

## Planning and work programmes

### OVERVIEW

Any building project begins long before the first brick is laid or the first foundation dug. Most buildings and construction projects will need some sort of planning approval before they get underway, as a range of planning restrictions are in place to keep building standards up, protect local people and protect the environment.

Work planning is also of paramount importance for every job, whether a single dwelling or a large housing estate. Without it even the smallest job can go wrong: something simple is forgotten or omitted, such as ordering a skip, and the job is suddenly delayed by anything up to a week. On a smaller job, poor planning can result in delays, which will harm your reputation and jeopardise future contracts. With larger contracts, penalty clauses can be costly: if the job overruns and isn't finished on time, the client may claim substantial amounts of money from the contractor.

This chapter will deal with:

- planning permission
- work programming.



## Planning permission

Before starting to plan a building project, it is important to know how your plans may be affected by local and national building restrictions. The two main sets of restrictions you will come across are:

- the Building Regulations
- planning permission.

We looked at the Building Regulations in Chapter 2, so here we will look at planning permission. It is crucial that anyone planning a construction project understands how this works, and seeks the necessary approval in the correct way. If not, building work runs the risk of having to be halted, altered or even taken down.

Planning permission laws were introduced to stop people building whatever they like wherever they like. The submission of a planning application gives both the local authority and the general public a chance to look at the development, to see if it is in keeping with the local area and whether it serves the interests of the local community.

The main **remit** of planning laws is to control the use and development of land in order to obtain the greatest possible environmental advantages with the least inconvenience for both the person/s applying for permission and society as a whole.

The key word in planning is 'development', defined in planning law as 'the carrying out of building, engineering, mining or other operations in, on, over or under land, or the making of any material change in the use of any buildings or other land'. As well as building work, this covers the construction of a new road or driveway, and even change of use: if a bank is to be turned into a wine bar, planning permission will be needed.

Planning permission is required for most forms of development. Here are a few more examples of work requiring planning permission:

- virtually all new building work
- house extensions including conservatories, loft conversions and roof additions (such as dormers)
- buildings and other structures on the land including garages
- adding a porch to your house
- putting up a TV satellite dish.

Even if you are intending to work from home and wish to convert part of your home into an office, you will require planning permission if:

- your home is no longer to be used mainly as a private residence
- your business creates more traffic or creates problems with parking due to people calling

### Definition



**Remit** – scope, job, the areas an organisation or individual has to cover

### Did you know?



Planning permission is needed if you want to put up a satellite dish. The job itself is small and not disruptive, but a dish is thought to change the outer appearance of a house enough to need permission.

- your business involves any activities classed as unusual in a **residential** area
- your business disturbs your neighbours at unreasonable hours or creates other forms of nuisance or smell.

Not all work requires planning. You can make certain types of minor alterations to your house, such as putting up a fence or dividing wall (providing it is less than 1 metre high next to a highway, or under 2 metres elsewhere), without planning permission.

In areas such as conservation areas or classified Areas of Outstanding Natural Beauty there will be stricter controls on what is allowed. Listed buildings also have stricter controls and come under the Planning (Listed Buildings and Conservation Areas) Act 1990.

For planning permission, you must apply to your local council. When they look at your proposed works, they will take into consideration:

- the number, size, positioning, layout and external appearance of the buildings
- the proposed means of access, landscaping and impact on the neighbourhood
- **sustainability**, and whether the necessary infrastructure, such as roads, services, etc., will be available
- the proposed use of the development.

Several steps are involved in applying for planning permission. The first is to contact the local authority to see if they think planning permission is required (some councils may charge a small fee for this advice). If they say you do need planning permission, you need to then ask them for an application form. There are two types of planning permission that you can apply for:

- **Outline application** This can be made if you want to see what the council thinks of the building work you intend to do before you go to the trouble of having costly plans drawn up. Details of the work will have to be submitted later if the outline application is successful.



