

'Improving the Environment; a Haven for People or a Haven for Wildlife - or for both?'

Exploring sand/gravel pit restoration options



QCA Geography - Unit 8: Improving the Environment: Section 4



'Improving the Environment; a Haven for People, a Haven for Wildlife - or for both?'

In this unit, pupils explore options for the restoration of a sand or gravel pit in the local area. Should it become a water leisure centre, a local park or a nature reserve; or should it just be left as it is? Can any of these uses be combined?

The unit offers opportunities for first-hand research (site visit and questionnaire), the use of secondary sources (local press, radio and TV reports, internet) and the production of a report which can be submitted to the local council.

QPA modified KS2 Geography Unit 8 - section 4
Improving the environment

Title: Restoration of a derelict sand or gravel pit – should it be a haven for wildlife or a haven for people? Is it possible to combine both?

QCA Unit link: Geography: Unit 8 section 4 - Improving the environment

Main curriculum area: Geography

Subsidiary areas: Citizenship, Literacy, ICT, Numeracy

Key theme: How would local residents like a derelict local sand or gravel pit to be restored - for water recreation, as a park, or as a nature reserve? What are the problems and benefits associated with each of these restoration options? Is it best to do nothing?

Description / overview of the unit:

Following section 4 the QCA Unit, (and assuming that sections 1,2 and 3 have been addressed in the school environment) the following questions will be asked:

- What is the sand or gravel pit environment like at the moment?
- What are the different options for restoration which are under consideration by the local council?
- What are the problems associated with these options?
- are they sustainable?
- What are people's views on the sand or gravel pit and its possible restoration?
- What would provide the best solution for the local community and /or wildlife?

This unit will encourage children to find out about a local derelict sand or gravel pit. They will

- investigate what options are being considered for restoration of the sand or gravel pit
- research the different options and **either**
- create a questionnaire to find out what local views are and then interview local residents of all ages on their feelings and knowledge of the sand or gravel pit **or, if a questionnaire survey is considered problematic,**
- divide the children into small groups and ask each group to devise a restoration plan to be presented to the whole class and voted upon (some basic information would be needed to help pupils here)
- **using the questionnaire or results of the class voting** weigh up people's feelings about the options and decide which would be best and/or whether a happy medium can be created combining one or more of them.

There is a strong ESD and citizenship message in this unit; pupils are being encouraged to participate in research on and think about the sustainable development of a derelict or disused site and about the potential influence of local people and themselves as children on decisions taken locally.

Literacy links will encourage writing for a real purpose in the creation of a questionnaire or pupils' restoration plans and newspaper reports about proposed developments.

Pupils will use ICT to present their findings and could use a database or spreadsheet (provided in appendix 2) to input questionnaire information or, if a questionnaire survey is not carried out (option 2) a spreadsheet to input voting results (provided in appendix 3).

Teacher overview

This modification of Section 4 is designed to fit into four lessons and two half-day fieldwork outings (if a questionnaire survey is considered problematic five lessons and a half-day fieldwork session),

If a questionnaire survey is used,

- **Lesson 1:** Identify a suitable site, carry out research using secondary sources
- **Fieldwork session 1:** visit the site, evaluate it
- **Lesson 2:** what did we find and what questions do we need to ask local people?
- **Fieldwork session 2:** questionnaire work
- **Lesson 3:** collating the results, bringing it all together
- **Lesson 4:** producing a report

If a questionnaire survey is not used

- **Lesson 1:** Identify a suitable site, carry out research using secondary sources
- **Fieldwork session 1:** visit the site, evaluate it
- **Lesson 2:** what did we find and what questions do we need to answer before we can make restoration plans?
- **Lesson 3:** pupils' own restoration plans
- **Lesson 4:** collating the results, bringing it all together
- **Lesson 5:** producing a report

Preparation

Fieldwork site for first visit

The teacher **must**

- have visited the site with helpers and carried out thorough risk assessments

the teacher **should** have ascertained whether the site is designated as

- a RIGS (Regionally Important Geological and Geomorphological Site)
- an SSSI (Site of Special Scientific Interest).

Information is given at

www.ukrigs.org.uk/html/ukrigs.php

and

www.english-nature.org.uk/pubslink.htm

Questionnaire survey

Choose an area of the local town which

- is safe
- has toilet facilities
- has a number of suitable rendezvous places
- has a covered area which may be useful in bad weather.

If there is a local shopping mall this may be a suitable venue but it is wise to approach the management who will almost certainly be willing to help.

