

CHAPTER 4

**THE GOVERNMENT OF THE
HONG KONG SPECIAL ADMINISTRATIVE REGION**

CAPITAL WORKS RESERVE FUND

GOVERNMENT SECRETARIAT

Works Bureau

GOVERNMENT DEPARTMENT

Highways Department

Construction of the Belcher Bay Link

**Audit Commission
Hong Kong
29 February 2000**

CONSTRUCTION OF THE BELCHER BAY LINK

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CONSTRUCTION OF THE BELCHER BAY LINK

Summary and key findings

A. **Introduction.** The Belcher Bay reclamation provides land for the construction of a dual carriageway (the Belcher Bay Link) to link Connaught Road West with the Smithfield Extension in Kennedy Town. In May 1993, the Highways Department (HyD) awarded a contract (the Contract) for the construction of the Belcher Bay Link to the lowest tenderer (the Contractor) in the sum of \$303.5 million. The works of the Contract commenced in May 1993 and were substantially completed in January 1997. During the construction period, disputes arose between the Government and the Contractor over the valuation of certain items in the Bills of Quantities (BQ). The disputes were subsequently resolved by arbitration. In June 1998, the Arbitrator decided in favour of the Contractor. The Government had to pay \$13.6 million to the Contractor to settle the disputes. In May 1999, the account of the Contract was finalised in the sum of \$324.4 million (paras. 1 to 4).

B. **Audit review.** Audit has recently conducted a review to ascertain the reasons for the disputes, whether there are lessons to be learnt and whether there is room for improvement in project planning and contract administration in future. The audit findings are summarised in paragraphs C to E below.

C. **The Contractor's proposal concerning erroneous BQ rates.** In response to the Engineer's enquiries during the assessment of tenders, the Contractor acknowledged that his tender contained 27 BQ items which were erroneously priced as a result of writing up errors in the preparation of the BQ. The 27 BQ rates consisted of 5 unreasonably high rates and 22 unreasonably low rates (the erroneous BQ rates). The erroneous BQ rates differed significantly from the rates he had intended to insert in the BQ (the intended rates). In January 1993, the Contractor made a proposal concerning the 27 erroneous BQ rates. The Contractor's proposal and the outcome were as follows:

- for the 5 unreasonably high BQ rates, the Contractor proposed that, if the actual quantities exceeded those in the BQ, the additional quantities would be valued at the intended rates which were much lower than those tendered. However, the Contractor's proposal was not accepted by the HyD. In the event, the actual quantities of two items with unreasonably high BQ rates were substantially greater than those in the BQ. In view of the increase in quantities, the Engineer considered that the BQ rates were no longer applicable and revised the BQ rates downwards. However, the Contractor disagreed with the Engineer's view, and said that the BQ rates should have been used. He claimed for the amount under-certified. The dispute was subsequently resolved by arbitration. The Arbitrator decided in favour of the Contractor and the Government had to pay \$8.7 million to the Contractor; and
- for the 22 unreasonably low BQ rates, the Contractor proposed that, if the actual quantities were less than the BQ quantities by over 10%, the Government would be reimbursed an amount calculated on the basis of the difference between the intended rates and the BQ rates, subject to a ceiling of \$4 million. However, the Contractor's proposal was not accepted by the HyD. In the event, the actual quantities of 20 items with unreasonably low BQ rates were less than the BQ quantities by over 10%. If the Contractor's proposal had been accepted, a sum of \$4 million would have been reimbursed to the Government (paras. 9, 10, 15, 16 and 18).

D. **Measurement of general site clearance.** According to the Contract, the measurement of general site clearance should be based on the plan area of the site as calculated from the drawings (i.e. the whole area). However, the BQ quantities only specified the particular areas (i.e. part of the site) where site clearance operations were required. Tenderers were required to insert rates in the BQ for those specified areas. During the contract period, the Contractor used the actual plan area for the measurement of general site clearance. Consequently, the total area measured for payment increased substantially. In view of the substantial increase in area, the Engineer considered that the BQ rates were no longer applicable and revised the BQ rates downwards. A dispute arose between the Contractor and the Engineer as the Contractor contended that the BQ rates should have been used. He claimed for the amount under-certified. The dispute was resolved by arbitration. The Arbitrator decided in favour of the Contractor. The Government had to pay \$3 million to the Contractor. In December 1999, the Government amended the method of measurement to require that general site clearance is billed as a lump-sum item (para. 27).

E. **Temporary sand overflow platform.** The HyD did not intend that the temporary platform would be included in the BQ as a separate item for measurement. However, in November 1992, the HyD made two amendments to the tender concerning the measurement of temporary works. The Contractor claimed that, according to one of the amendments, the temporary platform should have been an item to be measured for payment. The dispute was resolved by arbitration. The Arbitrator decided in favour of the Contractor. The Government had to pay \$1.9 million to the Contractor for the temporary platform. Audit considers that the dispute could have been avoided if the two amendments had been thoroughly vetted to ensure that there were no inconsistencies or ambiguities in them (paras. 32 to 34).

F. **Audit recommendations.** Audit has recommended that the Director of Highways should:

- (a) where a tenderer makes a proposal to avert possible disputes arising from erroneous tendered rates and his tender is recommended for acceptance, critically examine the merits of the proposal and, prior to the award of a contract, submit a full assessment of the proposal to the Central Tender Board (first inset of para. 21);
- (b) always critically vet the basis for preparing quantities of works items to ensure that the correct basis is used (first inset of para. 28);
- (c) as far as possible, avoid making amendments to tender documents after the commencement of the tender exercise (first inset of para. 35); and
- (d) if amendments to tender documents are considered necessary, conduct a critical examination of the amendments to ensure that the amendments are consistent with other tender provisions so as to avoid potential inconsistencies or ambiguities (second inset of para. 35).

G. **Response from the Administration.** The Director of Highways has generally agreed with all the audit recommendations (para. 44). The Secretary for Works has said that he notes the audit observations and recommendations (para. 45). The Secretary for the Treasury has generally agreed with the audit observations and recommendations on the Contractor's proposal concerning erroneous BQ rates (para. 46).

INTRODUCTION

1. The Belcher Bay reclamation provides land for the construction of a dual carriageway (hereinafter referred to as the Belcher Bay Link) to link Connaught Road West with the Smithfield Extension (Note 1) in Kennedy Town. The reclamation also provides land for the relocation of the cargo handling activities along the Kennedy Town Praya to the new Western District Public Cargo Working Area. While providing an additional corridor for the vehicular traffic between Pokfulam Road and Connaught Road West, the Belcher Bay Link and the Smithfield Extension help improve traffic flow in the Western District and form part of the essential road network to accommodate the traffic from the Western Harbour Crossing.

2. **Funding approvals.** There were three funding approvals by the Finance Committee (FC) of the Legislative Council:

- in May 1992, the FC approved the upgrading of two projects “370 CL —Belcher Bay Reclamation” and “503 TH —Belcher Bay Link” to Category A of the Public Works Programme. The approved project estimates were \$288 million and \$32 million respectively;
- in May 1993, the FC approved an increase in the approved estimate of the project “370 CL —Belcher Bay Reclamation” from \$288 million by \$61 million to \$349 million, mainly due to the higher tender prices and the inclusion of a temporary district open space; and
- in November 1996, the FC approved a further increase in the approved estimate of the project “370 CL —Belcher Bay Reclamation” from \$349 million by \$47 million to \$396 million, mainly due to price fluctuations and the provision of additional and enhanced facilities in the temporary district open space.

3. **Award of contract.** The Highways Department (HyD), with the assistance of an engineering consultant, was responsible for the Belcher Bay Reclamation and the Belcher Bay Link projects. In May 1993, the HyD awarded a contract (hereinafter referred to as the Contract) to the lowest tenderer (hereinafter referred to as the Contractor) in the sum of \$303.5 million for the reclamation of the Belcher Bay and the construction of the Belcher Bay Link. The engineering consultant was also the Engineer for the Contract (hereinafter referred to as the Engineer). The works of the Contract included:

- the reclamation of 10.3 hectares of foreshore and seabed in the Belcher Bay between Shek Tong Tsui and Kennedy Town;
- the construction of the Belcher Bay Link;

Note 1: *The Smithfield Extension is an extension of Smithfield from Kennedy Town to Pokfulam Road.*

- the construction of a 936-metre seawall; and
- the construction of the new Western District Public Cargo Working Area.

