The Sustainable Olympics

QCA Geography Unit 16 "What's in the news?"

This unit is based upon the QCA Geography continuous unit 16 (*What's in the news?)* and is designed to be used throughout Key Stage 2.
It uses news of the design and construction of the venues for the 2012 London Olympic Games, "the most sustainable games ever," to promote:

- Geographical learning at a widening range of scales;
- Education for sustainable development.

The unit can be used flexibly:

- When relevant developments occur.
- Within and outside designated geography curriculum time.

This unit consists of sets of activities clustered around three general themes.

1. Local and UK Theme: Where will the London 2012 Olympic Games take place?
2. Sustainability: How will the design, construction and use of the games venues help and conserve the environment?
3. The International Connection. How will competitors and spectators travel to the games in an environmentally friendly manner?

Unit 16 – What's in the news?

Geography Years 3 - 6

The investigators – the Sustainable Olympics

Description/overview of the unit

This unit is based upon the QCA Geography continuous unit 16 (*What's in the news?)* and is designed to be used throughout Key Stage 2. It uses news of the exciting development of the 2012 London Olympic Games sites to motivate and interest pupils whilst particularly developing:

- Geographical skills and ideas at a widening range of scales;
- Education for sustainable development.

The unit can be used flexibly when relevant news events occur. The teaching ideas can be used both within and outside designated geography curriculum time or can be incorporated in lessons or projects promoting Literacy, Numeracy, PSHE and citizenship, etc. This unit consists of sets of activities clustered around three general themes.

1. Local and UK: Where will the London 2012 Olympic Games take place?
2. Sustainable Development.
3. The International Connection

The activities can be adapted to meet the needs of different ages and abilities within Key Stage 2. Activities or combinations of activities can be used in individual lessons.

Teacher Introduction:

Local and UK theme

On 5th July 2005 London was designated the host city for the 2012 Olympic Games. London was in competition with Paris, Madrid, New York and Moscow to host this prestigious event.

The city's successful bid was partly built *"on the ecological and sustainable ideals developed in Sydney and Athens.*

London's bid to host the 2012 Olympic Games was a bid for the most sustainable Games ever."

… "London proposes:

- *a low carbon Games – to reduce the demand for energy and meet it from zero/low carbon and renewable sources; and to showcase how the Olympic Games are adapting to a world increasingly affected by climate change*
- *a low waste Games - to avoid landfill by reducing waste at source, then reusing, recycling and recovering all remaining waste*
- *a biodiverse Games - conserving natural habitats and wildlife, improving the quality of urban green space and bringing nature closer to people*
- *a showcase for sustainable transport –reducing the need for travel and providing sustainable alternatives to the private car*
- *a sustainable legacy from the Games – promoting health and wellbeing through an integrated package of sporting, environmental and cultural initiatives*

The London 2012 vision for the Olympic Games 2012 embodies the concept of a "One Planet Olympics", which complements the Olympic ideal of "sport and the harmonious development of mankind" and the notion of fair play in sport."

www.defra.gov.uk/

"To achieve this environmental excellence, the London bid proposes to:

• Regenerate east London communities and their environment;

• Embed sustainability in all planning and implementation;

• Demonstrate sustainable solutions for global problems."

www.london2012.org

The Role of the Quarry Products Association

The sustainable development of all the Olympic sites will depend for a large part on members of the Quarry Product Association. They will provide construction materials such as sand, aggregate, and cement in ways that are compatible with the environmental objectives of the London bid.

For example:

- Local aggregates will be prepared and recycled from existing materials on site where possible;
- Many imported materials will be transported in the most efficient, low carbon method possible. E.g. water or rail.

The Geography of the 2012 London Olympics

"Seventeen of the 26 Olympic sports would be staged within 15 minutes of the Olympic Village, either in new facilities in the Olympic Park or other existing venues such as the Dome. …

The Park would be easily accessible to everyone. It would be just six miles (10km) from Trafalgar Square. The journey time from King's Cross/St Pancras to the international travel hub at Stratford would be just seven minutes. And the proximity of central London would mean the city's historic landmarks and existing world-class facilities would also play a full role in 2012. Our world-famous parks would showcase several Olympic events.

Historic locations such as Buckingham Palace and Trafalgar Square would provide wonderful backdrops to other sporting action. And the likes of Wimbledon, Wembley and Lord's would complete London's unique line-up."

www.london2012.ctad.net/downloads/London2012_webbrochure.pdf

The remaining sports locations will make parts of the games accessible to other parts of the country. E.g. there will be sailing in Weymouth and football from Cardiff to Newcastle etc.

The main centre for the games: the Olympic Park.

The construction of the Olympic Park presents particular learning opportunities for this unit.

"At its heart would be the new 500-acre Olympic Park, containing the main sporting facilities and set in 1,500 landscaped acres stretching from Hackney Marshes on down to the Thames. It would be one of the largest new urban parks seen in Europe for 200 years, built around a network of reinvigorated rivers and canals.

The centrepiece of Olympic Park would be the Olympic Stadium. Close by would be a world-class aquatic centre featuring a 50m pool, a velodrome and BMX track, a three-arena multi-sports complex, all-weather tennis courts and hockey pitches.

The Olympic Village, located within walking distance, would have space to accommodate up to 17,800 athletes and officials, before being put to its designated post-Games use as housing.

Each of the Games venues has been conceived to meet long-term needs. And all will form part of a rejuvenation which would create thousands of new businesses, jobs and homes in the Lower Lea Valley, and throughout the entire East End of London and beyond." www.london2012.ctad.net/downloads/London2012_webbrochure.pdf

Construction timetable

The successful Olympic bid incorporated a construction timetable. As far as this unit is concerned it means that different aspects of the project are likely to be in

the news at different times and can be used by schools. A summary of the major construction projects is as follows:

2005	Burying power transmission lines that cross the Olympic Park site. Remedial work on contaminated sites begins.
2006	Wembley Stadium completed. Wimbledon improvement scheme begins. Jubilee Tube Line improvement completed
2007	Channel Tunnel link completed. Olympic Village and stadium construction begins. Wimbledon improvement scheme completed.
2008	Aquatics Centre, BMX circuit and Velodrome completed in the Olympic Park. Broxbourne canoe slalom course completed. Heathrow Terminal 5 completed.
2009/10	Construction of main facilities progresses. East London Railway extension completed
2011	Olympic Stadium, Village Hockey Park and other permanent installations completed.
2012	Olympic bus lanes established. July 27 Games start. August 29 Paralympics begin.

