



SHETLAND ISLANDS COUNCIL

INTERIM PLANNING POLICY (DRAFT)

MINERALS

Guidance on Mineral Working
within Shetland
Technical Report



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Produced by

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Chapter 1: Introduction

The purpose of this document is to update the Aggregates Working Papers – Volume 1 & 2 published in March 1994.

As reflected in the title of this document, it covers a more extensive topic area of minerals as opposed to specific aggregate working as evident within the original working paper, which are essentially sand, gravel or crushed solid rock used in the construction industry.

A precise definition of aggregate:

Naturally occurring material used in the construction industry in conjunction with or bound together with other materials such as cement or bitumen to produce mortar/concrete or tarmacadam ie the materials are literally aggregated together. Aggregate is also used in its raw state for uses such as hardcore for roads and building foundations, or rock for sea defences.

- 1.1 Characteristics differ in size, porosity and resistance to skidding, which determine the demand for and the price paid for aggregate. Engineering properties of the rock will also determine whether or not a particular reserve is worth exploiting economically. By widening the topic area to include all mineral workings and extraction permits consideration of a wider area including peat and larger reserves which might be suitable for export.
- 1.2 Preparation of this paper fits into context with the current review of the Shetland Structure Plan (2000) and Local Plan (2004), which is undergoing radical change as is explained in the following chapter. At national level as a result of the Planning etc. (Scotland) Act 2006, the two documents will be replaced by a Local Development Plan and will be supported by documents such as Supplementary Planning Guidance, Masterplans etc.
- 1.3 The Council previously agreed that working papers on key issues should be published in advance of the consultative draft plans. "Aggregates Working in Shetland" was the first such working paper. Other working papers were subsequently followed up on subjects including commercial development and housing policy.

1.4 Under the current review, it is envisaged that similar style topic papers will be prepared, however, each topic paper will go further than the previous working papers in that recommended policy will be drawn up for consideration within the Local Development Plan and Supplementary Planning Guidance. This represents a major revision of existing Shetland policies relating to this topic, bringing them up to date with the requirements of new national guidance, including the Environmental Impact Assessment (Scotland) Regulations 1999.

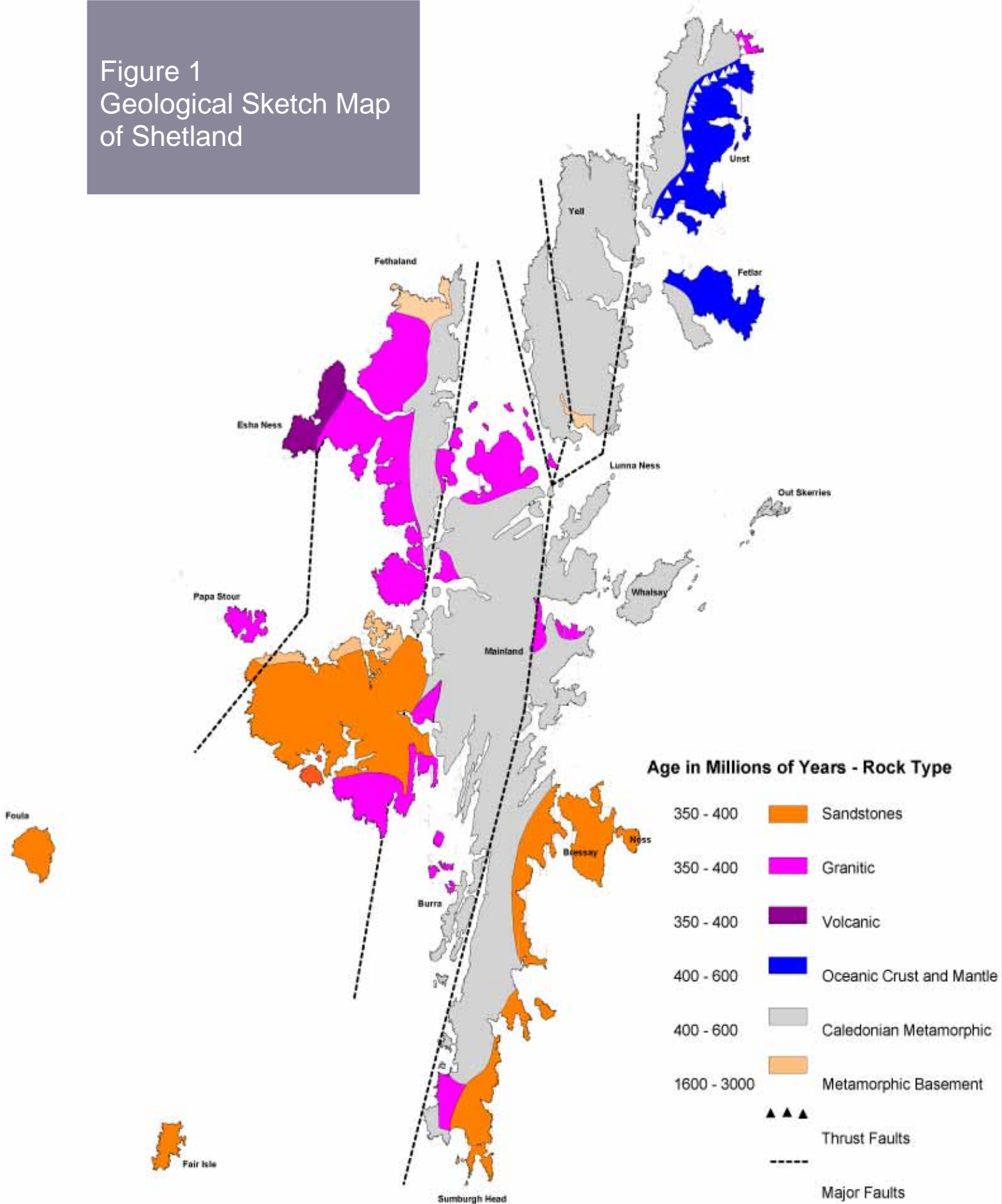
1.5 This document comprises of two sections:

- Part 1 Technical Paper : reviews mineral working within Shetland
- Part 2 Draft Recommended Minerals Policy : sets out a strategic and detailed policy framework for mineral developments in Shetland

Figure 1 on the following page provides a map that reflects the geological make up of Shetland.



Figure 1
Geological Sketch Map
of Shetland



Chapter 2: The Legislative Framework & National Guidance

In setting the scene, this chapter makes reference to the various aspects of legislation, national guidance and planning advice notices that are key to the exercise of review on which this document is fundamentally based upon.

Planning Acts

Emerging Regulations

Planning etc (Scotland) Act 2006

- 2.1 According to the Scottish Executive the new Planning etc (Scotland) Act 2006 is the central part of the most fundamental and comprehensive reform of our planning system in sixty years.
- 2.2 The National Planning Framework sets out arrangements for the preparation and publication of a spatial plan for Scotland. It also describes the procedure for Parliamentary consideration of the Framework, and its laying before Parliament. In force from April 2007 the Second National Planning Framework is due for publication in 2008 and will cover the period till 2030.
- 2.2 Regulations for the preparation of future Local Development Plans (to replace existing Structure and Local Plans) will be in effect from late 2008, following prior consultation. Although not in effect at the time of preparing this Topic Paper, draft regulations circulated for consultation place great weight on sustainable development with all new development plans and supplementary planning guidance being required to deliver sustainable development.

Existing Legislation

The Town and Country Planning Act 1997

- 2.3 Current legislation is drawn from the Town and Country Planning (Scotland) Act 1997. In association with related primary and secondary legislation this governs the day-to-day operation of the system. The general principle under which the planning system operates in Scotland is that decisions should be taken at the most local administrative level unless there are strong reasons for taking them at a higher level. In addition, any determination under the

planning Acts must have regard to the development plan unless material considerations indicate otherwise. Section 50 agreements were detailed under section 75 of the Act and from this point were referred to as S75 Agreements.

The Town and Country Planning (Minerals) Act 1981

- 2.4 The 1981 Act provides the Council, as a minerals authority, with an opportunity to tighten control over mineral extraction and restoration irrespective of the age of the quarry workings. The Act includes powers to take certain measures to tackle the problems of older, often unconditional planning permissions.
- 2.5 The Act requires a minerals authority to carry out a periodic review of every quarry site where operations are being carried out or have been carried out in the preceding 5 years. It also includes sites with planning permission that have not yet been developed. Thereafter, there is an obligation on the minerals authority to carry out further reviews, although the manner and frequency of these reviews is not stipulated.
- 2.6 In certain cases, up to date environmental conditions can be imposed on permissions granted some time ago. Aftercare conditions can only be imposed where the proposed after-use is related to agriculture, amenity or forestry.
- 2.7 The Act also provides local authorities with the opportunity of tackling issues such as the abandonment of unfinished works. The provisions also allow local authorities to prohibit the resumption of a quarrying operation where it has increased, and if necessary to impose appropriate tidying up and restoration conditions. The 1981 Act introduced a 60 year default time limit for planning permissions where a time limit had not already been stipulated as a planning condition. Prior to this limitation, if a quarry had commenced operations and there was no planning conditions restricting its operations, the quarry could remain open in perpetuity. The 60 year limit applies to all permissions granted before February 1992.
- 2.8 Use of many of the provisions of the 1981 Act have to be confirmed by the Scottish Ministers. Accordingly, for such action to be successful it would be helpful to have more detailed policies within the Local Development Plan and supportive policy documents in order to demonstrate to that consistent standards are being aimed at all quarrying operations.
- 2.9 The 1981 Act included provisions to reduce the level of compensation payable if permissions were altered in any way by local authorities. However, the possibility of high compensation payment has obviously been a disincentive to many councils in using the provisions of the Act.
- 2.10 During the preparation of the previous working papers Shetland Islands Council had undertaken a survey of other Scottish authorities, which concluded that few authorities had reviewed their quarry sites or used the available powers of the 1981 Act attached to modern conditions. The Scottish Office's Consultation Paper on the review of the 1981 Act (June 1992) concludes that progress on the reviews and updating of old

permissions has not been as fast as the Government would have hoped. The consultation paper suggests in paragraph 10 that:

The main reasons for not undertaking a review would appear to be; lack of staff time, more urgent departmental priorities, potential compensation liability, lack of staff expertise and financial constraints.

2.11 The SO Consultation Paper stresses that two questions need to be addressed, namely:

- how to ensure the upgrading of older inadequate permissions?
- what is the correct mechanism to provide for future periodic upgrading of mineral permissions to ensure that they keep pace with the standards of the day?

2.12 The Consultation Paper put forward various options including:

- reduce the 60 year default time limit;
- amend the compensation regime;
- review older permissions first; and
- re-examine permissions granted before an area was designated as an SSSI, etc.

Reclamation Legislation

Activity	Legislative Derivations	Current Legislative Provisions	Relevant Circulars
Attaching reclamation conditions to planning permissions	Town & Country Planning (Minerals) Act 1981, part II, Section 22 (inserted after section 27 of the Town and Country Planning (Scotland) Act 1972)	Town & Country Planning (Scotland) Act 1997, Schedule 3	Circular 5/1982 (now cancelled)
Old mineral workings and permissions	Planning & Compensation Act 1991 Schedule 9	Town & Country Planning (Scotland) Act 1997, Schedule 8	Circular 2/1992 Circular 26/1992
Review of Mineral Planning Permissions	Environment Act 1995, Schedule 13	Town & Country Planning (Scotland) Act 1997, Schedule 9	Circular 34/1996 Circular 34/1995 Annex
		The Environmental Impact Assessment (Scotland) Amendment Regulation : ROMPS	Circular 1/2003

The Planning & Compensation Act 1991

2.13 The Act introduced a number of provisions that are particularly relevant to minerals planning including procedures for upgrading, operating, restoration and aftercare conditions of permissions granted between November 1943 and the end of June 1948 (the so called *Interim Development Order* permissions). A completely new power was also introduced to deal with breaches of planning conditions. A minerals authority can serve a notice requiring compliance with planning conditions, including specifying steps to be taken to meet the original conditions. The Act also introduced a ten year limit which enforcement action should be taken against most unauthorised uses of land and most breaches of planning conditions. Further relevance to minerals planning is an emphasis on a development plan led planning control system and an extension of the review procedure introduced in the 1981 Minerals Act to apply to sites where mineral waste is deposited.

Previous Legislation

The Town and Country Planning (Scotland) Act 1972

2.14 The previous working paper focused upon this Act as it was the current Act at that time. The Act sanctioned the imposition of planning conditions and provides the legislative context for planning agreements. Section 50 agreements, as they were then known, enabled a planning authority to enter into a legally binding agreement with an applicant to impose commitments on a third party, although it is usually the applicant who makes the commitment. The agreement covered works to be carried out, or the prohibition or control of the development in some way. Instances in the quarrying context included restoration works, or an agreement to complete the development by a certain date, or to operate the quarry at specific times only.

Regulations

The Environmental Impact Assessment (Scotland) Regulations 1999

2.15 Environmental Impact Assessment was initiated by EC Directive 337/85 and is now a well established tool for environmental management and planning in the UK. In Scotland the legislation is enacted by the Environmental Impact Assessment (Scotland) Regulations 1999, which:

“requires that projects which are likely to have significant effects on the environment by virtue of their nature, size or location shall be subject to an assessment of those effects”.

2.16 For projects identified in annex I of the EC Directive (Schedule I of the EIA Regulations), there is a mandatory requirement for an Environmental Impact Assessment (EIA). For projects in Annex II of the EC Directive (Schedule 2 of the EIA Regulations) an EIA is discretionary. The regulations include a number of provisos, but the basic test is whether the proposed development would result in significant environmental effects rather than the amount of opposition or controversy that arises as the result of a specific proposal. The regulations state that there should be no automatic presumption that an EIA is required. Further reference to thresholds and the procedures relating to EIA is mentioned in paragraphs 2.57 – 2.62 (Circular 8/2007) of this document.

2.17 It is the Scottish Government's view that in the case of Schedule II projects an EA is required:

- where the project is major and of more than local importance, or where the project is unusually complex and potentially adverse environmental effects are likely to result, and where expert and detailed analysis of those effects would be desirable prior to deciding in principle whether or not the development should be permitted, and
- where a smaller scale project is located in a particularly sensitive or vulnerable location.

2.18 However, the Regulations provide that a project is to be taken as being **likely to have significant environmental effects** when the applicant and the planning authority agree that is the case, or when the Scottish Minister's so directs. It is stated that examples of major projects of more than local importance have included large mining operations and that the submission of an EIA on a voluntary basis for such projects has become increasingly common.

2.19 Examples given of smaller projects in sensitive areas, include projects:-

“.....likely to have significant effects on the special character of a protected area or site, such as a National Scenic Area (NSA), a Site of Special Scientific Interest (SSSI), a National Nature Reserve (NNR) or an area or monument of major archaeological importance.”

2.20 The Regulations also state that special considerations should apply to SSSIs classified as Special Protection Areas or RAMSAR sites.

2.21 If there is a disagreement between a minerals developer and the local authority as to whether an EA is appropriate, the developer can apply to the Secretary of State for his direction in the matter.

National Planning Policy Guidance

2.22 In general, planning legislation provides the context for dealing with planning applications for specific mineral projects, although the change in the status of development plans brought in by the Planning and Compensation Act 1991 is of major significance. National planning policy and advice relates more to the kinds of policies that are appropriate in statutory plans. There is, of course, a strong link between the two, as many of the provisions of the various acts (e.g. the provisions for better enforcement and restoration) should ideally be underpinned by appropriate development plan policies.

2.23 In England there has been a proliferation of different forms of guidance, including nearly a dozen Mineral Planning Guidance circulars (MPGs). For instance English circular 22/84 requests mineral authorities to:

- ensure that local, regional and traditional demand for minerals is met;
- have a landbank of permitted aggregates reserves;
- identify areas where there will be a presumption for and against mineral working;
- safeguard unworked mineral resources;
- set out criteria for development control; and
- require the restoration of mineral workings.

2.24 Scottish advice to date has been less extensive and less detailed. It consists of:

- Planning Advice Note (PAN 13) Planning & Geology (1973)
- National Planning Guidance (NPG) Aggregate Working (1977)
- National Planning Policy Guidance (NPPG4) Land for Mineral Working (July 1992)
- Scottish Planning Policy (SPP4) Minerals (September 2006)

The Government White Paper *This Common Inheritance* (1990) also provides a cursory indication of government thinking on a UK basis

Scottish Planning Policy (SPP)

Provide statements of Scottish Executive policy on nationally important land use and other planning matters, supported where appropriate by a locational framework.

Statements of Scottish Executive policy contained in SPPs are material considerations to be taken into account in development plan preparation and development management.

SPP1 The Planning System

- 2.25 SPP1 outlines the Planning System drawn from The Town & Country Planning (Scotland) Act 1997 and highlights the need to in-corporate sustainable development into the development plan process.
- 2.26 Enabling sustainable development requires co-ordinated action, combining economic competitiveness and social justice with environmental quality and justice. Policies and actions of the public, private and voluntary sectors should support and encourage sustainable development. The planning system is important as a means of integrating policies and decision making through its influence over the location of development and other changes in the way land is used. In relation to minerals there should be policies in place that encourage prudent use of natural resources.
- 2.27 Development plan policies should address sustainable development at the local level whilst reflecting national and international goals. Both the short-term and the long-term consequences of policies must be considered from the outset. Planning decisions should favour the most sustainable option, promoting development that safeguards and enhances the long-term needs of the economy, society and the environment. When conflicts between the objectives inevitably arise decisions should be taken in line with local priorities and need as identified in the development plan. All relevant issues must be considered together before a decision is made, looking at long-term implications as well as short-term effects.
- 2.28 Some types of development, such as mineral and coal workings, although raising significant environment issues, are necessary and important in the national interest. In such situations every effort should be made to offset the negative impacts of the development. Sustainable development promotes the right to a healthy and safe environment.

Scottish Planning Policy Relating to Minerals

2.29 There are two principal pieces of planning guidance issued by the Scottish Executive since the publication of the previous working papers.

NPPG 4: Land for Mineral Working (superceded by SPP4 Minerals)

2.30 This national policy guidance note (amended May 2001) set out the government's general approach to minerals planning in Scotland. It highlighted the principles of minerals planning and outlined general locational and operational considerations as well as additional policy guidelines for individual mineral operations. The NPPG contained an implicit *presumption in favour* of mineral extraction but noted that:

"The working of mineral resources should be reconciled with the protection of important environmental assets and other interests."

2.31 Under its locational guidance, the NPPG noted that within national designations, mineral extraction should only be permitted where the underlying objectives and overall integrity of the designated area would not be adversely affected, and where any adverse effects of the mineral extraction would be significantly outweighed by the national benefits that could accrue from the mineral extraction.

2.32 The NPPG also required local authorities to provide for the aggregate needs of construction industries, with a 10 year suitable landbank, and that planning authorities should provide for the reworking of mineral waste deposits and recycling of demolition and construction waste.

SPP4 : Minerals

2.33 SPP4 (September 2006) provides a statement of Scottish Executive policy for mineral working and replaces NPPG4 *Land for Mineral Working* (amended May 2001). The SPP takes account of developments in policy, legislation etc. and also draws on practical experience of implementing earlier policies. **The result is an up to date policy statement for mineral working.**

2.34 SPP4 states that minerals are vital to the Scottish economy, providing essential raw primary materials for industry, construction aggregates and secondary aggregates for the built environment. It highlights that mineral working may have impacts on local communities and the environment and that all mineral proposals should be fully assessed so that extraction only takes place where those impacts can be made acceptable.

2.35 The following objectives for mineral working are found within SPP4 that will ensure a sustainable approach to mineral extraction:

- safeguarding minerals as far as possible for future use;

- ensuring a steady and adequate supply is maintained to meet the needs of society and the economy;
- encouraging sensitive working practices during mineral extraction that minimise the environmental and transport impacts and once extraction has ceased ensure that sites are reclaimed to a high standard or enhance the quality of the wider environment;
- promoting the use and recycling of secondary materials in development plan policies in addition to those for the release of sites for primary materials;
- protecting international, national and locally designated areas of acknowledged natural or built heritage from damage; and
- minimising the potential adverse impact of minerals extraction on communities.

NPPG13 : Coastal Planning

2.36 NPPG13 recognises that many of the issues raised by mineral extraction in the coastal zone are generally similar to those inland and the guidance in SPP4 and PAN 50 continues to reflect Scottish Government policy on these matters. It does however draw attention to extraction of sand and gravel from dunes and beaches, the removal of which can adversely affect the stability of the shoreline and accelerate the rate of coastal erosion. It advises planning authorities to be vigilant in addressing the problem of small scale extraction for local use since the cumulative effects can be substantial and irreversible.

Other Relevant National Guidance

PAN 13 *Planning & Geology* (1973)

2.37 PAN 13 is a short document which basically encourages a planning authority to prepare a minerals plan or to include a minerals section within the Structure Plan.

Aggregate Working – National Planning Guidelines (1977)

2.38 The Verney Committee (1976) was particularly concerned with the predicted shortages of aggregates in South East England, and recommended that Scottish superquarries could make a contribution to this shortfall in the long term (i.e. very large scale quarries away from the main population centers and scenic areas of England). The Committee concluded that it was in the national interest to have larger quarries rather than many smaller ones. It was assumed that quarries, if carefully sited, could be adequately screened. For example, plant and machinery could be concealed from public view if located within the quarry void.

2.39 The Scottish Office set up working party to consider the implications of the Verney Committee report for Scotland. The working party's report "Aggregates in Scotland" resulted in the publication of the National Planning Guidelines (NPG) and a Land Use Summary Sheet on minerals. The NPG was more detailed than PAN 13. It stated that:

Mineral planning has both to ensure continuity of supplies from reasonably economic sources, and to cause least damage to the environment....(and to consider)....to what extent damage to the environment is justified in the national interest of securing aggregate supplies.

- 2.40 The NPG concentrated in particular on the impact of workings on the landscape. It stated that a development's acceptability will depend on a number of factors including the scale of the intrusion, the surrounding topography and the presence or lack of any artificial landscaping or screening.
- 2.41 Nationally, three broad zones were chosen to reflect the extent to which the landscape could visually absorb a large quarry. In determining the appropriate zone for a particular area, weight was given to official and semi-official designations of landscape and archaeological merit.
- 2.42 Four sets of small scale maps of Scotland were made available showing:
- categories of landscaping type;
 - landscape importance;
 - a combination of landscaping type and importance; and
 - a map in three broad zones indicating the potential of the landscape to absorb a quarry
- 2.43 The broad zones were defined as "basic" (those areas that had the greatest scope to absorb a quarry), "special" zones (those areas having the least scope) and "intermediate" zones (somewhere in between). The maps, being small scale, were an intentionally crude indication of the potential of the landscape to absorb a quarry. This was further emphasised by the particular zone/category on each map being represented by a colour on a grid square basis. All of Shetland fell into the intermediate or special zones (see Fig.2), i.e. it was recognised that locating a major quarry in the Shetland landscape would not be an easy task.
- 2.44 The then Scottish Office stated that it did not intend that local authorities would adopt these zones as policy (although in practice many have done so – see paragraph 3.12). Instead it was declared that:

“in general, substantial aggregate workings should not be permitted in areas of highest landscape value.”