The works of the Contract commenced in May 1993 and were substantially completed in January 1997. In September 1995, the HyD handed over part of the reclaimed site to the Western Harbour Crossing franchisee so that the franchisee could complete the road connections to the Western Harbour Crossing. In May 1999, the account of the Contract was finalised in the sum of \$324.4 million. Figure 1 on the centre pages shows the location of the Belcher Bay Link. Photograph 1 on the centre pages shows an overview of the Belcher Bay Link.

4. ***Disputes with the Contractor.*** During the construction of the works, disputes arose between the Government and the Contractor over the re-rating of some erroneously priced Bills of Quantities (BQ —Note 2) items, the area measured for payment of general site clearance and the valuation of an item of temporary works. The disputes were resolved by arbitration. In June 1998, the Arbitrator decided in favour of the Contractor. The Government had to pay \$13.6 million to the Contractor to settle the disputes (Note 3), as follows:

Dispute with the Contractor	Amount paid to the Contractor
	(\$ million)
Re-rating of the erroneously priced BQ items	8.7
Area measured for payment of general site clearance	3.0
Valuation of an item of temporary works	1.9
Total	13.6

Note 2: *The BQ section of a contract is a list of items giving descriptions of the works to be performed and the quantities estimated. Tenderers are required to price each BQ item. The BQ should also be extended, cast and totalled as appropriate. The BQ section allows a comparison of tender prices of tenderers, provides a means of valuing the works and forms the basis for valuing variations of works.*

Note 3: *The Government had another dispute with the Contractor over the valuation of certain works of this Contract. The Government and the Contractor had initially agreed to resolve it by mediation. The Mediator recommended that the Government should pay the Contractor \$23.7 million plus interest. The Government rejected the Mediator’s recommendation. Subsequently, the dispute was resolved by the same Arbitrator who decided in favour of the Government.*

AUDIT REVIEW

5. Audit has recently carried out a review to ascertain:
- the reasons for the disputes over the BQ rates, the area measured for payment of general site clearance and the valuation of an item of temporary works; and
 - whether there are lessons to be learnt and whether there is room for improvement in project planning and contract administration in future.

THE CONTRACTOR'S PROPOSAL CONCERNING ERRONEOUS BQ RATES

6. At the tendering stage, the Engineer noted that the Contractor's tender contained a number of BQ rates which appeared unreasonably high or low, or appeared inconsistent with rates of similar items in the BQ. In response to the Engineer's enquiries, the Contractor acknowledged that 27 BQ rates were unreasonably high or low due to writing up errors in the preparation of the BQ. The Contractor made a proposal concerning the 27 BQ rates. However, the Contractor's proposal was not accepted. Details of the tender examination, the Contractor's proposal and a dispute over the high rates are described in paragraphs 7 to 17 below.

Tender examination

7. According to Works Bureau Technical Circular (WBTC) No. 27/92 (Note 4) of September 1992, the procedures for the examination of tenders in respect of remeasurement contracts and the submission of tender reports to the Central Tender Board (CTB –Note 5) included the following:

- (a) all tenders submitted should be arithmetically checked;
- (b) **the rates tendered could not be changed.** The tendered sum should be adjusted under the following circumstances:
 - (i) errors in extensions and casting of page totals should be corrected and the rectified amounts carried to the General Summary of the BQ;

Note 4: *WBTC No. 27/92 was in force at the time of assessment of the Contractor's tender. In November 1998, WBTC No. 27/92 was replaced by WBTC No. 24/98 which is currently in force.*

Note 5: *The CTB is chaired by the Secretary for the Treasury. Its members consist of the Director of Government Supplies, the Secretary for Works or his representative, a member of the Department of Justice and a Deputy Secretary for the Treasury. The CTB is responsible for making recommendations to the Secretary for the Treasury on the acceptance of tenders.*

- (ii) where there was an extension amount but no rate had been inserted against any quantity, the rate was deemed to be the amount divided by the quantity; and
 - (iii) where there was no extension amount and no rate had been inserted against any item or quantity, the BQ rate was deemed to be zero;
- (c) unrealistic BQ prices or rates should always be checked with other sources;
- (d) after the correction of errors and examination of BQ rates, the Engineer designate should:
- (i) communicate in writing to each relevant tenderer concerning any substantially overpriced or underpriced BQ items; and
 - (ii) require each tenderer to confirm in writing that he either was prepared to abide by the tender or wished to withdraw the tender (Note 6); and
- (e) all correspondence from tenderers in respect of changes of original offers or withdrawal of tenders should be submitted to the CTB.

8. *The Contractor's explanation of the unreasonable BQ rates.* Pursuant to the requirements of WBTC No. 27/92, the Engineer examined the BQ rates in the Contractor's tender and corrected the errors which included errors in extensions and casting of page totals. In his examination of the BQ rates, the Engineer considered that there were 144 BQ rates which appeared unreasonably high or low, or appeared inconsistent with those of other similar items. In January 1993, the Engineer requested the Contractor to provide an explanation for the unreasonable BQ rates.

9. In response, the Contractor gave an explanation for the unreasonable BQ rates in two letters which were subsequently included as part of the Contract. The Contractor's reasons were as follows:

- **the 27 unreasonable BQ rates resulted from writing up errors in the preparation of the BQ (hereinafter referred to as the erroneous BQ rates). Of the 27 BQ rates, the Contractor acknowledged that 5 BQ rates were unreasonably high and 22 BQ rates were unreasonably low;**

Note 6: *This procedure has been amended by WBTC No. 24/98 of November 1998 which is currently in force. The new procedure requires that legal advice on possible remedy is sought if a tenderer chooses not to abide by the tender.*

- the Contractor did not agree that the other 117 (144 less 27) BQ rates, with one exception (Note 7), were unreasonable as they were assessed on the basis of subcontractors' quotations, ground conditions, timing of the works and commercial reasons; and
- the Contractor confirmed that he agreed to abide by the corrected tender sum of \$303.5 million.

The Contractor's proposal

10. In his letter of 14 January 1993 to the Engineer, the Contractor further explained about the 27 erroneous BQ rates. The Contractor submitted a breakdown of the 27 BQ rates which he said he had intended to insert in the tender (hereinafter referred to as the intended rates). The intended rates differed significantly from the tendered rates (see Appendices A and B for details). According to WBTC No. 27/92, the rates tendered could not be changed (see paragraph 7(b) above). Nevertheless, in the same letter, the Contractor made a proposal to the Engineer in which he outlined the circumstances under which the intended rates would be applied to variations of quantities of the 27 BQ items (see paragraphs 15 and 16 below for details).

11. ***Contractor's proposal not accepted.*** On 26 January 1993, the Engineer informed the HyD of the Contractor's proposal concerning the 27 erroneous BQ rates. However, the proposal was not accepted by the HyD and the Contractor's proposal was not incorporated into the Contract.

Tender submission to the CTB

12. On 4 February 1993, the HyD recommended that the lowest tender submitted by the Contractor in the sum of \$303.5 million should be accepted. On 11 February 1993, on the recommendation of the CTB, the Secretary for the Treasury approved the award of the Contract to the Contractor.

13. ***CTB not informed of the Contractor's proposal.*** In the tender report submitted to the CTB, the HyD did not submit the Contractor's letter dated 14 January 1993 concerning the erroneous BQ rates (see paragraphs 15 and 16 below). Therefore, the CTB was not aware of the Contractor's proposal.

14. ***Financial implications of variations in quantities of BQ items with unreasonably high BQ rates.*** In the tender report submitted to the CTB, the HyD also mentioned that, for 43 BQ

Note 7: *The Contractor acknowledged that there was an error in the rate of one item. However, the Contractor considered that the quantity involved was immaterial.*

items with unreasonably high BQ rates (Note 8), the Engineer had carried out an analysis of the financial implications of variations in the quantities. The analysis showed that:

- a 10% increase or decrease in the quantities of the BQ items would result in an increase or a decrease in payment of \$4.5 million to the Contractor; and
- it was no more likely that the quantities of the BQ items would increase than they would decrease.