Olympic Sports and their locations

There will be twenty six different sports events taking place during the 2012 Olympics. The sports, their location and basic information for this lesson are given below.

Sport	Location	Basic details
Aquatics	A new pool in the Olympic Park.	Space for 5000 spectators to watch swimming, diving, synchronised swimming and water polo. Some water polo matches will take place at the University of East London pool in the London Docklands.
Archery	Lord's Cricket Ground.	Sport to be performed in front of 6500 spectators in *Pavilion End* at the home of world cricket.
Athletics	In the new Olympic Stadium in the Olympic Park.	Capacity for the games 80,000 reducing to 25,000 after the games. The stadium will become the new home of British Athletics replacing Crystal Palace.
Badminton	Greenwich Arena.	A new temporary 6000 seat construction, next to the Dome.

		It will be dismantled and relocated after the games.
Basketball	In temporary arenas in Olympic Park.	Finals to be played in front of 16,500 in the Greenwich Dome.
Boxing	ExCEl centre	An existing Dockland Centre accommodating up to 10,000 spectators.
Canoeing	Flat water at Eton Dorney. Slalom at Broxbourne, Herts.	Temporary facilities at both locations seating 30,000 and 10,000 respectively.
Cycling	New purpose built Velodrome in the Olympic Park.	Seating for 6000 this arena will be surrounded by a "Velopark." This will be used for road track events, plus both competition and recreational BMX tracks.
Equestrianism	Temporary venue in Greenwich Park.	23,000 spectators can be accommodated for this event. The park will return to its original leisure purpose after the event.
Fencing	Temporary arena in the Olympic Park	This arena will be removed after the event.
Football	Final at Wembley. Other matches at Birmingham, Cardiff, Glasgow, Manchester and Newcastle.	Using the existing club facilities accommodation is: Wembley 80,000; Cardiff 74,600; Newcastle 52,000; Birmingham (Aston Villa) 42,000; Manchester (Old Trafford) 75,000; Glasgow (Hampden Park) 55,000.
Gymnastics	The Greenwich Dome.	Seating for 16,500.
Handball	Permanent arena in Olympic Park.	Seating 10,000 this venue will be retained for indoor sports after the games.
Hockey	Permanent hockey centre in Olympic Park.	5,000 seats which will be retained after the event to host club and international matches.
Judo	ExCEl centre	An existing Dockland Centre accommodating up to 10,000 spectators.
Modern Pentathlon	Disciplines in Olympic Park and Greenwich Park	Sharing the facilities for the Aquatic and Equestrian events.
Rowing	Regatta at Eton Dorney..	The facilities will be complete for the 2006 World Championships

Sailing	Competition at Weymouth.	Using the existing National Sailing Centre which will be improved for the event.
Shooting	Woolwich Barracks in London	Temporary facility.
Table Tennis	ExCEl centre	An existing Dockland Centre accommodating up to 10,000 spectators.
Teakwondo	ExCEl centre	An existing Dockland Centre accommodating up to 10,000 spectators.
Tennis	Wimbledon	On the existing facility. Centre Court will have a sliding roof from 2009.
Triathlon	Hyde Park, adjacent roads and the Serpentine	Temporary stands to be erected for 10,000.
Volleyball	Temporary arena in Olympic Park and Horse Guards Parade	Both temporary arenas will seat 12,000
Weightlifting	ExCEl centre	An existing Dockland Centre accommodating up to 10,000 spectators.
Wrestling	ExCEl centre	An existing Dockland Centre accommodating up to 10,000 spectators.

Sustainable Olympics and transport

These activities introduce the term *sustainable* since this is an important objective of the 2012 Games.

For most of Key Stage 2 an appropriate explanation for the term is probably "looking after the environment for the future." These activities teach sustainability in the context of transport.

The organisers of the London Olympics are trying to organise a games which uses "*Sustainable transport–reducing the need for travel and providing sustainable alternatives to the private car.*"

The preferred spectator transport in this context is bus, train, bicycle or walking. At key Stage 2 level the sustainable feature of these modes of transport is that they cause less air pollution and traffic congestion than travel by car.

The potential for both pollution and congestion is enormous. The organisers are planning to have full stadiums at fair prices.

"There will be 8 million tickets on sale for the Olympics and 1.6 million for the Paralympics, a total of 9.6 million." …"4.3 million will be priced at £20 or under, 6.2 million at £30 or less and 7.6 million at £50 or less. Several events such as the

Marathon, road cycling and triathlon will also be free."
www.timesonline.co.uk/article/0,,4662-1683992,00.html

Background Information:

Sustainable Development theme

The planning and development of the venues for the London Olympics provides a good opportunity for primary school pupils to learn about *sustainable development*. The demands of urban conurbations, like London, are undoubtedly having a great impact on the planet and could be compromising the lifestyle of future generations. To summarise the problems and opportunities, the Mayor of London's Sustainability Commission wrote for organisations planning new developments in the city:

"In 2000, a study to estimate London's environmental impact found that over that year an average Londoner consumed 13 MWh of gas and electricity, almost five tonnes of materials, more than 680Kg of food and undertook over 8400 km of travel. The study concluded that the area of land and sea needed to provide all the energy, water, food and other materials that were consumed in London (often referred to as an ecological footprint) amounted to 49 million global hectares, which is about 293 times the actual size of London, or equivalent to the size of Spain. This means that if everyone in the world consumed at the same rate as Londoners, then we would need at least three planets to sustain life.

Such continued consumption rates are clearly unsustainable. Not only are the earth's natural resources depleting rapidly, including those used to produce energy, but as other areas in the world continue to grow and develop, it is also predicted that there will be increased demand on those remaining resources. Additionally such high consumption produces a huge amount of waste. Landfill sites are rapidly filling up, and the incineration of waste releases pollutants and carbon dioxide into the atmosphere. This combined with the carbon dioxide and other pollutants released in London particularly through transport, means that although London's air quality is improving in some respects, it is still unlikely to meet European standards for certain key pollutants, and it still poses a considerable threat to the health of Londoners.

Additionally, these large amounts of carbon dioxide being emitted into the atmosphere contribute to the 'Greenhouse Effect', changing our ecosystem upon which life depends.

The London footprint study estimated that to attain a sustainable lifestyle by 2050, as an intermediate step, the average Londoner needed to reduce their consumption of energy, water, food and other materials by 35 per cent by 2020. This is an achievable goal, and there are many practical ways in which your project can help to meet this target.

