineral stripped of soils and/or overburden at any one time, phased working and restoration, the surfacing of internal haul roads, the sheeting of all mineral bearing lorries, the seeding of screen mounds, the appropriate design of all fixed plant and machinery (including loading bays and hoppers), the watering, as necessary, of areas and routes used by vehicles, fitting vehicles with exhausts pointing away from the ground, and in adverse weather conditions reducing the speed of vehicles, temporary re-routing of vehicles and stopping dust producing activities. In addition all reasonable steps shall be taken to minimise the emission of smoke, fumes and any other noxious or irritating substances from the site and plant and machinery thereon.

A5.41 When applications are submitted for planning permission for the expansion of existing sites or for new sites they shall be accompanied by details for the regular monitoring by the operator of the dust levels at appropriate locations in relation to dust sensitive locations or activities. Monitoring information shall be made available for inspection by the Mineral Planning Authority if requested. Detailed monitoring requirements will be decided on a site specific basis.

A5.42 Blasting - Ground vibration and air overpressure from blasting has the potential to cause damage to buildings, structures and fittings and might also cause disturbance to surrounding communities and sensitive operations. Where practicable, alternative effective methods such as ripping shall be considered. When blasting is necessary, provision shall be made, in accordance with a scheme to be agreed with the Mineral Planning Authority, to minimise the disturbance to people and risk of damage to properties, structures and sensitive operations arising from ground vibrations and air overpressure. The acceptable limits on ground vibrations (measured in terms of peak particle velocity) and, where appropriate air overpressure will be determined in relation to site specific circumstances.

A5.43 Blasting will normally be confined within the period 10 am to 4 P.M. Mondays to Fridays, except in emergencies. Arrangements will normally be required at the commencement of any new phase of blasting operations to inform local residents of anticipated times, frequency and duration of blasting operations.

A5.44 A scheme of monitoring each blast will be required and the results of such monitoring made available for the inspection by the Mineral Planning Authority if requested. Detailed monitoring requirements will be decided on a site specific basis.

A5.45 Soils - Conservation of soil is vital to securing satisfactory restoration and shall be based upon a comprehensive audit of existing on-site resources. No topsoil, subsoil or
overburden shall be exported from the site but shall be used to achieve the best possible restoration of the land. Handling of soils should be minimised to avoid mixing, loss and compaction. Soils of different characteristics will normally be stripped, stored and replaced separately in the correct sequence. Topsoil and subsoil shall be stripped from areas to be used for the excavation of materials, internal roads, plant and machinery areas, hardstandings and overburden mounds. Soil shall only be handled when it is in a suitably dry and friable condition. Handling soil when it has a high moisture content, and, in particular, traversing it with heavy plant, in such circumstances can result in serious damage to its structure and loss of its long term potential as a growing medium. The moisture content at which soils can be properly handled depends on their constituents and cannot be simply summarised. As a general rule, however, soil handling shall be confined to dry periods between 31 March to 30 September. Conditions to this effect will normally be imposed on planning permissions. Particular care shall be taken in selecting the plant and techniques for soil movements to avoid traversing the soil more than necessary.

A5.46 Ideally, stripped soils will be placed directly on land being restored to avoid double handling. It is often necessary to store soils for a period. The longer the storage period then the greater the risk of deterioration in the quality of the soils. Topsoils, subsoils and any soil making materials that might be recovered shall be stored in mounds in locations and to heights to be agreed with the Mineral Planning Authority. The mounds shall be seeded with a suitable low maintenance grass seed mixture and kept weed free until required for restoration purposes. Adequate provision must be made to ensure that the mounds are clearly demarcated and are not traversed by plant or adversely affected by other operations. Normally, the "outward" facing slopes of the soil mounds shall not exceed a gradient of 1 in 3 to ameliorate their visual impact and their levels shall be undulating to avoid an "engineered" appearance. Where temporary screen mounds are to be created, these will be expected to blend, so far as is practicable, with the surrounding landscape. All soil mounds shall be accurately mapped and the volumes of each mound individually marked.

