

What's going to happen there?



QCA Geography Unit 20 "Local Traffic - an environmental issue"



This is a focused local investigation to identify and predict what might happen to a redundant structure. This unit closely follows and meets all the objectives of the QCA Geography unit 20 *Local Traffic - an environmental issue*.

In this adapted unit children identify both the location of the redundant structure and who will be affected by the change in land use caused by redevelopment.

They look at a range of potential land uses and take part in a decision making process to decide the most appropriate future use. By considering the implications of demolishing the structure, this unit teaches children the important environmental issue about why we should reduce the amount of waste going into landfill sites. They learn some of the impacts of committing waste materials to landfill and ways it is possible to reuse and recycle valuable redundant resources.

Unit 20 - Local Traffic - an environmental issue

Geography Year 5

What's going to happen there?

Overview Teacher Introduction:

This is a focused investigation for children who have developed field work skills to determine what could, or is going to, happen to a redundant structure in the local community. The structure could be an old factory, derelict housing, disused railway bridge, underused church, vandalised tennis courts, disused farm buildings etc.

This unit closely follows the objectives of the QCA Geography unit 20 *Local Traffic - an environmental issue*. Five full lesson plans are supplied. The important sixth concluding lesson is described in the QCA unit and follows, seamlessly, from the fifth lesson in this unit.

This adapted unit encourages children to:

- Identify the location of the redundant structure;
- Identify the specific features and people who will be affected by a change in land use;
- Look at a range of land uses and suggest a variety of uses for either the structure or the land on which it stands;
- Go through a decision making process to decide the most appropriate redevelopment.

In addition, this unit raises the important environmental issue about how we reduce the amount of waste going into landfill sites. In it children:

- Understand the environmental impacts of committing waste materials to landfill;
- Know that it is possible to reuse and recycle redundant resources.

What is the quarry industry doing about reusing and recycling redundant resources?

The Government's Environment Agency estimate that in 2004 24% of the 434 million tons of waste produced annually is derived from the construction and demolition industry.

The government, as part of its commitment to European Union policies to reduce both waste and pollution, has responded by introducing taxes on:

- a) The amount of waste going into landfill;
- b) The tonnage of aggregates quarried.

Both the quarrying and the construction and demolition industry have reacted by developing new processes to recycle building and construction waste into aggregates.

By reducing the demand for new aggregates, the industry is becoming more sustainable i.e. not using assets up today that our children may need tomorrow. The industries are working hard to support the Government's drive to bring more recycled aggregates into play and, by 2005, were well on the way to beating the target set for 2011. Significantly, Britain has moved ahead of previous leaders Netherlands in the European aggregate recycling league.

As well as preventing building and construction waste going into landfill the Quarry Products Industry recycles other industrial by products that could enter the waste stream. Examples include:

- Ash from coal fired power stations is used in some cement and concrete products i.e. concrete blocks.
- Slag from iron and steel production is used in aggregates.

Why do we need to reduce the amount of waste going into Landfill Sites

As a nation the UK has historically been profligate and wasteful with natural resources. For example, in 2002 years more than 80% of household waste was dumped in landfill sites. This compared badly with some of our European neighbours. E.g. Sweden 23%, Denmark 13% and Switzerland 7% (Source: Green Alliance.) Recently there has been some progress. In 2004 the figure had reduced to 78% (Source: Environment Agency) but there is still scope for considerable improvement.

One explanation for our "throw away culture" is as follows:

The UK has a very diverse geology in a relatively small area. As a nation it has been possible to mine and quarry a wide range of useful minerals. Wherever these minerals have been mined a hole in the ground has been left after the minerals have been extracted. Filling these holes with our waste has been a convenient and relatively easy option in order to reinstate the landscape.

However there are several problems with this strategy.

Two of these problems, *land fill sites are running out*, and, *valuable materials are wasted*, are easily understood by most Year 5 pupils. Teachers working in "eco centres" have also found that some children of this age can cope with a more complex environmental problem. I.e. *that the way landfill sites are designed, to reduce air and water pollution, can accidentally create methane gas, which may contribute to climate change.*

Land fill sites are running out!

It has been calculated that each UK citizen produces more than half a tonne of household waste per year. www.acrr.org/resourcities/waste_resources

Although this weight of waste has not changed much from the 1930's, when most waste was ash from open fires, the volume of waste has more than doubled and is increasing. The large amount of waste that our society produces has filled many of the existing landfill sites. For example, Manchester and the North West of England have less than five years supply of landfill available. www.biffa.co.uk

In other areas, our throw away culture has filled many of the local holes in the ground and waste has had to travel many miles in order to be dumped. As an illustration, Bristol sends its city waste by a nightly train to be discarded in former brick making clay quarries in Bedfordshire.

www.bathnes.gov.uk/BathNES/environment/wasteandrecycling

Some valuable products are wasted.

Many of the materials that are discarded into landfill site are valuable and were obtained at considerable environmental cost. Metals are one example.

Metals are mined from mineral ores. Some of these ores are common and are distributed widely around the planet. (E.g. iron.) Others, such as gold and silver, are much rarer. Some people predict that the known reserves of some of these ores (e.g. Zinc, lead, copper.) may be exhausted within the children's lifetime. Other people are less cautious and believe that there are sufficient reserves to last for the foreseeable future. Which ever is true, all of the common mineral ores will be mined at an environmental cost. Some new reserves that are found are likely to be in less accessible places than current reserves. Places such as Antarctica and the ocean floors may need to be exploited. There is the potential for severe environmental damage.

The current metal mining process already impinges on valuable environments. For example, iron ore is mined in Brazil. There railways and roads, to carry the ore, have cut swathes through vast areas of rain forest. In other areas the legacy of mineral mining is water pollution. In parts of Northern Spain, arsenic, left in bygone mineral workings, has been washed out of them by rainwater. There is severe long term damage to the surrounding environment.

In addition, huge amounts of fossil fuel energy are used to convert mineral ores to a useful end product. The carbon dioxide pollution from production, distribution and manufacture is probably contributing to climate change.

In most cases recycling metals rather than dumping them in landfill makes good economic and environmental sense. Producing aluminium, for example, from the raw mineral bauxite, consumes up to 20 times more energy than recycling existing products (e.g. drinks cans).

Landfill sites have to be designed to cope with polluting materials. This can create another environmental problem.

Some of the objects that we use in our daily lives are potentially toxic. Batteries for example may contain mercury or cadmium. When these batteries are thrown

away into holes in the ground the poisonous metals they contain have the potential to leach into the surrounding geological formations and pollute underground water supplies.

