

3 MINERALS

3.1 Introduction

3.1.1 This chapter deals with mineral working and the implications of workings for development. The area has a long history of mineral working. The most significant minerals include coal, aggregates (hard rock and sand/gravel) fireclay, brickclays and peat. Coal, aggregates and peat are still worked on a significant scale today. The chapter assesses the implications of current national policy, records information on current workings, comments on likely future trends, and gives a summary of findings.

3.1.2 Minerals are regarded as an important national and local resource supporting a range of industries including construction, chemicals and energy generation. It is acknowledged however that mineral working can have an adverse impact on local communities and the natural environment. Careful control of workings is therefore essential. In addition, working of minerals and particularly coal, has left a legacy of poor ground conditions which has implications for built development.

3.2 National Planning Policy

3.2.1 Current national policy on minerals in general is contained in NPPG 4 “Land for Mineral Working” produced in 1994. Specific guidance on opencast coal and related minerals is contained within NPPG 16 dated March 1999. The main points arising from these guidelines can be summarised as follows:

NPPG 4 “LAND FOR MINERAL WORKING”

3.2.2 NPPG 4 supports the principle of “sustainable development” and a sustainable framework for mineral extraction is described by the following points:

- * *to conserve minerals as far as possible, while ensuring an adequate supply to meet the needs of society for minerals;*
- * *to minimise production of waste and to encourage efficient use of materials, including appropriate use of high quality materials and recycling of wastes;*
- * *to encourage sensitive working practices during minerals extraction and to preserve or enhance the overall quality of the environment once extraction has ceased; and*
- * *to protect designated areas of critical landscape or nature conservation value from development, other than in exceptional circumstances, where it has been demonstrated that development is in the public interest.*

3.2.3 This approach is developed as the following recommended framework for mineral working to be included in development plans:

- * *to provide positively for the working of mineral resources to meet society’s needs through the identification of preferred areas for mineral extraction;*
- * *to safeguard deposits of minerals from permanent development that would prevent or hinder their subsequent extraction;*

- * *to protect areas of importance for natural and built heritage from inappropriate mineral development;*
- * *to achieve a high standard of restoration and after care, and provide for beneficial after-uses when mineral working has ceased; and*
- * *to facilitate the recycling and re-use of material in waste tips and construction wastes where this is environmentally acceptable.*

3.2.4 Although the NPPG advocates that the planning system should facilitate mineral extraction, it does recognise the impact that this type of activity can have on the environment and heritage and contains advice on how this should be addressed. In relation to natural heritage, the NPPG advocates a hierarchy of protection tailored to the significance of the protected area. In this respect, international designations such as existing or proposed Special Protection Areas (SPAs) under the EC Directive on the protection of Wild Birds or Special Areas of Conservation (SACs) under the EC Directive dealing with habitats and species, would be afforded the maximum level of protection. Nationally important areas, such as Sites of Special Scientific Interest (SSSIs), or National Nature Reserves receiving a lesser level of protection. Even in nationally or internationally important areas, NPPG 4 does not support a policy approach which would totally preclude mineral working and rather the onus is placed on the developer to demonstrate that there are overriding reasons, associated with the national interest, in working the mineral which would justify workings in these protected areas.

3.2.5 The NPPG is relatively vague on the level of protection afforded to the built heritage, archaeology and protected historic landscapes, merely indicating that regard should be paid to these factors.

3.2.6 Significantly, the advice from the NPPG suggests that mineral development is generally incompatible with Green Belt objectives unless in situations where it can be demonstrated that the site would not be conspicuous and could be suitably restored to an appropriate Green Belt use. Prime quality agricultural land is also afforded protection against permanent development or irreversible damage.

3.2.7 The NPPG also accepts that there may be areas of more local significance which may also merit protection and in such cases, appropriate justification should be made in the Development Plan. Such circumstances may apply in the Falkirk Council area where, for example, there are relatively small areas recognised for their particular landscape qualities and a case could be made for a greater degree of protection.