A5.47 Landscape and Visual Amenity - Retained trees, hedges and woodland areas, together with any on-site and/or off-site planting shall be protected, managed, and all failures replaced on an annual basis, throughout the life of the operations.

A5.48 The retention of wildlife habitats within the site will help lend maturity to a recently restored landform and provide a seedbank to help recolonise neighbouring land. These areas shall be managed and, where appropriate, enhanced during the life of the site.

A5.49 Stockpiles and overburden mounds shall be located to minimise their environmental impact in locations and to heights and slopes agreed with the Mineral Planning Authority. The levels and profiles of the mounds shall be designed so as to avoid an 'engineered' appearance from views outside the site. Those faces of the overburden mound visible from the outside of the site for any substantial period of time shall be dressed and seeded to grass as soon as possible after construction. Permanent stockpiles shall be landscaped to screen and/or soften their visual impacts outside the site.

A5.50 When designing the siting of plant and buildings regard shall be had to the need to position such facilities in visually unobtrusive locations within the quarry site.

A5.51 Highway Considerations - Wherever practicable, the County and City Councils will seek to maximise the use of non-road borne options. In some situations, for example, when extraction areas are separated from processing plant by public highways, the use of field conveyors with overhead or subsurface crossings of roads shall be utilised (provided such facilities themselves do not give rise to unacceptable adverse impacts) to reduce the impact of
The traffic on the local highway network. Where road haulage is the only practicable solution, proposed access and routing arrangements shall be discussed at the outset with the County or City Council including arrangements to ensure compliance with agreed routes by the mineral operator or their contractors. Such measures could involve the erection of signs displaying agreed vehicle routes, the regulation of traffic levels at particularly sensitive times of the day and other traffic management steps.

A5.52 Access shall be limited to specific points and for specified purposes. Vehicular access points shall be surfaced, properly designed and maintained. The County and City Councils will normally require the access to be wide enough for two heavy lorries to pass. Acceleration and deceleration lanes and a right turning lane may be needed, or possibly more elaborate arrangements, where traffic access is onto a main road. The Highways Agency will generally resist the creation of access direct to trunk roads.

A5.53 Effective wheel cleaning facilities shall be provided and used by all heavy vehicles leaving the site. Wheel cleaning equipment shall normally be sited at least 50 m into the site and a hard-surfaced road, at least 50 m long and capable of being swept by a road sweeper, shall be laid on either side of the wheel wash. This facility shall be maintained in a clean condition so that mud and other debris is not carried out onto the public highway. Whilst the primary objective is to ensure that dirt is not carried out onto the public highway, where such an occurrence happens, steps shall be taken immediately to rectify the situation by sweeping the public highway not less frequently than once per day. The deposition of extraneous materials on the public highway constitutes an offence for which fines may be given on summary conviction. All loaded vehicles entering or leaving the site shall be sheeted.

A5.54 Diverted rights of way and existing rights of way that remain within the site shall be maintained and signposted where appropriate.

A5.55 Site Drainage, Water Pollution and Dewatering - All works shall be designed and undertaken so as to prevent the discharge of any polluting matter to any ditch, watercourse or underground strata as well as conserving of water resources. Site drains and watercourses shall be regularly inspected and maintained. Adequate measures shall be taken to ensure that the site operations will not adversely affect the drainage of surrounding areas. To avoid any pollution of groundwater or surface waters, the means of disposal of any trade waste or effluent must be agreed by the Mineral Planning Authority in consultation with the Environment Agency. In addition, under Section 30 of the Water Resources Act, developers will need to serve notice on the Environment Agency of any intention to carry out dewatering. The Environment Agency will issue a Conservation Notice as required.

A5.56 Where areas of nature conservation interest are sensitive to change in water quality or quantity either downstream of the proposed site or elsewhere, operators may be required to comply with strict controls on the management of water within the site and on its discharge from the site.

A5.57 Mineral development shall not normally be located in floodplains unless drainage works will be undertaken to minimise any potential detriment. No working shall take place within 30 metres of a main river unless it can be demonstrated that the operations will not adversely affect the river bank. An 8 metre wide access strip should be maintained at all times either side of the river.