Other discarded items can contain hazardous wastes that can pollute the air around the land fill site. For example products containing asbestos fibres are particularly dangerous and are known to cause cancer in those unfortunate enough to be exposed to them.

There are now strict environmental controls on the use of areas as land fill sites. They have to be lined with a waterproof material to prevent hazardous waste leaching out of the site. Clay is commonly used for this purpose.

Layers of waste are compacted and covered with soil and inert quarry waste to prevent air borne pollution and discourage vermin.

Most of the waste that originates from minerals does not change significantly once it's dumped in the landfill site. In the USA black plastic garbage bags full of waste, dumped decades ago have been unearthed. Much of the waste was in "pristine state" and has hardly deteriorated. The evidence is that long after we've lived our lives and we have decomposed, our waste will remain. The crisp packet and the super market shopping bag, derived from oil, and discarded so frivolously are more enduring than we are!

However, in contrast, the organic waste that is derived from products made from animals, trees and other plants does decompose in landfill sites. This decomposition of this organic material produces a potentially more serious problem.

Methane!

In order to get as much waste as possible into the land fill sites the rubbish is compacted. There is no point in burying air! In addition, the impermeable barrier around the site prevents liquids from draining out. Land fill sites are in fact poorly managed compost heaps! They are a damp, compact, airless mass. If oxygen is not freely available in the decomposition process of organic materials then the biodegrading organisms produce methane gas.

In some landfill sites the methane produced is collected and burned. It is either "flared off" and its heating potential is wasted, or it is used as a fuel to heat buildings, water etc.

In other landfill sites the gas escapes into the atmosphere.

Burning methane gas from land fill sites to generate electricity adds more carbon dioxide to the atmosphere and may contribute to Climate Change. However, if methane gas is not burned it probably causes a bigger problem. Methane is believed to be a much more potent Greenhouse Gas than carbon dioxide. If greater proportions of this gas are added to the Earth's atmosphere then Global Warming is likely to accelerate.

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Unit 20 Local traffic – an environmental issue Geography Year 5



ABOUT THE UNIT

This is a 'long' unit. It deals with changing the land use of a local derelict or redundant structure and the impact it will have on local people and the environment. **The unit has been designed so it can be adapted easily for any local issue.** The issue could be concerned with traffic improvement schemes, eg *speed ramps, one-way streets, cycle lanes, pedestrian crossings, routes for handicapped people* or a quite different issue, eg *a proposal for quarrying, the effect of a hypermarket on existing shops, building a BMX track*. The key questions for any issue are likely to be:

- What is the issue? – identify it clearly from maps, photographs, local knowledge
- Where is the issue? – how far does it extend?
- Why is it an issue? – which groups are in favour of this scheme and which against?
- What are the views of the different groups involved?
- What do the class think about the issue?
- How might the issue develop in the future?

The unit offers links with speaking and listening, citizenship and environmental education.

PLACES

- School locality
- Widening range of scales
- Effect of features on activities
- Changes

SKILLS

- Observe and question
- Collect and record evidence
- Use maps and plans
- Use secondary sources

THEMES

- Settlement: land use, land use issue
- Environment: impact, sustainability

VOCABULARY

In this unit, children are likely to use:

- useful, helpful, valuable, new, modern, brand new, original, smart, neat, tidy, clean, spotless, unpolluted, fresh, dirt-free, redundant, derelict, dilapidated, ruined, neglected, abandoned, deserted, disused, surplus, unneeded, unnecessary, demolition, landfill site, land use, agriculture, forestry, recreation, leisure, transport, residential, community, retail, industry, redevelopment

They may also use:

- words associated with the issue

RESOURCES

- a range of local maps and plans
- contemporary and historical photographs (ground and aerial)
- local newspaper reports
- planning proposals
- local people and professionals, eg *residents, planners, local politicians*

PRIOR LEARNING

It is helpful if the children have:

- studied aspects of their own and other localities, as in Units 6 and 13, for example
- developed map, photograph and fieldwork skills
- been introduced to some patterns and processes relating to the physical and human landscape

most children will:

begin to account for their own views about the environment, recognising that other people may have reasons for thinking differently; identifying how people affect the environment and recognise ways people try to manage it for the better

some children will not have made so much progress and will:

undertake simple tasks relating to maps, diagrams and secondary sources; state a range of views held by people about the issue

some children will have progressed further and will also:

recognise and describe how people can improve or damage the environment; come to a reasoned, personal view about what should happen; begin to understand the democratic process used to make local decisions

FUTURE LEARNING

Children may build on this unit by undertaking a larger-scale issue-based enquiry in year 6. They may also reflect on the progress of redevelopment in their area from time to time in the following year.

LEARNING OBJECTIVES	POSSIBLE TEACHING ACTIVITIES	LEARNING OUTCOMES	POINTS TO NOTE
<p>CHILDREN SHOULD LEARN</p> <p>Numbers in brackets indicate the lesson in which this objective is covered.</p>		<p>CHILDREN</p>	
<p>Lesson 1: Where is the structure? Lesson 2: Who is affected and what do they think?</p>			
<ul style="list-style-type: none"> • about the issues involved in a change in the local environment (2) • to locate features on a map (1) • to relate maps to photographs (1) • to carry out an interview (2) 	<ul style="list-style-type: none"> • Lesson 1 Provide opportunities for the children to identify the location and purpose of a redundant or derelict structure through looking at maps, newspapers and photographs, and (Lesson 2) carrying out local surveys and interviews with key people. If possible, take the children to visit the site of the redundant or derelict structure. 	<ul style="list-style-type: none"> • understand the nature of the issue 	<p>Speaking and listening: prepare children for interviewing by encouraging them to discuss the nature of the task and the amount of formality required. Ask them to consider the effect this has on the language they will use.</p>
<p>Lesson 1 and 2</p>			
<ul style="list-style-type: none"> • to use maps at a variety of scales (1) • to identify key physical and human features (2) • how features influence the location of human activities (2) 	<ul style="list-style-type: none"> • Ask the children to locate the area of the structure using Ordnance Survey maps and relate the development to the neighbours, main roads, local villages and towns and local land forms, <i>eg hills, valleys</i>. 	<ul style="list-style-type: none"> • understand how human and physical features in the area affect structure 	
<p>Lesson 3: What happens if we knock it down?</p> <p>Lesson 4: Can't we reuse it?</p>			

- about proposed changes in the locality(4)
- about a particular issue arising from the way land is used(4)
- To know some of the environmental problems associated with disposing waste in landfill. (3)
- To know that waste building and construction materials can be reused or recycled.(3)
- Discuss with the children how the issue is expressed, *eg complaints to newspapers, local protests, meetings, accidents statistics, people's own experience.*
- To use and understand a "flow diagram" and know that it is a useful way of explaining a process
- summarise and categorise the range of views involved