The public has a right to know about proposed developments



### Definition

**Residential** – where people live, rather than a business district, for example



### Definition

**Sustainability** – the ability to last or carry on, how easy something is to keep going

## Find out



Look online for your local authority's website. Most now have the main information you need for planning matters, and you may even be able to download the forms you need to use.

## Activity



Think of a simple task that you are familiar with and create a set of simple plans and contract documents to submit for planning approval.

## Remember



If you build something without planning permission then you may be forced to **dismantle** the building and put it back to the original state – as well as paying for the work yourself!

- **Full application** Here a full application is made with all the plans, specifications, and so on.

Once you have completed the relevant form this must be sent to the local authority along with any fee.

Next, the contents of your application will be publicised so that people can express their views and raise any objections. A copy will be placed in the planning register; an electronic version will be placed on the local authority's website; and immediate neighbours will be written to (or a fixed notice will be displayed on or as near as possible to the site). The local authority may also advertise your application in a local newspaper. As the applicant, you will be entitled to have a copy of any reports, objections and expressions of support the local authority receives regarding your application.

The local authority normally takes up to eight weeks to make a decision on your application but in some cases it may take longer. If this happens, the local authority should write asking for your written consent to extend the period. If your application is not dealt with within eight weeks, you can appeal to the Secretary of State, but this can be a lengthy procedure itself, so it is best to try to resolve the matter at a local level.

In looking at an application, the local authority considers whether there are valid reasons for refusing or granting permission: the local authority cannot simply reject a proposal because many people oppose it. The local authority will look at whether your proposal is consistent with the area's appearance, whether it will cause traffic problems and whether it has any impact on local amenities, environment and services.

Once an application has been looked at, there are four possible outcomes: permission refused; application still pending; granted with conditions; or granted.

- **Permission refused**

If permission is refused, the local authority must state its reasons for turning down the application. If you feel these are unfair, you can appeal to the Secretary of State. Appeals must be made within six months of the local authority's decision and are intended as a last resort. It can take months to get a decision, which may be a refusal. Alternatively, you can ask what changes need to be made to allow the proposal to pass: if these are acceptable, the amended application can be submitted for processing. If after this the application is still rejected, the work cannot go ahead. However, different authorities have different procedures, so always check before submitting proposals.

- **Application still pending**

Here the local authority may have found that it needs extra time to allow comments to come in, or to deal with particular issues that have arisen. If the application is still pending then, as stated previously, the local authority must ask for your written consent to extend the period for making a decision.



- **Granted with conditions**

In this case you are able to start the work, remembering to comply with the conditions stated. If you fail to comply, permission will be revoked and you may be ordered to undo the work done. If you are unhappy with the conditions set, you can ask for advice and, if needs be, make alterations to the plans. This would mean resubmitting the application.

- **Granted**

If you have been granted permission, you are free to start the work.

## Knowledge refresher



- 1 Why were planning permission laws introduced?
- 2 What is the main remit of planning laws?
- 3 Give five examples of work that would require planning permission.
- 4 Give one example of work that would not require planning permission.
- 5 Give a brief outline of the two types of planning permission you could apply for.
- 6 List the four possible outcomes of a planning application.

## What would you do?



You are working on a small job converting an attached garage into an extra bedroom. You have applied for planning permission and the application is still pending. The local authority say it should be fine, but there is one thing they need to check and it could take a few more weeks. This causes a problem for both you and the client: the client wants the work started and you have no other work to do for a few weeks. What do you do? What could the repercussions be? What could you do to protect yourself?

## Work programming

Once planning permission and Building Regulations approval have been obtained, the next step is to plan the work (NB in some instances the client may ask the contractor to provide a work programme at the tender stage, to check the contractor's efficiency and organising ability).

A work programme is vital for good work planning, as it shows:

- what tasks are to be done and when, including any overlap in the tasks
- what materials are required and when
- what plant is needed, when and for how long
- what type of workforce is required and when.

A few different types of work programme are in use, and we will cover the main two here.

### Planning the site

For every fair-sized job, the building site needs to be carefully planned. A poorly planned site can cause problems and delays, as well as incurring costs and even causing accidents.

