



THE GOVERNMENT OF THE HONG KONG
SPECIAL ADMINISTRATIVE REGION
TERRITORY DEVELOPMENT DEPARTMENT
HK ISLAND & ISLANDS DEVELOPMENT OFFICE

Agreement No. CE 7/99

Northern Access Road for Cyberport Development
Design and Construction

MONTHLY ENVIRONMENTAL MONITORING AND AUDIT REPORT NO. 23

March 2003

Document No. R/2146/122/1 Issue 1



Babtie Asia
with sub-consultants

Urbis Ltd
Wilbur Smith Associates Ltd
BMT Reliability Ltd

Babtie Asia

R/2146/122/1

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Certified by:
M K T Cheung
(Environmental Team Leader)

Verified by:
B Douglas
(Independent Environmental Checker)

** It is noted that noise and air monitoring did not meet the EM and A requirement due to equipment failure. This report is verified on the basis that spare equipment will be provided to cover such events in future*

Territory Development Department
Hong Kong Island and Islands Development Office
13/F North Point Government Offices Building
333 Java Road
North Point
HONG KONG


Babtie Asia Ltd
15/F, Cornwall House
Taikoo Place
979 King's Road
Quarry Bay
HONG KONG

Babtie Asia

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Approved for Issue by:

..... A M Pearson
Position: Project Director
Date: 14/3/03

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Monthly Environmental Monitoring and Audit Report No. 23

EXECUTIVE SUMMARY

This is the twenty-three Monthly Environmental Monitoring and Audit (EM&A) Report for the project of Northern Access Road for Cyberport Development. The contract entitled 'Contract No. HK10/2000, Northern Access Road for Cyberport Development at Telegraph Bay' was awarded to China Harbour Engineering Company (Group) on 31 October 2000 and the commencement date of construction was on 27 March 2001.

This report mainly presents the EM&A works for the project from 27 January 2003 to 26 February 2003.

Noise Level

24 hour continuous noise monitoring was carried out during the reporting period.

No noise level exceedance was recorded at both stations. However, the Contractor had erected a large semi-enclosure to shield the rock breaking activity. In addition, a semi-enclosure was erected along the demolished section of the existing bridge at Sha Wan Drive to mitigate the noise.

Air Quality

One 24-hour TSP and three 1-hour TSP were taken in every six-days for monitoring.

No measurement exceeding the action/ limit level was recorded from both stations. However, the Contractor had installed the sprinkler system, increased spraying water and erected a shelter for excavation near the crest slope to depress dust from arising.

Others

No notification of summons nor successful prosecutions was received.

To mitigate the visual inspect, the Contractor had replaced the green tarpaulin along the coastline and watered the hydroseeded area more frequently to enhance the growth of the grass.

Future Key Issues

Future construction activities, such as rock breaking works, slope excavation works, soil nail works, construction of Retained Earth Wall and Retaining Wall Nos. 1 and 2, demolition of existing bridge, piling and ground investigation should be closely monitored to ensure the effects on air quality and noise levels are minimized.

1. ENVIRONMENTAL STATUS

1.1 Construction Programme

The contract consists of the construction of bridge foundations, bridge substructure, bridge deck, electric substation, retaining walls and cascade, demolition works, earthworks, roadwork, drainage works, watermains laying works and landscaping works.

The updated master construction programme is shown in Figure 1.1.

1.2 Project Organization and Management Structure

An environmental team (ET) has been established to carry out monitoring and audit and environmental management. In addition, an Independent Environmental Checker (IC(E)) has been employed to verify the overall environmental performance of the Project, including the implementation of environmental mitigation measures, submissions relating to environmental monitoring and auditing, and any other submissions required under the Environmental Permit.

The project organization chart of EM&A works is shown in figure 1.2 and the management structure of contractor is shown in figure 1.3.

1.3 Summary of Work Progress from 27 January 2003 to 26 February 2003

The major construction activities undertaken in the reporting month were as follows:

1.3.1 Preliminaries

- Construction of semi-enclosure at the slope adjacent to Sha Wan Drive
- Traffic diversion at Sha Wan Drive
- Forming of haul road along the mid-hill between CH.50 & CH.300.
- A temporary footway has been formed along the crest line.
- The haul road from Sha Wan Drive to S3 has been maintained.

1.3.2 Utility & Services

- Preparation and Implementation for the temporary diversion of storm and sewer.
- Construction of slope surface channels at slope Nos. S2 & S4 substantially completed.
- Breaking of rock trench for watermains near CH.500 substantially completed.
- Construction of storm drain near Bridge 1 partially completed.

1.3.3 Construction Works

- Excavation for foundation works and construction of concrete footing for RE Wall were completed. Installation of precast panels is in progress.
- Footing and column of staircase were completed and construction of deck is almost completed.
- Rock breaking for Bridge No. 2 pier mostly completed.
- Backfilling of R/W No. 1 in progress.
- Installation of soil nail of slope S2 was completed.
- Excavation of slope S3 and construction of temporary soil nail for temporary works for R/W mostly completed.

- Preparation for the construction of R/W No. 2.
- Construction of cascade No. 2 intake (CH.400) and cascade No. 1 intake (CH.350) in progress.
- Construction of Bridge No. 3 was completed.
- VO for boulder field between S7 & S8 to remove boulders and stabilize the slope was issued. Erection of temporary rock fall fence and boulder removal were completed. Bulk excavation works and soil nailing works are in progress.
- 1st and 2nd Span of Bridge No. 4 were completed. Piling works and pile load tests for bridge 4 were completed. Abutments and wing walls were cast, pile cap and column at pier P4/1 and P4/2 were completed. Construction of 3rd Span of Bridge No. 4 is in progress.

Location of Cyberport Development in Telegraph Bay & Northern Access Road is shown in Figure 1.4, and the general layout plans of Northern Access Road are shown in Drawing Nos. T/2146/1003 & W/2146/1004.

Two monitoring stations, both for noise and air quality, are located in Pine Court & Magnolia Villa as shown in Figure 1.5 and 1.6 respectively. ASR-NA1 represents the location of air quality monitoring station in Pine Court while ASR-A1 represents the location of air quality monitoring station in Magnolia Villa. NSR-3 represents the location of noise monitoring station in Pine Court while NSR-9 represents the location of noise monitoring station in Magnolia Villa.

2. IMPLEMENTATION SCHEDULE OF ENVIRONMENTAL MITIGATION MEASURES

Implementation Schedule of Environmental Mitigation Measures is shown in Appendix A.

3. MONITORING RESULTS

3.1 Noise

3.1.1 Monitoring Methodology

The Construction noise levels were measured in terms of the A-weighted equivalent continuous sound pressure level (L_{eq}). $L_{eq(30 \text{ min})}$ was used as the monitoring parameter for the time period between 0700-1900 hours on normal weekdays. For all other time periods, $L_{eq(5 \text{ min})}$ was measured for comparison with the Noise Control Ordinance (NCO) criteria.

As supplementary information for data auditing, statistical results such as L_{10} and L_{90} were also obtained for reference.

3.1.2 Monitoring Equipment

Integrating Sound Level Meter, Model No. B&K2238, complying with the requirement stated in Technical Memorandum (TM) issued under the Noise Control Ordinance (NCO), was used for measurement. The Sound Level Meter is calibrated by the laboratory annually. A Sound Level Calibrator, Model No. B&K 4231, is used to calibrate the meter.

Copies of calibration certificates conducted by Wellab Ltd. for the sound level meters used in Pine Court and Magnolia Villa are included in Appendix B.

3.1.3 Noise Parameter

$L_{eq(30 \text{ min})}$ was measured to determine the noise impact for the time period between 0700 – 1900 hours on normal weekdays and $L_{eq(5 \text{ min})}$ was taken at times other than normal weekdays.

L_{10} and L_{90} were also recorded as supplementary information for reference.

The action and limit levels are shown in Appendix D.

The sound level meter at Pine Court and Magnolia Villa were broken down occasionally in this reporting period and was tabled in Appendix I.

Occasionally, when the noise meter at the stations stopped functioning, a hand-held noise meter was used to spot check the noise level.

3.1.4 Monitoring Locations

Locations of Monitoring Station are shown in Figure 1.5, the same locations as set up for the Baseline Monitoring. These are as follows: -

NSR-3	Pine Court
NSR-9	Magnolia Villa

3.1.5 Noise Monitoring Results

No noise level exceedance was recorded at both stations. However, the Contractor had erected a large semi-enclosure to shield the rock breaking activity. In addition, a semi-enclosure was erected along the demolished section of the existing bridge at Sha Wan Drive to mitigate the noise.

Noise was mainly generated by plant / equipment operation on site, road traffic and container vessels and motor boats crossing East Lamma Channel.

The graphical representations of noise level at day time are shown in Appendix E.

Noise Monitoring results from 27 January 2003 to 26 February 2003 are summarized in Table 3.1.

Table 3.1 Results Summary of Noise Monitoring

Time Period (Parameter)	Location	
	Pine Court	Magnolia
Day time : 0700 – 1900 hrs on normal weekday ($L_{eq(30 \text{ min})}$)	Maximum: 74.40 dB(A) Mean: 65.06 dB(A) Minimum: 56.70 dB(A)	Maximum: 72.80 dB(A) Mean: 63.74 dB(A) Minimum: 44.70 dB(A)
Evening-time : 0700-2300 hrs on holiday and 1900 – 2300 hrs on all other days ($L_{eq(5 \text{ min})}$)	Maximum: 66.20 dB(A) Mean: 62.36 dB(A) Minimum: 52.00 dB(A)	Maximum: 64.30 dB(A) Mean: 59.65 dB(A) Minimum: 42.30 dB(A)
Night-time : 2300-0700 hrs Of next day ($L_{eq(5 \text{ min})}$)	Maximum: 68.30 dB(A) Mean: 62.06 dB(A) Minimum: 46.80 dB(A)	Maximum: 64.70 dB(A) Mean: 59.23 dB(A) Minimum : 39.90 dB(A)

Detailed Monitoring Result are posted to the Cyberport Website regularly and a full set of data is stored on the CD-ROM attached to the report.

