本署檔號
OUR REF: (13) in Ax(1) to EP2/N1/A/27 Pt.8
來函檔號
YOUR REF: CCL/MA3011/Corres/Out/rt80904_v1
電　　話
TEL. NO.: 2835 1581
圖文傳真
FAX NO.: 2802 4511
電子郵件
E-MAIL:
網　　址
HOMEPAGE: http://www.epd.gov.hk

Environmental Protection Department
Branch Office
28th Floor, Southorn Centre,
130 Hennessy Road,
Wan Chai, Hong Kong.

環境保護署分處
香港灣仔
軒尼詩道
一百三十號
修頓中心廿八樓

By Fax: 2721 8630
12 September2008

Civil Engineering and Development Department
New Territories East Development Office
Suite 1213, Chinachem Golden Plaza
77 Mody Road
Kowloon, Hong Kong
(Attn : Mr. Norman Ng)

Dear Mr. Ng,

Road T3 and Associated Roadworks
Condition 4.1 of Environmental Permit No: EP-135/2002/H
Change of Environmental Monitoring &Audit (EM&A) Program under EM&A Manual

I refer to above referenced application dated 4 September 2008 which seeks our approval for change of impact monitoring stations for the Road T3 project in view of current construction scope. We noted that this application was duly justified by your Environmental Team (ET), Cinotech Consultant Limited and verified by the Independent Environmental Checker (IEC)

Pursuant to Condition 4.1 of the Environmental Permit No. EP-135/2002/H, I hereby approve the proposed change of EM&A Program under the EM&A Manual as per Tables A1 to A3, B1 to B4 and Figures 1a contained in the application. Please be reminded that all measures contained in your submission shall be fully implemented throughout the construction period.

Yours faithfully,

(Maurice KL Yeung)
Principal Environmental Protection Officer
for Director of Environmental Protection

Internal.
S(RN)4 – with a copy of the submission
EIAO register – please deposit a copy of submission together with the EM&A Manual approved under EP condition 2.3 of this permit.

c.c.
Cinotech (Attn: Ms Pricilla Choy) Fax: 3107 1388
Enpro (Atttn: Mr. Magnum Fan) Fax: 3104 1588

EP-135/2002/H

CINOTECH 漢臻
consultants limited

Room 1710, Technology Park,
18 On Lai Street, Shatin, N.T., Hong Kong.
Tel.: (852) 2151 2083 Fax: (852) 3107 1388
Website : http://www.cinotech.com.hk
E-mail : info@cinotech.com.hk

Our ref.: CCL/MA3011/Corres/Out/rt80904_v1

Environmental Protection Department
Environmental Assessment & Noise Division
Assessment & Audit Group
North East New Territories Section
27th floor, Southorn Centre,
130 Hennessy Road, Wan Chai, Hong Kong

By Post and Fax: 2591 0558

4 September 2008

Attn.: Ms. Fiona Cheung

Dear Sir,

Contract No. ST/2008/01 (EP-135/2002/H)
Sha Tin New Town Stage II
Road T3 and Associated Roadworks - Remaining works, Stage I
Proposed Environmental Monitoring Stations

We refer to your letter (ref: (9) in Ax(1) to EP2/N1/A/27 Pt.8) dated 2 September 2008 regarding comments on the captioned proposal we submitted on 15 August 2008 (ref: CCL/MA3011/Corres/Out/rt80815_v1) as enclosed.

We would like to clarify that considering the vicinity of the captioned Project site boundary, we are proposing to retain only 1 air quality (AQ1) and 3 construction noise (N1, N2 and N7) monitoring stations from another on-going CEDD's Project "Sha Tin New Town, Stage II – Road T3 and Associated Roadworks" (Contract No. ST79/02) as the impact environmental monitoring stations for the captioned Project.

We are pleased to enclose herewith the following supplementary information for your consideration:

1). Figure 1a showing the Project site layout and locations of proposed environmental monitoring stations for the captioned Project;

2). Figure 1b showing the Project site layout and locations of environmental monitoring stations for the on-going CEDD's Project "Sha Tin New Town, Stage II – Road T3 and Associated Roadworks" under Contract No. ST79/02; and

3). The Locations, Action/Limit Levels and Baseline Levels of environmental monitoring stations for ST79/02.

In accordance with Condition 4.1 of the Project EP, the verification letter from IEC on the captioned is also enclosed herewith for your information. We would be grateful if you can kindly provide your comment, if any, on the captioned.

Should you have any enquiry or require further information, please do not hesitate to contact our Mr. Robert Tsang at 2151 2099 or the undersigned at 2151 2089.

Yours faithfully,
Cinotech Consultants Ltd.

Dr. Priscilla Choy
Environmental Team Leader

Encl.

Cc	CEDD (Attn: Mr. Norman Ng)	w/e	By Fax: 2739 0076
	MCAL (Attn: Mr. Thomas Lee)	w/e	By Fax: 2691 2649
	MCAL-CRE (Attn: Mr. David Kwan)	w/e	By Fax: 2687 2322
	Enpro (Attn: Mr. Magnum Fan)	w/e	By Fax: 3104 1588

Enpro Environmental Technologies Co. Ltd.

Your fax No. 3107 1388

Our Ref.: ENPRO-L-2003014-NEMAP (1)

4 September 2008

Environmental Team Leader
Rm 1710 Technology Park
18 On Lai Street
Shatin, N.T.

Attn.: Dr. Priscilla Choy

Dear Dr. Choy,

Re: Contract No. ST/2008/01(EP-135/2002/H) Sha Tin New Town Stage II - Road T3 & Associated Roadworks (Remaining Works)

We refer to the submitted Environmental Monitoring Stations Proposal with the corresponding attachment (ref: CCL/MA3011/Corres/Out/rt809033_v1) dated on 3 September 2008 and letter from Ms. Fiona Cheung of EPD (ref: (9) in Ax(1) to EP2/N1/A/27 Pt.8) dated on 2 September 2008.

IEC has no adverse comment to the proposal. IEC would like to write this letter to verify that the captioned proposal is in accordance with the requirements of Condition 4.1 of the Environmental Permit No. EP-135/2002/H.

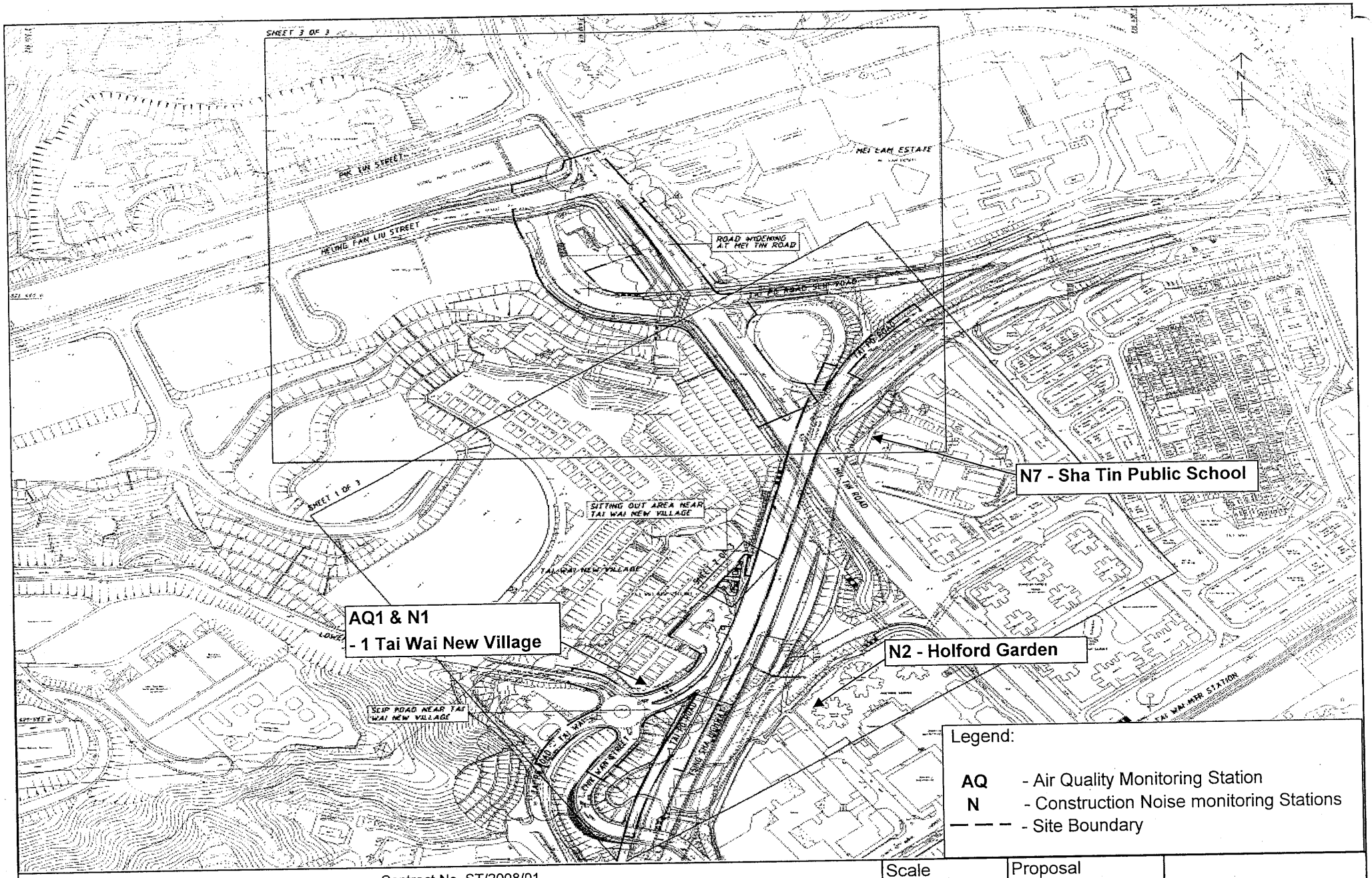
Please feel free to contact the undersigned or Thomas Lee at 3104 1533 if you have further query.

Yours sincerely,
Enpro Environmental Technologies Co. Ltd.

Mr. Magnum K.W. FAN
Independent Environmental Checker

cc. CEDD (Attn: Mr. Norman Ng) By Fax: 2739 0076
MCAL (Attn: Mr. Thomas Lee) By Fax: 2691 2649
MCAL-CRE (Attn: Mr. David Kwan) By Fax: 2687 2322

Unit 2 & 3, 4/F, Wellborne Commercial Centre, 8 Java Road, North Point, Hong Kong
Tel. (852) 3104 1533 Fax: (852) 3104 1588 e-mail: info@enpro.com.hk



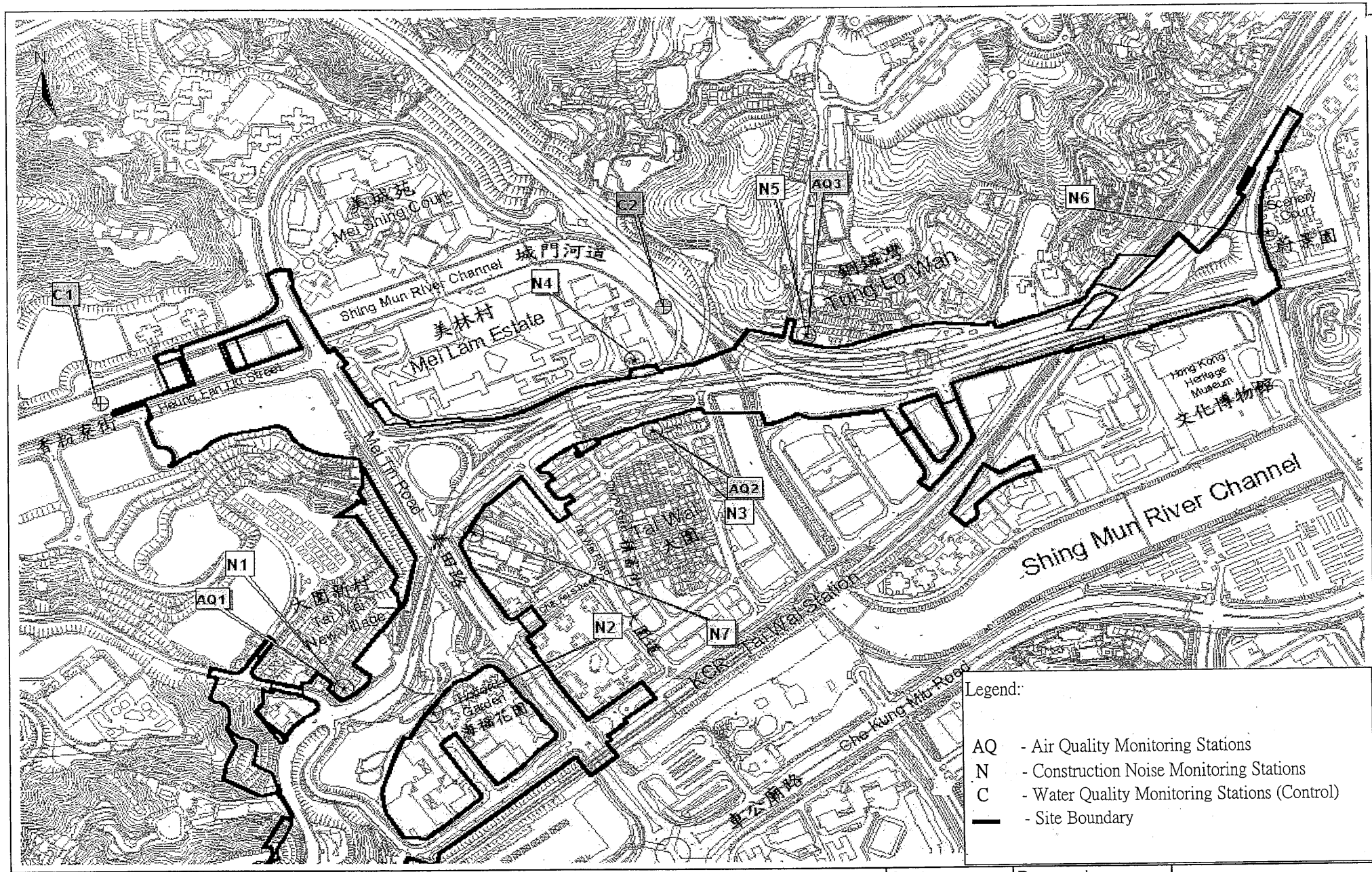
Contract No. ST/2008/01

SHA TIN NEW TOWN, STAGE II - ROAD T3 AND ASSOCIATED ROADWORKS (REMAINING WORKS)