Significant variations between the actual and BQ quantities of 27 items with erroneous BQ rates

15. As mentioned in paragraph 10 above, on 14 January 1993, the Contractor made a proposal in which he outlined the circumstances under which the intended rates would be applied to variations of quantities of the 27 BQ items with erroneous BQ rates. Of the 27 BQ items, there were five items with unreasonably high BQ rates. For these five items, the Contractor proposed that, if the actual quantities exceeded those in the BQ, the additional quantities would be valued at the intended rates. The intended rates were much lower than the BQ rates. However, the Contractor's proposal was not accepted by the HyD. In the event, the actual quantities of two items of the five items (i.e. item 5.1.44 and item 5.2.14 —see Appendix A) were substantially greater than those in the BQ. In view of the increase in quantities, the Engineer invoked a provision of the Contract for the re-rating of BQ items (Note 9) and valued the additional quantities at the intended rates (which were much lower than the BQ rates). However, the Contractor contended that the BQ rates were the contract rates which should have been used for valuing the additional quantities. He claimed for the amount under-certified. The dispute was subsequently resolved by arbitration. In June 1998, the Arbitrator decided in favour of the Contractor. According to the Arbitrator, the BQ rates should have been used for valuing the additional quantities. He considered that the increase in quantities had not, of itself, made the BQ rates unreasonable and there was no basis for re-rating. Consequently, the Government had to pay \$8.7 million (Note 10) to the Contractor to settle the dispute. The Arbitrator considered that it would have been more satisfactory if a rate for variations in quantity had been agreed at the pre-contract stage.

Note 8: *As mentioned in paragraph 8 above, in his examination of the BQ rates in the Contractor's tender, the Engineer considered that there were 144 BQ items the rates of which appeared unreasonably high or low, or appeared inconsistent with those of other similar items. Of these, the Engineer selected 43 BQ items for financial analysis.*

Note 9: *According to the Contract, if the actual quantity of an item of works was substantially greater or less than that stated in the BQ and, if in the opinion of the Engineer such increase or decrease of itself would render the rate or such item unreasonable, the Engineer should determine an appropriate increase or decrease of the rate using the BQ rate as the basis and should notify the Contractor accordingly.*

Note 10: *The sum awarded by the Arbitrator was made up of the following:*

Amount under-certified + interest + price fluctuations
= \$6.1 million + \$2.1 million + \$0.5 million
= \$8.7 million

16. Of the 27 items, there were 22 items with unreasonably low BQ rates. For these 22 items, the Contractor proposed that, if the actual quantities were less than the BQ quantities by over 10%, the Government would be reimbursed a sum determined according to a formula, subject to a ceiling of \$4 million. The purpose was to partly compensate the Government for not being able to enjoy the low BQ rates to the full extent of those BQ quantities, if the actual quantities turned out to be less than those in the BQ. The formula proposed by the Contractor was as follows:

$$\text{Sum to be reimbursed} = (\text{Intended rate} - \text{tendered rate}) \times 0.75 \times (90\% \text{ of BQ quantity} - \text{actual quantity})$$

However, the Contractor's proposal was also not accepted by the HyD. In the event, the actual quantities of 20 items of the 22 items were less than those in the BQ by over 10% (see Appendix B for details). If the Contractor's proposal had been accepted, a sum of \$4 million would have been reimbursed to the Government.

17. *Comments of the Legal Advisory Division of the Works Bureau on the contract provision for re-rating.* In April 1999, the HyD expressed concern over the contract provision for re-rating. It sought the advice of the Legal Advisory Division of the Works Bureau on how the issue of adjustment of contract rates due to substantial changes in quantities was addressed in the standard forms of contract of other countries. In May 1999, the Legal Advisory Division advised the HyD that:

- the contract provision for re-rating closely resembled a clause in the Conditions of Contract issued by the Institution of Civil Engineers of the United Kingdom;
- the clause for re-rating frequently gave rise to the misunderstanding that the BQ rate of an incorrectly priced item could be revised if there was a variation in quantity; and
- the parties to a contract had to abide by the BQ rate, however unreasonable the rate might be, unless they had negotiated for variations to the rate.

Audit observations on the Contractor's proposal

18. As mentioned in paragraphs 9 and 10 above, the Contractor's tender contained 27 items with erroneous BQ rates (5 high and 22 low rates) which differed significantly from the intended rates. On 14 January 1993, the Contractor made a proposal concerning the erroneous BQ rates (see paragraphs 15 and 16 above). **Bearing in mind that the Contractor's tender recommended to the CTB was the lowest tender, the acceptance of the Contractor's proposal would not have prejudiced against other tenderers and would not have affected the fairness of the tendering result. All tenderers were still competing on the same level-playing field. In Audit's view, the HyD should have taken more proactive action to critically examine the Contractor's proposal,**

including seeking legal advice from the Department of Justice on the merits of the proposal and the action required to be taken to make the proposal contractually binding.

19. In this connection, the Government's procurement policy for public works contracts is to seek competitive tenders and to select the offer representing the best value for money. It is relevant to note that, in December 1997, the Stores and Procurement Regulations were promulgated to replace the Stores Regulations. The Stores and Procurement Regulations provide more guidance to departments on the factors which have to be taken into account in the evaluation of tenders. With reference to proposals from tenderers to reduce prices after tender closing, Regulation 370(d) states that:

“Other than corrections arising from arithmetical errors, departments should not accept any change in tender price offered by a tenderer after the opening of tenders and during tender evaluation. In the tender evaluation, only the original tender price (adjusted for arithmetical errors) should be used in determining the price ranking of the tenders received. Any proposal of reduction in price should only be considered if the tender is recommended for acceptance.” (Audit's emphasis)

Nowadays, works departments are required to consider proposals of reduction in price made by a tenderer after tender closing if the tender is recommended for acceptance.

20. As mentioned in paragraph 13 above, the CTB was not aware of the Contractor's proposal. **To allow the CTB to make a fully informed decision, Audit considers that the CTB should have been informed of the Contractor's proposal.**

Audit recommendations on the Contractor's proposal

21. **Audit has recommended that the Director of Highways should:**

- **where a tenderer makes a proposal to avert possible disputes arising from erroneous tendered rates and his tender is recommended for acceptance, critically examine the merits of the proposal and, prior to the award of a contract, submit a full assessment of the proposal to the CTB. In doing so, due regard should be paid to the need to ensure that the price ranking of the tenders would not be affected so that all tenderers continue to compete on the same level-playing field; and**
- **in order that the CTB can make a fully informed decision, provide the CTB with sufficient relevant information, including all correspondence from tenderers in respect of changes of original offers, when tender recommendations are submitted to the CTB.**

MEASUREMENT OF GENERAL SITE CLEARANCE

22. According to the terms of the Contract, the Contractor was responsible for the clearance of all obstructions to the carrying out of the works. The Contractor should clear “all fixed and floating obstructions” within the site to the extent required or approved by the Engineer. The Contractor should also clear any obstructions on the seabed.

23. **Method of measurement.** The Contract was a remeasurement contract and the actual quantities had to be measured for payment purposes. According to the Contract, the method of measurement should be based on the document titled “Standard Method of Measurement for Civil Engineering Works (1988 Edition)” (SMM) as modified by the Particular Preambles to the BQ. The said SMM should be read and construed as part of the Contract. Regarding the measurement of general site clearance, the relevant clause of the SMM, as amended by the Particular Preambles to the BQ, stated that:

“The measurement of general site clearance shall be of the plan area of the site as described calculated from the Drawings. No deductions shall be made for buildings structures or existing carriageways. General site clearance shall not be measured for separate works areas, marine borrow areas or dumping areas.” (Note 11)

24. **BQ rates revised.** According to the amended SMM clause, the measurement of general site clearance should be based on the plan area of the site as calculated from the drawings (i.e. the whole site area of 177,236 square metres). **However, the BQ quantities (110,318 square metres) were prepared on the basis that only the areas for which site clearance was required would be measured for payment. Based on the actual plan area, the total area of site clearance measured for payment was 177,236 square metres which was greater than the area of 110,318 square metres in the BQ by 66,918 square metres (61%).** In view of the substantial increase in the area measured for payment, the Engineer considered that the BQ rates were no longer applicable. He revised the BQ rates downwards and made payment according to the revised rates. The revised rates and actual quantities as compared with those in the BQ are shown in Table 1 below.

Note 11: *The 1988 SMM stated “the measurement of general site clearance shall be the plan area of the site.” The Contract elaborated on the clause by making reference to the contract drawings and stated what should or should not be measured for payment. In 1992, a new edition of the SMM, which contained the clause, was promulgated. In December 1999, the clause was amended to require that general site clearance is billed as a lump-sum item.*

Table 1

General site clearance –revised rates and actual quantities as compared with those in the BQ

Site clearance	BQ quantity (square metres)	Actual quantity (square metres)	BQ rate (\$ per square metre)	Engineer's revised rate (\$ per square metre)
Land areas	5,200	14,559	60	26.05
Land areas (Not included — Note)	—	3,842	—	7.18 (Note)
Marine areas	<u>105,118</u>	<u>158,835</u>	55	46.47
Total	<u>110,318</u>	<u>177,236</u>		

Source: HyD's records

Note: The general site clearance in respect of two sections of the works was not included in the BQ. The rate was determined by the Engineer in a Variation Order.