For example, to manage your waste better, (planning) proposals can:

• reduce the amount of packaging or waste they produce;

• reuse materials where possible;

• recycle those materials that can no longer be used.

This should also result in cost savings, not only through the reduced amount of materials that you will need to purchase but savings associated with less storage or

lower waste charges. Further benefits can also be produced by using energy from renewable sources, and utilising energy more efficiently.
Managing resources is not only about consumption and production, but also relates to protecting and improving London's diverse green environment, plant and animal life, open spaces and buildings of historic or cultural significance.
As London continues to grow and develop, greater pressure will be exerted on its wildlife habitats and open spaces, an important factor in determining how Londoners feel about their local area, and vital for the maintenance of a good quality of life in the bustling capital. Historic and cultural buildings can create a 'sense of community' within an area, and improve people's happiness with the area they live in." www.lsx.org.uk/

Sustainable Olympic Venues

The design and construction of the Olympic Venues provides the opportunity to study many *sustainability* themes. This unit concentrates on just four of those themes which are appropriate for most Key Stage 2 pupils.
A summary of the sustainable policies and the reasons for those policies are listed in the following table.

Theme	Sustainable policy	Reasons
Transport and Air Quality	To carry resources using energy efficient transport e.g. water and rail.	Reduce pollution, improve air quality, minimise production costs.
Construction resources and Waste minimisation	Using on site recycled materials where possible. Incorporating recycled materials or waste products into new construction materials. The procurement and management of resources that generates minimal waste.	As above, plus reducing the amount of waste going into landfill or incineration.
Water management	Constructions are designed to: • Be water efficient e.g. collecting, storing and cleaning rainwater for toilets; • Reduce rapid run off.	Reducing the demand for water, conserving natural water systems and their environments. Reduce the risk of flooding.
Protecting and enhancing the environment.	Designs incorporate quality green spaces.	Promotes community health, social cohesion and biodiversity.

Transport and air quality

A great deal of quarried material will be brought in to construct elements of each Olympic Venue.
Products will include aggregates (including limestone and granite), asphalt, cement and ready mixed concrete. If this material were to be carried in average twenty tonne loads by road then there will be great potential for pollution and damage to air quality.
One alternative is to use train. For example, limestone aggregates can be brought to London from Torr in Somerset.

"*Through the joint venture between Foster Yeoman and Hanson, Mendip Rail Ltd operates 8 General Motors Class 59 locomotives, over 400 items of rolling stock and transports over 5 million tonnes of limestone per annum from the Mendips. In addition, it also hauls aggregate from South Wales, Leicestershire, Isle of Grain in Kent and Essex. If it were not for the company's rail capability, these movements would require over a quarter of a million lorry trips per year.*
Through dedicated train logistics Foster Yeoman has built up a highly sophisticated and far-reaching rail terminal network linking Torr Works to its key markets and major civil engineering schemes throughout the United Kingdom. Aggregate is loaded from storage bins at Torr Works into purpose-built rail wagons at a rate of 2,000 tonnes per hour. Once they reach the depot our hopper's under floor discharge facility enables quick and efficient unloading."
www.foster-yeoman.co.uk

Another alternative is to use barges. For example, Bennetts Tugs Ltd. has barges that can carry up to 1700 tonnes of aggregate in a single load on navigable Thames waterways. www.bennetts-tugs.co.uk

Construction Resources and Waste minimisation
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.
The quarrying industry has also reacted by developing processes to:
- Recycle building and construction waste into aggregates. This waste will be either be recycled and used on the development site or will be recycled and incorporated with new virgin quarried material.
- Recycle waste from other sources into useful construction materials.

Both processes reduce the demand for virgin materials so the industry is conserving materials for future use.
Recycling building and construction waste into aggregates.

The redevelopment of the Lea Valley, Wembley Stadium etc. for the London Olympics gives an opportunity to recycle demolition waste from existing redundant features on site.
The construction waste will be screened to remove wood, plastic and metals which can be reused, recycled or, as a last resort, committed to landfill.
The remaining waste of brick, stone, concrete etc. is then crushed and sorted. It can be incorporated in blends with new virgin quarried materials and used in a variety of applications.
The larger sized particles can be used road and building foundations, under paths and track ways, in concrete etc.
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 already been used in a future Olympic site (The Millennium Dome at Greenwich). www.hanson.co.uk
Soils containing recycled aggregates are likely to be used through out the Olympic Park particularly in the creation of green spaces.
Recycling waste from other sources into useful construction materials.
For many years lightweight concrete blocks have been available that contain waste from other industries e.g. the ash and clinker waste from coal fired power stations and iron and steel furnaces.
Other developing processes include:

- Using recycled glass in bricks, concrete, asphalt and insulation;
- Reusing asphalt road planings as either new asphalt or foundation material;
- Recycled plastics in pipes, decking, fencing, boardwalks, flooring and ducting etc.;
- Recycled paper in insulation;
- Recycled tyres in roofing tiles.

A good information source for escalating uses of materials previously destined for landfill or incineration is www.wrap.org.uk .

Water management

Even before the Olympics, London's water supply and usage is finely balanced. To reduce the pressure on the system the companies that supply London are considering installing a desalination plant high up on the tidal reaches of the Thames and building a new storage reservoir in Oxfordshire. Both schemes would have an environmental impact. Desalination consumes large amounts of energy and new reservoirs can destroy farmland and other rural habitats.
To minimise the impact of the Olympics on London's water supply the games organiser's proposals include:

- Incorporating water recycling and rainwater harvesting into structures in the Olympic Park;

- New buildings will have dual water supplies i.e. "Mains" drinking water supply and on site rainwater collection for toilets;
- Recycled grey water from washing clothes, showers etc. will be used for irrigation and vehicle washing;
- Waters containing sewage material will be used to produce methane (Natural Gas) for energy use;
- Neglected waterways will be rejuvenated for amenity and wildlife use.