A building site should be seen as a temporary workshop, store and office for the contractor, and must contain all the **amenities** needed on a permanent base. Sites should be planned in a way that minimises the movement of employees, materials and plant throughout the construction, while at the same time providing protection and security for employees, materials and components, and members of the public. A well-planned site will also have good transport routes, which will not disrupt the site or the general traffic.

Many things need to be included on a building site, so it is often easiest to plan your site using a site plan and cut-outs of the amenities you need. These cut-outs can be laid onto the plan and moved around until a suitable layout is found.

The ideal layout of the site will vary according to the size and **duration** of the job – there is no point hiring site offices for a job that will only last a day! The following gives an idea of what might be needed on an average site:

- **Site offices**

The office space (usually portable cabins) should be of a decent size, usually with more than one room for different members of staff and a large room for meetings. Phone, fax and email facilities will be needed, so that the site office can communicate with Head Office, contractors, suppliers and others. As with any office, the site office must be heated, have plenty of light (natural or artificial) and be fitted out with useful, comfortable furniture.

#### Remember



If you need to plan several sites, save the cut-outs from one to use on the next (checking that you are using the same scale). You could end up with a 'kit' to use whenever you need it.

#### Definition



**Amenities** – facilities such as toilets, rest areas, etc.

**Duration** – how long something goes on

- **First aid office**

This is sometimes contained within the site office, but on larger sites a separate space may be needed so that injured people can be treated quickly and efficiently. The first aid office must be fully stocked, and there must be sufficient trained first aiders on site.

- **Toilets**

There must be sufficient toilets on the site. Usually there will be a WC block next to the canteen or mess area, with additional portable toilets dotted around the site if needed. Toilets must be kept clean and well stocked at all times, and have somewhere for people to wash their hands. The WC block may also need to house showers if the work being done requires them.

- **Lunch area**

This should be protected from the wind and rain and have heating and electricity. It should contain equipment such as a microwave, kettle or urn and fridge to heat and keep food, as well as suitable food storage such as cupboards. There should be adequate seating and tables, and the space should be kept clean to prevent any unwelcome pests such as rats or cockroaches.

- **Drying room**

This provides space for employees to dry off any clothes that get wet, on the way to or during work. It is usually sited next to the lunch area, or is part of the same building. The room must have adequate heating and ventilation, as well as lockers or storage to house things like motorcycle helmets.

- **Cranes, hoists, etc.**

These can be static or portable. When a large static crane is required, its position needs to be planned so that it can easily and safely reach the area where it is needed. Larger cranes should be situated away from the main site office for safety reasons.

- **Transport route**

Having a good transport route into, out of and within a building site is vital. It is best to have separate entrances and exits, with a one-way system on the site and good signposting throughout. These measures will avoid large delivery lorries having to turn around on site, and help to keep both internal and external traffic flowing with minimum disruption.