Dispute over measurement

25. The Contractor did not agree with the Engineer's revised rates and contended that the BQ rates should have been used. He claimed for the amount under-certified. The dispute was subsequently resolved by arbitration. The Arbitrator did not agree with the Engineer's view that the increase in quantities had rendered the BQ rates unreasonable. He decided in favour of the Contractor. The Government had to pay \$3 million (Note 12) to the Contractor for the settlement of the dispute.

26. The Arbitrator said, among other things, that:

- it was agreed that the nature of the work done in the additional areas was not onerous, and that very little site clearance was required. The work turned out to be easy but this did not make the BQ rates unreasonable; and

Note 12: The sum awarded by the Arbitrator was made up of the following:

Amount under-certified + interest + price fluctuations
 = \$2 million + \$1.1 million - \$0.1 million
 = \$3 million

- the SMM required a rate per square metre to be inserted in the BQ rather than a lump sum. The general site clearance work could easily have been billed as one item, but it was not.

Audit observations on measurement of general site clearance

27. Audit notes that a lesson can be learnt from this case. According to the Contract, the measurement of general site clearance should be based on the plan area of the site as calculated from the drawings (i.e. the whole site area of 177,236 square metres). However, the BQ quantities (110,318 square metres) only specified the areas where site clearance operations were required. Tenderers were asked to submit prices for those specified areas. In the circumstances, the total area of site clearance measured for payment increased by 66,918 square metres (61%). **As mentioned in paragraph 25 above, the Arbitrator disagreed that the Engineer could revise the BQ rates downwards due to the increase in quantities and said that the general site clearance work could easily have been billed as one item. As a result, the Government had to pay \$3 million to the Contractor.** In December 1999, the Government amended the SMM to the effect that, in future, general site clearance should be billed as a lump-sum item.

Audit recommendations on measurement of general site clearance

28. **Audit has recommended that the Director of Highways should:**

- **always critically vet the basis for preparing quantities of works items to ensure that the correct basis is used, and to avoid the risk of disputes arising from inconsistencies in the bases of measurement of the quantities; and**
- **always give due consideration to including appropriate works items, such as general site clearance work, as lump-sum items in a contract.**

TEMPORARY SAND OVERFILL PLATFORM

29. According to the Contract, the term “temporary works” means all temporary works of every kind required for the construction, completion and maintenance of the works. As mentioned in paragraph 4 above, there was a dispute over the valuation of an item of temporary works for the construction of a temporary sand overfill platform. The temporary platform had to be constructed to provide support to the piles at the western end of the seawall during the piling works. The temporary platform would be removed after the completion of the seawall. Figure 2 on the centre pages shows a cross-section of the western end of the seawall. Photograph 2 on the centre pages shows the temporary sand overfill platform. The details of the dispute are described in paragraphs 30 to 33 below.

30. According to the SMM, the BQ rates of the respective items should cover the value of any related temporary works, unless expressly stated otherwise. **Therefore, temporary works were not required to be included in the BQ as separate items for measurement and payment.**

31. ***The temporary platform not intended as an item for measurement.*** During tendering, in response to an enquiry, the Engineer issued a circular letter dated 20 November 1992 to all tenderers informing them that the temporary platform was not an item that would be measured for payment.

Dispute over whether the temporary platform was an item for measurement

32. On 27 November 1992, the HyD issued a tender addendum to all tenderers. The tender addendum included amendments to two paragraphs of the SMM concerning the measurement of temporary works. In the event, the Contractor and the HyD had different interpretations of the amendments, resulting in a dispute over whether the temporary platform was an item to be measured for payment. The salient points of the dispute are as follows:

- ***Amendment to paragraph 17.8 of the SMM.*** Paragraph 17.8 of the SMM was amended to require that separate BQ items are provided for a new group of works “Temporary filling” (see Appendix C for details). **The Contractor considered that the amendment was an express statement, by way of exception, to the requirement of the SMM that the BQ rates were inclusive of the value of temporary works. He contended that the temporary platform was an omitted item in the BQ and should have been separately measured and paid for. He submitted a claim for additional costs.** However, the HyD did not agree that it was an omitted item. An amendment to paragraph 17.9 of the SMM (see the second inset below for details) indicated that the BQ rate was inclusive of the value of the temporary platform; and
- ***Amendment to paragraph 17.9 of the SMM.*** Paragraph 17.9 of the SMM was amended to require that the items “for fill for marine structures and reclamation” include overfilling for the formation of temporary platforms and the subsequent removal of the platforms (see Appendix C for details). **The HyD interpreted that the amended paragraph 17.9 of the SMM would include the temporary platform.** Therefore, the temporary platform was not an omitted item. The HyD considered that the circular letter of 20 November 1992 and the SMM clearly stated that the BQ rates were “to be inclusive of the cost of temporary works”, i.e. the temporary platform was not to be measured for payment. The Contractor disputed this interpretation.

33. ***Dispute over the temporary platform resolved by arbitration.*** The dispute over whether the temporary platform was an item for measurement was resolved by arbitration. The Arbitrator decided in favour of the Contractor. The Government had to pay \$1.9 million (Note 13) to the Contractor for the temporary platform. The Arbitrator considered that:

Note 13: *The sum awarded by the Arbitrator was made up of the following:*

Amount under-certified + interest + price fluctuations
= \$1.3 million + \$0.4 million + \$0.2 million
= \$1.9 million

- according to the Contract, any inconsistencies between the SMM and the amendment to the SMM should be resolved by giving prevalence to the amendment. However, the Arbitrator considered that there was clearly a discrepancy between, or an ambiguity in, the two amendments. This was because one amendment required that BQ items of temporary filling are provided, whilst the other amendment required that the items “for fill for marine structures and reclamation” include the temporary platform and its subsequent removal. To resolve the ambiguity in the two amendments, he found that the circular letter of 20 November 1992 was of limited assistance because the letter was issued one week before the SMM was amended; and
- after giving consideration to the comparative weight of the two amendments, he considered that the temporary platform was, objectively, intended by the parties to be a measurable item.

Audit observations on the temporary platform

34. The HyD did not intend that the temporary platform would be included in the BQ as a separate item for measurement. However, the two amendments to the SMM gave rise to different interpretations between the Contractor and the HyD on whether the temporary platform was an item to be measured for payment (see paragraph 32 above). According to the Arbitrator, there was clearly a discrepancy between, or an ambiguity in, the two amendments to the SMM. The Arbitrator considered that the temporary platform was a measurable item. The Government had to pay \$1.9 million to the Contractor for the temporary platform. **Audit considers that the dispute could have been avoided if the two amendments to the SMM had been thoroughly vetted to ensure that there were no inconsistencies or ambiguities in them. In this connection, Audit noted that the HyD had sought advice from the Department of Justice on some of the amendments contained in the tender addendum before the amendments were issued to tenderers. However, the HyD had not sought legal advice on the two amendments to the SMM.**

Audit recommendations on the temporary platform

35. **Audit has *recommended* that the Director of Highways should:**

- as far as possible, avoid making amendments to tender documents after the commencement of the tender exercise;
- if amendments to tender documents are considered necessary, conduct a critical examination of the amendments to ensure that the amendments are consistent with other tender provisions so as to avoid potential inconsistencies or ambiguities; and
- where necessary, consider seeking legal advice on amendments to tender documents before the tender exercise is completed.

BQ QUANTITIES OF PILING WORKS

Piling works

36. As mentioned in paragraph 3 above, the works under the Contract included the construction of a seawall. The western end of the seawall included a “reinforced concrete relieving platform” partly supported by bored piles. The bored piles consisted of two components —the pile shaft and “extra over for permanent lining to pile shaft” (hereinafter referred to as the pile shaft lining —Note 14). In preparing the BQ quantities of the piling works, the Engineer considered that the pile length would depend on the actual ground conditions. According to the design, it was estimated that the average pile length would be 30 metres. Based on the average pile length, the quantities of the piling works were estimated, according to two ranges of depth, as follows:

- *Piles in the 25/30-metre range.* For bored piles with length exceeding 25 metres but not exceeding 30 metres, the BQ quantities of pile shaft and pile shaft lining would be 420 metres; and
- *Piles in the 30/35-metre range.* For bored piles with length exceeding 30 metres but not exceeding 35 metres, the BQ quantities of pile shaft and pile shaft lining would also be 420 metres.

In the event, no piling works were in the 25/30-metre range. All the quantities were in the 30/35-metre range or above. Details are described in paragraphs 37 to 41 below.

