Chapter 12 COAL

Winding Towers at Clipstone Colliery

Introduction

12.1 Coal is an energy mineral of national importance, its main use being to supply power stations. Domestic coal production has seen a relentless decline in recent years. The severest decline occurred during the 1990's when national production halved to less than 40 million tonnes per annum by the end of the decade. Most of this decline was caused by the closure of large numbers of coal mines and, although Nottinghamshire remains one of the most important coal mining counties in the UK, it has not escaped this decline. Only 4 mines in Nottinghamshire remained open at the start of 2002 compared to 15 in 1990.

12.2 In contrast, national opencast coal extraction has remained relatively stable. Nottinghamshire has, however, been a relatively small player and there has been no opencast coal extraction since 1997.

Geology

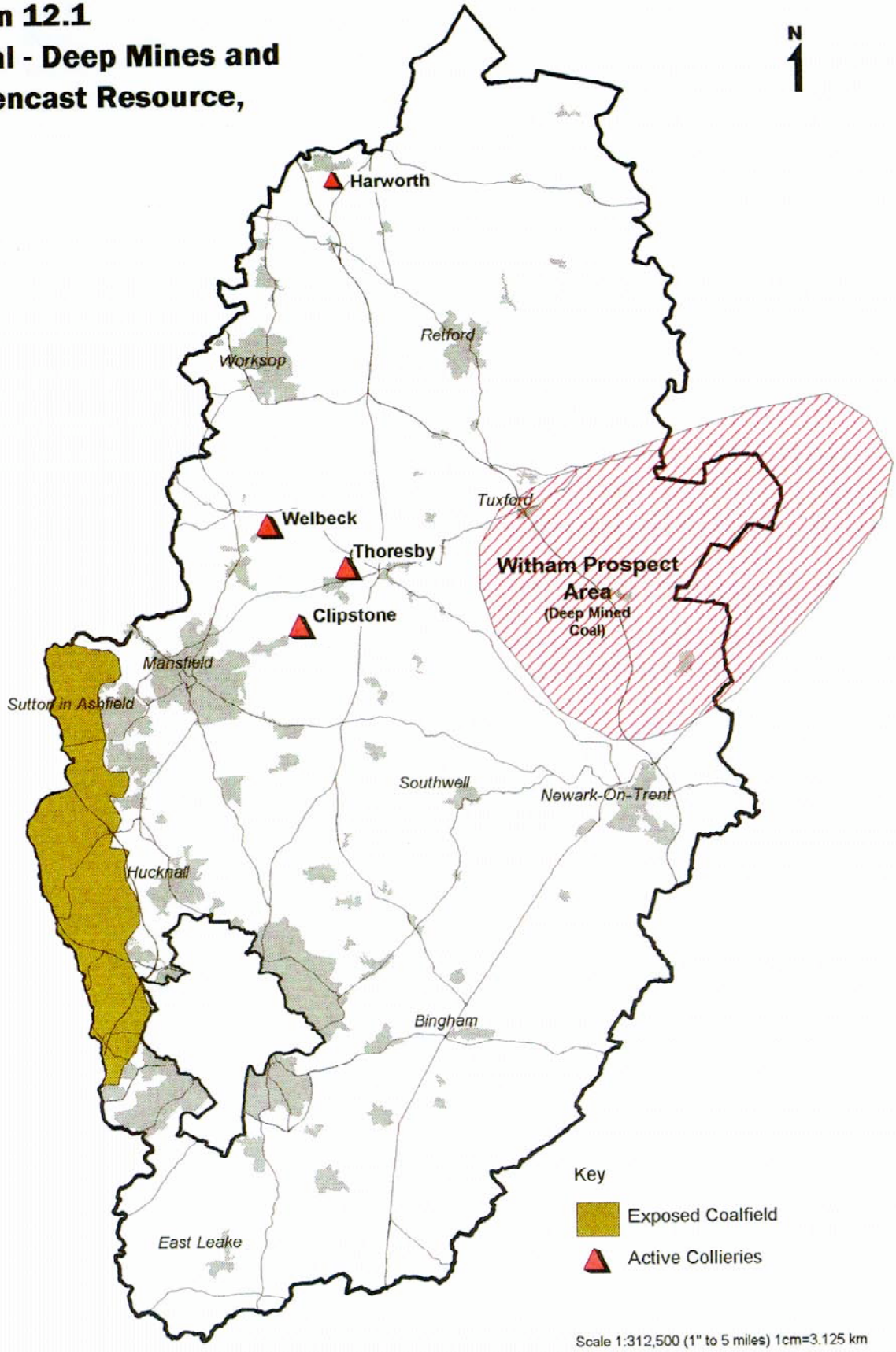
12.3 Nottinghamshire is located within the Yorkshire and East Midlands Coalfield, the largest and most productive in the UK. The coal measures dip gently eastwards and are relatively undisturbed and easy to mine. In the west, the coal measures outcrop and form the 'exposed coalfield' whereas in the east they become ever more deeply buried and the coalfield is said to be 'concealed', (see Plan 12.1). The exposed portion falls mainly in Derbyshire and South & West Yorkshire, but the southern extremities just impinge into Nottinghamshire along the Erewash Valley. It is only within the exposed coalfield where coal seams may be near to the surface that opencast extraction is possible. In the concealed coalfield, which underlies most of Nottinghamshire, deep mining is the only option.