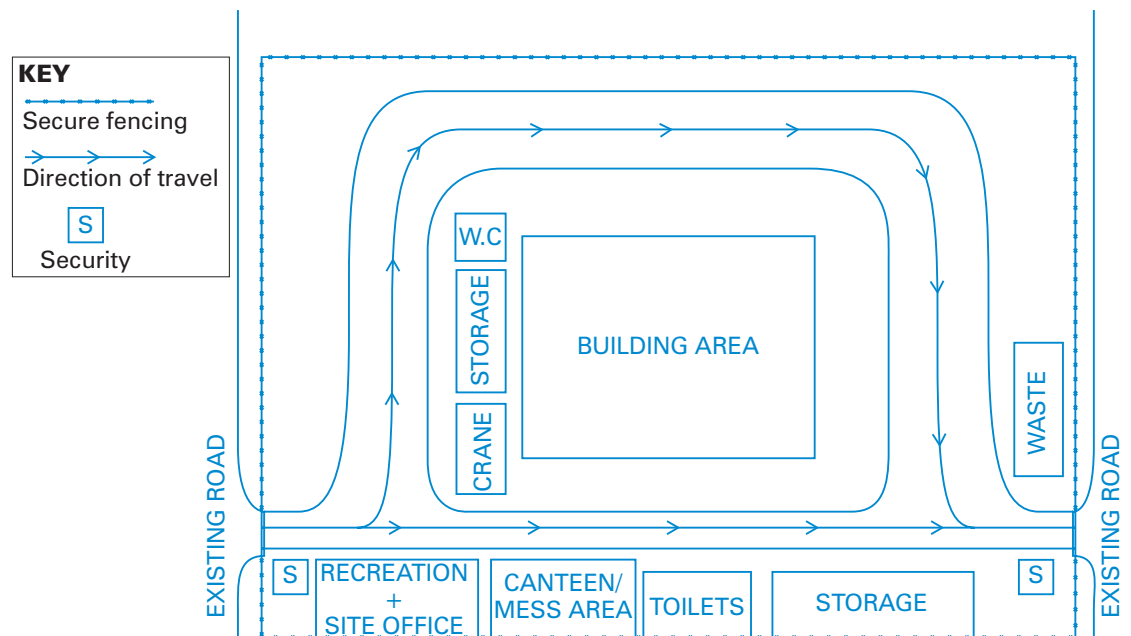
- **Waste area**

This must be well away from the lunch area for health and safety reasons, and should be easily accessible from the transport route so that the skips and bins can be emptied easily. Separate well-labelled skips are needed for different kinds of refuse, and there should be some for recycling. Certain skips should be kept separate to avoid **contamination**, and chemical dumps (for paint, etc.) should be kept secure and emptied regularly.

Various types of storage are also needed on a building site, such as:

- **materials storage** – enough adequate space to store all types of materials, ideally near to where they are being used (for example, cement and sand should be stored near the mixer). All materials should be stored in a way that prevents them being damaged or stolen; some materials will have to be stored separately to avoid contamination.
- **component storage** – a secure compound protected from the wind and rain for items such as doors and windows. Again, components should be stored in a way that prevents them being damaged.
- **tool storage** – a secure place for employees' own tools as well as site tools such as table saws. The tool storage area needs to be thoroughly secure to prevent theft.
- **ironmongery storage** – a locked compound in a container with well-labelled racks to avoid things like screws and nails being mixed up. Expensive ironmongery such as door furniture needs to be properly secure. On a well-planned site, expensive ironmongery is only ordered when needed.

A good site layout might look something like this.



**Figure 3.1** Good site layout

## Activity

Design a site layout for a large project, placing all the amenities that you think may be required in an appropriate place.

## Planning the work

There are many types of work programme, including the critical path and the Bar/Gantt chart. The latter is the one you will come across most often.



## Bar charts

The bar or Gantt chart is the most popular work programme as it is simple to construct and easy to understand. Bar charts have tasks listed in a vertical column on the left and a horizontal timescale running along the top.

Time in days										
Activity	1	2	3	4	5	6	7	8	9	10
Dig for foundation and service routes										
Lay foundations										
Run cabling, piping, etc. to meet existing services										
Build up to DPC										
Lay concrete floor										

**Figure 3.2** Basic bar chart

Each task is given a proposed time, which is shaded in along the horizontal timescale. Timescales often overlap as one task often overlaps another.

Time in days										
Activity	1	2	3	4	5	6	7	8	9	10
Dig for foundation and service routes	■	■								
Lay foundations			■	■						
Run cabling, piping, etc. to meet existing services				■	■					
Build up to DPC						■	■			
Lay concrete floor								■	■	■

Key:      proposed ■

**Figure 3.3** Bar chart showing proposed time for a contract

The bar chart can then be used to check progress. Often the actual time taken for a task is shaded in underneath the proposed time (in a different way or colour to avoid confusion). This shows how what *has* been done matches up to what *should have* been done.



### Did you know?

The Gantt chart is named after the first man to publish it. This was Henry Gantt, an American engineer, in 1910.