LEARNING OBJECTIVES CHILDREN SHOULD LEARN	POSSIBLE TEACHING ACTIVITIES	LEARNING OUTCOMES CHILDREN	POINTS TO NOTE
How did the issue arise? (Covered in lesson 1)			
<ul style="list-style-type: none"> to use secondary evidence to compare before and after (1) 	<ul style="list-style-type: none"> Ask the children to investigate how the structure was used and what the area was like before redundancy began. They could use maps, photographs, old newspapers, documents and oral history in their research. 	<ul style="list-style-type: none"> identify environmental changes arising from the redundancy of the structure 	
What are the groups involved in the issue and what are their views? Lesson 5: What do other people think?			
<ul style="list-style-type: none"> how people affect their environment (4 and 5) that different people hold different views about an issue(5) 	<ul style="list-style-type: none"> With the children's help, devise and carry out a questionnaire survey of the main groups involved. 	<ul style="list-style-type: none"> know the views of different people about the issue know who are likely to gain and lose from the issue 	Environmental education: this work links to conflict resolution.
<ul style="list-style-type: none"> how and why people seek to manage and sustain their environment <p>This is the important concluding lesson for the adapted unit. Lesson plans are not provided as adequate information is supplied here.</p>	<ul style="list-style-type: none"> Divide the children into small groups and ask each group to analyse the data collected in the questionnaire survey. Ask them to use the results of their analysis to suggest ways the issue might be resolved. They could use ICT to present their suggestions. Conduct a role play of a public meeting, concluding by asking groups to decide what they think should happen next. 	<ul style="list-style-type: none"> play a role in a simulation of a public meeting suggest ways in which the issue might be resolved express and justify their own views on the issue 	Citizenship: through these activities, children will begin to understand how decisions are made at the local scale.
			SAFETY – All off-site visits must be carried out in accordance with LEA and school guidelines.

Lesson 1: Where is the structure?

Prior Knowledge / Work:

The knowledge that children need to have acquired is identical to the QCA unit. I.e. it is helpful if the children have:

- Studied aspects of their own and other localities;
- Developed map, photograph and fieldwork skills;
- Been introduced to some patterns and processes relating to the physical and human landscape.

In addition it would be helpful if children knew how to use a thesaurus.

Learning Objectives:

- To identify and locate the position of a redundant structure on local maps and plans.
- To understand in basic terms the original purpose of the structure and why it was built.
- To imagine and explore feelings and ideas,

Subject Links:

- English; writing (POS 9a)
- History (POS2a)

Resources:

- Local maps or plans.
- Photographs of the structure in its existing state.
- If possible photographs of the structure when it was being used for its intended purpose
- If possible old maps, plans, newspapers etc. that show the structure and its surrounds when it was in use.
- Copies of a thesaurus.
- A flipchart or white board.

Background Information:

This lesson will depend on the teacher finding adequate information about the original purpose and some of the reasons for the demise of a particular local structure. Local people, newspapers, libraries, historical and special interest societies are the obvious sources for this information.

Activity:

Tell the children that they are going to take part in a project where they can design and perhaps help create a better environment.

Show the children pictures of the redundant structure.
Together identify the site of the structure on local maps or plans.

Discuss the original purpose of the structure listing key words on a flipchart or white board.

Show the children any evidence of the structure's original state and purpose by using old maps, plans, newspapers etc.

Together add words to the list on a flipchart or white board that might have been used to describe the building or structure when it was first built. These may include: *useful, helpful, valuable, new, modern, brand new, original, smart, neat, tidy, clean, spotless, unpolluted, fresh, dirt-free.*

Now, together create a list of words that describe the state of the structure now. You could suggest a few words to help the children with this activity. Words might include: *redundant, derelict, dilapidated, ruined, neglected, abandoned, deserted, disused, surplus, unneeded, unnecessary, tatty, scruffy, shabby, decrepit, worn out, weather beaten, dirty, filthy, grimy, mucky, polluted, stained and soiled.*

(Whilst creating the word bank you might give children the chance to expand the vocabulary list by asking them to look for similar words to a particular suggestion in a thesaurus.)

Now ask the children to think about one of the following. Either the:

- People who designed or built the structure;
- People who used the structure;
- Or, if the children are capable of this empathy, the structure itself.

Using the word list as a visual aid, ask the children to think and write two paragraphs about what they might have felt about the structure:

1. When it was built and first used;
2. Now, when it is derelict or redundant.

In a plenary session, read some of the children's descriptions to the class.

Mount and display some of the children's work alongside pictures and maps of the structure ready for the next lesson.

Lesson 2: Who is affected and what do they think?

Prior Knowledge / Work:

It would be useful if the children had experience of the process of preparing and conducting interviews with people.

Learning Objectives:

- To identify key human and physical features on a map and possibly in the field.
- To identify those who have an interest in the existing structure.
- To understand how those features impact on the derelict or redundant structure.
- To carry out an interview.

Subject Links:

- English: speaking and listening. (POS 2b, 2a, 3a, 3d)
- Citizenship: seeing things from another point of view

Resources:

- Local maps and plans.
- Some photographs of the redundant structure and children's writing from lesson 1.
- Local person or people who are neighbours or are particularly affected by the structure.
- Perhaps a tape recorder or similar and/ or clipboards.

Background Information:

The teacher will need to identify people who are particularly affected by the redundant structure and who are willing to answer children's questions. These people could include the owners, the owner's agents, neighbours, former workers or users, local historians or politicians. Make arrangements so that some or one of these people can meet and discuss the structure with the children either in school or as part of an out of school visit.

Activity:

Remind children of the derelict or redundant structure in lesson 1 using maps, photographs and the children's work. Tell them that they are going to try and find out who is particularly affected by the structure.

Show the children the local maps. Together identify:

- The structure;
- Local relevant human and physical features;

- The people who might have an interest in changing and improving the space occupied by the structure.

Tell the children who you have arranged to meet the children to discuss the structure.

With the children, discuss and list the questions the children could ask the above person/people.

Ensure that they ask questions that:

- Increase knowledge about the use and demise of the structure;
- Suggest alternative uses for the structure or the site in the future.

Either take the children to the site of the structure or, if not possible, stay in school. Interview the above person/people.

Lesson 3: What's going to happen to it? "Knock it down!"