Future Requirements

12.4 Mineral Planning Guidance Note 3 (MPG3) 'Coal Mining and Colliery Spoil Disposal', 1999, states that 'it is not for the planning system to seek to set limits on or targets for any particular source or level of energy supply; nor to predetermine the appropriate levels of coal to be produced by deep mine or opencast. It is for individual operators to determine the level of output they wish to aim for in the light of market conditions, and to determine the acceptability of individual projects'.

12.5 The extraction of coal, whether by deep mine, or opencast, differs from many other types of mineral working in terms of scale and impact on the environment and economy. Applications for all mineral development should have regard to the policies in Part 1 of the Plan, but for coal, further requirements should be met as identified below.

Plan 12.1
Coal - Deep Mines and Opencast Resource,



12.6 MPG 3 sets out the criteria against which MPAs should assess future proposals for coal extraction. In applying the principles of sustainable development there should normally be a presumption against coal development, be it opencast, deep mine or spoil disposal, unless the proposal would meet the tests specified in MPG3. In translating these tests into policy, the overall approach must be to ensure that coal development is only permitted where the environmental impacts are outweighed by local and community benefits, such as the reclamation of derelict or degraded land, or maintaining local employment. The protection of designated and other environmentally important sites will be in accordance with the environmental protection policies in Chapters 3 and 4. These criteria are included as appropriate for Nottinghamshire in Policy M12.1.

POLICY M12.1 COAL DEVELOPMENT

Planning permission will not be granted for opencast or deep mine coal extraction, or colliery disposal unless the proposal:

(a) is environmentally acceptable, or can be made so by planning conditions or obligations; or

(b) where the proposal is not and cannot be made environmentally acceptable the local and community benefits that are provided clearly outweigh the likely impacts.

(c) Where proposals occur within the green belt they will be tested against the highest environmental standards and, if planning permission is granted, stringent conditions will be imposed to ensure that the site is well operated and restored to the highest standards.

12.7 The planning issues for deep mined coal, colliery spoil disposal and opencast coal are considered in turn below.

Deep Mined Coal

Method of Working and Environmental Impact

12.8 Deep mined coal from Nottinghamshire is extracted from depths generally ranging from between 400-900 metres below the surface. From the pithead on the surface a vertical shaft is sunk through overlying rock to the coal seams. Roadways are then driven along the seam to open up the face from which coal is extracted. Extraction and transportation of coal is highly mechanised, usually taking place by the longwall method. As the seam is worked, the void is allowed to progressively collapse behind the worked area, causing subsidence at the surface. The coal is transported away from the face by conveyor through screening, crushing and homogenising plants and then on to a coal preparation plant.

