

# The limestone inquiry, 21<sup>st</sup> Century: teachers' notes

## Level

This activity is most appropriate for students aged 14-16 to illustrate useful materials made from rocks in the context of problems associated with extraction of raw materials.

The activity also addresses the key skills of communication and working with others. The activity could be used to help address aspects of citizenship.

## Topic

The activity deals with limestone, its uses and some of its chemistry. It also looks at some of the social, economic and environmental issues concerned with the extraction of limestone.

## Description

The activity is a role-play exercise examining issues related to the quarrying of limestone in an area of outstanding natural beauty.

## Context

Students should already have done some work on the chemistry of limestone, including some experimental work (see *The Chemistry of limestone*), and be aware of some of the uses of limestone and products derived from it (see *Limestone in your everyday life*).

## Teaching points

The aims of this activity include

- complementing and revising prior work on calcium carbonate, limestone and its uses
- developing awareness of issues involved in the responsible exploitation of mineral resources, particularly concerning environmental impact
- providing an opportunity to practise skills in communication, in particular assembling and presenting an argument

## Timing

One approximately 60-minute lesson for the role-play. Preparation time (about 30 minutes in class or homework) is needed beforehand.

## Resources

Each student will need copies of the General Briefing (*GB*) and a copy of those Specific Briefing Sheets (*B1* to *B7*) appropriate to their role. For a class of 30, 30 copies of the *GB* sheets and 4 copies of each of the *B* sheets will be needed.

## The activity

The activity is a role play modelled on a Public Inquiry about a proposed extension of a limestone quarry within a National Park. Students take on roles as:

- Inspector's panel
- Representatives of the quarrying company
- Representatives of the users of limestone
- Trades unionists
- Representatives of the National Park Authority
- Local residents
- The local conservation group

### **During the preliminary lesson**

Tell the students that next lesson they will be taking part in a Public Inquiry about a proposed extension of a limestone quarry within a National Park. Each student will need a copy of the General Briefing, *GB*.

Divide the class into seven groups. One group will play the role of the Inspector and his or her assessors, and will organise the Inquiry. The Inspector will act as a chairperson to control the proceedings. Members of this 'Inspectors group' need copies of Briefing Sheet *B1*. It is important to have students with appropriate personal qualities (especially fairness and balance) in these roles, particularly for the Inspector. (In a real public inquiry, assessors are present to provide an objective (unbiased) input and comments, usually on complicated points of science and technology. The inspector considers this information alongside that presented by the proposers and objectors, and makes an independent judgement on recommendations to government on what should be done.)

Three groups will be in favour of the quarry extension. They will represent Rock Quarry Holdings plc (abbreviated to RQH), who are the quarry operators proposing the development ('the appellants'), the industrial users of limestone, and the trades unions. They will need briefing sheets *B2*, *B3* and *B4* respectively.

Three groups will oppose the extension ('the objectors'). They will represent the National Park Authority, local residents and the local conservation group. They will need briefing sheets *B5*, *B6* and *B7* respectively.

Issue each member of the class with copies of the general briefing sheets (*GB*), and their specific briefing sheets (*B1* to *B7*) according to the group they are in. They should study these sheets in class or for homework (or both). Students could use this time to research the issues in greater depth than in the briefing sheets and possibly see pictures of quarries on the internet, for example at [www.qpa.org](http://www.qpa.org) (accessed July 2003); go to Lifezone and click on 'crushed rock'.

In school trials, it was found to be very important to allow plenty of preparation time for students to assimilate the information and discuss it together.

### **On the day of the Inquiry**

Each group should first spend some time together using their briefing sheets, their notes and other sources of information to plan how they are going to present their arguments.

The Public Inquiry itself should, as far as possible, be organised by the Inspector and his or her team. It may be better to do this in a classroom or laboratory where there is movable furniture so that the Inspector can arrange the seating suitably. The Inspector should be encouraged to take firm control of the Inquiry to ensure everyone gets a fair hearing.

A suggested sequence of events for the Inquiry is given in the Inspector's briefing sheet (*B1*) where it is suggested that at the end of the proceedings the inspector and assessors should draft a brief report giving their conclusions and recommendations along with any conditions that should be imposed if permission for the quarry is to be granted.

Students may suggest using Powerpoint® slides etc, for their presentations. However impress on them that there are time limits both for their preparation and for their presentation.

At the end of each presentation, copies should be given to the Inspector.

## **Further notes for teachers**

As far as possible, the exercise has been modelled upon conventional practices in planning, decision-making and particularly the appeals process in England and Wales. The situation and terminology differs but has parallels in Scotland and Northern Ireland. However, at the time of revision (early 2003) major changes in the planning decision-making process are in hand in England, but the appeals process is likely to remain in this format.

The title 'Public Inquiry' is the legal term for an investigation – conducted rather like a court, into proposals to carry out development eg quarrying, building a retail park or to prepare a development plan.

The assessment criteria for mineral applications given in briefing sheet *GB3* are likely to be reviewed during 2003 and will be contained in a new document.

## **Further resources**

These may be useful for extension work or homework.

D J Harrison and K A McL. Adam, *Limestones of the Peak : Mineral Assessment Report 144*, London: British Geological Survey / HMSO, 1985. This contains detailed coloured maps of limestone by chemical purity in the Peak District of Derbyshire and Staffordshire, the local geological structure, data from boreholes and resource blocks and a brief resume of the development of the industry in that area over the last 200 years. It is an ideal source book and, while still in print, excellent value at only £5.

*Reports of the East Midlands Aggregates Working Party* (EMAWP) carry detailed statistics annually on the production, use and reserves of limestone (and other aggregates) by county in the East Midlands (separate figures also for Peak Limestone the Peak District National Park). Similar reports also cover the smaller outcrop in Staffordshire (and the rest of England and Wales) – available on [www.planning.odpm.gov.uk/rawp/index.htm](http://www.planning.odpm.gov.uk/rawp/index.htm) (accessed June 2003) or EMAWP reports in hard copy from the publishers, The National Stone Centre, Porter Lane, Wirksworth, Derbyshire DE4 4LS (Tel/fax: 01629 824833 and email [nsc@nationalstonecentre.org.uk](mailto:nsc@nationalstonecentre.org.uk))

Useful information is available on various web sites showing satellite photographs, aerial photographs and maps which indicate the positions of quarries, (eg [www.getmapping.com](http://www.getmapping.com) (accessed June 2003) geology, [www.bgs.ac.uk/mineralsuk/](http://www.bgs.ac.uk/mineralsuk/), (accessed June 2003) and environment mapping at any scale for all environmentally officially designated areas in England and Wales, [www.magic.gov.uk](http://www.magic.gov.uk) (accessed June 2003).

## **Acknowledgement**

This material has been adapted (in 2003) to take account of recent changes in procedure at planning inquiries and the industry by Ian Thomas of the National Stone Centre, with permission, from *SATIS No. 602 The Limestone Inquiry*, Hatfield, Association for Science Education, 1986.

The JESEI project is very grateful to the Association for Science Education for permission to adapt and update this resource.

### **Special note**

The information contained in this activity is not intended to relate to any particular organisation or area, but reflects current practice. Planning legislation and procedures are currently undergoing major changes at the time of writing.

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