Prior Knowledge / Work:

It would be useful if the children had a basic understanding of:

Some of the recycling processes of materials they use (E.g. paper or glass.);

The way some items are commonly reused. (E.g. clothes in a clothes banks)

Learning Objectives:

- To know some of the environmental problems associated with disposing waste in landfill.
- To know that waste building and construction materials can be reused or recycled.
- To use and understand a "flow diagram" and know that it is a useful way of explaining a process.

Subject Links:

- Mathematics: Processing, representing and interpreting data. (POS Ma4 2a,2c)
- Education for sustainable development.

Resources:

- ICT, the Virtual Quarry and the four visual aids supplied for this lesson downloaded from this website. A picture of the redundant structure needs to be pasted onto each visual aid.
- An enlarged paper copy of Visual Aid 4.
- A copy of Worksheet 1 for each child.

Background Information:

This lesson uses a progressively developing "flow diagram" to explain what happens to materials removed from a demolished structure.

The flow diagram

The flow diagram uses:

- Rectangular "text boxes" to explain the processes in each stage of the operation;
- Rhombus shapes to indicate where decisions in the process are taken.

Reuse or recycle

Some children interchange the terms *reuse* and *recycle*.

Reuse is used to describe particular *objects* that are used again, without substantial change, for either an identical, similar or different purpose to that which was intended. Examples:

- Glass milk bottles are reused many times for their intended purpose;

- Wooden pallets can be reused for transporting "palletted" items or reused as the sides of a compost heap.

Recycle is used to describe *materials* that are processed back into an original state for processing into new, maybe different objects.

An example would be a used children's school exercise book. This could be recycled and then used to make a newspaper.

Recycling the construction and building waste.

There are many ways of recycling building and construction waste. A comprehensive collection of case studies can be viewed on

www.aggregain.org.uk/demolition/demolition_new_build_best_practice/index.html

Many of the different ways to recycle and reuse building and construction waste is a significant part of the companion Geography unit *The Sustainable Olympics* on this website.

One method of recycling this discarded material begins by screening the construction waste in a working quarry. The waste passes on a conveyor in front of a team of workers who manually remove wood, plastic and metals to be reused, recycled or, as a last resort, committed to landfill.

The remaining waste of brick, stone, concrete etc. is then crushed and sorted in the same way as primary (new) quarried materials. It can be incorporated in blends with new materials.

The larger sized particles are now extensively used in asphalt, road and building foundations, concrete etc.

Children will be interested to hear that the smaller particles can be blended into soils which are often used in reinstatement projects in urban or post industrial settings. These "Manufactured soils" conserve agricultural soils which may have previously been removed for these purposes. The soils have been used in such high profile places as the *Millennium Dome* in London and the *Eden Project* in Cornwall. The latter, built in a former china clay quarry, imported soil made from different blends of recycled building and construction waste, clay, sand, bark chippings and organic matter. www.hanson.co.uk/Products-Services/Aggregates/Recycled

This recycling process described above is also carried out in locations other than quarries. Mobile recycling facilities are often taken to demolition sites. It makes better environmental and economic sense to recycle building and construction waste into aggregates and use it again on site.

Some children will have seen mobile recycling facilities operating on local roads. When the road surface is re-laid the existing surface is planed off and removed. The road becomes a temporary horizontal quarry as the "planings" are recoated with bitumen and incorporated into the new road surface.

Reusing Building and Construction waste

Only about 6% of the annual building and construction waste is reused whereas nearly 50% is recycled. In the hierarchy of waste minimisation strategies *reuse* is usually preferable to *recycling* because there is often less energy expended in producing a useful end product.

Reusing building and construction waste has been hampered by two linked problems.

1. Most buildings are not designed to include end of life dismantling. Although it may be relatively easy to dismantle and reuse timber, plastic and some kinds of boarding, other materials such as plaster and tiles are much more difficult to remove and reuse. Materials, such as plaster, can actually contaminate the brick or block surface to which they adhere and make even recycling difficult.
2. Demolition contractors assert that it can take between two and ten times as long to deconstruct a structure rather than demolish it. In addition, there may not be a market for some of the items that have taken time to remove. So, as long as labour costs remain higher than landfill disposal charges demolition will be the preferred option. www.greenspec.co.uk

However developments to alleviate some of these problems are taking place. For example,

Laser technology has been developed to more speedily separate bricks from cement mortar. In addition, both the costs of landfill and energy are likely to increase, making the reuse of building and construction materials more economically viable. www.umist.ac.uk/news/articles

Activity:

Tell the children that they are going to think about some of the things that could happen to the redundant structure.

Show the children Visual Aid 1.

Explain that:

- Decisions will need to be taken about what to do with the structure;
- It can be useful to show these decisions on a diagram as shown in the visual aid;
- In this diagram decisions will be shown in rhombus shapes;
- The first decision will be whether the structure is knocked down or reused.

Tell the children that this lesson will just look at what might happen if the building is knocked down. They will think about ways to reuse the structure or the space in another lesson.

Show the children Visual Aid 2.

Explain/discuss that:

- If the structure is knocked down a decision will need to be taken about what to do with the materials that are left after demolition;

- If the materials are to be "thrown away" they will probably go to a landfill site.

Discuss the reasons why:

- Landfill has been the preferred destination for so much of our waste;
- There is a need to reduce the amount of waste going into landfill.

Elicit the information that many landfill sites are disused quarries and that much of the waste from the demolished structure would be returning back to the ground from which it was quarried.

Show the children Visual Aid 3.

Explain/discuss that:

- If demolition materials are not thrown away in landfill there is another decision to be taken;
- Some parts of the structure(Bricks, wood, stone etc.) can be cleaned up and reused;
- Some materials that are not reused can be recycled. A small amount has to go into landfill;
- There are environmental benefits and implications for employment if objects are reused or materials recycled.

To reinforce the difference between the terms *reuse* and *recycle* discuss in terms of children's daily experience:

- Other objects that are reused (Clothes, milk bottles, etc.) or could be reused if people chose to do so (Plastic shopping bags, school worksheets etc.).
- Materials that are recycled (Glass, aluminium, steel, some plastics. etc.).

Show the children the enlarged paper copy of Visual Aid 4.

Explain/discuss that if demolition materials are to be recycled they can be:

- Processed on site by mobile recycling machinery;
- Taken to a place such as a quarry where recycling machinery has been installed.

Show the children the *Virtual Quarry*. The complete sequence will reinforce the information that many construction materials are originally obtained from quarries.

Focus on the sequence in the *Virtual Quarry* that shows:

- Demolition materials entering the quarry;
- Mixed materials being screened and sorted to eliminate materials to be recycled elsewhere or discarded into landfill;
- Bricks, stone, concrete and glass being separated and crushed;
- The crushed material being sieved and sorted by size;
- The recycled material being sold or incorporated with virgin (new) rock material for use in new products.