12.9 This method of extraction creates large volumes of waste, the disposal of which is one of the main environmental impacts of winning coal (see para

12.17). The other main environmental impacts include the surface development of the pithead, transport and subsidence.

12.10 The winning and processing of coal requires substantial surface development, notably winding towers, coal preparation plants and stocking areas all of which can have significant visual impact. Most pithead development falls under the 1995 General Permitted Development Order, which provides only very limited controls over siting and appearance.

12.11 Most major movements of coal, especially those supplying power stations occur by rail using 'merry-go-round' trains. Road transport, although significant, is avoided as far as possible due to environmental drawbacks and costs.

12.12 The most widespread impact of underground working is caused by subsidence at the surface. It is estimated that nearly half the County has either been affected by subsidence, or is within range of existing, or former mine-take areas.

Reclamation and After-use

12.13 Reclamation of former colliery sites normally involves the removal of plant, buildings and machinery followed by regrading and soiling, or other treatment to allow an appropriate after-use. Abandoned mine shafts can either be filled or capped. Some collieries may include buildings, equipment and other features of historic interest which may justify preservation. An existing example is the winding house at the former Bestwood Colliery.

12.14 The 1995 General Permitted Development Order reinforces the 1988 General Development Order, requiring any pithead development to be removed within two years of cessation of working, unless otherwise agreed by the MPA. Previously most pithead development had no reclamation requirements. Where there are no reclamation conditions, agreement is sought on the future use of sites with the relevant authorities under the Minerals Review procedure (see Para 4.55).

12.15 The proximity of many colliery sites to existing settlements and the potential for redevelopment can have substantial local land-use planning implications. In most cases proposals for the redevelopment of these sites is dealt with at a district level. There may also be the potential to collect mine gas from emissions from abandoned workings, (see Chapter 13, Paras. 13.26-28).

Future New Mines

12.16 Despite the decline in deep mined coal production, in 1996, RJB Mining (now UK Coal) indicated their interest in pursuing the 'Witham Prospect'. This prospect area straddles the Nottinghamshire – Lincolnshire border north of Newark. The development of any new mine would raise major land use and socio-economic planning issues, some of which, such as new housing, would need to be considered in the review of District Local Plans. Planning applications for new mines will require a rigorous examination, including an Environmental Impact Assessment (see Chapter 3, Paras. 3.6-3.10).

POLICY M12.2 NEW DEEP COAL MINES

Applications for new deep mined coal development should include details on the issues set out below:

(a) effects upon existing nearby communities;

(b) transport and safety implications;

(c) visual impact of ancillary surface development;

(d) noise and dust impact;

(e) impact on biodiversity;

(f) details of coal processing including washing and lagoons;

(g) disposal of colliery spoil;

(h) site restoration;

(i) treatment and pumping of underground water;

(j) monitoring and preventative measures for potential gas emissions, including the potential to capture gas for on-site energy;

(k) potential effects of subsidence;

(l) likely socio-economic effects.

Colliery Spoil Disposal

Method of Working and Environmental Impact

12.17 Colliery spoil is the waste material that is extracted in the process of deep mining coal. In the past, mining methods produced relatively little waste above ground as coal excavation by hand was highly selective and most waste was separated and left underground. Nowadays, coal is won at the face by machine, and in doing so the dirt bands interspersed with the coal seams, together with parts of the seam floor and roof, are also extracted.

12.18 The majority of surface tipping of spoil give rise to spoil heaps immediately adjacent to the originating colliery. Individual heaps may exceed 100 hectares and rise to 50 metres above ground level. Whilst visual intrusion is the most obvious impact, noise, dust and water contamination may also occur. Spoil can also be disposed of at remote sites or also backstowed underground, but this is rarely a viable or practical option.