LOCATION OF PROPOSED ENVIRONMENTAL MONITORING STATIONS

Scale	Proposal
N.T.S	No. MA3011
Date	Figure
Aug-08	1a

CINOTECH



Contract No. ST/79/02

SHA TIN NEW TOWN, STAGE II - ROAD T3 AND ASSOCIATED ROADWORKS

PROJECT SITE LAYOUT AND LOCATION OF ENVIRONMENTAL MONITORING STATIONS

Scale	Proposal No.	
N.T.S	MA3011	CINOTECH
Date	Figure	
Sep-08	1b	

A). Environmental Monitoring Stations

Table A1 - Locations of Air Quality Monitoring stations (1-hr TSP & 24-hr TSP)

Monitoring Stations	Locations	Recommendation for the New Civil Contract (ST/2008/01)
AQ1	**1 Tai Wai New Village**	***Retain***
AQ2	60-68 Chik Chuen Street, Tai Wai	*Cancel*
AQ3	1 Tung Lo Wan Village	*Cancel*

Table A2 - Locations of Noise Monitoring Stations

Monitoring Stations	Locations	Measurement	Recommendation for the New Civil Contract (ST/2008/01)
N1	**1 Tai Wai New Village**	**Façade**	***Retain***
N2	**Holford Garden**	**Free Field**	***Retain***
N3	60-68 Chik Chuen Street	Façade	*Cancel*
N4	Buddhist Wong Wan Tin College	Façade	*Cancel*
N5	1 Tung Lo Wan Village	Façade	*Cancel*
N6	Scenery Court	Façade	*Cancel*
***N7**	**Sha Tin Public School**	**Façade**	***Retain***

Remarks: * An additional noise monitoring station, N7, was proposed and confirmed in May 2003.

Table A3 - Locations of Water Quality Monitoring stations

Monitoring Stations		Coordinates	Recommendation for the New Civil Contract (ST/2008/01)
Control Stations	C1	835723.1E 826439.6N	*Cancel*
	C2	836451.3E 826572.6N	*Cancel*
*Impact Station	I1	NIL	*Cancel*

Remarks: *As there is no direct water discharge from the construction site to the nearby surface channel to the Shing Mun River, water quality monitoring was conducted at the two designated control stations (C1 and C2) only.

B). Action and Limit Levels

Table B-1 Action and Limit Levels for 1-Hour TSP

Location	Action Level, $\mu g/m^3$	Limit Level, $\mu g/m^3$
AQ1	**350**	**500**
AQ2		
AQ3		

Table B-2 Action and Limit Levels for 24-Hour TSP

Location	Action Level, $\mu g/m^3$	Limit Level, $\mu g/m^3$
AQ1	**199**	**260**
AQ2	193	
AQ3	189	

Table B-3 Action and Limit Level for Construction Noise

Action Level		Limit Level
0700-1900 hrs on normal weekdays	One or more complaint(s) received in one week	75* dB(A)
0700-2300 hrs on holidays & 1900-2300 hrs on all other days		60/65/70** dB(A)
2300-0700 hrs of next day		45/50/55** dB(A)

(*) reduce to 70 dB(A) for schools and 65 dB(A) during school examination periods.

(**) to be selected based on Area Sensitivity Rating. If Specified Powered Mechanical Equipment (SPME) is employed, the noise limits should be 15 dB(A) less than that shown above for the restricted hours.

Table B-4 Action and Limit Level for Water Quality

Parameters	Action Level	Limit Level
Turbidity in NTU	8.6 NTU and 120% of upstream control station's Tby	9.0 NTU and 130% of upstream control station's Tby
pH	7.2 – 8.7	6 – 9
SS in mg/L	10.3 mg/L and 120% of upstream control station's SS	12.5 mg/L and 130% of upstream control station's SS

C). Baseline Environmental Monitoring Levels

Table C-1 Baseline Air Quality Monitoring Results

Monitoring Stations	Average 1- hr TSP Concentration, $\mu g/m^3$ (Range)	Average 24- hr TSP Concentration, $\mu g/m^3$ (Range)
AQ1	**203.7 (86.0 – 429.0)**	**106.1 (61.0 – 173.3)**
AQ2	225.3 (102.0 – 440.0)	96.8 (57.5 – 131.9)
AQ3	228.2 (77.0 – 430.0)	90.8 (51.4 – 148.7)

Table C-2 Baseline Noise Level and Allowed Construction Noise Level for Monitoring Stations

Monitoring Stations	Baseline Noise Level, dB (A)	Allowed CNL, dB (A)
N1 – 1 Tai Wai New Village	**75.9**	**75.0**
N2 – Holford Garden	**59.0**	**75.0**
N3 – 60-68 Chik Chuen Street	72.9 (at 2300-0700 hrs: 67.2)	75.0 (at 2300-0700 hrs: 55.0)
N4 – Buddhist Wong Wan Tin College		
- Normal School Days	69.9	70.0
- Examination Period	69.9	65.0
N5 – 1 Tung Lo Wan Village	71.3	75.0
N6 – Scenery Court	72.3	75.0
N7 – Sha Tin Public School		
- Normal School Days	**66.7**	**70.0**
- Examination Period	**66.7**	**65.0**

Table C-3 Baseline Water Quality Monitoring Results

Monitoring Stations	Average Turbidity, NTU (Range)	pH (Range)	Average SS, mg/L (Range)
C1	3.8 (2.2-6.6)	8.9 (7.4 – 10.4)	4.3 (1.0 – 8.0)
C2	6.0 (3.1 – 9.2)	7.8 (7.1 – 9.8)	5.5 (3.0 – 13.0)

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COPY

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Our ref.: CCL/MA3011/Corres/Out/rt80815_v1

Environmental Protection Department
Environmental Assessment & Noise Division
Assessment & Audit Group
North East New Territories Section
27th floor, Southorn Centre,
130 Hennessy Road, Wan Chai, Hong Kong

By Post and Fax: 2591 0558

15 August 2008

Attn: Ms. Fiona Cheung

Dear Madam,

Contract No. ST/2008/01 (EP-135/2002/H)
Sha Tin New Town Stage II,
Road T3 and Associated Roadworks -Remaining works, Stage I
Proposed Environmental Monitoring Stations

We refer to Condition 4.1 of the Environmental Permit (EP-135/2002/H) regarding changing of the EM&A Program for the Project. On behalf of Civil Engineering and Development Department (CEDD), we would like to seek EPD approval on the captioned.

Please be kindly informed that a new civil contract (Contract No. ST/2008/01) for the remaining works for Road T3 project (Contract No. ST 79/02), which will be commenced soon, is under the same Environmental Permit (EP-135/2002/H). In consideration of the scope and site boundary for the new civil contract, we would like to propose to retain the following monitoring stations from ST79/02 as the impact monitoring stations for the new Project:

Parameters	Monitoring Stations	Locations
Air Quality	AQ1	1 Tai Wai New Village
Construction Noise	N1	1 Tai Wai New Village
	N2	Holford Garden
	N7	Sha Tin Public School

Also, the Baseline Level and Action Level for the monitoring stations above are proposed to be adopted from ST79/02 to the new Project.

In accordance with the Project EP, the environmental monitoring works for ST 79/02 will still be conducted in all the current monitoring stations until the substantially complete of the Project construction works that is anticipated to be the end of 2008. Once the environmental monitoring works are no longer required for ST 79/02, the impact monitoring works will be continuously conducted only at the proposed monitoring stations for the new Project.

The verification letter issued by IEC dated 14 August 2008 and the figure showing the Project Site Area and the Monitoring Stations are enclosed herewith.

Should you have any enquiry or require further information, please do not hesitate to contact our Mr. Robert Tsang at 2151 2099 or the undersigned at 2151 2089.

Yours faithfully,
Cinotech Consultants Ltd.

Dr. Priscilla Choy
Environmental Team Leader

Encl.

Cc CEDD (Attn: Mr. Norman Ng) w/e By Fax: 2739 0076
MCAL (Attn: Mr. Thomas Lee) w/e By Fax: 2691 2649
MCAL-CRE (Attn: Mr. David Kwan) w/e By Fax: 2687 2322
Enpro (Attn: Mr. Magnum Fan) w/e By Fax: 3104 1588

Territory Development Department

NT EAST Development Office

Sha Tin New Town, Stage II

Road T3 and Associated Roadworks

Updated Environmental Monitoring and Audit Manual (Version 2.1)

October 2002

Certified By

(Environmental Team Leader)

REMARKS:

The information supplied and contained within this report is, to the best of our knowledge, correct at the time of printing.

CINOTECH accepts no responsibility for changes made to this report by third parties.

CINOTECH CONSULTANTS LTD
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1. INTRODUCTION

Background

1.1 The Road T3 Project forms part of the continuing programme for the development for the Sha Tin New Town. It will provide the essential link between R9-CSWST with the high speed road networks in the north east New Territories and alleviates the traffic congestion at the local roads in Tai Wai, Sha Tin. The Project site is shown in Figure 1.1

1.2 The Project is a designated project and an Environmental Permit No. EP-135/2002 was issued on 13 May 2002 for this project (T3 EP) to the Territory Development Department (hereinafter called the "Project Proponent") as Permit Holder. Condition 2.3 of the T3 EP requires an updated Environmental Monitoring and Audit Manual (Updated T3 EM&A Manual) be prepared to include the latest EM&A requirements in accordance with the information and recommendation described in the T3 Environmental Review Report (ERR) which was completed in April 2002.

1.3 Cinotech Consultants Limited was commissioned by the Project Proponent to undertake the Environmental Monitoring and Audit (EM&A) works for "Sha Tin New Town, Stage II – Environmental Team (ET) for Route 9 (Sha Tin Section) and Road T3 (pre-construction stage)". This Updated EM&A Manual was prepared by Cinotech to fulfil the requirements of the EP.

Definitions

1.4 For the purpose of this Manual, the "Engineer" shall refer to the Engineer as defined in the construction Contract for the Road T3 project, Contract No. ST79/02, and the Engineer's Representative (ER), in cases where the Engineer's powers have been delegated to the ER, in accordance with the Contract. The ET Leader, who shall be responsible for and in charge of the ET of the construction and operational Stage of the Project, shall refer to the person delegated the role of executing the environmental monitoring and audit requirements.

Purpose of this Manual

1.5 The purpose of this Updated Environmental Monitoring and Audit (EM&A) Manual is to guide the setup of an EM&A programme to ensure compliance with the Environmental Impact Assessment (EIA) and Environmental Review Report (ERR) studies recommendations, to assess the effectiveness of the recommended mitigation measures and to identify any further need for additional mitigation measures or remedial action.

1.6 This Manual outlines the monitoring and audit programme to be undertaken for the construction and operational phases of Sha Tin New Town Stage II Trunk Road T3. It aims to provide systematic procedures for monitoring, auditing and minimising of the environmental impacts associated with the project.

1.7 Hong Kong environmental regulations for noise, air quality, water quality and waste, the Hong Kong Planning Standards and Guidelines, and recommendations in the EIA and ERR study reports on Sha Tin New Town Stage II Trunk Road T3 have served as environmental standards and guidelines in the preparation of this Manual.