A5.58 Fencing - Sites shall be securely fenced to prevent accidental trespass and discourage intentional access. Additional safeguards might be required in particularly dangerous areas.
A5.59 Fixed Plant, Buildings, Parking and Storage Areas - When designing the siting of fixed plant, buildings, storage and parking areas, regard shall be had to the need to position such facilities in visually unobtrusive locations and away from sensitive locations. Fixed plant, buildings, parking and storage areas shall be located in positions previously agreed with the Mineral Planning Authority. All plant and buildings shall be painted in a colour or colours, or clad in materials previously approved by the Mineral Planning Authority and maintained in good decorative order throughout the life of the operations. The County and City Councils expect developers to take into consideration energy conservation during the design of buildings and plant.

A5.60 Archaeological Investigation - Where areas of potential archaeological interest are to be disturbed the operator should have regard to the requirements of MLP Policies 24 and 25 and should:

1. Provide adequate opportunity for access for Mineral Planning Authority officials or their nominees for the purpose of monitoring archaeological investigations or for the carrying out of watching briefs; and

2. Use their best endeavours to discourage any unauthorised person or groups from interfering with the site.

A5.61 Public Infrastructure/Utilities e.g. gas, electricity water - The County and City Councils will expect the mineral operator to have discussed with the relevant utility operator any required means of support for and method of working near, the utility operator’s facility before a planning application is submitted.

A5.62 In some circumstances it may be advisable to leave undisturbed margins between mineral workings sites and public utilities and installations. However, this is subject to any existing agreements between the undertaker and landowners and it may be possible to divert such installations to allow mineral working. Where the utility runs through the site, then the detailed arrangements for working in the vicinity of the facilities shall be submitted as part of the planning application. The effect of working near the facility can then be given full and proper consideration during the processing of the planning application.

A5.63 Planning Permission Documentation - The quarry/mine manager will no doubt be aware of the obligations arising from the planning permission. Nevertheless it is good practice to keep a copy of the planning permission and all approved plans and documents available for reference at the site.

A5.64 Local Liaison Forum - Where appropriate liaison forums comprising representatives of local communities, the Mineral Planning Authority and the Mineral Operator have been established at mineral sites. These provide an opportunity for local residents to be informed of the detailed progress of site operations and restoration, allow problems and concerns to be discussed and can investigate general environmental improvements that might be implemented during the working of the site. Where appropriate the County and City Councils will encourage further forums to be established. Such forums are particularly useful where the site, or the access route, are in close proximity to residential properties, or where there has been a history of complaints relating to the operation of the site.

RESTORATION AND AFTERCARE

A5.65 Introduction - During mining, the character and use of land is changed. When mineral operations cease, the land shall be satisfactorily restored to its former use or to an acceptable
alternative use as soon as practicable. As indicated in MLP Policy 9, the Mineral Planning Authority expects that the quality of restoration on mineral sites will continue to rise and that new mineral development, or reviews of former permitted sites, will aim to secure high standards of restoration and beneficial afteruse of restored land. When mining operations cease, all plant, buildings and machinery introduced for the purpose of the mineral development shall be removed as part of the comprehensive restoration proposals.

A5.66 The working and restoration of mineral sites might provide the opportunity to reclaim derelict or degraded land, improve the restoration of former mineral sites which are considered to be inadequate by contemporary standards, provide for community facilities such as recreation areas or improved rights of access to the countryside, promote woodland planting and diversify and enhance the landscape and nature conservation value of the land, including the re-creation of historic landscape patterns and features or creation of rock exposures which may have recreation or education interest. Provision must be made by way of a management scheme, funding and/or other appropriate means to sustain the benefits of restoration for a period of aftercare of 5 years following the satisfactory completion of restoration. The Mineral Planning Authority will seek to ensure continuity of management beyond 5 years where desirable by way of voluntary agreements with appropriate parties. Such benefits will be one factor to be taken into consideration when mineral development proposals are being determined. Restoration opportunities should be viewed creatively and opportunities may exist, subject to planning permission for a wide variety of initiatives from motor sports to quieter pursuits.