Now use Visual Aid 4 to revise this sequence.

Explain how the recycled materials are used in soil, concrete, fill, foundations, etc.

Give each child a copy of worksheet 1.

Show them how they can use the Visual Aid to help them answer each of the three questions.

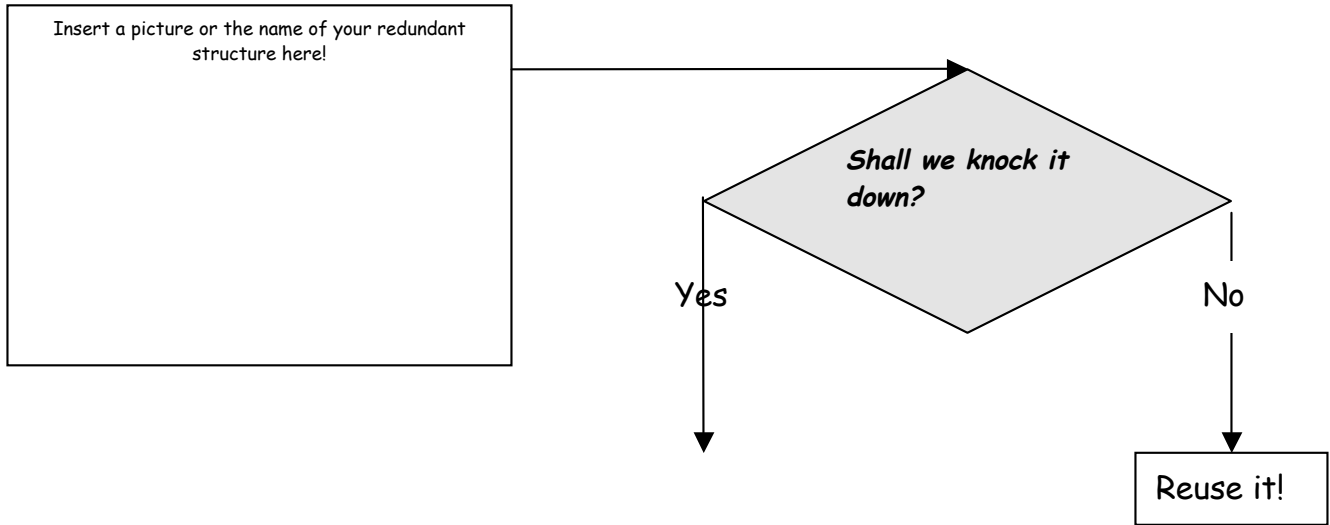
Discuss a full and comprehensive solution to the first question as an example.

Let the children complete the worksheet.

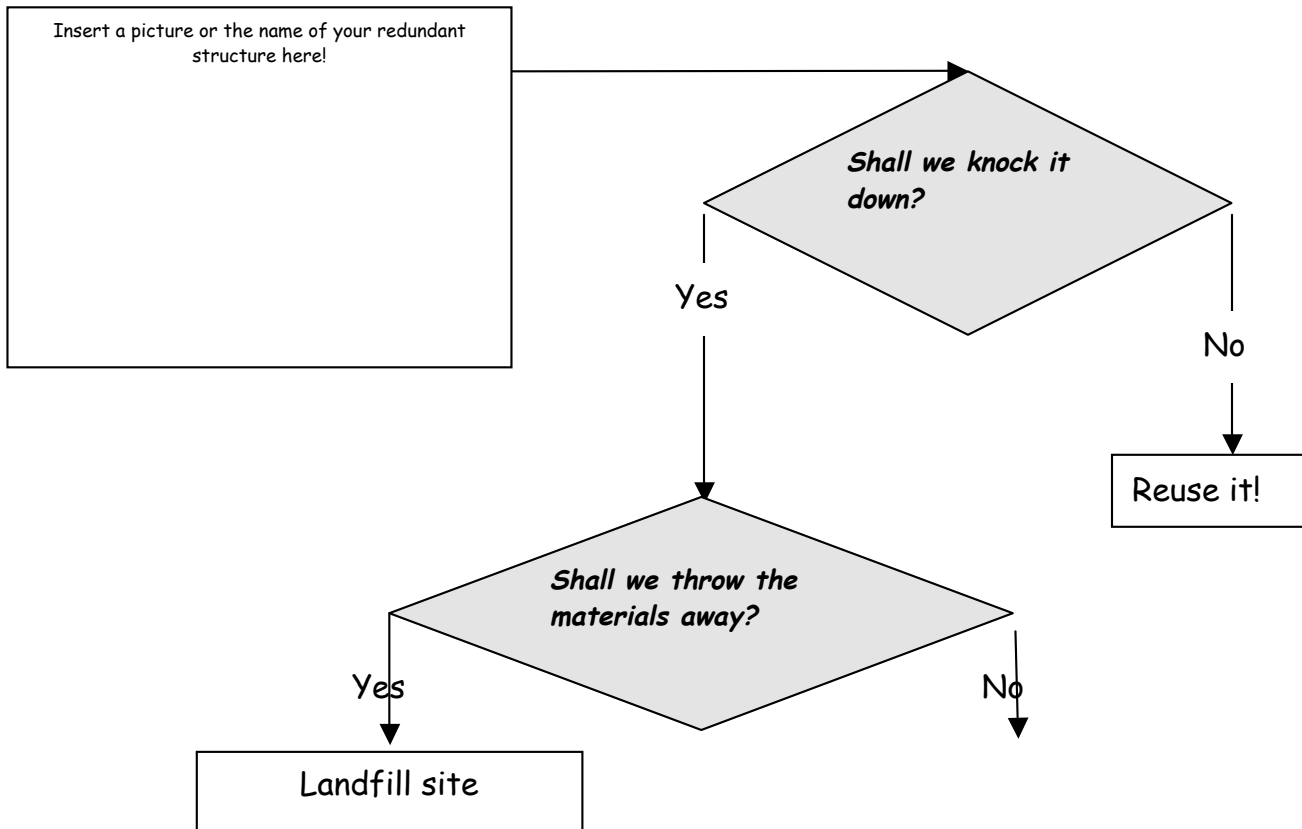
In the plenary session role play the parts of the landfill site owner and the two buyers. Ask the children the questions on the worksheet.

Get different children to read their answers, helping children to verbally clarify any written answers that don't seem clear.

