Executive Summary

This R&D Study RD1103 "Staff Resource Requirement on DSD Contracts adopting the New Engineering Contract (NEC) Form" is to investigate the implications of works contracts adopting NEC form and evaluate if additional staff resource should be allocated for the works contracts in the future, following DEVB's policy directive in promoting NEC form in all public works contracts for tenders first gazetted or called in 2015 or after.

The advantage of NEC form over traditional contract form such as General Conditions of Contract (GCC) with bill of quantities (BQ) includes its flexibility in tackling project uncertainties and selection of different options on payment and dispute methods to suit their specific needs. In addition, different tools provided in NEC encourage good project management and promote team works and mutual trust among the parties involved in the contract. Drawbacks reported in general, mainly involve additional staff resource for different administration tasks e.g. warning and risk register with very tight schedule, and higher demand in sub-contracting, site measurement and accounting works depending on the NEC options selected.

This Study reviewed the staff resource requirement of seven completed/ on-going DSD works contracts which adopted NEC form, and staff resource required for both entire project cycle including design, construction and account finalization stages and snap-shot view in the interim of construction phase. For a better comparison, staff resource for conventional GCC form of similar project nature and scale was estimated for review. The seven NEC projects under study were of different NEC options, project scale and natures, and there was assumption adopted for the staff resource requirement for the contracts based on the project teams' best estimate and past project experience. Observations based on these various NEC project details with very limited available data could only be viewed as reference and not be representative. Other benefits brought by the NEC form including mutual trust and cooperation gained among the project team including employer, consultants and contractors, collaborative decision making and risk reduction by early warning system, programme advancement and cost effectiveness, etc. could not be reflected in this Study.

Based on the limited survey data from the 7 NEC pilot contracts with only one DC/2008/02 Fuk Man Road (FMR) being completed, it was observed that in general, slightly higher staff resource is required for NEC compared with conventional

contract (except DC/2012/03 Happy Valley Underground Stormwater Storage Scheme (HVUSSS) as a result of the project team's anticipated advance contract completion). The higher staff resource requirement for both design and construction stages was considered to be attributed from the learning time required to catch up the requirements stipulated for NEC form and the skill sets to achieve positive management approach which were new for the project team. It was advised that for example, higher demand of professional staff was found in construction stage to participate in the collaborative decision making and to handle various NEC specific procedures such as early warning and risks register system to timely resolve potential problems and avoid delay. The increase in technical staff such as supervisory staff and surveying officers may likely be required for the new and more complicated payment mechanism involving measurement of completed works and reimbursement payment to contractor particularly for NEC Option C or D target contract.

Saving in staff resource in account finalization using NEC was observed under DC/2008/02 FMR, the only DSD NEC contract completed so far, as well as similar staff saving projection from the other six NEC pilot projects. The advantage could be a result of the positive management and collaborative working attitude among the project team who timely resolved or even avoided most of the disputes in construction stage, and also completed the required site measurement for account finalization. However, due to the limited data available, it is not sure whether a clear conclusion could be drawn based on the above.

External NEC advisory and quantity surveying service were found reported in the seven NEC pilot contracts, to provide support to the staff who were unfamiliar with the requirements and procedures in delivering works contracts in the NEC form. These services included support on NEC option evaluation, contract preparation, assistance in payment, contract management advisory and partnering workshops, etc. It is anticipated that following the experience gained via direct participation in NEC works and also subject to adequate DEVB guidelines to be issued on NEC, the need for these NEC supporting and advisory service would be evanished in the future.

In general, the overall implication on staff resource of contracts adopting NEC varied wildly among contracts. The resources saved in account finalization may offset some of those additional requirements in design and construction stages. Engagement of external NEC advisory and support services was found in NEC pilot stage to assist staff being familiarized with the operation of the NEC. The overall implication on staff cost of adopting NEC form was about 2% - 6% higher than that

anticipated for conventional contract form, and was found insignificant when comparing to the contract sum. The discussion of this Study hence could only be treated as reference and no conclusion on the implication of DSD staff resource requirements for works contract adopting NEC form could be drawn in view of the wildly fluctuating performance advised among different contracts adopting NEC.