**Chapter 6: Demolition and Disposal**

***Note: Answers to review tasks are coloured blue***

**6.1 The Demolition Decision**

**Reflective Summary**

* The issue of building obsolescence is complex and the reasons for choosing to demolish buildings may often be associated with factors other than physical obsolescence.
* Buildings will inevitably reach a stage at which their continued use ceases to be appropriate or economic in a given context.
* The decision to demolish depends on the context of building as well as the physical condition of the structure and fabric.
* The following factors need to be investigated before the decision to demolish a building is made: building costs in use and other economic factors, historic buildings and listed building status, physical condition, building form and sustainability issues

 **Review Task**

Discuss the issues that will affect the decision to demolish a building under the following headings:
1. Building Costs in use and other Economic factors
2. Historic buildings and Listed building status
3. Physical Condition
4. Building Form

**Building Costs in use and other Economic factors**
All buildings are designed with an expectation that at some point they will become obsolete or will have served their intended purpose and will be disposed of. Different buildings will be designed with very different intentions for their expected life-cycle and the potential for redevelopment, alteration and refurbishment will be consequent upon the decisions regarding components and materials at the time of construction. At various points in the building's life financial analysis will be required to compare the alternative options for the future of the building. This may result in refurbishment, alternative use or demolition.

In some situations grants may be offered as incentives to retain a building rather than demolish

**Historic buildings and Listed building status**
Many older buildings are of a form that is appropriate for re-use in a modern context, albeit often a different use than the original. However, they will generally require upgrading of the services, fire precautions and interior environment to enable them to be effectively adapted for modern use.

The implications of listed building status upon the decision to demolish must be carefully considered. Although, in principle it is possible to demolish a building that has listed status, the practice is complex and by no means certain. Where buildings are of particular historic or architectural merit it is often the case that an agreement will be reached resulting in partial demolition with retention of the specific elements of the building that are noted to be of merit.

**Physical Condition**
One of the greatest influences upon the decision to demolish will be the physical condition of the building. In extreme cases the Local Authority has powers to serve notices and enforce actions upon owners of derelict and dangerous buildings. The potential to refurbish or alter buildings economically depends upon the existing physical condition of the fabric and this alone may force the decision to demolish rather than refurbish.

**Building Form**
Whilst it may be the case that a building is technically capable of refurbishment, it is often the case also that the layout and form are inappropriate for a desired use. In such situations demolition may be the favoured option to allow the construction of a new building of appropriate form.

**6.2 Demolition techniques**

**Reflective Summary**

* Demolition is sometimes undertaken as a sequential process in the reverse order of construction.
* In order to gain sufficient information to allow for successful and safe demolition it is necessary to undergo a detailed data gathering exercise which will normally involve the undertaking of a detailed demolition survey.
* Available demolition methods are generally defined within two categories; piecemeal demolition and deliberate controlled collapse.
* Pre-demolition issues include undertaking a demolition survey, looking into notification requirements, investigating health and safety issues, and considering the most suitable demolition option
* A range of mechanical plant is in common use to assist with the demolition process
* The use of explosives is restricted to certain types of site and structure, although this method has bee adopted successfully in many urban sites.

**Review Task**

Produce a checklist that could be used for undertaking a pre-demolition survey

Typically the survey will deal with the following:

* Presence of adjoining/adjacent buildings and structures that might be affected by the process
* Structural form of the building and specific constructional details
* General building condition with particular emphasis on weak spots
* Identification of requirements for temporary reinforcement or support
* Identification of existing services and utilities
* Presence of hazardous or deleterious materials such as asbestos
* Available access to the site
* Potential dangers to workers and the public

Describe the mechanical systems that are available to help with the demolition process

A range of equipment is commonly used to assist with the process of hand demolition including:

* Breakers
* Cutting equipment and thermal lances
* Hammers, picks etc,
* Lifting equipment

A range of mechanical plant is also in common use to assist with the demolition process including the following:

* *Balling Machines*: these utilise a large steel ball suspended from a crane which is normally mounted on a crawler. The suspended ball is dropped onto the building element or swung with the aid of a drag rope to impact against the structure of the building. This is a skilled operation and requires highly competent operatives and well-maintained plant and equipment if to be carried out safely.
* *Impact Hammers*: these normally have a track or wheel mounted chassis and operate by the use of a heavy-duty pick or pneumatic hammer positioned using an articulated boom. They act to break up large sections of concrete and masonry to allow removal in pieces. This results in high levels of noise generation.
* *Hydraulic Shears and Nibblers*: these are fitted to the arms of hydraulic excavators and act to cut through steel members and reinforced.
* *Pusher Arms:* these are generally mounted on tracked vehicles to apply horizontal pushing or pulling force to elements of the structure to induce overturning. The articulated pusher arm is often fitted with a toothed plate or hook to ensure effective application of the force against the building