- 2.45 The NPG suggested that in basic zones it was reasonable for operators to have a landbank of at least 10 years supply. In intermediate zones the 10 year supply would be an aim but would not be so important. It was also suggested that where an operator had a proposal requiring special justification, his supporting case might cover:

- the need for further land with permission;
- the quality of the mineral resources and its relationship to markets; and
- factors leading to the choice of the site along with details to the alternative sites assessed.

2.46 There was to be a presumption against granting permission in the most important areas of nature conservation (i.e. National Nature Reserves and some SSSIs). Special consideration was also to be given to proposals for aggregate working which were likely to affect higher grade SSSIs of geological importance.

2.47 In the NPG coastal superquarries were defined as producing more than 10 million tonnes of rock per annum (10mta). The guidance stated that:

“....on planning grounds a Coastal exporting quarry could in principle be acceptable if a scheme can be put forward which minimises the damage to the environment both by choice of location and detailed site proposals.”

Geology, operational needs, marine conditions and landscape impact were all seen as important considerations in the choice of a coastal quarry site.

This Common Inheritance (1990)

2.48 More recent government thinking is found in the White Paper *This Common Inheritance* where it states that:

“....Decisions about proposals to work minerals need to strike a careful balance between the interests of amenity and the need to exploit the resource. Operators must take account of best environmental practice.....”

Figure 2
The Potential of the Shetland
Landscape to Absorb Large
Scale Quarries

Verney Committee (1976)



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Planning Advice Notes

Planning Advice Notes (PANs) provide advice on good practice and other relevant information.

PAN 50: Controlling the Environmental Effects of Surface Mineral Workings

2.49 This consists of a set of 4 documents, titled as follows:

- *Annex A (1996) – The Control of Noise at Surface Mineral Workings*
- *Annex B (1998) – The Control of Dust at Surface Mineral Workings*
- *Annex C (1998) – The Control of Traffic at Surface Mineral Workings*
- *Annex D (2000) – The Control of Blasting at Surface Mineral Workings*

2.50 This set of PANs lay down guidance for planning authorities on how to control and minimise the impacts of surface mineral workings, including advice on defining the scope of Environmental Impact Assessments. The PAN also sets out many of the specific potential effects associated with surface mineral workings such as visual intrusion, groundwater, surface water and wastes, along with potential mitigation measures and planning responses.

PAN 64: Reclamation of Surface Mineral Workings

2.51 This document provides guidance on how new or existing mineral workings can be reclaimed to a high standard, creating or enhancing a range of habitats and landscape features.

2.52 The PAN considers the range of potential after-uses of mineral workings and how an appropriate choice may be made. It provides advice on both *restoration*, the soil-moving operations carried out after the extraction process is complete in order to restore the site, and *aftercare*, the additional works required to bring the restored site to a quality suitable for its intended after-use. It also provides good practice advice for operations prior to and during mineral extraction such as the correct stripping, storage and reinstatement of site-won soils.

Planning Circulars

Circulars, which also provide statements of Scottish Government policy, contain guidance on policy implementation through legislative or procedural change.

Circular 1/2003

The Environmental Impact Assessment (Scotland) Amendment Regulations 2002 Review of Old Mineral Permissions (ROMPs)

2.53 This Circular gives guidance on the Environmental Impact Assessment (Scotland) Amendment Regulations 2002 (Scottish Statutory Instrument 2002 No. 324) ("the ROMP Regulations"). These Regulations came into force on 23 September 2002. They set out the procedures to be followed when considering the environmental effects associated with applications for the review of old mineral permissions ("ROMP applications") under Schedules 8, 9 and 10 of the Town and Country Planning (Scotland) Act 1997 ("the 1997 Act"). This Circular supersedes SODD Circular 25/1998 and supplements the guidance in SDD Circular 34/1996 January 2003

2.54 There is a legislative requirement to review regularly the conditions attached to all mineral permissions so that improved operating and environmental standards can be secured. The Planning and Compensation Act 1991 introduced a requirement to upgrade Interim Development Orders ("IDOs") approved between 1943 and 1948. Advice relating to these reviews was set out in Scottish Office Environment Department (SOED) Circular 26/1992. The legislative provisions were subsequently consolidated in Schedule 8 of the 1997 Act. The Environment Act 1995 introduced a requirement for reviewing mineral permissions granted between 1948 and 1982 as well as future 15-year periodic reviews of all extant mineral permissions (including IDOs). SDD Circular 34/1996 gives advice on the statutory procedures to be followed. The relevant provisions were subsequently consolidated in Schedules 9 and 10 of the 1997 Act.

Circular 34/1996

Environment Act 1995: Section 96 Guidance on Statutory Provisions and Procedures

Review of Old Mineral Permissions (ROMP)

2.55 Planning authorities are required to review the conditions attached to mineral permissions every 15 years. Guidance on the procedures to be applied is given in Circular 34/1996 and Circular 1/2003. In addition, Circular 8/2007 is relevant as ROMP applications now fall within the descriptions of either Schedule 1 or Schedule 2 of the Environmental Impact Assessment

(Scotland) Amendment Regulations 1999. These procedures provide an important opportunity to ensure that up-to-date operating and environmental standards are put in place. When preparing and considering proposals for new working conditions, operators and planning authorities are also required to take account of the operational considerations set out in SPP4.

Circular 3/1999

Town and Country Planning (Compensation for Restrictions on Mineral Working and Mineral Waste Depositing) (Scotland) Regulations 1998

This Circular supersedes SDD Circular 22/1987

2.56 This Circular explains the provisions of the Town and Country Planning (Compensation for Restrictions on Mineral Working and Mineral Waste Depositing) (Scotland) Regulations 1998 (SI 1998 No.2914 (s.170)) which came into force on 25 January 1999. The Regulations update the compensation arrangements, which apply when a planning authority revokes, modifies, suspends, prohibits or discontinues mineral working.

Circular 8/2007

The Environmental Impact Assessment (Scotland) Regulations 1999

This Circular supersedes Circular 15/1999

2.57 The criteria and thresholds in Annex A of the previous Circular 15/1999 removes:

- the three main types of case for which Scottish Ministers consider that EIA will generally be required; and
- the indicative thresholds previously identified for assessing whether a development required to be assessed against the 1999 Regulations.

2.58 The Scottish Government expressed concern during the consultation process as to whether these thresholds and types were still sufficiently watertight and believed there could be projects which do not fall into any of the three types or were below the thresholds but which could potentially have significant environmental effects and therefore require EIA. Although views were expressed during the consultation process with regard to the lack of consistency in terms of the removal of these criteria, the Scottish Government are of the view that their removal will encourage the fullest consideration as to the need for EIA based on the particular circumstances and location of each individual development proposal in all cases.

2.59 There was concern that in some instances the thresholds were being used less as guidelines than as an automatic *trigger* and in some circumstances this may have led to greater numbers of EIAs being requested unnecessarily and conversely may have hampered authorities from issuing positive screening opinions in other instances. In the long term the Scottish

Government considers that these measures will lead to greater clarity in EIA screening decisions.

- 2.60 To counter balance the proposal to remove these criteria, the Scottish Government will expand screening guidance in order to help authorities reach better and more informed defensible screening decisions.
- 2.61 Schedules 1 and 2 of the 1999 EIA Regulations will remain, in addition to the selection criteria for screening Schedule 2 development (Annex A of the Circular). However, it is stressed that the categories of projects listed are illustrative and not exhaustive. The fact that a particular type of project is not listed specifically within one of the categories of projects does not mean that it is not to be considered for EIA. Generally it will fall to the planning authority in the first instance to consider whether a proposed development requires EIA. They will first need to consider whether the development is described in Schedule 1 or Schedule 2 to the Regulations:

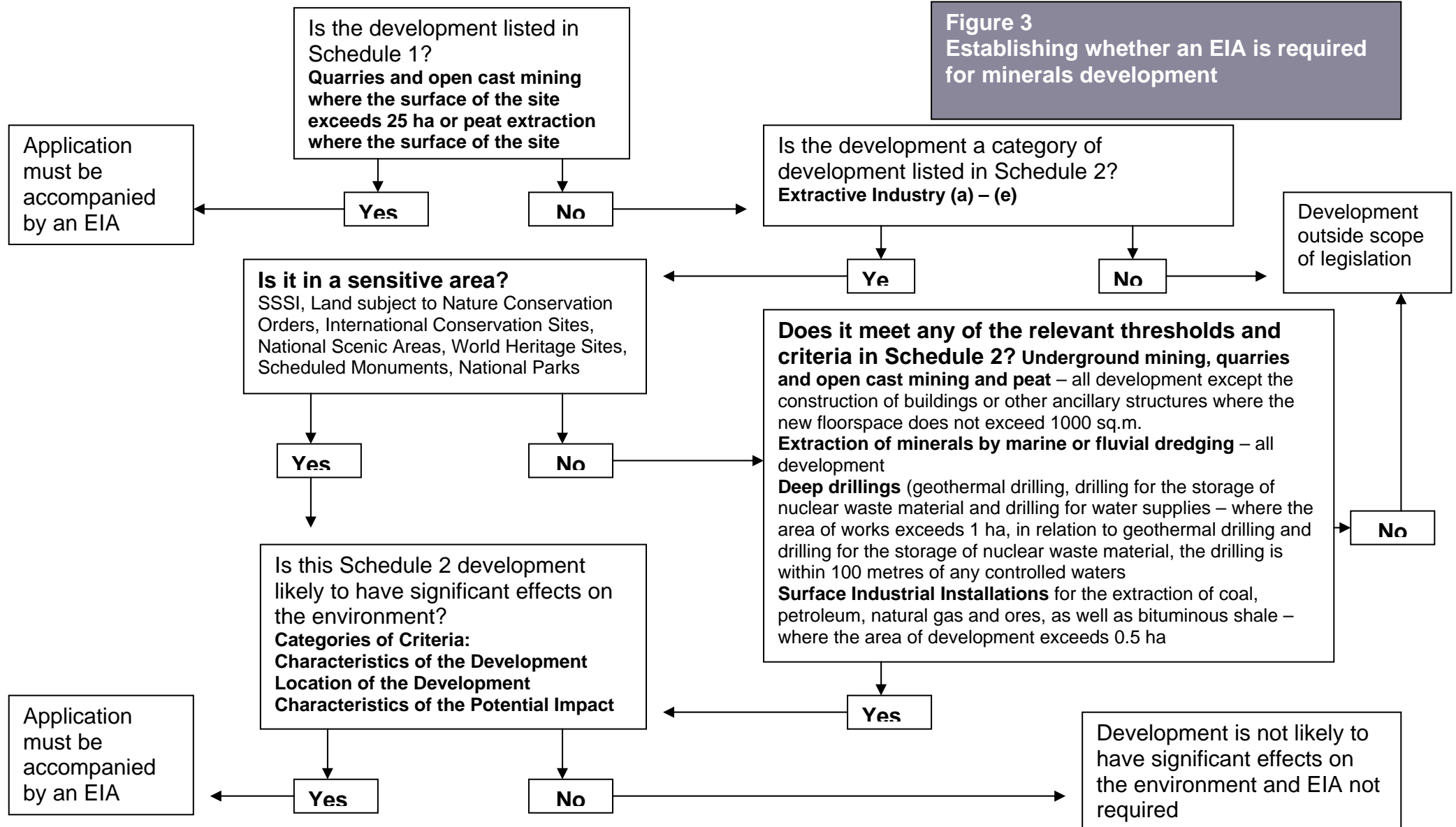
Schedule 1 development – development of this type always requires EIA

Schedule 2 development – development of a type listed in Schedule 2 requires EIA if it is likely to have significant effects on the environment by virtue of factors such as its size, nature or location.

Changes or extensions to Schedule 1 or Schedule 2 developments – changes or extensions which may have significant effects on the environment also fall within the scope of the Regulations.

- 2.62 Figure 3 provides a reference guide to establishing whether a proposed development requires EIA.

Figure 3
Establishing whether an EIA is required for minerals development



European Initiatives

- 2.63 There are a number of EC initiatives set to have an impact on the minerals industry and local authority planning, some details of which have not been fully worked out yet. These initiatives are briefly mentioned here as they indicate the direction that EC policy is going.

Sixth Environment Action Programme

The European Union (EU) defines the priorities and objectives of European environment policy up to 1010 and beyond and describes the measures to be taken to help implement its sustainable development strategy.

- 2.64 *Communication from the commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the regions on the Sixth "Environment 2010: Our choice" (COM (2001) 31 final).*

Summary:

The Sixth Environment Action Programme of the European Community entitled "Environment 2010: Our Future, Our Choice" covers the period from 22 July 2002 to 21 July 2012. The programme is based on the Fifth Environment Action Programme, which covered the period 1992-2000, and on the decision regarding its review. As a result of the action plan various integrations of environmental policy were drawn up.

Promoting sustainable development in the non-energy extractive industry

The Commission sets out broad policy lines for promoting sustainable development in the EU non-energy extractive industry while reconciling the competitiveness of the industry with environmental protection.

- 2.65 *Communication from the Commission promoting sustainable development in the EU non-energy extractive industry.*

Summary:

The communication covers the extraction of all solid minerals, except coal and uranium. Lignite, peat, brown coal and oil shale are also excluded from the scope of the communication.

Characteristics of the European Extractive Industry

- 2.66 The extractive industry is often divided into three subsectors: metallic minerals (iron copper, zinc, etc.), construction materials (natural stone, sand, limestone, chalk, etc.) and industrial minerals (talc, feldspar, salt, potash, sulphur, etc.). The extractive industry is present across the Community and is relatively evenly spread over its territory. The subsector where production is more concentrated concerns metallic minerals, where

Finland, Greece, Ireland, Portugal, Spain and Sweden together account for some 75% of total EU production. The EU remains highly dependent on imports for its raw materials supply. It is the world's largest consumer of minerals.

- 2.67 The European metallic minerals industry has to face up to every intense world competition and it has invested a great deal outside the Community. As regards construction materials, the European Union is a major world producer and is largely self sufficient. Natural stone is an important export product. In the industrial minerals subsector, competition has increased markedly in recent years. Geological deposits are determined by several factors (type and grade of the ore, depth of the deposit and the technical process/design that can be used for the extraction).

Environmental Impact of Extractive Operations

- 2.68 From the point of view of the environment, extractive operations raise two types of concern: the use of non-renewable sources may mean that these resources will not be available for future generations and extractive operations harm the environment (are, soil and water pollution, noise, destruction or disturbance of natural habitats, visual impact on the surrounding landscape, effects on groundwater levels).
- 2.69 The waste produced by the extractive industry is a major problem. Mining waste is among the largest waste streams in the Community and some of that waste is dangerous.
- 2.70 Abandoned mine sites and un-restored quarries spoil the landscape and can pose severe environmental threats due especially to acid mine drainage.

Related Acts

Directive 2006/21/EC of the European Parliament and of the Council of 15th March 2006 on the management of waste from extractive industries (official Journal L 102 of 11.04.2006).

- 2.71 This Directive introduces measures to prevent or minimise any adverse effects on the environment and resultant risks for health resulting from the management of waste from the extractive industries, such as tailings and displaced material. In particular, it contains provisions relating to facilities for the management of waste from the extractive industries, measures for the management of this waste, and the inspections to be carried out.

Towards Sustainability

2.72 *Towards Sustainability* indicates that there will be a significant further development of environmental policy affecting most aspects of aggregate production, transport and use. Environmental Impact Assessment of proposals, as referred to earlier in this chapter, will be broadened to more accurately target their scope and purpose so as to accord with the Action Programme. This approach would also be applied to Strategic Environmental Assessment of the Council's Development Plans so as to develop links between policies affecting the local and European environment.

2.73 Other relevant EC initiatives which may influence the location of quarry sites and mineral planning include:

- RAMSAR sites and Special Protection Areas (SPAs). These are largely bird protected sites. In the United Kingdom a site has to be designated as an SSSI before it can be designated a RAMSAR site. Designation of a site is effectively equivalent to a top grade SSSI.
- Under the European Habitats Directive Special Areas of Conservation (SACs) are being designated, aimed at achieving minimum statutory habitat protection. The emphasis will not be on no development but on the protection of existing habits.

2.74 All designated sites within Shetland are listed in the Table at Appendix 2.

Natural Heritage Designations

3.20 Sullom Voe and Yell Sound Coast were designated by Scottish Ministers as marine Special Areas of Conservation (SAC) on 17 March 2005 under the EC Directive on the Conservation of Natural Habitats and of Wild Fauna and

Flora, commonly referred to as the Habitats Directive. The qualifying habitats/species and conservation objectives for the individual sites are as follows:



	Qualifying Habitats/Species	Conservation Objectives	Potential Harmful Aggregate Operations
Sullom Voe Marine SAC	<ul style="list-style-type: none"> ▪ coastal lagoons ▪ large shallow inlets and bays ▪ reefs 	<p>To ensure the following are maintained in the long term:</p> <ul style="list-style-type: none"> ▪ extent of the habitat on site ▪ distribution of the habitat within the site ▪ structure and function of the habitat ▪ distribution of typical species of the habitat ▪ viability of typical species as components of the habitat ▪ no significant disturbance of typical species of the habit 	<ul style="list-style-type: none"> ▪ extraction of subtidal aggregate ▪ commercial vessels ▪ civil engineering operations ▪ discharges
Yell Sound Coast	<ul style="list-style-type: none"> ▪ Common Seal <i>Phoca vitulina</i> ▪ Otter <i>Lutra lutra</i> 	<p>To ensure the following are maintained in the long term:</p> <ul style="list-style-type: none"> ▪ population of the species as a viable component of the site ▪ distribution of the species within the site ▪ distribution and extent of habitats supporting the species ▪ structure, function and supporting processes of habitats supporting the species ▪ no significant disturbance of the species 	<ul style="list-style-type: none"> ▪ civil engineering operations ▪ commercial vessels

3.21 The UK Regulations make it a duty for all *competent authorities* to assess development proposals in light of the Directive's requirements and planning authorities are obliged not to permit developments that may be damaging to the integrity of the site unless there are imperative reasons for overriding public interest for the development to be undertaken. Where developments are not damaging, however, they are likely to be permitted (subject to complying with all other planning policy requirements.)

3.22 Given the proximity of the potential coastal quarry site located at Orka Voe to both the Sullom Voe and Yell Sound Coast SACs, various tests will be required under the Habitat Regulations for any development operations in this area that may impact on the features of the SAC. Proposing a Safeguarding Area around the two potential coastal quarry sites **does not** imply a presumption in favour of development, it merely safeguards the area from inappropriate development which may prejudice its development at a future date. Any proposal to extract from the Orka Voe site would require to assess the potential impacts on the designated sites in line with the relevant Habitats Directive Regulations.

Chapter 3: A Review of Current Minerals Policies

Shetland's Minerals Policies

3.1 The Shetland policy context for extracting minerals is currently provided by the Shetland Structure Plan (2000) and the Shetland Local Plan (2004).

3.2 *Shetland Structure Plan*

The current Structure Plan approved in 2000 includes three policies for minerals:

- MIN1 seeks to safeguard significant mineral sources and commercially viable sites
- MIN2 implies general presumption for mineral and aggregate extraction where it does not result in adverse impact on local residents, the landscape, the best and most versatile agricultural land; water courses; nature conservation; the historic environment and the visual amenity of the area.
- MIN3 seeks to minimise disturbance by use of appropriate conditions

(Appendix 1 details the individual policies)

3.3 These policies were heavily influenced by the Council's desire to encourage diverse employment opportunities throughout Shetland and encourage sustainability. It was considered that mineral and aggregate reserves had the potential to provide employment and locally sourced materials for construction, in addition to potentially supplying export markets.



3.4 *Shetland Local Plan*

Four years later, the Shetland Local Plan whilst seeking to encourage employment opportunities, additionally sought to balance the need to control the proliferation of quarries in the Shetland landscape, whilst providing for local aggregate demands. Policies were also brought up to date to conform to NPPG4 and the Corporate Plan and the use of Section 75 Agreements to provide a bond for restoration purpose. They do not, however, incorporate the requirements of the Environmental Impact Assessment Regulations (Scotland) 1999.

- LPMIN4 implies a general presumption against new, or extensions to existing quarries within 800 metres of occupied schools or permanently occupied houses.
- LPMIN5 implies a general presumption against new or extended quarry developments where adequate permitted reserves already exist.
- LPMIN6 clarifies that proposals to re-establish mineral workings that are disused or abandoned and do not have planning permission will be considered as applications for new workings in policy terms.
- LPMIN7 seeks to control the proliferation of “borrow pits” in terms of size, location, limiting extraction and ensuring restoration.
- LPMIN8 seeks to encourage the re-use of former quarries for other uses for temporary uses only as restoration of all worked out or abandoned quarries is the ultimate aim.
- LPMIN9 seeks to protect the coastline from damaging extraction of sand and shingle.
- LPMIN10 implies a general presumption for commercial peat extraction provided criteria are met in terms of protection of water flows, areas of active blanket bog and bog orchid sites and which support otters and other wildlife and breeding birds.
- LPMIN11 relates to proposals for coastal export quarries which will only be permitted where the proposal fully complies with relevant Shetland Structure Plan and Local Plan Policies.
- LPMIN12 seeks to control stockpiles or the development or use of new and existing pierhead facilities as transshipment terminals associated with export based coastal quarries.
(Appendix 2 details the individual policies)

Scottish Planning Policy SPP4 : Planning for Minerals

- 3.5 Under the present two-tier system, structure plans set out the requirements for minerals, consider the need for safeguarding, define areas where international and nationally important designations are unlikely to be reconciled with mineral working and set priorities for development management. Local plans define those matters more precisely. In future, local development plans will establish both the strategy and the detail.
- 3.6 When developing a minerals policy, planning authorities should have regard to resource availability, the quality of the deposits and their suitability for working. Through SEA, development plan policies should aim to minimise any significant negative impacts from mineral extraction on the interests and amenity of local communities, the built and natural heritage or other economic sectors important to the local economy. Policies should require a high standard of restoration and aftercare and provide for beneficial after-uses when mineral working has ceased. They should also facilitate the recycling and re-use of material in waste tips and construction and demolition wastes at appropriate general industrial locations or mineral sites. Planning authorities should set out their policy on planning agreements in their development plans and provide a reasoned justification to provide clarity to communities and to the minerals industry.
- 3.7 Proposals in the new Planning etc. (Scotland) Act 2006 include a requirement for pre-application consultation for certain categories of development. Pre-application consultation by operators is intended to provide community councils, other representative bodies or individuals with a worthwhile opportunity to comment on development proposals. The Act includes powers that would allow a planning authority to decline to register an application where a developer has not engaged adequately and will, once enacted, permit “good neighbour agreements” which may have a role in offering communities greater involvement in the operation of developments that affect them. At the time of preparing this Review it is not clear whether minerals development supplying islands needs would fall under these proposals, however, a large quarry proposal such as a coastal quarry, may well do so.

