When writing a Scope document or proposal for your case study or major project, you must ensure that you address how you will meet the 9 functions of project management.

These are:

- Integration Management
- Scope
- Time
- Cost
- Human Resources
- Communication
- Risk *
- Quality
- Procurement *

(* We have separate assessment criteria that deals with Risk and Procurement)

In order to meet the assessment criteria "Guide applications of project integrative processes" you should address the following:

- Integrate 9 functions of PM with **objectives of company**

- Identify your **stakeholders** (especially those involved in authorising project & change). Which stakeholders need to approve aspects of the project? Which stakeholders need to be consulted before decisions are made? Which stakeholders need to be informed as the project progresses.

- **Define the scope** of the project.

What problem needs to be addressed? To what level do they need to be solved? For example a web site for a scientist to retrieve weather data may not need to have multimedia objects, plain html may suffice, but a web site for an up and coming rock band needs much more than a simple text display.

When the scope is defined it should be approved by the key stakeholders, and should not be changed without consulting them.
After a project scope has been defined and approved and the project is underway, employees at the client company start having ideas on how they can adapt the new system to their circumstance. Slowly requests come in to change the project from its original scope. Sometimes these changes are small, other times they are expensive and place the budget under risk. Some poorly thought out changes can put the whole project at risk.

Consequently it is important that the project manager ensures a change management process. This is often a formal process where the change request must be approved by key stake holders, the project manager and head engineer.

In order to prepare a schedule for the project the overall scope of the project needs to be analysed and iteratively divided into smaller sub-projects and tasks with clear outcomes that can in turn be delegated to team members and contractors. These sub-projects and tasks forms the basis of the task list.

The task list will generally have the predecessors of each task and a time estimation for the task.

A predecessor is a task that needs to be completed before the current task at hand can be started. For example, if I am responsible for installing application software on a new server I must wait until an operating system is installed on the server. The task ‘installing OS on server’ is a predecessor to the task ‘installing application software on server’.

A time estimation is a realistic estimation of how long it should take from the start of a task until its completion. This is easy if the task is routine and the project manager has experienced the task may times. However many project tasks are innovative and have not been attempted before. In this situation it is advisable to seek the advice of people who are experienced in those types of tasks to get a reliable time estimation.

A wise project manager will factor in a buffer so that there is flexibility in the schedule for unexpected issues to arise. Based upon personal experience this buffer is about 30% for non-routine tasks. For example if a client was to ring up and ask me to solve a permissions problem. I may estimate that it would take 30 minutes to discuss the problem with the client to identify the location and nature of the problem and 40 minutes to get into the server, locate the error, repair and test. Although my initial estimate is 70 minutes, I would quote at least 90 minutes to the client. If I’m wrong and have over-estimated the time required, in the client’s eyes I have been effective. If I have under-estimated the time required then I have a 20 minute buffer to solve the problem before we fall behind in the schedule. If I had take the other approach and estimated 70 minutes only to take 90 minutes, not only is my capabilities and efficiency brought into question, but I run the risk of putting successive tasks behind schedule.

Once the task list is complete this can be used to create a schedule, GANTT chart, and PERT chart.
- Identify required resources

Resources are normally divided into at least two groups. Those that are human, and those that are not. The laws associated with managing human resources are a lot stricter.

**Human resources** required are determined by the **skills** required, the hours of work required and the time by which the project needs to be done. Basically if you have 32 hours of work required for a task, and you need to have that task completed in two days, you will need to have at least 2 people to work on that task (32 hrs / 8 hrs per person).

The cost of human resources generally varies with the value of the skill set required.

Other resources (e.g. tools and equipment) need to be costed. If the resource is hired then the hours of use should be recorded with the cost.

- Manage Communication

Communication is at the heart of a project manager's work. It is essential to keep people informed of what is happening in the project. It is also important to keep reminding people of when their involvement in the project will be required.

When managing communication the following decisions need to be made:
- who is responsible for the communication?
- to whom do they communicate to?
- what do they communicate?
  i.e.
  - progress
  - changes
  - down time for current sys
- how they will communicate?
  i.e. what methods of communication will be used?
- when they will communicate these things?

Different groups need different communication techniques. In a medium-large organisation that has a common room for staff, a display board with a suggestion box (or a web based equivalent) may be sufficient to communicate with the main body of staff.

In smaller organisations when the project is critical to the organisation staff meetings may be held to keep staff informed and to obtain feedback.

Generally stakeholders are kept informed with e-mail phone calls, and face-to-face meetings.