In addition hard surfaces (roads, pathways, etc.) will be designed to absorb rainwater and prevent rapid runoff and flooding. A useful brochure showing how these surfaces can be constructed using recycled materials is available on online. www.aggregain.org.uk

Protecting and enhancing green spaces

"The Olympic Park will lie at the heart of the Lower Lea Valley, just four miles from Tower Bridge.
Currently one of the capital's most underdeveloped areas, the Lea Valley is an area of outstanding potential which will be transformed by the Olympic Games and Paralympic Games.
The Games legacy will transform this area into one of the largest urban parks created in Europe more than 150 years, stretching 20 miles from the Hertfordshire countryside to the tidal estuary of the River Thames.
A network of footpaths, cycleways and canal towpaths will link the communities on either side of the valley.
Riverside housing, shops, restaurants and cafes will provide new amenities for the local community.
New playing fields will sit alongside the world-class sport facilities that will be adapted for community use.
The natural river system of the valley will be restored, canals would be dredged and waterways widened. Birdwatchers and ecologists will be able to enjoy three hectares of new wetland habitat.
And the park will be planted with native species, including oak, ash, birch, hazel, holly, blackthorn and hawthorn, providing a home for wildlife in the middle of the city.
The rehabilitation of the Lower Lea Valley lies at the heart of the Olympic legacy to east London, restoring an eco-system and revitalising an entire community."
www.london2012.com/en/bid/greengames

Background Information:
The International Connection

The construction and development of major traffic infrastructure in London gives older pupils an opportunity for pupils to start to make links with other parts of the world. As well as the competitors, surveys of previous Olympic Games have shown a vast increase in visitor numbers attracted by the event. For example, 1.6 additional visitors went to Australia for the 2000 Sydney Olympics.
Two major transport infrastructure developments, to cope with such an increase in visitors, have particular significance for the London Olympics.

1. The Channel Tunnel Rail Link
2. London Airport Heathrow Terminal 5

The Channel Tunnel Rail Link

"The Channel Tunnel Rail Link is being built by London & Continental Railways Limited. It will be Britain's first major new railway for over a century - a high-speed line running for 109km (68 miles) between St Pancras station in London and the Channel Tunnel. The project was authorised by Parliament with the passage of the Channel Tunnel Rail Link Act, 1996.
The new high speed line is being built in 2 Sections. Construction of Section 1 began in October 1998 and runs between the Channel Tunnel and Fawkham Junction in north Kent. The first Section opened in September 2003.
Work on Section 2 began in July 2001 and completes the new line into London's St Pancras." www.ctrl.co.uk/introduction
Section 2 of the rail link passes the Olympic Park at Stratford. Passengers will be able to disembark from the train and gain immediate access to the games. The Channel Tunnel Rail Link website (www.ctrl.co.uk) has excellent maps and other educational resources.

Most of Section 1 of the rail link runs through attractive Kent countryside. Environmental considerations have been important in both design and construction. Examples include:

- Considering the route. Most lies alongside existing route ways (railway and motorway.) and has not separated homogeneous communities;
- Protecting landscape and ecology. E.g. replanting indigenous woodland and relocating ponds;
- Minimising construction waste by reuse and recycling. E.g. creating sound barriers and embankments with the waste;
- Controlling noise and dust pollution.

London Airport Heathrow Terminal 5

"Construction of the new terminal started in September 2002; phase one of the project is scheduled to be completed and opened by April 2008 with the second phase opening in 2011. Heathrow is one of the busiest airports in Europe and passenger numbers are expected to grow by 27 million per year as a result of phase one, and then by a further 3 million per year after phase two. The airport currently employs 68,000 personnel and expects to increase this by 16,500 as a result of the expansion."…

''Terminal 5 will have its own modern rail station that will be located in the basement of Concourse A. The station will have six rail platforms: two for the London Underground Piccadilly Line extension; two for the Heathrow Express extension, and a third pair built for potential future rail expansion links to the west.

The T5 expansion will also require additional and improved road infrastructure including internal airside roads and also connecting roads from the current road transport network. A spur road from the M25 is to be constructed in the coming months and the road around the western perimeter of the Heathrow site realigned to provide improved access. In addition to a growth in the transport capacity servicing Heathrow Airport, BAA plans to develop a 4,000-space multi-storey car park"...

The number of people using cars, taxis, buses and coaches in and out of Heathrow will more than double once T5 is operational. This does not take into account extra lorries and other heavy goods vehicles travelling in and out to service the airport on roads that are already three times busier than the national average.

In 1991, approximately 13.8 million people travelled to Heathrow by car and 5.8 million by taxi. By the year 2016, when BAA expects T5 to be fully operational, the figures are estimated to increase to 28.1 million by car and 11.9 million by taxi. Another obvious problem associated with the increase in traffic in the area is a worsening of noise and air pollution."

In the sustainability section of this unit the environmental problem of carbon emissions has <u>not</u> been mentioned. The unit has focused on less abstract environmental problems. However the development of Heathrow Airport does create an opportunity to discuss the linked problem of *carbon emissions* and *climate change.*

The London Olympic Committee understood the contradiction of promoting sustainable games whilst encouraging air travel.

"5 June 2005-- Part of its commitment to a 'Low Carbon Games', London 2012 today announced details of its innovative scheme to offset carbon emissions due to international air travel related to the Games.

Working in partnership with UK Government and existing networks in this field the London Organizing Committee would ensure there is no net increase in global emissions due to participants flying to the Games in 2012.

The air travel by national teams, technical officials and Olympic and Paralympic Family members coming to London, and travel by members of the organising committee during the seven year preparation phase of the Games, is estimated to account for some 30,000 – 35,000 tonnes of carbon dioxide emissions.
These emissions will be offset by supporting renewable energy projects with strong sustainable development benefits in developing countries. This will be achieved through the purchase and retirement of emission reduction credits and by directly investing in new capacity, which will promote access to clean energy in Least Developed Countries.
This will be done by means of installing clean energy systems to replace the use of emission-intensive energy generation, or providing new capacity in remote areas: for example renewable energy for hospitals, schools, sports facilities, sanitation and water supply. Wherever possible, projects will be channelled through existing international programs and networks."
Global Forum for Sports and the Environment, Press Release.

The actual design and construction of Terminal 5 includes many "sustainable" features.
These include:

- A rainwater capture system from the building and aircraft standing area. The water is cleaned and used in the airport toilet and heating systems;
- An expansion of railway infrastructure to facilitate connection with both London and the area to the west of the airport.

The Olympic Rings

"The Olympic Flag (five coloured interlocking rings on a white background) was conceived by Pierre de Coubertin. Almost a century after the flag's creation, the six colours, those of the rings (blue, yellow, black, green and red) and that of the background (white), still maintain their symbolism today.
The Olympic symbol, the five interlocking rings, represents the union of the five continents and the meeting of the athletes of the world at the Olympic Games."
http.worldatlas.com
The colours do not represent particular continents.

Sustainable Olympics

Unit 16 What's in the news? Geography Years 3 - 6

ABOUT THE UNIT

This is a 'continuous' unit, designed to be developed at various points through the key stage. It shows how news items and development information about the London 2012 Olympic Games at a widening range of scales can be used to develop geographical skills and ideas.