Coastal Quarries

3.8 NPPG4 (Land for Mineral Working) sought a cautious approach in terms of the national provision of large coastal quarries. Three new potential search areas were identified by the document, in addition to the existing quarry at Glensadda in Highland Region. Shetland (in addition to the north coast of Highland Region and the Western Isles) was identified as one of the three potentially suitable search areas for a coastal superquarry. Consequently, planning authorities in these areas were urged to consider suitable locations and, where appropriate, preferred locations included in Structure Plans and specific sites in Local Plans.

3.9 NPPG4 has now been replaced by SPP4. The onus is now on planning authorities to consider the identification of search areas for coastal exporting quarries, deciding, in consultation with local communities, whether they intend to make provision in development plans for coastal exporting quarries. It is recognised that primary industry remains a significant employer in rural areas, and where impacts on local communities are acceptable and those communities have been properly consulted, new coastal exporting quarries may be acceptable at a limited number of locations. Where provision is to be made for identified coastal exporting quarries, the development plan should, in addition, set out the criteria to be satisfied by quarries and their associated infrastructure. However, the general framework of Scottish Planning Policy and specific policies in SPP4 should provide the context.

3.10 *Comparisons*

Both the Western Isles Structure Plan and Highland Region Structure Plan have been developed in the context of the now superseded NPPG4 and therefore, of the three planning authorities previously identified for coastal superquarries, Shetland Islands Council appear to be the first to develop policies against the new framework contained in SPP4. However, the policies contained within the Western Isles and Highland development plans are still relevant in that they seek to avoid what can be significant detrimental environmental or socio-economic effects.

3.11 *The Western Isles (Comhairle) Structure Plan*

In November 2000 plans for the establishment of a controversial 600 hectare superquarry within a National Scenic Area on Harris were rejected by the Scottish Executive. The decision refused Lafarge Redland Aggregates application to extract and transport rock on the grounds that any economic benefits would not outweigh the adverse impacts on the area. In 2004 the company failed to overturn the decision in the Edinburgh Court of Session.

3.12 Policy ED9 of the Western Isles Structure Plan Consultative Draft (2002), whilst recognising the potential employment benefit to the islands, seeks to ensure that proposals for development sites for the export of minerals, such

as superquarries, will be subject to rigorous examination of the social, economic and environmental impacts of such a development as well as the transportation implications. The Comhairle may also seek to establish a Community Minerals Trust Fund, funded by operators, in recognition of the wider impact and disturbance arising to the host community from large scale quarrying. Scottish Ministers decision letter approving the Structure Plan and answering representations for modifications indicates that the minerals policy accords with current national planning guidance.

3.13 *Highland Region Structure Plan*

The Highland Structure Plan was adopted in 2001 and has 7 mineral related policies covering the following issues:

- M1 Mineral Resources
- M2 Mineral Extraction
- M3 Protection of mineral deposits
- M4 Protection of mineral deposits
- M5 Large Coastal Quarries
- M6 Mineral Waste
- M7 Peat Extraction

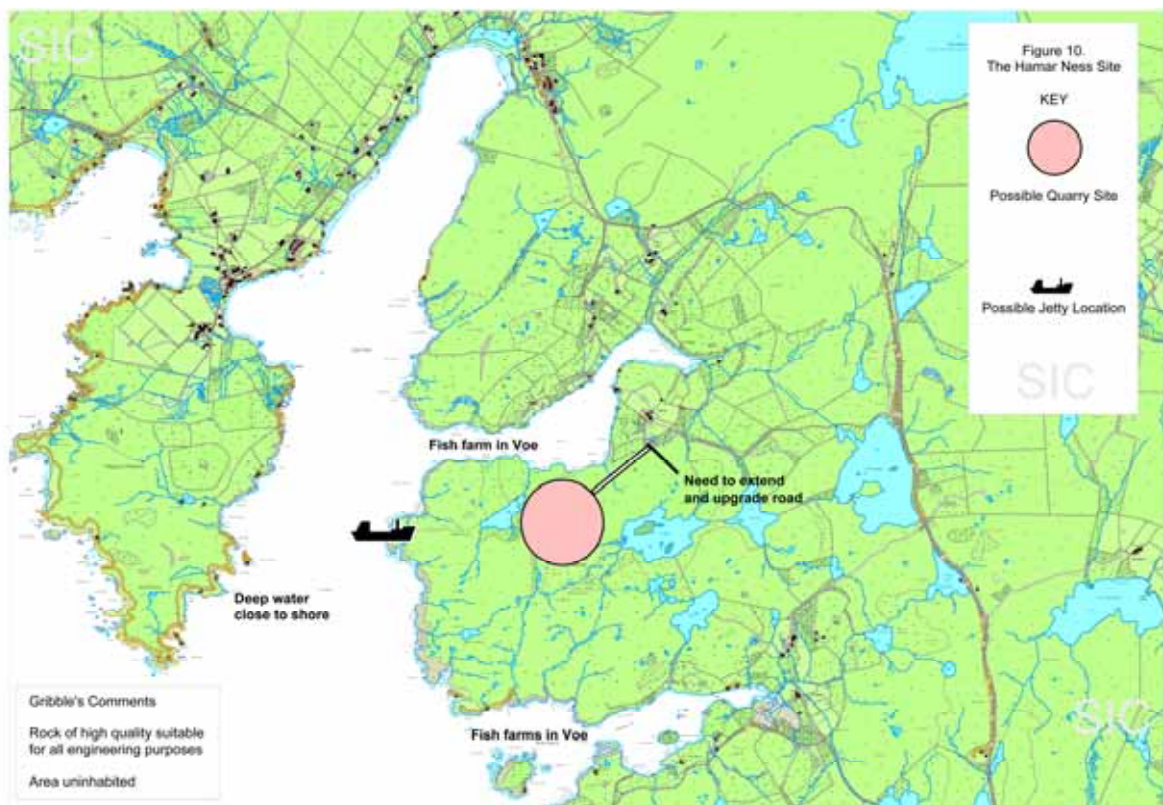
3.14 The Council broadly welcomes the examination for potential mineral resources in the Highlands for possible future winning and working, provided proposals conform with General Strategic Policies, no adverse environmental impacts or there are socio-economic impacts an Environmental Impact Assessment for all new workings and major extensions supported by and where necessary a financial guarantee in respect of restoration and aftercare is provided.

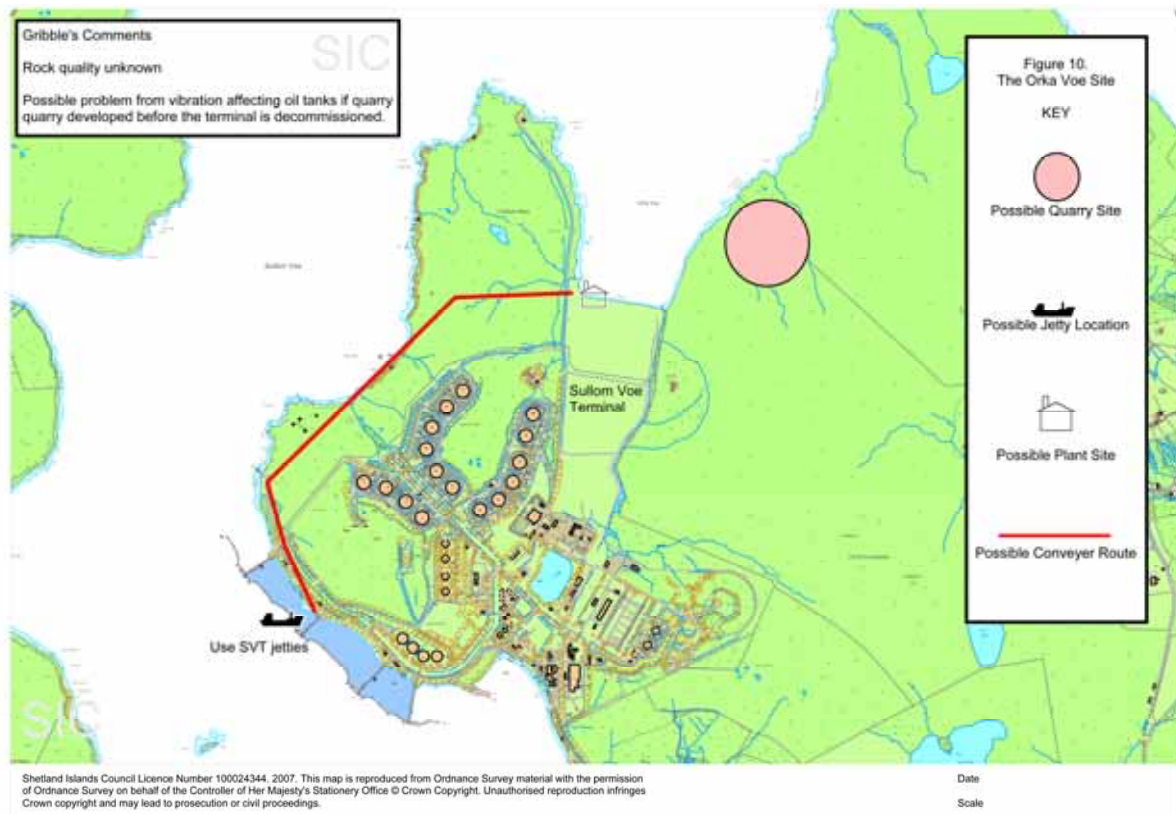
3.15 Emphasis is also given to the protection of mineral deposits by safeguarding measures. A form of buffer zone approach is applied around existing mineral workings protecting them from incompatible neighbouring developments. The Council continues to identify investigatory large coastal sites towards the north coast with no presumption in favour of development, whilst keeping the situation under review. The Council also encourages mineral waste utilisation, the recycling of demolition materials and other appropriate wastes as an alternative to primary aggregates extraction. Extraction of peat on the other-hand at a large a large-scale commercial level is not acceptable unless exceptional circumstances are evidenced.

3.16 *Shetland Context*

It is generally recognised that identification of specific development sites for a coastal export quarry will only be able to consider the environmental implications in broad terms. Development plan policies should therefore indicate that the acceptability or otherwise of a particular proposal will depend on the individual circumstances of the proposal and that decisions can only be taken following the preparation of an environmental impact assessment by the developer, which addresses the significant environmental effects with respect to a specific proposal at a specific site.

- 3.17 Proposals for development of this size will undoubtedly fall within the requirements of the Environmental Impact Assessment (Scotland) Regulations 1999 whose main aim is to ensure that the authority giving the primary consent for a particular project makes its decision in the knowledge of any likely significant effects on the environment. The procedure, known as Environmental Impact Assessment (EIA) is a means of drawing together, in a systematic way, an assessment of the projects likely significant environmental effects, including justification in sustainable terms for the proposals. This helps to ensure that the importance of the predicted effects, and the scope for reducing them, are properly understood by the public and the relevant competent authority before it makes its decision.
- 3.18 Planning authorities are additionally able to satisfy themselves with regard to other operational issues, such as infrastructure, noise, air quality, ground and surface water, waste and restoration, aftercare and after-use prior to making any decision on a proposal. Policies written around these operational issues should ensure that all quarries, not just super coastal quarries provide sufficient environmental information and justification to ensure that significant environmental impact is mitigated against.
- 3.19 Gribbles study (1990) commissioned to identify suitable locations for a large scale coastal quarry in Shetland remains relevant, however, as a result of the designation of Sullom Voe and Yell Sound Coast SACs (post 1990), there are likely to be restrictions on development of this area. The relevance of safeguarding the identified sites at Hamar Ness in Northmavine and north east of Sullom Voe given the change of emphasis of SPP4 and the SAC designations requires further consideration.





Conclusions

- 3.20 The change of emphasis of the policies contained in the Structure Plan of 2000 and the Local Plan of 2004 confirms the fact that Shetland's statutory minerals policies need to be updated, both in terms of consistency and to ensure that they are in accordance with current legislation, namely, the proposals within SPP4 (Planning for Minerals) and the Environmental Impact Assessment (Scotland) Regulations 1999.
- 3.21 Shetland's statutory minerals policies will require to be more specific and more detailed in order to provide clear and consistent policy guidelines to mineral operators, local communities and the general public, and provide the decision-making framework for processing minerals applications. Such an approach is sure to be welcomed by all, however, a number of conclusions would appear to be drawn:
- identifying investigatory sites or safeguarding the identified sites at Hamar Ness in Northmavine and north east of Sullom Voe, should not constitute a presumption in favour of development, any application will be rigorously evaluated against Local Development Plan Policies and the requirements of the Environmental Impact Assessment (Scotland) Regulations 1999;

- future proposals should link the mineral extraction with the positive economic, social and environmental wellbeing of the area in a comprehensive integrated approach; and
- a suitable framework for mineral extraction should seek to minimise production and also encourage the efficient use of materials, including the use of recycled or secondary materials.

3.20 Although comparisons have been made with the two Local Authorities identified in the previous working paper their development plans are of a similar adoption date to the Shetland Structure Plan, and require further review in the light of updated national policy. Nevertheless this offers an insight into how they have approached the issues that have to be addressed in the form of policy.



Chapter 4 : The Superquarry Concept

Recent emergence of the SPP4 reveals that there is no longer the focus on superquarries once evident in the previous NPPG4, which identified areas of Shetland that had potential to absorb large-scale quarries. However it is still prudent to discuss the issues involved as there is still the possibility for developers to continue to consider Shetland as a location for a large-scale quarry . Due to the static nature of the subject matter the issues raised within the previous Aggregates Working Paper (1994) still remain relevant but have been updated to include recent decisions.



Why coastal superquarries?

- 4.1 It became apparent in the 1970's that Britain would experience a dramatic shortfall in aggregate supply in the coming decades; hence the Verney Committee was commissioned to draw up a report on the issue. The report had predicted that the shortfall would occur for two reasons; firstly, due to depleted reserves in SE England and adjacent areas, and secondly, due to increased public hostility towards the development of known reserves adjacent to areas of dense population (often within designated scenic areas such as the National Parks). It was further anticipated that land with proven reserves would come under pressure to be developed for more remunerative uses than quarrying (e.g. housing). It was also assumed that over the years, transporting aggregate over longer rail and road distances would not only become an economic factor but increasingly an environmental one as well.

- 4.2 Accordingly, it was deemed appropriate to consider the possibility of large scale coastal quarries (or superquarries as they are sometimes called) away from the main centres of population. Apart from the obvious political advantages that a remote location would offer, (i.e. less affected than in a more developed area), a remote coastal location offered the possibility of large scale reserves with significant economics of scale over an extended time period. The possibility of exploiting areas of homogeneous rock would also allow the development of very deep quarries (i.e. less land area would be required per tonne of rock extracted). This type of thinking was confirmed by John Yeoman, the founder of the Glensanda Quarry (the largest coastal quarry in Britain). He commented in 1987 that:

“Only by coming to a remote area can an operator have the confidence of such enormous reserves. There are no neighbours to offend....”

- 4.3 The cost of transporting the rock over long distances was obviously an important concern. However, it was considered that transporting the aggregate in large bulk carrying ships would reduce the financial impact of the distances involved. David Tidmarsh (Managing Director of Foster Yeoman) said of Glensanda (1987) that he expected that carrying aggregate in bulk from a coastal quarry would:

“enable material to be hauled over 800 miles for the same price that a 20 tonne lorry will deliver over 15 miles”.

Superquarries as locations not sites?

- 4.4 Wilson has developed the superquarry concept further by suggesting that Scottish coastal superquarries should be developed as locations rather than as individual sites. In a conference paper in 1991 he stated that:

“In order to prevent the proliferation of coastal superquarries in small yield reserves with an operating life of 20 to 30 years, a new definition for a coastal superquarry is recommended... (i.e.)... a location, not a site, with recoverable reserves in excess of 2 billion tonnes, with a minimum life of 100 years. A location is an area which can contain a number of potential sites.”

- 4.5 Wilson has suggested that the coastal quarry would provide the necessary major infrastructure and harbour facilities needed, including perhaps the provision of low cost power, and that this infrastructure would act as a catalyst in the development of other ventures. He suggests that smaller reserves of other minerals including slate, quartzite, pegmatite, talc and serpentine could be exploited alongside the coastal quarry making use of the common infrastructure and even its distribution facilities. Additional

opportunities for non-material developments could be created as well for local people and businesses within the adjacent area, which Wilson refers to as a 'Crofting Enterprise Zone'. The advantages of this concept would include:

- the provision of piers and harbours at each site;
- the improvement in the quality of crofting land by the application of top-soils created by mixing quarry fines, lime and peat;
- the provision of job share opportunities for crofters;
- the provision of quarry jobs which would allow many expatriates from the region to return home;
- assistance to fish farming by allowing refrigerated containers to be transported "piggy back" on aggregate ships;
- an encouragement to develop renewable energy resources to provide for the quarries (i.e. wind and wave power) as the long life expectations of quarrying operations would make the capital investments to develop these energy resources worthwhile; and
- the provision of alternative energy would be an important incentive in encouraging the development of other ancillary processing plants.

4.6 The advantages, as set out by Wilson, are intrinsically appealing to rural communities in particular. However, the reality of the situation is more likely to be similar to that experienced by the Rodel community of Harris in the Western Isles. The local community around Rodel tried in vain to persuade the prospective developers (Redland) to form a trust fund for local community development as part of their superquarry development package. Experience has also shown that in remote geographical areas (i.e. where most superquarry developments are likely to occur), investment in downstream industries has not usually followed investment in primary industries. Experience within Shetland confirms this as there has been no pressure to develop an oil refinery or chemical factory at Sullom Voe to take advantage of Europe's largest oil terminal.

4.8 In the final analysis Wilson's concept may be more attractive to the quarry operator than to the local community. A potential operator (or consortium of operators) could exploit a variety of different minerals in an area, at a variety of sites and at a variety of operational scales. The resulting environmental impact of the number of workings could be devastating, particularly when one considers the conveyor belt links that would be required between the workings and the plant/jetty locations.

4.9 At the time when this concept was previously considered in Shetland (Aggregates Working Paper 1994), NPPG4 recognised the conflict that may arise between job creation and environmental protection in rural areas. Special mention was made of the need to consider the cumulative impact of a proposal, which would result in more than one quarry in an area because of the potential adverse environmental consequences.

What size is a coastal superquarry?

- 4.10 There are no accepted definitions as to what size of coastal quarry constitutes a 'superquarry' or what size is practical. The Verney report (1976) spoke in terms of quarries exporting 10 million tonnes of rock per annum (10mta). Wilson and Gribble (1980) who wrote the report *Potential for a large scale coastal quarry in Scotland – (preliminary research report)* defined a large scale coastal quarry or superquarry as having proven reserves of 200 – 400 million tonnes with a minimum annual production of 3 – 5 million tonnes and a minimum quarry life of 60 years.
- 4.11 Gribble has also suggested in different publications that an annual extraction rate of 3 million tonnes (1989) or 5 million tonnes (1990), with a quarry lifespan of 50 years (i.e. minimum exploitable reserves of 150 – 250 million tonnes) constitutes adequate resources for a coastal superquarry. Published research by Ove Arup (1992) sponsored by DoE considers potential sites with reserves of at least 150 million tonnes capable of minimum production level of 5 mta. The fact that this threshold was used suggests that the consultants regarded this production rate as an optimum size to allow a reasonably rapid return on capital investment. Ocean Shipping Consultants (1991) in a report for the SIC suggested a much smaller figure (i.e. a minimum reserve of 75 million tonnes with a minimum annual production of 1.5 million tonnes). However, this study is basically concerned with the costs of shipping rather than the economics of quarrying, so too much emphasis should not be placed on this opinion.
- 4.12 In comparison with most of these definitions, the Haggrister proposal (up to two million tonnes per annum) was quite small, whilst the recent Sullom Mine (Jeniva Landfill) proposal is smaller still (a proposal to export about 1 million tonnes per annum). A potentially smaller quarry, with an estimated output of 400,000 – 1,000,000 tonnes per annum is currently being developed at Adigole in County Cork, South West Ireland by Wimpey in partnership with Fleming, a local firm. It is worth noting that in 2005 a potential developer at the Sullom Haggrister site attempted to commence the process of developing a 40 million tonne superquarry only for it to collapse when stone proved to be of insufficient quality to justify investment.
- 4.13 In laymans terms, the existing and potential quarries discussed above are all very large. For instance, if the original Haggrister proposal was implemented it would instantly become one of the "top ten" British quarries in terms of size alone. To put these figures in a Shetland context, it is estimated that the total amount of rock excavated at the Scord quarry over the past 40 years is less than 3 million tonnes, and the recent annual extraction rate has been less than 150,000 tonnes per annum. In other words, the total amount extracted at Scord to date is less than one years production at Glensanda and less than two year's production at the proposed Haggrister quarry.

- 4.14 There also seems to be considerable variation as to what size appears to be economic for a coastal quarry. As a lower baseline, Gribble (1990) states that:

“...it is doubtful if the price per tonne of aggregate would be competitive unless the rate of production was at least one million tonnes per annum.”

However there is a clear indication in most recent studies that a typical minimum threshold is of the order of 3-5 million tonnes per annum.

- 4.15 The term “superquarry” is an emotive one with connotations of vast quarry workings. Accordingly, the prospective Haggister developers have suggested to the Council that their proposal is not a “superquarry” but merely a large scale coastal quarry. Objectors to such developments on the other hand, tend to take the opposite view. As the term “superquarry” cannot be precisely defined, it is not used again in the rest of this report. Instead the term “coastal quarry” is used to refer to all quarries with a coastal location, irrespective of their size or scale of operation.
- 4.16 The quality of the finished aggregate is obviously a determining factor as to whether a particular size of quarry is economic or not. A higher value aggregate product can be economically quarried at a much smaller output than a lower value product. In this regard it should be noted that the Adrigole quarry will produce a premium product with a very high polished stone value, suitable for the pre-coated roadstone chipping market.
- 4.17 As a generalisation, small quarries must be inherently vulnerable to competition, especially if newer quarries are much larger and can take advantage of economies of scale both in terms of production and distribution. It should be noted that over time there has been a tendency to think bigger all the time. In other words acceptable quarry sizes, ship sizes and productivity ratios are all consistently being revised upwards. However, depth restrictions at trans-shipment terminals and destination ports may necessitate the use of smaller ships.

What is likely to be the demand for Scottish coastal quarry rock?

- 4.18 A relatively recent projection of the amount of crushed rock that can be supplied by Scottish coastal quarries has been made by Savery (1990). He estimated that by the year 2010, Scottish sites could produce 46 million tonnes annually (i.e. 36% of the British aggregate demand). However, estimating future demand for coastal quarry rock is difficult since the rock is likely to meet world-wide demands as well as national demands.