3.2.8 Other constraints on mineral working, in the form of features of tourism/recreation value and proximity to settlements, are also recognised in the NPPG. However, little emphasis is placed on this aspect of the NPPG.

3.2.9 The need to minimise the impact of mineral working on the environment is acknowledged, and in this respect, local plans and development control should recognise factors such as visual impact, noise, dust, pollution of watercourses and transportation. Appropriate restoration, after-care and after-use of sites are also important issues for local plans.

3.2.10 The NPPG gives guidance on specific minerals including aggregates, oil, gas and peat, all of which feature in the Structure Plan area. Guidance on opencast coal has been revised by NPPG 16.

3.2.11 A summary of the key points from this guidance is given below:

3.2.12 Aggregates

- * *Provide adequate/steady supply for the construction industries, with a landbank of at least 10 years permitted reserves for a local market area.*
- * *Market areas may overlap necessitating joint working between authorities.*

3.2.13 Secondary Aggregates (Waste Materials)

- * *Provide for the reworking of mineral waste deposits and recycling of demolition/construction waste.*

3.2.14 Oil and Gas

- * *Plans should facilitate onshore gas/oil extraction subject to good environmental protection/practice.*

3.2.15 Peat

- * *Planning authorities should consult Scottish Natural Heritage & Historic Scotland in view of potential conflict with nature conservation designations.*
- * *Consult with SNH/Historic Scotland to identify areas which might be suitable for development.*

NPPG 16 “OPENCAST COAL AND RELATED MINERALS”

- 3.2.16 In NPPG 16, published in March 1999, the Government has set out guidance for planning authorities on opencast coal and related minerals, such as fireclays and brickclays.
- 3.2.17 NPPG 16 addresses the role of opencast coal within national energy policy. It notes that the Government has set no limits or targets for coal or any other source for energy supply, nor has it set specified levels of deep and opencast coal production. The level of output is left to individual operators taking account of prevailing market conditions. It is noted that a contract to supply any of the public electricity generators does not confer on opencast coal operators any special status in terms of planning legislation or policy.
- 3.2.18 NPPG 16 recognises the potential economic benefits of opencast workings. It is also noted however that the working of opencast coal can have a significant adverse environmental impact and that it is becoming increasingly difficult to find sites that can be worked in ways which local communities, or society in general find acceptable. The key policy principle is therefore to safeguard local communities from the significant adverse effect of opencast extraction and also to protect the local environment from irreversible damage. NPPG 16 also recognises that mineral working in certain areas may be unacceptable.

3.2.19 In the interests of protecting communities and the local environment from the unacceptably adverse consequences of opencast working, the government recommends the application of the following tests.

* *Is the proposal environmentally acceptable taking account of the use of planning conditions and/or agreements to effectively mitigate any adverse impacts?*

* *If not, are there any local or community benefits relating to the proposal which sufficiently outweigh any material risk of disturbance or environmental damage?*

3.2.20 If the proposal does not satisfy one or other of the above tests, it should be refused unless there are exceptional circumstances. Exceptional circumstances are considered to apply where the proposal would clear a substantial area of derelict land, stabilise previously undermined sites for building purposes or remove pollution arising from former mine workings.

3.2.21 In relation to impact on settlements, the advice suggests that in general, working faces within 500 metres of settlements are likely to pose a threat to the amenity of a community and are therefore likely to be unacceptable. It is noted however that this distance may be reduced by local circumstances, such as the nature of intervening topography.