There was loss of monitoring data from noise meter of Magnolia Villa Monitoring Station on 27 of January 2003. The reason for no noise monitoring data collection was due to the occurrence of power stoppage over the weekend. When the noise meter was re-activated by switching on the power on the following Monday afternoon, the data was lost and irrecoverable. This incident had nothing to do with the noise meter which was found in a good condition. The power cut off could be due to the triggering off of the current leakage breakage system for the power system in the premises. The fault was outside the contractor's control as the power to the noise meter is supplied by the estate management.

The building manager is aware of the problem and has assured the RE staff that a recurrence of the event will be avoided if at all possible.

3.2 Air Quality

3.2.1 Monitoring Methodology

The TSP levels are measured in accordance with the standard high volume sampling method as established in the Title 40 of the Code of Federal Regulations, Chapter 1 (Part 50), Appendix B.

One set of 24-hour TSP level and three sets of 1-hour TSP are measured in every six days.

All relevant data including temperature, weather conditions, elapsed-time meter reading for the start and stop of the sample, identification and weight of the filter paper, and any other local atmospheric factors affecting or affected by site conditions etc. are recorded in detail.

3.2.2 Monitoring Equipment

A High Volume Sampler, Model No. GMW2310, for TSP sampling, complying the Title 40 of the Code of Federal Regulations, Chapter 1 (Part 50), Appendix B, is used for measurement, both for 24-hour and 1-hour TSP sampling. The High Volume Sampler is calibrated once every three months.

Its associated calibrator, Model No. GMW25, is used to calibrate the sampler.

A copy of calibration certificates of the high volume sampler in Pine Court & Magnolia Villa is included in Appendix C.

Samples are sent to the Government Chemist for measuring the weight of particulates and analysis, and the ER is responsible for handling the filter paper, conducting the tests and the calculation of TSP level.

3.2.3 Air Quality Parameter

Monitoring and audit of the Total Suspended Particulates (TSP) levels is carried out by the ER & ET to ensure that any deteriorating air quality can be readily detected and timely action is to be taken to rectify the situation.

Three 1-hour and one 24-hour TSP monitoring in every six-days is carried out to indicate the impacts of construction dust on air quality. The 24-hour TSP levels are conducted by following the standard high volume sampling method as set out in the Title 40 of the Code of Federal Regulations, Chapter 1 (Part 50), Appendix B.

The action and limit levels are shown in Appendix D.

The air sampler was broken down at Pine Court in this reporting period and was tabled in Appendix I.

3.2.4 Monitoring Location

Locations of monitoring stations are shown in Figure 1.6, the same set up as for the Baseline Monitoring. These are as follows:

ASR – NA1	Pine Court
ASR – A1	Magnolia Villa

3.2.5 Air Quality Monitoring Result

No measurement exceeding the action/ limit level was recorded from both stations.

Available air quality sampling results from 27 January 2003 to 26 February 2003 are summarized in Table 3.2.

The graphical representations of air quality monitoring data are shown in Appendix F.

Table 3.2 Summary of Air Quality Monitoring Results

	Location	
	ASR-NA1 ($\mu\text{g}/\text{m}^3$)	ASR-A1 ($\mu\text{g}/\text{m}^3$)
24-hour monitoring	Maximum: 70.71 Mean: 63.51 Minimum: 39.42	Maximum: 100.33 Mean: 96.29 Minimum: 88.22
1-hour monitoring	Maximum: 137.70 Mean: 100.77 Minimum: 56.72	Maximum: 360.80 Mean: 232.48 Minimum: 109.05

Detailed monitoring results are posted to the Cyberport Website regularly and a full set of results are stored on the CD-ROM attached to the report.

The air sampler at Magnolia Villa has broken down from 27 January 2003 to 12 February 2003. The ER & ET had then investigated the problem and found that the contractor had provided late maintenance service of the sampler due to the shortage of spare parts in the market. The Contractor has been requested to check constantly with the supplier about the availability of the stock of spare parts.

4. RECORD OF NON-COMPLIANCE, COMPLAINTS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTION

4.1 Noncompliance and Deficiency

4.1.1 Air Quality

No measured impact was found to have exceeded the action/limit level from both stations. Sprinklers are still being operated to depress dust from arising in earthworks zone. The Environmental Team undertook the environmental weekly check on site.

4.1.2 Noise

No noise level exceedance was recorded at both stations. However, the Contractor had erected a large semi-enclosure to shield the rock breaking activity. In addition, a semi-enclosure was erected along the demolished section of the existing bridge at Sha Wan Drive to mitigate the noise.

The Environmental Team undertook the environmental weekly check on site, and no major deficiencies were found during the site inspection.

4.2 Complaint

No complaint was received in the reporting month.

To mitigate the visual impact, the Contractor had replaced the green tarpaulin along the coastline and watered the hydroseeded area more frequently to enhance the growth of the grass.

4.3 Notification of Summons and Successful Prosecutions

No notification of summons or successful prosecution was received by the contractor in the reporting month. The relevant cumulative statistics are shown in Appendix G.

5. FUTURE KEY ISSUES AS VIEWED FROM THE WORKS PROGRAMME AND WORK METHOD STATEMENTS

The proposed construction works to be carried out in the next report period, which have a potential environmental impact and will require mitigation measures, are listed below:

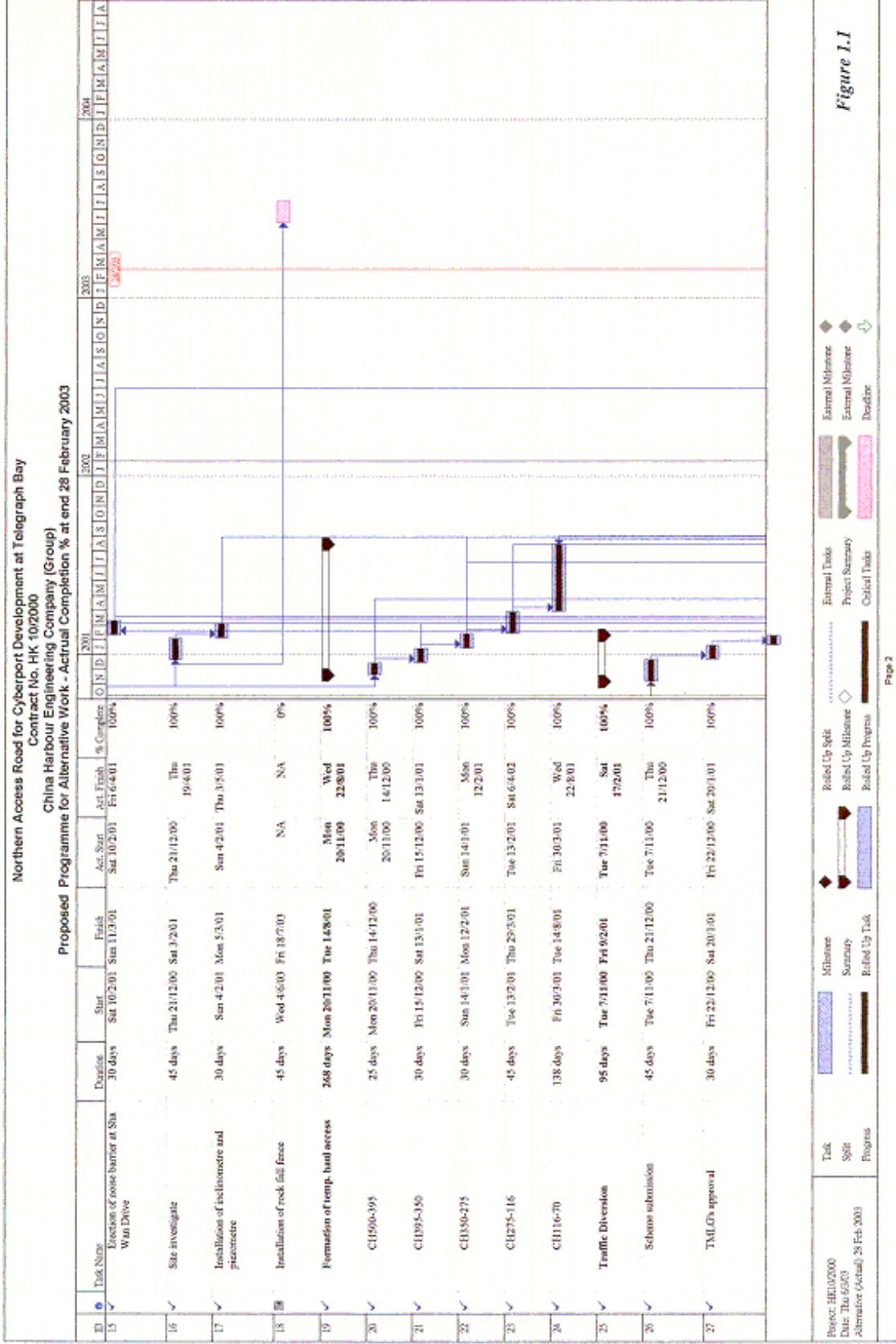
1. Rock breaking Works
2. Slope Excavation Works
3. Soil Nail Works
4. Construction of Retaining Wall Nos. 1 & 2, Cascade 1 & 2
5. Construction of bridge No. 1, 2 & 4
6. Ground Investigation
7. Piling Works
8. Demolition of existing bridge in Sha Wan Drive

