

Information Card: What is Preconstruction?

Preconstruction is the series of activities that are carried out before the construction, or building, of a project. It involves a range of activities and primarily focuses on **planning**.

This information card uses the new Dundee railway station and plaza as an example of preconstruction.

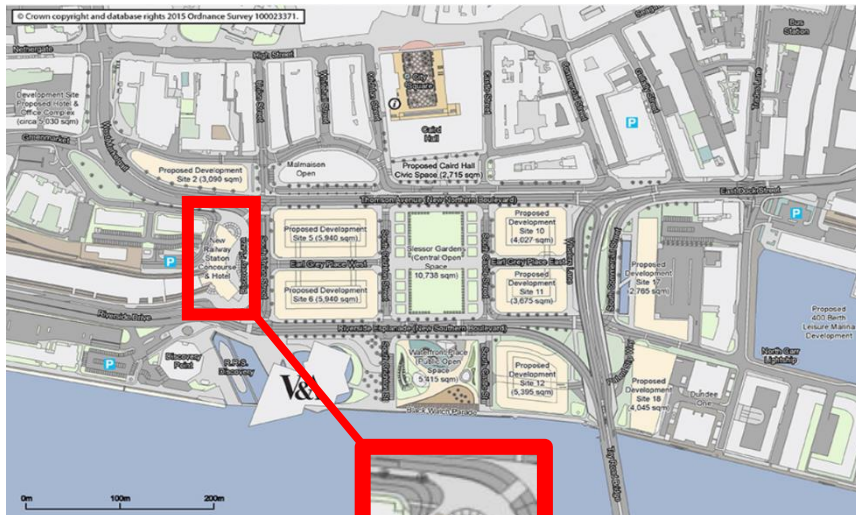


Image courtesy of Dundee City Council

Why do we need to know about preconstruction?

The *On the Right Track: Engineering and Education for All* resource pack uses the redevelopment of the Dundee Waterfront as a basis to learn about civil engineering and the built environment. Today's schoolchildren are tomorrow's engineers; informing children at primary school age of what civil engineering is, the type of projects that are undertaken and which subjects can help to pursue an interest and career in engineering.



Preconstruction is the first phase of a new project and is about feasibility and planning and this information card will provide basic information so that the subsequent topics of this resource pack (that look at the construction activities) can be more easily broached.

What is involved in preconstruction?

For any project there must be a need, or number of needs for it to be developed. We describe these needs as **drivers**; these are the reasons that the project is happening.

Drivers can be a number of different things including:



- Social: providing attractive places for us to use – a new rail station and café will make a good impression to anyone visiting Dundee.
- Financial: the new railway station is part of the waterfront redevelopment and the construction work provides jobs. An attractive waterfront (including the new V&A museum) will attract visitors from Dundee and further afield; they will come to the city and spend money in our cafes, shops, swimming pool etc.



When looking at redeveloping the railway station it was important to consider what other functions the new station would include, for example not just the rail line, platforms, ticket office, but also cafes, hotels, access for pedestrians, cars, buses and taxis. It was important that:

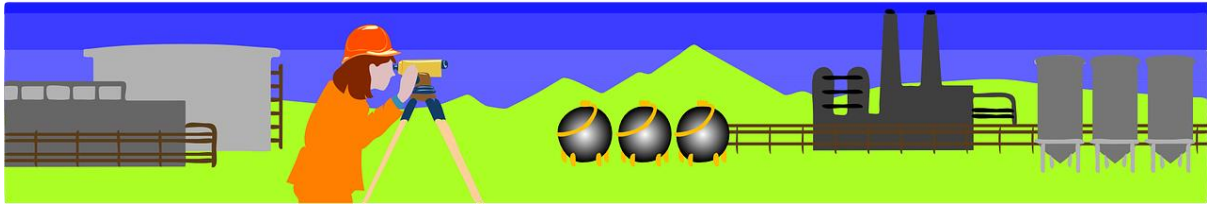


- There would be enough land available – the new building is much larger than the previous
- It would be possible for the proposed station and building to tie in with existing buildings and infrastructure. What does infrastructure mean?

Infrastructure: is the systems and services we need to live in our towns and cities. Examples include roads, railways, sewers, drinking water supply, electric and gas.

- There were no significant objections to the new station being built. The people and organisations consulted included:
 - **Network Rail:** which is the organisation that owns the railway.
 - **Scotrail:** the national rail operator for Scotland.
 - **Transport Scotland:** the national transport agency for Scotland which seeks to “deliver a safe, efficient, cost-effective and sustainable transport system for the benefit of the people of Scotland, playing a key role in helping to achieve the Scottish Government’s Purpose of increasing sustainable economic growth with opportunities for all of Scotland to flourish.”¹
 - **Scottish Environment Protection Agency (SEPA):** which is the organisation that ensures that the air, land and water in Scotland is not damaged or polluted.
 - **Dundee City Council:** Planning, Environment and Transportation departments of the city council.
 - **Local People:** local people have a say in all new development. Dundee City Council has a process where people can object if they have good reason to believe the proposals are not suitable.

¹ <https://www.transport.gov.scot/about/>



To plan the redevelopment of the rail station the site (the area that was to be redeveloped) had to be surveyed.

Q. Do you know what surveying is?

A: Surveying uses special equipment to record the different locations and heights of the land around us; by doing so we can create a drawing or map.



Surveying the site area allowed the engineers and architects to understand the practicalities of the space. For example, the new rail station and plaza had to be located on the existing rail line, fit in to the available land and include suitable access for cars and pedestrians.

To understand what the new rail station and plaza would look like architects and engineers had to prepare lots of drawings and pictures; we refer to this as the development design. The design helps others to understand where buildings, roads, street lighting etc will be located. This is particularly helpful when trying to agree that the development can proceed.

Once the basic layout of the development (buildings, roads, rail line, etc) is agreed then more detailed designs are then drawn. These detailed design drawings are done in lots of detail so that the people who will build the project know exactly where everything should be and what it should look like.

Q. Do you think this is important?

A: Yes! If we don't build things correctly they may not work, or could be dangerous. Can you imagine building a new section of road, which instead of connecting to the existing road, went in the wrong direction!



Once the layout of the development is approved then someone must build it. What normally happens is that companies that would like to build the project submit an offer (known as a tender) of how they will build the project and how much it will cost. The winner of the tender is not always the company offering the lowest cost – other things such as experience in similar work, quality, environmental and local labour employment are also important.



Once the tender is awarded to a company then the project construction can begin! We will look at the different stages involved in the project in more detail in the following work packs!