A5.67 The applicant needs to demonstrate that the site can be restored satisfactorily. Consideration of restoration issues should start when mining proposals are being planned and shall have regard, amongst other matters, to existing on-site resources, the character of the surrounding land and its uses and the planning policy context. Proposals should seek to minimise the area of land to be disturbed at any one time and progressively restore non operational land after mining as soon as practicable.

A5.68 The Councils have prepared supplementary planning guidance entitled "Planning for Landscape Change", to the Staffordshire and Stoke-on-Trent Structure Plan 1996-2011. With all proposed forms of restoration, reference should be made to that guidance.

A5.69 The restoration strategy can be strongly influenced by whether or not there is a need to import infill or other materials to secure satisfactory restoration. Suitable infill material may be in short supply, erratic in its availability and produced too far away from quarries. The impact of importation operations including security of supply will be taken into consideration during the evaluation of planning applications.

A5.70 In some cases, for example opencast coal mining, the coal recovered is a relatively small proportion of the total quantity of material to be disturbed and this, together with the natural bulkage of disturbed material might allow re-creation of the original landform or such other landform as may be deemed appropriate. In other types of quarrying operations the removal of relatively large quantities of mineral from the site will leave permanent changes in the landform with levels at, or close to the final excavated levels of the quarry and may provide the opportunity to create interesting landforms. The opportunity might also exist to provide different final landform by the importation of suitable infill materials to the quarry.

A5.71 The acceptability of infill operations in terms of their engineering attributes depends in part upon the nature of the infill material and the characteristics of the prepared receptor area. Many quarries may only be suitable for the deposit of inert wastes e.g. construction wastes which contain no biodegradable organic matter or soluble chemical components, thus excluding most domestic, industrial and commercial wastes. On the other hand, particularly
where clay materials are available it might be possible to contain potential pollutants and offer greater potential for importation of infill materials. The relationship between the depth of excavation and the water table and the importance of the bed rock as an aquifer for a water supply are further matters relevant to the determination of such proposals. Where importing infill material is not appropriate then restoration will be dependent upon available material on site such as silts, overburden and stored soils.

**A5.72** Restoration may have important implications for drainage, flood defence, groundwater and pollution control and the County and City Councils will consult the Environment Agency on all restoration proposals.

**A5.73** Where a site contains Grades 1, 2 and 3a agricultural land, it should be restored so that its potential as a high quality resource is conserved for the longer term. In view of the changing circumstances for the agricultural industry and the need to diversify the rural economy there is much more scope for alternative approaches to restoration; particularly on lower quality agricultural land. Provided these are compatible with the Development Plan this could include commercial and amenity woodland, nature conservation and recreational uses.

**A5.74** The restoration of former mineral development sites provides the opportunity to replace and compensate for the loss of ponds, wetlands (in particular reed beds and lowland wet grasslands) and other valued landscape and ecological features. Innovative restoration schemes have the potential to create significant areas of new and valuable wildlife habitat. Of particular importance is the need to recreate areas of heathland, wetland and species rich grassland. Staffordshire is co-operating in the preparation of a Biodiversity Action Plan and will encourage restoration schemes which look to provide 'corridors or stepping stones' between existing wildlife habitats.

**A5.75** Beneficial opportunities exist generally to develop woodland areas particularly in the National Forest and Forest of Mercia and also over a wider geographic area. One vehicle for achieving more woodland planting is through the restoration of mineral working sites to forestry.

**A5.76** To sustain high standards of restoration it is crucial that the land is managed to ensure that the afteruse is satisfactorily established. The aftercare period commences upon completion of restoration of the land. Aftercare proposals should be submitted at the time of the initial application although the detailed proposals may be reserved for determination at a later stage. In any event aftercare schemes must be submitted for approval in consultation with the Ministry of Agriculture, Fisheries and Food, English Nature or the Forestry Authority, as appropriate, at least 12 months in advance of the replacement of the topsoil. Aftercare proposals for agriculture, forestry, amenity and nature conservation schemes will need to provide for five years, although a longer time period may be beneficial for certain afteruses and where this is the case the agreement of the applicant will be sought for a longer period of aftercare.

