

A formal VM and VE approach involves significant time and cost. The Consultant shall carry out a preliminary assessment to determine whether such an approach would be beneficial to a particular project. DMAT has a major interest in optimising the content of drainage projects and the Consultant shall obtain DMAT's agreement where he considers that formal VM and VE are not justified.

2.8. Options Appraisal

In many cases of storm water and sub-soil drainage design there will be several layout options.

DMAT's approval of the Developer's proposals requires that there is a cost-effective balance between initial capital cost and ongoing operational and maintenance costs. To support this evaluation the Consultant shall carry out an options appraisal exercise based on the layout options agreed with DMAT. The optimum balance will normally be given by the lowest NPV based on capital and annual costs. However, other factors such as construction risk, programme risk, health and safety risk and environmental impact shall also be considered.

In the case of a simple drainage network with a clear solution the Developer may request DMAT's approval to not carrying out an options appraisal exercise.

2.8.1. Capital Cost (CAPEX)

The capital cost of each option shall be estimated using the latest market rates, preferably obtained from DMAT tenders. The estimating method will depend on the stage of the project; unit rates will be adequate for the Master Plan stage with increasing accuracy and detail through to the final estimate at detailed design which is to be based on a detailed bill of quantities. The estimating method is to be approved by DMAT before commencing the stage.

2.8.2. Operational and Maintenance Cost (OPEX)

The operating and maintenance costs of each option shall be estimated taking advice from DMAT as the long-term owner. Costs will include:

- Labour
- Vehicles and plant
- Power
- Parts and consumables
- Chemicals
- O&M management

For each option the Consultant shall prepare a spreadsheet of estimated daily, weekly, monthly and annual operating and maintenance quantities to which DMAT will add its unit costs to give annual estimates of OPEX. These values shall be used by the Consultant in appraising the options.

2.8.3. Economic Appraisal of Options

At various points in the Manual reference is made to NPV (Net Present Value) calculations. This is the means of making an economic comparison of the whole life cost of competing options. The option with the lowest NPV gives the most economically advantageous solution.