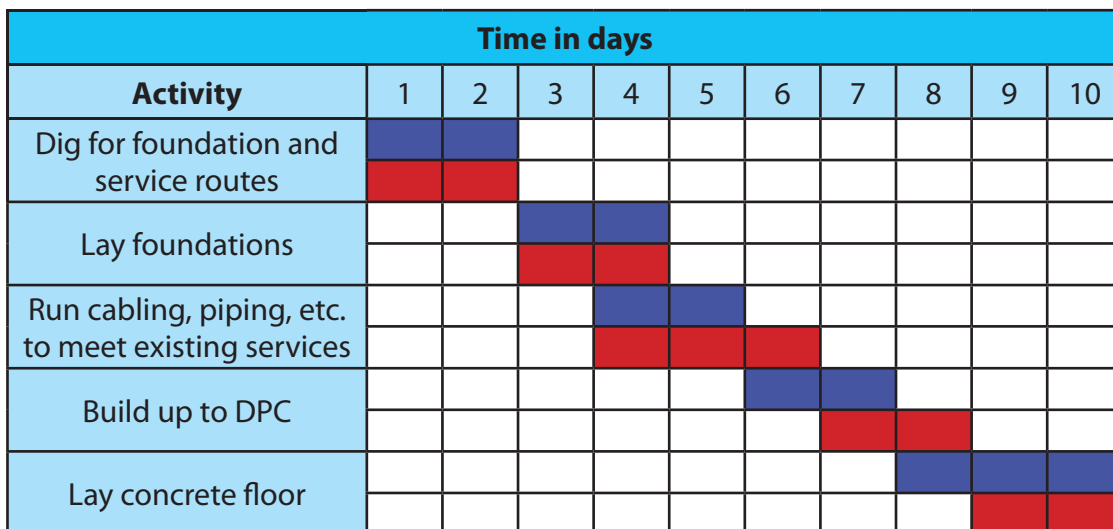


### Activity

Think of a task and create a bar chart for that task.

## Activity

Using the bar chart you've created, think of what could go wrong and write a list of contingencies to overcome any problems.



Key: proposed ■ actual ■

**Figure 3.4** Bar chart showing actual time half way through a contract

As you can see, a bar chart can help you plan when to order materials or plant, see what trade is due in and when, and so on. A bar chart can also tell you if you are behind on a job; if you have a penalty clause written into your contract, this information is vital.

When creating a bar chart, you should build in some extra time to allow for things such as bad weather, labour shortages, delivery problems or illness. It is also advisable to have contingency plans to help solve or avoid problems, such as:

- capacity to work overtime to catch up time
- bonus scheme to increase productivity
- penalty clause on suppliers to try to avoid late or poor deliveries
- source of extra labour (e.g. from another site) if needed.

Good planning, with contingency plans in place, should allow a job to run smoothly and finish on time, leading to the contractor making a profit.

## Critical paths

Another form of work programme is the critical path. Critical paths are rarely used these days as they can be difficult to decipher. The final part of this chapter will give a brief overview of the basics of a critical path, in case you should come across one.

A critical path can be used in the same way as a bar chart to show what needs to be done and in what sequence. It also shows a timescale but in a different way to a bar chart: each timescale shows both the minimum and the maximum amount of time a task might take.

The critical path is shown as a series of circles called event nodes. Each node is split into three: the top third shows the event number, the bottom left shows the earliest start time, and the bottom right the latest start time.

## Did you know?

Bad weather is the main external factor responsible for delays on building sites in the UK. A Met Office survey showed that the average UK construction company experiences problems caused by the weather 26 times a year.



The nodes are joined together by lines, which represent the tasks being carried out between those nodes. The length of each task is shown by the times written in the lower parts of the nodes. Some critical paths have information on each task written underneath the lines that join the nodes, making them easier to read.