12.19 Many tipping areas began prior to planning legislation, when little if any attention was paid to the environment or reclamation. Furthermore, tips were often located close to residential areas and had a very detrimental effect on the amenity of whole communities. Fortunately, since the 1960s the worst examples have been reclaimed under a major derelict land clearance programme carried out by the County Council, funded by Central Government. In 1998, the County Council in collaboration with the Forest Enterprise reclaimed over 800 hectares of spoil tips at 8 closed collieries. This project, which was sponsored by the former British Coal, cost over £10

million. The scheme focussed on reclaiming the spoil heaps to commercial and amenity woodland with public access. Over 2 million trees have been planted.

12.20 Recent planning permissions for tipping have sought to minimise the environmental impact by ensuring that the reclaimed tip will blend into the surrounding landscape. Where possible, improvements to existing adjacent tipping areas, which may be subject to poor or non-existent planning conditions, have also been included.

12.21 One of the main constraints is the need to accommodate both 'dry' and 'wet' categories of spoil. Dry dirt (or coarse discard) is the easiest form of spoil to dispose of as it can simply be taken to the tip by conveyor or dumptruck and graded into the required landform. Once the desired contours are reached, soils can be immediately replaced and the site reclaimed. With proper advanced planning, tipping and reclamation can be tightly phased so that only a small active tipping area is needed at any one time. The early construction and reclamation of the most visible slopes to help screen active operations can further reduce the visual impact.

12.22 Wet dirt (or tailings) comprises the fine particles of clay washed out of coal, which at some collieries may represent nearly half the waste produced. Wet dirt is much more difficult to dispose of.

12.23 The simplest, cheapest and most widely practised disposal option is to pump the wet dirt as slurry into settling lagoons which are normally created out of dry dirt. An individual lagoon typically extends over 5-10 hectares (excluding bund walls) and takes several years to fill. Once full, it has to be left to dry out for 2 or more years, when it can then be capped with dry dirt to allow final reclamation. At most tips there will be one active slurry lagoon, one that is drying out and one that is under construction. As a result phasing opportunities are usually very limited leaving large parts of the site unreclaimed. Where wet:dry ratios are high it is also possible that nearly all dry dirt is needed just to keep pace with lagoon wall construction. There may also be insufficient dry dirt to cap lagoons and create the required final landform, particularly if a colliery closes early.

12.24 Insensitive design and lack of dry dirt has in the past resulted in slurry lagoons having very artificial shapes which, even when reclaimed, fit awkwardly into the landscape. Inaccurate dirt forecasts have necessitated amendments to approved schemes resulting in fewer larger, but more intrusive, lagoons which are more difficult to reclaim satisfactorily. Recent schemes have tried to redress these problems.

POLICY M12.3 COLLIERY SPOIL DISPOSAL

When planning permission for colliery tipping is granted the County Council will impose conditions to ensure that schemes are designed so that:

(a) priority is given to the early construction and reclamation of the external, visible faces;

(b) tipping profiles avoid 'engineered' or other alien landforms;

(c) opportunities are taken to improve the appearance of existing adjacent tipping schemes;

(d) reclamation is phased to minimise visual impact and problems of surface runoff;

(e) opportunities are taken to reclaim sites to suitable local Biodiversity Action Plan priority habitats.

12.25 The disadvantages of wet dirt can be eliminated by the use of filter presses. These mechanically squeeze out excess moisture to leave a filter cake which can be mixed with, and disposed of alongside, dry dirt. The main obstacle against filter presses is economics, as the process requires substantial buildings, equipment and extra operational costs. Such levels of investment are only likely to be justified at new collieries, or at existing collieries which have a long term future, and where large tipping extensions are sought. As a result their use in Nottinghamshire and elsewhere has been very limited. The future use of filter presses is therefore likely to be restricted to large schemes and where the avoidance of lagoons will result in significant environmental gains.

POLICY M12.4 COLLIERY SPOIL DISPOSAL – USE OF FILTER PRESSES

Major proposals for colliery tipping must use filter presses where this will result in significant environmental gains over the use of slurry lagoons unless it can be demonstrated that this is not a viable option.

Reclamation and After-use

12.26 Where recent tipping has extended over greenfield sites, soil conservation measures normally allow the tip to be reclaimed to its previous use, which, typically, will be agriculture and, less commonly, woodland.