3.2.22 NPPG 16 also gives guidance on detailed operational considerations such as dealing with dust, noise, pollution, restoration, after-care and after-use. Further advice is also given on what constitutes benefits or disbenefits of workings and on balancing such factors when making a decision on an application. These can perhaps be regarded as detailed issues for consideration in local plans. Other significant issues to be dealt

with in Structure Plans are likely to include the following:

* *the need for opencast coal operators in submitting planning applications, to provide information on the location of coal reserves in land surrounding the application site and their interests in likely future workings in such areas. Planning authorities must have regard for this additional information in reaching a decision. It is further suggested that planning authorities should establish an overall strategic framework for open cast working in structure plan including a transportation strategy giving emphasis to rail transport where feasible;*

* *the identification within structure plans of broad areas where opencast coal and related mineral developments may be acceptable, considering all the advice in NPPG 16. Applicants will still require to submit an environmental statement in situations where there are likely to be significant environmental effects; and*

* *outwith such preferred areas, there should be a general presumption against opencast coal and related minerals working.*

3.2.23 It is considered that the advice given in the NPPG 16 places significant burdens on the planning authorities and mineral operators, particularly in relation to the provision of information on mineral reserves in areas outwith the immediate application site and the assessment of such information. The identification of preferred areas, other than by using very broad criteria, is also likely to prove difficult for planning authorities. This assessment is based on the perceived availability of information of this type for the Falkirk Council area. Such information has generally been regarded by landowners as commercially confidential. In other situations, the commercial value of any reserves could only be established through detailed site investigation.

3.3 Existing and Potential Mineral Working

3.3.1 The range of minerals worked within the area includes coal (deep coal and shallow reserves) aggregates (sand/gravel and hard rock) peat, fireclay and brickclays. No other minerals of economic significance have been noted. The only minerals worked on a significant scale at present are coal, peat and aggregates. In the case of coal, there are additional operations extracting methane from coal seams. The following list and map summarises the current position.

Figure 3.1 - List Of Current And Potential Mineral Workings (November 1998)

Mineral Type and Location	Details
Deep Coal	No current working under the land area but consent exists for working under the Forth from the Longannet Mine Complex. Current application F/98/507 for working by Scottish Coal from Longannet Complex under the River Forth and under land between the Forth and the M9 and Airth to Skinflats. Workings are programmed for the period 1999-2014. The output from the proposed mining area being estimated as 9 million tonnes.
Shallow Coal Opencast	
Waterslap, Airth	Application F/97/0831 consent granted (Millstone Grit & Fireclay Ltd) Extension to existing site to extract 6,000 tonnes. Subject to appeal.
Hareburn, Avonbridge	Application F/97/473 (Banks) - Council agreed to grant subject to Section 75 agreement. 300,000 tonnes of coal plus 40,000 tonnes of fireclay. Granted May 2000.

Wester Jawcraig,
Near Slamannan

Application F/97/18 (Millstone Grit & Fireclay Ltd) - Council agreed to grant consent subject to Section 75 agreement. 160,000 tonnes coal plus 20,000 tonnes fireclay worked over 18 months. Application withdrawn.

Canada Wood, near Falkirk

Application (F/98/0390) (Hall Construction). Application withdrawn. 45,000 tonnes over 2 years 8 months.

Fencehillhead, by Avonbridge

Workings incomplete, operator in liquidation.

Aggregates - a) Sand & Gravel

Avonbank Quarry,
near Polmont

Long term working and processing plant on site. Consented reserves thought to be nearing exhaustion by 1999-2000.

Avondale Quarry,
near Polmont

Consent granted for landfill site.

Hillhouse Farm, Larbert -

Application F98/2 for sand/gravel working and infill with inert material. 8.1 ha and 718,000 tonnes worked over 7-8 years. Application now approved.

Aggregates - b) Hard Rock

Boards Quarry, near Denny

Long established working. Reserves and output not available (Tarmac).

Northfield Quarry, near Denny

Long established working. Reserves and output not available, formerly Council operated now leased to Tillicoultry Quarries.

Cowdenhill Quarry,
near Banknock

Former working dormant since 1953. Could be reopened subject to scheme of modern conditions within defined area. (2.5 million tonnes consented originally). Conditions now approved.

Peat

Gardrum Moss

Long established active site which requires scheme of modern conditions under terms of the Environment Act 1995 (Wm. Sinclair). Output unknown.