**A5.77** Where a longer period of management might be required then the County or City Council will consider the need to agree an appropriate legal agreement to provide the necessary control.

**A5.78** The monitoring of mineral sites during working, restoration and aftercare is an important responsibility of the operator and Mineral Planning Authority. Close liaison will be maintained between the Mineral Planning Authority and other relevant statutory bodies such as the Ministry of Agriculture, Forestry Authority, English Nature and parish councils etc. throughout this period.
A5.79 The following sections of the Code of Practice deal with two main restoration possibilities in terms of final landform:

1. Restoration to levels at or above original ground contours using imported wastes or on-site overburden;

2. Restoration to levels lower than original ground contours.

The latter category can be further subdivided into those cases where finished levels are above the water table and are potentially free draining and those cases where they lie below. These circumstances are generally confined to River Terrace Sand and Gravel Sites in the Trent and Tame valleys where a range of water based recreational facilities may be accessible from major population centres.

A5.80 Restoration to Levels at or above Original Ground Contours - Restoration using on site overburden will normally be based on the following principles:-

1. Overburden and soils shall be replaced separately and at the same horizons and to comparable depths as existed before the commencement of operations. No soils shall be moved unless they are suitably dry and friable.

2. The restored surface of the overburden, when graded to the contours agreed with the MPA shall be ripped to a minimum depth of 300mm at maximum centres of 500 mm to relieve compaction and expose any stones, rock or other deleterious material; all such materials greater than 200 mm in any dimension shall be buried at depth (greater than 2 metres) or removed from the site.

3. All available subsoil (generally not less than 700 mm) shall be re-spread evenly over those areas agreed to receive such subsoil. No layer of replaced soil shall exceed 450 mm thickness before it is sub-soiled (rooted) and the sub-soiling operations must penetrate at least 150 mm into the underlying layer to relieve compaction at the interface. Where restoration to woodland or of best and most versatile agricultural land is proposed, loose tipping is the preferred method of soil placement.

4. Topsoil or soil forming material shall be replaced to a uniform, agreed depth, generally in the order of 300 mm. The restored topsoil shall be subsoiled at a maximum of 500 mm centres with the subsoiler penetrating at least 150 mm into the underlying layer to relieve compaction; stones greater than 100 mm in any dimension shall be removed. If forestry is the proposed afteruse, more detailed guidance can be obtained in Forestry Commission Bulletin 110 "Reclaiming Disturbed Land for Forestry".

5. Hedges or other means of enclosure characteristic of the locality e.g. stone walls shall be provided. Consideration shall be given to the provision of shelter belts and woodland.

6. Within a floodplain the finished ground levels shall not be higher than the existing levels and the restored contours shall not adversely affect the capacity or function of the floodplain.
A5.81 Restoration using imported wastes will normally have regard to the following criteria:-

1. Where there is built development within 500 m of the site, particularly rigorous examination of the site, circumstances and proposals will be required in order to ensure that there will not be adverse impact by way of factors such as odour, noise or visual impact. Only in special circumstances will landfill areas within 250m of residential property be considered appropriate. This is a consequence of the significant potential which exists for disturbance to be caused to local residents and reflects the guidance on the separation of landfill from other development which is contained within Waste Management Papers. Where areas of interest for nature conservation exist within the site and/or within surrounding areas a full ecological survey will be required to establish along with other appropriate surveys, whether and to what extent those areas will be affected by gas and/or leachate generated and discharged from the site.

2. To facilitate monitoring of tipping, submitted final levels shall relate to finished, pre-settlement levels, i.e. levels immediately following the capping of waste (where appropriate) and the replacement of soils.

3. Post settlement levels shall be designed to blend harmoniously with the surrounding landform. Whilst doming of the surface will normally be necessary to allow for satisfactory drainage following settlement, excessively domed landforms which have characterised some landfill sites in the past, and which are based primarily on maximising the available air space, will not be acceptable. Subject to the overriding requirement to blend harmoniously with surrounding scenery overall gradients shall generally be designed at between 1 in 15 and 1 in 25, unless steeper gradients are justified within the context of the local landscape, or are required to ensure the successful establishment of vegetation.