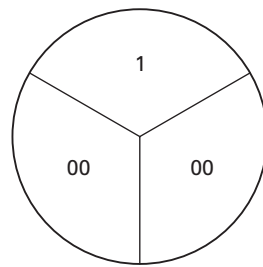


Figure 3.5 Single event node

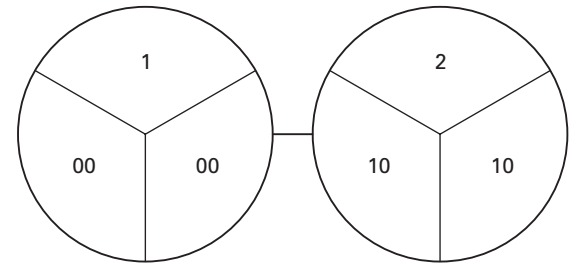


Figure 3.6 Nodes joined together

On a job, many tasks can be worked on at the same time, e.g. the electricians may be wiring at the same time as the plumber is putting in his pipes. To show this on a critical path, the path can be split.

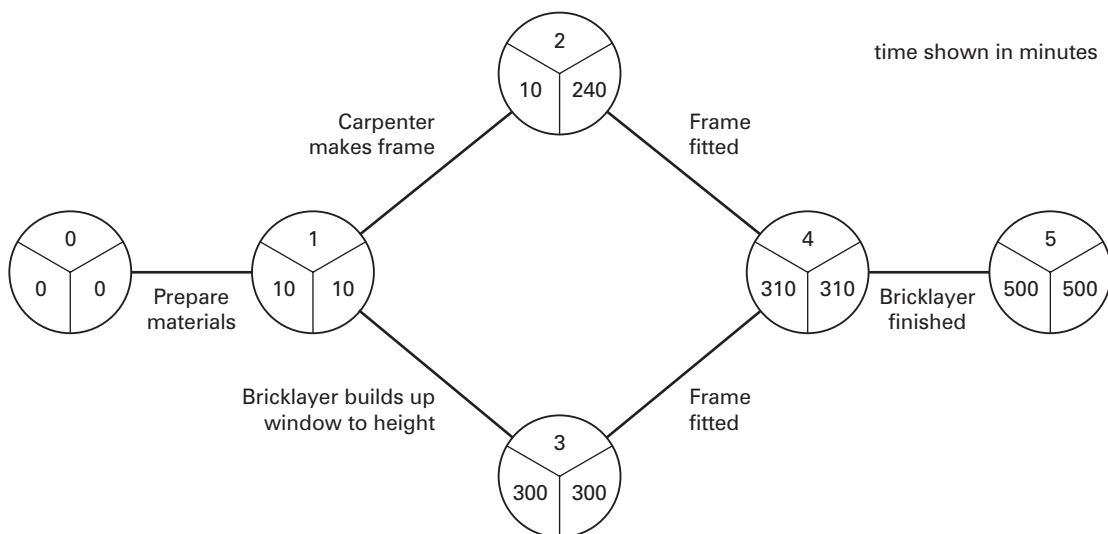


Figure 3.7 Split path

The example shown shows how a critical path can be used for planning building in a window opening, with a carpenter creating a dummy frame.

The event nodes work as follows:

- **Node 0** – This is the starting point.
- **Node 1** – This is the first task, where the materials are prepared.
- **Node 2** – This is where the carpenter makes the dummy frame for the opening. Notice that the earliest start time is 10 minutes and the last start time is 240 minutes. This means that the carpenter can start building the frame at any time between 10 minutes and 240 minutes into the project. This is because the frame will not be needed until 300 minutes, but the job will only take 60 minutes. If the carpenter starts *after* 240 minutes, there is a possibility that the job may run behind.
- **Node 3** – This is where the bricklayer must be at the site, ready for the frame to be fitted at 300 minutes, or the job will run behind.



### Activity

Think of a task you are familiar with and create a critical path for that task.