Letham Moss,
between Airth and Larbert

Long established site not subject to planning consent when originally established in 1940s. Requires Certificate of Lawfulness and Scheme of modern planning conditions.

Fireclay

No known current workings. In the recent past fireclay has been produced in conjunction with coal workings from opencast mines.

Coal Bed Methane

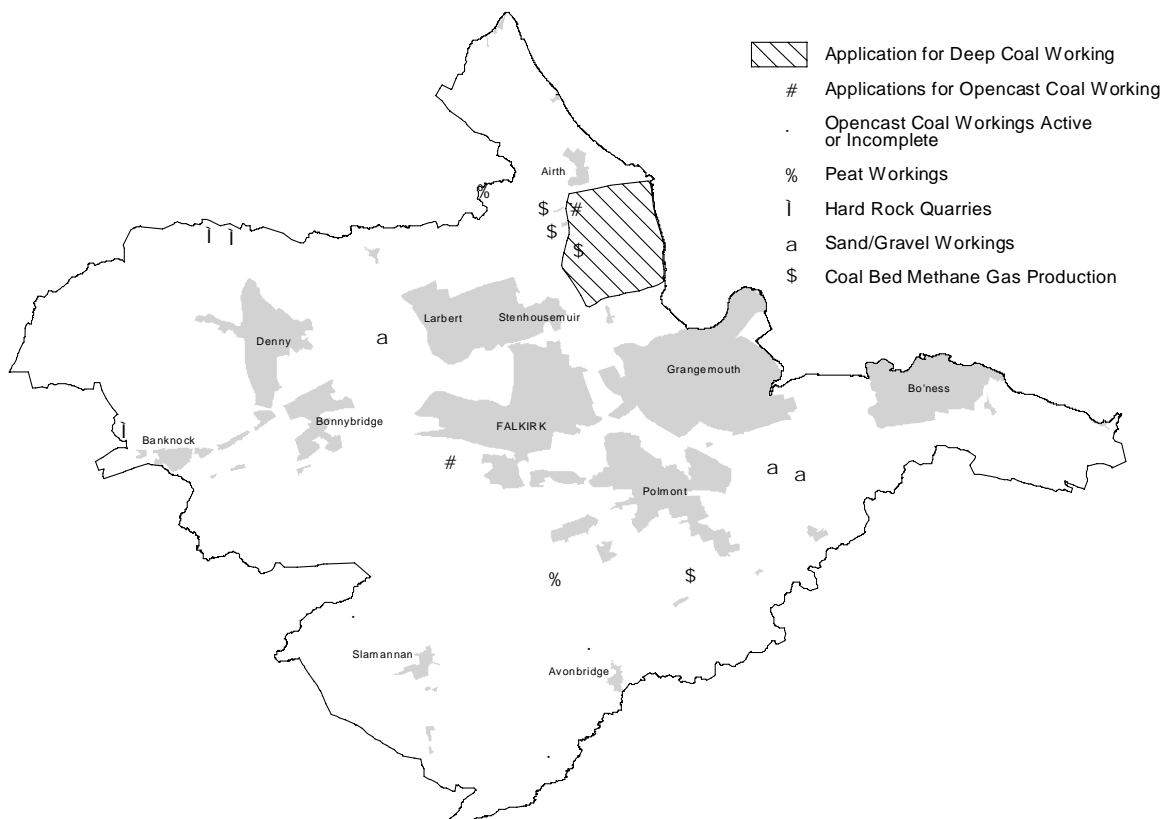
3 sites near Letham.
One site near Standburn

Gas from coal seams is collected and used to generate electricity.

Note : Selectively updated September 2000.

Map 3.1 Existing and Proposed Mineral Working

Coal - Production , Reserves and Demand



3.3.2 Deep coal reserves are known to exist under the River Forth and extending westwards into the Council area from Grangemouth in the south to the boundary with Stirling Council area in the north. The westward extent of these reserves is unknown.

