

**Drainage Services Department**  
**Technical Circular No. 8/2004**

**The Management and Assessment of Risks**  
**of Time-critical Projects**

**Introduction**

This Circular promulgates the updated departmental procedure for the management and assessment of risks of time-critical projects. The previous DSD Technical Circular No. 9/2000 is hereby superseded and cancelled.

2. Time-critical projects are projects which could have significant consequences if not completed on time. They are usually characterized by extremely tight programmes, complex interfaces between contracts and other projects, and complications involving developing situations and uncertainties in ground conditions. Additional efforts and resources are required to manage time-critical projects for completion on time and within budget.

**Scope**

3. Policies and guidelines on management of works projects are provided in the Project Administration Handbook and Technical Circulars issued by the Environmental, Transport and Works Bureau (ETWB). This circular provides more specific guidelines on the management of time-critical projects with particular reference to the experience of the Drainage Services Department. These guidelines should be used to supplement existing guidelines, requirements and procedures stipulated in other publications issued by the ETWB or other authorities.

## **Risk Assessment**

4. Divisional heads are required to consider whether the projects under their management are time-critical or not. Comprehensive risk assessment on time-critical projects must be carried out in the early planning stage to ascertain the practicality and the risks involved in delivering the project on time and within budget. Adequate resources and expertise are to be committed to identify critical and high risk factors including but not limited to the following :

- (a) Potential variability of project scope and brief due to changing circumstances.
- (b) Physical, technical and funding constraints.
- (c) Adequacy, availability and variability of planning data on matters such as site investigation, operation performance of existing plant and system, population and sewage flow projection.
- (d) Activities on the critical path which have the potential of running into difficulties and causing delay. These activities may include statutory procedures, public consultations, land allocation application, resolution of public objections and environmental & archaeological complications etc.
- (e) Interfaces and coordination between different contracts of the same project and/or between different projects which have the potential of causing knock-on delay effects.
- (f) Uncertainties in ground conditions, locations of utilities and traffic requirements etc.
- (g) Availability of proven and reliable construction technology, equipment, skilled labour and personnel on specialist works such as tunnelling in hard rock at great depth under the sea.
- (h) Contractual arrangement issues.
- (i) Performance of contractors during the construction phase.
- (j) Fluctuation in the construction market.

5. Having identified the risks and uncertainties associated with the project, the potential cost and time implications shall be examined. Solutions and strategies should then be worked out to mitigate or contain the risks and contingency plans devised to cope with the uncertainties.

### **Risk/Value Management Workshops**

6. Risk/value management workshops are useful tools for the identification of risks and optimum solutions. Workshops should be conducted at critical stages as appropriate during the implementation of the projects to cope with changing circumstances.

7. The workshops should involve representatives of an appropriate level of seniority and experience from:-

- (a) the client and the project proponent and where appropriate Environmental, Transport and Works Bureau, Financial Services and the Treasury Bureau and other relevant policy bureaux;
- (b) parties who would be critically affected by late delivery of the projects;
- (c) parties involved in the delivery of the project such as the design and project management teams, Lands Department, Transport Department, Highways Department, Traffic Police etc; and
- (d) parties responsible for the operation and maintenance of the completed works.

8. The workshops provide a forum for all parties concerned to understand the limitations and uncertainties in the delivery of the projects and agree realistic targets in terms of time and cost. All agreements and conclusions reached at the workshops should be documented. As the workshops

would involve senior representatives from other parties, the workshops should be chaired by an officer at D1 rank or above.

### **Baselining the Project**

9. The outcome of the workshops, particularly the target completion date and cost and the potential exposure to delay and additional cost should form an agreed baseline for project control purpose. Any subsequent deviation from the baseline should be properly documented to form a complete audit trail. All reports relating to the baseline of the project should be copied to the Director through the relevant Assistant Director and Deputy Director for information and monitoring purposes.

10. As a related issue, in case the works contracts involved are costing \$100 million or above, the design and method of measurement shall be reviewed and endorsed by the Committee to Access Risks and Estimates (CARE) as stipulated in DSD TC No. 6/2004.

### **Contractual Arrangements**

11. The choice of an appropriate contract form to suit the specific circumstances and requirements of a project is essential to the successful delivery of time-critical projects. The nature and risk exposure of the project should be taken into account in determining the contractual provisions and contract form to be adopted.

12. A clear and equitable risk sharing mechanism in construction contracts is important for the delivery of time-critical projects as this would help to minimise the scope and extent of disputes during the construction phase. Where substantial underground works are involved, consideration should be given to adopt appropriate approaches, including non-traditional ones, for

allocation of ground condition risks under the contract.

13. To reduce the risk exposure of the project, consideration should also be given to dividing the project works into different contract packages and limiting the number of contracts to be awarded to one single contractor. However, the benefits of this approach should be weighted against possible demerits such as the reduction in economy of scale and the problems arising from contract interface issues.

14. In order to minimize the risk of the contractor from defaulting, consideration should be given to adopt contractual measures such as requiring the contractor to provide parent company guarantee and a substantial performance bond (e.g. 10% of the tendered sum). These contract instruments are required to be executed under seal. As their provision may entail complicated legal procedures when overseas companies operating under a different legal system are involved, realistic time limits should be set to allow sufficient time for the contractor to provide the contract instruments. The contract conditions with respect to the time limits for provision of the required contract instruments should be strictly enforced.

15. The outlay of contract expenditure should be carefully devised to ensure that contract payments will be made, as far as possible, in line with the actual progress of works to avoid front-loading of contract payment by contractor. In this respect, consideration may be given to setting a suitable ceiling cap (e.g. 10% of the contract sum) on preliminary items. The amount of ceiling cap should be worked out prior to tender invitation by reviewing all relevant circumstances.

16. The interfaces between inter-related contracts require particular attention because of the possible knock-on effect of any delay. It is important that all the merits and demerits of using multiple-contract arrangements,

including implementing different disciplines of works under separate contracts and implementing parts of the project works under advance contracts, should be thoroughly evaluated before deciding on the most appropriate contract arrangements to be adopted.

A handwritten signature in black ink, appearing to read 'R T K Cheung', with a long horizontal stroke extending to the left.

( R T K CHEUNG )

Director of Drainage Services