6. ADVICE ON THE SOLID AND LIQUID WASTE MANAGEMENT STATUS

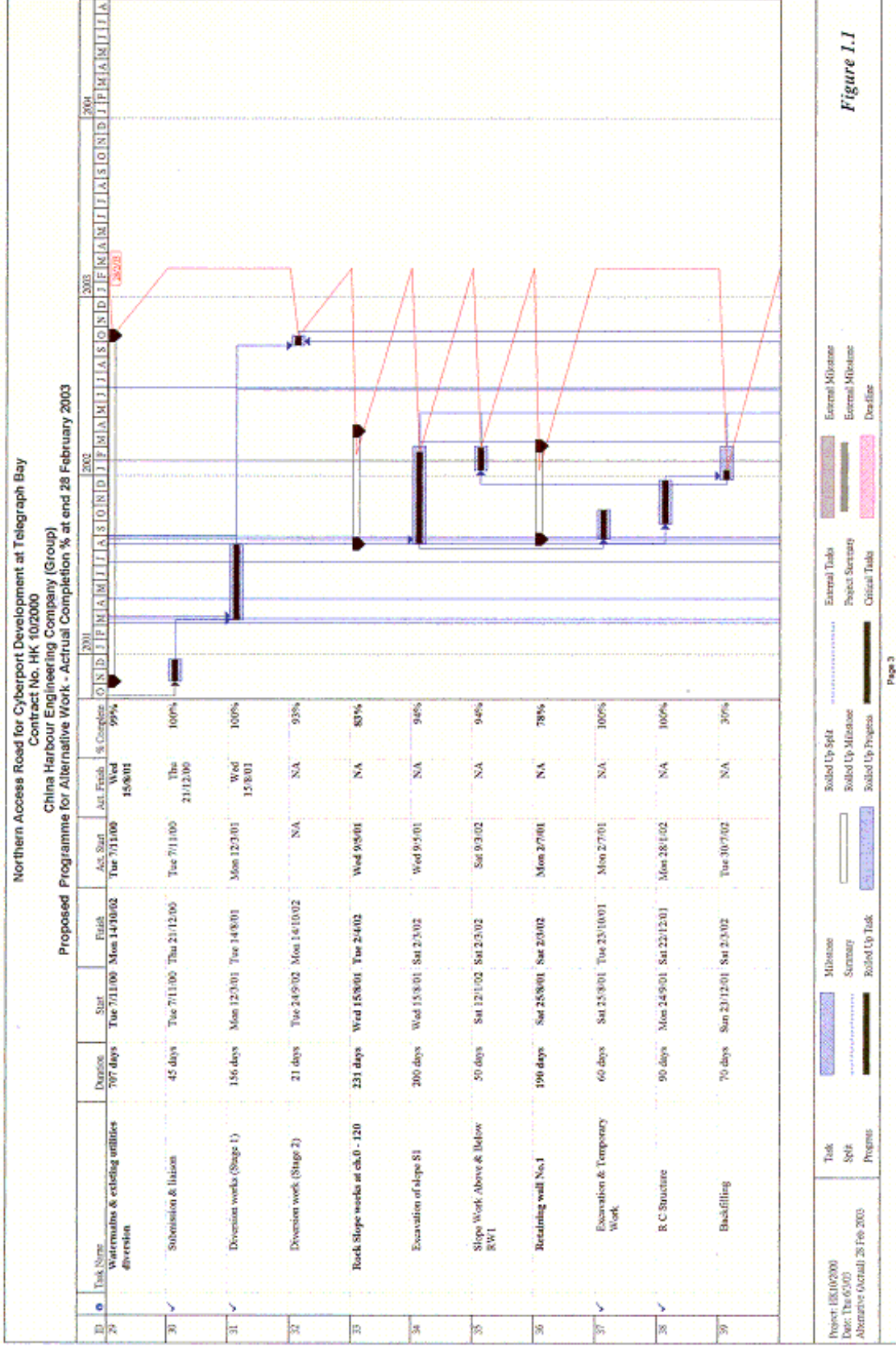
The waste management plan was approved by EPD.

The 'trip-and-ticket' system has been implemented for the disposal of the construction and demolition waste.