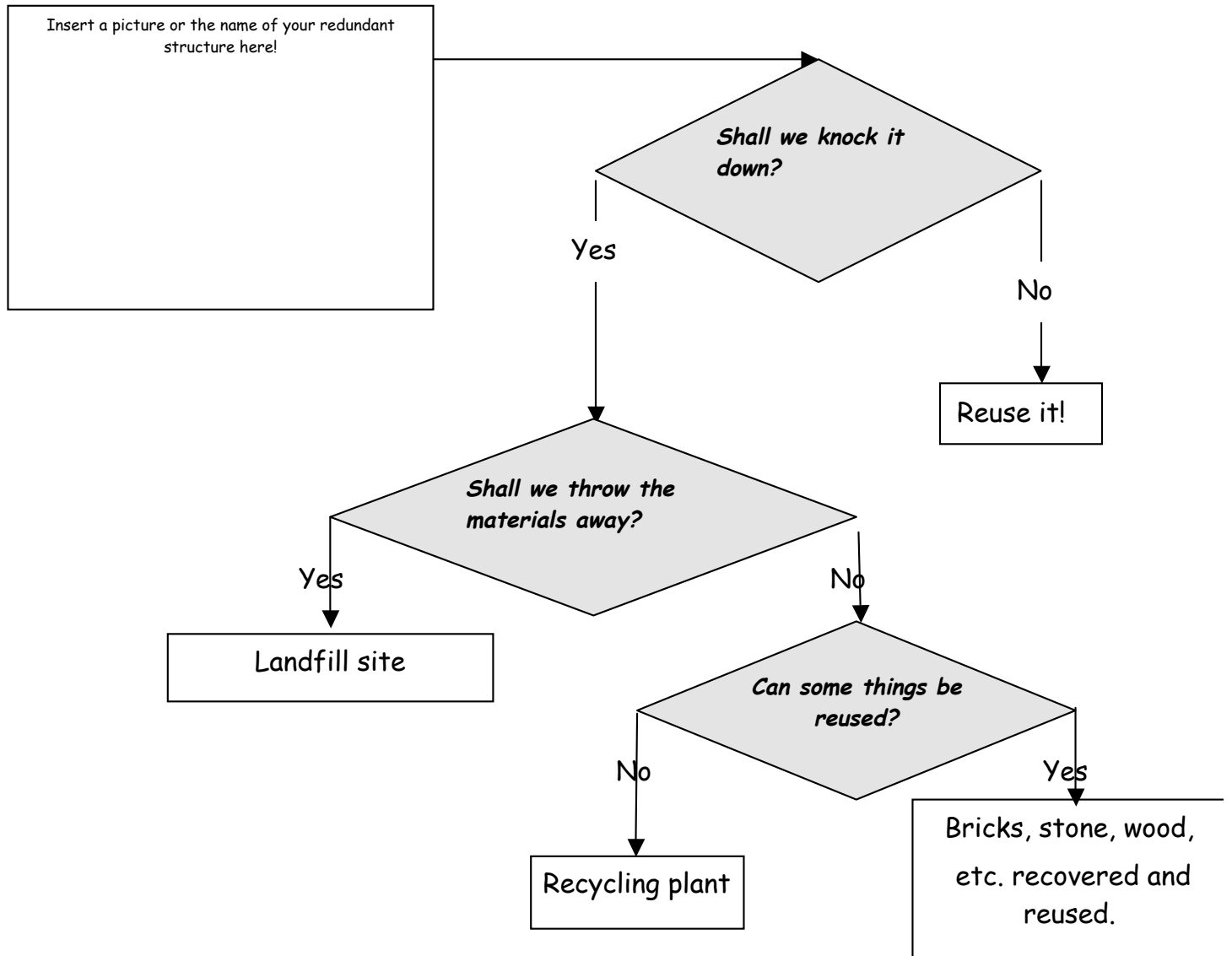
What happens if we knock it down?



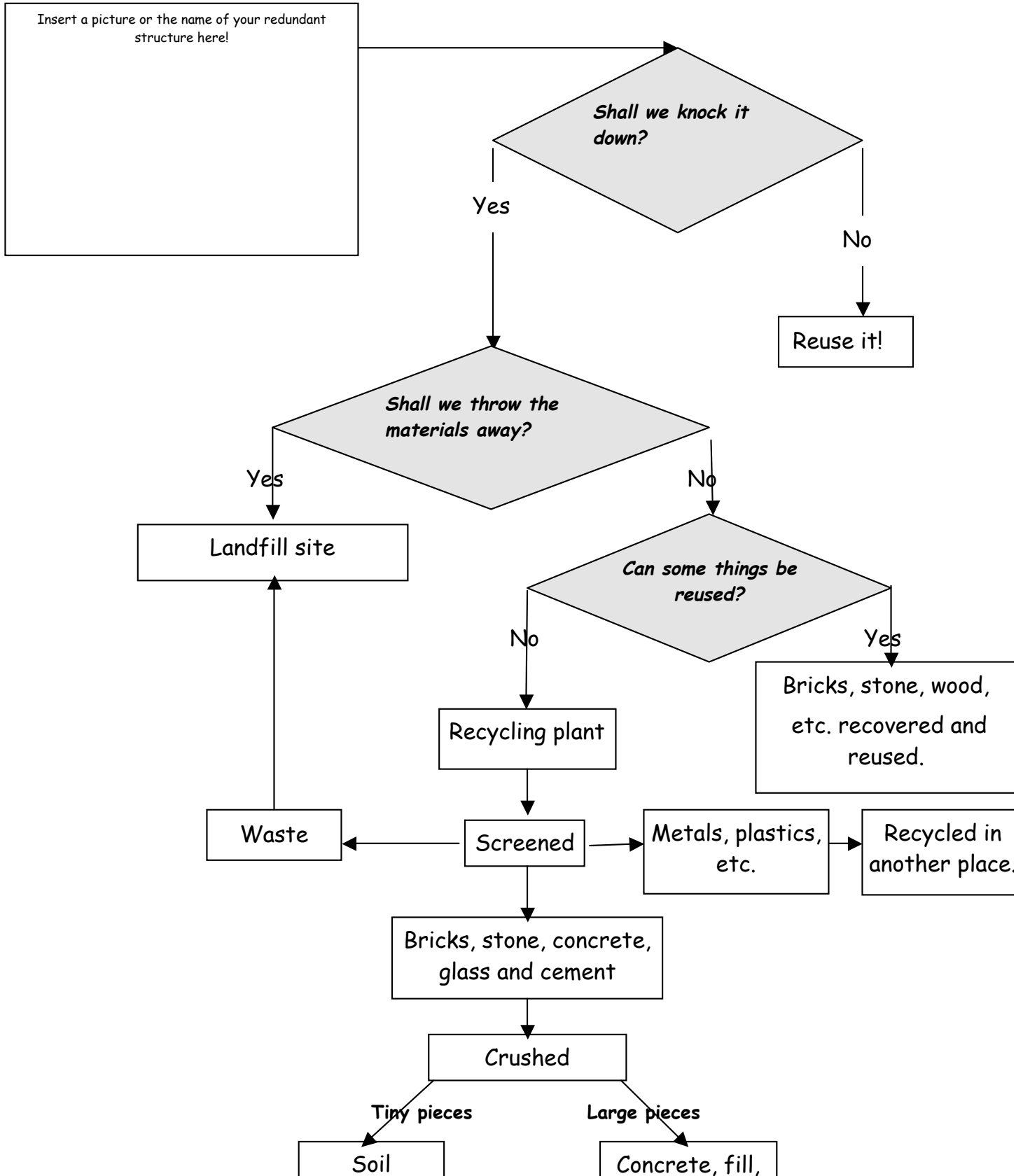
What happens if we knock it down?