1.8 This Manual contains the following:

- Duties of the Environmental Team (ET) with respect to the environmental monitoring and audit requirements during construction;
- Duties of the Independent Environmental Checker (IEC) with respect to the environmental monitoring and audit requirements during construction;
- Information on project organisation and programming of construction activities for the project;
- Requirements with respect to the construction schedule and the necessary environmental monitoring and audit programme to track the varying environmental impacts;
- Definition of Action and Limit Levels;
- Establishment of event and action plans;
- Requirements of reviewing pollution sources and working procedures required in the event of non-compliance of the environmental criteria; and
- Requirements of presentation of environmental monitoring and audit data and appropriate reporting procedures.

Environmental Monitoring and Audit Requirements

1.9 Environmental Protection Department (EPD) requires that environmental monitoring to be undertaken for the Project as follows:-

- *Baseline Monitoring* refers to the measurement of prevailing environmental parameters, including existing dust, noise levels and water quality, to determine the nature and ranges of natural variation and to establish, where appropriate, the nature of change. This information is useful for assessing the short and long term environmental impacts of the Project activities.
- *Impact Monitoring* involves the measurement of environmental parameters during the Project activities in order to determine the impacts of the activities and the effectiveness of the proposed mitigation measures, and any further remedial measures which are needed.
- *Compliance Monitoring* involves periodic sampling and/or continuous measurement of environmental parameters and the determination of their compliance with regulatory requirements and standards.

1.10 The EIA Report and ERR also specified the recommended environmental mitigation measures. An implementation schedule of the recommended environmental mitigation measures is prepared as part of the EIA and ERR Studies and is contained in Appendix A of this Manual.

1.11 The environmental monitoring programme shall also be subject to environmental audit. The aim is to determine whether satisfactory compliance with the legislative requirements has been met, and to ensure that no annoyance is caused to sensitive receivers or else the remedial

action plan will be initiated, if required. This will require information on the standards for parameters of concern and monitoring data. Each audit will consist of a review of the monitoring data and comparison with the relevant legislative requirements and environmental performance standards specified in the Contract Document of Contract No. ST79/02.

1.12 In order to ensure that the mitigation measures recommended in the EIA and ERR Studies are implemented fully and resulted in the expected effectiveness, this Manual defines the scope of EM&A requirements for the construction and operation of the proposed developments to achieve satisfactory environmental performance. The EM&A requirements for the Project shall be as follows:-

- Pre-Construction Phase – including all baseline monitoring prior to any Project activity occurring on site.
- Construction Phase – including impact/compliance monitoring and audit during all construction activities.
- Post Construction Phase – including road traffic noise impact/compliance monitoring for a 12-month period upon Project operation.

Project Organizations

1.13 The proposed EM&A organization is shown in Figure 1.2 of this Manual. The responsibilities of respective parties for the EM&A programme are listed in later Clauses.

1.14 The Contractor for the Project (under Contract ST79/02, hereinafter referred to as "ST79Contractor") shall be responsible for:-

- Implementing good site practice and recommending mitigation measures;
- Working to the requirements under Contract No. ST79/02;
- Providing assistance to the ET in carrying out monitoring and audit;
- Following any reasonable directions given by the Engineer or the Engineer Representative (ER) particularly as the result of the implementation of event action plans;
- Complying with all Ordinances, by-law, regulations and rules for the time being in force in Hong Kong governing the control of any form of pollution, including air, noise, water and waste pollution;
- Adhering to the procedures for carrying out complaint investigation in accordance with the requirements under Contract No. ST79/02 and Sections 7.13 and 7.14 of this Manual; and
- Implementing actions in accordance with event/action plans.

1.15 The Engineer/ER shall be responsible for:-

- Reviewing the monitoring and audit reports submitted by the ET and following up the recommendations;
- Ensuring that the EM&A programme is fully implemented in accordance with the requirements set out in this Manual and its subsequent updates, if any;
- Ensuring that the ST79Contractor is implementing environmental controls and mitigation as set out in this Manual as well as any additional measures necessary for compliance with the environmental standards;

- Ensuring that the ST79Contractor is implementing in accordance with the event action plans when exceedances of Action and Limit levels occur;
- Implementing a "stop work" action if repeated exceedance of limit levels justifies this action.
- Undertaking an engineering audit of environmental reports;
- Conduting site liaison; and
- Implementing and enforcing event action plans under the Contract when exceedances of action limit levels occur.

1.16 The Environmental Team (ET) shall not be in any way an associated body of the ST79Contractor. ET Leader is responsible for and in charge of the ET refers to the person delegated the role of executing the EM&A programme. The ET Leader shall have relevant professional qualifications and have at least 7 years EM&A experience. Appropriate staff shall be included in the ET, under the supervision of the ET Leader to fulfill the EM&A duties as specified in this Manual. In general, ET is comprised of an ET Leader, an Environmental Scientist and technicians. A minimum of four staff shall be employed. The ET shall be responsible for:-

- Monitoring the various environmental parameters as required in this Manual and collecting/monitoring all necessary data by following the procedures outlined in this Manual;
- Investigating and auditing the Contractor's equipment and work methodologies with respect to pollution control and environmental mitigation, and anticipate environmental issues for proactive action before problem arise;
- Auditing and preparing EM&A reports on the environmental monitoring data and the site environmental conditions;
- Undertaking regular maintenance and calibration of equipment to ensure precision of the data acquired;
- Ensuring that EM&A results are reported timely to the ER, the IEC and EPD;
- Complaint investigation, evaluation and identification of corrective measures;
- Completing Environmental Checklists and Schedule of Recommended Mitigation Measures implementation status. The checklist shall include items such as:
  (a) Construction activity item names, equipment, any night time activity;
  (b) Any mitigation measures to be implemented; and
  (c) Any affected sensitive receivers, any school nearby, any examination period.

1.17 The Independent Environmental Checker (IEC) shall be appointed by the Project Proponent to audit and verify the overall environmental performance of all the Project work sites and to assess the effectiveness of the ET in their duties. The IEC shall not be an associate body of the Contractor, the ER and the ET. The IEC is responsible for:-

- Reviewing EM&A reports and making recommendations for improvement;
- Arranging and conducting monthly general site inspections/audits of different works area;
- Reviewing the programme of works, in order to anticipate any potential environmental impacts before they arise;
- Ensuring that impact monitoring is conducted at the recommended locations at the recommended frequency as stipulated in the EP and in this Manual;
- Validating and confirming the accuracy of monitoring results, monitoring equipment, monitoring locations, monitoring procedures and locations of sensitive receivers;

- Checking complaint cases and the effectiveness of corrective measures;
- Checking that mitigation measures that have been recommended in the EIA Report, are properly implemented, in a timely manner; and
- Reporting the findings of site inspections/audits and other environmental performance reviews to DEP and the Project Proponent.

Construction Programme

1.18 The ET and IEC shall make reference to the ST79Contractor's actual works progress and works programme during the construction stage to schedule the EM&A works, and the ST79Contractor shall provide the respective information to the ET Leader and the IEC for formulating the EM&A schedule.

1.19 The works to be executed under Contract No. ST79/02 include the construction of the following major items:-

(a) Construction of about 2 kilometers of elevated road, with interchanges and slip roads, on the section of Tai Po Road between Sha Tin Heights and Lion Rock Tunnel Road;
(b) Construction of slip roads, viaducts and an underpass to connect to Route 9 (Cheung Sha Wan to Sha Tin) and the future Trunk Road T4;
(c) Realignment of the westbound carriageway of the Tai Po Road Bridge over the existing Kowloon Canton Railway (KCR) East Rail tracks to accommodate the Road T3 viaduct;
(d) Reprovisioning of a footbridge over the KCR East Rail tracks adjacent to Tai Po Road – Tai Wai Section;
(e) Realignment of a section of Sha Tin Heights Road and modification of Chik Wan Street;
(f) Construction of a two-lane elevated road linking Tai Po Road – Sha Tin Heights Section and Lower Shing Mun Road;
(g) Improvement works at Tai Po Road – Sha Tin Heights Section between Lok Hop Village and Tai Wai New Village including the construction of two turn-around flyovers, local road widening and slope stabilization;
(h) Improvement works at Mei Tin Road comprising:-
  - Construction of a gyratory one-way road system and a two-lane vehicular bridge over the Shing Mun River at the junctions of Mei Tin Road with Heung Fan Liu Street and Pik Tin Street;
  - Construction of a footbridge system for pedestrians and cyclists at the junction of Mei Tin Road and Chik Wan Street;
  - Construction of a footbridge system for pedestrians and cyclists at the road junction west of Mei Kam Estate across Mei Tin Road;
  - Construction of a subway for pedestrians and syslisys at the junction of Mei Tin Road and Chik Fai Street;
(i) Some 6330 meters of noise barriers, including about 5200 meters of vertical barriers ranging from three to seven meters high, about 1000 meters of noise semi-enclosures and about 130 meters of noise full enclosures; and
(j) Associated traffic control and surveillance system, electrical and mechanical works, drainage, landscape areas, footways, cycletracks, and geotechnical works.

1.20 A tentative construction programme and implementation schedule for contract No. ST79/02 prepared by the Engineer is attached at Appendix B of this Manual.

2. AIR QUALITY

Air Quality Monitoring Parameters

2.1 Dust impact would be the major air quality impacts during the construction phase of the Project. Monitoring and audit of the TSP levels shall be carried out by the ET to ensure that any deteriorating air quality could be readily detected and timely action taken to rectify the situation.

2.2 1-hour and 24-hour TSP levels shall be measured to indicate the impacts of construction dust on air quality. The TSP levels shall be measured 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. Upon approval of the ER, 1-hour TSP levels can be measured by direct reading methods which are capable of producing comparable results as that by the high volume sampling method, to indicate short event impacts.

2.3 All relevant data including temperature, pressure, weather conditions, elapsed-time meter reading for the stat and stop of the sampler, identification and weight of the filter paper, and other special phenomena and work progress of the concerned site etc. shall be recorded down in details. A sample field log sheet is shown in Appendix C to this Manual.

Monitoring Equipment

2.4 High Volume Sampler (HVS) in compliance with the following specifications shall be used for carrying out the 1-hour and 24-hour TSP monitoring:

- 0.6-1.7m^3/min (20-60 SCFM) adjustable flow range;
- equipped with a timing/control device with +/- 5 minutes accuracy for 24 hours operation;
- installed with elapsed-time meter with +/- 2 minutes accuracy for 24 hours operation;
- capable of providing a minimum exposed area of 406 cm^2 (63in^2);
- flow control accuracy: +/- 2.5% deviation over 24-hour sampling period;
- equipped with a shelter to protect the filter and sampler;
- incorporated with an electronic mass flow rate controller or other equivalent devices;
- equipped with a flow recorder for continuous monitoring;
- provided with a peaked roof inlet;
- incorporated with a manometer;
- able to hold and seal the filter paper to the sampler housing at horizontal position;
- easy to change the filter; and capable of operating continuously for 24-hour period.

2.5 The ET Leader shall be responsible for provision of the monitoring equipment and associated and power supply. He shall ensure that sufficient numbers of HVSs with an appropriate calibration kit are available for carrying out the regular impact monitoring and ad hoc monitoring. The HVSs shall be equipped with an electronic mass flow controller and be calibrated against a traceable standard at regular intervals. All the equipment, calibration kit, filter papers, etc. shall be clearly labeled. The ET Leader shall also liaise with the concerned parties for gaining access to the monitoring stations for the installation of the monitoring equipment and carrying out monitoring.

2.6 Initial calibration of dust monitoring equipment shall be conducted upon installation and thereafter at bi-monthly intervals. The transfer standard shall be traceable to the internationally recognized primary standard and be calibrated annually. The calibration data shall be properly documented for future reference. All the data should be converted into standard temperature and pressure condition.

2.7 The flow-rate of the sampler before and after the sampling exercise with the filter in position shall be verified to be constant and be recorded in the field log sheet mentioned in Section 2.3.

2.8 If the ET Leader propose to use a direct reading duct meter to measure 1-hour TSP levels, he shall submit sufficient information to the ER to prove that the instrument is capable of achieving a comparable result as that the HVS and may be used for the 1-hour sampling. The instrument shall also be calibrated regularly, and the 1-hour sampling shall be determined periodically by HVS to check the validity and accuracy of the results measured by direct reading method.

2.9 Wind data monitoring equipment shall also be provided and set up at conspicuous locations for logging wind speed and wind direction near to the dust monitoring locations. The equipment installation location shall be proposed by the ET Leader and agreed with the ER. For installation and operation of wind data monitoring equipment, the following points shall be observed:-

- The wind sensors should be installed on masts at an elevated level 10m above ground so that they are clear of obstructions of turbulence caused by the buildings;
- The wind data should be captured by a data logger and to be downloaded for processing at least once a month;
- The wind data monitoring equipment should be re-calibrated at least once every six months; and
- Wind direction should be divided into 16 sectors of 22.5 degrees each.