4. Notwithstanding the original thickness of soil stripped from the site, where infilling with waste material has taken place, there shall be a minimum of 1.5 m of rock free and obstruction free overburden, soil-making material, subsoil and topsoil, overlying the waste material, consisting of all the original topsoils and subsoils with, if necessary, the additional depth being made up by selected soil material. These materials must be capable of supporting tree growth, where tree planting is proposed. This material shall be in addition to any capping which is required to cover waste material under the terms of the waste management licence. The purpose of this 1.5 m layer is to permit cultivation techniques, under-drainage and root development for a wide range of crops and trees to take place. Department of the Environment publication "The Potential for Woodland Establishment on Landfill Sites" provides more details of cap type and thickness appropriate for sites restored to forestry.

5. Prior to the replacement of the subsoil, and prior to the replacement of the topsoil the surface of the overburden and the surface of the subsoil shall be scarified to its full depth at not more than 500 mm centres. Where this cannot be achieved in a single operation then repeated loosening might be required during the replacement of the subsoil. Subsequent deep loosening with a winged subsoiler following replacement of the top soil shall be carried out and might require repeating during the aftercare period. As an alternative, consideration may be given to loose tipping which may reduce or eliminate ripping requirements. Regard will be paid to the soil handling requirements outlined in paragraph A5.45 of the code.
6. The topsoil shall be subsoiled at a maximum of 500mm centres with the subsoiler penetrating at least 150mm into the underlying layer. Stones greater than 100mm in any dimension will be removed.

7. Hedges or other means of enclosure characteristic of the locality e.g. stone walls shall be provided. Consideration shall be given to the provision of shelter belts and woodland.

8. Where the use of pulverised fuel ash is proposed to restore sites within a floodplain it will be necessary to provide temporary protective bunding in accordance with details to be agreed with the Mineral Planning Authority in consultation with the Environment Agency. As part of the restoration proposals provision shall be made for final drainage.

A5.82 Restoration using controlled wastes will require a Waste Management Licence from the Environment Agency.

A5.83 Restoration to Levels Lower than Original Ground Contours - Successful restoration in such circumstances will generally be based on blending the former quarry into the local landscape by means of contouring, planting and location of land uses. Where the base of the quarry is below the water table, this may provide the beneficial opportunity to create lakes and ponds for water based recreational and conservation purposes as well as for landscape improvements. Available materials on site can be used to create water meadows, wetland habitats such as marsh land and reedbeds (which are priority objectives in increasing the biodiversity of the Plan area) or dry land.

A5.84 Vertical faces or steep slopes can provide valuable habitats but also might be a source of instability to the surrounding land and/or danger to people and animals, and might be subject to erosion and be difficult to successfully vegetate as well as being alien to the local landform. The following broad guidelines will apply:-

1. Final finished faces between the quarry floor and surrounding land shall not normally exceed a gradient of 1 in 4, in either in-situ material, or following regrading with on-site waste materials. This general guideline does not preclude the possibility of retaining localised cliff faces (on which the provision of small ledges could be beneficial) in appropriate locations to provide a range of visual diversity, flora and fauna and wildlife habitats (e.g. nesting sites for sand martins).

2. Within an appropriate landscaping scheme steeper slopes (greater than 1 in 5) shall normally be tree or shrub planted.

3. The restored base of quarries shall normally have a gradient of not less than 1 in 80 to an acceptable outfall to provide natural drainage unless it is related to planned wetlands where sites or part sites are restored to amenity or nature conservation end uses.

4. Restoration drainage schemes which rely entirely on internal soakaways will not normally be acceptable unless they relate to planned wetlands where sites or part sites are restored to amenity or nature conservation end uses.

5. Where practicable the floor of quarries, other than where these consist of silt beds, shall normally be ripped to a depth of at least 500 mm at centres not more than 1 metre prior to the respreading of overburden, and soil horizons.