The unit can be used flexibly when relevant news events occur. The teaching ideas could be selected and used outside designated geography curriculum time, *eg during assembly, a short activity at the beginning or end of the day, or within a context for literacy and mathematics work.* Alternatively the ideas could be integrated within other units, particularly those concerned with science and geography where appropriate.

The unit will have strong links to any theme linked to sustainable development. So, for example, if the school is developing an anti litter policy this unit will have a strong relevance.

The first three sections are designed to be used in years 3–4, and the others in years 5–6.

The unit offers links to literacy, mathematics, speaking and listening and IT.

PLACES

- Widening range of scales
- Wider context
- School locality
- UK locality
- Overseas locality
- Physical and human features
- Similarities and differences
- Changes

All above covered

SKILLS

- Undertake fieldwork
- Use globes, maps and atlases
- Use secondary sources
- Identify places on maps A, B and C
- Use ICT

All above covered

THEMES

- London Olympics 2012
- Sustainability
- Environment: impact

Other aspects of skills, places and themes may be covered depending on the content of the news item.

VOCABULARY

In this unit, children are likely to use:

- news, current affairs, issues, weather, weather symbols, climate, country, continent, land use, environmental quality, community, physical features, human features, traffic, journeys, distance, direction, grid references, Ordnance Survey maps and symbols

They may also use:

- words associated with the news item
- Sustainable, air pollution, transport, waste minimisation, landfill, incineration, water management, green environment

RESOURCES

- newspapers
- access to the internet and the Virtual Quarry
- local street plans
- UK and world maps
- Ordnance Survey maps
- word processing, desktop publishing or other software appropriate for presentation
- a camera
- quote cards
- radio recordings of news and traffic news
- television recordings of weather forecasts and news bulletins

PRIOR LEARNING

It is helpful if the children have:

- developed geographical skills, including the interpretation of secondary sources
- investigated places, as in Units 1, 6, 10, for example

EXPECTATIONS(Identical)

at the end of this unit

most children will:	recognise selected physical and human processes and appreciate how these can change the character of places and environments studied; identify and explain different views held by people about an environmental change; recognise and describe how people can improve or damage the environment in particular cases; use a range of skills and sources to undertake independent or teacher-planned investigations; identify the points of reference specified on maps A, B and C in the national curriculum
some children will not have made so much progress and will:	respond to questions about 'why things are like that'; begin to recognise that other people may have different views towards environmental change; identify how people affect the environment; use a range of skills and simple sources to undertake investigations planned by the teacher
some children will have progressed further and will also:	collect, synthesise and use information from a wide range of secondary sources to inform their enquiries; develop a suitable investigation for another place in the news; compare reports of the same event in different media

FUTURE LEARNING(Identical)

Children may develop further their geographical skills, in particular the use of secondary sources, and continue to study current affairs in geography during key stage 3 and beyond.

LEARNING OBJECTIVES CHILDREN SHOULD LEARN	POSSIBLE TEACHING ACTIVITIES	LEARNING OUTCOMES CHILDREN	POINTS TO NOTE
Local Theme: Where will the 2012 Olympics take place?			
• to investigate places • to use secondary sources • to use and interpret maps and plans • to develop awareness of recent or proposed changes in a locality	• Bring local or national news items from **newspapers** or the internet (photographs in particular) concerning the 2012 Olympics to the attention of the whole class by displaying them on a London Olympic Map and ask the children to do the same. • Use images to focus on a sport or particular location. To understand why the reported actions have taken place, who will benefit and what the implications for the environment are.	• To understand which sports will be played in the London Olympics and where. • Match headlines to stories or write a news report based on the interpretation of secondary sources and their own geographical ideas (Not described in this unit but a good additional activity)	Literacy: children can practise their non-fiction writing through this unit and consider different styles and forms of written text.
What is happening in our local area? Local Theme: Where will the 2012 Olympics take place?			
• to use ICT to present information • conducting a survey and presenting the results	• Ask the children to write a news report about a local effects of the games. E.g. Where is the nearest venue? How will local people be able to use public transport to get to see the event. Ask them to publish it using word-processing or desktop publishing software. The children could also create posters about the issue to display around the school, to which other children can respond. • Using both keys and scales. Calculating the distance from the school to the nearest Olympic Venue. • Conducting a survey of who is likely to travel and watch the Olympic Games	• produce a news report that demonstrates their developing public transport opportunities in their community	Literacy: this activity can link to an investigation of how newspapers present issues, *eg the use of headlines to influence a reader, different 'voices' in a text.* IT: using word processing and desktop publishing software to present information (Unit 4A).
Sustainability Unit			

- to investigate places
- to use secondary sources
- to develop four sustainability themes

- Use regional, national or international **television** and internet sources of information to understand:
- how and where some materials used in the construction of London Olympic venues are obtained.
- sustainability factors in the use and acquisition of those materials

- recognise sustainable issues
- identify similar sustainable opportunities for improve their own environment

LEARNING OBJECTIVES CHILDREN SHOULD LEARN	POSSIBLE TEACHING ACTIVITIES	LEARNING OUTCOMES CHILDREN	POINTS TO NOTE
What is in the local, national or international news today? Where are these places? What is happening there? Why? Implicit in all units			
• to investigate places • to use secondary sources • to use and interpret maps and plans All the above are covered in each section of this unit	• Bring local, national or international news items from **newspapers** or the internet to the attention of the whole class by displaying them on a 'class newsboard' and ask the children to do the same. • Ask the children to identify the location of the story on a local street plan or UK or world map. • Use images of geographical events, *eg flooding,* as a stimulus for report writing. Ask the children to write a news report about what happened before and after the event, in terms of geographical processes and the impact of the event on human lives. These activities are not referred to explicitly in this unit, but could be used in addition to or instead of some the included activities.	• show a developing understanding of geographical processes relating to news items by writing a news report based on interpretation of secondary sources and their own geographical ideas All the above are covered in each section of this unit	Literacy: there are opportunities to highlight how information is selected and printed in different texts, *eg newspapers, encyclopedias.*
What is happening in our local area? Covered in the first group of activities			
• about recent or proposed changes in a locality • to use fieldwork skills • how people affect the environment • to use ICT to present information		• show how different people in the community may respond to a change by producing a news bulletin	To answer the enquiry question, focus activities on specific questions, *eg What is it like here? How will this change? How will other people in the community respond?* IT: using wordprocessing or desktop publishing software to present information (Unit 4A).