2.10 In exceptional situations, the ET Leader may propose alternative methods to obtain representative wind data from the IEC and the ER, and agreement from EPD.

Laboratory Measurement/Analysis

2.11 The ET Leader shall carry out laboratory measurements/analyses for the dust samples collected.

2.12 A clean laboratory with constant temperature and humidity control, and equipped with necessary measuring and conditioning instruments, to handle the dust samples collected, shall be available for sample analysis, and equipment calibration and maintenance. The laboratory shall be Hong Kong Laboratory Accreditation Scheme (HOKLAS) accredited.

2.13 If a site laboratory is set up or a non-HOKLAS accredited laboratory is hired for carrying out the laboratory analysis, the laboratory equipment shall be approved by the ER and the measurement procedures shall be witnessed by the ER. The ET Leader shall provide the ER with one copy of the Title 40 of the Code of Federal Regulations, Chapter 1 (Part 50),

Appendix B for his reference.

2.14 Filter paper of size 8"×10" shall be labeled before sampling. It shall be a clean filter paper with no pin holes, and shall be conditioned in a humidity controlled chamber for over 24-hour and be pre-weighed before use for the sampling.

2.15 After sampling, the filter paper loaded with dust shall be kept in a clean and tightly sealed plastic bag. The filter paper is then returned to the laboratory for reconditioning in the humidity controlled chamber followed by accurate weighing by an electronic balance with a readout down to 0.1 mg. The balance shall be regularly calibrated against a traceable standard.

2.16 All the collected samples shall be kept in a good condition for 6 months before disposal.

Monitoring Locations

2.17 Three designated monitoring stations, AQ1, AQ2 and AQ3 are selected for impact dust monitoring. Table 2.1 describes the air quality monitoring locations, which are also depicted in Figure 2.1.

Table 2.1 Locations for Air Quality Monitoring Stations

Monitoring Stations	Location
AQ1	1 Tai Wai New Village
AQ2	60-68 Chik Cheung Street Tai Wai
AQ3	1 Tung Lo Wan Village

2.18 The status and locations of dust sensitive receivers may change after issuing this Manual. If such cases exist, the ET Leader shall propose updated monitoring locations and seek approval from the ER and the IEC and agreement from EPD on the proposal.

2.19 When alternative monitoring locations are proposed, the following criteria, as far as practicable, shall be followed:-

- At the site boundary or such locations close to the major dust emission source;
- Close to the sensitive receptors; and
- Take into account the prevailing meteorological conditions.

2.20 The ET Leader shall agree with the ER on the position of the High Volume Sampler for installation of the monitoring equipment. When positioning the samplers, the following points shall be noted:

- A horizontal platform should be provided with appropriate support to secure the samplers against gusty wind;
- No two samplers should be placed less than 2 meters apart;
- The distance between the sampler and an obstacle, such as buildings, should be at least twice the height that the obstacle protrudes above the sampler;

- A minimum of 2 meters of separation from walls, parapets and penthouses is required for rooftop samples;
- A minimum of 2 meters separation from any supporting structure, measured horizontally is required;
- No furnaces or incineration flues is nearby;
- Airflow around the sampler is unrestricted;
- The sampler is more than 20 meters from the drip line;
- Any wire fence and gate, to protect the sampler, should not cause any obstruction during monitoring;
- Permission must be obtained to set up the samplers and to obtain access to the monitoring stations; and
- A secured supply of electricity is needed to operate the samplers.

Baseline Monitoring

2.21 Baseline monitoring shall be carried out at all the designated monitoring locations for at least 14 consecutive days prior to the commissioning of the construction works to obtain daily 24-hour TSP samples. 1-hour TSP sampling shall also be done at least 3 times per day while highest dust impact is expected.

2.22 During the baseline monitoring, there should not be any construction or dust generation activities in the vicinity of the monitoring stations.

2.23 In case the baseline monitoring cannot be carried out at the designated monitoring locations during the baseline monitoring period, monitoring shall be carried out at alternative locations which can effectively represent the baseline conditions at the impact monitoring locations. The alternative baseline monitoring locations shall be approved by the ER and IEC and agreed with EPD.

2.24 In exceptional case, when insufficient baseline monitoring data or questionable results are obtained, the ET Leader shall liaise with EPD to agree on an appropriate set of data to be used as a baseline reference and submit to ER for approval.

2.25 Ambient conditions may vary seasonally and shall be reviewed at three monthly intervals. If the ET Leader considers that the ambient conditions have been changed and repeat of the baseline monitoring is required to be carried out for obtaining the updated baseline levels, the monitoring should be conducted at times when the ST79Contractor's activities are not generating dust, at least in the proximity of the monitoring stations. Should changes in ambient conditions be determined, the baseline levels and, in turn, the air quality criteria, should be revised. The revised baseline levels and air quality criteria should be agreed with EPD.

Impact Monitoring

2.26 The ET Leader shall carry out impact monitoring during the course of the Project activities under Contract No. ST79/02. For regular impact monitoring, the sampling frequency of at least once in every six-day, shall be strictly observed at all the monitoring stations for 24-hour

TSP monitoring. For 1-hour TSP monitoring, the sampling frequency of at least three times in every six-day should be undertaken when the highest dust impact occurs.

2.27 The specific time to start and stop the 24-hr TSP monitoring shall be clearly defined for each location and be strictly followed by the operator.

2.28 In case of non-compliance with the air quality criteria, more frequent monitoring exercise, as specified in the Event/Action Plan in Table 2.3, shall be conducted within 24 hours after the result is obtained. This additional monitoring shall be continued until the excessive dust emission or the deterioration in air quality is rectified.

Event and Action Plan for Air Quality

2.29 The baseline monitoring results form the basis for determining the air quality criteria for the impact monitoring. The ET Leader shall compare the impact monitoring results with air quality criteria set up for 1-hour TSP and 24-hour TSP. Table 2.2 below shows the air quality criteria, namely Action and Limit levels to be used. Should non-compliance of the air quality criteria occur, the ET, the ER and the Contractor shall undertake the relevant action in accordance with the Event/Action Plan in Table 2.3 below.

Table 2.2 Action and Limit Levels for Air Quality

Parameters	Action	Limit
24 Hour TSP Level in $\mu g/m^3$	For baseline level < 108 $\mu g/m^3$, Action level = average of baseline level plus 30% and Limit level For baseline level > 108 $\mu g/m^3$ and baseline level < 154 $\mu g/m^3$, Action level = 200 $\mu g/m^3$ For baseline level > 154 $\mu g/m^3$, Action level = 130% of baseline level	260
1 Hour TSP Level in $\mu g/m^3$	For baseline level < 154 $\mu g/m^3$, Action level = average of baseline level plus 30% and Limit level For baseline level > 154 $\mu g/m^3$ and baseline level < 269 $\mu g/m^3$, Action level = 350 $\mu g/m^3$ For baseline level > 269 $\mu g/m^3$, Action level = 130% of baseline level	500

Table 2.3 Event/Action Plan for Air Quality

EVENT	ACTION			
	ET	IEC	ER	ST79CONTRACTOR
ACTION LEVEL				
1.Exceedance for one sample	1. Identify source 2. Inform ER & IEC 3. Repeat measurement to confirm finding 4. Increase monitoring frequency to daily	1. Check monitoring data submitted by ET	1.Notify Contractor 2.Check monitoring data and Contractor's working methods	1.Rectify any unacceptable practice 2.Amend working methods if appropriate
2.Exceedance for two or more consecutive samples	1. Identify source 2. Inform ER & IEC 3. Repeat measurements to confirm findings 4. Increase monitoring frequency to daily 5. Discuss with ER & IEC for remedial actions required 6. If exceedance continues, arrange meeting with ER & IEC 7. If exceedance stops, cease additional monitoring	1. Checking monitoring data submitted by ET 2. Advise the ER & ET on the effectiveness of the proposed remedial measures 3. Supervise the implementation of the remedial measures	1.Confirm receipt of notification of failure in writing 2.Notify Contractor 3.Check Contractor's working methods 4.Discuss with ET, IEC and Contractor on proposed remedial actions 5.Ensure remedial actions properly implemented	1.Submit proposals for remedial actions to ER within 3 working days of notification 2.Implement the agreed proposals 3.Amend proposal if appropriate
LIMIT LEVEL				
1.Exceedance for one sample	1. Identify source 2. Inform ER & IEC and EPD 3. Repeat measurement to confirm finding 4. Increase monitoring frequency to daily 5. Assess effectiveness of Contractor's remedial actions and keep EPD and ER & IEC informed of the results	1. Check monitoring data submitted by ET 2. Advise the ER & ET on the effectiveness of the proposed remedial measures 3. Supervise the implementation of the remedial measures	1.Confirm receipt of notification of failure in writing 2.Notify Contractor 3.Check monitoring data and Contractor's working methods 4.Discuss with ET, IEC and Contractor on proposed remedial actions 5.Ensure remedial actions properly implemented	1.Take immediate action to avoid further exceedance 2.Submit proposals for remedial actions to ER within 3 working days of notification 3.Implement the agreed proposals 4.Amend proposal if appropriate
2.Exceedance for two or more consecutive samples	1. Identify source 2. Inform ER, IEC and EPD the causes & actions taken for the exceedances 3. Repeat measurement to confirm findings 4. Increase monitoring frequency to daily 5. Investigate the causes of exceedance 6. Arrange meeting with & IEC and ER to discuss the remedial actions to be taken 7. Assess effectiveness of Contractor's remedial actions and keep ER, IEC and EPD informed of the results 8. If exceedance stops, cease additional monitoring	1. Check monitoring data submitted by ET 2. Review Contractor's remedial actions to assure their effectiveness and advise the ER accordingly 3. Supervise the implementation of the remedial measures	1.Confirm receipt of notification of failure in writing 2.Notify Contractor 3.Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented 4.Discuss amongst ET, IEC and the Contractor on proposed remedial actions 5.Ensure remedial measure are properly implemented 6.If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated	1. Take immediate action to avoid further exceedance 2. Submit proposals for remedial actions to ER within 3 working days of notification 3. Implement the agreed proposals 4. Resubmit proposals if problem still not under control 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated

Dust Mitigation Measures

2.30 The ST79Contractor shall be responsible for the design and implementation of the following measures:

- Covering of materials on truck with tarpaulin sheeting.
- Watering of the dusty areas, at least twice a day.
- Good housekeeping.
- Providing wheel-washing facilities at site exit(s).

2.31 If the above measures are not sufficient to restore the air quality to acceptable levels upon the advice of the ET Leader, the ST79Contractor shall liaise with the ET Leader and the IEC on some other mitigation measures, propose to the ER and IEC for approval, and implement the mitigation measures. In addition, the *Air Pollution Control (Construction Dust) Regulation: Chapter 311 Subsidiary Legislation* shall be adhered.

3. NOISE

Noise Monitoring Parameters

3.1 Monitoring and audit of construction noise levels should be carried out by the ET to ensure that any unacceptable noise impacts could be readily detected and timely and appropriate action be undertaken to rectify the situation.

3.2 The construction noise levels shall be measured in terms of the A-weighted equivalent continuous sound pressure level (Leq). Leq(30 min) shall be used as the monitoring parameter for the time period between 0700-1900 hours on normal weekdays. For all other time periods, Leq(5 min) shall be employed for comparison with the Noise Control Ordinance (NCO) criteria.

3.3 The ET Leader shall also carry out monitoring of road traffic noise after the works under Contract No. ST79/02 are completed and put into operation. The road traffic noise during operation of the Project shall be measured in terms of the A-weighted equivalent of L_{10}(1-hr). During the traffic noise measurement, traffic count shall also be undertaken concurrently.

3.4 As supplementary information for data auditing, statistical results such as L_{10} and L_{90} shall also be obtained for reference. Sample noise field data sheets are shown in Appendix D and E to this Manual for reference.

Monitoring Equipment

3.5 As referred to in the Technical Memorandum (TM) issued under the Noise Control Ordinance (NCO), sound level meters in compliance with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications shall be used for carrying out the noise monitoring. Immediately prior to and following each noise measurement the accuracy of the sound level meter shall be checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements may be accepted as valid only if the calibration level from before and after the noise measurement agree to within 1.0dB.

3.6 Noise measurements shall not be made in the presence of fog, rain, wind with a steady speed exceeding $5ms^{-1}$ or wind with gusts exceeding $10ms^{-1}$. The wind speed shall be checked with a portable wind speed meter capable of measuring the wind speed in m/s.

3.7 The ET Leader shall be responsible for the provision of the monitoring equipment and associated accessories and power supply. He shall ensure that sufficient noise measuring equipment and associated instrumentation are available for carrying out the regular impact monitoring and ad hoc monitoring. All the equipment and associated instrumentation shall be clearly labelled. The ET Leader shall also liaise with the concerned parties for gaining access to the monitoring stations for the installation of the monitoring equipment and carrying out monitoring.