Figures



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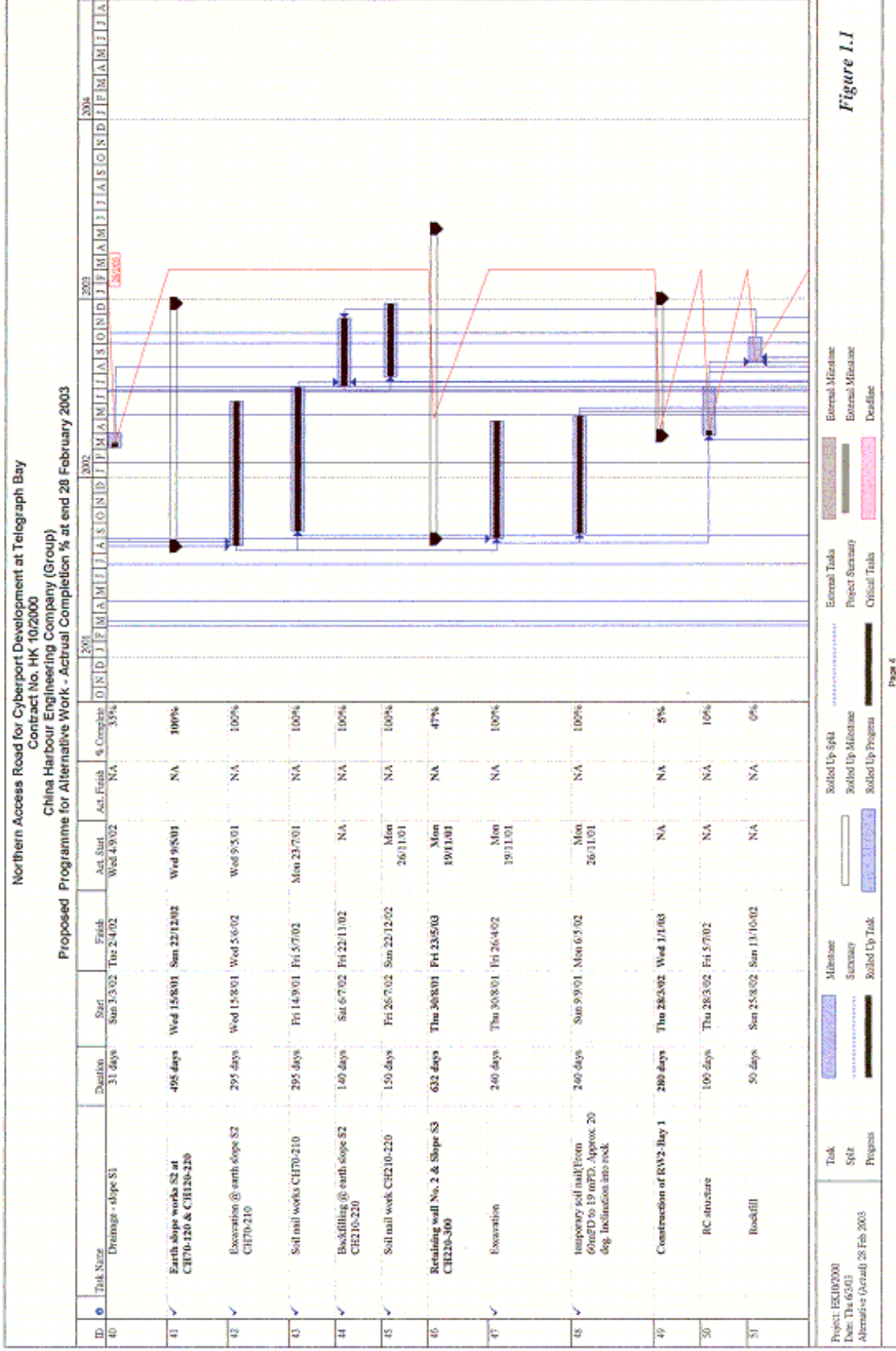
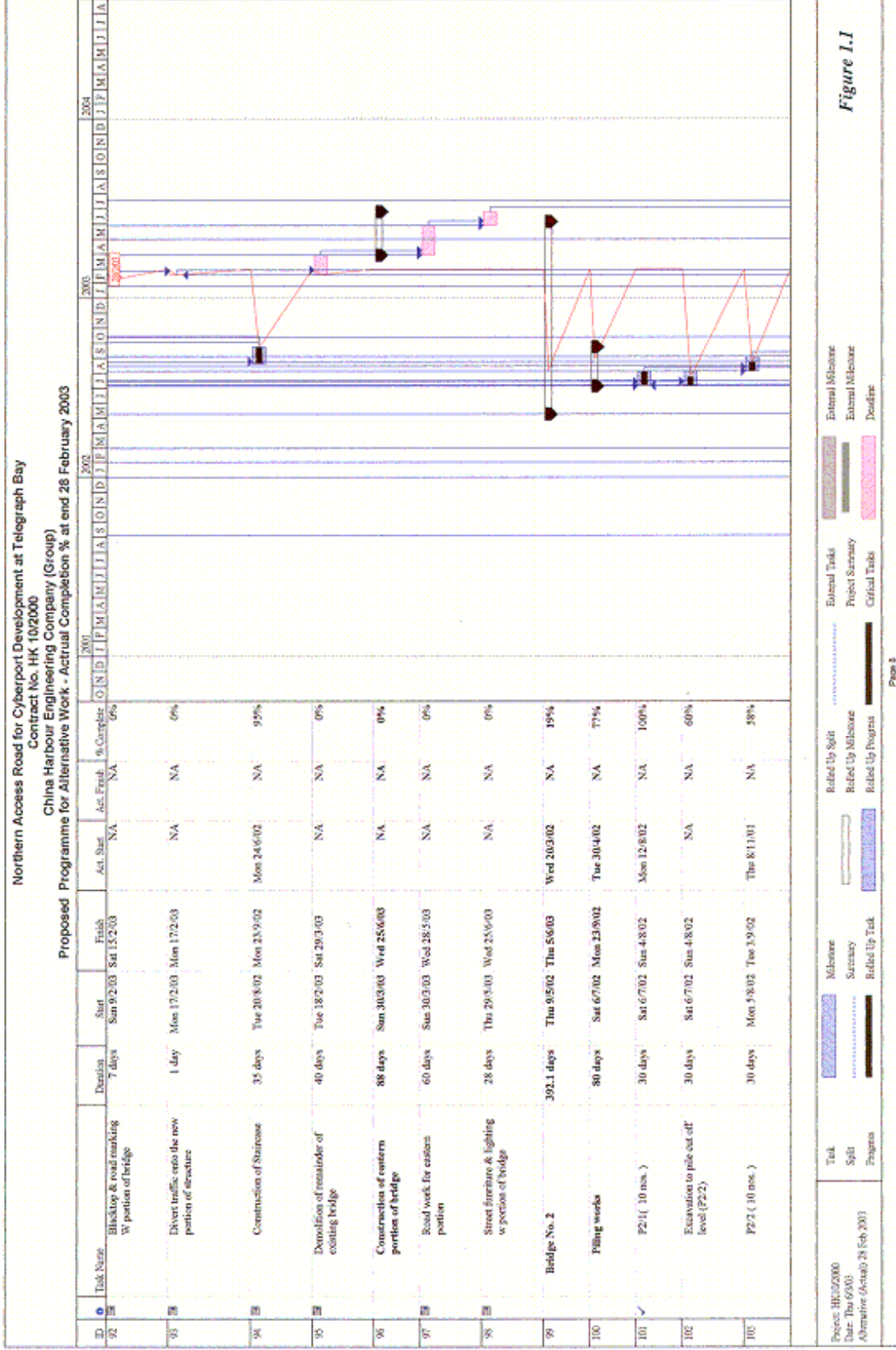
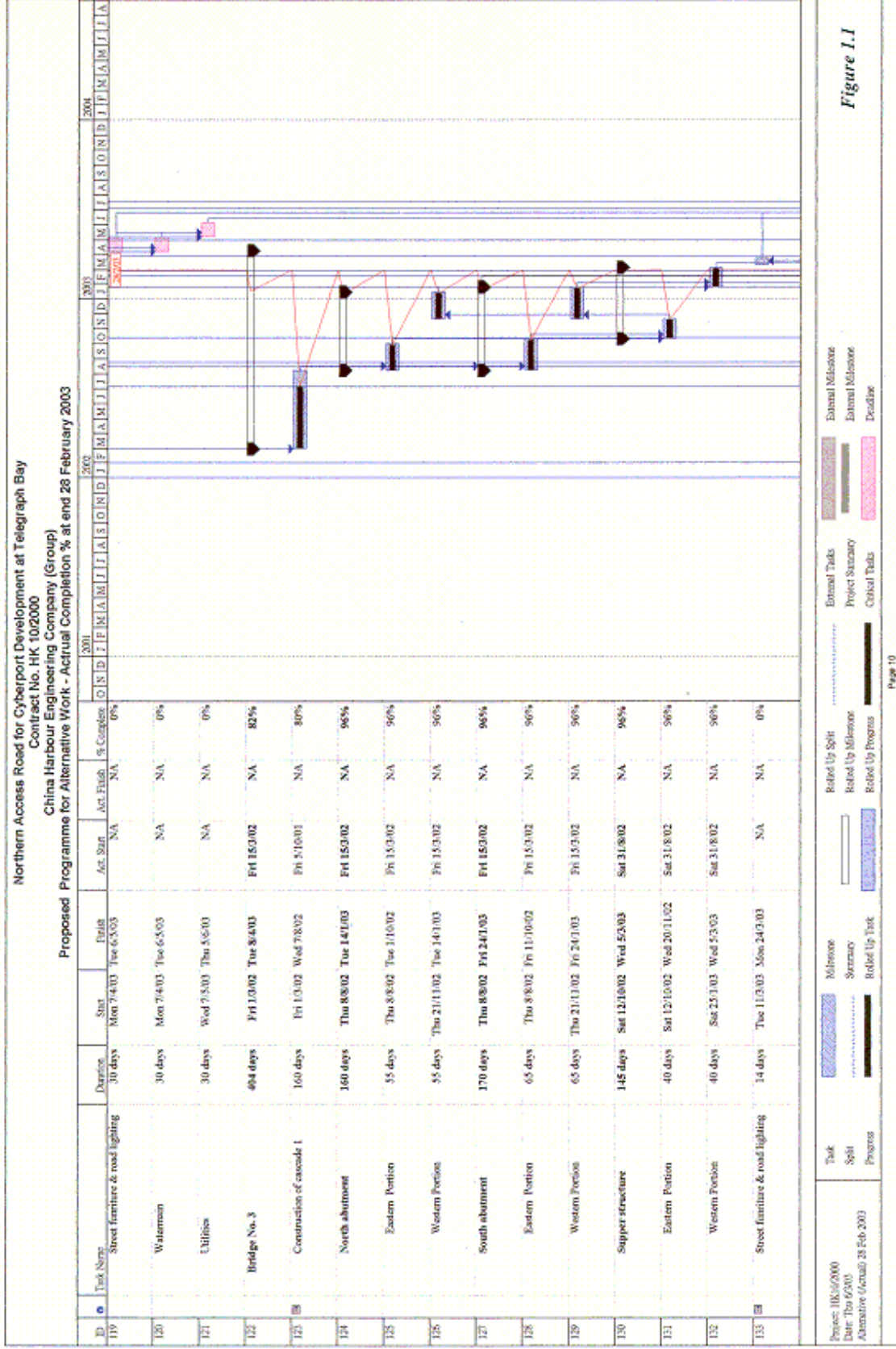


