

New sporting venues are among the biggest recent building projects in the UK. The Olympics comes to London in 2012 and a whole area of London is due to be redeveloped. There's a new Wembley Stadium, Manchester City FC and Arsenal FC have recently moved into new homes, Liverpool FC are set to begin building a new ground soon and Everton FC have plans. Do these huge schemes have environmental consequences?

AIM

This Report will look at recent and planned large new sporting venues. By the end of it you should be able to discuss the environmental concerns in building them as well as what modern grounds try to do for the environment.

This Report will be a Case Study. You will be given lots of information to read through as well as being asked to do your own research. You will then be asked to complete a presentation on what you have found out.

How is the environment affected on Match Day?

Many things about a stadium affect the environment while it is running:

- Large amounts of electricity and gas are needed for floodlights, heating, facilities in the ground etc,
- Travel by supporters to and from the ground causes a huge amount of pollution to be released and fossil fuels to be burned,
- The production of the food and drink consumed by up to 80,000 supporters is massive,
- The pitch requires large amounts of water,
- The litter problem is huge.

Can you think of things that clubs could do to reduce these problems?

LARGE-SCALE SPORTING VENUES

Arsenal, Liverpool, Everton, Manchester City – if you follow football, you'll recognise these names. These football clubs are some of the biggest in the world and these days they have massive pressure on them to perform. All of these clubs have either recently moved home or are planning to in the near future.

Having a magnificent stadium with space for more spectators and all the facilities may well help the clubs' success, but does building them put a strain on the environment? Or can the clubs actually help the environment by doing it?

The main downside of large new sporting venues is the pollution caused by building them. Carbon Dioxide (CO₂) is released during construction, new roads bring more traffic and the power used produces CO₂ when it is made. Unless they are built on urban sites, the land needed will destroy countryside.

However, these projects are now doing more to avoid harming the environment. Have a look at this article to see what they can do to help the environment.

UK's 'green' football stadiums

Dartford Football Club played the first match at their new home, Prince's Park – the world's first custom-built eco-friendly football stadium – on 11 November.

A number of other teams in the UK – including Manchester City and Arsenal in the Barclays Premiership – have also installed 'green' features such as wind turbines at their grounds.

Prince's Park, home of Dartford FC, is the world's first eco-friendly football stadium

Environmentally-friendly stadium design

Dartford are the first team to have designed their stadium with environmentally-friendly features in mind. Features such as a curved roof and a sunken pitch allow the £6.5 million design to blend in to the local countryside.

Meeting the threat of water shortages

Dartford, which is in the south-east of England, experiences some of the lowest annual rainfall anywhere in the UK, so the ground was designed to meet the threat of water shortages. Water run-off from the roof is channelled through pipes and gullies into two lakes. The rainwater can then be used to maintain the pitch, which requires up to 20,000 litres every day.

Solar heating

Solar panels on the roof of the stadium power most of the hot water and the under-floor heating in the clubhouse.

Big hit with the local community

The stadium has already proved a big hit with the local community. The first match was a sell-out, while Dartford Borough Council installed a webcam at the stadium so people could watch every stage of the development via the internet.

Windy city

Manchester City's Eastlands Stadium is one of the first football stadiums in the world to generate its own power by wind. An 85m wind turbine at Sportcity – built adjacent to the stadium – provides all of the football club's power needs, with the excess made available to the local community.

Other eco-friendly initiatives at Eastlands

Other eco-friendly initiatives found at Manchester City include:

Landfill has been reduced by 85 per cent

The club uses electric vehicles on-site

Eco-friendly paper products are used around the stadium

Manchester City recycles a range of items, including paper, card and glass

Arsenal turn green

Arsenal have also installed a number of environmentally-friendly features at their new stadium, Ashburton Grove, in London. Skylights and windows throughout the building have been adapted to maximise the amount of daylight and reduce the need for artificial lights. In addition, 12,000 metres of green roofs were installed to increase thermal insulation, while the complex was built using materials that were the least energy-intensive to produce.

As you can see, the UK's sports teams are fully-aware of their responsibilities to the environment. Visit one of our eco-friendly stadiums and see for yourself.

From i-uk, <http://www.i-uk.com>, 16th November 2006.



New venues are making a big effort to look after the environment:

Environmentally-friendly Tork tissue at the new Wembley Stadium

Environmentally-friendly tissue products from Tork have won SCA Tissue Europe the washroom contract for the new Wembley Stadium.

The stadium has 2,618 toilets, estimated to be more than in any other building in the world. All these washrooms – including those in the Royal Box - will feature Tork hygiene products.

Various factors were considered when choosing a tissue supplier, but price was not the main one according to Wembley Stadium's cleaning services manager John Andersen. It was SCA's strong environmental policies that clinched the deal with the country's new national stadium.

From Tork website,
http://www.tork.co.uk/Pages/News/New_s.aspx?id=29436, 19th February 2007.

Finally, consider this media release from a building firm about what needs to be considered when building a new stadium:

Sustainability

Sustainability has recently become a buzz word adopted by local authorities, energy companies, house builders and businesses to encompass a wide range of factors affecting environment, quality of life and economics.

In architectural terms, sustainability still means reducing energy use and using modern building fabrics. This is obviously an issue that needs to be addressed at the design stage of large buildings such as training grounds and sports stadiums, which incur high energy usage, in terms of electricity.