Organising the fieldwork visit and if used the questionnaire survey

Follow specific LEA guidelines (not given here as detail varies)

Obtain all necessary permissions and parental consent well in advance of the field trip(s)

Send letters to parents outlining the content of the trip(s) and what pupils will need to bring to school.

QPA modified Geography Unit 8: section 4.
Improving the environment



ABOUT THIS MODIFIED SECTION OF THE UNIT

This is part of a 'long' unit. Earlier, children will have used the school buildings, grounds and immediate locality to investigate environmental issues and improvements. This modified section of the unit encourages children to become actively involved in improving their local environment.

The modified section of the unit offers links to citizenship (units 9 & 10), literacy, mathematics, IT and environmental education.

PLACES

- Wider scale
- Changes

SKILLS

- Observe and question
- Collect and record evidence
- Undertake fieldwork
- Use secondary sources
- Use ICT

THEMES

- Environment: impact, sustainability
- Land use issue

VOCABULARY

In this section of the unit, children are likely to use:

- environment, issues, environmental quality, community, air pollution, air safety, vehicles, litter, derelict, planning, land use

They may also use:

- conserve, sustain, urban, rural

RESOURCES

- clipboards
- a base map of the fieldwork site
- a digital camera
- local authority contact details

PRIOR LEARNING

It is helpful if the children have:

- investigated the school buildings and grounds and immediate locality, as in Units 1, 2 and 3, for example
- started to develop a range of geographical concepts, eg *location, place, environment*

EXPECTATIONS

at the end of this unit

most children will:

begin to account for their own views about the environment, recognising that other people may have reasons for thinking differently; identify how people affect the environment and recognise ways in which people try to manage it for the better; ask and respond to geographical questions while undertaking tasks set by the teacher, offering their own ideas appropriate to the situation; use a range of simple equipment, maps and resources to carry out tasks supported by the teacher

some children will not have

made so much progress and will:

express their own views about the environment and begin to recognise that some people think differently; identify how people affect the environment; ask and respond to geographical questions while undertaking tasks set by the teacher

some children will have

progressed further and will also:

identify and explain the different views held by people about an environmental change; describe different approaches to managing the environment; draw on their own knowledge and understanding and awareness of topical matters to suggest geographical questions/enquiries; use a wide range of equipment, maps and resources to carry out independent investigations and tasks supported by the teacher

FUTURE LEARNING

Children can extend their knowledge and understanding of environmental change and issues by studying local issues in depth, eg *Unit 12*.

Environmental education may be developed through other units, eg *Units 10 and 15*.

Improving the environment: for people, for wildlife, or for both?

LEARNING OBJECTIVES CHILDREN SHOULD LEARN	POSSIBLE TEACHING ACTIVITIES	LEARNING OUTCOMES CHILDREN	POINTS TO NOTE
What is this place like and why? How can it be improved?			
<ul style="list-style-type: none"> • to investigate places • to collect and record evidence to answer questions • fieldwork skills • how people affect the environment • how and why people seek to manage and sustain their environment • to use ICT to present findings 	<ul style="list-style-type: none"> • As a class, identify an area in the locality that has not been cared for, <i>eg a disused gravel pit</i>. Visit the area and gather evidence, <i>eg photographs, sketches</i>. • Discuss with the children how the area might be improved and who is responsible for improving the environment. • Divide the children into small groups, and ask each group to use word-processing software to write a report about the area to send to the local authority, describing how the environment is being affected and presenting the results of their first-hand and secondary investigations into the options for restoration. 	<ul style="list-style-type: none"> • appreciate the need for improvement in some places and some of the problems associated with this • are aware that particular groups of people have some responsibility for improving environments 	<p>To answer the enquiry questions, focus activities on specific questions, <i>eg What evidence is there that this place has not been 'cared for'? How can we improve this area? Who is responsible for looking after this area?</i></p> <p>Literacy: writing to the local authority can be used as an opportunity to show children how to distinguish between the most and least important details in a report. They can also look at different types of writing, <i>eg by comparing their letter with a newspaper report on an environmental issue</i>.</p>

Lesson 1

Introduce the pupils to the idea that the local council plans to restore a local disused and derelict sand or gravel pit. There are four possible options:

1. a water sports and recreation centre
2. drain the site and create a park
3. a nature reserve
4. do nothing

Give some background to the site and to details of both schemes:

- is the site geologically important - locally (RIGS - Regionally Important Geological and Geomorphological Site) or nationally (SSSI - Site of Special Scientific Interest)
- if a RIGS or SSSI would any of the restoration options conflict with the designation(s)
- what facilities for water sport and recreation are planned?
- what facilities would the park provide?
- what kind of wildlife will benefit from the nature reserve?
- how will the schemes be funded?
- what would happen if nothing is done?

