Protection of the Environment

Introduction

In order to function properly a community needs buildings to live in, to work in, to be educated in and entertained in. In addition, there need to be railways and roads and services such as electricity, water supply and drainage.

In the past, people were allowed to build whatever they wanted wherever it suited them as long as they owned the land. This led to towns growing in a disorganised way with factories and warehouses being built among houses. Today, land use is planned and tightly controlled. People cannot build what and where they like even if they own the land.

No industrial society will ever stop polluting, but we must limit the damage caused to the environment. Pollution of the environment may be controlled in different ways, all operating at the same time. These include:

- legislation
- control
- design and specification
- management systems
- personal

Legislation

In the UK and many other countries, planning legislation establishes Local Authority control over land use and the built environment. ***The Town and Country Planning Act 1990*** updated all the previous Acts. In addition there were three other Acts in 1990:

- The Planning (Listed Buildings and Conservation Areas) Act
- The Planning (Hazardous Substances) Act
- The Planning (Consequential Provisions) Act

Some procedures were modified by the Planning and Compensation Act 1991.

Another area of Legislation relates to the control of pollution and protection of the environment : These include:

- **The Control of Pollution Act 1974**

  This gives Local Authorities (through their Environmental Health departments) the power to control the noise, air and water pollution that may arise from construction work. They can control such things as the hours of working, the permitted noise levels and particular types of machinery.

- **The Environmental Protection Act 1990**

  This set up a system of pollution controls involving a number of agencies with the power to issue enforcement or prohibition notices.

Legislation

There are many, many pieces of legislation relating to control of the environment, for example:

- Control of Pollution Act 1974 (Amendment) 1989
- Countryside and Rights of Way Act 2000
- Highways Act 1980
- Land Drainage Act 1994
- Water Industry Act 1991

Environmental issues are changing so quickly that it is difficult for legislation to keep up. The European Community is taking a more active role in new environmental legislation. Once it has been enacted in Europe it is often introduced in the UK.

Control

The Secretary of State for the Environment is responsible for the administration of the planning system and has power over local planning authorities which include County Councils, District Councils, Metropolitan Authorities and other bodies such as the Peak Park Planning Board.

A two tier planning system operates:

- **County Councils** (e.g. Derbyshire) are responsible for waste disposal, trunk roads and county wide matters summarised in a ***Structure Plan***. These deal with strategic issues, looking forward 20 to 30 years, relating to :
  - transport and communications
  - industrial and commercial locations
  - population locations and distribution

- **District Councils** (e.g. Chesterfield) are responsible for developmental control and the production of ***Local Plans.*** These are more detailed than Structure Plans. They look forward 10 years and apply the objectives set out in the Structure Plan to particular areas of land. They can include:
  - proposal for development and land use
  - measures for traffic control
  - means of improving the local environment

  The aim of the Local Plan is to examine social, economic and land use issues; to make the public aware of these and to propose solutions. The plan should also provide a means of co-ordinating developments and ensuring the optimum use of public and private investment.

In addition, London Boroughs and Metropolitan Districts (such as Doncaster) are required to prepare **Unitary Development Plans**.

Design and specification

Energy efficiency in building construction is no longer an 'optional extra'. It is widely recognised as a basic requirement. In the Department of the Environment White Paper '*This Common Inheritance - Britain's Environmental Strategy*' 1990, it was stated:

"Energy efficiency improvements are the cheapest and quickest way of combating the threat of global warming"

This aspect of construction is covered in the Building Regulations. In addition, designers are encouraged to use more environmentally friendly materials by following the EU Construction Products Directive issued in 1989, issued by the UK government in 1991 as the Construction Practice Regulations.

The assessment of the environmental impact of individual buildings is difficult. A building is made up of thousands of components. Life cycle assessment (LCA) involves looking at each component in a building and assessing the energy used in its production and the energy used by the building when complete.

Each element has '**embodied energy**'. This represents all the energy used to produce and install the element within the building. This could include :

- energy needed to extract material from a natural resource
- energy used to transport natural resources to processing plants
- energy used to process the material into products
- energy used to transport products to the construction site
- energy used to handle and install the element in the building

These processes also involve the production of waste products such as :

- emissions from internal combustion engines
- emissions from power stations
- waste materials from the processing of natural products
- waste materials used for transportation and handling

The building will have '**operational energy**' requirements. These include :

- the energy needed to provide lighting within a building
- the energy required to run heating systems
- the energy required to run ventilation systems
- the energy required to run air conditioning systems
- the energy required for lifts and escalators

These Life Cycle Assessments are very complex to perform and are usually done using computer programs.

Management Systems

The need for environmental management systems (EMS) has arisen due to a change in public attitudes to the environment. The main points of an EMS are:

- development of an EMS manual containing a fully documented set of procedures and a set of working instructions that satisfy the appropriate environmental standards
- implementation of these procedures and instructions in the course of business
- review and updating of the procedures and instructions at regular intervals

In practice, such environmental management systems require full time employees to set up and maintain the system. In addition, such systems require independent observation and monitoring. This means that they incur considerable costs. As a consequence of this, only larger companies tend to use them.