- 4.19 If Savery's (1990) estimates are correct and factoring into the equation the refusal of the Rodel application, this reflects the shortfall in aggregate to meet UK demands is likely to be order of 20 million tonnes per annum (i.e. 1-2 sizeable quarries). As stated above, world-wide demand could significantly increase the demand for Scottish coastal quarry rock, so there may be pressure to develop many more quarries in the near future.

What geographical areas are likely to come under pressure for large scale quarries?

- 4.20 Over the years, the various technical/government reports suggesting potential areas for coastal quarry sites within Scotland have consistently referred to the same geographical search areas i.e. Shetland, the Western Isles, Strathclyde Regional Council and Highland Region.
- 4.21 The earliest report in 1980, (Wilson and Gribble), initially suggested 25 possible locations for coastal quarry sites in Scotland, of which 5 sites were given special mention. The Walls area in Shetland was considered to be one of the top five sites. Of the other sites, the Rodel area in South Harris has been refused permission, the Loch Linnhe area (Glensanda) is now in production and the Kentallen area (Oban) is actively under consideration.
- 4.22 The SIC/HIE sponsored study by Gribble (1990) suggested that large tracts of land, mainly down the west coastline of the Mainland of Shetland, may be suitable locations for large coastal quarries of 3 million tonnes per annum capacity or more. This study concluded that the Walls area should no longer be considered suitable for a large coastal quarry as the rock varies too much in quality and there are few natural harbours to exploit. Wilson (1991) had suggested that the granite mass surrounding Ronas Voe would be an ideal area for a coastal quarry location. The Ove Arup Study (1992) also confirmed Shetland as a possible location for large-scale coastal quarries to serve SE England.
- 4.23 Current indications are that pressure from potential quarry operators to locate large-scale coastal quarries in Shetland may continue, particularly in the long term. However, it may be the case that if a few large permissions are granted elsewhere in Scotland within the next few years, then Shetland will not come under pressure for any coastal quarries at all. The converse view is that the employment opportunities afforded by coastal quarries may be lost to Shetland, unless Shetland can attract coastal quarry development within the near future.

Where are large coastal quarries in operation or being planned?

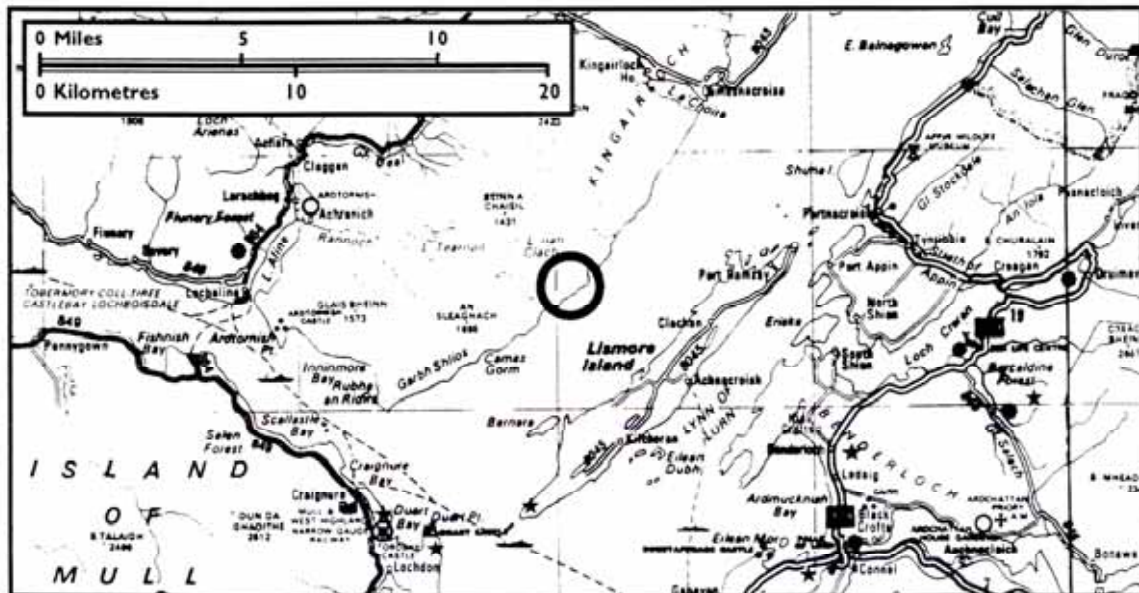
- 4.24 There are many small British and Irish coastal quarries in existence at present, but they are either exploiting small scale mineral reserves or the port operation is only capable of handling small ships. Of the two larger scale coastal quarries in existence in the British Isles, the Adrigole quarry is approaching permitted production capacity, whilst the Glensanda quarry has

been in production for some years (although not anywhere near its full production potential).

4.25 Highlands

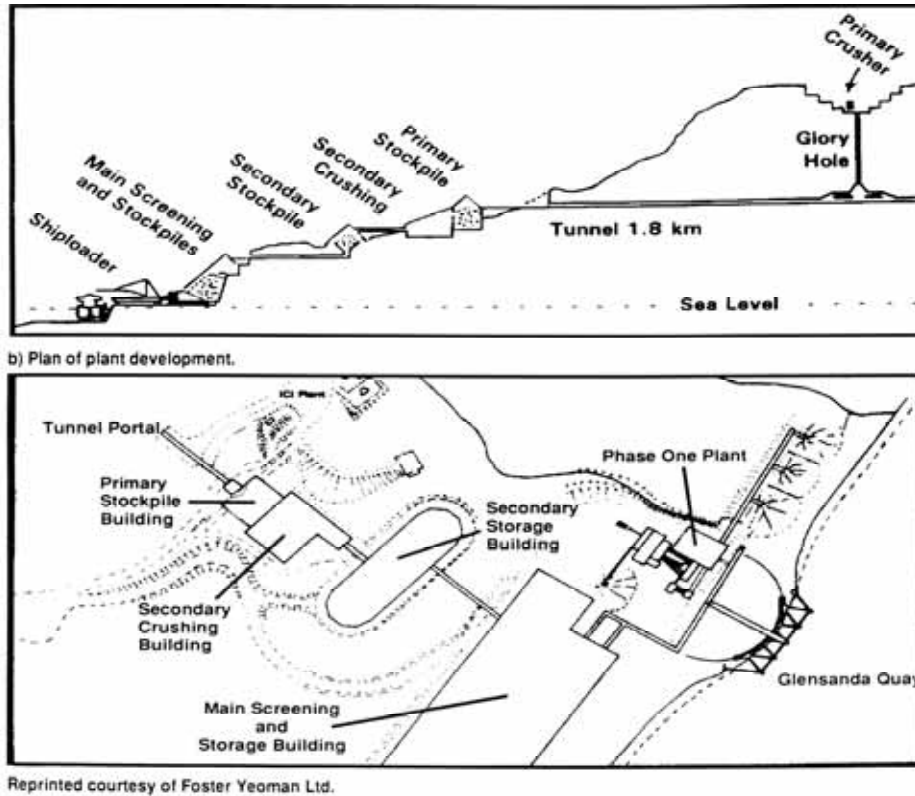
The Glensasanda Quarry on the shores of Loch Linnhe is operated by Foster Yeoman. The company bought the entire 6,000 acre Glensasanda Estate and have planning permission to quarry 200 acres of biotite granite. The site lies on the mountainous Morvern peninsula. It is remote from any roads so the quarry is entirely serviced by sea from Port Appin and Oban. The nearest occupied house is about 5 miles away on the island of Lismore (see Fig.4).

Figure 4 – Glensasanda Quarry



4.26 The sheer scale of the quarry can be seen from the following facts and figures. Estimated rock reserves at Glensasanda were put at 8,000 million tonnes by John Yeoman in 1987. The main quarry is about 2km inland from the shore where the quarry plant is located. The rock from the quarry is transported to the secondary crushing area via a deep vertical shaft called the “glory hole” (330m deep and 12m in diameter), which feeds a 1.8km underground conveyor. The volume of rock already excavated to accommodate just the plant and processing buildings at the foreshore is about 10 million tonnes. The different grades of aggregate are stored in 12 separate covered bins, (blasted out of the hillside), each with a capacity of 70,000 tonnes (see Fig. 5 for annotated diagrams of the quarry operation).

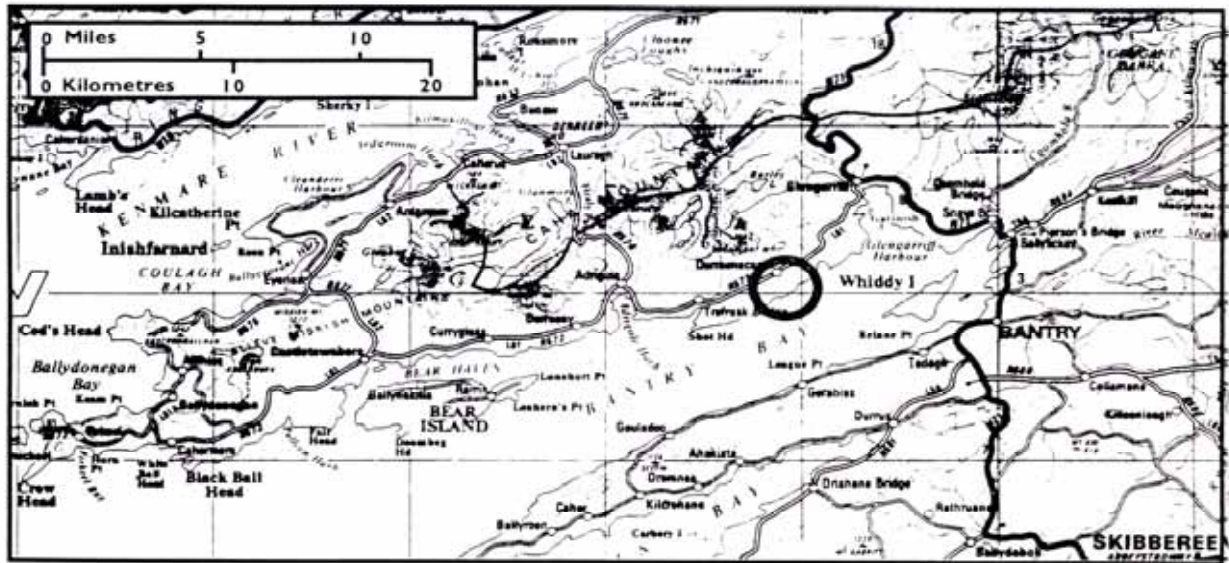
Figure 5 – Site Plan and Section of the Glensasanda Coastal Quarry Site



4.27 South West Ireland

The Adrigole Quarry is much smaller with reserves of about 16 million tonnes, although the owners have a purchase option on further land to the north which could be exploited. The rock is a high quality quarzitic limestone. The quarry is really only visible from the sparsely populated peninsula to the south which is a couple of miles across Bantry Bay (see Fig.6). There is no specific planning restriction on the amount of rock that can be quarried each year, although the operators originally indicated to Cork County Council that the rate was likely to be the order of 40,000 tonnes per annum over a period of 40 years. However, the size of the development is restricted to the extent that the operator has to comply with planning conditions relating to environmental controls over dust emission etc. At present the Council are unhappy about a number of matters including dust suppression.

Figure 6 - Location of the Adrigole Coastal Quarry Site



4.28 Rodel Quarry, Lingarabay, Harris

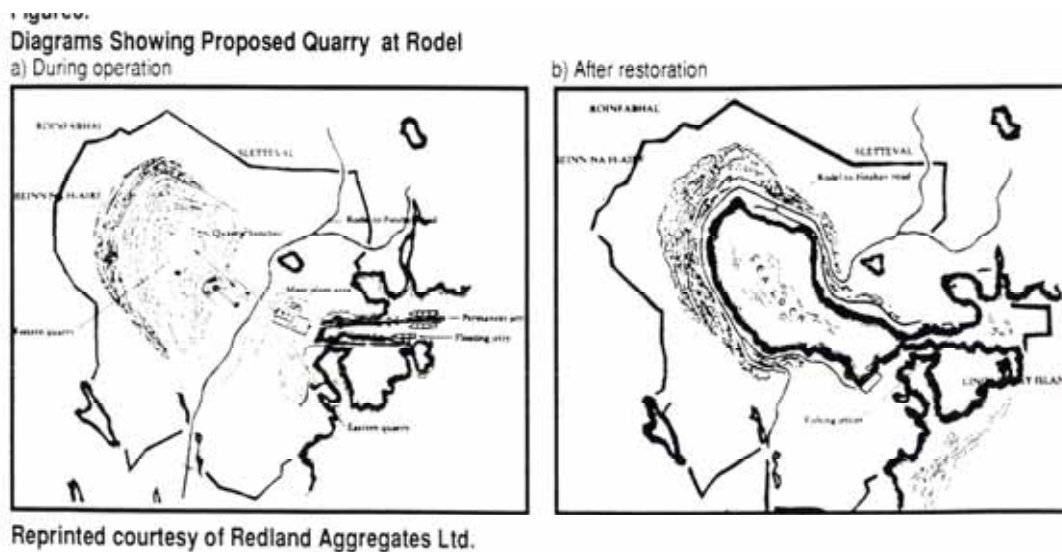
Lafarge Redland applied to extract 600 million tonnes of anorthosite over a period of 70 years at Rodel, South Harris (see Fig.7 for a location map). The proposal was to extract leaving a hole in the ground a mile and a half long, a mile wide and 1600 feet deep. After extraction had ceased the intention was to let the sea fill the quarry workings to form a new sea loch within the already indented coastline (see Fig.8). The quarry had the potential to provide both basic and premium grade aggregate. The high grade white anorthosite is suitable for sea defence work because of its specific gravity. The pink anorthosite is suitable for general aggregate uses.

Figure 7 – Location of the Rodel Quarry Site, South Harris



4.29 Of the 5 sites in Scotland suggested by Wilson and Gribble in 1980 as potential superquarry sites, the Rodel site was considered to be the least constrained environmentally by a follow up study by the Scottish Office, despite the fact that it is located in a National Scenic Area. In November 2000 the application was rejected by the Scottish Executive on the grounds that any economic benefits would not outweigh the adverse impacts on the area. In 2004 the company failed to overturn the decision in the Edinburgh Court of Session.

Figure 8 – Rodel Quarry Site During Operation and After Restoration



4.30 Islay

Wimpey have carried out extensive test drilling on Islay to evaluate the potential of the area for a superquarry. To date, no firm proposal or application has been lodged with the planning authority. Neither the current Islay, Jura and Colonsay Local Plan (1998), nor the Strathclyde Structure Plan have policies to deal with an application of this scale. It would also appear that to date there has been no pursuance for mineral extraction within the said area at the time of compiling this updated report.

4.32 Shetland

A few years ago there was interest from a private company to develop a coastal quarry at Hamar Ness. The proposal was to excavate an area of about 3 sq km to a depth of 30 metres. The average planned production rate would have been about 1 million tonnes per annum. The SIC is landlord of this area, the area being part of the Busta Estate. The initiative foundered in February 1988 when the Development Committee of the Council voted against the company being allowed to carry out test drilling in the area following strong objections from crofting tenants.

- 4.33 Both the Haggriester (c 2 million tonnes per annum) and Sullom Mine proposals (c 1-2 million tonnes per annum) are quite small quarries in comparison with the Glensanda and Rodel quarries.

What specific site characteristics are required for a coastal quarry?

- 4.34 Whilst Shetland, the Western Isles and Highland region appear to have been the primary search areas in Scotland, the industry has fairly detailed criteria for the choice of individual coastal quarry sites. In the late 1970s geological and geographical criteria were paramount. Since then, more criteria have been added. A typical set of essential criteria for selecting coastal quarry sites is given by Gribble (1991), namely:

- a site close to the sea (less than 2km away);
- sufficient reserves for 50 yrs (i.e. 250 million tonnes at 5 mta);
- rock quality as good as possible;
- sufficient water depth to take Panamax-sized ships (i.e. at least 10m deep); and
- a site protected from the prevailing westerly winds.

Tidmarsh (1991) suggested that the ideal site would also:

“be remote enough to be away from public view and future encroaching development.”

- 4.35 The site criteria outlined above are designed to maximise the flexibility of the quarry’s operation and minimise capital investment from the operator’s point of view. Sheltered water, for example, has a financial implication (i.e. a more exposed site would necessitate the construction of a costly breakwater in addition to a jetty), whilst depth of water will affect the size of vessels that could conveniently berth at the jetty and hence determine the economics of distribution. However, any list of criteria should be regarded as indicative only, as an operator’s final decision to develop a particular site will depend on the total cost of the development rather than a strict adherence to a list of criteria.
- 4.36 Criteria lists published do not normally include detailed environmental considerations. It is sometimes possible for an operator to locate a suitable site that meets the majority of the criteria listed about whilst at the same times causing relatively minor damage to the environment. The Glensanda, Rodel and Adrigole sites probably fit this situation.
- 4.37 Unsurprisingly, the converse can also be true. An ideal site from the operator’s point of view may attract adverse criticism in terms of environmental impact. An example in the Shetland context is the site recommended by Gribble (1990) for a coastal quarry at Colla Firth (see Chapter 5). Based on his criteria, Gribble suggests that this is the best available site in Shetland. However, development of this site is likely to be unacceptable in both visual and nature conservation terms as it would

severely affect the living environment of residents in and around the Housetter area and affect a SSSI. Additionally, the site would now affect an SAC, and SPA and a Ramsar Site. As a result of the potential environmental conflicts in site selection, it is understandable why the companies with an interest in the Glensanda and Rodel quarry sites took a number of years to select their sites. Apparently Redland looked at over 40 sites over a 4 year period before opting for the Rodel site.

- 4.38 It is in the best interests of potential operators and mineral planning authorities alike that planning policies are detailed and clearly stipulate specific areas or types of areas which might be acceptable in environmental terms and those which may not. Failure to do so is likely to result in pressure being put on local authorities to accept quarry sites which meet operator's site criteria but which may be environmentally harmful. It may be particularly difficult for authorities to resist such applications if the development plan does not provide clear guidance, as the lure of new jobs promised may sway public opinion in favour of a proposal. The absence of clear guidance may well have effect of blighting a community in that people may decide not to build new houses in an area which has been suggested as a possible site due to the uncertainty as to whether a coastal quarry may be developed in the vicinity.

What type of rock and rock characteristics are required?

- 4.39 The assessment of the suitability of a specific rock mass is a very technical subject which is outwith the scope of this report, however, some general guidance is given below. Sufficient reserves of rock with relatively homogeneous properties throughout are obviously needed to ensure consistent quality. Subject to this, Gribble (1990) suggests that the following types of rock are normally suitable for coastal quarries, namely:

- Igneous rocks diorte
 gabbro
 granite
- Metamorphic rocks gneiss
 marble

- 4.40 The specific engineering qualities of the rock are of prime importance. Detailed engineering specifications for density, water absorption, flakiness, crushing strength, porosity and abrasion value will determine whether the rock source is only suitable for general aggregate purposes or specialised uses as well. For example, rocks with a high polished stone value (PSV) are needed for the wearing courses on roads. Aggregate from such rock has a premium value (as in the case of the Adrigole quarry). Rock with a high specific gravity (SG) is suitable for sea defence works (the white anorthosite at Rodel had this property).

Financial resources required

- 4.41 The modern coastal quarry concept is not just about finding a suitable site with acceptable locational characteristics and rock reserves, but rather a concept including a large capital commitment, good marketing and the means and economics of transport. Significant financial resources are needed by an operator to carry out site appraisal works as well as the initial development works (e.g. constructing a jetty and building storage sheds, purchasing appropriate plant and vehicles to transport, crush and grade the rock). It can be over a decade before full production is reached.
- 4.42 The large scale Glensanda project (ultimate likely extraction rate of 15-18 mts), is indicative of the resources required to establish a competitive coastal quarry. Permission was granted in 1982 and development works began in 1984. It is clear that tens of millions of pounds are needed to be invested before an operation reaches break-even point.

Marketing and transporting the aggregate

- 4.43 The need to secure a market for the particular aggregate product is obviously important. As has already been stressed different aggregate specifications are required for different uses, and exacting specifications command a premium price. Operators already in the quarrying business obviously have an advantage over new companies in that they already have a marketing infrastructure in place to expand upon. In particular, operations need to secure customers who have the financial resources to contemplate the purchase of rock by the hundred thousand tonnes and gain access to port facilities, which can handle aggregate in these amounts.
- 4.44 The construction aggregate produced requires the use of large self-discharge or standard bulk carriers. In their earlier report Wilson and Gribble (1980) concluded that 16,000 dead weight tonnage (dwt) deck barges were appropriate. Today, the standard is 75,000 dwt self-unloader ships with internal conveyors able to discharge the aggregate at 6,000 tonnes per hour. Even larger ships have been contemplated. Tidmarsh (1988), managing director of Foster Yeoman looked forward to the mid-1990s with vessels being of the order of 120,000-140,000 dwt and Yeoman (1987) of ships of the order of 180,000 dwt. The Rodel application included a jetty capable of berthing 120,000 dwt ships.
- 4.45 Aggregate can be delivered to floating trans-shipment terminals or major marine terminals. The terminals, linked to railways, roads and inland waterways, can supply rock to a satellite of aggregate depots for final processing and delivery in Britain or elsewhere. Providing large sites for trans-shipment terminals to facilitate storage and redistribution of the aggregate is a necessity. However, finding acceptable sites is perceived by the industry to be a major problem as many sites that were previously available and relatively cheap to buy have now been effectively sterilized or transformed into premium sites by adjacent developments. This is true of much of London's docklands.

- 4.46 The speed of loading and discharging the aggregate has also been suggested as an important factor in viability (Tidmarsh 1989). The use of larger ships, especially self-unloaders gives a company a competitive edge over one using ordinary cargo ships as no large cranes or grabs are needed at the discharging port. This allows a wider range of marine terminals and ports to be used which increases a company's flexibility.
- 4.47 Smaller operations, like that at Adrigole, can be developed on the basis of chartering smaller ships at more infrequent intervals where the product is of high quality. The Adrigole operators expect to make use of ships visiting Cork and possibly Dublin. The rock will be carried by 'ships of opportunity' up to a maximum size of 40,000 dwt, but it is expected that most ships will be a quarter of that size.
- 4.48 Foster Yeoman is a good example of a company who have maximised their ship size and reduced their over-heads by controlling all aspects of the coastal quarry operation from marketing to piloting boats. The company have chartered a dedicated fleet of large 75,000 dwt self-unloader ships, and they have established a series of terminals to unload the ships and redistribute in smaller loads. The largest terminal is at the Isle of Grains near London. Use is also made of the company's existing train and lorry fleet.