12.27 However, the change in emphasis away from agricultural production means that opportunities to reclaim tips to uses other than agricultural may be more appropriate. In particular, reclaimed tips may provide suitable sites for increasing woodland and heathland cover in accordance with the Local Biodiversity Action Plan. Some tips, especially those close to settlements, may be suited to recreational after-uses.

12.28 The reclamation of older tips often presents far greater obstacles because of the absence of soil and poor grading. Colliery spoil provides very hostile acid conditions, and even when weathered is rarely able to support a viable grass sward. Without treatment, birch scrub may gradually establish, and after many decades a patchy cover of vegetation can develop.

12.29 The premature closure of collieries has often meant that existing reclamation schemes cannot be achieved. For example, slurry lagoons may be left partly filled and dry dirt tips may fall short of approved contours. Where collieries have closed and no reclamation provisions exist the County Council will seek alternative reclamation proposals in accordance with policies in Chapter 4.

Future Requirements of Spoil Disposal

12.30 The decline in coal production has meant that rates of spoil disposal have declined likewise. Nevertheless new disposal areas may be required and applications for spoil disposal schemes should be made in accordance with the national procedure, 'Procedural Manual Evaluative Framework: Assessment of Alternative Colliery Spoil Disposal Options' (HMSO, 1999). This framework is used to identify the various options available for individual spoil disposal schemes and to assess the economic and environmental effects of each, so that considered judgements can be made between the alternatives.

POLICY M12.5 COLLIERY SPOIL DISPOSAL – NATIONAL EVALUATIVE FRAMEWORK

Applications for spoil disposal schemes must be made in accordance with the national evaluative framework procedure.

Reworking of Colliery Spoil Tips

12.31 Past coal processing was generally very inefficient and substantial quantities of coal often remained in the spoil especially in slurry ponds. At some sites it may now be economic to recover this coal, which can amount to several hundred thousand tonnes in a single large tip. Such an operation would result in the recovery of coal which would otherwise be lost. Coal recovery involves the re-excavation of spoil which may require screening and/ or washing to remove the coal, before the spoil is re-deposited within the original tipping area. Occasionally, the spoil may contain sufficient coal to be saleable without treatment.

12.32 This activity can have a severe impact on the environment in terms of visual intrusion, traffic movements, noise and dust, and will destroy any existing reclamation. At closed collieries the reclamation and redevelopment of unreclaimed tips and pithead areas may be delayed, and blight adjacent areas, pending the outcome of proposals to recover coal. In some instances there may be environmental gains where derelict or poorly reclaimed tips can be reworked and reclaimed to a more satisfactory landform and after-use. Such opportunities are likely to be very few, especially where tips have become established landscape or wildlife features, even though the standard of reclamation may be poor. The potential exists at some tips to utilise the

existing colliery rail network to remove the spoil rather than relying on road transport.

12.33 Limited reworking may be possible under the provisions of the 1995 General Permitted Development Order, but where extensive reworking is proposed, planning permission is normally required. In determining proposals of this nature it is necessary to balance the potential level of disturbance to the environment and local communities, and the environmental benefits which may be gained.

POLICY M12.6 REWORKING OF COLLIERY SPOIL TIPS

Planning permission will only be granted for the reworking of a spoil tip if:

(a) it has not become an established, attractive landscape or wildlife feature;

(b) it will not cause an unacceptable environmental impact;

(c) it will not cause an unacceptable impact to local communities;

(d) It will result in a substantial environmental improvement of the site.

12.34 As mentioned in Chapter 9, there is the potential for colliery spoil and dry dirt discard to be used as a secondary aggregate, particularly as a bulk fill. The above impacts of reworking spoil tips are applicable both to the recovery of coal as well as the use of spoil as a secondary aggregate. Policy M12.6 therefore also applies to secondary aggregates.

Opencast Coal

Method of Working and Environmental Impact

12.35 Modern technology allows extraction to reach depths in excess of 200 metres, although 80 metres is more commonplace. This compares to depths of just 10-15 metres when opencast extraction first began in the 1940s. Nationally the largest sites may be several hundred hectares in extent, although small private licensed sites of just a few hectares can still be economic.