3.3.3 The reserves under the River Forth are already subject to planning consent for working with access from the Longannet Mine Complex located in the Clackmanannshire Council area. Scottish Coal is currently seeking consent for further underground working from the Longannet complex in an area from the banks of the River Forth westward towards the M9 motorway. Scottish Coal indicate that the application area contains 25 million tonnes of coal in the Upper Hirst seam although the current proposals only allow for the working of 9 million tonnes. It is envisaged that the 9 million tonnes can be worked at a rate of 1.9 million tonnes per annum exclusively supplying Longannet Power Station.

3.3.4 Concerns have been raised over possible subsidence arising from this deep mining, particularly as the subsidence might affect the nature conservation and agricultural value of the land if sea level rises.

3.3.5 Shallow coal exists in many locations throughout the area and this has been worked by shallow mining and more recently by opencast methods. Currently, there are no active workings but there are three consented sites, two applications to be determined and one unfinished site. This contrasts with a much higher level of activity in the late 1980s, when up to 13 sites were operating simultaneously within the Council area.

3.3.6 Details of the market for opencast coal produced locally are not available. In general, it is known that Longannet Power Station is a major outlet for local opencast coal, which is required for blending with deep mine coal produced for power station use. The remaining domestic and industrial market for opencast coal is known to be diminishing and reference has already been made to a change in government policy which might impose greater restrictions on opencast working.

Coal Reserves and Likely Future Workings

3.3.7 Former shallow workings and reserves at shallow depth are known to exist over an extensive part of the Council area. In general these reserves and former workings are found in the area south of Falkirk, including the Slamannan Plateau, in the flat land north east of Larbert and north of Grangemouth, north of Banknock and to a lesser extent on the north east edge of Denny/Dunipace. Detailed information on workable reserves is much harder to obtain. One major landowner in the area, Callendar Estates, has indicated a willingness to enter into negotiations with the Council in an attempt to define a longer term programme of opencast working for land in their ownership.

3.3.8 Given the current situation in the local coal market with clearly defined proposals for deep mining and lack of activity in the opencast sector, it is not considered appropriate at this stage to attempt to define a ten year consented land bank.

Aggregates - Production Reserves and Demand

3.3.9 Information on the level of production, reserves with planning permission and the general pattern of flow of materials to market areas is important in formulating planning policies in this subject area. Information of this nature is however limited and certain assumptions must be made. This arises in part from the fact that the two operational hard rock quarries in the area are long established workings, not subject to modern planning permission with appropriate conditions. An assessment has been based on Scottish Office information included in the "Survey of Aggregate Working 1993" which dealt with Regions, rather than current local authority areas, information presented at a planning inquiry dealing with a new quarry proposal and information held by the Council.

3.3.10 The 1993 Scottish Office Study recorded 5 hard rock quarries in Central Region and 5 sand and gravel workings. In case of hard rock, 3 quarries were known to be within the boundaries of the Falkirk Council area with one further quarry in Clackmannanshire and one in the Stirling Council area. The latter two were in locations well within the 30 mile radius normally accepted as a limit for the economic transport of aggregates to markets and on this basis, could supply markets in the Falkirk Council area. The following tables from the 1993 survey illustrate the level of production, how this relates to reserves and the number of years supply this represents at 1993 levels of production.

Figure 3.2 - Central Region - Production/Supply of Aggregates

Minerals	Production Per Year	Estimated Consented Reserves	Years supply at 1993 levels	Reserves with consent for future use
Hard Rock	1.095 M. tonnes	34.1 M. tonnes	31	-
Sand & Gravel	0.777 M. tonnes	12.8 M. tonnes	17	3.0 M. tonnes

3.3.11 The 1993 survey showed the Region to be a net exporter of material, supplying Strathclyde, Lothian and Tayside. The data also revealed a rising trend in production nationally, from 1986 to 1993.