Employment generated by coastal quarries

- 4.49 It is difficult to estimate the real significance of coastal quarries on employment prospects, as Glensanda and Adrigole are the only modern, large scale coastal quarries in production in the British Isles at present. Therefore, assessment has also to be based on the employment estimates put forward by prospective developers as well. There are four aspects to estimating employment generation from a particular proposal. Firstly, how many direct quarrying jobs will be created by a proposal? (noting that the construction workforce will normally be higher than the eventual production workforce). Secondly, how many of the people employed will be recruited locally? Thirdly, how many existing quarrying jobs will be lost elsewhere as a result of the proposal? Fourthly, there is the multiplier effect in the local economy (i.e. how many new jobs created will be created in ancillary or service industries?).
- 4.50 Estimating the number of jobs that may be lost and the possible multiplier effect is difficult in isolation of a specific proposal, as the numbers involved will depend on any agreements, planning restrictions or leasehold agreements that might apply to a particular site. For instance, if rock from the quarry is also allowed to enter the local market, job losses may occur in local firms. The extent to which the multiplier effect will operate is likely to depend on the self contained nature of the proposal and the amount of services contracted out. Accordingly, the rest of this section emphasises the number of direct quarrying jobs likely to be created.
- 4.51 Wilson (1991) suggested that 1200 direct minerals jobs would be created by his idea of establishing 6 'superquarry locations', with each location quarrying an average of 15 mta over a period of 200 years. That works out at about 200 jobs per 15 mta quarry. The large Glensanda project employed in 1991 131 people, including ancillary workers. As Glensanda has no road access, the company has to operate launches and landing craft to bring personnel to the site. About two thirds of the workforce were recruited locally. The quarry currently extracts about 4 mta. This is planned to increase (with demand) to 15-18 mts. However, the direct number of jobs is not expected to rise. Note the original planning estimate for direct quarrying jobs was 120, this figure has been used in the table. Redland estimated an ultimate maximum workforce of up to 80 staff to quarry 10 mta or more of rock at Rodel. The Haggrister proposal would have an estimated peak workforce of 50 people to extract up to 2 mta of aggregate. The smaller Adrigole project employs 18 staff (13 of whom were recruited locally). A maximum workforce of 25 people is estimated for a production rate of 1 mta.
- 4.52 The employment data given above is reproduced in Table 1. Efficiency ratios have been estimated (i.e. tonnes of rocks quarried per employee). The figures must be treated with care as increased production can be achieved by increasing shift hours and by more mechanisation as well as by employing more people. As noted above, some of the Glensanda figures are based on the original planning application submission.

- 4.53 Two general conclusions can be drawn from these figures. Firstly, very large scale coastal quarries do generate a significant number of local jobs. Secondly, there appears to be a dramatic increase in productivity (i.e. tonnes of aggregate per employee) as the quarry size increase. It is likely that this productivity is also related to increased competitiveness as well. Whilst it is possible to have a lower productivity ratio (i.e. more employees/tonne) for a premium product because of its higher value, smaller quarries producing general quality aggregate must be a competitive disadvantage when compared with larger quarries – all other factors being equal.
- 4.54 More specifically, Wilson’s estimate seems rather optimistic and casts further doubt on the community benefits of his theory. Some doubt must also be cast on the proposed Haggriester employment estimates (i.e. either, annual production would probably be higher than 2 mta or, the numbers employed would be significantly less).

Table 1: Estimated quarry size and production workforce at existing and proposed coastal quarry sites			
Quarry	Quarry Size	Employees	Tonnes per employee
Rodel Quarry	10 mta	80	125,000
Glensanda Quarry	15 mts	120	(33,330) ² – 125,000
Wilson’s Estimate	15 mts	200	75,000
Sullom Mine Proposal ¹	Up to 2 mts	30 – 35	57,150 – 66,750
Haggriester Proposal	2 mta	50	40,000
Adrigole Quarry	0.4 – 1 mta	18 - 25	22,200 – 40,000

Sources:

¹ BBC Radio Shetland on October 7th 1992 and The Shetland Times on October 9th 1992

² Current estimate

- 4.54 In an article giving an historical overview of the Yeoman company, Yeoman (1987) stated that productivity per employee in the company had increased between 1984-1987 from 14,500 tonnes per employee to 22,000 tonnes. He also remarked that large open pit quarries elsewhere in the world probably produced over 30,000 tonnes per employee. Whilst allowing for the fact that these Yeoman company figures do not relate to coastal quarry sites and that they probably include ancillary workers (thus reducing the efficiency ratios), the figures do clearly demonstrate that the trend in modern quarrying is towards ever increasing efficiency and that significant increases in productivity can occur over relatively short periods of time. This suggests that to maintain a competitive edge and to be able to take full advantage of technical innovations, quarries need to have massive reserves and flexibility in terms of annual production rates.

- 4.55 If this logic is applied to employment generation, the conclusion is obvious. The larger the coastal quarry is, the greater the number of jobs there will be created and it is more likely that the jobs created will be long term and sustainable.
- 4.56 The Sand and Gravel Association have expressed concern to the Shetland Islands Council in the past that small scale deliveries of rock from coastal quarries to local customers could destabilise the existing supply and demand equilibrium locally, if the aggregate entered local markets. They suggest that this is already the case in mainland Scotland with Glensanda rock entering the local markets. Accordingly, the jobs generated by a coastal quarry may not be a net gain to the community if the quarry is allowed to supply aggregate to the local market as well (i.e. jobs may be lost as smaller local quarries who cannot compete on equal terms). It may be possible to effectively control the amount of local sales by agreement or perhaps by planning conditions, for example, the local roads servicing the Adrigole quarry are so poor that lorries are restricted from transporting aggregate from the site by road.
- 4.58 The extent of the multiplier effect is hard to predict as it could include the use of quarry material for added value products, and the number of jobs could be significant if one accepts Wilson's scenario. Realistically, any such additional jobs should be seen as a bonus. As previously stated this is confirmed by Shetland's experience of the oil industry (see paragraph 4.7). Similarly, it was hoped that the four oil refineries on the Milford Haven estuary in West Wales would result in 'down – stream' chemical related jobs. Sadly this has not been the case despite the fact that there is a large scale Enterprise Zone in the area. In fact, in the last few years the number of jobs locally has been reduced by the closure of the Esso refinery.

Use of former coastal quarries

- 4.59 It has been suggested that the Government might have a hidden agenda for allowing large scale coastal quarries. In an article in the Highland Free Press (Feb 1992) an ecologist, a local objector to the Rodel application, claimed that:

“The people of South Harris will be left with a massive dump for industrial waste on their doorstep before Redland Aggregates have even finished quarrying out one of the largest holes in the world at Lingarabay... (it was) pointed out that in 1987 Nirew published a report on the way forward for nuclear waste disposal in the UK in which the Rodel area was named as a prime site.”

- 4.60 The same concerns were articulated in a letter to the SIC by the Director of Planning for Argyll and Bute District Council (1991) regarding the after use of the Glensanda quarry. He states that:-

“The only other issue which remains unresolved is the question of after use. There is a local body of opinion that fears that the quarry could be used as a nuclear waste depository. This remains speculation and it will be a number of years before the question of after use is properly addressed”

- 4.61 The restoration and after use of a quarry can be subject to planning conditions ensuring that any fill is either topsoil or inert waste. It would be expected that any applicant would put forward detailed restoration and after use plans. However, there is an obvious concern that the use of former coastal quarry workings as dumps could be considered to be in the national interest, either, now or, at some future date. The idea would seem to have an obvious political attraction, as the coastal quarry concept is based on the idea of developing peripheral or remote sites away from the more densely populated parts of the UK (i.e. similar criteria are used for locating waste dumps).

Conclusions

- 4.62 Previous conclusions within the 1994 Aggregates Working Paper of the above mentioned issues found that there were no accepted definitions as to what constituted a ‘superquarry’ in terms of its size. Estimating future demands for coastal quarry rock were difficult to predict in meeting regional, national and international demands, subject to pricing.
- 4.63 Well over a decade later, after the production of the Aggregates Working Papers in 1994, the concept of superquarrying has not yet come into fruition within Shetland. Although there has been no recent interest in mineral extraction on such a scale this may be due to economic drivers, as indicated above, particularly relating to export. This is not to say that this could occur in the future, as influences that may be currently suppressing interest may change. There are possible requirements on a local level for large amounts of aggregate supporting major projects throughout the Isles.
- 4.64 Due to the static nature of the subject matter in geology terms the issues raised within the previous Working Paper still remain and are as relevant now as then.
- 4.65 However, although the subject of ‘Environmental Issues of Large Scale Quarries’ had been featured in the 1994 Papers, there is now greater emphasis on this issue with the additional requirement of a stringent approach to Environmental Impact Assessment (EIA) introduced in Circular 15/1999 since the papers were produced, catering for varying sized mineral extraction operations. EIA is deemed a key element in the planning process.
- 4.66 Estimating future demand for coastal quarry rock is difficult, since the rock is likely to meet the regional, national and international demands (subject to the price!).

- 4.67 Within Scotland most coastal quarries will be sited in the Western Isles, Shetland or Highland Region. Within Shetland, large tracts of land (mainly down the west coastline of the Mainland) may be suitable locations for large coastal quarries. The granite mass surrounding Ronas Voe has also been suggested as a possible quarry location.
- 4.68 A number of years ago there was interest from a private company to develop a coastal quarry at Hamar Ness. The initiative foundered in February 1988 when the Development Committee of the Council voted against the company being allowed to carry out test drilling in the area. Both the Haggriester (c 2mta) and Sullom Mine proposals (c 1-2 mta) are quite small quarries in comparison with the Glensanda quarry.
- 4.69 The choice of individual quarry sites by prospective operators, depends on a number of criteria including the need for the site to be close to the sea, to have sufficient reserves for 40-50 yrs and to have sufficient water depth to take 65,000 dwt ships. Locating a site that meets the operator's criteria, but causes relatively minor damage to the environment can be difficult.
- 4.70 Significant financial resources are needed by an operator to develop a coastal quarry because of the extent of the capital works required (i.e. a jetty, storage sheds, plant to crush and grade the rock). It can be over a decade before full production is reached.
- 4.71 The need to secure a market for the particular aggregate product is obviously important. Operators already in the quarrying business obviously have an advantage over new companies in that they already have a marketing infrastructure in place to expand upon.
- 4.72 Transporting the aggregate requires the use of large self-discharged or standard bulk carriers. Today, the standard is 75,000 dwt self-unloader ships with internal conveyors able to discharge the aggregate at 6,000 tonnes per hour. Larger ships up to 180,000 dwt have been contemplated.
- 4.73 As regards job creation, very large scale coastal quarries can generate a significant number of local jobs. Also, there appears to be a dramatic increase in productivity (i.e. tonnes of aggregate per employee) as the quarry size increases. The larger the coastal quarry is, the greater the number of jobs are likely to be created and the more likely it is that these jobs will be long term.
- 4.74 The scale of a large coastal quarry (such as Glensanda) is awesome and until restoration is fully complete such a quarry must remain a blot on the landscape irrespective of the quarrying methods and standards. Even smaller coastal quarries of the proposed 'Haggriester' size are likely to be visibly intrusive as they are still large quarries in conventional terms.
- 4.75 The noise generated by coastal quarries, from drilling and blasting, to rock crushing, and loading the rock onto ships, is likely to prove a serious problem in any locations near to individual houses or settlements given the scale of operations of a coastal quarry. As with visual considerations the

more isolated a location in terms of human habitation, the less offensive a quarry operation is likely to be.

- 4.76 Pollution risks from coastal quarry developments include contaminated ballast water from ships and polluted surface water or wash water from the quarry entering watercourses.
- 4.77 Quarry operators like to plan well ahead since the development of a large-scale quarry is a long-term investment of 60 years or more. There is normally a long lead in time between the initial preparatory phases and the full production stage. Site searches and appraisals, market analysis, an environmental assessment, a planning application, potential planning appeal or call-in by the Scottish Ministers, initial site preparation works etc., all have to be concluded before commercial production commences. Accordingly, much time and expense will be spared if the Council clearly states through planning policies its attitude towards coastal quarries, including the assessment criteria through the scoping stage of an EIA that will be used should a planning application be forthcoming.

Chapter 5: Environmental Issues Relating to Quarry Development

This chapter addresses the main environmental issues associated with mineral working proposals

Introduction

- 5.1 Minerals are an important national resource and they make an essential contribution to the nation's prosperity by meeting industry's need for raw materials and creating employment opportunities. However, the extraction process can often be disruptive and have significant environmental impact. Whilst it is acknowledged that minerals can only be worked where they are found, it is also recognized that this need must be reconciled with care for the environment, particularly in relation to the natural and built heritage, and communities.
- 5.2 This Development Plan review will set out the broad/strategic policies which protect the environment from the harmful effects of all forms of development. As minerals can only be worked where they occur the potential for conflict is increased. Whilst the environmental impact of mineral extraction can never be totally eliminated, careful planning can ensure that adverse effects are minimised.

Environmental Impact Assessment (Scotland) Regulations 1999

- 5.3 The Environmental Impact Assessment (Scotland) Regulations 1999 require an environmental assessment to be undertaken for proposed mineral working where:
- in all cases where the surface of the site exceeds 25 hectares or peat extraction where the surface of the site exceeds 150 hectares. (*Schedule 1 : Quarries & Open Cast Mining*);
 - unless included in Schedule 1, all development except the construction of buildings or other ancillary structures where the new floorspace does not exceed 1,000 sq.m; and
 - is development which is likely to have significant effects on the environment by virtue of factors such as its nature, size or location;
 - any development is to be carried out in a sensitive area. (*Schedule 2 : Quarries, Open Cast Mining and Peat Extraction*) (subject to screening by the Planning Authority).

- 5.4 The environmental assessment process enables greater understanding to be reached between the intended operator, their neighbours and the regulatory authorities. In the event of planning approval there is also the opportunity to use the results of assessments as a basis for determining conditions to be imposed, for monitoring the actual environmental effects and for evaluating decisions. To be effective, environmental assessment requires to be focused (scoping), ie the early identification of the issues that are most likely to be significant and therefore have most relevance in determining whether or not the proposal can be allowed to proceed with appropriate mitigation measures. Care requires to be taken to ensure that steps to deal with one particular aspect of concern does not create others.
- 5.5 For Schedule 2 proposals, the need for an EIA will rely on the likelihood of significant effects and will therefore depend on the scale and duration of the works and the likely consequent impact of noise, dust, discharges to water and visual intrusion.
- 5.6 Where there is a possibility that a proposed mineral development will require an EIA, developers are advised to consult the Council well in advance of a planning application and formally request an opinion on whether an EIA is required. This procedure then ensures that developers can obtain a clear ruling on the need for an EIA well before they reach the stage of lodging a planning application.
- 5.7 The Scottish Government have recently undertaken a consultation exercise relating to the removal of thresholds for EIA (Scottish Executive Consultation: Draft Revision of Circular 15/1999: The Environmental Impact Assessment (Scotland) Regulations 1999 June 2007.) At the present time it is unclear as to the impact the removal of thresholds would have on minerals applications or how planning authorities will interpret any new proposals.



Controlling Environmental Effects

- 5.8 Even if the proposed development does not trigger a requirement for environmental assessment under the Regulations, a quarry proposal raises a number of environmental issues just by nature of the operations proposed. The main issues which give rise to concerns in connection with quarry working are:
- effects of road traffic
 - effects of blasting, noise and dust
 - visual/landscape effects
 - contamination of surface water discharges
 - the marine environment (coastal quarries)
- 5.9 The identification of environmental effects need not necessarily preclude development from proceeding. Planning conditions can enable development to proceed where it might otherwise be necessary to refuse planning permission. The sensitive use of appropriate planning conditions, which address known and anticipated problems and concerns, can provide important environmental safeguards. To be effective planning conditions must be enforceable. They must be precise, capable of being monitored, defined sufficiently for breaches to be provable, necessary, relevant to planning and to the development and reasonable. (see SDD Circular 18/1986 The Use of Conditions in Planning Permissions)
- 5.10 Additionally, where the Council wish to control certain matters which lie beyond the legal scope of planning conditions, Section 75 Agreements under the Town and Country Planning (Scotland) Act 1999 may be sought. Circumstances where planning agreements may be sought include:
- provision of off-site works such as highway improvements and landscape treatment;
 - where funding is required to facilitate the preservation by record of archaeological remains; and
 - to ensure that financial bonds are put in place to cover the financial costs of the restoration of a quarry should commercial extraction cease.
- 5.11 In addition to control through planning legislation, many environmental impacts will be controlled by other legislation. For example, all but the very smallest crushers will be required to have an authorisation from SEPA under the Pollution Prevention and Control Regulations and discharges to the water environment will also be controlled by environmental legislation. It is necessary to be clear as to the types of issues covered by an environmental licence in order that a planning permission does not conflict or dual regulates.

Proximity to Communities

- 5.12 Residents living in close proximity to proposed quarries may be exposed to some or all of the effects referred to above. Accordingly Planning Authorities are required to take particular care in respect of any conditions

they attach to any consent, however, where they judge that mitigation measures are not sufficient to safeguard the quality of the local environment, refusal or restriction of the proposal may be the only appropriate course. Conversely it is also reasonable to avoid inappropriate development and encroachment in the area around the longer term quarry workings and any significant reserves.

Specific Environmental Effects

5.13 Traffic

The potential offsite effects of traffic are:

- increase in the number and size of vehicles on the road (this may cause congestion, accidents, difficulties for pedestrians etc.);
- damage to roads and/or their verges;
- spilled material onto roads and the spreading dust;
- creation of air pollution, dust, noise and vibration in areas adjacent to roads.

Onsite the potential effects are largely noise and dust in neighbouring areas.

- 5.14 Vehicles carrying minerals (particularly on rural roads) are among the heaviest and often the largest to use the roads in question. They are often out of scale with the rural and urban roads they use, especially in the vicinity of the quarry. Even low traffic flows in sensitive areas give rise to complaints. Empty lorries are an equal cause for concern. They tend to travel faster and be noisier as they suffer from bodyslap when going over bumps or pot holes. If not sheeted, empty vehicles may create significant dust problems.



5.15 Blasting Vibration, Overpressure and Flyrock

Blasting at surface mineral working gives rise to a number of effects:

- **Vibration:** The levels of vibration generated by mineral workings are well below those required to cause structural damage to properties. However, vibration transmitted through the ground and pressure waves through the air (overpressure) shake buildings and people and may cause nuisance. The effects of the two factors are difficult for even an expert to distinguish without instrumentation. The pressure

wave may arrive after the ground vibration by up to 2 seconds over a distance of 1 km. The perception of both factors is likely to be stronger inside a building than outside.

- Audible Noise: Because it is part of the pressure wave, this occurs at the same time as overpressure. It may be augmented by the rattling of windows caused by the overpressure.
- Flyrock: (fragments of rock propelled into the air by the explosion. This is clearly potentially dangerous to people and property both inside and outside the site.
- Dust and Fumes: (which may be noticeable in confined spaces).

5.16 Levels of overpressure and noise can be significantly affected by metrological conditions. In addition a range of weather conditions can affect noise. There is also a range of weather conditions that can increase overpressure effects. Once a blast is set up and the holes charged, firing must proceed under safety regulations, irrespective of weather conditions. Because of these factors it is difficult to define and enforce appropriate planning conditions.

5.17 The need for blasting varies significantly amongst the types of material being worked. For sand, gravel, clay and peat working it is unlikely ever to be required. In hardrock quarrying it is necessary not only to loosen the rock but also to fragment and move it away from the quarry face. Because of this more energy is lost to the atmosphere than, for example, coal blasting, where most of the energy stays in the ground, as it is only necessary to loose the rock strata between seams. As a result the overpressure of blasting hardrock may be greater. The basis of good blasting design is to achieve the desired degree of fragmentation in the rock safely and economically.

5.18 **Noise**

Noise generated by quarries comes from a variety of sources: drilling and blasting, rock crushing, transporting by trucks and conveyors. Noise is likely to be perceived to be a particular problem due to the fact that quarrying operations are generally not just a nine to five operation.

5.19 The prediction of noise levels using the methods of BS5228 are reasonably accurate, especially when using the specific measured noise values of the proposed or actual items of plant and equipment. In the case of many larger operations, predictions can make use of computer models. Weather conditions affect the propagation of noise. Calm weather often means a low background noise level and a uniform propagation in all directions. A light wind enhances levels downwind, upwind there can be significant reductions. With high winds, noise propagation is variable; the background levels are likely to be higher and may mask other sources of noise.

5.20 Dust and Air Quality

Dust is considered to be any solid matter emanating from mineral workings, or from vehicles serving it, which is borne by the air. It can range in size from 1 75 microns (m). It can be emitted from a stack as a plume or it can be picked up by the wind from the ground, the surface of a road or a stockpile. Depending upon their chemical composition, the particles can be chemically active, eg. limestone or effectively inert, eg. sand. Colour varies from black through to brown to white. The finest particles will be respirable. Dust is likely to be an issue in the Shetland context because of the occurrence of strong winds.

5.21 *The main potential effects of dust are:*

- visual: dust plumes, reduced visibility, coating and soiling of surfaces;
- physical and/or chemical contamination (eg spoiling paint finishes);
- coating of vegetation and contamination of soils; and
- contamination of the water environment.

5.22 Dust is a key community concern and the likely effects of dust emissions should be assessed against the existing body of scientific, medical and epidemiological evidence. These effects have been explored in detail in the University of Newcastle-upon-Tyne study (*Do Particulates from Opencast Coal Mining Impair Children's Respiratory Health? (1999).*) The Newcastle study highlights the need to ensure proposals are assessed against the objectives in the Air Quality Strategy for England, Scotland, Wales and Northern Ireland. The Newcastle Study also contains a framework to guide the assessment of the implications of proposals on the objective for PM10 particulates and the research suggests that this assessment framework will also be relevant to mineral working generally and should be adopted when drawing up and considering proposals for new sites, or extensions or modifications to existing sites, if there is a residential property or other sensitive establishment within 1 km of any site activity with the potential to generate dust (e.g. haul roads, crushers and stockpiles). Developers should provide sufficient information to enable a full assessment to be made of the likely effects of development together with proposals for appropriate control, mitigation and monitoring.

5.23 Visual Aspects

It is often possible to minimise the visual effect of a large quarry in a landscape by careful siting and by applying certain controls, e.g. maintaining ridges and summits and permitting no breaches of the skyline by the quarry or plant. In addition, landscaping and the phasing programme can ameliorate the worst visual effects. However, the scale of a genuinely large quarry, such as Glesanda in Highland is awesome and until restoration is fully complete (potentially 2050), such a quarry must remain a blot on the landscape, irrespective of the quarrying methods and safeguards. Even smaller scale quarries have the potential to be visually intrusive. It should be stressed that the impact of a quarry operation is not just the quarry itself, but includes all the necessary plant and machinery related to the quarry.