Piling works with unreasonably low BQ rates

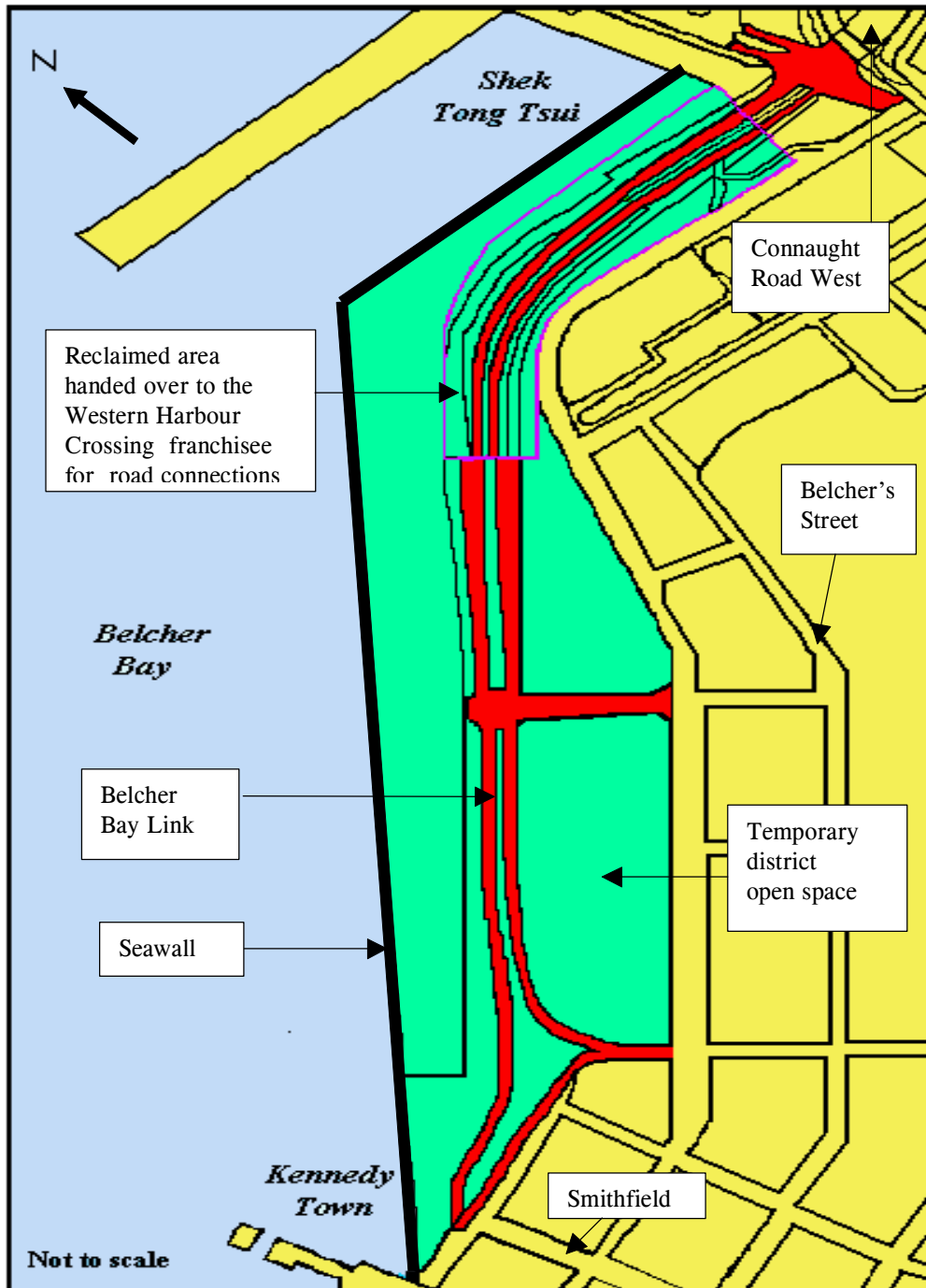
37. During the assessment of the Contractor’s tender, for the piling works in the 30/35-metre range, the Engineer considered that the two items were priced reasonably. However, for the piling works in the 25/30-metre range, the Engineer considered that the two items were priced with unreasonably low BQ rates. A comparison between the BQ rates and those intended is shown in Table 2 below.

Note 14: *Lining is the protective support within a pile shaft to prevent the collapse of unstable soils during excavation. The “extra over” for permanent lining includes the following:*



- *fabrication works;*
- *protective coatings or surface treatments; and*
- *handling, pitching and installation works.*

Figure 1

Location of the Belcher Bay Link



Legend:

-  Reclaimed area
-  Belcher Bay Link

Source: Records of the HyD

Photograph 1

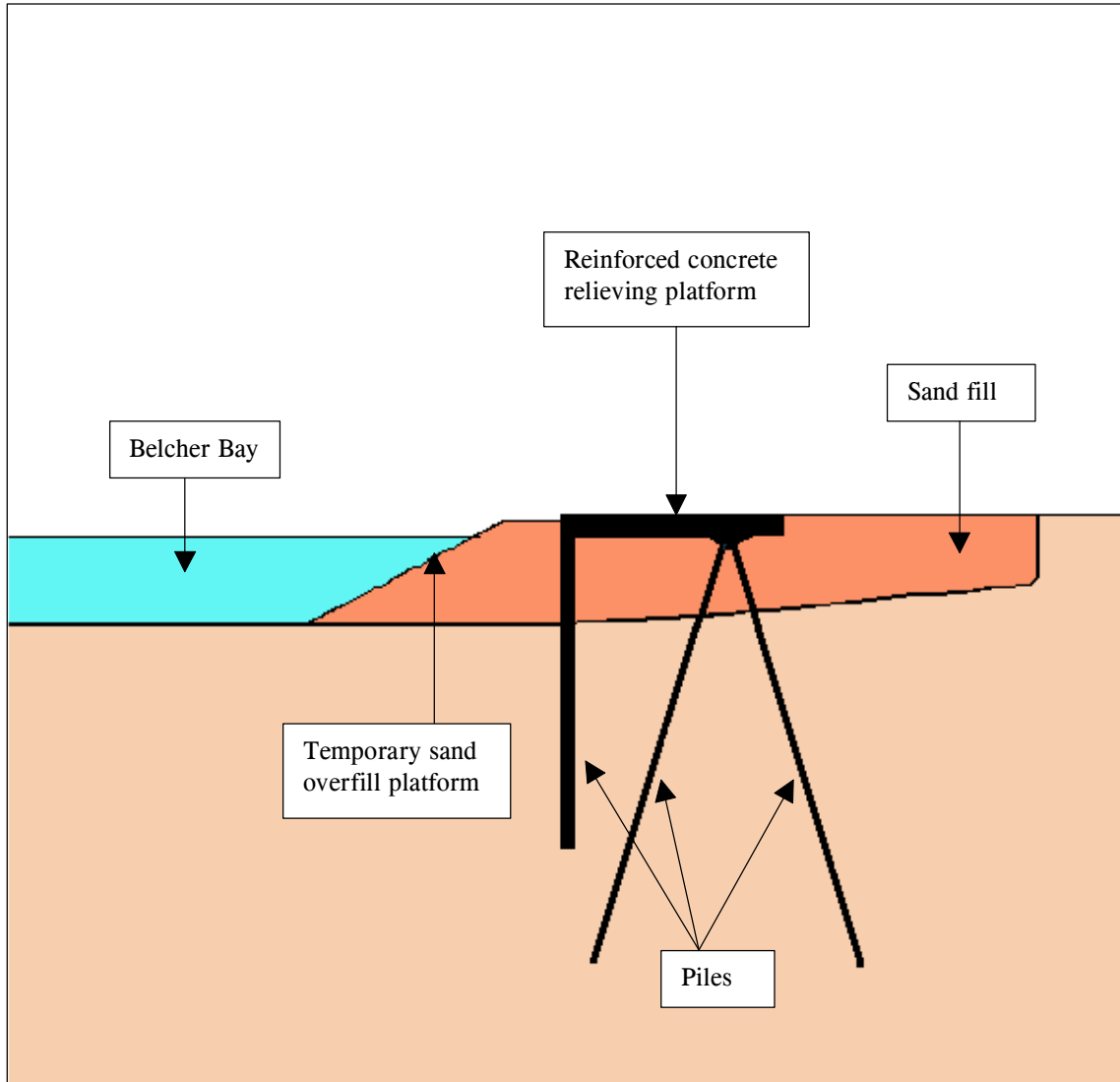
An overview of the Belcher Bay Link



Source: Records of the HyD (photograph taken in February 1997)