LEARNING OBJECTIVES CHILDREN SHOULD LEARN	POSSIBLE TEACHING ACTIVITIES	LEARNING OUTCOMES CHILDREN	POINTS TO NOTE
What is in the televised news today? What is happening and why? How does weather vary around the world? Why? (The television is an implicit resource throughout this unit)			
• to investigate places • to use secondary sources • issues of London Olympics and sustainability	• Use children's **television** news programmes and other selected mainstream news bulletins as a stimulus for geographical enquiry. About the London Olympics • Use sustainability issues in the London Olympics to promote environmental development at school and in their own community	• use television to support their enquiries • show a developing awareness and understanding sustainability issues	
What is in the radio traffic news today? (The radio is an implicit resource throughout this unit)			
• to investigate places • to use secondary sources • to use and interpret maps and plans • about wider geographical contexts All above covered	• Use daily traffic news on the **radio** as a stimulus for a discussion on congestion and air pollution	• identify and record details to London and other Olympic 2012 venues	To answer the enquiry question, focus activities on specific questions, *eg How will this affect journeys to work or school? What alternative routes could be used?* Mathematics: this work may provide links to work on co-ordinates and understanding and using measures.
What is happening in our local area? How and why is the place changing? How will people in the community respond? (Similar themes covered in The International Connection)			
• about recent or proposed changes in localities i.e. Channel Tunnel Rail Link	• Discuss with the children a local issue that they have heard about on the **radio,** tv ,internet, newspapers or other media. • Divide the children into small groups and ask each group to develop a report about an issue considering different arguments In different roles	• understand that different people in the community may respond in different ways to a particular issue	Speaking and listening: the issue may be explored through role-play.
			SAFETY – All off-site visits must be carried out in accordance with LEA and school guidelines.

Lesson 1: Valuable materials from out of the ground.

Prior Knowledge / Work:
As in the QCA unit. It would help if the children have completed Science Units 1C "Sorting and using materials" and 2D "Grouping and changing materials."
Learning Objectives:

- To review children's knowledge of materials, used in their environment. I.e. which are naturally occurring and which have been processed?
- To identify, observe and compare some rocks and common building materials.
- To know that most of these materials are obtained from "out of the ground."
- To know that these materials are used for a variety of purposes.

Subject Links:

- Geography, QCA Unit 6 *"Investigating our local area."* (POS 3d,3e.)
- English, Speaking and listening. (POS 1a, 2e, 3a, 3c.)

Resources:

- A collection of examples of locally used building materials obtained from a builder's merchant. These should include: Some naturally occurring quarried materials such as slate, limestone, sand and gravel; some "processed" quarried products such as brick, concrete blocks, roof tiles, etc; building plastics (guttering, drainage pipe etc.).
- Cardboard identification tabs and felt tip pen.

Background Information:
There are many schools in situations where it is very difficult to easily see materials that young children would define as "rock." Examples include urban areas and parts of the UK where the underlying geology is clay or sand.
To make the topic of *Rocks and soils* relevant to these children, this initial lesson includes processed quarried materials in the form of bricks, concrete blocks, roof tiles, etc. which are easily visible in most parts of the UK. The lesson also shows how important quarried materials are in our lives.

Rocks used as basic building materials
Originally, locally occurring rocks that naturally or easily broke into mainly cuboid shaped blocks were used for constructing buildings. Examples include limestone,

sandstone, slate and granite. They were all fit for their purpose i.e. they could be easily arranged in the construction and would not crumble or squash.

Limestone, granite, slate and other "naturally occurring materials."

Today each of these rocks is quarried at particular locations throughout the UK. Each rock is processed in some way before use. For example, limestone is often crushed and different sized particles are used in varying products such as cement or chippings. Granite and slate are often cut or trimmed into rectangular solid shapes prior to use.

Bricks are mainly made from clay. The clay is mixed with water, moulded, dried and then fired in a kiln. The colour of the brick depends on the mineral content of the original clay and the way that it is fired.

Clay is a sedimentary rock, made up of tiny mineral particles that were originally part of another quite different rock. The original rock may have been changed by the Earth's heat and movement, by chemical action and erosion. The particles were probably deposited in ancient seas and lakes that occupy the space where the UK is today.

Cement is made from either limestone or chalk. Both are rocks that were originally formed from material derived from coral or shell organisms that accumulated as sediment in ancient seas. To manufacture cement, the rock is quarried, crushed, mixed with small amounts of other minerals (clay or shale) and then heated to about 1450^{o} Celsius. The material is cooled, powdered, sometimes mixed with other additives and then packed in waterproof bags. Builders mix the cement powder with sand and water and use it as an adhesive, called *mortar* to hold bricks and other building materials together.

Concrete is widely used in the building industry. It has been described as "the most versatile building material in the world. It can made into blocks or can be taken to site in a liquid form and set into any moulded shape as a solid. It gets stronger with time as crystals grow and interlock."

Concrete is a mixture of sand, cement, and gravel, crushed rock or recycled building waste to which water is added.

Concrete blocks are made from this mixture plus a combination of other materials which affect the final properties of the product. These other materials can include recycled cinders, ash and slag from other industrial processes e.g. coal fired power stations, iron and steel smelting. To manufacture the blocks the concrete is poured into a mould. The blocks are usually larger than bricks and the building process can consequently often be completed more quickly. The properties of the blocks can include strength, relatively light weight and good heat insulation.

Glass is an obvious material in many buildings. The main ingredient in glass is sand. If heated to 1700° Celsius the silica in sand would fuse to produce a glassy substance. However, by adding "soda ash" (Sodium Carbonate) to the sand, the fusion process takes place at much lower temperatures. Soda ash is made from a chemical process involving both limestone and salt.

Sand and gravel are also sedimentary rocks. These materials are often quarried in the same location then sieved to separate them. Their origins are similar to those of clay. However the particle size of sand and gravel is larger than that of clay. There are large reserves of clay, limestone, chalk and sand and gravel in the UK. These materials are quarried in many locations.