Figure 1.1





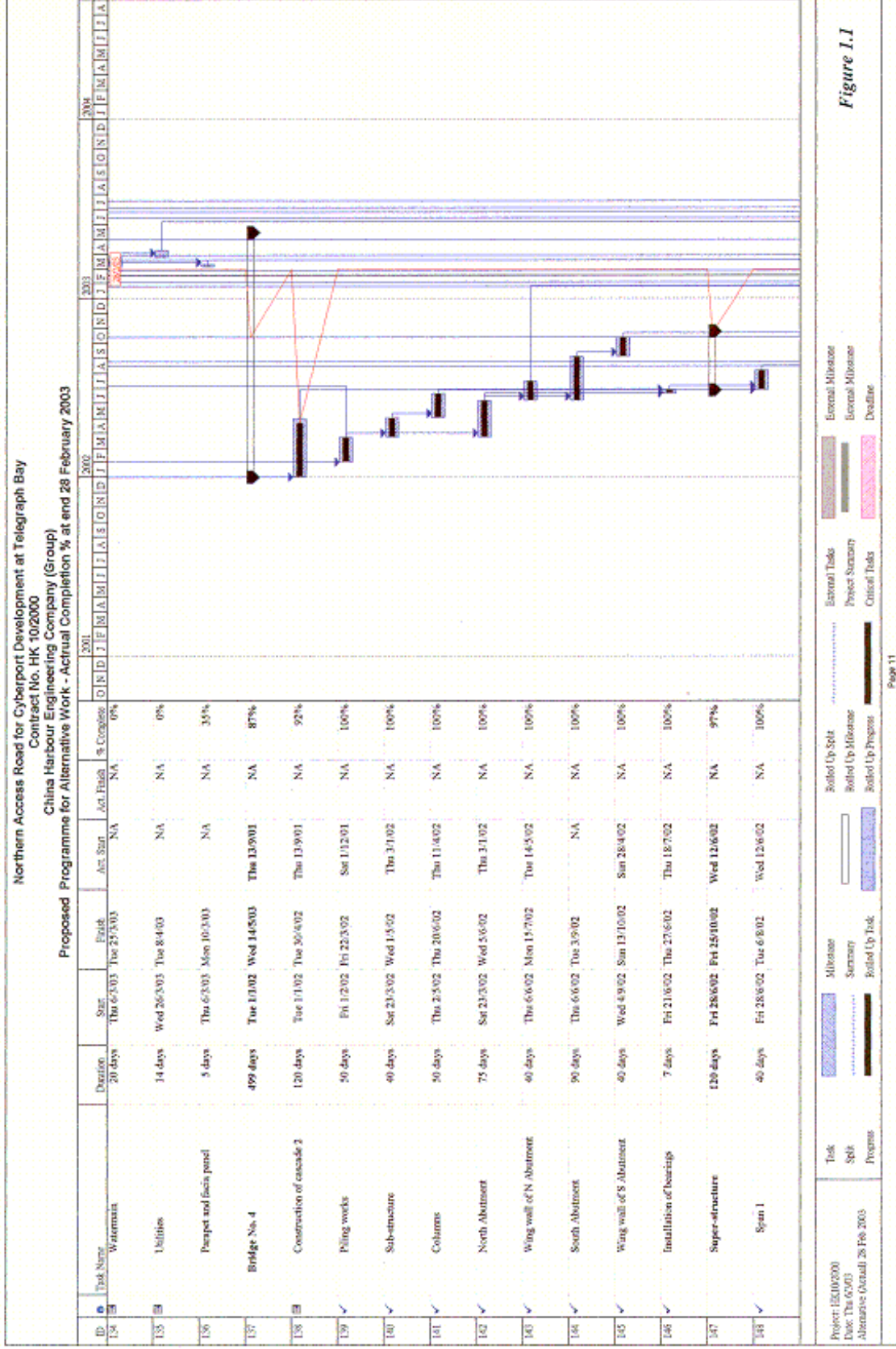
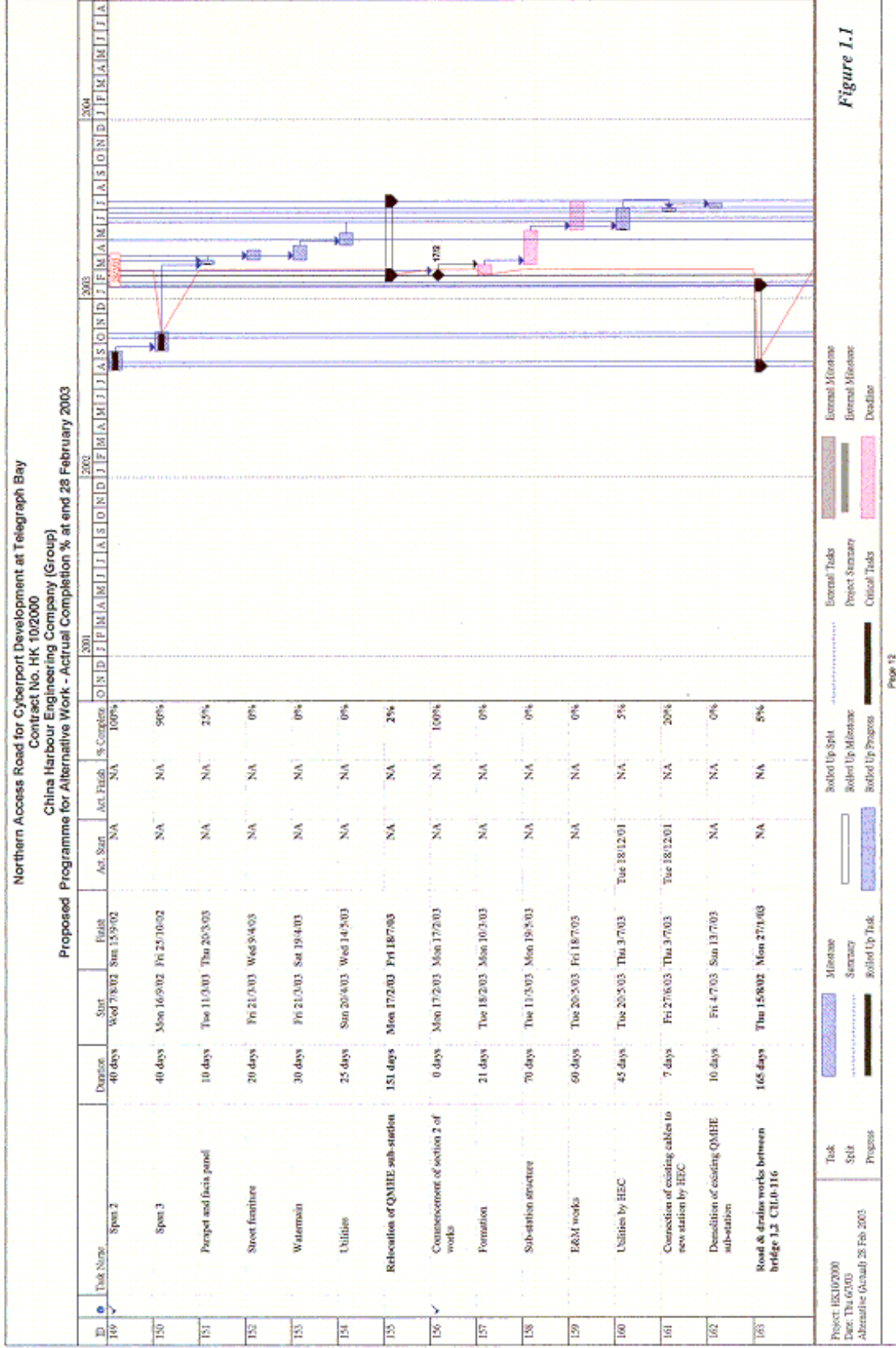