- 5.24 Remoteness can reduce the visual impact of a coastal quarry as it is less likely to be seen. However, an equally important factor is the extent to which a quarry can be absorbed into a landscape. This “absorption” potential depends on a variety of elements including the height of the land, the length and width of a vista, the degree of land undulation and the vegetation patterns. The more uniform the landscape (irrespective of its visual quality), the harder it would be to reduce the visual impact. The size of an excavation need not itself be a problem, but it could be if it is out of scale with its surroundings. Given Shetland’s open landscape with very limited opportunities for screening, large scale quarry developments might simply be too large for the Shetland landscape.
- 5.25 Proposals for screening mounds at smaller developments might generally be better than a view of the mineral working, but may be seen as alien features in the landscape, especially if obviously manmade. Mounds with flat tops also result in poor runoff. They may have a useful function in relation to short term operations, but alternative measures may be preferable where the period of working is likely to be over a longer timescale. The visual impact of mounds can be reduced by natural vegetation. This should be a normal requirement for any mound that is likely to remain for more than a couple of years. Vegetation also has the added benefit of preventing erosion and loss of material. Vehicles on access roads and lights on processing plant can be visually intrusive. Lights frequently give rise to complaints due to their adverse effects on amenity, the glare they cause and the distraction and danger to traffic.



- 5.26 Landscape considerations are a key aspect in deciding the acceptability of any quarry (large or small) and if approved require detailed monitoring and management arrangements to ensure agreed measures to mitigate impact are implemented in the most effective way.

5.27 **Contamination of the Water Environment**

Quarry workings have the potential to change the natural groundwater and surface water systems. The removal of topsoil and overburden, the extraction of minerals, and their replacement during restoration (including in combination with imported materials) may:

- result in routine discharges to the water environment, for example, from a surface water scheme;

- result in accidental discharges due to accidents or emergency works;
- alter the quantity and timing of surface water flows due to abstractions or changes in site characteristics;
- result in physical impacts on the water environment, such as watercourse diversion or culverting.

5.28 Many of issues leading to these changes can be ameliorated by appropriate operational practices and by specifying specific planning conditions, for example delaying operations until monitoring data is available to demonstrate the absence of problems or allowing precautionary measures to be agreed.

5.29 The direct discharge of List 1 and List II substances to groundwater is regulated under the Water Environment (Controlled Activities) (Scotland) Regulations 2005 (as amended) (CAR). In order to comply with the Groundwater Directive and the Water Framework Directive, SEPA will only authorise a direct discharge of List 1 and List II substances providing that it is from a restricted list of activities which includes water pumped out of mines and quarries. The discharge will require a CAR authorisation and be subject to a risk assessment. The level of authorisation will always be a licence and will be dependent on the volume and composition of the discharge. The discharge into groundwater of inorganic and other effluents arising from mines and quarries activity must comply with CAR General Binding Rules and may require a Registration or License depending on the quality and volume of the effluents. The mining and quarrying activities may also require the abstraction of groundwater and again this activity may require authorisation under CAR. Full details of the level of authorisation required can be found in The CAR Practical Guidance, available from SEPA's website (www.sepa.org.uk)

5.30 The Water Environment (Controlled Activities) (Scotland) Regulations 2005 also regulate activities that have the potential to impact on Scotland's water environment. Operators will require authorisation under these Regulations for any activity which could impact on the water environment. Further information is available from SEPA's website (www.sepa.org.uk).

5.31 **Mineral Waste**

It is the Scottish Government's policy to minimise the quantity of waste produced at mineral workings and they intend to implement the EC Directive on the management of waste from extractive industries over the next two years (2009). The Directive provides for measures, procedures and guidance to prevent or reduce as far as possible any adverse effects on the environment, in particular water, fauna, flora, soil, air and landscape and any resultant risks to human health, brought about as a result of the management of waste.

5.32 **Associated Industrial Development**

The Town and Country Planning (General Permitted Development (Scotland) Order 1992 (GPDO) allows for certain types of industrial development to be located within the boundary of a quarry without the need

for specific permission. Broadly these comprise industrial processes that largely depend on the mineral worked from the related quarry. Various criteria relating to height, appearance and other restrictions also apply. All other industrial development associated with the quarry requires planning permission.

- 5.33 Proposals for industrial development that fall outside the scope of the GPDO will only be permitted where it can be shown that there are clear overall environmental advantages in a close link between the industrial and extractive operations. The Council will give particular regard to environmental and transport effects and the likely duration of working.

5.34 **Restoration, Aftercare and After-Use**

In the past land was typically returned, following quarrying activities, to agriculture or forestry use, however, in recent years it has been shown that reclamation operations can create or enhance a wide range of habitat types and landscape features, including wet grassland, reed beds, open water and watercourses. Reclamation can therefore contribute to targets in UK and Local Biodiversity Action Plans. Current standards and expectations for the reclamation of Surface Mineral Workings are contained in PAN 64, the key aim being to ensure that land worked for minerals is reclaimed as soon as possible after working has ceased.

- 5.35 Advances in reclamation techniques now enable minerals extraction sites to be reclaimed to a high standard. Mineral operators, in consultation with other parties, need to treat reclamation as an integral part of the mineral extraction process and it is essential that mineral extraction and reclamation are properly designed at the planning application stage to ensure that both are technically and economically feasible and that the impact can be fully assessed.
- 5.36 PAN 64 stresses that it is important that planning authorities are consistent in their application of the terms in connection with restoration and aftercare, particularly with regard to the scope of works required:

Restoration is used to mean operations carried out after the extraction of material is complete and involves using sub-soil or soil-forming material to restore the site.

Aftercare are the steps taken after restoration to bring land up to the required standard for the intended after- use, and can include planting, maintenance of planting, fertilising, cultivating, stone picking, watering or works after restoration to improve drainage.

Reclamation consists of the operations associated with the extraction of minerals that are intended to return the area to an acceptable environmental condition, and to a condition suitable for the intended after use. Reclamation includes both restoration and aftercare and events which take place before and during mineral extraction, for example, the correct stripping, storage and reinstatement of soils.

See also (*Effectiveness of Provisions for the Aftercare of Mineral Workings DETR (2000)*)

5.37 **Marine Environment**

Proposals for coastal quarry developments have the potential to conflict with a wide range of habitats and species. Of particular concern are:

- impacts on European Protected Species, particularly otters and cetaceans and other sensitive and important species such as seals, basking sharks and breeding birds, including secondary effects resulting from the displacement of animals from the affected area.
- the effects of suspended and deposited solids on marine habitats and species, other than fish.
- sources of noise, in addition to blasting, may be loud enough to affect marine life, for example, noise produced by loading bulk carriers.

5.38 The effect of underwater blasting has a well documented effect on marine life. Concern has also been expressed in the past that similar damage to fish stocks would be experienced from terrestrial blasting, although this has to been substantiated by any empirical evidence. A further risk, particularly from large scale coastal quarry developments, is from polluted surface water or wash water from a quarry (with suspended solids in it). This is a significant risk to fish farming as the solids in suspension can damage the gills of fish and hence affect their breathing.

5.39 Contaminated ballast water from ships has resulted in the devastation of fishery operations worldwide. From the Great Lakes in Canada to Tasmania, there are documented examples of the closure of fish farms due to this cause. This problem is potentially more acute when ships do not have dedicated ballast tanks but instead ballast water is introduced into the cargo holds. The use of modern, large scale self-unloading ships reduces the potential risks. Imposing conditions to control the discharge of ballast water is questionable. Not only is it difficult to enforce, but there are significant concerns as it is possible that biologically contaminated ballast water could be introduced into the local eco systems from ships that had picked up their ballast water elsewhere. For example, ballast water picked up in the Thames Estuary could have a significant impact on the eco system of bays in Shetland. However, Sullom Voe Oil Terminal's policy on ballast water has been extremely successful and could be used as a useful model for future quarry developments.

Chapter 6 : Quarrying Issues in Shetland

Supply and Demand

6.1 National Context

SPP4 (Planning for Minerals) seeks a sustainable approach to mineral extraction which should reconcile the need for minerals with concern for the natural and built environment and communities in a manner which:

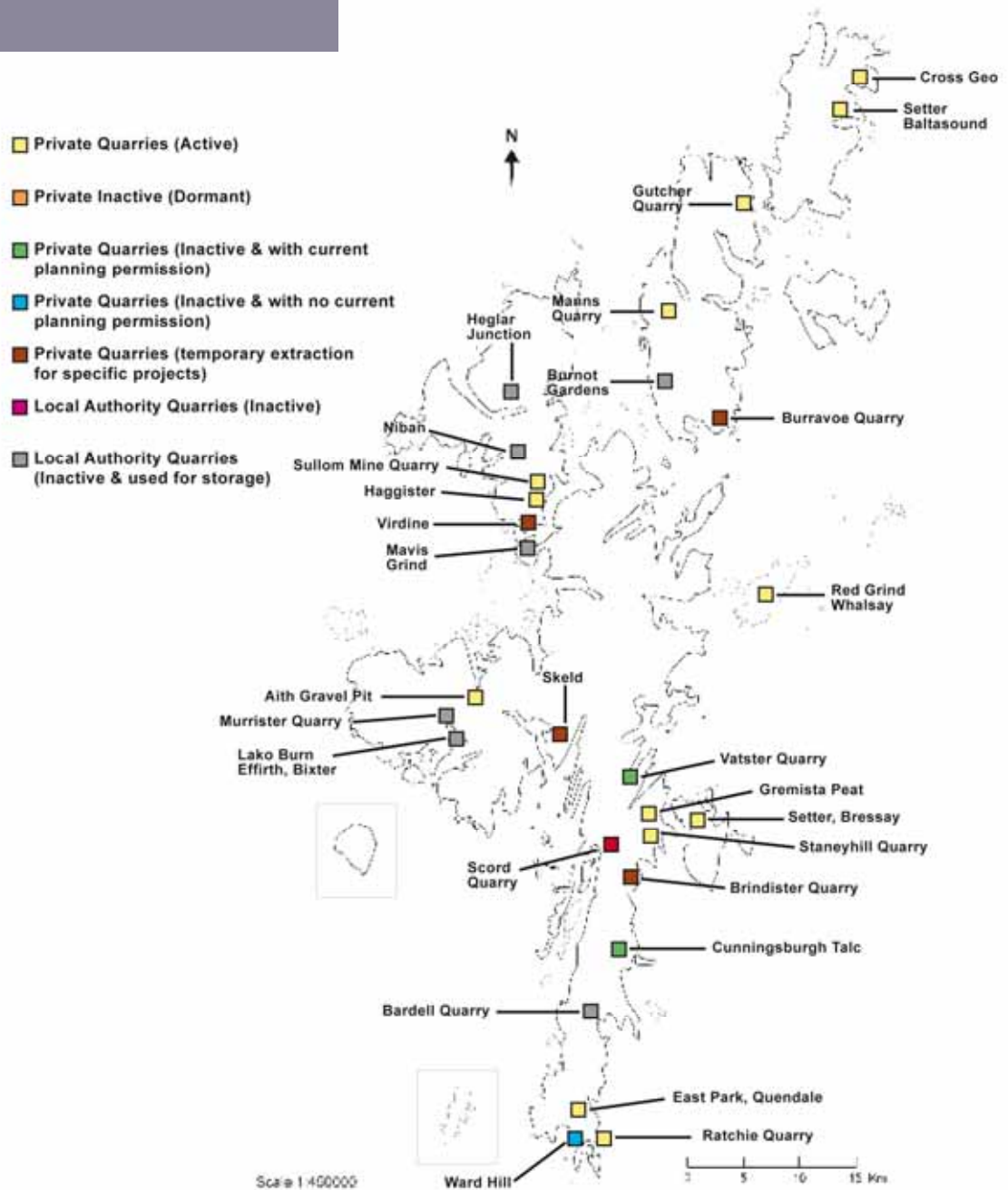
- safeguards minerals as far as possible for future use;
- ensures a steady and adequate supply is maintained to meet the needs of society and the economy; and
- promotes the use of recycled and secondary materials in addition to the release of sites for extraction of primary materials

6.2 Given the importance of minerals to the economy, the Scottish Government is working with the minerals industry to survey minerals production, distribution and reserves in Scotland. Continuity of supply for demand by the industry depends on the availability of land with workable deposits having planning permission for extraction. Surveys will supply the data to assist a planned approach to minerals provision, including reserves, market areas and market demand for individual minerals and construction aggregates. Surveys of production, supply and demand will allow the effectiveness of policies on safeguarding, search areas and landbanks to be monitored. However, unlike its predecessor (NPPG4) SPP4 is not seeking to prescribe permitted landbank reserves (previously at least 10 years supply for sand and gravel), but is seeking to ensure that extraction accords with the principles of sustainable development and environmental justice whilst stimulating the use of recycled and secondary aggregates with at least 18% of demand expected to be from recycled and secondary sources.

Shetland Context

6.3 The supply and demand equation for aggregate in Shetland is more simplified than in many parts of mainland Britain in that the regional dimension is missing. Accordingly, in Shetland, the supply/demand equation has only two dimensions, namely the local dimension and the national or international dimension. In the Shetland context this is largely synonymous with the distinction between small scale local quarries and large scale coastal quarries. The exceptions include the Virdins Quarry and the Scord at Scalloway, which are quite large local quarries, and Brindister quarry which is

Figure 9 Existing Quarry Sites in Shetland



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mainly locally based, and has in the past exported some high quality aggregate. Additionally, Cross Geo quarry in Unst exports small quantities of talc.

- 6.4 Economic factors have played an important role in determining exports from Shetland. Until 2005 the local industry were subsidised for the export of minerals. Since the withdrawal of the subsidy it is evident that this has had an affect upon the export rates, not to mention the Aggregates Levy recently imposed. According to the aggregates industry, customers are unwilling to pay the extra cost, whilst the businesses themselves are also unable to meet them. Consequently opportunities for the export of aggregate from existing quarries within Shetland over the last few years has been lost.
- 6.5 Local market considerations are affected by Shetland's geography, ie the number and distribution of the inhabited islands. There is a tendency for each inhabited island to be relatively self sufficient in terms of aggregate supplies, instead of relying on more costly deliveries by inter-island ferries. This does vary of course depending on the quality of the aggregate required. Aggregate for concrete work or for the wearing courses on roads is routinely transported between the islands.
- 6.6 During the summer of 2007 the Planning Service carried out a survey of local quarry operators to gain information with regard to current extraction rates and the amount of reserves held at each quarry. Sadly the response to the survey was poor and therefore it is difficult to extract any meaningful detail. However, a number of conclusions can be drawn from the replies received:
- Shetland Islands Council currently still extracts the largest amount of aggregate in Shetland
 - the amount of aggregate reserves held by private operators and the SIC appear sufficient to meet current demand levels for a period in excess of 10 years.

Consequently, there does not appear to be a problem in ensuring that the supply/demand equation in terms of the local market for crushed rock is met.

6.7 **Supply of Sand**

However, the supply of sand is another matter as beach and dune sand constitutes the only significant sand deposits in Shetland. Dune sand is stabilised to some extent by vegetation but often supports diverse flora and fauna, whereas beach sand is regularly moved by wind and waves and moves seasonally between the beach and the seabed offshore.

- 6.8 Sand extraction from dunes may cause significant local damage to the natural heritage but, provided it is well managed and especially if it is carried out in areas of well stabilised sand away from the beach and main dune ridge, does not necessarily have a wider *downstream* impact.
- 6.9 Extraction from beaches may appear to have less impact in the immediate term, as the material removed is likely to be partly replaced by natural

processes transporting material in from the rest of the beach or from offshore. However, Shetland, has very limited reserves of coastal sediment and any removal of sand from a beach or inshore waters reduces the amount circulating in that system which will lower the beach profile, allowing the dune front to be attacked by waves and potentially destabilising the entire dune system.

- 6.10 The quarrying of active beach material reduces the sedimentary store of the beach, which in turn reduces its capacity. The quarrying of active beach material reduces the sedimentary store of the beach, which in turn reduces its capacity to respond to storm events. The natural movement of sediment along a beach and between the beach and adjacent seabed is critical to the behaviour of beaches and one of the most important factors when considering beach stability. Research into sediment supply on open beaches suggest that a very minor fall in lateral sediment supply in the order of 0.1% can result in rates of beach erosion comparable to a 0.5m increase in mean sea level.
- 6.11 Unlike much of mainland Scotland, where river terraces and other terrestrial features contain large amounts of glacially derived sand and gravel (known as fluvi-glacial sediments), Shetland's fluvi-glacial sediments are below sea level and have been submerged by the continuous rise in relative sea level in Shetland since the end of the last ice age around 13,000 years ago. Consequently, the sediment stores on the Shetland coastline are limited, unlikely to be replaced and continually dwindling due to the rising sea level. Coastal sediments provide a natural coastal defence whose further depletion is unsustainable.
- 6.12 Current planning policy seeks to control the commercial extraction of sand from beaches with commercial sand extraction currently confined to dune areas in Quendale in the south Mainland. The reasons for control are obvious as coastal erosion is a serious problem in parts of Shetland and interference by man in the natural processes of erosion and deposition can undoubtedly accelerate this process. Beaches also provide valuable recreational assets and are visually important in Shetland's landscape. In order to ensure that extraction is undertaken in a sustainable manner, applications for sand extraction will only be granted where all the following criteria are met:
- an island need for the sand and/or shingle extraction;
 - a description of the alternatives that have been considered which should include consideration of alternative sources (both within and outwith Shetland); alternative materials, using dredged material, and doing nothing.
 - an independent technical report, prepared by a competent body, which assesses and demonstrates:
 - : acceptable environmental impact as determined through Environmental Impact Assessment (if required under the 1999 Regulations) or submission of sufficient environmental information if EIA is not required;

: the impact on the surrounding coastal environment, which should include assessment of the likely cumulative effects of the development and in particular details of the hydrographic conditions and information on the lateral and longitudinal shifts along the beach/coastline in the relevant area and which could lead to wider erosion and flooding risk.
: satisfactory management, operation, phasing and restoration arrangements.

and where:

- recreational use of any beach or dune system is not compromised;
- local biodiversity will not be adversely affected;
- archaeological remains would not be destroyed.

Additionally, if extraction is related to a particular project:

- details of how sand/gravel extraction is an essential part of the project.

- 6.13 A report by Mather and Smith (1974) provided valuable background information on which to assess the effects of sand extraction on beaches. This report is still considered very relevant and has recently been used by SNH in the preparation of their *Guide to managing coastal erosion in beach/dune systems 2000*. The Mather and Smith (1974) report highlighted how delicate the natural processes at work are and concluded that the safest approach was to allow no direct commercial extraction of sand from beaches.
- 6.14 It has been suggested that the long term answer to local sand supplies may lie in offshore deposits. Mather and Smith (1974) suggested that as the 5 fathom line represents the approximate limit at which wave motion is capable of moving seabed material onshore, dredging below this level could potentially provide a sand supply. Gribble (1990) cast doubt on this conclusion and suggested that the deposits were unlikely to be extensive enough and therefore not the solution to Shetland's problem. The effects of deeper seabed extraction is considered in a publication prepared for the Crown Estate *Assessment of the Rehabilitation of the Seabed Following Marine Aggregate Dredging*. Currently about 23 million tonnes of material is extracted each year from the seabed around the UK, however, the conclusions of the report indicated that the time taken for the recovery of extraction appears to be dependent on local environmental factors and the intensity of dredging and can vary from less than 2 years to more than 10 years.
- 6.15 Given these considerable environmental considerations, a more likely solution for the Shetland context would be to produce sand as a by-product of crushing rock on a large scale, ie within a coastal quarry. Enough sand could be produced this way to supply the Shetland market. Unless a large scale quarry becomes a reality Shetland is likely to be a net importer of sand for the foreseeable future.

6.16 Supply of Peat

Commercial peat extraction is currently undertaken at two sites within Shetland: Lerwick and Cunningsburgh. Although the humid climate of Shetland favours the growth of peat-forming vegetation, the anoxic conditions which lead to peat formation are a consequence of waterlogged ground conditions resulting from poorly drained, acidic soils, rather than the climate. Shetland's peat is also believed to be the slowest growing of all peats.

- 6.17 Given the Scottish Ministers policy to encourage the use of peat substitutes, the working of peat will only be acceptable in areas of degraded peatland which has been significantly damaged already by human activity and where the conservation value is low. Areas of peatland that retain a high level of natural heritage conservation interest or are important for their archaeological interest and value as CO₂ sinks require to be protected and conserved for the benefit of future generations. Consequently any proposals for additional commercial peat extraction within Shetland (new areas of extraction, including extensions to the existing sites) will require to be fully justified in this regard.

6.18 Recycled and Secondary Aggregates

As part of its commitment to sustainable development, the Scottish Government wishes to maximise the contribution from the recycled and substitute sectors. Approximately 275 million tonnes of aggregates are used each year in the UK as raw construction materials and of this supply, around 70 million tonnes are already derived from recycled or secondary sources.¹ The Scottish Government's expectation is to source 18% of demand from recycled and secondary sources (SPP4). Planning Authorities are required to identify within development plans, suitable sites which may include existing mineral workings, or industrial sites or locational criteria where the processing of secondary materials, including construction and demolition wastes can take place.

- 6.19 The term *recycled* and *secondary* aggregate are often used interchangeably. The term *recycled aggregates* refers to those aggregates that have been used previously in construction. Recycled aggregates can comprise construction and demolition waste and asphalt road planings. *Secondary aggregates* are by-products of other processes and will not have been used previously as aggregates. They include dredgings, colliery spoil, china clay waste, slate waste, power station ashes, blast furnace and steel slags, incinerator ashes and foundry sands.

6.20 Use of Secondary Aggregates within Shetland

Currently there is little exploitation of secondary aggregates within Shetland other than dredgings. The Lerwick Port Authority is at present undertaking the largest single dredging contract ever commissioned by the port to remove around 700,000 m³ of material, which will be used to reclaim around 18 acres of land at the Greenhead Base and Arlanda.

¹ QPA 2007

6.21 It is possible, however, that more innovative uses of secondary products for aggregates use may be determined over time. For example, it is known that crushed mussel shells have the potential to be used as a possible aggregate for lime mortar, in place of lime. Given the limited possibilities for lime extraction in Shetland this may prove a beneficial product to be investigated. It should be noted that some secondary aggregate materials will initially be considered as waste and their processing and use may require exemption from Waste Management Licensing Regulations.

6.22 **Recycled Aggregates within Shetland**

The Government's general promotion of sustainable waste management and the realisation of the amount of valuable resources being wasted has resulted in the reduction in the amount of construction and demolition waste being landfilled. Crushed rubble can be used on building sites for levelling purposes or graded for use in road construction. For maximum use as a secondary aggregate, construction and demolition waste needs to be crushed, screened and graded. This can be done on-site by a temporary mobile plant, or the waste can be taken off-site to a permanent recycling plant. Mobile plants generally only need planning permission if they are to remain in-situ for more than 28 days.

6.23 Good practice guidance and more information on case studies using secondary aggregates and recycle is available from www.wrap.org.uk. Of particular interest within these case studies is the use of incinerator bottom ash, recycled glass and asphalt.