12.36 The ratio of overburden to coal extracted on average is 17:1. Consequently, extraction involves massive earth moving operations in order to recover relatively small quantities of coal. Soils and overburden are stripped and stored in large mounds, which may serve as noise and visual screens. These mounds may be the most conspicuous features of the workings. Successive layers are then removed creating a series of working benches at coal horizons. Harder rock layers may require blasting to loosen them prior to removal. Once extracted, coal is normally taken by lorry to the nearest blending centre for processing. At large sites traffic generation can therefore be considerable.

12.37 Where possible, extraction is phased so that only part of the total site is opened up at any one time. When the last phase has been worked the remaining void is filled with overburden stored around the site, and the soils replaced. Although often referred to as a 'temporary activity', this whole process can take 10 years to complete, and many more for the reclaimed land to mature. Where other mineral deposits such as fire clays are extracted, there are additional implications for the operation of the site, (see para 12.51).

Reclamation and After-use

12.38 Most opencast coal sites can be reclaimed to their original or near original levels. This is because of the high overburden to coal ratio and the 'bulking-up' effect of returned material. The major earthmoving operations associated with extraction can provide substantial opportunities to modify the existing topography in order to suit the desired after-use. The high proportion of clay in the Coal Measures may also make a site geologically suited to receive a wide range of waste materials. Reclamation to agriculture is usually possible although other after-uses may be acceptable, or preferred in accordance with Government advice in diversifying the rural economy.

12.39 Opencast coal reclamation has had a very good track record in terms of agricultural production, although concerns regarding the long-term effects of reclamation, in particular losses in landscape quality, soil fertility and agricultural productivity remain.

Future Opencast Coal Sites

12.40 MPG 3 recommends the Minerals Local Plans should indicate any areas where coal extraction may be acceptable in principle and suggests three possible options. These are to indicate:

- broad areas of search; or,
- the extent of the shallow coalfield and constraints within that area; or
- a combination of the two.

12.41 In the absence of any clearly defined and justifiable local production target, it would be inappropriate to make any specific provisions for further releases of opencast coal during the Plan period. Uncertainty over the location of all potentially economic resources in the County also acts against identifying sites. Instead, proposals can only be assessed on their merits, with sustainable, rather than 'need' issues being the main controlling factor. Indeed previous arguments that opencast coal, low in chlorine, is required for blending with deep mined coal are accorded less weight, due to lack of evidence. Therefore, the Plan adopts the second of the alternative approaches identified in MPG 3, and indicates the extent of the shallow coalfield and defines the main areas of constraint, on the proposals map.

Opencast Coal Constraint Areas

12.42 Much of the opencast coal resource lies within the Erewash Valley. Built development, Mature Landscape Areas (MLAs), archaeological and ecologically important areas are particularly relevant constraints within the shallow coalfield. As part of the County Council's Countryside Appraisal a landscape character assessment of the County's landscape has been undertaken which forms the Nottinghamshire Landscape Guidelines. The Erewash Valley falls within the Nottinghamshire Coalfields Regional Character Area which is made up of the River Meadowlands and Coalfield Farmlands landscape types.

12.43 The Countryside Appraisal Project has made it possible to define those areas which need to be protected from opencast coal extraction with the MLAs being the best examples of these landscape types. These are areas strong on landscape character with a distinct sense of place and that have remained relatively unchanged over time when compared to the wider landscape.

12.44 The MLAs within the Nottinghamshire Coalfield contain some of the most ancient, small scale pastoral landscapes in the County. The more traditional, historic and higher quality landscapes correspond with ancient field patterns, permanent pastures, species rich hedgerows, ancient small scale woodlands, pockets of mature parkland and meadowlands fringing the River Erewash. A number of these woods have been recognised as ancient woodlands in English Nature's Ancient Woodland Inventory for the County.