3.3.12 Evidence presented at a planning enquiry for a new quarry near Denny/Dunipace held in 1997, was more specific on the issues of need but also noted the difficulty in obtaining accurate figures given the planning status of the existing quarry operations. This evidence made assumptions about the output of Northfield and Boards Quarries. On this basis, it was estimated that the available landbank for Central Region was 27 years for hard rock aggregates and 16 years for sand and gravel. More recently, Northfield quarry has been leased by the Council for operation by a private quarry company and this factor is likely to increase the overall production level of this particular quarry.

Aggregates Demand

3.3.13 No significant information exists on the level of demand for the Council area. At national level, there is clear relationships between construction activity, as measured by the construction index and the production of aggregates for uses such as concrete roadstone, bulk fill and general building. In the Council area, there has been a relatively high level of construction activity including housebuilding, the Grangemouth petro-chemicals complex, business and commercial developments. From the evidence of planning consents and developer interest, it can be assumed that construction activity will remain buoyant and indeed higher levels of activity could be predicted in the coming 5-10 year period.

Conclusions on Aggregates

3.3.14 It is considered that sufficient information exists to conclude that the Falkirk Council area has an adequate supply of aggregates to at least meet the 10 years requirement specified in national policy guidance. Given that the area has two operational quarries close to the principal road network, a third major quarry lies close to the boundary within Stirling Council area and a fourth dormant quarry with development rights exists near Banknock, the supply situation is particularly favourable in relation to hard rock aggregates. In this situation, there is a strong case for restricting further new hard rock quarries. The situation is less favourable in regard to local sand and gravel supplies. There is however no available evidence of a deficiency of this mineral resource which would give direction to strategic policy.

Peat - Production, Reserves, Demand

- 3.3.15 Little information is available on the market conditions for peat or production levels. This arises in part from the absence of modern planning consents, with conditions for the two operational sites. It is thought that both workings produce peat mainly for horticultural use rather than for fuel use. Peat reserves are known to exist in the Slamannan Plateau area with smaller pockets in the carselands west of Airth.
- 3.3.16 Restrictions in the form of nature conservation interests in peatland areas will limit the potential for future peat workings. In addition, recognition of the nature conservation value of peat bogs has led to the development of alternative materials for horticultural use.

Brickclays/Fireclay - Production, Reserves and Demand

- 3.3.17 Little information is available on conditions in the local brickclay/fireclay market. No current fireclay workings are known within the area, although firebricks are still produced at works near Whitecross and at Bonnybridge. It is thought that the basic material for brick production is now imported to the area, although in the recent past, fireclays were produced in conjunction with coal, in opencast workings.
- 3.3.18 A geological study produced in 1982 by the Institute of Geological Sciences concluded that the best fireclay in the United Kingdom could be found in the Falkirk/Grangemouth area and that this could be regarded as a resource of national significance. In spite of this assessment, there is no current evidence of significant interest in further fireclay working in the area and no perceived need to attempt to identify 10 year land banks.

Coal Bed Methane

- 3.3.19 The extraction of methane gas from coal seams is a recent development within the area, the operation being confined to a few locations on the flat land around the village of Letham and more recently at one site near Standburn. At present, 3 separate sites operate with the combined gas output of the three sites feeding a gas powered electricity generator at one location. These wells have an estimated life of up to 40 years, but there is no information on the potential for future development. These are all relatively small scale developments but the well heads are visually obtrusive given the flat open nature of the land in the Letham area.

The Implications of Mineral Working for Development

- 3.3.20 The long history of mining for several minerals in the area has created significant problems for built development. In the case of deep mining, particularly that carried out by more modern longwall methods, surface subsidence often occurs within a short time period from the cessation of working. After subsidence occurs, there is less danger of further surface effects. Shafts and adits can however cause particular problems.
- 3.3.21 Particular concerns have been raised by local residents and Scottish Natural Heritage in relation to the current proposals by Scottish Coal to mine deep coal under the flat land between the M9 and the Forth. Although the maximum subsidence arising from individual panels of working is calculated to be less than one metre at maximum, fears have been expressed because of the low lying nature of the land which is already subject to flooding. The possibility of sea level rise and the condition of the existing sea defences also cause concern. This development proposal remains under consideration.
- 3.3.22 Shallow underground coal working creates potentially greater problems. All mining less than 30 metres deep can be regarded as shallow, in some situations where geology and surface deposits have certain characteristics, mining deeper than 30 metres can cause problems.
- 3.3.23 Previous studies of the implications of local geology and mineral working on land use and development have attempted to define the extent of shallow mineral working over much of the area. Coal has generated the most extensive shallow mining activity but there are also more limited fireclay and limestone workings in this category.