6.24 **Development Involving Incidental Mineral/Peat Extraction**

Most mineral extraction within Shetland takes place in established quarries. There are however, two situations where this may not be the case. Firstly minerals, including peat, may be extracted as an incidental part of another development, or secondly they can be worked within a borrow pit in order to meet the temporary needs of a major construction project. The planning issues raised by each of these activities is considered in turn below.

6.25 *Incidental Mineral Extraction*

In principle recovering minerals as an incidental element of another development proposal promotes sustainable development by helping conserve mineral resources that might otherwise be lost. The Council will expect that all applications for planning permission which involve the excavation and removal of significant quantities of soils, overburden and material, are also accompanied by a supporting statement indicating how the excavated material will either be used on the site or where it will be removed to. In the event that planning permission is required for the proposed use of excavated material, it is essential, in the interests of compatibility, for both applications to be considered at the same time. Interim reclamation proposals must be included in the event of the primary development being delayed or failing to be implemented.

6.26 Incidental mineral extraction is not precisely defined in terms of quantity of mineral worked or duration. It does not, however, apply to minerals development simply because it is small scale or short term. If mineral extraction is a significant reason for justifying or promoting the primary development, the proposal will need to be assessed against the relevant policies applicable to the mineral being worked.

6.27 *Borrow Pits*

The term *borrow pit* is applied to a temporary mineral working supplying material for use solely in a specific construction project, particularly roads. Borrow pits are typically located next to the construction site, and in the ideal situation are soon backfilled with materials that have to be removed from the construction area, and landscaped back into the adjoining gradients. Hence the material excavated is *borrowed*.

6.28 With the exception of small borrow pits developed within the boundary of highway construction sites, planning permission is required. The Council will treat proposals for borrow pits in the same way as any other mineral extraction scheme. This means that borrow pits must be justified in terms of being the most suitable source of material to meet demand, and that appropriate environmental safeguards covering both working and reclamation are included.

6.29 Advance planning is essential to ensure that the borrow pit can be developed within the timescales required. For example, if archaeological remains are present, these may require a lengthy investigation before any mineral can be extracted. Submitting proposals after contracts are let is unlikely to allow sufficient time to resolve such complications. Urgency of need cannot be an overriding factor in the treatment of archaeological remains and other similar environmental factors.

6.30 It is important to ensure that borrow pits only supply the construction project intended. Therefore in granting planning permission for borrow pits, the Council will take appropriate measures to control access and routing and permission will be time limited to the life of the construction project.

6.31 In considering "need", the quantities and specifications of materials required for the construction project will be assessed in the context of the level and location of existing permitted reserves. In general, the Council would wish to see requirements met from local established quarries or from waste materials and the use of secondary aggregates. Consequently borrow pits can normally only be justified where they offer clear environmental gains over alternative sources of supply. For example, where borrow pits are adjacent to construction sites, the most obvious environmental benefit will be the avoidance of significant heavy traffic on public roads. There will also be significant economic and energy savings due to the reduced haulage costs.

6.32 These short term gains could be offset if the borrow pit is not properly reclaimed, or if it is inappropriately located. Reclamation proposals must therefore accord with the Council's overall objectives for minerals reclamation

and where possible infillling with waste material from the construction project will normally be the preferred option.

6.33 Borrow pits, have significant implications for local amenity and landscape, as well as adverse effects on habitats and the economy (particularly the tourist economy). It is important that there is no proliferation of borrow pits throughout the Plan area as their cumulative impact on the islands landscape and environment is undesirable, particularly if these pits are left without being restored.

6.34 Where applications for borrow pits are submitted, they will only be granted where all the following criteria are met:

- there are no overriding environmental or other planning benefits compared to obtaining materials from alternative sources;
- alternative materials of the required specification (including the use of recycled or secondary materials) are unavailable in sufficient quantities;
- the borrow pit is contiguous with or close to the projects they are intended to serve;
- they are limited to the life of the project and material is to be used only for the specified project;
- proposals include appropriate reclamation measures which make full use of surplus spoil from the project;
- the applicant is prepared to enter into an agreement under section 75 of the Town and Country Planning (Scotland) Act 1997 to ensure that the site is used solely in conjunction with a specific construction scheme and to ensure that restoration is completed satisfactorily and within an agreed timescale; and
- the proposal conforms to all other relevant local plan policies.

6.35 There is the potential within Shetland for a number of large scale construction projects over the next five/ten years which are likely to involve the significant extraction of minerals to serve the proposed development. Whilst a *borrow pit* cannot be precisely defined in terms of quantity of mineral worked, the Council would wish to ensure that applications clearly indicate the size and nature of the proposed extraction and the potential visual and environmental impact are satisfactorily assessed and mitigated against either during the preparation of an Environmental Impact Assessment or by way of supplementary planning information. This should also include how the extraction sites will be managed over the time period of the development.

6.36 **Issues Affecting Local Quarries and Coastal Quarries**

Chapter 5 identifies in general terms the enviromental issues relating to quarry development, however, the issues affecting local and coastal quarries in Shetland include consideration of wider issues such as archaeology and the number and distribution of quarries and borrow pits.

6.37 Proximity of Mineral Workings to Communities

Where mineral working is to take place close to communities, proposals must address fully the implications for such communities in order to minimise local difficulties. Extraction can be regarded as an unwelcome environmental intrusion and nuisance. Access to relevant information is essential to ensure effective engagement with communities as stakeholders both in development planning and in the process of determining applications. In line with the guidance contained in SPP4, Shetland Islands Council will encourage community participation through pre-application consultation by operators of new quarries or where extensions to existing quarries are proposed, prior to the enactment of any statutory requirement in the 2006 Planning Act.

6.38 This will ensure better public understanding of the likely environmental effects of proposals, how these will be mitigated and provide community councils, other representative bodies or individuals with a worthwhile opportunity to



comment on development proposals. New powers to be enacted under the 2006 Planning Act will allow a planning authority to decline to register an application where a developer has not engaged adequately.

6.39 Cumulative Impacts

The Council will ensure that any proposals for new development will not lead to a disproportionate burden of negative environmental impacts on settlements. The Council will expect the range of cumulative impacts to be addressed in any EIA submission, or in information supporting planning applications. Cumulative impact is not only settlement-related but can affect landscape, natural heritage, the rural economy's diversification and regeneration, or occur as a result of successive operations over long periods of time.

6.40 SPP4 suggests that Planning Authorities should seek an assessment from the developer of the likely cumulative impacts of additional workings on all settlements within a radius of 5km of the proposed site boundary. This should include site design, likely further increases in road traffic, period and intensity of disturbance to communities and the length of time and level of landscape impact. The developer will require to demonstrate what measures will be taken to mitigate likely cumulative impacts. If adverse cumulative impacts cannot be mitigated against adequately, permission will be refused.

6.41 **Number and Distribution of Quarries and Borrow Pits**

Many of Shetland's quarries and pits do not have planning permission and few are, or will be, restored. The large number of small quarries and borrow pits within Shetland is due to a number of factors including:

- the fact that Shetland is comprised of a number of habitable islands;
- aggregate is a bulk, low value product;
- transport costs are high;
- the large number of capital projects that have occurred in Shetland over the past two decades, necessitating considerable quantities of aggregate;
- many of the quarries are only intermittently used;
- low standards of restoration and aftercare; and
- permitted crofting rights.

6.42 Figure 7 indicates the location of existing aggregate quarries in Shetland. The Council, in particular, have been guilty in the past of a *laissez-faire* attitude to opening quarries and borrow pits, often without planning permission. Many others are long standing and were established prior to before a time when restoration was considered a priority. The Council have also generally failed to restore borrow pits after a construction project is complete. Such practices have set a poor example in the past and, it could be said, effectively deny the planning authority the credibility to adopt and pursue a more consistent and rigorous planning policy towards quarries in the future, unless of course improvements are made to these older quarries and pits.

6.43 Crofters rights to extract material have increased the number of small scale quarries and pits. The Town and Country Planning (General Permitted Development) (Scotland) Order 1992, as amended, permits the winning of materials reasonably necessary for agricultural purposes within the agricultural unit, provided no mineral extracted is moved to any place outside the agricultural land from which it was extracted, except to land which is held or occupied within the agricultural unit.

6.44 The fact that a quarry or borrow pit is small is not an indication of its insignificance. The impact of these pits and quarries on the landscape is not related to their individual size, but also to their location and the cumulative impact of their number. Much publicity is devoted to marketing Shetland as a natural, unspoilt environment with high standards of environmental control

e.g. the oil and fish farming industries in particular. In the area of mineral extraction, Shetland does not necessarily maintain these high standards.

6.45 There is a legislative requirement on Planning Authorities to review regularly the conditions attached to all mineral permissions so that improved operating and environmental standards can be secured. The Environment Act 1995 built on the provisions of the 1981 Mineral Act and introduced a requirement for reviewing mineral permissions granted between 1948 and 1982 as well as future 15 year periodic reviews of all extant mineral permissions. Circular 34/1996 gives advice on the statutory procedures to be followed and recently Circular 1/2003 ensures that these review applications are assessed against the Environmental Impact Assessment (Scotland) Regulations 1999. Despite including a commitment in 1995 to undertake a review of existing quarries, the Council have so far failed to carry out this review or make use of any of the provisions of the Act to improve existing or former quarries.

6.46 **Improving Existing and Abandoned Quarries**

Since the Council are directly or indirectly responsible for many of Shetland's abandoned quarries, restoration should be considered a priority. This should be followed by a programme to progressively restore Council quarries still in use. This is an important step morally as well as politically in order to ensure community support for increased standards. It would be unacceptable for the Council to insist on higher standards from others before first putting its own house in order. Accordingly the Council will:

- undertake a review of quarries as required by the 1995 Environment Act and in accordance with the procedures within Circulars 34/1996 and 1/2003;
- draw up a programme to restore any abandoned Council quarries and to progressively restore existing Council quarries;
- use the provisions of the 1995 Environment Act to add additional restoration and aftercare conditions to private quarries as appropriate;
- where the original operator cannot be traced, encourage the Shetland Amenity Trust to restore the site; and
- enforce existing planning conditions relating to restoration and aftercare in existing sites.

6.47 **Future Restoration Policy**

In order to ensure that new quarries or existing quarries will be adequately restored, the Council will require all proposals for new quarries or extensions to older quarries to:

- ensure that the proposals are designed to allow a phased sequence of extraction, reclamation and implementation of any planned after-use; and

- include proposals to adequately screen/landscape the quarry where this is practical and provide full restoration and aftercare proposals for the site.

6.48 **Conservation of the Natural and Built Heritage**

Within the wider framework of sustainable development the Scottish Government is committed to safeguarding, and where possible, enhancing Scotland's natural and built heritage, including areas designed for their international and national heritage value. The Council have endorsed this commitment in the Corporate Improvement Plan and consequently planning permission for mineral extraction will only be granted where there will be no significant adverse effect on the natural or built heritage features and qualities of the area under consideration. A list of designated sites (SSSIs, SPAs, Ramsar Sites and National Scenic Areas) within Shetland are contained at Appendix 2. A list of European Protected Species may be found on Schedule 2 (Animals) and 4 (Plants) of the Habitats Regulations 1994 (as amended in 2004 and 2007)

6.49 **Archaeology**

Conflicts between quarrying activities and protection of Shetland's archaeological heritage have not to date been a major issue, although the proposed talc quarry at Catpund, Cunningsburgh did raise such a consideration. NPPG5 *Archaeology and Planning* and PAN 42 *Archaeology* provide detailed guidance and advice on assessing the effects of proposals which may impact on archaeological sites, scheduled monuments and the historic environment. The Council has always been committed in its development plan policy to the protection of both scheduled and unscheduled remains of local interest. Accordingly where small quarries would significantly affect the archaeological heritage and where there are no overriding reasons why the quarry should be at that specific location, there would be sufficient justification for either refusing permission or amending the proposal to avoid disturbing the site. What constitutes an important site is of course not necessarily clear, and it is not always obvious that a site is important until some preliminary work has been undertaken. Shetland Amenity Trust employ full-time archaeologists and the Council will seek their advice as appropriate.

6.50 Where there are significant overriding reasons for allowing a quarry to be developed or extended, either on, or adjacent to, a site of archaeological interest, prior to the commencement of quarrying operations provisions will be sought from the developer (by way of an agreement under s.75 of the Planning (Scotland) Act 1997) for:

- an adequate survey;
- fencing of vulnerable areas;
- digging of test pits as appropriate; and
- rescue digs.

6.51 **Agricultural Land**

Prime quality land is a national resource and should normally be protected against permanent irreversible development. Mineral deposits may lie beneath both prime quality and lower category agricultural land. Demand for industrial raw materials and the contribution which minerals development might make to the diversification of the rural economy, together with the current pressure to reduce agricultural output, may in appropriate circumstances, offer opportunities to remove valuable minerals and to restore sites to a quality which would allow them to contribute to any upturn in the demand for agricultural production.

6.52 **Rural Economy**

Mineral working has an important role to play in supporting the economy of rural and island communities by providing employment. However, in many areas tourism and recreation support local economies which depend on the quality of the environment. Consequently, the likely long-term or cumulative impact of mineral extraction on other local economic activity will be a relevant material consideration. Settlements and island populations reliant on environmental assets to sustain rural and island life and attractive as locations for promoting investment may be more economically important in the long-term than new minerals operations. Recreation and tourist facilities can nevertheless be an acceptable after-use for existing minerals sites once working has ceased.

6.53 **Addressing Operational Issues**

Dust, noise, vibration and water pollution are often perceived by the general public as being the major issues regarding the acceptability of quarries in a local landscape. In practice these matters should be less of a problem than other issues as with care, investment and enforcement they can generally be adequately controlled. Dust and noise emanate from a number of general quarrying operations irrespective of the quarrying scale, and noise in particular can be experienced over half a mile away. Sources of water pollution include oils and re-agents used in quarrying, as well as surface water run off from the quarry floor and stockpiles. The source of water may not be just rain, but water sprayed onto stockpiles and conveyors to minimise air-borne dust. Settlement ponds or lakes on site are used to encourage separation of the suspended solids from the water, but problems can occur in freak weather conditions, or when the design capacity of the settlement pond is too small, or when there is insufficient water supply laid on at the quarry. In such cases contaminated water may flow directly into watercourses, burns or the sea.

6.54 The local topography and climate can either enhance or reduce the impact of dust and noise. Wind speed and direction can affect the distance that dust travels and can significantly affect noise levels. Proximity to an open body of water can also increase the distance over which noise travels. Rain obviously has the potential to suppress dust, while excessive wind will transport it. The Shetland landscape and climate ensures that these are

matters which require serious consideration, regardless of the size of the quarry or extension proposed.

- 6.55 These matters can be controlled to a degree under the Pollution Prevention and Control Regulations 2000 and discharges from settlement ponds and the like are authorised under the Water Environment (Controlled Activities) (Scotland) Regulations 2005 (as amended), as well as by planning conditions or planning agreements (see paragraph 3.26). Noise, for example can be controlled by setting maximum noise level standards for different locations as part of a planning condition. Noise can also be controlled using the Environmental Protection Act (1990) to ensure that noise levels recorded at nearby houses do not exceed the permitted threshold levels above the ambient noise levels that existed before the quarry was developed. However, one must not lose sight of the primary issue – whether or not a quarry is acceptable in that location in the first place. PAN 50 *Controlling the Environmental Effects of Surface Mineral Workings* provides a good practice guide for the consideration of both environmental issues and the proximity of mineral workings to communities. In addition Annex A: *The Control of Noise at Surface Mineral Workings* and Annex B: *The Control of Dust at Surface Mineral Workings* provide an indication of the criteria that planning authorities will require to consider both in the preparation of development plan policies and for the consideration of mineral developments.
- 6.56 Proposals within Shetland for major quarries would trigger a requirement for environmental assessment under the EIA Regulations 1999. This should enable the prospective noise, dust and vibration levels proposed at the quarry, the site perimeter and beyond, to be fully assessed and appropriate mitigation measures devised. Assessment of this information will determine whether or not a proposal is acceptable in principle (assuming there are no other planning policy grounds which have already pre-judged the matter.)
- 6.57 Guidance suggests that significant nuisance from noise can be experienced over half a mile away. Montague Evans (1991) in a report to Delting Community Council regarding a planning application for a quarry at Haggrister, gave some indication of the effect strong winds have when they stated that:
- “..... from empirical evidence, most of the dust generated will be deposited within 200 – 400 metres from the source – 800 metres in strong winds.”*
- Since 1994 the Council have used this indicated distance to protect the amenity of householders and schoolchildren.
- 6.58 For smaller quarries, close consultation between the Council's Planning Service and Environmental Health Service regarding the quarry proposal should be adequate in determining the acceptability of a proposal in principle.
- 6.59 **Landscaping, Restoration, Aftercare and After-Use**

Proposals for phased working, progressive restoration where applicable and provisions for aftercare and after-use will require to be incorporated in planning applications. Proposals should also address visual impact during

the life of the site, locational impact of operations, design, layout and phasing. During operations, detailed working and phasing programmes and final proposals may alter. The level of detail necessary at the outset should be sufficient to establish proposed outcomes that meet the terms of development plan policy and mitigate community and environmental impact. The need to mitigate the potential danger to aircraft from birdstrike or structures should also be recognised. Where a proposed development is located within the vicinity of an airport, consultation with the aerodrome operator will be required in order to mitigate against any birdstrike hazard generated by the development, its operation or restoration.

(Shetland Islands Council Supplementary Planning Guidance: Public Safety and Safeguarding Consultation Zones Within Shetland).

- 6.60 Once mineral working has ceased, the land should be reinstated at the earliest opportunity to a standard suitable for any agreed uses. Submitted phasing and restoration schemes should provide for the use in progressive on-site restoration of minerals unsuitable for the market to avoid the need for stockpiling.
- 6.61 Financial guarantees are an appropriate means of reassuring planning authorities and communities of the operator's commitment and ability to meet their operational, restoration and aftercare obligations. In order to address the risk of land falling derelict, the Council will seek an appropriate financial bond, unless the operator can demonstrate that their programme of restoration, including the necessary financing, phasing and aftercare of sites, is sufficient. Any financial guarantees will require to reflect the scale and type of mineral extraction proposed and the Council will avoid imposing costs on operators beyond those necessary. Calculation of the financial guarantee will require to ensure that it covers the full cost of restoration and aftercare, including professional fees. Any financial guarantee will be reviewed at regular intervals to ensure that it is in line with the proposed overall costs. Further advice is given in *PAN 64: Reclamation of Surface Mineral Workings*.

6.62 **Planning Conditions**

Many matters can be controlled to a degree by planning conditions or s.75 planning agreements. Planning agreements are often more satisfactory than planning conditions, as an operator can appeal against the imposition of conditions and/or re-apply at a later stage to have the conditions lifted, whereas a planning agreement is voluntarily entered into by the applicant and is legally binding.

- 6.63 Conditions will not be used to control matters that fall within the scope of related legislation, however they will take account of the circumstances of specific proposals and the need to provide for the protection of any impact on adjacent communities/residents. Monitoring the impact of a development is well established within the planning system, and conditions requiring environmental audits by operators may provide a basis for monitoring with the content and frequency being set in terms of individual circumstances. Audit results allow for agreement to be reached on the need for any remediation to further safeguard the environment.

6.64 Enforcement

Effective monitoring and enforcement provide assurances to communities and residents that the site will be managed and operated in accordance with any required conditions. Enforcement powers available to planning authorities are summarised in SPP1: *The Planning System* (paragraphs 62-64) and are explained in *PAN 54: Planning Enforcement* and *Circular 4/1999*. To improve planning authority enforcement resources, the Scottish Government intends to proceed with plans to introduce a new statutory charging regime to recover the costs of monitoring and enforcing minerals permissions from operators.

6.65 Supporting Information

Proposals within Shetland for major quarries may well trigger a requirement for environmental assessment under the EIA Regulations 1999 (see Chapter 5), however, Shetland Islands Council consider it appropriate that any application for a new quarry, or an extension to an existing quarry which does not trigger the EIA thresholds should provide sufficient information to enable a full assessment of the proposals in terms of the impact on the adjacent and wider environment. Advice on controlling the environmental effects of surface mineral workings is given in *PAN50 Controlling the Environmental Effects of Surface Mineral Workings* with specific details contained in four Annexes relating to noise, dust, traffic and blasting. Advice with regard to reclamation is contained with *PAN 64 Reclamation of Surface Mineral Workings*.



Appendix 1 Shetland Islands Council Current Minerals Planning Policies

Chapter Eight of the Shetland Structure Plan 2001 Minerals

Topic Goal

To conserve Shetland's aggregate sources and mineral deposits and ensure that, where possible, the Islands' needs can be met using local resources and to encourage commercial extraction in suitable locations.

8.1 The Council is keen to encourage diverse employment opportunities throughout Shetland and encourage sustainability. Mineral and aggregate reserves have the potential to provide employment and locally sourced materials for construction, in addition to supplying export markets.

Construction Materials

8.2 Shetland has substantial reserves of rock suitable for general and more specialised aggregate* use. In a survey carried out in 1992, quarry operators reported sufficient landbank reserves for the Structure Plan period i.e. 10 - 20 years. Near Quendale, some commercial sand extraction occurs but the possible exacerbation of coastal erosion limits the potential for further extraction. Sand can be produced as a by-product of rock crushing and, although the current level of quarry waste if recycled would not meet local needs, recycling waste rock at a coastal export quarry could be sufficient to supply the local market. A survey into potential sources of flagstones in Shetland identified a number of locations that may have the potential to be quarried for local use.

Other Minerals

8.3 A wide range of base and industrial minerals are present in Shetland including chromite, copper, zinc, lead, iron, talc, magnesite, gold and platinum. In the mid 1980s, Shetland was responsible for 99% of Britain's talc production and there remain deposits with potential for extraction in Unst, Fetlar and Cunningsburgh. Copper has been mined in the past at Sandwick and Quendale and surveys have suggested that gold could potentially be exploited in parts of the Mainland and Unst.

8.4 In response to interest in setting up a coastal export quarry in Shetland a study was commissioned to identify suitable locations. Sites identified at Hamar Ness in Northmavine and north east of Sullom Voe will be safeguarded in the Local Plan.

Policy SP MIN1

Significant aggregate sources and commercially viable sites for mineral extraction will be safeguarded from development which would sterilise or prevent their future extraction

8.5 Mineral and aggregate extraction can cause nuisance from dust, vibration and noise pollution, be visually intrusive and damaging to habitats unless care is taken over siting, operational conditions, restoration and aftercare. Many of Shetland's quarries and borrow pits do not have planning permission and few of them have been or are being actively restored. Disused quarries can spoil the landscape and attract flytipping and the Council is keen to support efforts to reinstate old pits. Shetland Amenity Trust is active in clearing redundant plant and rubbish tipped at existing pits and will be producing a programme for borrow pit restoration.