There are a number of standards available on which to base an EMS:

- **ISO14001** - this is an international standard which provides specification and guidance on a wide range of environmental issues including Environmental Audits and Life Cycle Assessment.
- **EMAS** - Eco Management and Audit System. This was introduced by a European Union Council regulation. It was introduced in the UK in 1995. This is a voluntary scheme for individual companies.
- **BS7750** - this is the UK's own EMS introduced in 1992 and based around the quality control system of BS5750.

All these EMS standards stress the need for continuous improvement in the protection of the environment.

Personal

As individuals we all contribute to pollution of the environment. Everything we do has environmental consequences. Individuals can contribute directly, for example, by conserving energy:

- Turn off lights, computers, and other appliances when you're not using them
- Use energy efficient appliances: heaters, refrigerators, washing machines, etc.
- Use water sparingly, e.g. have low flush toilets
- Keep your thermostat at 68 F in the winter, or lower when you are away from home
- Insulate your home as best you can
- Compost vegetable waste
- Recycle paper, glass, cans etc.
- Use public transportation, or better still, walk or cycle whenever possible
- Buy vehicles with low NOx emissions, and maintain all vehicles well

Individuals can also join pressure groups, such as Greenpeace and Friends of the Earth, who lobby against environmental matters such as motorway construction and deforestation.

Environmental Audit

An environmental audit is an attempt to provide information on the environmental performance of a building or an organisation. It helps business managers to determine whether or not their operations are being performed in compliance with current legislation, government standards, internal company policies and industry standard good practice.

The aims of an environmental audit include:

- verification of compliance with current legislation and government standards
- assessment of current internal policy and procedures
- checking current practice against industry standards
- identification of opportunities for improvement

The environmental audit will normally cover:

- materials management, savings and alternatives
- energy management and savings
- water management and economy of use
- waste generation, management and disposal
- noise reduction, evaluation and control (internal and external)
- air emissions and indoor air quality
- transportation and travelling practices
- staff awareness, participation and training in environmental issues
- environmental information publicity
- environmental management policy

Environmental audits cannot be designed as a ready made package to suit all circumstances. They can be used at different levels in commerce, industry or less formally in the home. The audit could follow the following stages:

1. Identify the place to be audited. E.g. your home, place of work or college
2. Select and make a list of the areas you will audit, e.g. waste, water and energy management, materials use etc.
3. Determine any existing management policies relating to these areas
4. Draw up some key questions relating to the selected areas,
   e.g. what measures are taken to reduce energy consumption?
5. For each of these main questions develop further follow up questions,
   e.g. are low energy light bulbs used?
   do all heaters have thermostats
   are photocopiers switched off at night
6. Check for compliance with current legislation, policies and good practice
7. Produce a detailed report of your findings
8. Create an action plan to improve the current situation

Assessment

Protection of the Environment

Questions 1 to 5 - Select the correct response for the following questions :

1. Pollution of the environment may be controlled in different ways, all operating at the same time. Which one of the following is **not** a commonly used method of controlling pollution of the environment?

   A legislation
   B design and specification
   C pressure groups
   D management systems

2. County Councils are responsible for producing a ?

   A structure plan
   B action plan
   C local plan
   D unitary development plan

3. Which of the following would **not** be part of a Local Plan ?

   A proposal for development and land use
   B measures for traffic control
   C means of improving the local environment
   D transport and communications

4. Which of the following would **not** be considered part of the embodied energy of a construction material ?

   A the energy needed to extract material from a natural resource
   B the energy used to process the material into products
   C the energy used to transport products to the construction site
   D the energy required to run heating and ventilation systems

5. Which of the following would **not** be considered part of the operational energy of building ?

   A the energy used to handle and install an element in a building
   B the energy needed to provide lighting within a building
   C the energy required to run air conditioning systems
   D the energy required for lifts and escalators

Questions 6 to 10 - Decide whether each of these statements is True (T) or False (F).

6. i) The Secretary of State for the Environment is responsible for the administration of the planning system and has power over local planning authorities.
   ii) District Councils are responsible for waste disposal, trunk roads and county wide matters.

   Which option best describes the two statements?
   A i) T ii) T
   B i) T ii) F
   C ii) F ii) T
   D ii) F ii) F

7. i) Life Cycle Assessment (LCA) involves looking at each component in a building and assessing the energy used in its production and the energy used by the building when complete.
   ii) Life Cycle Assessments (LCAs) are very simple to perform.

   Which option best describes the two statements?
   A i) T ii) T
   B i) T ii) F
   C i) F ii) T
   D i) F ii) F

8. i) ISO14001 is an international standard which provides specification and guidance on a range of environmental issues including Environmental Audits and LCAs.
   ii) BS7750 is the UK's own Eco Management System introduced in 1992.

   Which option best describes the two statements?
   A i) T ii) T
   B i) T ii) F
   C i) F ii) T
   D i) F ii) F

9. i) Individuals can do very little to reduce pollution of the environment.
   ii) Individuals can also join pressure groups, such as Greenpeace and Friends of the Earth, who lobby against environmental matters such as motorway construction and deforestation.

   Which option best describes the two statements?
   A i) T ii) T
   B i) T ii) F
   C i) F ii) T
   D i) F ii) F

10. i) An environmental audit is an attempt to provide information on the environmental performance of a building or an organisation.
    ii) An environmental audit will not normally cover waste management.

    Which option best describes the two statements?
    A i) T ii) T
    B i) T ii) F
    C i) F ii) T
    D i) F ii) F