Figure 2

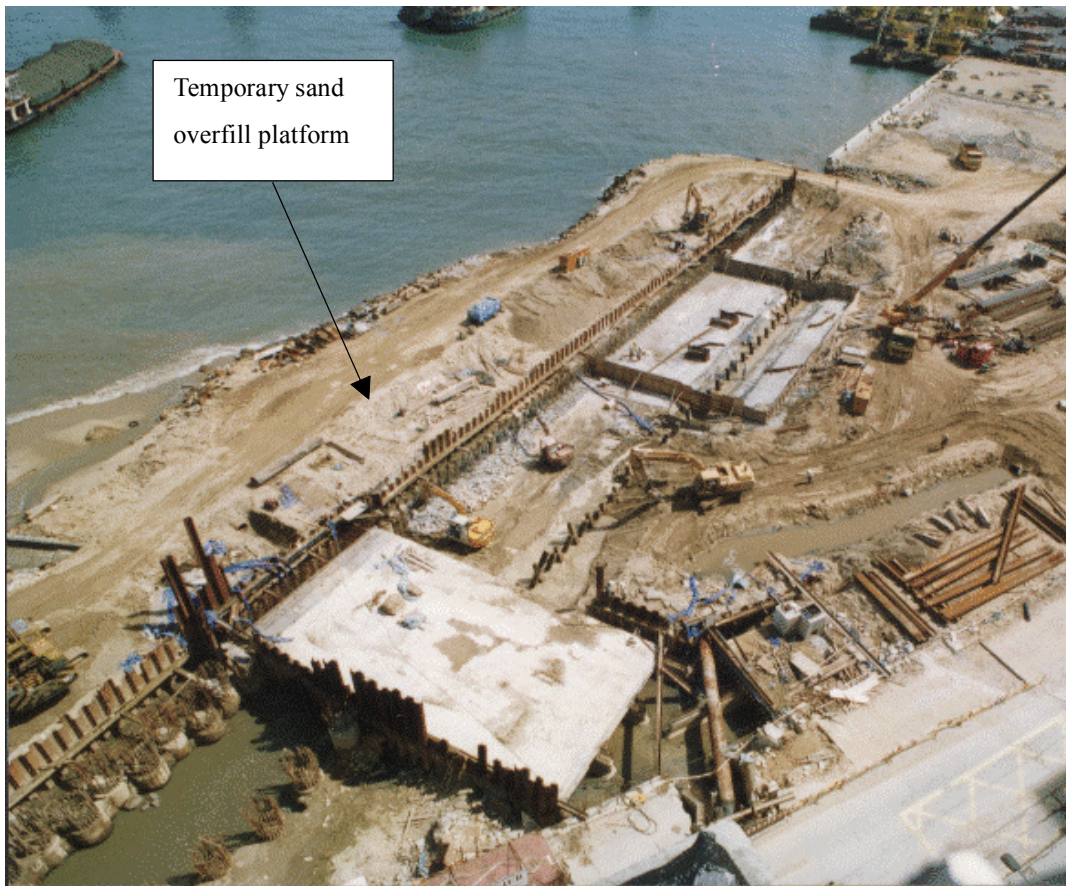
A cross-section of the western end of the seawall



Source: Records of the HyD

Photograph 2

Temporary sand overfill platform



Source: Records of the HyD (photograph taken in August 1996)

Table 2

A comparison between the BQ rates and the intended rates of piling works

BQ item	Description	BQ quantity (metre) (a)	BQ (tendered) rate (\$ per metre) (b)	Intended rate (\$ per metre) (c)	Intended rate over BQ rate (d) = (c)/(b)
<i>Pile shaft</i>					
6.3.15	Pile shaft in the 25/30-metre range	420	100	10,000	100 times
6.3.16	Pile shaft in the 30/35-metre range	420	10,000 (Note)	N/A	
<i>Pile shaft lining</i>					
6.3.18	Pile shaft lining in the 25/30-metre range	420	80	8,000	100 times
6.3.19	Pile shaft lining in the 30/35-metre range	420	8,000 (Note)	N/A	

Source: HyD's records

Note: The Engineer considered that the BQ rates of these items were reasonable.

Variations in BQ quantities of piling works

38. As shown in Table 2 above, for piling works in the 25/30-metre range, there were two items (i.e. items 6.3.15 and 6.3.18) of which the intended rates were 100 times the BQ rates. In view of the very low BQ rates, the Engineer reviewed the reasonableness of the quantities of the items. In the course of finalising the tender report, on 28 January 1993 the Engineer informed the HyD that there was a high probability that the pile lengths would be in the 30/35-metre range.

39. Regarding the piling works, the tender report submitted to the CTB in February 1993 stated that:

- the Contractor had entered substantially different rates for the two ranges of piling works (see Table 2 above). If the piles were in one range, the cost of piling works would be increased or decreased by \$6 million;

- the final pile lengths would depend on the actual ground conditions. The design required a certain pile length, and 30 metres was the average length indicated by the design assumptions. However, it was more likely that the pile lengths would increase; and
- after taking into account a possible increase in cost of \$6 million arising from an increase in quantities of piling works in the 30/35-metre range, the adjusted tender sum would be \$309.5 million (i.e. tender sum of \$303.5 million plus the increase in cost of \$6 million). The adjusted sum was still the lowest tender sum received.

40. **Actual quantities of piling works.** The actual quantities of the two items of piling works (i.e. items 6.3.15 and 6.3.18), which were in the 25/30-metre range, turned out to be zero. No piling works were billed under the unreasonably low rates tendered for the piling works. As the piles constructed were all in the 30/35-metre range and the 35/40-metre range, the piling works were all billed under the rates for the 30/35-metre range. The Engineer considered that the rates were reasonable (see Appendix D for details).

41. **Contract Adviser's comments.** In October 1996, the Contract Adviser of the HyD made the following comments concerning the items with unreasonably low BQ rates:

- the Government would no longer be able to benefit from the unreasonably low BQ rate of item 6.3.15 because the actual quantity was zero. There was hardly any provisions in the Contract which might provide the Government with any redress; and
- the outcome was not quite equitable to the Government. Both the Government and the Contractor were aware of the erroneous BQ rates in the tender, but they still entered into the Contract. By entering into a remeasurement contract with erroneous BQ rates, the two parties took on a huge risk. If the quantities of such items turned out to be inaccurate, one party would suffer and the other party would benefit. The financial consequences could be substantial.

Audit observations on BQ quantities of piling works

42. As mentioned in paragraph 36 above, for piles in the 25/30-metre range and in the 30/35-metre range, the BQ quantities of the piling works were each estimated to be 420 metres. In his tender, the Contractor had quoted substantially different BQ rates for the piling works in the two depth ranges. In view of the pricing irregularities, the Engineer carried out a review of the reasonableness of the BQ quantities. The review revealed that there was a high probability of pile lengths ending up all in the 30/35-metre range. This turned out to be the case. No piles were in the 25/30-metre range and the Government could not have reaped the benefit of the unreasonably low rates tendered. **Audit considers that there is a lesson to be learnt. Audit also considers that, if the quantities of BQ items with erroneous BQ rates turned out to be inaccurate and if actual quantities of such items were incorporated into the works, the financial consequences could be substantial.**

Audit recommendation on BQ quantities of piling works

43. To avoid adverse financial consequences arising from inaccurate BQ quantities with erroneous BQ rates, Audit has *recommended* that the Director of Highways should always critically vet the reasonableness of quantities of works items involving underground works, such as piling works, so as to ensure that the quantities are reasonably estimated.