12.45 In accordance with Policy M3.23, proposals for opencast coal extraction which would destroy or degrade these mature landscapes will be refused unless any harm that would be caused is outweighed by ameliorative reclamation measures. Other key designated sites in the coalfield include Sites of Special Scientific Interest (SSSI's), Scheduled Ancient Monuments (SAMs) and ancient woodland. These are also given a strong degree of protection in Chapter 3. (see Policies M3.19, M3.24 and Para 3.63). Many of these sites fall within the MLA areas.

12.46 A study of the Erewash Valley conducted in 1987 by the Nottinghamshire and Derbyshire Wildlife Trusts defined ecologically important stretches of the river and adjacent areas. Opencast coal proposals present a serious threat to this interest because they can involve the removal, diversion and reinstatement of the river along a new course. It is recognised that there is insufficient technical knowledge to date to ensure that the wildlife interest could be replaced. Accordingly, until such proven reclamation techniques exist, proposals that involve the removal of ecologically important stretches of the River Erewash will not normally be acceptable.

12.47 The above areas and features are considered to represent the most environmentally important sites in the coalfield which warrant specific protection from opencast coal extraction. These are not, however, the limit of environmentally sensitive and important areas and constraints within the opencast coal resource. Other factors such as access, traffic, residential amenity, local nature conservation sites and archaeology also need to be taken into account.

POLICY M12.7 OPENCAST COAL CONSTRAINT AREAS

Planning permission will not be granted for opencast coal extraction within areas defined as 'opencast constraint areas' on the proposals map, unless the proposal meets the requirements of Policy M12.1.

New Opencast Coal Mining Techniques

12.48 New techniques for opencast coal extraction have recently emerged that reduce the amount of land-take required for opencast coal, and which allows for additional coal to be taken that would not have been possible due to environmental constraints. The two main methods are known as 'augering' and 'highwall mining' and these are considered below:

Augering

12.49 Augering can be carried out from within the excavations of an opencast coal site and involves the boring of coal seams. Supporting pillars of coal are left within the seam to reduce the risk of subsidence. Although augering technology is not yet widely used in the UK, it is a well established method of coal recovery in the USA, having the advantage of recovering coal which may not otherwise be extracted.

Highwall Mining

12.50 Highwall mining follows the principle of augering except that it has a cutting face rather than a boring action and can thus extract greater quantities of coal. The advantages of this are that it is economical in its own right, without the need for an opencast coal site to be operated in conjunction. For the highwall mining machine to be able to access the coal a trench has to be excavated to the coal seam and this will therefore have some repercussions at surface level. However, the mining schemes are short-term, typically 12 months, and relatively small areas of land are required in comparison to opencast coal sites.

Opencast Coal - Incidental Extraction of Fireclays and other Minerals

12.51 MPG 3 recommends that policies should make provision for proposals where extraction of coal from a site would facilitate the efficient and economic working of other mineral deposits on that site in an environmentally acceptable way. This avoids economic minerals being sterilised, thus making opencast coal extraction more sustainable.

12.52 Opencast coal can be found in conjunction with other minerals, in particular fireclay and brick clay. Fireclays have a relatively restricted geological occurrence being found only below coal seams. They were originally used in the manufacture of refractory bricks, but more recently they have become more valued for their use in the manufacture of cream and buff coloured bricks. Although brick and fireclays have not been recovered from opencast coal workings in Nottinghamshire since the 1970s, it remains possible that economical quantities of such minerals could be present in any new opencast proposals. In such cases it is important that the opportunity to work these other minerals commercially is fully explored.

12.53 The main planning issues raised include possible delays to the reclamation of the site, access and traffic problems, and storage of clay, if it cannot be used at the rate it is recovered. Providing these issues can be satisfactorily resolved then the extraction of these minerals is in accordance with the principles of sustainable development.

POLICY M12.8 OPENCAST COAL - INCIDENTAL MINERAL EXTRACTION

Where proposals for opencast coal extraction are acceptable the recovery of fireclays and other incidental minerals will be granted where this does not result in any unacceptable environmental impact.