Pupils look at a map of the local area and relate the site to the school and their homes. They look at both options, using maps and websites (local council, local wildlife trust):

- are there already local facilities for water-related recreation? If so,
 - how far away?
 - what facilities are offered?
- are there local parks?
- how would people get to the site?
- are there already local nature reserves in similar situations? If so,
 - what wildlife were they created for or do they benefit?
- is there anything else in the area which might influence the council's decision?

Round off the lesson by summarising, with input from the pupils, what they have already discovered and what else they may be able to discover from first-hand investigation:

- what is the site like? (size, geology, water depth - simple description!, bank features e.g cliffs, beaches)
- is it accessible?
- is anything going on which is unpleasant?
- what wildlife lives there already?
- what is going on in the area around the old pit?

Finally remind pupils that there will be a field trip to the sand or gravel pit and set the ground rules: what to wear, things to bring (notebook & pencil, packed lunch etc.). Assign pupils to fieldwork groups.

Lesson 1 resources:

Local maps,

OHPs, of local maps

computer access to internet - for useful websites

- **Information about RIGS** (Regionally Important Geological and Geomorphological Site) at www.ukrigs.org.uk/html/ukrigs.php
- **Information about SSSIs** (Sites of Special Scientific Interest) www.english-nature.org.uk/pubslink.htm
- **The Environment Agency website: information about recycling** www.environment-agency.gov.uk/yourenv/eff/resources/waste
- **Relevant local authority website** for information on landfill, recycling
- **MAGIC website** for information on local strategies and relevant maps www.magic.gov.uk
- **Relevant local wildlife trust website** for information on conservation
- **Friends of the Earth website** for views on recycling and waste from an effective pressure group www.foe.co.uk/learning/campaign/waste
- **QPA website:**
 - Info about a working gravel extraction pit and how this could be restored when the extraction is completed.
 - Facility to find local gravel pit
 - access virtual quarry site to look at local (if any) or regional working and restored gravel pits and extraction and restoration methods

Fieldwork trip 1: the sand or gravel pit

On arrival

- split the pupils into their groups
- ask them to remind you what they have come to do.

Reminded pupils

- which adult is in charge of which group
- set a framework for behaviour and teamwork
- give the reasons for these.

Careful supervision of the pupils is essential!

Working in groups, pupils inspect the site, noting down and/or sketching what they see bearing in mind the questions asked at the end of lesson 1. Is there anything else that they think is important?

At the end of the day gather the pupils together in a safe place and ask each group to give their first impressions of the site.

The ideas and words used may provide useful material for literacy.

Fieldwork trip 1 resources:

Pencils (carry spares)

Clipboards and clipboard bags in case of rain

Prepared worksheets with the questions to be answered and space for other observations (carry spares)

Fold-out identification charts from FSC Publications:

- Butterflies of Britain
- Dragonflies and Damselflies
- 'Top 50' garden birds
- Commoner water plants
- Wetland birds

Available from

Field Studies Council Publications, Preston Montford, Shrewsbury SY4 1HW,
Tel 0845 345 4072

Email publications@field-studies-council.org

Website www.field-studies-council.org

Digital camera(s) to record the site

Lesson 2: evaluation of the visit, preparation for second fieldwork trip

In small groups pupils prepare and present their findings from the fieldwork, for example

- the old pit was overgrown
- people had thrown rubbish over their garden fences
- it was noisy - aircraft were taking off overhead
- it had junk in it

or perhaps

- it was peaceful and clean
- there were fish in it
- there were ducks on the water

If the site is on a flight path then pupils' attention should be drawn to the possible problems of a nature reserve - will birds such as ducks create a bird-strike hazard?

Preparation of the questionnaire survey

Pupils then discuss whom they should approach (i.e. not mothers with difficult children, or people obviously struggling with heavy bags) and the way in which they should approach them:

- 'Good morning/afternoon. We are children from school and we wonder if you would have the time to answer a few questions to help us in our Geography work?'

and the sort of questions which they might put to local people in a questionnaire survey. A carefully structured questionnaire will give opportunities for the pupils to use a database.

- do you live in the local area? (yes/no). If yes,
- may we ask where? (different areas of the local map, based on concentric rings around the sand or gravel pit, are given number codes)
- do you know that the local council is discussing options for restoring the sand or gravel pit? (know/don't know)
- are you interested in what happens? (yes/no)
- which option would you prefer? (water leisure/public park/wildlife/do nothing)

Whether or not individuals are prepared to answer questions they are thanked.