RESPONSE FROM THE ADMINISTRATION

44. The Director of Highways generally agrees with all the audit recommendations. He has also said that:

The Contractor's proposal concerning erroneous BQ rates

- (a) he agrees with the audit recommendation that the merits of a tenderer's proposal should be critically examined, especially now that the Stores and Procurement Regulations contain clear guidelines on this;
- (b) he agrees with the audit recommendation that, in order that the CTB can make a fully informed decision, the CTB should be provided with sufficient relevant information, including all correspondence from tenderers in respect of changes of original offers, when tender recommendations are submitted to the CTB;
- (c) at the time of tender assessment in December 1992 and January 1993, the Stores Regulations were not so explicit about the treatment of post-tender offers. Since the Contractor's previous letter had addressed the queries raised by the Engineer, it was considered that the Contractor's letter of 14 January 1993 needed not be attached to the tender report if the proposal were not to be taken forward;
- (d) substantial changes in BQ quantities could be dealt with under the contract provision for re-rating. It was unclear at the time of tender assessment whether it would be more advantageous to deal with these changes contractually or under the Contractor's proposal;
- (e) the Contractor's proposal should not be accepted without further clarification. If the proposal was worthy of consideration, there should be further negotiations between the parties and redrafting of offer terms. The Government was committed to completing the Belcher Bay Link on time as it would need to compensate the Western Harbour Crossing franchisee if there would be delay in the completion of certain sections of the project. If the HyD embarked on negotiations with the Contractor on his proposal, it was likely that the programme would be lengthened;

Measurement of general site clearance

- (f) he agrees with the audit recommendations that the basis for preparing quantities of works items should always be critically vetted to ensure that the correct basis is used and to avoid the risk of disputes arising from inconsistencies in the bases of measurement of the quantities, and that due consideration should always be given to including appropriate works items, such as general site clearance work, as lump-sum items in a contract;

Temporary sand overfill platform

- (g) he agrees with the audit recommendations that amendments to tender documents after the commencement of the tender exercise should be avoided as far as possible and that, if amendments to tender documents are considered necessary, a critical examination of the amendments should be conducted to ensure that the amendments are consistent with other tender provisions so as to avoid potential inconsistencies or ambiguities, and that where necessary, consideration should be given to seeking legal advice on amendments to tender documents before the tender exercise is completed; and

BQ quantities of piling works

- (h) he agrees with the audit recommendation that, in order to avoid adverse financial consequences arising from inaccurate BQ quantities with erroneous BQ rates, the reasonableness of quantities of works items involving underground works, such as piling works, should always be critically vetted so as to ensure that the quantities are reasonably estimated.

45. The **Secretary for Works** has said that he notes the audit observations and recommendations.

46. The **Secretary for the Treasury** generally agrees with the audit observations and recommendations on the Contractor's proposal concerning erroneous BQ rates.

Appendix A
(paragraphs 10 and 15 refer)

Items with unreasonably high BQ rates –actual quantities and intended rates

BQ item	Description	BQ quantity	Actual quantity	Increase/ (decrease) in quantity	Percentage increase/ (decrease) in quantity	Tendered rate	Intended rate	Tendered rate over intended rate
		(a)	(b)	(c)=(b)-(a)	(d)=(c)/(a) × 100%	(e)	(f)	(g)=(e)/(f)
5.1.10	Type I deep compaction of fill material	64,063 m ³	50,350 m ³	(13,713 m ³)	(21%)	\$150/m ³	\$15/m ³	10 times
5.1.44	Dredging in all materials	57,949 m ³	94,021 m ³	36,072 m ³	62%	\$117/m ³	\$17/m ³	7 times
5.2.14	Type I deep compaction of fill material	44,970 m ³	64,059 m ³	19,089 m ³	42%	\$150/m ³	\$15/m ³	10 times
6.4.9	Excavation for structural foundations in suitable material except rock maximum depth not exceeding 3m	2,460 m ³	2,399 m ³	(61 m ³)	(2%)	\$100/m ³	\$10/m ³	10 times
7.2.64	20×20mm polysulphide joint sealant	394 m	227 m	(167 m)	(42%)	\$75/m	\$7.5/m	10 times

Legend: m denotes metres
m³ denotes cubic metres
mm denotes millimetres

Source: HyD's records

**Items with unreasonably low BQ rates — amount reimbursable
to the Government if the Contractor's proposal had been accepted**

BQ item	Description	BQ quantity	Actual quantity	Increase/ (decrease) in quantity	Percentage increase/ (decrease) in quantity	Tendered rate	Intended rate	Intended rate over tendered rate	Amount reimbursable to the Government (Note 1)
		(a)	(b)	(c)=(b)-(a)	(d)=(c)/(a) × 100%	(e)	(f)	(g)=(f)/(e)	(h)=[(f)-(e)] × 0.75 × [0.9 × (a)-(b)]
3.2.10	Moving equipment for vertical drain installation	3,751 no.	0	(3,751 no.)	(100%)	\$5/no.	\$50/no.	10 times	\$113,937
3.2.11	Vertical drain installed in marine mud	31,660 m	0 m	(31,660 m)	(100%)	\$5/m	\$50/m	10 times	\$961,673
3.2.21	Surcharge minimum top level at 7m PD	760 m ²	0 m ²	(760 m ²)	(100%)	\$25/m ²	\$250/m ²	10 times	\$115,425
3.2.22	Surcharge minimum top level at 9m PD	1,100 m ²	0 m ²	(1,100 m ²)	(100%)	\$35/m ²	\$350/m ²	10 times	\$233,888
6.3.10	Excavation for structural foundation maximum depth exceeding 3m but not exceeding 6m	1,450 m ³	886 m ³	(564 m ³)	(39%)	\$1/m ³	\$10/m ³	10 times	\$2,828
6.3.15	1500mm diameter concrete Grade 40D/20 pile shaft exceeding 25m but not exceeding 30m in length	420 m	0 m	(420 m)	(100%)	\$100/m	\$10,000/m	100 times	\$2,806,650
6.3.18	Extra over for permanent lining to 1500mm diameter pile shaft exceeding 25m but not exceeding 30m in length	420 m	0 m	(420 m)	(100%)	\$80/m	\$8,000/m	100 times	\$2,245,320
6.6.52	225mm wide covered U channel with precast concrete covers	1,113 m	0 m	(1,113 m)	(100%)	\$36/m	\$360/m	10 times	\$243,413
7.1.5	Excavation for structural foundations in suitable material except rock maximum depth exceeding 3m but not exceeding 6m	5,016 m ³	3,615 m ³	(1,401 m ³)	(28%)	\$1/m ³	\$10/m ³	10 times	\$6,071

Appendix B
Page 2/3
(paragraphs 10 and 16 refer)

BQ item	Description	BQ quantity	Actual quantity	Increase/ (decrease) in quantity	Percentage increase/ (decrease) in quantity	Tendered rate	Intended rate	Intended rate over tendered rate	Amount reimbursable to the Government (Note 1)
		(a)	(b)	(c) = (b)-(a)	(d) = (c)/(a) × 100%	(e)	(f)	(g) = (f)/(e)	(h) = [(f)-(e)] × 0.75 × [0.9 × (a)-(b)]
7.1.5a	Excavation for structural foundations in unsuitable material maximum depth exceeding 3m but not exceeding 6m	300 m ³	0 m ³	(300 m ³)	(100%)	\$1/m ³	\$10/m ³	10 times	\$1,823
7.1.7	Deposition of suitable material above structural foundation	2,912 m ³	976 m ³	(1,936 m ³)	(66%)	\$1/m ³	\$10/m ³	10 times	\$11,102
7.1.11	Compaction of suitable material above structural foundation	2,912 m ³	976 m ³	(1,936 m ³)	(66%)	\$1/m ³	\$10/m ³	10 times	\$11,102
7.1.15	400mm diameter precast concrete vertical piles exceeding 25m but not exceeding 30m in length	1,022 m	439 m	(583 m)	(57%)	\$42/m	\$420/m	10 times	\$136,307
7.1.16	400mm diameter precast concrete vertical piles exceeding 30m but not exceeding 35m in length	1,224 m	161 m	(1,063 m)	(87%)	\$42/m	\$420/m	10 times	\$266,660
7.1.17	500mm diameter precast concrete vertical piles exceeding 25m but not exceeding 30m in length	290 m	105 m	(185 m)	(64%)	\$53/m	\$530/m	10 times	\$55,809
7.1.18	500mm diameter precast concrete vertical piles exceeding 30m but not exceeding 35m in length	374 m	0 m	(374 m)	(100%)	\$53/m	\$530/m	10 times	\$120,419
7.1.19	Driving 400mm diameter precast concrete vertical piles exceeding 25m but not exceeding 30m in length	1,022 m	517 m	(505 m)	(49%)	\$15/m	\$150/m	10 times	\$40,784

Appendix B

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(paragraphs 10 and 16 refer)