6. Former silt beds shall normally be restored to woodland or semi-wetland nature conservation uses, unless they have been covered with at least 1 metre of granular overburden or soil.
7. In general terms the provisions relating to the replacement of soil, the re-establishment of vegetation and related matters shall be as previously described for restoration using imported waste or on-site overburden. There may be circumstances however where restoration will not require the full range of techniques.

**A5.85** Sites may be restored for a variety of afteruses including agriculture, forestry, nature conservation and amenity. The preceding paragraphs have given guidance on the design and preparation of the land to a condition suitable for agricultural and forestry afteruse. In addition, where afforestation is proposed particular regard shall be paid to establishing correct ground conditions, particularly in respect of drainage. Slopes shall normally not be slacker than 1 in 10 and not steeper than 1 in 5. To provide slopes of 1 in 10 on sites with gentler slopes a system of ridges and furrows is recommended. Details of tracks and access points shall be provided. Consideration shall also be given to multiple uses such as nature conservation and informal recreation.

**A5.86 Aftercare** - for agriculture or forestry will need to be based on site specific criteria but generally should have regard to the following principles:-

1. The soil shall be analysed annually for pH and nutrient status and prior to respreading and any necessary additions of lime and fertiliser made, taking into account the proposed afteruse.

2. In respect of agricultural aftercare, the land will normally be reseeded with a pioneer grass crop with a proportion of nitrogen-fixing clover in the first year. Good root growth is to be encouraged involving an agreed management/ grazing regime. The grass crop shall be cut for hay or silage in the first year prior to seed heads forming, or grazed by sheep. Cattle and horses shall be kept off the land during the first year and all stock shall be removed from the restored land when ground conditions are unsuitable to prevent damage to the soil.

3. In respect of agricultural aftercare, after two to three years the initial sward shall be deep ploughed and the land re-cultivated, and minor settlement corrected. A grass or cereal crop can then be re-established.

4. Internal ditches shall be positioned within the site to prevent the scouring of the surface and to protect woodland and hedgerows as well as assisting in the final drainage of the site. A permanent under-drainage system and associated subsoil loosening cultivations are normally required where an agricultural afteruse is proposed. In designing the system regard shall be had to the effect of any discharges into ecologically sensitive watercourses, waterbodies and wetlands off site.

5. Provision shall also be made where necessary for a permanent water supply to the restored area.

6. Mineral development shall not be seen as an opportunity to create larger field units. Hedgerow and hedgerow tree planting, in accordance with an agreed scheme, will normally be established in the first planting season following replacement of the topsoil to restore the appearance of the land and to encourage the reintroduction of wildlife. Hedges or hedgerow trees shall be adequately protected from livestock and wild animals, properly maintained and failures shall be replaced on an annual basis throughout the aftercare period. In certain areas, other means of enclosure e.g. stone walls might be characteristic of the locality and be considered for provision on restoration.
7. Where the land is being replanted to woodland for commercial and/or amenity purposes, planting shall take place in the first planting season following replacement of the topsoil. Preparatory works, species, sizes, densities, method of planting, protection and maintenance, including application of herbicides and fertilisers where necessary, shall be submitted to the Mineral Planning Authority for its approval not less than six months prior to the commencement of aftercare on all or part of the site. Normally, weeding shall be carried out at least once per year to maintain a 1 metre diameter of grass and weed free soil around all trees and shrubs for the first five years of their life to assist their establishment. Beating up shall be carried out annually to achieve a stocking density at the end of the five year period commensurate with the initial spacing (e.g. a minimum 80% stocking for 2 metre spacing across the site and for each species).

8. On the successful completion of the restoration and aftercare period (for agriculture, forestry, amenity or nature conservation use) the Mineral Planning Authority will issue a certificate indicating that satisfactory restoration has been completed.

9. Provision needs to be made for the monitoring and controlling of gas and leachate generated from wastes imported to infill and restore the site.

A5.87 Restoration to Water Based Recreation and Nature Conservation Uses - In cooperation with other local planning authorities, landowners and the Environment Agency, Staffordshire County Council is encouraging restoration of mineral workings in the Trent and Tame Valley to provide recreation and nature conservation benefits where this is practicable and compatible with overall planning policy and development control considerations. The extension of this principle to sites elsewhere may merit consideration.