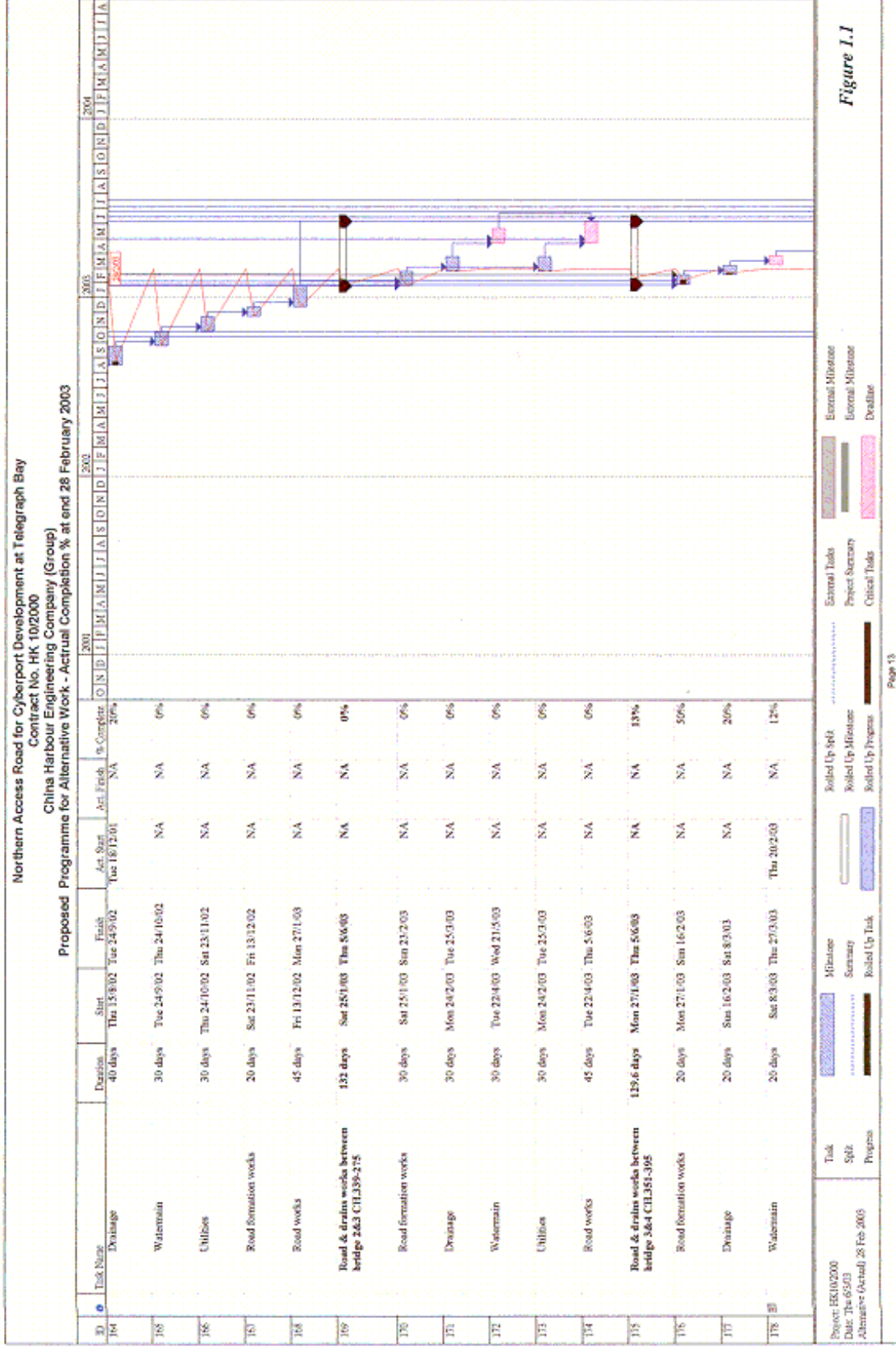
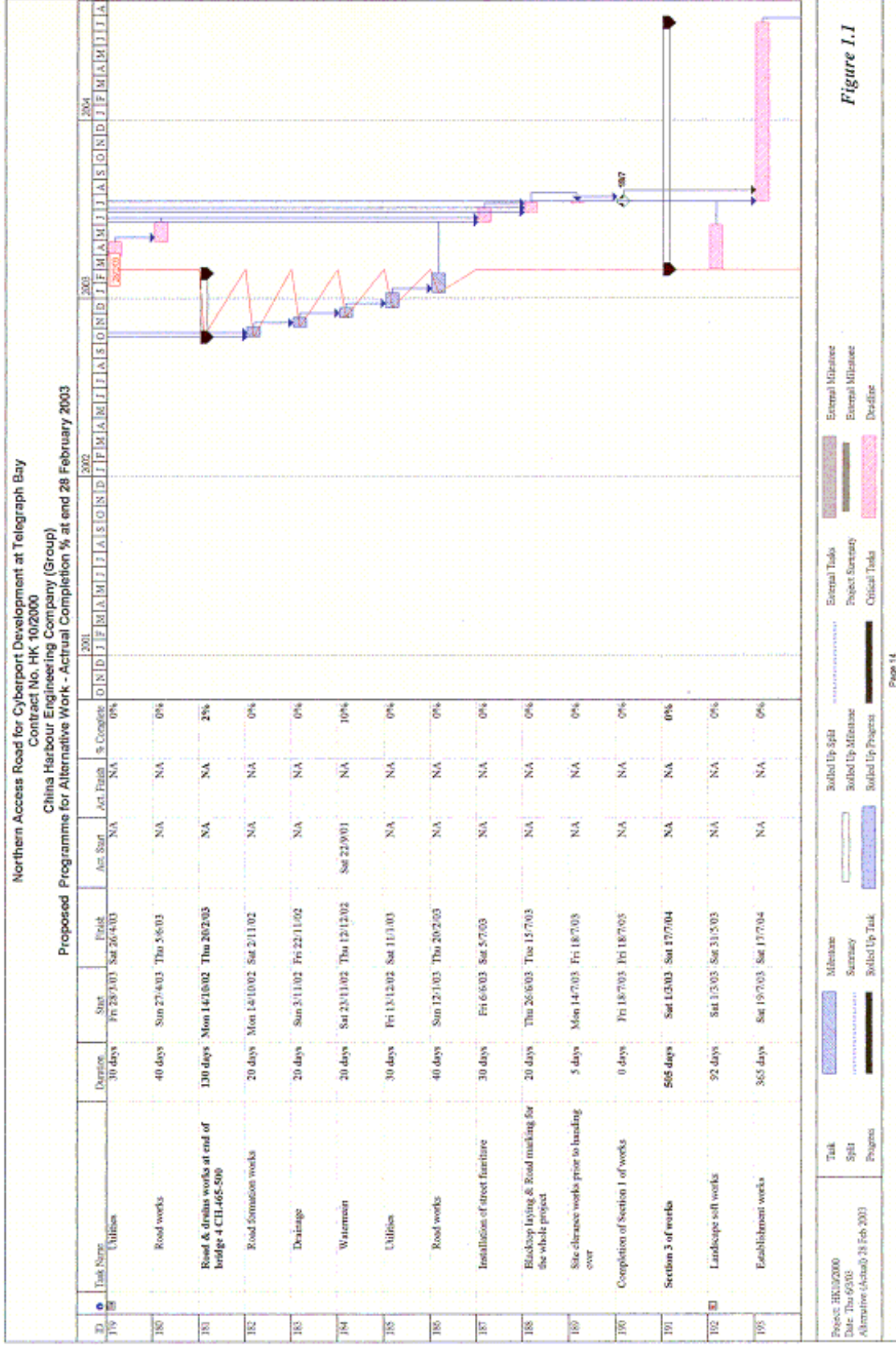
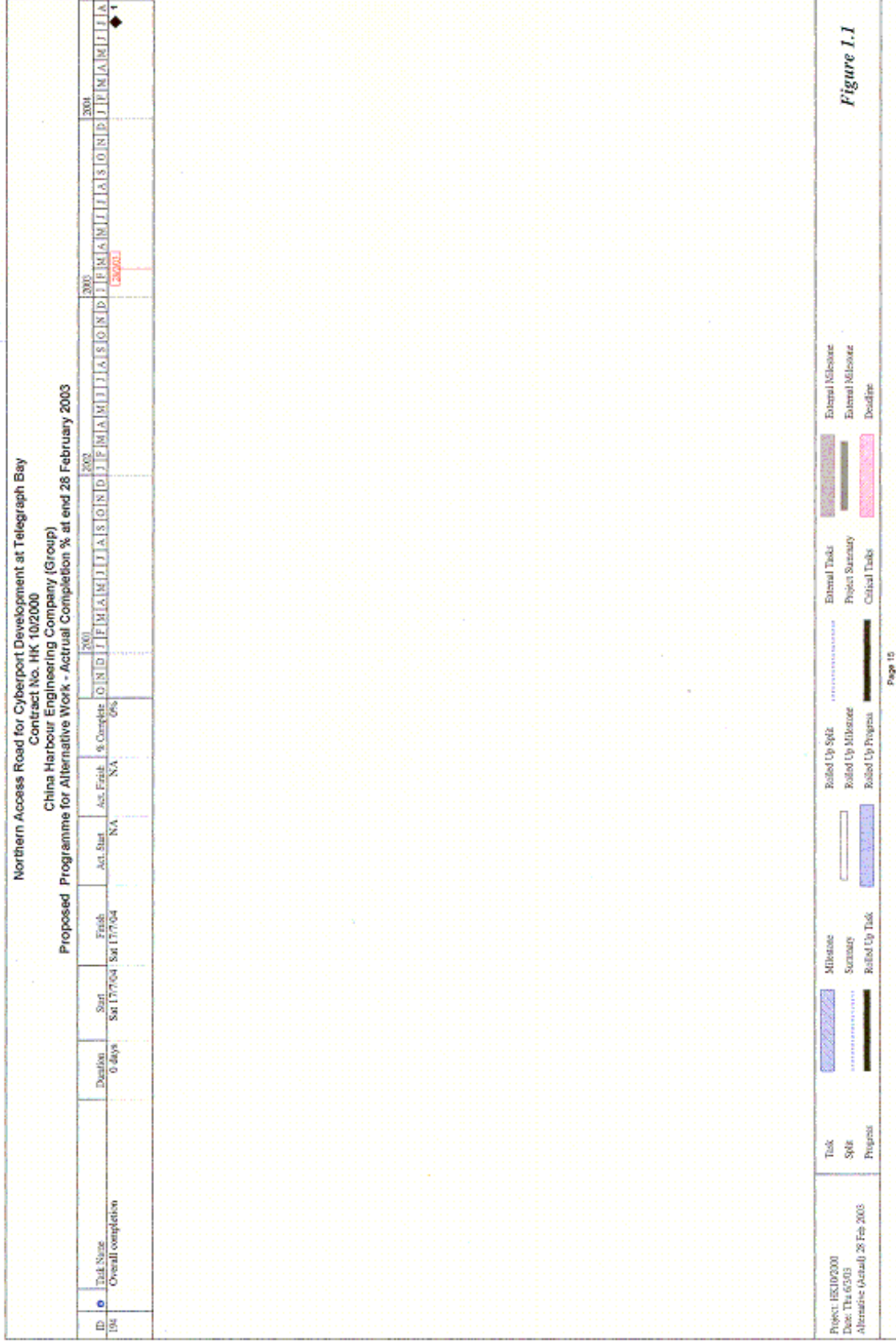