BQ item	Description	BQ quantity (a)	Actual quantity (b)	Increase/ (decrease) in quantity (c)=(b)-(a)	Percentage increase/ (decrease) in quantity (d)=(c)/(a) × 100%	Tendered rate (e)	Intended rate (f)	Intended rate over tendered rate (g)=(f)/(e)	Amount reimbursable to the Government (Note 1) (h)=[(f)-(e)] × 0.75 × [0.9 × (a)-(b)]
7.1.20	Driving 400mm diameter precast concrete vertical piles exceeding 30m but not exceeding 35m in length	1,224 m	348 m	(876 m)	(72%)	\$15/m	\$150/m	10 times	\$76,302
7.1.21	Driving 500mm diameter precast concrete vertical piles exceeding 25m but not exceeding 30m in length	290 m	250 m	(40 m)	(14%)	\$17/m	\$170/m	10 times	\$1,262
7.1.22	Driving 500mm diameter precast concrete vertical piles exceeding 30m but not exceeding 35m in length	374 m	0 m	(374 m)	(100%)	\$17/m	\$170/m	10 times	\$38,625
3.1.14	1500mm thick drainage layer	4,763 m ³	4,393 m ³	(370 m ³)	(8%)	\$15/m ³	\$150/m ³	10 times	0 (Note 2)
3.1.15	Geotextile filter type I	3,175 m ²	5,190 m ²	2,015 m ²	63%	\$3/m ²	\$30/m ²	10 times	0 (Note 2)
Total									\$7,489,400 (but subject to a ceiling of \$4 million — Note 3)

Legend: m denotes metres
m² denotes square metres
m³ denotes cubic metres
mm denotes millimetres
PD denotes principal datum in Hong Kong

Source: HyD's records

Note 1: The amount reimbursable to the Government was calculated based on the Contractor's proposal (see paragraph 16 above). The Contractor proposed that, if the actual quantities of these BQ items were less than the BQ quantities by over 10%, the Government would be reimbursed a sum determined according to a formula, subject to a ceiling of \$4 million. The formula proposed was as follows:

$$\text{Sum to be reimbursed} = (\text{Intended rate} - \text{tendered rate}) \times 0.75 \times (90\% \text{ of BQ quantity} - \text{actual quantity})$$

Note 2: No amount was reimbursable to the Government because the actual quantities were not less than the BQ quantities by over 10%. Therefore the items did not qualify for any reimbursement under the Contractor's proposal as mentioned in Note 1.

Note 3: As mentioned in Note 1, the maximum amount to be reimbursed to the Government was subject to a ceiling of \$4 million.

**Extract of paragraphs 17.8 and 17.9 of
the SMM and the amendments to the SMM**

(A) Paragraph 17.8 of the SMM

1. Separate items should be provided for fill for marine structures and reclamation in accordance with the following:

“Group (Note)		Feature (Note)
I	1. 2. 3. 4. 5.	Sand fill Rubble fill Selected building debris Armouring rock Other stated types of fill material
II	1.	Material of different sizes
III	1. 2. 3. 4. 5.	From excavation on site Provided by the Contractor Provided by others Provided and placed by others Provided by others and collected by the Contractor
IV	1.	Different sources or points of collection
V	1. 2. 3. 4.	In seawall foundations In breakwaters In other stated marine structures In reclamation”

2. The Particular Preambles to the BQ added the following new group of works to the SMM:

“VIA	1.	Temporary filling”
------	----	--------------------

Source: HyD’s records

Note: According to the SMM, each item description of the BQ was to be compounded from the descriptive features listed in the itemisation groups so as to identify the works required, but not more than one feature from any one group might be represented in any one item description. Where the SMM did not identify the works required, it should be amended as appropriate by stating in the Particular Preambles to the BQ.

(B) Paragraph 17.9 of the SMM

1. The items for fill for marine structures and reclamation should include for:
 - “(a) stockpiling, multiple handling, transporting, depositing, tamping, compacting, trimming and shaping to specified profiles;
 - (b) selection, separation and processing of material;
 - (c) complying with any requirements on the rate and method of deposition;
 - (d) settlement and displacement of underlying materials;
 - (e) consolidation of fill material;
 - (f) removing and disposing of any unsuitable overburden materials or material deposited by siltage prior to filling subsequent layers;
 - (g) taking precautions to avoid damage to structures and existing sewers and services;
 - (h) packing around piles, pedestals, sewers and services;
 - (i) use of divers; and
 - (j) filling of any void caused by overdredging or any other fill outside the fill profile.”

2. The Particular Preambles to the BQ added the following items to the SMM:
 - “(1)A overfilling to form temporary platforms as indicated in the sequence of construction or such alternative methods as may be adopted by the Contractor; and
 - (s)A dredging and removal of overfill platform material to original seabed profile, and disposal of material in approved dumping grounds as specified.”

Source: HyD's records

Appendix D
(paragraph 40 refers)

Actual quantities of the two components of the piling works

BQ item	Description	BQ quantity (metres)	Actual quantity (metres)	BQ rate (\$ per metre)
<i>Pile shaft</i>				
6.3.15	Pile shaft in the 25/30-metre range	420	0	\$100 (Intended rate was \$10,000)
6.3.16	Pile shaft in the 30/35-metre range	420	720.85	\$10,000 (Note 1)
— (Note 2)	Pile shaft in the 35/40-metre range	—	212.85	\$10,000 (Note 2)
Total		<u>840</u>	<u>933.70</u>	
<i>Pile shaft lining</i>				
6.3.18	Pile shaft lining in the 25/30-metre range	420	0	\$80 (Intended rate was \$8,000)
6.3.19	Pile shaft lining in the 30/35-metre range	420	548.15	\$8,000 (Note 1)
— (Note 2)	Pile shaft lining in the 35/40-metre range	—	107.85	\$8,000 (Note 2)
Total		<u>840</u>	<u>656.00</u>	

Source: HyD's records

Note 1: The Engineer considered that these BQ rates were reasonable.

Note 2: There were no such items in the original BQ. Their rates were valued by the Engineer on the basis of the rates of the piling works in the 30/35-metre range.

Chronology of key events

May 1992	The FC approved the upgrading of two projects “370 CL —Belcher Bay Reclamation” and “503 TH —Belcher Bay Link” to Category A of the Public Works Programme. The approved project estimates were \$288 million and \$32 million respectively.
November 1992	The Engineer issued a circular letter to all tenderers informing them that the temporary sand overfill platform was not an item that would be measured for payment.
November 1992	The HyD issued a tender addendum to all tenderers. The tender addendum included amendments to two paragraphs of the SMM concerning the measurement of temporary works.
January 1993	The Engineer requested the Contractor to provide an explanation for the 144 unreasonable BQ rates submitted.
January 1993	The Contractor acknowledged that the BQ rates of 27 items were unreasonable due to writing up errors in preparing the tender. He did not agree that the other 117 BQ rates were unreasonable.
January 1993	The Contractor made a proposal in which he outlined the circumstances under which the intended rates would be applied to variations of quantities of the 27 items with erroneous BQ rates.
January 1993	The Engineer informed the HyD of the Contractor’s proposal concerning the 27 items with erroneous BQ rates.
January 1993	The Engineer informed the HyD that he considered that there was a high probability that the lengths of the bored piles would be in the 30/35-metre range.
February 1993	The HyD recommended that the lowest tender in the sum of \$303.5 million should be accepted.

Appendix E

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February 1993	On the recommendation of the CTB, the Secretary for the Treasury approved the award of the Contract to the Contractor.
May 1993	The FC approved the inclusion of a temporary district open space in the project 370 CL and an increase in the approved project estimate from \$288 million by \$61 million to \$349 million.
May 1993	The Contract for the construction of the Belcher Bay Link was awarded to the lowest tenderer in the sum of \$303.5 million. The works of the Contract commenced.
September 1995	The Contractor handed over part of the reclaimed site to the Western Harbour Crossing franchisee so that the franchisee could complete the road connections to the Western Harbour Crossing.
October 1996	The Contract Adviser of the HyD commented that, if the items with erroneous BQ rates turned out to be inaccurate, the financial consequences could be substantial.
November 1996	The FC approved the request to increase the approved project estimate of the project 370 CL from \$349 million by \$47 million to \$396 million.
January 1997	The works of the Contract were substantially completed.
December 1997	The Stores and Procurement Regulations were promulgated to replace the Stores Regulations. Regulation 370(d) states that any proposal of reduction in price should be considered if the tender is recommended for acceptance.
June 1998	The disputes between the Government and the Contractor were resolved by arbitration. The Arbitrator decided in favour of the Contractor and the Government had to pay \$13.6 million to the Contractor to settle the disputes.
December 1999	The Government amended the SMM to require that general site clearance is billed as a lump-sum item in the BQ.

Appendix F

Acronyms and abbreviations

BQ	Bills of Quantities
CTB	Central Tender Board
FC	Finance Committee
HyD	Highways Department
SMM	Standard Method of Measurement for Civil Engineering Works
WBTC	Works Bureau Technical Circular