Monitoring Locations for Construction Noise

3.8 Six designated monitoring stations, N1 to N6 are selected for construction noise monitoring. Table 3.1 describes the construction noise monitoring locations, which are also depicted in Figure 3.1. The status and locations of noise sensitive receivers may change after this Manual is issued. If such cases exist, the ET Leader shall propose updated monitoring locations and seek approval from ER & IEC and agreement from EPD of the proposal.

Table 3.1 Locations for Construction Noise Monitoring Stations

Monitoring Stations	Location
N1	1 Tai Wai New Village
N2	Holford Garden
N3	60-68 Chik Cheung Street Tai Wai
N4	Buddhist Wong Wan Tin college
N5	1 Tung Lo Wan Village
N6	Scenery Court

3.9 When alternative monitoring locations are proposed, the monitoring locations should be chosen based on the following criteria:-

(a) at locations close to the major site activities which are likely to have noise impacts;
(b) close to the noise sensitive receivers. For the purposes of this section, any domestic premises, hotel, hostel, temporary housing accommodation, hospital, medical clinic, educational institution, place of public worship, library, court of law, performing art centre should be considered as noise sensitive receiver; and
(c) for monitoring locations located in the vicinity of the sensitive receivers, care should be taken to cause minimal disturbance to the occupants during monitoring.

3.10 The monitoring station shall normally be at a point 1m from the exterior of the sensitive receivers building facade and be at a position 1.2m above the ground. If there is problem with access to the normal monitoring position, an alternative position may be chosen, and a correction to the measurements shall be made. For reference, a correction of +3dB(A) shall be made to the free field measurements. The ET Leader shall agree with the ER on the monitoring position and the corrections adopted. Once the positions for the monitoring stations are chosen, the baseline monitoring and the impact monitoring shall be carried out at the same positions.

Baseline Monitoring for Construction Noise

3.11 The ET Leader shall carry out baseline monitoring prior to the commencement of the construction works. The baseline monitoring shall be carried out daily for a period of at least 14 consecutive days. A schedule on the baseline monitoring for construction noise prior to the commencement of the construction works shall be submitted to the ER for approval before the monitoring starts.

3.12 There shall not be any construction activities in the vicinity during the baseline monitoring.

In exceptional cases, when insufficient baseline monitoring data or questionable results are obtained, the ET Leader shall liaise with EPD to agree on an appropriate set of data to be used as a baseline reference and submit to the ER for approval.

Impact Monitoring for Construction Noise

3.13 There shall not be any construction activities in the vicinity during the baseline monitoring. In exceptional cases, when insufficient baseline monitoring data or questionable results are obtained, the ET Leader shall liaise with EPD to agree on an appropriate set of data to be used as a baseline reference and submit to the ER for approval.

3.14 Noise monitoring shall be carried out at all the designated monitoring stations. The monitoring frequency shall depend on the scale of the construction activities. The following is an initial guide on the regular monitoring frequency for each station on a per week basis when noise generating activities are underway:-

(a) one set of measurements between 0700-1900 hours on normal weekdays;
(b) one set of measurements between 1900-2300 hours;
(c) one set of measurements between 2300-0700 hours of next day; and
(d) one set of measurements between 0700-1900 hours on holidays.

3.15 For the measurements (b), (c) and (d) above, one set of measurements shall at least include 3 consecutive Leq(5 min) results.

3.16 If a school exists near the construction activity, noise monitoring shall be carried out at the monitoring stations for the school during the school examination periods. The ET Leader shall liaise with the school's personnel and the Examination Authority to ascertain the exact dates and times of all examination periods during the course of the construction.

3.17 In case of non-compliance with the construction noise criteria, more frequent monitoring as specified in the Event/Action Plan in Table 3.3 of this Manual shall be carried out. This additional monitoring shall be continued until the recorded noise levels are rectified or proved to be irrelevant to the construction activities.

Event and Action Plan for Construction Noise

3.18 The Action and Limit levels for construction noise are defined in Table 3.2. Should non-compliance of the criteria occur, action in accordance with the Event/Action Plan in Table 3.3, shall be carried out.

Table 3.2 Action and Limit Levels for Construction Noise

Time Period	Action	Limit
0700-1900 hrs on normal weekdays	When one documented complaint is received	75* dB(A)
0700-2300 hrs on holidays; and 1900-2300 hrs on all other days		60/65/70** dB(A)
2300-0700 hrs of next day		45/50/55** dB(A)

* reduce to 70 dB(A) for schools and 65 dB(A) during school examination periods.
** to be selected based on Area Sensitivity Rating.

Noise Mitigation Measures

3.19 The EIA report has recommended construction noise control and mitigation measures. The ST79Contractor shall be responsible for the design and implementation of these measures.

- Install temporary noise barriers
- Locate noisy equipment and activities as far from NSRs as is practical
- Replace noisy plant or processes by quieter alternatives where possible
- Schedule noisy activities to minimize exposure of nearby NSRs to high levels of construction noise
- Turn off throttle down idle equipment, ad operate noisy equipment only when necessary
- Provide vibration isolation and/or acoustic enclosures to the power units of non-electric stationary plant and earth–moving plant
- Plan to avoid parallel conduction of noisy activities close to a given receiver
- Properly maintain and operate construction plant and the associated silencing measures

3.20 If the measures mentioned in Clause 3.19 above are not sufficient to restore the construction noise quality to an acceptable levels upon the advice of ET Leader, the ST79Contractor shall liaise with the ET Leader and the IEC on some other mitigation measures, propose to the ER and the IEC for approval, and carry out the mitigation measures.

Table 3.3 Event/Action Plan for Construction Noise

EXCEEDANCE	ACTION			
	ET	IEC	ER	Contractor
Action Level	1.Undertake measurement to establish validity of complaint 2.Identify the source(s) of the complaint 3.Inform ER & IEC in writing. Discuss remedial actions required with ER&IEC 4.Increase monitoring frequency to assess efficacy of remedial measures 5.If exceedance continues, meet with ER&IEC to review implementation of appropriate mitigation measures 6.If exceedance stops, cease additional monitoring	1.Review the analysed results submitted by the ET 2.Review the proposed remedial measures by the Contractor and advise the ER & ET accordingly 3.Supervise the implementation of remedial measures	1.Confirm receipt of notification of complaint and notify Contractor if proven 2.Check monitoring data trends and Contractor's working methods. 3.Remind the Contractor of his contractual obligations and discuss with ET, IEC and Contractor on proposed remedial actions 4.Assess the efficacy of remedial actions and keep the Contractor informed 5. Inform complainant of actions taken	1.Submit proposals for remedial actions to ER within three working days of notification 2.Amend proposals if required by the Engineer 3.Implement the remedial actions immediately upon instruction 4.Liaise with the ER to optimise the effectiveness of the agreed mitigation 5. Amend proposal if appropriate

Table 3.3 Event/Action Plan for Construction Noise (Cont'd)

EXCEEDANCE	ACTION			
	ET	IEC	ER	Contractor
Limit Level	1.Repeat measurement to confirm findings 2.Identify the source(s) of impact 3.Inform ER&IEC and EPD in writing 4.Discuss remedial actions required with ER&IEC 5. Increase monitoring frequency to assess efficacy of remedial measures 6.If exceedance continues, meet with ER&IEC to identify appropriate mitigation measures 7.If exceedance stops, cease additional monitoring	1.Check monitoring data submitted by ET 2. Review Contractor's remedial actions to assure their effectiveness and advise the ER &ET accordingly 3.Supervise the implementation of the remedial measures	1. Confirm receipt of notification of exceedance and notify Contractor 2. Check monitoring data trends and Contractor's working methods 3. Discuss with ET, IC(E) and Contractor on proposed remedial actions to be implemented 4. Assess the efficacy of remedial actions and keep the Contractor informed 5. If exceedance continuous, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is aborted	1.Take immediate action to avoid further exceedance 2.Submit proposals for remedial actions to ER within three working days of notification 3.Amend proposals if required by the ER 4.Implement remedial actions immediately upon instruction 5.Liaise with the ER to optimise the effectiveness of the agreed mitigation 6.Resubmit proposals if problem still not under control 7.Stop the relevant portion of works as determined by the ER until the exceedance is aborted.

Operational Traffic Noise Monitoring

3.21 The ET Leader shall prepare and deposit to EPD, at least 6 months before the operation of the works under the Project, a monitoring plan for the purpose of assessing the accuracy of traffic noise predictions by comparing the project noise impact predictions with the actual impacts. The monitoring plan shall contain monitoring locations, monitoring schedules, methodology of noise monitoring including noise measurement procedures, traffic counts and speed checks, and methodology of comparison with the predicted levels. The ET Leader shall implement the monitoring plan in accordance with the deposited monitoring plan unless with prior justification. Monitoring details and results including the comparison between the measured noise levels and the predicted levels shall be recorded in a report to be deposited with EPD within one month of the completion of the monitoring. The report shall be certified by the ET Leader and the Project Proponent before deposit with EPD.

3.22 The traffic noise levels shall be measured twice at 6-month intervals within the first year upon completion of the Project. Measurements shall be made in terms of the A-weighted L_{10} over 3 half hour periods during the peak traffic hour, other metrics like L_{eq} may be added as seen fit.

3.23 Six designated monitoring stations, N1 to N6 are selected for operational noise monitoring. Figure 3.2 describes the operational noise monitoring locations, which are also depicted in. The status and locations of noise sensitive receivers may change after this Manual is issued. If such cases exist, the ET Leader shall propose updated monitoring locations and seek approval from ER & IEC and agreement from EPD of the proposal.

3.24 The monitoring locations shall be selected according to the following criteria:-

- They should be at NSRs in the vicinity of recommended direct technical remedies; preferably, there should be one representative monitoring locations near each types of noise screening element (i.e. vertical barrier, cantilever barrier and enclosure);
- One high floor and one medium floor monitoring points should be chosen at each location as far as possible; and
- Selected monitoring locations should enable monitoring to be done twice within one year after implementation of the mitigation measures during operation of the proposed road

3.25 When alternative monitoring locations are proposed, the monitoring locations shall be chosen based on the following criteria:-

- alternative location shall be similarly exposed to potential noise impacts;
- it shall be close to the noise sensitive receivers; and
- shall be located so as to cause minimal disturbance to the occupants.

3.26 The operational noise monitoring shall be carried out at a distance of 1 m from the openable window and 1.2 m above the floor level of the noise sensitive receivers identified. The ET Leader shall agree with the IEC on any necessary corrections adopted.

3.27 Noise monitoring shall be carried out at all the designated traffic noise monitoring stations. The following is an initial guide on the traffic noise monitoring requirements during the

operational phase:-

(a) one set of measurements at the morning traffic peak hour on normal weekdays;
(b) one set of measurements at the evening traffic peak hour on normal weekdays;
(c) a concurrent census of traffic flow and percentage heavy vehicle shall be obtained for far-side and near-side of the road and the existing road network in the vicinity of each measuring point;
(d) average vehicle speed estimated for far-side and near-side of the road and the existing road network in the vicinity of each measuring point; and
(e) the two sets of monitoring data should be obtained within the first year of operation.

3.28 Measured noise levels should be compared with predicted noise levels by applying appropriate conversion corrections to allow for the traffic conditions at the time of measurement. A sample operational noise field data sheet is attached in Appendix E.

3.29 The measured/monitor noise levels shall be compared with the predicted results and the predicted traffic flow conditions (calculated noise levels based on concurrent traffic census obtained). In case discrepancies are observed, explanation should be given to justify the discrepancies.

4. WATER QUALITY

Water Quality Parameters

4.1 Monitoring of Turbidity in NTU, pH and suspended solids (SS) in mg/l shall be carried out by the ET to ensure that any deteriorating water quality could be readily detected and timely action be taken to rectify the situation. The former two parameters are measured in-situ while the latter one is determined in laboratory. If there are other water quality parameters recommended in the EIA report, they shall also be included in the environmental monitoring work. A sample monitoring record sheet is shown in Appendix F for reference.

Monitoring Equipment

4.2 pH Measuring Equipment

(a) The instrument should be a portable, weatherproof pH metre complete with cable, sensor, comprehensive operation manuals, and use a DC power source. It should be capable of measuring:-
- pH in the range of 0-14, with a resolution of 0.1 and 0.01 pH, and
- a temperature of 0-45 degree Celsius.

(b) It should have a membrane electrode with automatic temperature compensation complete with a cable. Sufficient stocks of spare electrodes and cables should be available for replacement where necessary. (e.g. Beckman, Hanna HI9023C)

4.3 Turbidity Measurement Instrument

The instrument should be a portable, weatherproof Turbidity-measuring instrument complete with comprehensive operational manual. The equipment should use a DC power source. It should have a photoelectric sensor capable of measuring Turbidity between 0-1000 NTU and be complete with a cable (e.g. Hach model 2100P or an approved similar instrument).