A5.88 Restoration schemes should consider the inclusion of a variety of habitats of value to wildlife and to create habitats which are in decline elsewhere e.g. heathland where this is practical. In general the creation of large habitat areas is to be encouraged because, for example, many species of birds e.g. bitterns require a minimum size of habitat in order to breed successfully.

A5.89 In view of the dramatic reduction in ponds, marshes, water meadows and other wetland natural habitats throughout the country, the County and City Councils encourage, where appropriate, the creation of new lowland wet grassland, lowland heathland and wetland habitats for nature conservation. Prior planning of the final contours and distribution of land and water is essential. The Mineral Planning Authority, where appropriate, will encourage restoration of sites which will provide for the conservation of waterfowl and wading birds.

A5.90 Recreation and nature conservation can co-exist satisfactorily on sites given good planning, design and management. The suitability of a site to provide for these dual purposes must be carefully assessed on a site by site basis having regard to the need to minimise conflict between the two land uses by appropriate management practice and careful design of water bodies suitable for their intended afteruse.

A5.91 Sites proposed largely or exclusively for nature conservation uses are unlikely to provide a significant income for their long-term maintenance, nor, in many instances, will the landowner or operator have expertise in the management of such resources. Consequently, where such uses are proposed, the applicant will normally be encouraged to involve appropriate conservation and local naturalist groups in the design and management of the scheme. In appropriate cases, the County and City Councils will seek to agree with the applicant/landowner an appropriate legal
agreement covering such matters as ownership, access, long term management, after-care, financial provision for maintenance etc.

A5.92 The range of physical features for nature conservation sites will need to be based on site specific criteria but are generally summarised below:

1. Schemes shall provide a wide diversity of habitats; deep and shallow water, islands, marsh areas etc.

2. A water depth of up to 3 m is ideal. Whilst depths of over 3m shall generally be avoided, there might be circumstances where deeper water is required.

3. A high proportion of lakeside margins shall be gently shelving (1 in 20) for several metres from the edge to encourage the establishment of a wide range of marginal and aquatic plants, although some steep edges or low cliffs are desirable to provide diversity.

4. Shorelines shall be indented and scalloped to maximise the more productive littoral areas.

5. Islands shall be created to provide secure nesting sites for wildfowl. They shall be of low profile with gently shelving margins, adopting the same principles as the lake shoreline. They might be shingle covered or carry herbage but normally not trees.

6. In addition to open water and islands, marshy areas and water meadows (grasslands which shall be permanently moist and flooded only occasionally) shall be incorporated where possible.

7. Islands, banks and surrounding areas shall be surfaced with subsoil and sown with appropriate grass and wild flower seed mixtures as soon as final profiles have been established and soil replaced. Advice on appropriate seed mixtures for particular situations and for aquatic plants can be obtained from the Mineral Planning Authority.

8. Tree and shrub planting shall normally form an integral part of the proposals. Some tree planting near the water’s edge may be appropriate, but most of the immediate surrounds shall be kept free of trees to avoid problems of future shading and leaf fall. Adjacent to larger areas of open water which have potential for attracting significant numbers of wintering wildfowl, trees will not normally be planted around the shore, but the creation of large grassy areas will be encouraged. Dense tree planting shall be avoided on islands and other nesting areas.

9. Water level control devices and means of pollution interception might also be required to provide for security and quality of water.

10. Consideration might be given, in appropriate circumstances, to creating large (greater than 10 hectare) reedbeds with water depths of approximately 300 mm. This habitat has been in decline in the Plan area and if recreated, offers considerable wildlife benefits.

Other Approvals

A5.93 The grant of planning permission does not remove the obligation to obtain other approvals or authorizations which might be necessary in relation to the Town and Country
Planning Act 1990 or other regulations or legislation relating to statutory undertakers
equipment, rights of way, listed buildings, advertisement, environmental protection, mines and
quarries safety considerations, etc. Informal discussions prior to the submission of the
planning application will help clarify what other approvals may be required, but securing these
approvals are entirely the responsibility of the applicant.