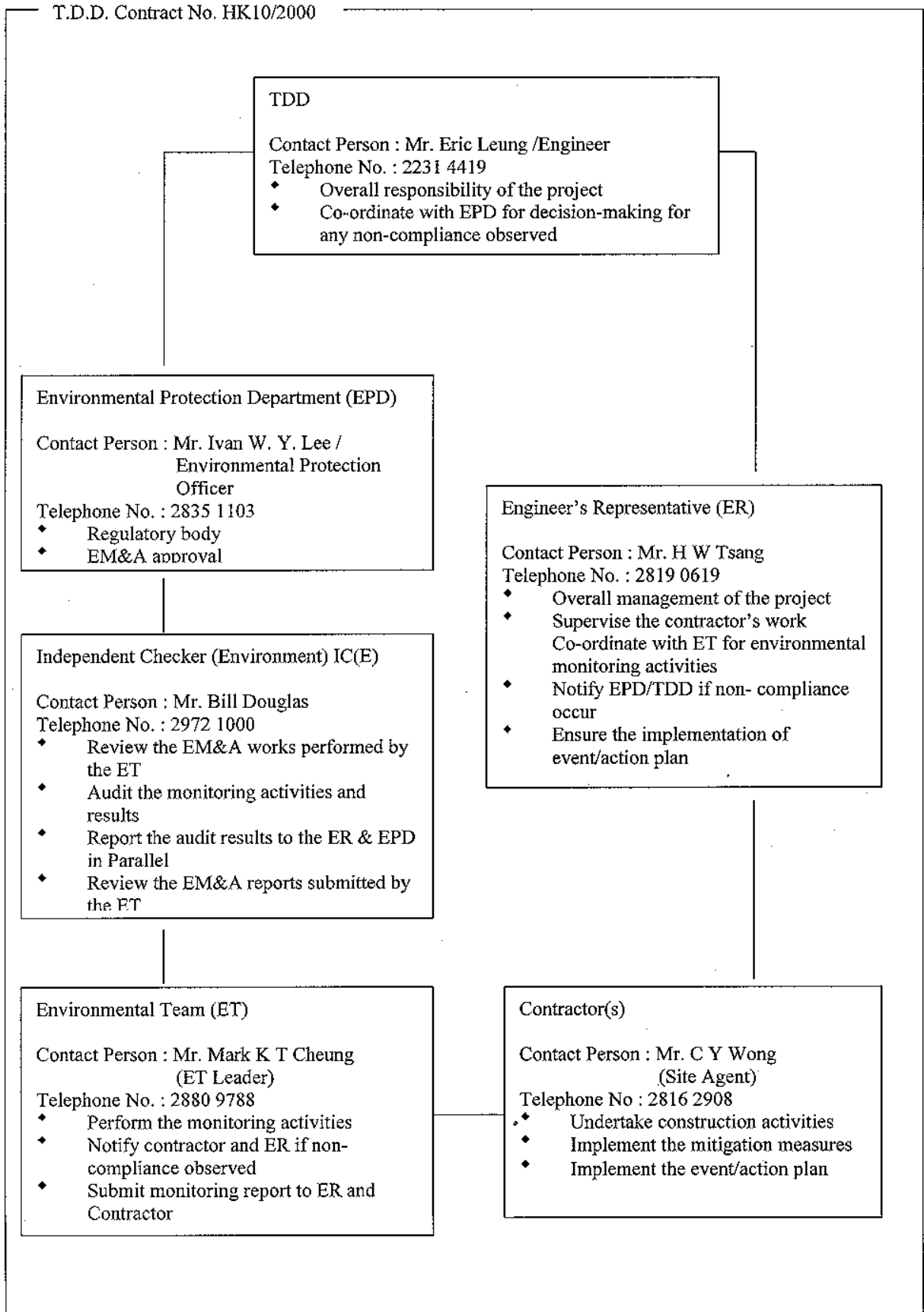
Figure 1.1







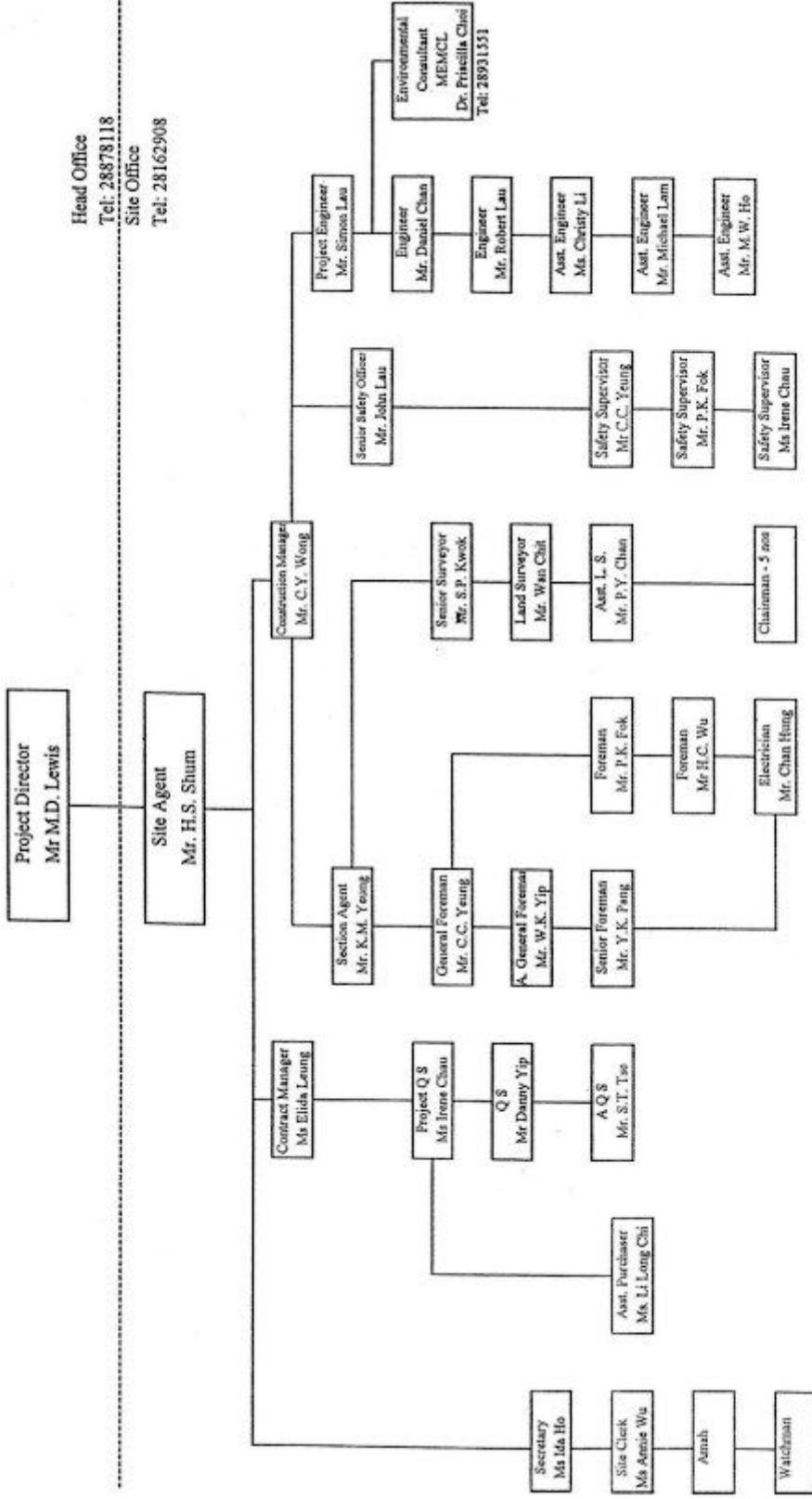




Project Organization of EM&A Works

Figure 1.2
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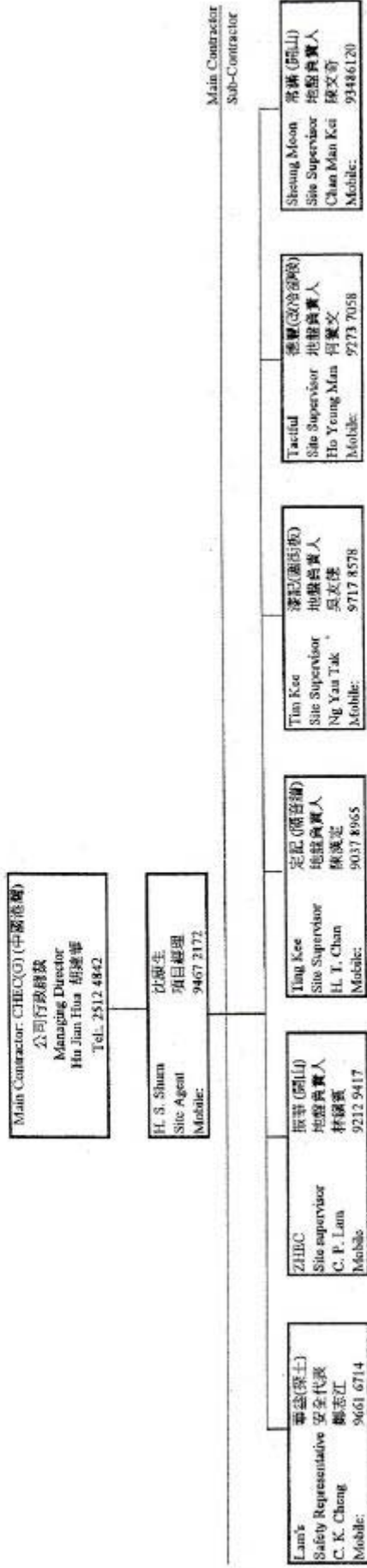
Org. Chart of China Harbour Engineering Co. (Group)
in Project HK10/2000



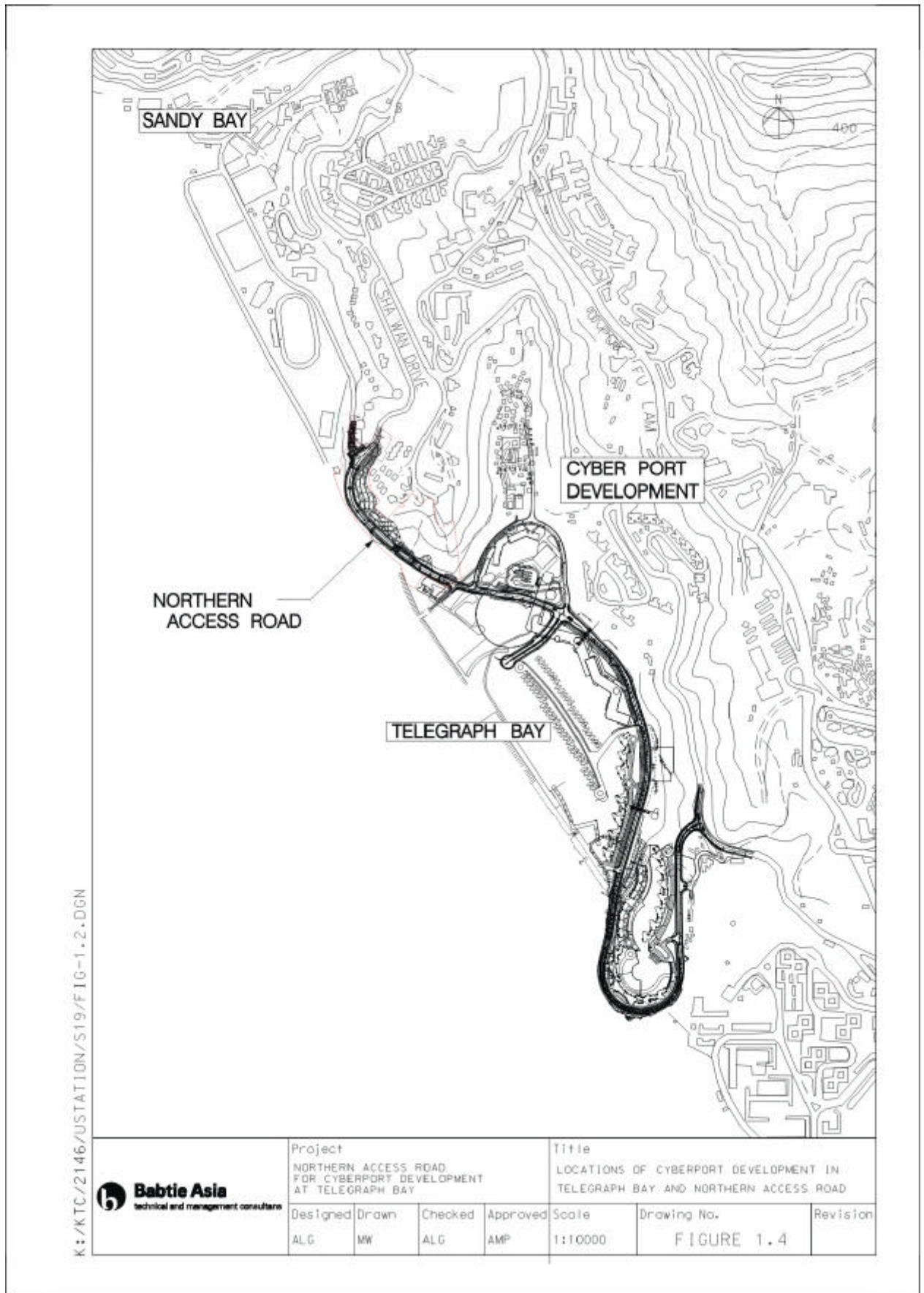
Management Structure of the Contractor
Figure 1.3
(Sheet 1 of 2)