4.4 Suspended Solids

Water samples for suspended solids measurement should be collected in high density polythene bottles, packed in ice (cooled to 4°C without being frozen), and delivered to the laboratory as soon as possible after collection.

4.5 All in-situ monitoring instrument shall be checked, calibrated and certified by a laboratory accredited under Hong Kong Laboratory Accreditation Scheme (HOKLAS) or any other international accreditation scheme before use, and subsequently re-calibrated at 3 monthly intervals throughout all stages of the water quality monitoring. Responses of sensors and electrodes should be checked with certified standard solutions before each use.

4.6 For the on-site calibration of field equipment, the BS 127:1993, "Guide to Field and on-site test methods for the analysis of water" should be observed.

4.7 Sufficient stocks of spare parts should be maintained for replacements when necessary. Backup monitoring equipment shall also be made available so that monitoring can proceed uninterrupted even when some equipment is under maintenance, calibration, etc.

Laboratory Measurement/Analysis

4.8 Analysis of suspended solids shall be carried out in a HOKLAS or other international accredited laboratory. Water samples of about 500 ml shall be collected at the monitoring stations for carrying out the laboratory SS determination. The SS determination work shall start within 24 hours after collection of tie water samples. The SS determination shall follow APHA 17ed 2540D or equivalent methods subject to approval of DEP.

4.9 If a site laboratory is set up or a non-HOKLAS and non-international accredited laboratory is hired for carrying out the laboratory analysis, the laboratory equipment, analytical procedures and quality control shall be approved by DEP. All the analysis shall be witnessed by the ER. The ET Leader shall provide the ER with one copy of the relevant chapters of the "Standard Methods for the Examination of Water and Wastewater" updated edition and any other relevant documents for his reference.

4.10 For the testing methods of other parameters as recommended by EIA or required by DEP, detailed method procedures should be submitted to DEP for approval prior to the commencement of monitoring programme. If in-house or non-standard methods are proposed, details of the method verification may also be required to be submitted to DEP. In any circumstances, the sample testing should have comprehensive quality assurance and quality control programmes. The laboratory should prepare to demonstrate the programmes to DEP or his representatives when requested.

Monitoring Locations

4.11 Water quality monitoring shall be carried out at all discharge points from the construction site to the nearby surface channels and two control points upstream of the site. The locations of the control points are shown in Figure 4.1 and depicted in Table 4.1.

Table 4.1 Locations for Water Quality Monitoring Control Stations

Monitoring Stations	Coordination
C1	835723.1E 826439.6N
C2	836451.3E 826572.6N

4.12 When alternative monitoring locations are proposed, they should be chosen based on the following criteria:-

- at locations close to and preferably at the boundary of the mixing zone of the major site activities as indicated in the EIA final report, which are likely to have water quality impacts;
- close to the sensitive receptors which are directly or likely to be affected; and
- for monitoring locations located in the vicinity of the sensitive receptors, care should be taken to cause minimal disturbance during monitoring.

Baseline Monitoring

4.13 Baseline conditions for water quality shall be established and agreed with DEP prior to the commencement of works. The purposes of the baseline monitoring are to establish ambient conditions prior to the commencement of the works and to demonstrate the suitability of the proposed impact, control and reference monitoring stations. The baseline conditions shall normally be established by measuring the water quality parameters specified in Section 4.1. The measurements shall be taken at all two control stations, 3 days per week, for two weeks prior to the commencement of marine works.

4.14 There shall not be any construction activities in the vicinity of the stations during the baseline monitoring. In exceptional case when insufficient baseline monitoring data or questionable results are obtained, the ET Leader shall seek approval from DEP on an appropriate set of data to be used as baseline reference.

Impact Monitoring

4.15 During the course of construction works, monitoring shall be taken three days per week, with sampling/measurement at all discharge locations and the two designated control stations. The interval between two sets of monitoring shall not be less than 36 hours except where there are exceedances of Action and/or Limit levels, in which case the monitoring frequency shall be increased.

Event and Action Plan for Water Quality

4.16 The water quality criteria, namely Action and Limit levels are shown in Table 4.2. Should the monitoring results of the water quality parameters at any designated monitoring stations indicate that the water quality criteria are exceeded, the actions in accordance with the Action Plan in Table 4.3 shall be carried out.

Table 4.2 Action and Limit Levels for Water Quality

Parameters	Action	Limit
pH	Mid-way between average baseline data and limit level	6-9
SS in mg/l	95%-ile of baseline data and 120% of upstream control station's SS	99%-ile of baseline and 130% of upstream control station's SS
Turbidity (Tby) in NTU	95%-ile of baseline data and 120% of upstream control station's SS	99%-ile of baseline and 130% of upstream control station's SS

Notes: For SS and Turbidity, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
All the figures given in the table are used for reference only and the EPD may amend the figures whenever it is considered as necessary.

Water Quality Mitigation Measures

4.17 The EIA report has recommended water quality control and mitigation measures. The ST79Contractor shall be responsible for the design and implementation of these measures.

- Use of oil/grit separators
- Use of sediment basins/traps.

4.18 If the above measures are not sufficient to restore the water quality to an acceptable levels upon the advice of the ET Leader, the Contractor shall liaise with the ET Leader on some other mitigation measures, propose to IEC and ER for approval, and carry out the mitigation measures.

Table 4.3 Event/Action Plan for Water Quality

EVENT	ACTION			
	ET	IEC	ER	ST79CONTRACTOR
ACTION LEVEL				
1.Exceedance for one sample	1. Identify source 2. Inform ER & IEC 3. Repeat measurement to confirm finding 4. Increase monitoring frequency to daily	1. Check monitoring data submitted by ET	1.Notify Contractor 2.Check monitoring data and Contractor's working methods	1.Rectify any unacceptable practice 2. Amend working methods if appropriate
2.Exceedance for two or more consecutive samples	1. Identify source 2. Inform ER & IEC 3. Repeat measurements to confirm findings 4. Increase monitoring frequency to daily 5. Discuss with ER & IEC for remedial actions required 6. If exceedance continues, arrange meeting with ER & IEC 7. If exceedance stops, cease additional monitoring	1.Checking monitoring data submitted by ET 2.Advise the ER & ET on the effectiveness of the proposed remedial measures 3.Supervise the implementation of the remedial measures	1.Confirm receipt of notification of failure in writing 2.Notify Contractor 3.Check Contractor's working methods 4.Discuss with ET, IEC and Contractor on proposed remedial actions 5.Ensure remedial actions properly implemented	1.Submit proposals for remedial actions to ER within 3 working days of notification 2.Implement the agreed proposals 3.Amend proposal if appropriate
LIMIT LEVEL				
1.Exceedance for one sample	1. Identify source 2. Inform ER & IEC and EPD 3. Repeat measurement to confirm finding 4. Increase monitoring frequency to daily 5. Assess effectiveness of Contractor's remedial actions and keep EPD and ER & IEC informed of the results	1.Check monitoring data submitted by ET 2.Advise the ER & ET on the effectiveness of the proposed remedial measures 3.Supervise the implementation of the remedial measures	1.Confirm receipt of notification of failure in writing 2.Notify Contractor 3.Check monitoring data and Contractor's working methods 4.Discuss with ET, IEC and Contractor on proposed remedial actions 5.Ensure remedial actions properly implemented	1.Take immediate action to avoid further exceedance 2.Submit proposals for remedial actions to ER within 3 working days of notification 3.Implement the agreed proposals 4.Amend proposal if appropriate
2.Exceedance for two or more consecutive samples	1. Identify source 2. Inform ER, IEC and EPD the causes & actions taken for the exceedances 3. Repeat measurement to confirm findings 4. Increase monitoring frequency to daily 5. Investigate the causes of exceedance 6. Arrange meeting with & IEC and ER to discuss the remedial actions to be taken 7. Assess effectiveness of Contractor's remedial actions and keep ER, IEC and EPD informed of the results 8. If exceedance stops, cease additional monitoring	1.Check monitoring data submitted by ET 2.Review Contractor's remedial actions to assure their effectiveness and advise the ER accordingly 3.Supervise the implementation of the remedial measures	1.Confirm receipt of notification of failure in writing 2.Notify Contractor 3.Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented 4.Discuss amongst ET, IEC and the Contractor on proposed remedial actions 5.Ensure remedial measure are properly implemented 6.If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated	1. Take immediate action to avoid further exceedance 2. Submit proposals for remedial actions to ER within 3 working days of notification 3. Implement the agreed proposals 4. Resubmit proposals if problem still not under control 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated

5. WASTE MANAGEMENT

5.1 The ST79Contractor is responsible for waste control within the construction site of Contract No. ST79/02, removal of the waste material produced from the site and to implement any mitigation measures to minimize waste or redress problems arising from the waste from the site. The waste material may include any sewage, waste water or effluent containing sand, cement, silt or any other suspended or dissolved material to flow from the site onto any adjoining land, storm sewer, sanitary sewer, or any waste matter or refuse to be deposited anywhere within the site or onto any adjoining land.

5.2 In order to ensure that all waste is disposed of in an appropriate manner, if practical, waste shall be separated by category on-site by the ST79Contractor. It is recommended that waste be segregated into the following categories:

- excavated material or construction waste suitable for reuse on-site;
- inert construction waste for disposal at public dump;
- chemical waste;
- non-inert construction waste; and
- general refuse.

5.3 Good site practices will ensure that the on-site impacts mentioned previously are minimized. These include:-

- daily collection of general refuse or as often as required;
- regular maintenance and cleaning of waste storage areas; and
- storage of waste in suitable containers/receptacles.

5.4 It is the ST79Contractor's responsibility to ensure that only approved licensed waste collectors are used and that appropriate measures to minimize adverse impacts, including windblown litter and dust from the transportation of these wastes are employed. In addition, the ST79Contractor must ensure that all the necessary waste disposal permits are obtained.

5.5 The ST79Contractor shall also pay attention to the Waste Disposal Ordinance, the Dumping at Sea Ordinance, the Public Health and Municipal Services Ordinance and the Water Pollution Control Ordinance, and carry out the appropriate waste management work. The relevant license/permit, such as the effluent discharge license, the chemical waste producer registration, etc. shall be obtained. The Contractor shall refer to the relevant booklets issued by EPD when applying for the license/permit.

5.6 The ET Leader shall carry out regular auditing of each waste stream to determine compliance of approved procedures and the site waste management plan. Aspects concerned with waste management to be examined include waste generation, storage, recycling, treatment, transport and disposal. The auditing exercise shall be undertaken on a quarterly basis, with the first audit conducted when construction activities commence.

5.7 During the site inspections / audits and the document review procedures as mentioned in Section 7 of this Manual, the ET Leader shall pay special attention to the issues relating to waste management, and check whether the ST79Contractor has followed the relevant contract specifications of Contract No. ST79/02 and the procedures specified under the Laws of Hong Kong.

6. VISUAL AND LANDSCAPE

Pre-Construction

6.1 The ET Leader shall verify, and endorsed by the IEC, that

(a) The alignment and configuration of the road and slip roads are designed so as to minimise land-take and interference with the existing topography and vegetation;
(b) Sensitive architectural design of noise barriers *in accordance with ACABAS approved designs*, with soft landscape screening where appropriate; and
(c) all design input proposed for both hard and soft mitigation measures have been incorporated into the design of the works under Contract No. ST79/02. This includes design of road flyover profiles, noise barriers and pavement materials as well as screen and streetscape planting.

During Construction

6.2 The ET Leader shall carry out monitoring to ensure that the works programme is organized to ensure that areas to receive screen and streetscape planting are planted as early as possible within the construction phase.

Post Construction

6.3 The ET Leader shall carry out an audit to ensure all proposed mitigation works have been completed.

Recommended Visual and Landscape Mitigation Measures

6.4 The recommended visual and landscape mitigation measures include:-

- Retention of all existing roadside planting, where possible;
- Dense tree and shrub planting to new cut slopes in order to create a landscape buffer zone and visual screen using fast growing species such as *Eucalyptus* and *Casuarina* and slower growing native species such as *Aleurites*, *Celtis*, *Machilus* and *Mallotus*;
- Re-instatement of street tree planting;
- Transplantation of street tree planting within or in the vicinity of site;
- Dense screen tree and shrub planting in the planned Open Space at Area 40 using fast growing Eucalyptus and *Casuarina* species mixed with slower growing native species such as *Aleurities*, *Celtis* and *Mallotus* and ornamental flowering shrubs as an edge to the screen planting to provide seasonal display;

- Dense tree and shrub planting in all roadside amenity areas within the interchange using native tree such as *Michelle* and *Aleurities*;

- Dense tree and shrub planting to screen all retaining walls and noise barriers/enclosure where possible;

- Design and quality of finishes to all hard materials on all elevated sections of roads together with their piers in conjunction with advice from Advisory Committee on the Appearance of Bridge and Associated Structures (ACABAS);

- Design and quality of finishes for all materials used for streetscape finishes;

- Design and quality of finishes for the subway tubes and portals in conjunction with advice from ACABAS; and

- Design and quality of finishes to the noise barriers incorporating the advice from ACABAS.