What happens if we knock it down?



What happens if we knock it down?



Worksheet 1

Use the information on "What happens if we knock it down?"

Write how you would answer these questions.

1. You are driving a lorry for a demolition company to a landfill site.

The Landfill site owner asks "What's in your lorry and why are you bringing it here?"

“

2. You are selling recycled bricks.

A buyer asks "How did you get your bricks and where did they come from?"

“

2. You are selling soil that includes recycled materials.

A buyer asks "Where does that soil come from?"

“

Lesson 4: How can we reuse it?

Prior Knowledge / Work:

This follows the previous lesson and uses the same flow diagram methodology to begin the lesson.

Learning Objectives:

- To understand the range of possible land uses for the redundant structure or the land on which it stands.
- To understand that different people have both different preferences and points of view.

Subject Links:

- Mathematics: Processing, representing and interpreting data. (POS Ma4 2a,2c)
- PSHE and Citizenship. Discuss and debating issues, looking at alternatives and making choices.
- English: Listening plus group interaction and discussion.

Resources:

- ICT and Lesson 4 Visual Aid downloaded from this website.
- A copy of worksheet 2 for each group of children.
- A flipchart or whiteboard.

Background Information:

This lesson guides children into selecting possible uses for either the redundant structure or the land on which it stands.

The National Land Use Data Base (www.nlud.org.uk) encourages organisations that are discussing the way in which land is used to employ a consistent vocabulary. The range of terms used in this lesson has been taken from that data base but has been reduced and simplified to make it easier for Year 5 children to handle.

Recreation and Leisure

This includes: outdoor amenity spaces (parks), monuments, amusement and show places, libraries, museums and galleries, sports grounds (ball game pitches, athletic tracks, target sports, vehicle race tracks, animal competing places, swimming and bathing, water sports), allotments.

Residential Use

This includes: homes, hotels, community homes and non medical community homes.

Community Services

This includes: medical and health services, churches, mosques, synagogues, school, colleges and other education establishments, community centres, village and community halls, police and fire stations and public conveniences.

Retail and Industry

This includes: shops, supermarkets, banks and building societies, restaurants and cafes, public houses and night clubs, factories, offices and warehouses.

Agriculture and Forestry

This includes: farms, glasshouses, nurseries, market gardens, managed and unmanaged woodland.

Transport and other useful things

This includes: roads, tracks, bus and train stations, car parks, lorry parks, power stations, water supply and treatment, waste disposal and recycling sites, postal sorting offices, telecommunication centres (TV, radio, and phone), cemeteries and crematory.

Activity:

Show the children Lesson 4 Visual Aid.

Discuss/ explain the outcomes of the decision *Shall we knock it down?*

If the answer is:

- *yes* then the land on which the structure stands can be reused;
- *no* then the structure itself can be reused.

Now direct the children's attention to the list of categories of land use on the visual aid.

Explain that each of these terms gives a clue to the way the redundant structure or the land on which it stands could be reused.

Then, discussing each category in turn, elicit:

- The meaning of the term;
- Some of the range of land uses that could be included in each category.

List each category and the children's suggestions on a flipchart or whiteboard.

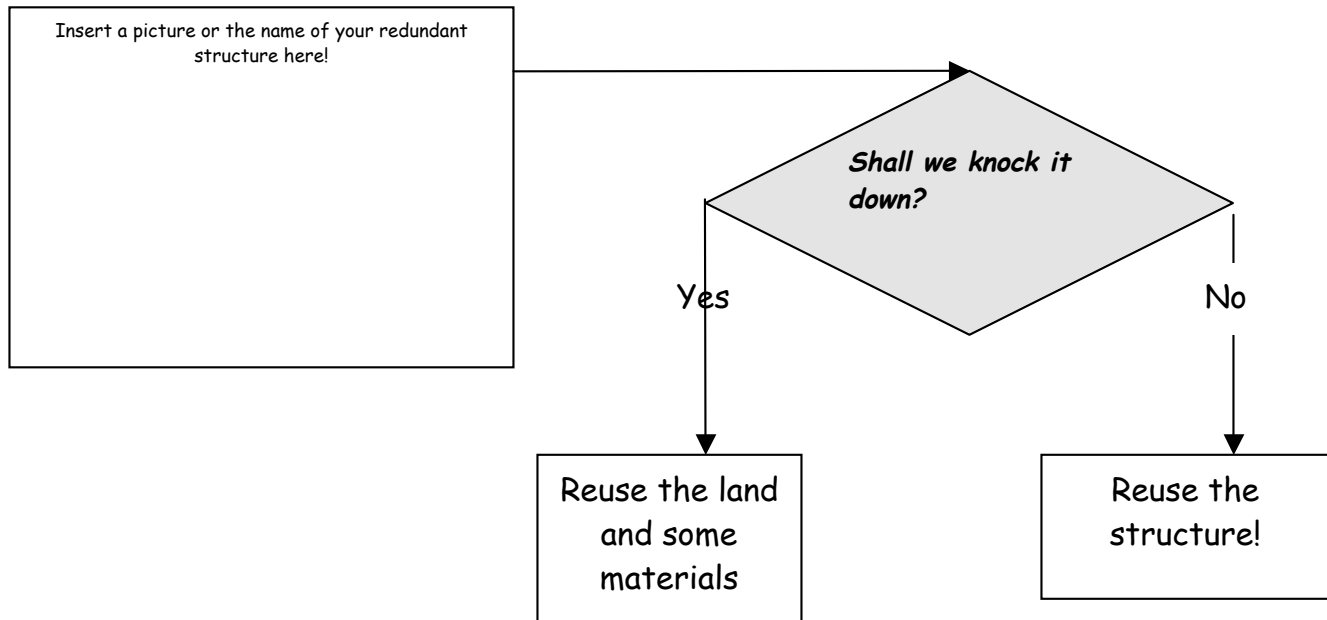
Let the children work small groups. Give each group a copy of worksheet 2.