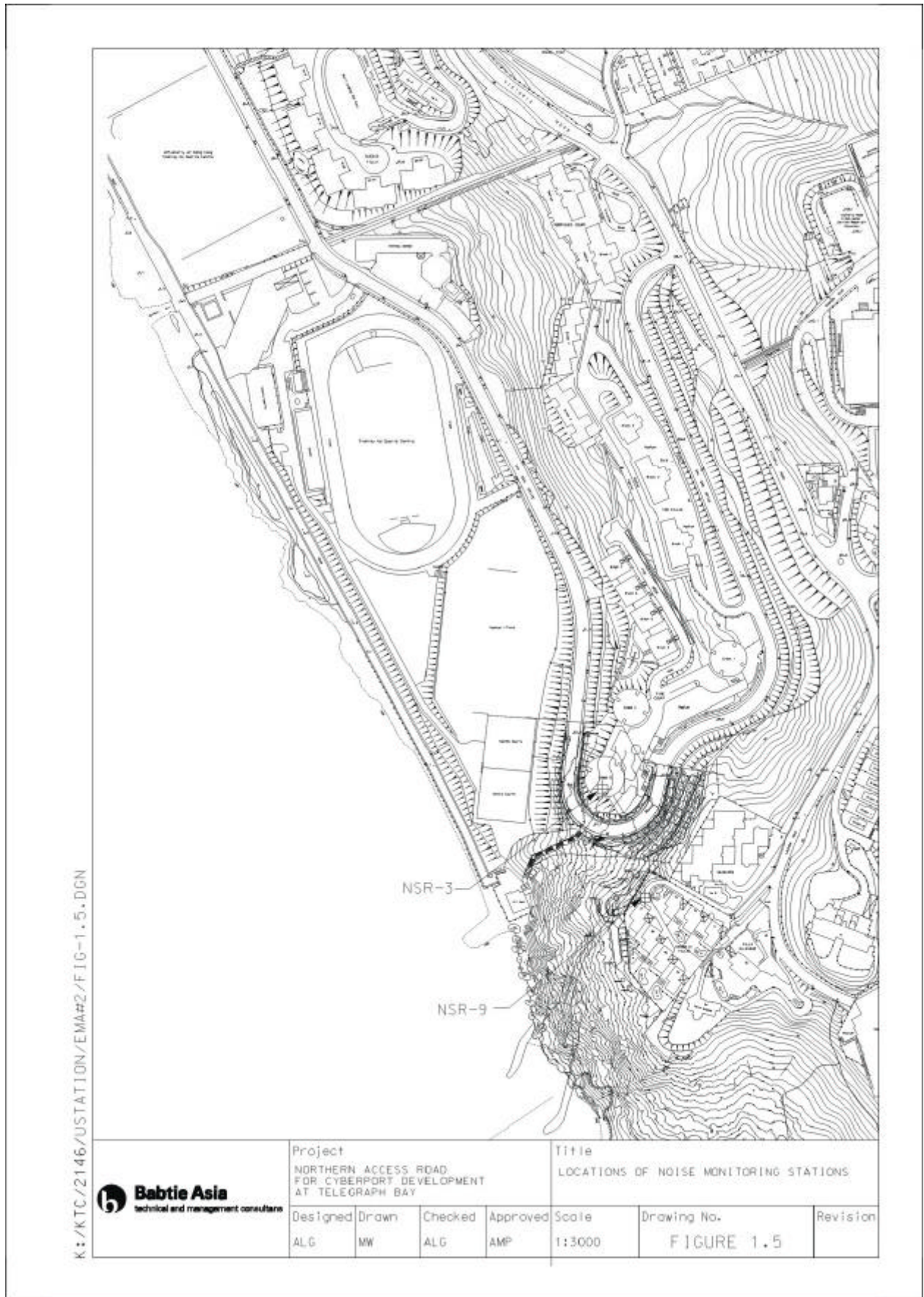
Contract No. HK/10/2000
Northern Access Road for Cyberport
Development at Telegraph Bay
Date: 10/5/01

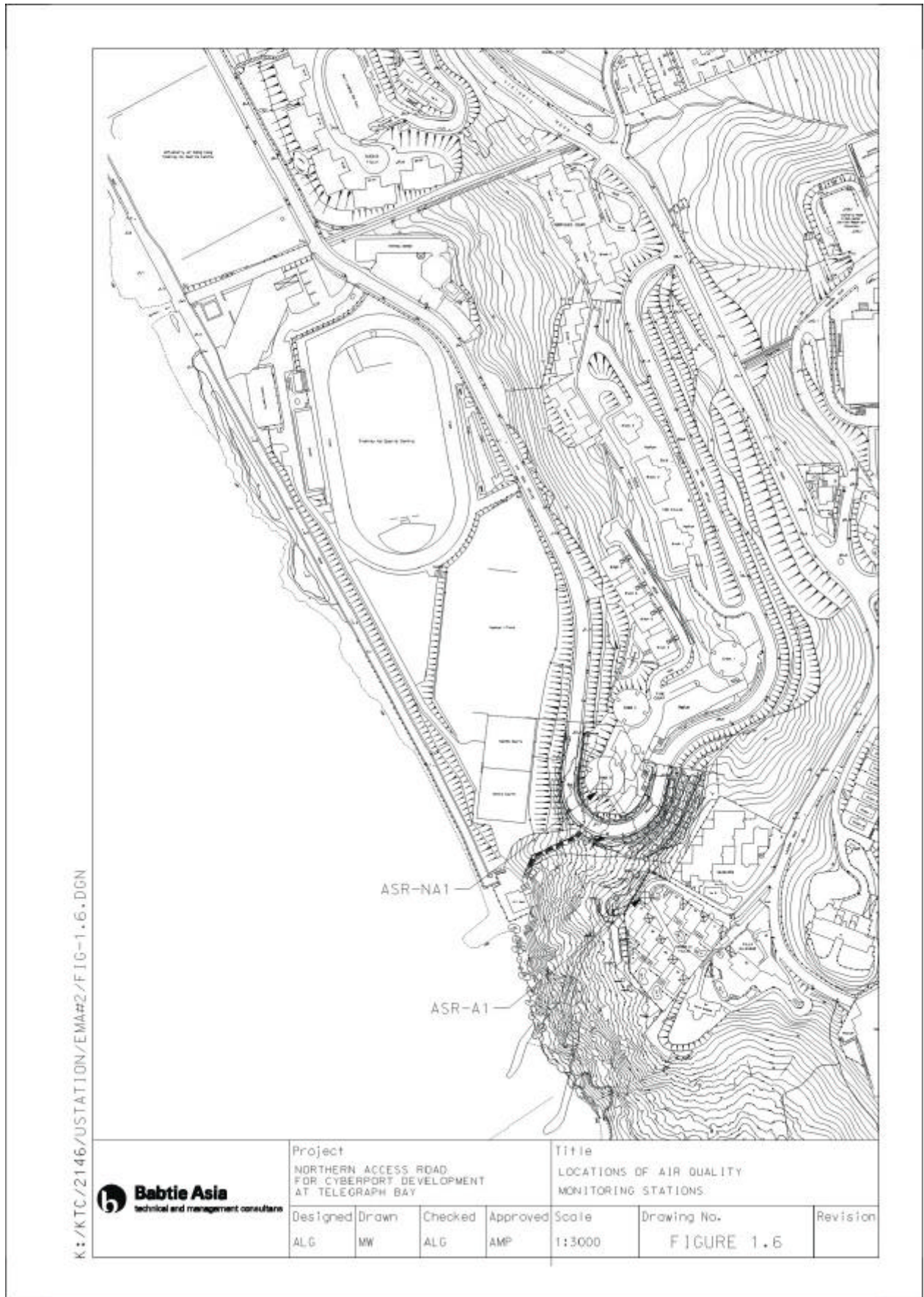
Sub-Contractor Organization Chart



Management Structure of the Contractor
Figure 1.3
(Sheet 2 of 2)







Drawings