7. SITE ENVIRONMENTAL AUDIT

Site Inspections / Audits

7.1 Site Inspections / Audits provide a direct means to trigger and enforce the specified environmental protection and pollution control measures. They shall be undertaken routinely to inspect the construction activities in order to ensure that appropriate environmental protection and pollution control mitigation measures are properly implemented. With well defined pollution control and mitigation specifications and a well established site inspection, deficiency and action reporting system, the site inspection is one of the most effective tools to enforce the environmental protection requirements on the construction site.

7.2 The ET Leader is responsible for formulation of the environmental site inspection, deficiency and action reporting system, and for carrying out the site inspection works. He shall submit a proposal on the site inspection, deficiency and action reporting procedures within 21 days of the commencement of Contract No. ST79/02 to the ST79Contractor for agreement and to the ER and the IEC for approval.

7.3 Regular site inspections / audits shall be carried out at least once per week. The areas of inspection shall not be limited to the environmental situation, pollution control and mitigation measures within the site; the ET Leader shall also review the environmental situation outside the site area which is likely to be affected, directly or indirectly, by the site activities. The ET Leader shall make reference to the following information in conducting the inspection:-

(a) the EIA recommendations on environmental protection and pollution control mitigation measures;
(b) works progress and programme;
(c) individual works methodology proposals (which shall include proposal on associated pollution control measures);
(d) the contract specifications on environmental protection;
(e) the relevant environmental protection and pollution control laws; and
(f) previous site inspection results.

7.4 The ET Leader shall liaise with the ST79Contractor to update all relevant information of Contract No. ST79/02 for him to carry out the site inspections / audits. The inspection results and the associated recommendations on improvements to the environmental protection and pollution control works shall be submitted to the ER, the IEC and the ST79Contractor within 24 hours, for reference and for taking immediate action. The ST79Contractor shall follow the procedures and time-frame as stipulated in the environmental site inspection, deficiency and action reporting system formulated by the ET Leader to report on any remedial measures subsequent to the site inspections / audits.

7.5 The ET Leader shall carry out ad hoc site inspections / audits if significant environmental problems are identified. He shall also carry out any inspections/ audits required subsequent to receipt of an environmental complaint, or as part of the investigation work, as specified in the Action Plan for environmental monitoring and audit.

Compliance with Legal and Contractual Requirements

7.6 There are contractual environmental protection and pollution control requirements as well as environmental protection and pollution control laws in Hong Kong which the construction activities shall comply with.

7.7 In order that the works are in compliance with the contractual requirements of Contract No. ST79/02, all the works method statements submitted by the ST79Contractor to the ER for approval shall also be sent to the ET Leader and the IEC for vetting to see whether sufficient environmental protection and pollution control measures have been included.

7.8 The ET Leader shall also be responsible for certifying the environmental acceptability of permanent and temporary works, and the environmental acceptability of relevant design plans and submissions.

7.9 The ET Leader shall also review the progress and programme of the works to check that relevant environmental laws have not been violated, and that any foreseeable potential for violating the laws can be prevented.

7.10 The ST79Contractor shall regularly copy relevant documents to the ET Leader and the IEC so that the checking work can be carried out. The document shall at least include the updated Work Progress Reports, the updated Works Programme, the application letters for different license/permits under the environmental protection laws, and all valid licenses/permits. The site diary shall also be available for the ET Leader's inspection upon his request.

7.11 After reviewing the document, the ET Leader shall advise the ER and the ST79Contractor of any non-compliance with the contractual and legislative requirements on environmental protection and pollution control for them to take follow-up actions. If the ET Leader's review concludes that the current status on licence/permit application and any environmental protection and pollution control preparation works may not cope with the works programme or may result in potential violation of environmental protection and pollution control requirements by the works in due course, he shall also advise the ST79Contractor and the ER accordingly.

7.12 Upon receipt of the advice, the ST79Contractor shall undertake immediate action to remedy the situation. The ER shall follow up to ensure that appropriate action has been taken by the ST79Contractor in order that the environmental protection and pollution control requirements are fulfilled.

Environmental Complaints

7.13 Complaints shall be referred to the ET Leader for carrying out complaint investigation procedures. The ET Leader shall undertake the following procedures upon receipt of the complaints:

(a) log complaint and date of receipt onto the complaint database;
(b) investigate the complaint to determine its validity, and to assess whether the source of

the problem is due to works activities;

(c) if a complaint is valid and due to works, identify mitigation measures;

(d) if mitigation measures are required, advise the Contractor accordingly;

(e) review the Contractor's response on the identified mitigation measures, and the updated situation;

(f) if the complaint is transferred from EPD, submit interim report to EPD on status of the complaint investigation and follow-up action within the time frame assigned by EPD;

(g) undertake additional monitoring and audit to verify the situation if necessary, and review that any valid reason for complaint does not recur;

(h) report the investigation results and the subsequent actions to the source of complaint for responding to complainant (If the source of complaint is EPD, the results should be reported within the time frame assigned by EPD); and

(i) record the complaint, investigation, the subsequent actions and the results in the monthly EM&A reports.

7.14 During the complaint investigation work, the Contractor and ER shall cooperate with the ET Leader and the IEC in providing all the necessary information and assistance for completion of the investigation. If mitigation measures are identified in the investigation, the Contractor shall promptly carry out the mitigation. The ER shall ensure that the measures have been carried out by the Contractor. A flow chart of the complaint response procedures is shown in Figure 7.1. A sample of the complaint log sheet is provided in Appendix H.

8. REPORTING

General

8.1 The ET Leader shall prepare and certify the EM&A Reports and Traffic Noise Monitoring Reports in accordance with following reporting requirements. The following reporting requirements based upon a paper documented approach. However, the same information can be provided in an electronic medium upon agreeing the format with the ER and EPD. This would enable a transition from a paper/historic and reactive approach to an electronic/real time proactive approach.

Baseline Monitoring Report

8.2 The ET Leader shall prepare and submit a Baseline Environmental Monitoring Report within 10 working days of completion of the baseline monitoring. Copies of the Baseline Environmental Monitoring Report shall be submitted to each of the four parties: the ST79Contractor, the ER, the IEC and the EPD. The ET Leader shall liaise with the relevant parties on the exact number of copies they want. The format of the report and the format of the baseline monitoring data in magnetic media to be submitted to EPD shall be agreed with EPD.

8.3 The baseline monitoring report shall include at least the following:-

(a) Up to half a page executive summary;
(b) Brief project background information;
(c) drawings showing locations of the baseline monitoring stations;
(d) an updated construction programme with milestones of environmental protection/mitigation activities annotated;
(e) monitoring results (in both hard and diskette copies) together with the following information:
- monitoring methodology;
- name of laboratory and types of equipment used and calibration details;
- parameters monitored;
- monitoring locations (and depth); and
- monitoring date, time, frequency and duration;
- QA/QC results and detection limits.

(f) details on influencing factors, including:
- major activities, if any, being carried out on the site during the period;
- weather conditions during the period; and
- other factors which might affect the results.

(g) determination of the Action and Limit Levels for each monitoring parameter and statistical analysis of the baseline data, the analysis shall conclude if there is any significant different between control and impact stations for the parameters monitored;
(h) revisions for inclusion in the Updated EM&A Manual, and
(i) comments and conclusions.

Monthly EM&A Reports

8.4 The results and findings of all EM&A work required in this Updated EM&A Manual shall be recorded in the monthly EM&A reports certified by the ET Leader and verified by the IEC. The EM&A report shall be prepared and submitted within 10 working days of the end of each reporting month, with the first report due in the month after construction commences. Six hard copies of each monthly EM&A report shall be submitted to each of the five parties: the Employer, the ST79Contractor, the ER, the IEC and EPD (2 hard copies), and an electronic copy as described in Section 8.11 shall be submitted to each of the ER and EPD. Before submission of the first EM&A report, the ET Leader shall liaise with the parties on format of the monthly reports in both hard copy and electronic medium requirement.

8.5 The ET Leader shall review the number and location of monitoring stations and parameters to monitor every 6 months or on as needed basis in order to cater for the changes in surrounding environment and nature of works in progress.

First Monthly EM&A Report

8.6 The first monthly EM&A report shall include at least the following:

(a) 1-2 pages executive summary;
- breaches of Action/Limit levels;
- Complaint Log;
- Notifications of any summons and successful prosecutions;
- Reporting Changes;
- Future key issues.

(b) Basic project information;
- Project organization including key personnel contact names and telephone numbers;
- Construction Programme with fine tuning of construction activities showing the inter-relationship with environmental protection/mitigation measures for the month;
- Management structure; and
- Works undertaken during the month;

(c) Environmental Status
- Works undertaken during the month with illustrations (such as location of works, daily dredging/filling rates, percentage fines in the fill material used) and;
- Drawing showing the project area, any environmental sensitive receivers and the locations of the monitoring and control stations.

(d) Summary of EM&A requirements including:
- all monitoring parameters;
- environmental quality performance limits (Action and Limit levels);
- Event-Action Plans;
- environmental mitigation measures, as recommended in the EIA report and the

ERR;
- environmental requirements in contract documents;

(e) Implementation Status

- advice on the implementation status of environmental protection and pollution control/mitigation measures, as recommended in the EIA report and the ERR, summarized in the updated implementation schedule;

(f) Monitoring results (in both hard and diskette copies) together with the following information;
- monitoring methodology
- name of laboratory and types of equipment used and calibration details
- parameters monitored
- monitoring locations (and depth)
- monitoring date, time, frequency, and duration;
- weather conditions during the period;
- graphical plots of the monitored parameters in the month annotated against;
- the major activities being carried out on site during the period;
- weather conditions that may affect the results;
- any other factors which might affect the monitoring results;
- QA/QC results and detection limits.

(g) Report on non-compliance, complaints, notifications of summons and successful prosecutions
- record of all non-compliance (exceedances) of the environmental quality performance limits (Action and Limit levels);
- record of all complaints received (written or verbal) for each media, including locations and nature of complaints, liaison and consultation undertaken, actions and follow-up procedures taken, results and summary;
- record of all notifications of summons and successful prosecutions for breaches of the current environmental protection/pollution control legislations, including locations and nature of the breaches, investigation, follow-up action taken, results and summary;
- review of the reasons for and the implications of non-compliance, complaints, summons and prosecutions including review of pollution sources and working procedures; and
- description of the actions taken in the event of non-compliance and deficiency reporting and any follow-up procedures related to earlier non-compliance

(h) Others
- an account of the future key issues as reviewed from the works programme and work method statements;
- advice on the solid and liquid waste management status; and
- submission of implementation status proforma, proactive environmental protection proforma, regulatory compliance proforma, site inspection proforma, data recovery schedule and complaint log summarizing the EM&A of the period.

Subsequent Monthly EM&A Reports

8.7 The subsequent monthly EM&A reports shall include the following:

(a) Executive Summary (1-2 pages)
- Breaches of Action and Limit levels
- Complaint Log
- Notifications of any summons and successful prosecution
- Reporting Changes
- Future key issues

(b) Environmental Status
- Construction Programme with fine tuning of construction activities showing the inter-relationship with environmental protection/mitigation measures for the month
- Works undertaken during the month with illustration including key personnel contact names and telephone numbers; and
- Drawing showing the project area, any environmental sensitive receivers and the locations of the monitoring and control stations

(c) Implementation Status
Advice on the implementation status of environmental protection and pollution control/mitigation measures including measures for ecological and visual impacts, as recommended in the project EIA study report and ERR, summarized in the updated implementation schedule.

(d) Monitoring Results
To provide monitoring results (in both hard and diskette copies) together with the following information:
- Monitoring methodology
- Name of laboratory and types of equipment used and calibration details
- Parameters monitored
- Monitoring locations (and depth)
- Monitoring date, time, frequency, and duration;
- Weather conditions during the period;
- Graphical plots of the monitored parameters in the month annotated against;
- The major activities being carried out on site during the period;
- Weather conditions that may affect the results;
- Any other factors which might affect the monitoring results;
- QA/QC results and detection limits.