* aggregate can be broadly defined as sand, gravel, or crushed solid rock used in the construction industry

Policy SP MIN2

Proposals for mineral and aggregate extraction will be favourably considered where the proposal does not have an adverse effect on: local residents; the landscape; the best and most versatile agricultural land; water courses; nature conservation; the historic environment or the visual amenity of the area.

Policy SP MIN3

The Council will impose appropriate conditions on proposals for mineral and aggregate extraction to ensure the minimum of disturbance from noise, dust, vibration, flyrock, and traffic and to ensure the adequate restoration and aftercare of sites.

Partners

SIC Development Committee	Quarry Operators
Economic Development Forum	Health and Safety Executive
British Geological Survey	Shetland Amenity Trust
SEPA	Shetland Enterprise
Highlands and Islands Enterprise	

Strategies

Shetland Enterprise Strategy	Shetland Amenity Trust Quarry and Borrow Pit Remediation Programme
SIC Aggregate Working in Shetland Volume 2 Policy Paper	

Plan Performance Indicators

- ◇ Planning Applications for new or extensions to existing quarry workings/mineral extraction.
- ◇ Planning Applications for development approved/refused in quarry/mineral safeguarding areas.
- ◇ Land bank estimates.
- ◇ Annual extraction rates.

Chapter Eight of the Shetland Local Plan 2004 Minerals

Topic Goal

To conserve Shetland's aggregate sources and mineral deposits and ensure that, where possible, the Islands' needs can be met using local resources; and to encourage commercial extraction in suitable locations.

8.1 A wide range of aggregate, non-aggregate, base metal and industrial minerals is present in Shetland. Among them are chromite, copper, zinc, lead, iron, gold and talc-magnesite. Platinum and palladium have been identified in stream sediments.

8.2 Over 50 people are currently employed at quarries around Shetland, with most quarries supplying aggregates for local markets. High quality roadstone aggregate chippings are exported. Imports are predominantly sand, which is likely to continue since commercial sand extraction is damaging to beach and dune habitats and is discouraged. Talc deposits, with potential for extraction, are located on Unst, Fetlar and near Cunningsburgh. In the past, Shetland has produced a high proportion of the total UK production.

8.3 The location of minerals is determined by geology and many of the known deposits are in remote locations and subject to little development pressure. It is important to ensure that access to deposits, which may be of commercial interest, is safeguarded. However, safeguarding does not necessarily indicate acceptance of working. In 1990, a report commissioned by the Council identified two potential coastal aggregate quarry sites, one at Hamar Ness and another at Orka Voe. The policy for new dwellinghouses seeks to restrict residential development that would prejudice future mineral extraction. Investigations would be necessary to establish the environmental acceptability and commercial viability of developing either of these sites.



Policy LP MIN4

Location of Quarries and Mines

There will be a general presumption against new, or extensions to existing, quarries and mines within 800 metres of occupied schools or permanently occupied houses. With the exception of coastal quarries, this limit may be relaxed under the following circumstances, namely if:

- a) the applicant is prepared to limit the hours of operation; and**
- b) the quarry, quarry extension or mine is small scale; or**
- c) due to the specific topography of the area, the applicant can demonstrate to the satisfaction of the Planning Authority that the proposal will not have a significant adverse effect on the amenity of the area (particularly in terms of noise and dust, but also in terms of any other form of disturbance or pollution); and**
- d) the applicant can demonstrate to the satisfaction of the Planning Authority that no other acceptable sites are available and/or that the proposal to renew or extend an existing quarry or mine would have less of an environmental impact than opening up a new location elsewhere.**

This policy does not apply to borrow pits (see policy LP MIN7).

Justification

Dust, vibration and noise emanate from a number of general quarrying and mining operations irrespective of the scale (i.e. from blasting, drilling, crushing rock and loading/unloading operations). Government guidance suggests that significant nuisance from noise can be experienced over half a mile away. Accordingly, this policy aims to maximise the distance between working quarries or mines and permanently occupied houses or schools.

In recent years, planning applications for new houses have been approved within 800 metres of Scord quarry. In such instances, the developer is fully aware of the quarry and the potential danger and disturbance and the houses have been built at the developers' own risk.

Where the 800m cordon is relaxed under clauses (a) or (b), the Planning Authority will impose planning conditions to restrict the operating hours of the quarry and/or to restrict the scale of operations.

This policy conforms to:

- NPPG 4 (Land for Mineral Working)
- Structure Plan policy SP MIN2

This policy supports:

- Development Plan aims 1,2 and 3
- The Corporate Plan

Background information:

Aggregate Working in Shetland 1994

Policy LP MIN5

Establishing the Need for a New Quarry or an Extension

There will be a presumption against new or extended quarry developments, where adequate permitted reserves already exist. These restrictions will not apply to borrow pits or export orientated coastal quarries. Applicants will therefore include, in addition to the information required by the relevant industrial policies, the following information when lodging a planning application for a new or extended quarry, namely:

- a) the scale, location and reserves of permitted quarries in the area; and of any other quarries operated in Shetland by the applicant;**
- b) the necessity for the mineral deposit to be worked in that specific location;**
- c) the direct and indirect employment implications of the proposal.**

Where appropriate, agreements under Section 75 of the Town and Country Planning (Scotland) Act 1997 and a financial bond will be entered into for the purpose of restricting or regulating the development or use of the land.

Justification

Applications to develop new aggregate quarries, or to extend existing ones, will be considered against the need to control the proliferation of quarries in the Shetland landscape, whilst providing for local aggregate demands. In order to avoid a proliferation of quarries in Shetland, the Council will assess applications on the basis of the availability of local supplies, and in particular, the adequacy of existing reserves. This policy excludes borrow pits which are dealt with in Policy LP MIN7 and coastal quarries which are dealt with in Policies LP MIN11 and LP MIN12.

This policy conforms to:

- NPPG 4 (Land for Mineral Working)
- Structure Plan policy SP MIN

This policy supports:

- Development Plan aims 1 and 3
- The Corporate Plan
- Aggregate Working in Shetland 1994

Policy LP MIN6

Re-opening of Abandoned Workings

Proposals to re-establish mineral workings that are disused or abandoned and do not have a current planning permission will be considered as applications for new workings in policy terms.

Justification

There are many worked out or abandoned mineral working sites in Shetland. Applications to resume quarrying at a particular location will be considered in the same light as entirely new applications. This is because circumstances may have changed since the quarry ceased operation and all the issues need to be re-examined. This policy makes it clear that the re-opening of former quarries is not necessarily considered preferable in policy terms to the opening of new quarries or the extension of existing ones.

This policy conforms to:

- NPPG 4 (Land for Mineral Working)
- Structure Plan policy SP MIN2 and SP MIN3

This policy supports:

- Development Plan aims 1,2 & 3
- The Corporate Plan

Background information:

- Aggregate Working in Shetland 1994

Policy LP MIN7

Borrow Pits ²

Applications for the development of borrow pits will only be granted where the following criteria are met in full, namely that:

- a) there are net demonstrable environmental benefits from developing a borrow pit, compared with supplying the construction project from an established source of aggregate;**
- b) the development will not adversely affect sites of archaeological or natural heritage significance including, those of interest for geological or geomorphological features;**
- c) material extracted from the borrow pit is used only in connection with the specific construction project it is associated with;**
- d) the borrow pit is located within the immediate vicinity of the construction project;**
- e) the impact of the development on waterflows and water quality are evaluated;**
- f) the borrow pit is located so as to minimise its landscape and visual impact, dust and noise disturbance to the local community;**
- g) suitable restoration proposals which enhance biodiversity are agreed at the application stage and the site is restored immediately the construction project is complete; and**
- h) the proposal does not conflict with any other Structure Plan or Local Plan policy or proposal.**

Justification

In Shetland the definition of the term borrow pit has become distorted by past practice and the crofters' traditional right to extract material. The proliferation of quarries and pits in the Shetland landscape is perceived as a problem. In the past borrow pits have often been opened without planning permission: the Council, in particular, was a major culprit in this regard. This policy aims to control the size and number of pits opened by imposing a limit on the tonnage extracted to protect investment in established quarries and ensuring that the pits are restored once the construction project is complete, to prevent them being used for illegal dumping and fly-tipping. Planning consent for borrow pits used to provide material for the repair and maintenance of paths and tracks may be granted for an extended period, where a rolling programme of restoration is in place.

This policy conforms to:

- NPPG 4 (Land for Mineral Working)
- Structure Plan policy SP MIN2 and SP MIN3

This policy supports:

- Development Plan aim 3
- The Corporate Plan

Background information:

Aggregate Working

² Past practice in Shetland and the crofters' traditional right to extract material has distorted the meaning of the term borrow pit. For the purposes of the Local Plan, this policy will apply where the total amount of material to be extracted for the project is less than 35,000 tonnes.

Policy LP MIN8

Use of Former Quarries for Other Uses

Proposals to use worked out or abandoned quarries for alternative uses will not normally be given consent. The temporary use of sites for storing road-making materials or other construction materials related to a specific project may, where appropriate, be an exception.

Justification

Applicants will have to demonstrate to the Council that the proposed use is needed at that specific location and that no other suitable sites are available. Any permissions granted for such uses will be temporary in nature, as the Council are keen to encourage the restoration of all worked out or abandoned quarries. Additionally the re-use of former borrow pits and quarries may require authorisation under environmental legislation.

This policy conforms to:

- NPPG 4 (Land for Mineral Working)
- Structure Plan policy GDS1

This policy supports:

- Development Plan aim 3
- The Corporate Plan

Background information:

- Aggregate Working in Shetland 1994

Policy LP MIN9

Extraction of Sand and Shingle

Commercial extraction of sand or shingle from beaches and dunes will be permitted only where it can be demonstrated to the satisfaction of the Planning Authority that:

- a) the proposal will not accelerate the processes of erosion on the coast;**
- b) there are no other reasonable sources available;**
- c) the workings will not be unduly visually intrusive;**
- d) recreational use of the beach is not compromised;**
- e) local biodiversity will not be adversely affected;**
- f) archaeological remains would not be destroyed and**
- g) the proposal does not conflict with other Structure or Local Plan policies.**

Limited extraction of sand may be permitted from dune areas adjacent to beaches, where it can be shown that this is unlikely to cause significant environmental damage. Strict restoration conditions will be imposed.

Justification

The aim of this policy is to protect the coastline from damaging extraction. An independent technical report from a competent body must be submitted to the Planning Authority, at the applicant's expense, to demonstrate that any proposal will not cause an unacceptable level of damage to the coastal environment (i.e. encourage or accelerate coastal erosion).

Sand or shingle extraction can have impacts well away from the extraction site if it interferes with the movement of sediment along the coastline. If the results of the study are inconclusive the precautionary principle will apply.

If archaeological remains are present there may be circumstances where in situ remains could be excavated in advance at the discretion of the Shetland Archaeologist and at the developer's own expense.

This policy conforms to:

- NPPG 4 (Land for Mineral Working)
- Structure Plan policy GDS1, GDS4, SP MIN2 and SP MIN3

This policy supports:

- Development Plan aim 3
- The Corporate Plan

Background information:

Aggregate Working in Shetland 1994

Policy LP MIN10

Commercial Peat Extraction

Proposals for commercial peat extraction will normally be permitted on re-seeded blanket bog or on eroded bogs, where major intervention would be required to halt the process of erosion, provided that the proposal fully complies with the requirement set out in Local Plan policy LP IND5 and the proposed site is not located within or likely to affect:

- a) water flows, water quality or receiving watercourses;**
 - b) bogs known to contain archaeological features of local, regional or national importance;**
 - c) areas of active blanket bog;**
 - d) bogs supporting locally or nationally important plant, bird and animal populations, including:**
 - bog orchid sites;**
 - bogs of high ornithological value;**
 - bogs within 100 metres of coastal areas frequented by otters and other areas known to have a high density of otters;**
- and that suitable restoration proposals which enhance biodiversity are agreed at the application stage.**

Where appropriate, agreements under Section 75 of the Town and Country Planning (Scotland) Act 1997 and a financial bond will be entered into for the purpose of restricting or regulating the development or use of the land.

Justification

Active blanket bog is a bog, which is still producing peat; as such it is a rare habitat in national terms. However, only some of Shetland's extensive tracts of active bog enjoy statutory protection as sites notified for their nature conservation value (SSSIs etc.). Commercial extraction is likely to do irreparable harm to a bog's ecological value. In general sphagnum is usually a major contributor to peat formation and the presence of 10% or more cover of sphagnum moss is a reliable indicator of an active bog.

Bog orchid is a scarce national species: at present it is the only nationally scarce plant known to occur in Shetland bogs.

Breeding birds are vulnerable not only to disturbance but also and perhaps more importantly, to habitat damage or destruction resulting from peat extraction. The red-throated diver and whimbrel (both on Schedule 1 of the Wildlife and Countryside Act) and the golden plover (on Annex 1 of the Birds Directive) nest at high density on some peatlands and are likely to be disturbed by peat extraction.

Otter holts are common in peatland areas within 100 metres of the shore. Workings in these areas are likely to destroy holts and generally cause disturbance.

This policy conforms to:

- NPPG 4 (Land for Mineral Working)
- Structure Plan policy GDS1, GDS4, SP MIN2 and SP MIN3

This policy supports:

- Development Plan aim 3
- The Corporate Plan

Background information:

Aggregate Working in Shetland 1994

Policy LP MIN11

Coastal Export Quarry Proposals

Proposals for coastal export quarries will only be permitted where the proposal fully complies with the Shetland Structure and Local Plan and in particular with policy LP NE10 and the Plans' Mineral and Industrial policies.

Where appropriate, the Council's Works Licence and Coastal Development policies and the requirements of Policies SP CST2 and LP CST6 will also apply.

At the application stage suitable site restoration proposals which include enhancing biodiversity and the removal of redundant plant and equipment must be agreed.

Where appropriate, agreements under Section 75 of the Town and Country Planning (Scotland) Act 1997 and a financial bond will be entered into for the purpose of restricting or regulating the development or use of land.

An Environmental Impact Assessment will be required.

Justification

The location of coastal export quarries is likely to raise fundamental environmental issues. These issues will have to be weighed against the potential economic benefits to the community in line with the development plan and current government advice.

This policy conforms to:

- NPPG 4 (Land for Mineral Working)
- Structure Plan policy SP MIN1, SP MIN2 and SP MIN3

This policy supports:

- Development Plan aims 1 and 2
- The Corporate Plan

Background information:

- Aggregate Working in Shetland 1994

Policy LP MIN12

Development of Pier Facilities and Stockpiles for Export Quarries

There will be a general presumption against the siting of stockpiles or the development or use of new and existing pierhead facilities, as trans-shipment terminals associated with an export based coastal quarry, where the proposed development is within 800m of occupied houses. This limit may be relaxed under the following circumstances, namely if:

- a) the applicant is prepared to limit the hours of operation;**
- b) due to the specific topography of the area, the applicant can demonstrate to the satisfaction of the Planning Authority that the proposal will not unreasonably affect the environment of the local area (particularly in terms of noise and dust, but also in terms of any other form of disturbance or pollution).**

Justification

Dust, vibration and noise emanate from a number of quarrying operations. In the case of coastal quarries, stockpiles and pierheads are normally geographically separated from the quarry production area. Noise from the loading/unloading of ships at all hours and problems of wind borne dust can be significant and as severe in their effect on local communities as the quarry or mine itself. Accordingly, the Council has adopted the same distance criterion (i.e. 800m) to separate the local community from all quarrying and mining export operations.

This policy conforms to:

- NPPG 4 (Land for Mineral Working)
- Structure Plan policy SP MIN3

This policy supports:

- Development Plan aims 2 and 3
- The Corporate Plan

Background information:

Aggregate Working in Shetland 1994

Appendix 2 : Designated Sites

Site Code	Site Name	Grid Reference	Area (Ha)
Gardens and Designed Landscape			
8791	Belmont House	HU 565 009	23.7
8808	Brough Lodge	HU 580 926	25.7
8901	Gardie House	HU 488 428	31.3
8978	Lunna House	HU 488 428	61.2
National Scenic Area			
9148	Shetland		11600
National Nature Reserve			
5035	Hermaness		964.4
5040	Keen of Hamar		42.4
5057	Noss		313
Ramser Site			
8453	Ronas Hill - North Roe and Tingon		5470.2
Special Area of Conservation			
8249	East Mires and Lumbister		620.32
8253	Fair Isle		561.27
8270	Hascosay		164.92
8279	Keen of Hamar		38.52
8333	Mousa		530.6
8338	North Fetlar		1581.93
8345	Papa Stour		2076.69
8370	Ronas Hill - North Roe		4900.9
8388	Sullom Voe		2698.55
8393	The Vadills		62.43
8395	Tingon		569.3
8409	Yell Sound Coast		1540.55
Special Protection Area			
8496	Fair Isle	HY 750850	592.48
8498	Fetlar	HU 625930, 602987, 670915	2639.4
8504	Foula	HT 960390	1326.9

8512	Hermaness, Saxa Vord and Valla Field	HP 590135 & HP 628173	1662.92
8543	Lochs of Spiggie and Brow	HU 374160	145.7
8551	Mousa	HU 460240	209.8
8561	Noss	HU545444	313
8563	Otterswick and Graveland	Otterswick HU 452940 & Graveland HU 495868	2241.41
8564	Papa Stour	HU 165610	569
8568	Ramna Stacks and Gruney	HU 380970	10.76
8572	Ronas Hill - North Roe and Tingon	HU323855 & HU255840	5490.67
8582	Sumburgh Head	HU 408091	41.31
Site of Special Scientific Interest			
28	Aith Meadows	HU 440293	23.9
144	Balta	HU 660077	14.1
256	Breckon	HP 529052	57.9
272	Burn of Aith	HU 442295	14.4
276	Burn of Lunket	HU 370573	1.4
277	Burn of Valayre	HU 369693	5.8
347	Catfirth	HU 437538	0.16
367	Clothister Hill Quarry	HU 437538	7
475	Crussa Field and the Heogs	HU 625105	474.3
481	Culswick Marsh	HU 273445	7.9
486	Dales Voe	Site of Special Scientific Interest	5.2
492	Dalsetter	Site of Special Scientific Interest	34.2
587	East Mires and Lumbister	Site of Special Scientific Interest	604
590	Easter Loch	Site of Special Scientific Interest	6.5
592	Easter Rova Head	Site of Special Scientific Interest	3.5
615	Eshaness Coast	Site of Special Scientific Interest	51.5
620	Fair Isle	Site of Special Scientific Interest	592.5
633	Fidlar Geo to Watsness	Site of Special Scientific Interest	18.5
655	Foula	Site of Special Scientific Interest	1326.9

656	Foula Coast	Site of Special Scientific Interest	235.7
661	Fugla Ness - North Roe	Site of Special Scientific Interest	0.7
663	Funzie	Site of Special Scientific Interest	6.8
8110	Graveland	Site of Special Scientific Interest	853.09
755	Gutcher	Site of Special Scientific Interest	1.9
759	Ham Ness	Site of Special Scientific Interest	31.6
767	Hascosay	Site of Special Scientific Interest	165.2
776	Hermaness	Site of Special Scientific Interest	980.3
782	Hill of Colvadale and Sobul	Site of Special Scientific Interest	819.4
827	Keen of Hamar	Site of Special Scientific Interest	51.3
837	Kergord Plantations	Site of Special Scientific Interest	6.5
901	Lamb Hoga	Site of Special Scientific Interest	809.7
913	Laxo Burn	Site of Special Scientific Interest	0.5
1028	Loch of Clousta	Site of Special Scientific Interest	49.7
1030	Loch of Girlsta	Site of Special Scientific Interest	101.7
1084	Lochs of Kirkigarth and Bardister	Site of Special Scientific Interest	18.1
1085	Lochs of Spiggie and Brow	Site of Special Scientific Interest	154
1086	Lochs of Tingwall and Asta	Site of Special Scientific Interest	71.5
1111	Lunda Wick	Site of Special Scientific Interest	1.2
1146	Melby	Site of Special Scientific Interest	6.4
1204	Mousa	Site of Special Scientific Interest	209.8
1208	Muckle Roe Meadows	Site of Special Scientific Interest	2.7
1216	Ness of Clousta - The Brigs	Site of Special Scientific Interest	69.9
1217	Ness of Cullivoe	Site of Special Scientific Interest	10.9
1234	North Fetlar	Site of Special Scientific Interest	1676.4
1239	North Roe Meadow	Site of Special Scientific Interest	1.2
1242	North Sandwick	Site of Special Scientific Interest	5.9
1247	Norwick	Site of Special Scientific Interest	6.3
1248	Norwick Meadows	Site of Special Scientific Interest	23.2
1249	Noss	Site of Special Scientific Interest	313
8109	Otterswick	Site of Special Scientific Interest	1388.32

1267	Papa Stour	Site of Special Scientific Interest	629.48
1302	Pool of Virkie	Site of Special Scientific Interest	32
1315	Punds to Wick of Hagdale	Site of Special Scientific Interest	4.6
1318	Quendale	Site of Special Scientific Interest	143.4
1319	Qui Ness to Pund Stacks	Site of Special Scientific Interest	2.2
1323	Quoys of Garth	Site of Special Scientific Interest	0.5
1328	Ramna Stacks and Gruney	Site of Special Scientific Interest	10.8
1370	Ronas Hill - North Roe	Site of Special Scientific Interest	4906.7
1684	Sandness Coast	Site of Special Scientific Interest	10.67
1406	Sandwater	Site of Special Scientific Interest	38.3
1408	Saxa Vord	Site of Special Scientific Interest	58.9
1415	Sel Ayre	Site of Special Scientific Interest	1
1434	Skelda Ness	Site of Special Scientific Interest	3.3
1437	Skeo Taing to Clugan	Site of Special Scientific Interest	15.2
1458	South Whiteness	Site of Special Scientific Interest	81.8
1475	St Ninian's Tombolo	Site of Special Scientific Interest	12.6
1508	Sumburgh Head	Site of Special Scientific Interest	41.3
1528	The Ayres of Swinister	Site of Special Scientific Interest	27.1
1530	The Cletts, Exnaboe	Site of Special Scientific Interest	13
1679	The Vadills	Site of Special Scientific Interest	19.7
1539	Tingon	Site of Special Scientific Interest	584
1545	Tonga Greff	Site of Special Scientific Interest	19.5
1563	Tressa Ness to Colbinsoft	Site of Special Scientific Interest	14.2
1564	Trona Mires	Site of Special Scientific Interest	153.3
1586	Uyea, North Roe Coast	Site of Special Scientific Interest	264
8108	Valla Field	Site of Special Scientific Interest	623.52
1589	Villians of Hamnavoe	Site of Special Scientific Interest	55.5
1590	Virva	Site of Special Scientific Interest	1.2
1591	Voxter Voe and Valayre Quarry	Site of Special Scientific Interest	23.8
1594	Ward of Culswick	Site of Special Scientific Interest	152.4
1686	Yell Sound Coast	Site of Special Scientific Interest	868.74

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