3.3.24 The 1982 study “Planning for Development - Falkirk/Grangemouth Project” (Institute of Geological Sciences) illustrates significant areas of shallow mining in the following areas:

- * *in and around Bo’ness;*
- * *in the Skinflats/Bothkennar area;*
- * *on the high ground south of Falkirk/Bonnybridge;*
- * *south of Slamannan;*
- * *on the west edges of Denny/ Dunipace;*
- * *north and west of Banknock; and*
- * *immediately east and north of Larbert.*

3.3.25 It is recognised that all workings will not be recorded and that mineral resources at shallow depth still remain in these areas.

3.3.26 The 1982 study and a later 1990 study over a more restricted Falkirk/Grangemouth area, both emphasise the limitations of information available on the extent of former workings and the constraints this might impose on development. Unrecorded workings may well exist outwith the areas identified as being subject to shallow mining and detailed site investigation is essential to prove the suitability of all such areas for building purposes. Superficial deposits such as peat, clay, silt, made ground and fill can also cause foundation problems.

3.4 Summary of Main Findings

3.4.1 The following bullet points summarise the main findings of the chapter on minerals.

3.4.2 NPPG 16 “Opencast Coal and Related Minerals”, indicates a more rigorous approach to this group of minerals than is the case with NPPG 4. This applies in particular to greater emphasis on the need to minimise the impact of workings on communities; the protection of the built and natural heritage, the need to define preferred areas for working and the need to consider all proposals within a wider strategic framework for future working.

3.4.3 The most significant minerals in terms of scale and potential for workings are coal and aggregates. All other minerals are worked on a small scale. The number of opencast coal workings has diminished significantly over the past 10-15 years and this reflects the overall national energy market. No significant increase in opencast working is envisaged given market conditions.

3.4.4 Assuming that environmental concerns can be adequately addressed, deep coal working seems likely to continue under the Forth and into the eastern fringes of the Council area for the foreseeable future.

3.4.5 Difficulties are likely to be encountered in defining preferred areas for opencast working and a strategic framework for working, given the lack of detailed information on reserves.

- 3.4.6 In relation to aggregates, local sand and gravel working is confined to a few sites probably reflecting the fact that the best local reserves have already been worked in the past. Although the available information on production and reserves is limited, it is concluded that there is adequate provision in existing quarries and one other inactive quarry to meet demand for the foreseeable future. In this situation, there is no strong case for new workings.
- 3.4.7 Because many of the existing minerals workings are long established and not subject to modern planning permissions with appropriate conditions, there is a general need for further research on minerals to inform future detailed policy formulation.
- 3.4.8 Poor ground conditions caused by previous shallow mineral working is a significant consideration for built development in the area and may cause subsidence. Insufficient information is available to accurately define the extent of such areas.

Bibliography

- British Geological Survey (1990) Geology for Land Use Planning:-Falkirk-Grangemouth, Technical Report
- Forsyth IH et. al. (1982) Planning for Development - Falkirk Grangemouth Project
- Ironside Farrar Ltd (May 1987) Rullie Quarry Environmental Statement
- Scottish Office (1989) Survey of Aggregate Working in Scotland
- Scottish Office (1993) Survey of Aggregate Working in Scotland
- Scottish Office (1994) NPPG 4 - Land for Mineral Working
- Scottish Office (1999) NPPG 16 - Open Cast Coal and Related Minerals