Tell the children to:

- Look at the list of land use categories and the range of possible uses on the flipchart or whiteboard;
- Brainstorm, and list the ways to reuse the land or the structure. Encourage the children to extend the list onto the back of the worksheet.
- Finally to choose from their list what they think is the best way to a) reuse the land or b) reuse the structure. Ask them to explain the reasons for their choice on the worksheet.

In the plenary list each group's "best" proposals on the flipchart or whiteboard and discuss the reasons for their choice.

How can we reuse it?



We can use the land or structure for:

Recreation and Leisure;

Residential use;

Community Services;

Retail and Industry;

Agriculture and Forestry;

Transport and other useful things.

Worksheet 2

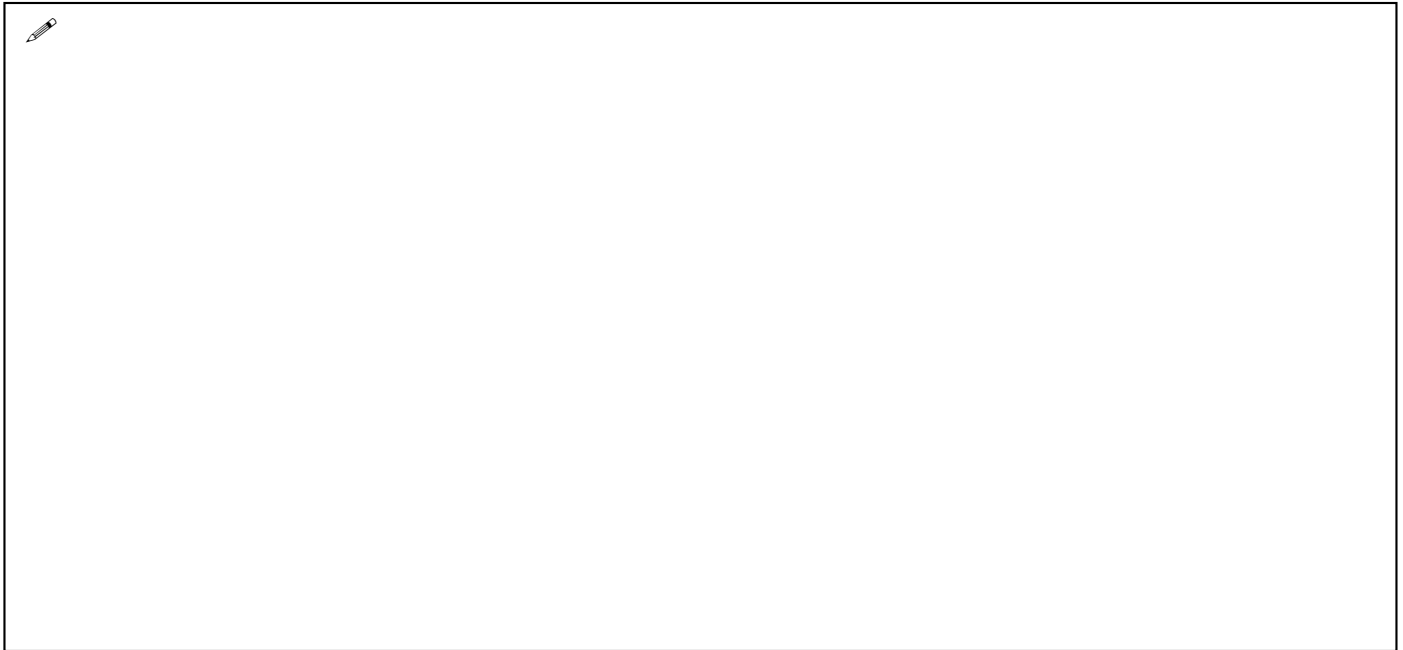
How can we reuse it?

If we knock this down we can reuse the land.
If we leave it standing we will have to find another way to use it.

1. Brainstorm!

List down all the ways you could either reuse the land or the structure.

Insert picture of the structure here.



2. From your list choose the best way to a) Reuse the land b) Reuse the structure.
Explain why you think these are the best ideas.

The best way to	The reasons are
a) Reuse the land is	
b) Reuse the structure is	

Lesson 5: What do other people think?

Prior Knowledge / Work:

This is the final lesson in the series.

Learning Objectives:

- To take part in a democratic process.
- To identify people who are likely to gain and lose from a potential redevelopment.
- To develop a questionnaire to find out other people opinions about a possible redevelopment.

Subject Links:

- PSHE and Citizenship. Discuss and debating issues, looking at alternatives and making choices.
- English: Listening plus group interaction and discussion.

Resources:

- Flipchart or whiteboard of the children's best proposals for the reuse of the redundant structure or the land on which it stands. (Lesson 4)

Background Information:

This lesson and the subsequent lesson alluded to in the activity below, closely follows the methodology in the original QCA unit.

Prior to the lesson you will need to:

- Identify and prepare cogent and sensitive explanations for any of the children's proposals which seem unrealistic or impracticable;
- Identify those who might be interested in the children's ideas for proposed redevelopment of a redundant structure (E.g. residents, planners, local politicians.);
- Plan how a children's questionnaire on the subject could be disseminated. E.g. it could be distributed on a school website, promoted to parents at a Parents Meeting, through the PTA or maybe through a local newspaper etc.

Activity:

Show the children the flipchart or whiteboard of the children's best proposals for the reuse of the redundant structure or the land on which it stands. (Lesson 4)

Introduce and explain the term *redevelopment*.

If there is a large list of proposals, in a sensitive and democratic way, discuss whether:

- It would be sensible to reduce the range of suggestions of proposed redevelopment;
- Any suggestions for proposed redevelopment on reflection seem unrealistic or impracticable and can be eliminated from the list.

With the remaining list of suggestions:

- Review the reasons in favour of the proposed redevelopment;
- Identify those groups of people who are likely to gain and likely to lose from each proposal.

Discuss how the children can find out other people's feelings about any proposed redevelopment.

With the children's help, devise a questionnaire survey of the main groups involved.

Discuss how the survey is to be carried out.

In a subsequent lesson:

- Divide the children into small groups and ask each group to analyse the data collected in the questionnaire survey. Ask them to use the results of their analysis to suggest ways the issue might be resolved. They could use ICT to present their suggestions.
- Conduct a role play of a public meeting, concluding by asking groups to decide what they think should happen next.