Building plastics. Although children will have already used vast amounts of plastic in their lives, most will be unaware of where it comes from.
Plastic is mainly derived from crude oil which is pumped from beneath the ground. Apart from pictures of a sticky black treacly substance polluting beaches most children (and adults) will have no real experience of crude oil.
Most scientists accept that crude oil is a finite fossil fuel that was formed in warm seas millions of years ago. Plants and small creatures, called plankton, thrived in the sea. When they died their remains sank to the ocean floor where they were covered by silt and sand. Over millions of years the pressure from accumulations of further silt and sand, plus heat from the earth's core, has changed the remains of these organisms into crude oil.
Crude oil is obtained by drilling oil wells and pumping the substance to the surface. Then, by heating, different useful substances are separated from it. Young children will recognise several of these other products, i.e. petrol, diesel, and 'natural gas'. They may be surprised that most plastics, some fabrics, chemicals, paints and polishes are derived from crude oil too. Sand and limestone are both often added to plastics as "fillers."

Activity:
Tell the children that they are going to play a game to help them learn more about some important materials that we use everyday in our lives.
Show, identify and label each of the examples of building materials.
Then, together sort the materials into those which are "natural" (limestone, slate, sand, gravel.) and those which have been "manufactured." Explain that all these materials came "out of the ground" and in simple terms what happened subsequently to each quarried material.
Now play a game with the children. Describe one of the labelled materials selecting an observable characteristic (colour, texture, shape) and a possible purpose. Reinforce the terms "natural" and "manufactured" in the questions.
E.g. Which building material am I describing? This is red and manufactured for building walls? Answer: brick.
Which natural smooth material is used on roofs? Answer: slate.

Visual Aid 1

Olympic Sports

Aquatics	Hockey
Archery	Judo
Athletics	Modern Pentathlon
Badminton	Rowing
Basketball	Sailing
Boxing	Shooting
Canoeing	Table Tennis
Cycling	Taekwondo
Equestrianism	Tennis
Fencing	Triathlon
Football	Volleyball
Gymnastics	Weightlifting
Handball	Wrestling

Visual Aid 2

Olympic Sports Descriptions

Races and competitions in water.
Hitting targets with arrows fired from bows.
Running, jumping and throwing events.
A game with a shuttlecock, racquet and net.
A team game like netball.
People wearing gloves try to hit each other.
Events where people paddle small boats.
Bicycle races.
Competitions that take place on horses.
Competition with swords.
Teams try to kick a ball into another team's goal.
Balance, strength and agility events.
A game like squash played with gloves and a ball.
Teams try to hit a ball into another team's goal.
Tripping and throwing an opponent onto a mat.
Five events involving running, swimming and riding.
Races in boats powered by oars.
Races in boats powered by sails.

Competition with rifles, pistols and shotguns.
A game with bats, ball, net and table.
A martial art involving spinning and kicking.
A game using a court, racquets, ball and net.
Running, swimming and cycling a race.
Team game on a court, using hands, ball and net.
Competitors try to lift the heaviest weights.
Throwing and holding an opponent on the ground

Worksheet 1

1.Use the large map of the British Isles.

Use the map scale and some string.

Calculate the approximate distance between your school and these places where some Olympic Events will take place.

Olympic Location	Sport	Distance from my school
London	Most sports	
Eton	Rowing and canoeing	
Broxbourne	Canoeing	
Weymouth	Sailing	
Cardiff	Football	
Newcastle	Football	
Birmingham	Football	
Manchester	Football	

2. The Olympic Games organisers want spectators to use public transport rather than cars to travel to the different sport's locations. What do you think are their reasons?

3. Suppose you are living close to a Sport's location when the 2012 Games Take place.

List the ways you think the organisers would prefer you to travel to watch a sport.

Worksheet 2

Why we need to walk, cycle or travel to the Olympics by Public Transport.

The organisers of the London Olympics 2012 want to encourage spectators to fill every stadium for every event.

1. Look at the table.

It shows the Olympic Venues and the seating capacity.

Calculate how many car journeys and car parking spaces would be needed if each stadium was full and everyone travelled by car.

Stadium	Seating Capacity	Average of 4 persons per car	Average of 3 persons per car	Average of 2 persons per car	Average of 1.6 persons per car
Aquatics Pool Olympic Park	**5000**				
Olympic Stadium Olympic Park	**80000**				
Greenwich Dome	**16500**				
Velodrome Olympic Park	**6000**				
Cardiff Millennium Stadium	**74600**				

2. List the problems that would be caused if lots of spectators went to each stadium by car.

Activities for the Sustainable Development theme

Prior Knowledge / Work:
Children should have completed at least the first two activities from the first activity group. This will ensure they understand the kind of sport played at each Olympic venue and where that venue is located.
Learning Objectives:

- To use secondary sources to understand the origin of some of the construction materials used in the London Olympic venues.
- To know how the construction materials are obtained in a more sustainable fashion.
- To recognise a sustainable feature or element in an Olympic venue's design and construction and identify opportunities for their own involvement.
- To know some of the ways the London Olympics is being managed sustainably.
- To use ICT and information from other media in Geographical Investigations.

Subject Links:

- Science: activity 6 and 7.
- Literacy- 6,7,8,9 and 10.
- PSHE - 6,7,8,9 and 10.

Resources:

- Information copied from the media on one of the Olympic Games venues being developed. This information can be from newspaper and magazine cuttings, internet articles and recordings from radio and television.
- Large wall mounted map of the British Isles.
- Large wall mounted map of London.
- The *Virtual Quarry* downloaded from this website.

Background
See *Sustainable Development* theme in teacher introduction

Activity 6: A story; From Rock to Gold Medal!
Tell the children that they are going to find out how lumps of quarried material can help someone win a gold medal.
Show the children some information copied from the media on one developing Olympic Games venue. Identify on a U.K. or London map the location of the venue.
Discuss:

- Why the venue is being built?

- Which games will be played at the venue;
- Which raw aggregate materials are being used in the construction?
- Any of the four sustainability themes (see above) that is apparent in the construction.

Show the children the Virtual Quarry. Together identify the quarry sequence and list the main elements (in *italics* below) on a flipchart or whiteboard. The sequence is:

1. *Drilling.* Holes are drilled in area of rock face. The holes are filled with explosives.
2. *Explosion.* Following a sequence of warning sirens the explosive is detonated.
3. *Excavation*. When a siren indicates that the detonation is safely complete a huge mechanical excavator lifts the pieces of broken rock into a dumper truck.
4. *Transportation*. The huge dumper truck carries a massive weight of rock and tips it into the crushing machinery.
5. *Demolition* materials enter the quarry. The materials are screened and sorted and bricks, stone, concrete, cement and glass are separated and crushed;
6. *Sieving.* The crushed materials are sieved into different sizes and taken to a store.
7. *Transportation*. The quarry products are transported away from the quarry by rail.