Sustainable Energy

While football stadiums might not be top of the list of major polluters, they are significant energy users and their environmental impact can be considerable within a large radius. From site selection to planning and design, environmental issues need to be examined to ensure that a stadium remains sensitive to the local population and cost-effective throughout its lifetime.

For the Architect, this brings many challenges such as how to increase natural light in some areas in order to curb energy use, while reducing it in others in order to minimise light pollution. Then there's the need to minimise noise and traffic pollution to protect the surrounding areas.

At Al Jazira Football Club's new stadium in Abu Dhabi, AFL has designed a number of features to solve these problems. Daytime temperatures mean stadiums in the Middle East don't usually have a roof, but Al Jazira wanted to create a European atmosphere by trapping in the sounds of the crowd and creating a complete focus on the pitch.

AFL's proposed roofing solution uses a special ventilation system to release warm air from the stadium and is designed to minimise noise pollution in the surrounding area by reflecting crowd noise onto the pitch.

Sustainable Communities

However, the recent Government definition of sustainable communities takes a wider view of the issue and defines sustainable communities as "places where people want to live and work, now and in the future... sensitive to their environment, safe and inclusive, well-planned, built and run". In other words, a project should be designed to be capable of sustaining economic development in the future without being a drain on the surrounding environment.

Architectural Practice

AFL places sustainable economic development at the heart of its design process and has been at the forefront of building, developing and integrating local communities around football stadiums.

Within the last decade, the design of football stadia and their role within the community has changed dramatically. They are no longer just about accommodating fans on a Saturday afternoon; they now have a wider reaching influence into the health, education and lifestyle of the local community. Indeed, new or redesigned stadia can become a focus for the regeneration of economically depressed areas.

Take Liverpool Football Club's new stadium, which is the centrepiece of an ambitious regeneration programme for the deprived Anfield area. The 63,000 capacity stadium will be linked to a new public space known as Anfield Square, as well as to a new development to be built on the site of the existing football ground. AFL has designed a 'Community Resource Centre' into the west stand comprising a sports centre and new education facilities for the community to use. Linking the new and the old stadiums with new facilities means visitors will stay in the area longer and be encouraged to spend both time and money within the wider Anfield/Breckfield area.

John Roberts, Director of AFL.
http://www.afl-uk.com/about_us/press_releases/building_eng_dda.doc, 10th August 2005.

It is clear that stadiums these days are expected to cover all sorts of areas in order to benefit their local communities and minimise the amount of light pollution and noise pollution they produce, as well as using energy wisely.

THE 2012 OLYMPICS

London is looking forward to holding the Olympic Games in 2012. This is a huge event and one of the reasons that London was chosen is because it promised to develop a run-down area of London so that, after the Games are over, the city will have great new facilities to use and the overall effect on the local area will be positive.

London's bid was also chosen because it had a strong environmental theme. Read the article opposite from the BBC and see what the developers have promised:

Main Task

Sporting Venues

Go through the information here and do your own research. Make a Presentation to explain:

- What environmental problems stadium builders face,
- What ideas builders of modern stadiums use to help make modern sports venues environmentally friendly,
- How the development for the 2012 Olympic Games intends to be as environmentally friendly as possible.

The New Wembley: Facts and Figures

- The construction of the pitch used over 22,000 tonnes of stone, gravel, sand and soil,
- 23,000 tonnes of steel were used to build the stadium,
- There are 380 floodlights:
These could use in total about 4 BILLION JOULES (4,000,000,000J) of energy in 90 minutes. This requires about 140kg of coal, if our power stations and floodlights were 100% efficient. In reality, this might take more like 500kg to 600kg of coal.

London 2012's environment plan

The environmental plan for the 2012 Summer Olympic Games focuses on four areas: low-carbon emissions, waste, biodiversity, and promoting environmental awareness.

Below is a summary of how the Games' organisers intend to turn the aspiration to stage a "One Planet Olympics" into a reality.

LOW CARBON

Venues and infrastructure: Minimise the Games' carbon "footprint" during the design, construction and operational stages. One way the team aims to achieve this is by maximising the use of renewable energy and providing the most efficient energy supply in the new Olympic park.

Transport: The most carbon-efficient fleet of vehicles will be used to ferry officials and competitors to and from venues. There will also be campaigns to encourage people to use public transport, cycle and walk to events.

Offsetting emissions: Some aspects of staging the Games will involve unavoidable emissions, such as people flying into the UK from all over the world. Organisers plan to offset these emissions by supporting and developing clean energy projects in developing nations.

ZERO WASTE

The goal is to avoid sending waste to landfill sites. The 2012 team will work closely with the Olympic delivery authorities, waste management companies and contractors to make sure products and packaging that will eventually become waste during the Games can be recycled or recovered.

BIODIVERSITY

The Olympic Biodiversity Action Plan sets out how the construction of the venues and infrastructure will improve habitats for wildlife. The measures include: Restoration of rivers, creating wetlands, effective drainage, and the creation of a "green corridor" from Lea Valley to River Thames.

ECO-AWARENESS AND PARTNERSHIPS

The main driver for promoting awareness is through the One Planet Olympics concept. There will also be a "Sustainable Sport Programme" for the local community, as well as annual clean-up projects.

On the international stage, there are plans for exchange programmes, scholarships and a network to share ideas and experiences.

BBC website,
<http://news.bbc.co.uk/1/hi/sci/tech/4299876.stm>. 24th October 2005.