More able pupils may be able to design a spreadsheet for the questionnaire; an example is given both as a Word table in appendix 1 and as an Excel spreadsheet (with a summary sheet) in appendix 2.

Questionnaire survey	Date:		Place:	
Names of recorders:				
	Tally counts			Totals
Number of people questioned				
Not willing to help				
Live locally				
Where (area code)	1	2	3	4
	5	6	7	8
	Tally counts			Totals
Know about plans				
Interested in what happens				
Prefer water leisure & sport				
Prefer a public park				
Prefer nature reserve				
Do nothing				

Questionnaire survey	Date:		Place:	
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Where (area code)	1	2	3	4
	5	6	7	8
	Tally counts			Totals
Know about plans				
Interested in what happens				
Prefer water leisure & sport				
Prefer a public park				
Prefer nature reserve				

Do nothing

Fieldwork trip 2: questionnaire survey

An area of the local town which is safe, has toilet facilities and a number of suitable rendezvous places has been chosen; if a covered area is available then this may be useful in bad weather. If there is a local shopping mall this may be a suitable venue but it is wise to approach the management who will almost certainly be willing to help.

On arrival the children are issued with questionnaire sheets and clipboards & pencils and given clear instructions:

- who is in which group
- who is in charge of each group
- where each group will be working
- who is in overall charge
- how many people's responses are needed by each group
- rendezvous time(s) and place
- location of toilets
- road safety procedures
- behaviour towards others
- teamwork

Each team leader carries spare questionnaire sheets and pencils.

At the end of the fieldwork the teacher in charge ensures that everyone has put their names on their questionnaire sheets and collects them in for safe keeping

Fieldwork trip 2: questionnaire survey: resources

Clipboards

Clipboard bags

Pencils (carry spares)

Questionnaire sheets (carry spares)

First-aid kit - each adult to carry one

Mobile phone - each adult to carry one

Contact detail sheet for each adult

Medical information about their group for each adult

Lesson 3: collating the results

The pupils are split up into their working groups and their questionnaire sheets returned. They are now asked to total up the tally scores for each question and enter their results into a simple spreadsheet or database.

The results can then be presented graphically:

Pie charts can be used for

- proportions of people willing/unwilling to help
- if living locally, proportions aware/unaware of plans
- proportions interested/uninterested
- proportions preferring water leisure, public park, nature reserve, or no action

A bar chart could be used for numbers of people living at different distances from the site (more able pupils might consider whether distance from the site might affect people's awareness preferences, although this is probably too complex an issue for most children at Key Stage 2).

The teacher can now discuss the results of the survey with the pupils and prepare them for the final lesson in the unit where they will prepare a report which will be given to the local council for consideration. They are asked to think about the form the report might take. A newspaper or newsletter produced using ICT skills is a possibility.

Lesson 4: producing a report

The pupils now have the opportunity to bring together their first-hand investigations and secondary research in the form of a newsletter or newspaper incorporating:

- the proposals for the site
- their work on the site and photographs of it
- the results of their questionnaire survey
- secondary research on existing facilities/nature reserves
- secondary research on the problems of bird strikes near airports
- recommendations to the local council based on the above

Lesson 4: resources

ICT facilities including page layout and photo manipulation software

Lesson 1

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- if a RIGS or SSSI would any of the restoration options conflict with the designation(s)
- what facilities for water sport and recreation are planned?
- what facilities would the park provide?
- what kind of wildlife will benefit from the nature reserve?
- how will the schemes be funded?
- what would happen if nothing is done?

Pupils look at a map of the local area and relate the site to the school and their homes. They look at both options, using maps and websites (local council, local wildlife trust):

- are there already local facilities for water-related recreation? If so,
 - how far away?
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- is there anything else in the area which might influence the council's decision?

Round off the lesson by summarising, with input from the pupils, what they have already discovered and what else they may be able to discover from first-hand investigation:

- what is the site like? (size, geology, water depth - simple description!, bank features e.g cliffs, beaches)
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Finally remind pupils that there will be a field trip to the sand or gravel pit and sets the ground rules: what to wear, things to bring (notebook & pencil, packed lunch etc.). Pupils are assigned to fieldwork groups.