Now together complete the sequence on the flipchart or whiteboard using the media information. E.g. The Olympic Venue is constructed, games are played in it and victors are awarded their medals.
Now ask the children to complete a written account explaining how lumps of quarried rock eventually helped victors win their Olympic Medal.

Activity 7: A cartoon sequence: From Rock to Gold Medal!
Using the same lesson format as in activity 6 above, but, perhaps, with a different Olympic location discuss the purpose, sustainable methods and construction materials used.
Use the Virtual Quarry to identify and record on a flipchart or whiteboard the main elements of the quarry sequence.
Complete the sequence to include construction, competition and the victor's ceremony.
Divide the class into groups.
Ask each member of the group to devise an annotated cartoon to explain one element of the sequence.
Display the cartoons in sequence order.

Activity 8: The Olympic Venues: They can improve the quality of our lives.
Show the children some information copied from the media on one developing Olympic Games venue. Identify on a U.K. or London map the location of the venue.
Discuss:

- The sustainability features incorporated in its design and construction;
- The reasons for these features i.e. they reduce air pollution, water consumption or waste or, improve the green environment.

Identify practical ways the children could improve their immediate environment to achieve the same effect.
Let the children use desktop publishing, ICT or artwork to create posters which advertise both a sustainability feature of an Olympic venue and how a similar result could be recreated at school.

Activity 9: Devising an environmental impact assessment.
Remind children of the range of sports that make up the Olympic Games.
Together select one of the sports. Identify on a U.K. or London map the location of the venue for this sport.
Explain that many new venues are being constructed for the games.
Discuss and list:

- The things needed for people to play and watch this sport at the Olympic Games. E.g. an Olympic Standard competition area, training facilities, comfortable viewing area for spectators, easy access for competitors and spectators, some parking for vehicles, etc.
- Who or what might be affected by the Olympic development? E.g. neighbours, people who regularly travel through the area, existing wildlife;
- The environmental problems they might want to avoid before, during and after the Olympic Games. E.g. air pollution, traffic congestion, litter and waste, noise for neighbours etc.
- The environmental opportunities the new building might create. E.g. improved facilities for transport, recreation and play, more open spaces and wildlife.

As a class, group or individual select one of these sports. Ask pupils to devise a list of questions that they would ask to find out how an Olympic venue will be made friendly to:

- Competitors;
- Neighbours;
- Spectators;
- The environment

Activity 10: Using ICT and research to complete an environmental assessment.
Using information copied from the media on one or more developing Olympic Games venues (e.g. newspaper and magazine cuttings, internet articles and recordings from

radio and television.) try and find answers to the questions posed in the environmental assessment in Activity 9 above.
You could display questions and answers alongside pictures and press cuttings of the developing venue.

3. The International Connection

Prior Knowledge / Work:

These are activities for older key stage 2 children. It extends the breadth of study it focuses on the new infrastructure being constructed to enable people from different parts of the world to visit the Olympics. It would be helpful if children were familiar with atlases and understood how to use the index.

Learning Objectives:

- To use atlases.
- To know how and why some places have changed.
- To recognise how people can improve and damage the environment.
- To recognise how and why people seek to manage an environment sustainably

Subject Links:

- Literacy- activity 12 and 13.

Resources:

- A copy of the Olympic Flag
- World Map or Globe
- Atlases for each pair of children
- List of flight arrivals at Heathrow airport on the date and time of the lesson downloaded from www.baa.com (Select all Heathrow, all terminals and arrivals. Copy and paste the relevant arrivals into a new *Word* document.)
- Maps of the route of the Channel Tunnel Rail Link, photographs of construction and Eurostar trains downloaded from www.ctrl.co.uk

Background Information:

See Teacher Introduction *International Connection* theme

Activity 11: How will spectators from abroad get to the London Olympics? Five Continents.

Show the children a copy of the Olympic Flag.

Discuss and explain using the World Map or Globe as a visual aid where necessary:

- That the land on the world's surface is divided into five continents (Europe, Asia, Africa North and South America) plus Antarctica;
- That the rings on the Olympic Flag represent the five continents;
- That the rings on the Olympic Flag do not represent particular continents;

- That the rings overlap or interlock to show that the athletes of the world are coming together;
- Olympic athletes and spectators will travel to London from all parts of the world;
- Many of these people will travel by plane. Many will fly in to London Heathrow Airport.

Tell the children that they are going to play a game.
Give out Atlases and a copy of the flight arrivals at London Heathrow Airport during the time of the lesson to each pair of children.
Tell each pair to:

- Draw their own copy of the Olympic Flag;
- Select a ring for each continent;
- Use the atlas and its index to find the location of each city or town that planes arriving in London have flown from;
- To identify which continent the town or city was located;
- To write the name of that city or town in the appropriate ring.

In the plenary show the children the correct answers.
Discuss or explain, in appropriate terms;

- That London is expanding its airport facilities by constructing Terminal 5 at Heathrow;
- Some of the environmental problems of air travel;
- How the London Olympics plans to offset these effects.

Activity 12: Arriving by train. Looking after passengers, neighbours and the environment.
Remind pupils of the previous activity. I.e. Many people will travel to the London Olympics by Plane.
Show children a map of the location of the Channel Tunnel Rail link, plus photos of Eurostar trains and the tunnel.
Explain:

- The organisers are encouraging people to travel to the London Olympics by train;
- Trains cause less air pollution than planes;
- The people will travel under the English Channel via a tunnel in a high speed train;
- That a new high speed railway track is being built in time for the games;
- The railway will pass close to the Olympic Park at Stratford:
- People will be able to get off the train at Stratford and watch or take part in the Olympics.

Show the children pictures of the construction of the rail link.
Ask the pupils to work in small groups and think about the design, construction and operation of the Channel Tunnel Rail Link.
Ask the children to discuss and list:

- Those who will benefit;
- Those who will suffer;
- What will need to be done to protect the environment?

In the plenary session discuss and list each group's answers.
Explain some of the actions taken in the design and construction to minimise the damage to neighbouring communities and the environment.

Activity 13: The Channel Tunnel Rail Link. Debating the issue
Remind children of the previous activity.
Show them the lists of those who benefit and suffer from the Channel Tunnel Rail Link and what needs to be done to protect the environment.
Let individual children or groups take on the role of one of those affected by the design, construction and operation of the railway.
Encourage them to use ICT and other media information to develop and express their point of view.
Role play a debate on the whether the Rail Link should have been built.
Use the children's written contributions and downloaded maps of the scheme to present a display on the project.