### Remember

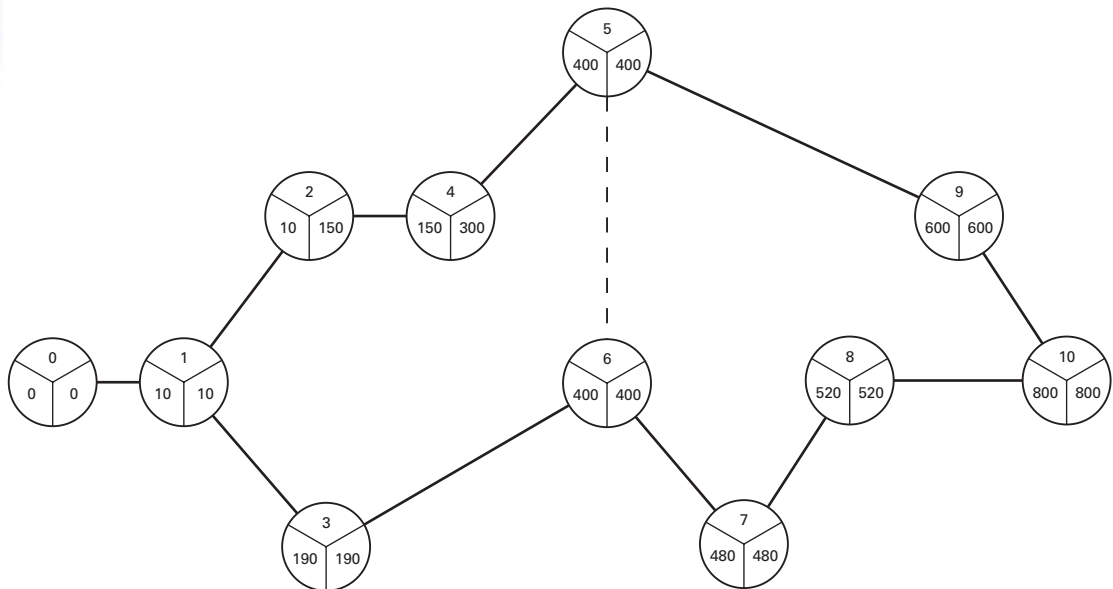


Whichever way you choose to programme your work, your programme must be realistic, with clear objectives and achievable goals.

- **Node 4** – With the frame fitted, the bricklayer starts at 310 minutes and has until node 5 (500 minutes) to finish.
- **Node 5** – The job should be completed.

When working with a split path it is vital to remember that certain tasks have to be completed before others can begin. If this is not taken into account on the critical path, the job will run over (which may prove costly, both through penalty clauses and also in terms of the contractor's reputation).

On a large job, it can be easy to misread a critical path as there may be several splits, which could lead to confusion.



**Figure 3.8** Critical path for a large job

## FAQ



### ***How do I know if my job needs planning permission?***

If you are unsure, you should contact your local council.

### ***What type of planning permission should I apply for?***

If you are unsure of your work, you can make an outline application, which will tell you if your job will pass without getting costly plans made up (though you will have to submit plans later). If you are confident of what you want, you can apply for a full application.

### ***How much does planning permission cost?***

The costs vary depending on what application you make and to which council you make it.

### ***Do I need to have all the listed amenities on my building site?***

No. The amenities listed are a guide to what should be on a large site. If you are just doing an extension, the amenities needed will be fewer and simpler (e.g. no site office).

### ***Which type of programme should I use: bar chart or critical path?***

It is up to the individual which programme they use – both have their good points – but a bar chart is the easiest to set up and work from.

### ***What if it rains for the entire 20-day duration of the job?***

The job would be seriously behind schedule. You can't plan for the weather in this country, but it would be unwise to start this job during a rainy season. There are companies that can provide scaffolding with a fitted canopy to protect the work area, which would be ideal for a job of this size. Larger jobs have longer programmes, and when they are drawn up they are made more flexible to allow for a lot of rainy days.



## Knowledge refresher



- 1 List four things that might be included in the layout for a large site.
- 2 Why is it best to have a good transport route within a site?
- 3 List four different types of storage that may be needed on a building site.
- 4 State four pieces of information you can get from a bar chart.
- 5 With regard to critical paths, what three things are contained in an event node?

## What would you do?



You have been tasked with designing a programme of work for a large contract involving the building of 20 houses. What sort of thing should you check prior to starting? What should you do about plant, labour, materials? What sort of programme should you use (bar or critical path)? What amenities should you consider?