Summary

Risk is inherent in any construction project. Understanding the uncertainties and dangers that can affect a project and then realistically assessing and analysing the risks involved is the key to effective risk management for successful conclusion of the project in terms of time, cost and quality. Unfortunately, even with the use of the most modern project management tools, projects are still not finished on time and construction budgets are exceeded. There is an overwhelming need for a comprehensive yet simple procedure for combining the process of risk analysis and the management strategy to improve the contractor's opportunity of achieving the objectives of the project.

This dissertation demonstrates that by integrating risk management in the basic planning process and by using network analysis techniques in conjunction with simulation, the contractor's likelihood of achieving success on the project is greatly improved. A case study was employed to support this argument. This paper also illustrates the steps in undertaking a Risk Management Process of a project including the procedure for introducing uncertain events in the network model.

Based on the results of the case study the following conclusions were formulated:

- By integrating risks and uncertainties in the project base plan, a more realistic estimate of project duration can be established.
• The lack of contingency planning at the onset of the project would make the contractor vulnerable to uncertain events and hence, unprepared to undertake corrective measures or strategy to bring project back on track. It also leaves the contractor minimal time to recover.

• The results of the risk analysis may not give precise forecast because the input values are based on estimator's best judgement and historical data and due to the 'one-off' nature of projects; some risks are distinct and may have been overlooked in the analysis. However, it is not only the correctness of the estimate that matters but the quality and timing of decisions made.

• The results of the risk analysis also serves as a test of whether the original base plan is feasible or not, based on forecast duration. They can be used for the re-development of the base plans or change of approach to increase confidence that commitments can be met.

• By creating 'what-if-scenarios' in the network through the introduction of uncertain events and three-point estimates, a greater understanding of the risks can be obtained.