Lesson 1 resources:

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- **QPA website:**
 - Info about a working gravel extraction pit and how this could be restored when the extraction is completed.
 - Facility to find local gravel pit
 - access virtual quarry site to look at local (if any) or regional working and restored gravel pits and extraction and restoration methods

Lesson 2: evaluation of the visit, preparation for pupils' preparation of presentations on the options for the site

In small groups pupils prepare and present their findings from the fieldwork, for example

- the old pit was overgrown
- people had thrown rubbish over their garden fences
- it was noisy - aircraft were taking off overhead
- it had junk in it

or perhaps

- it was peaceful and clean
- there were fish in it
- there were ducks on the water

If the site is on a flight path then draw pupils' attention to the possible problems of a nature reserve - will birds such as ducks create a bird-strike hazard?

Pupils are reorganised into four groups and prepare presentations (posters, ICT, role playing) on each option for restoration:

- status quo (do nothing) - this may be an important option if the site is designated as a RIGS or an SSSI
- develop for water recreation (sailing, rowing, angling) perhaps with an outdoor activity centre
- develop (perhaps partly fill in) as a park - footpaths, cycle paths, picnic areas, tree planting etc., perhaps an environmental education centre
- develop as a nature reserve perhaps with an environmental education centre

Give pupils guidelines for the length and if necessary the structure of each presentation - they will be allowed a practice run before presenting their case.

Lesson 2 resources

ICT - computer network, page layout software, PowerPoint, printer(s), data projector

Flipchart or other poster paper, felt-tip pens

Lesson 3: pupils' own restoration plans

Allow each group of pupils a corner of the classroom and a short time to make final preparations and then each group in turn presents their plan to the rest of the class. Drawing numbered corks from a hat will ensure that pupils know that the order of presentations is random.

Notes down agreed bullet points from each presentation so that finally all four are summarised in a comparable form.

Lesson 3 resources

ICT - computer network, page layout software, PowerPoint, printer(s), data projector

Flipchart or other poster paper, felt-tip pens

Lesson 4: voting on pupils' own restoration plans, discussion on how to produce a report

First of all display the summaries of the presentations.

The class can then vote on each proposal. This can either

- be done very simply by a show of hands for each proposal (can be equated to the current 'first past the post' electoral system) and in the case of a tie for first place the third and fourth placed options can be eliminated and a second vote held
- or if ICT involvement is desirable then a spreadsheet can be constructed (an Excel template is provided as a resource) in which each pupil gives an order of preference:
 - First preference scores 4
 - Second preference scores 3
 - Third preference scores 2
 - Last preference scores 1

again, in the case of a tie the third and fourth preferences can be eliminated and a second round of voting held.

A preferred option will now emerge from the voting process.

Now discuss the results of the voting with the pupils and prepare them for the final lesson in the unit where they will prepare a report which will be given to the local council for consideration.

Ask them to think about the form the report might take. A newspaper or newsletter produced using ICT skills is a possibility

QPA
 KS2
 Unit 8
 -
 appendix 3
 Summary
 sheet
 for
 class
 voting
 -
 option
 2

Pupil number	Scores			
	a water sports and recreation centre	drain the site and create a park	a nature reserve	do nothing
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				

14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
Total scores	0.0E+0 1	0.0E+0 1	0.0E+0 1	0.0E+0 1
No. of pupils preferring option	0.0E+0 1	0.0E+0 1	0.0E+0 1	0.0E+0 1

The scores could be used to make a bar chart, and the preferences to make a pie chart.

Lesson 5: producing a report

The pupils now have the opportunity to bring together their first-hand investigations and secondary research in the form of a newsletter or newspaper incorporating:

- the proposals for the site
- their work on the site and photographs of it
- the results of their questionnaire survey
- secondary research on existing facilities/nature reserves
- secondary research on the problems of bird strikes near airports
- recommendations to the local council based on the above

All help (e.g. from the shopping mall manager(s), those who responded to questions) is acknowledged and the final report can be presented to the local council.

It may be possible as follow-up for the pupils to attend a Council meeting where the options are discussed and decisions made; in this way they are able to see how local government decides on issues.

Lesson 5 resources

Computer network
page layout & photo processing software
Printer(s)

Fieldwork trip: the sand or gravel pit

On arrival

- split the pupils into their groups
- ask them to remind you what they have come to do.

Remind pupils

- which adult is in charge of which group
- set a framework for behaviour and teamwork is set
- give the reasons for these.

Careful supervision of the pupils is essential!

Working in groups, pupils inspect the site, noting down and/or sketching what they see bearing in mind the questions asked at the end of lesson 1. Is there anything else that they think is important?

At the end of the day gather the pupils are gathered together in a safe place and ask each group to give their first impressions of the site.

The ideas and words used may provide useful material for literacy.

Fieldwork trip 1 resources:

Pencils (carry spares)

Clipboards and clipboard bags in case of rain

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Digital camera(s) to record the site