(e) Report on non-compliance, complaints, notifications of summons and successful prosecutions
- Record of all non-compliance (exceedances) of the environmental quality performance limits (Action and Limit levels);
- Record of all complaints received (written or verbal) for each media, including locations and nature of complaints, liaison and consultation undertaken, actions and follow-up procedures taken, results and summary;

- Record of all notifications of summons and successful prosecutions for breaches of the current environmental protection/pollution control legislations, including locations and nature of the breaches, investigation, follow-up action taken, results and summary;
- Review of the reasons for and the implications of non-compliance, complaints, summons and prosecutions including review of pollution sources and working procedures; and
- A description of the actions taken in the event of non-compliance and deficiency reporting and any follow-up procedures related to earlier non-compliance

(f) Others
- An account of the future key issues as reviewed from the works programme and work method statements;
- Advice on the solid and liquid waste management status.

(g) Appendix
- Action and Limit levels
- Graphical plots of trends of monitored parameters at key stations over the past four reporting periods for representative monitoring stations annotated against the following:
  i) major activities being carried out on site during the period;
  ii) weather conditions during the period; and
  iii) any other factors which might affect the monitoring results

- Monitoring schedule for the present and next reporting period
- Cumulative complaints statistics
- Details of complaints, outstanding issues and deficiencies

Quarterly EM&A Summary Reports

8.8 The quarterly EM&A summary report which should generally be around 5 pages (including about 3 of text and tables and 2 of figures) should contain at least the following information. Apart from these, the first quarterly summary report should also confirm that the monitoring work is proving effective and that it is generating data with the necessary statistical power to categorically identify or confirm the absence of impact attributable to the works:

(a) up to half a page executive summary;

(b) basic project information including a synopsis of the project organization, programme, contacts of key management, and a synopsis of work undertaken during the quarter;

(c) a brief summary of EM&A requirements including:

- monitoring parameters;
- environmental quality performance limits (Action and Limit levels); and
- environmental mitigation measures, as recommended in the EIA report and the ERR;

(d) advice on the implementation status of environmental protection and pollution control/mitigation measures, as recommended in the EIA report and the ERR, summarised in the updated implementation schedule;

(e) drawings showing the project area, any environmental sensitive receivers and the locations of the monitoring and control stations;

(f) graphical plots of the trends of monitored parameters over the past 4 months (the last month of the previous quarter and the present quarter) for representative monitoring stations annotated against;

- the major activities being carried out on site during the period;
- weather conditions during the period; and
- any other factors which might affect the monitoring results;

(g) advice on the solid and liquid waste management status;

(h) a summary of non-compliance (exceedances) of the environmental quality performance limits (Action and Limit levels);

(i) a brief review of the reasons for and the implications of non-compliance including review of pollution sources and working procedures;

(j) a quarterly assessment of construction impacts on suspended solids at the project site, including, but not limited to, a comparison of the difference between the quarterly mean and 1.3 times of the ambient mean, which is defined as 30% increase of the baseline data or EPD data, of the related parameters by using appropriate statistical procedures. Suggestion of appropriate mitigation measures if the quarterly assessment analytical results demonstrate that the quarterly mean is significantly higher than the 1.3 on water quality times of the ambient mean ($p<0.05$)

(k) a summary description of the actions taken in the event of non-compliance and any follow-up procedures related to earlier non-compliance;

(l) a summary record of all complaints received (written or verbal) for each media, liaison and consultation undertaken, actions and follow-up procedures taken;

(m) a summary record of notifications of summons and successful prosecutions for breaches of the current environmental protection/pollution control legislations, locations and nature of the breaches, investigation, follow-up actions taken and results;

(n) comments (e.g. effectiveness and efficiency of the mitigation measures), recommendations (e.g. any improvement in the EM&A programme) and conclusions for the quarter; and

(o) the Employer's contacts and any hotline telephone number the public to make enquiries.

Final EM&A Summary Report

8.9 The termination of EM&A programme shall be determined on the following basis:

(a) completion of construction activities and insignificant environmental impacts of the remaining outstanding construction works;
(b) trends analysis to demonstrate the narrow down of monitoring exceedances due to construction activities and the return of ambient environmental conditions in comparison with baseline data; and
(c) no environmental complaint and prosecution involved.

8.10 The proposed termination may be required to consult related local community such as village representative/committee and/or District Board and the proposal should be endorsed by the IEC, ER and the project proponent prior to final approval from the Director of Environmental Protection;

8.11 The final EM&A summary report shall include, inter alia, the following:

(a) an executive summary;

(b) basic project information including a synopsis of the project organization, programme, contacts of key management, and a synopsis of work undertaken during the entire construction period;

(c) a brief summary of EM&A requirements including:
- monitoring parameters;
- environmental quality performance limits (Action and Limit levels); and
- environmental mitigation measures, as recommended in the project EIA study final report;

(d) advice on the implementation status of environmental protection and pollution control/mitigation measures, as recommended in the project EIA study reports and ERR, summarized in the updated implementation status proformas;

(e) drawings showing the project area, any environmental sensitive receivers and the locations of the monitoring and control stations;

(f) graphical plots of the trends of monitored parameters over the construction period for representative monitoring stations annotated against;
- the major activities being carried out on Site during the period;
- weather conditions during the period;
- any other factors which might affect the monitoring results; and
- the return of ambient environmental conditions in comparison with baseline data;

(g) compare and contrast the EM&A data with the EIA predictions and annotate with explanation for any discrepancies;

(h) provide clear-cut decisions on the environmental acceptability of the project with reference to the specific impact hypothesis;

(i) advice on the solid and liquid waste management status;

(j) a summary of noncompliance (exceedances) of the environmental quality performance limits (Action and Limit levels);

(k) a brief review of the reasons for and the implications of non-compliance including review of pollution sources and working procedures;

(l) a summary description of the actions taken in the event of non-compliance and any follow-up procedures related to earlier non-compliance;

(m) a summary record of all complaints received (written or verbal) for each media, liaison and consultation undertaken, actions and follow-up procedures taken;

(n) review the monitoring methodology adopted and with the benefit of hindsight, comment on its effectiveness (including cost effectiveness);

(o) a summary record of notifications of summons and successful prosecutions for breaches of the current environmental protection/pollution control legislations, locations and nature of the breaches, investigation, follow-up actions taken and results;

(p) review the practicality and effectiveness of the EIA process and EM&A programme (e.g. effectiveness and efficiency of the mitigation measures), recommend any improvement in the EM&A programme ; and

(q) a conclusion to state the return of ambient and/or the predicted scenario as per EIA findings.

Data Keeping

8.12 The site document such as the monitoring field records, laboratory analysis records, site inspection forms, etc. are not required to be included in the monthly EM&A reports for submission. However, the document shall be well kept by the ET Leader and be ready for inspection upon request. All relevant information shall be clearly and systematically recorded in the document. The monitoring data shall also be recorded in magnetic media form, and the software copy can be available upon request. All the documents and data shall be kept for at least one year after completion of the Contract No. ST79/02.

Interim Notifications of Environmental Quality Limit Exceedances

8.13 With reference to Event/Action Plans in Tables 2.3, 3.3 and 4.3, when the environmental quality limits are exceeded, the ET Leader shall immediately notify the ER, the IEC, and EPD, as appropriate. The notification shall be followed up with advice to EPD on the results of the investigation, proposed action and success of the action taken, with any necessary follow-up proposals. A sample template for the interim notifications is shown in Appendix G.

Electronic Reporting of EM&A Information

8.14 To facilitate public inspection of the monthly EM&A Reports via the EIAO Internet Website and at the EIAO Register Office, electronic copies of these Reports shall be prepared in Hyper Text Markup Language (HTML) (version 4.0 or later) and in Portable Document Format (PDF version 4.0 or later) unless otherwise agreed by EPD and submitted to the ER and to EPD at the same time as the hard copies as described in Sections 8.2 and 8.4. For the HTML version, a content page capable of providing hyperlink to each section and sub-section of these Reports shall be included in the beginning of the document. Hyperlinks to all figures, drawings and tables in these Reports shall be provided in the main text from where the respective references are made. All graphics in these Reports shall be in interlaced GIF format unless otherwise agreed by EPD. The content of the electronic copies of these Reports must be the same as the hard copies.

8.15 The ET shall establish a website and all environmental monitoring data shall be made available to the public via internet access in the form of a website, in the shortest possible time and in no event later than 2 weeks after the relevant environmental monitoring data are collected or become available, unless otherwise agreed with EPD. The ET shall inform EPD in writing within 6 weeks after the commencement of the Project the internet address where the environmental monitoring data are to be placed. The internet address and the environmental monitoring data shall be made available to the public via the EIAO Internet Website and the EIAO Register Office.

8.16 The internet website as described in Section 8.12 above shall enable user-friendly public access to the monitoring data with features capable of:

(a) providing access to all environmental monitoring data collected since the commencement of works;

(b) searching by date;

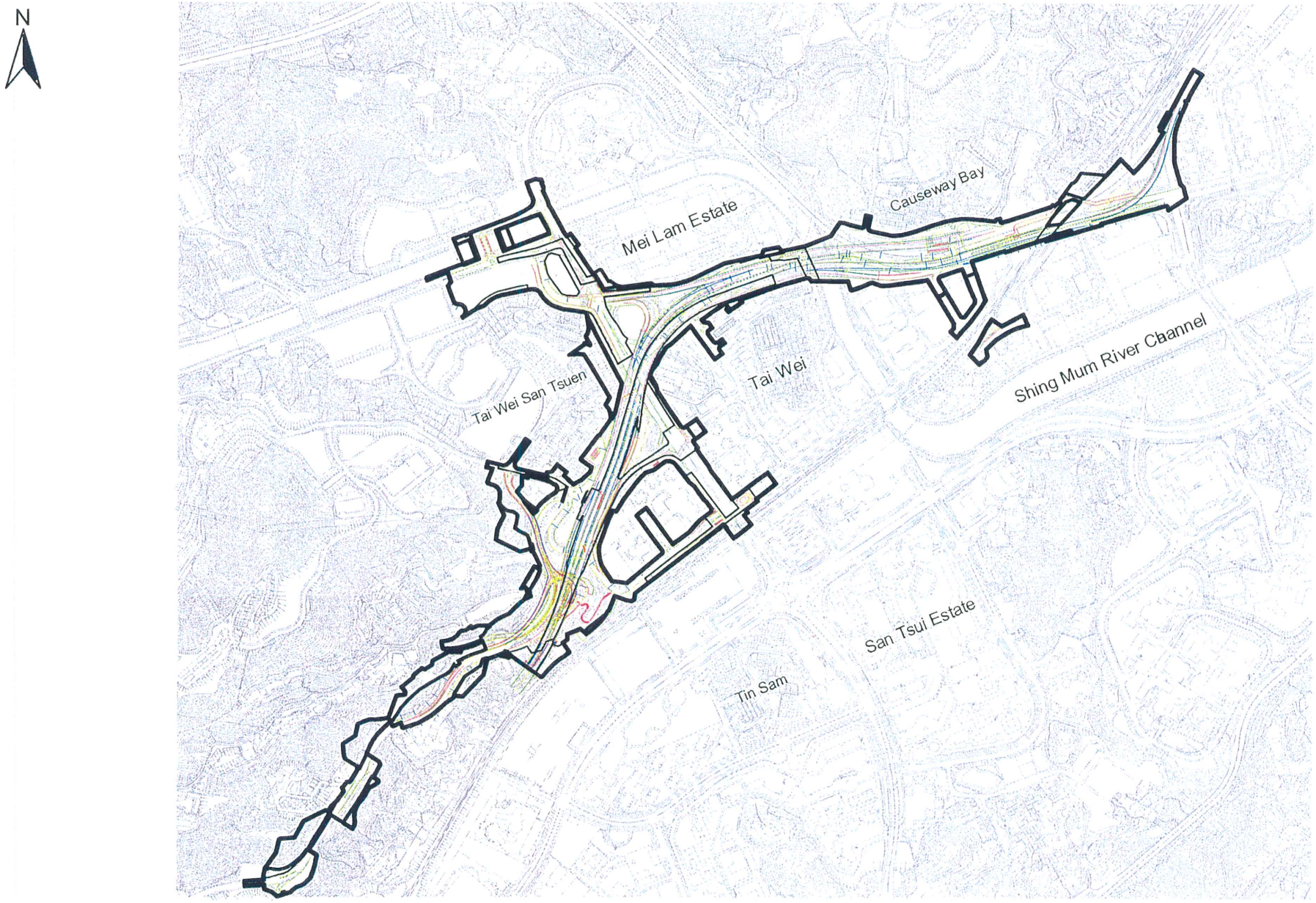
(c) searching by types of monitoring data (air quality and noise); and

(d) providing hyperlinks to relevant monitoring data after searching,

or otherwise as agreed by EPD.

8.17 The ET shall incorporate the Baseline Monitoring Report in the internet website described in Section 8.13 above.

FIGURES



Title	SHA TIN NEW TOWN - STAGE II ENVIRONMENTAL TEAM TRUCK ROAD T3 (SHATIN SECTION) SITE LAYOUT PLAN	Scale: 1 : 11 000	Project No.: MA2027
		Date: Oct 2002	Figure No.: 1.1

CINOTECH

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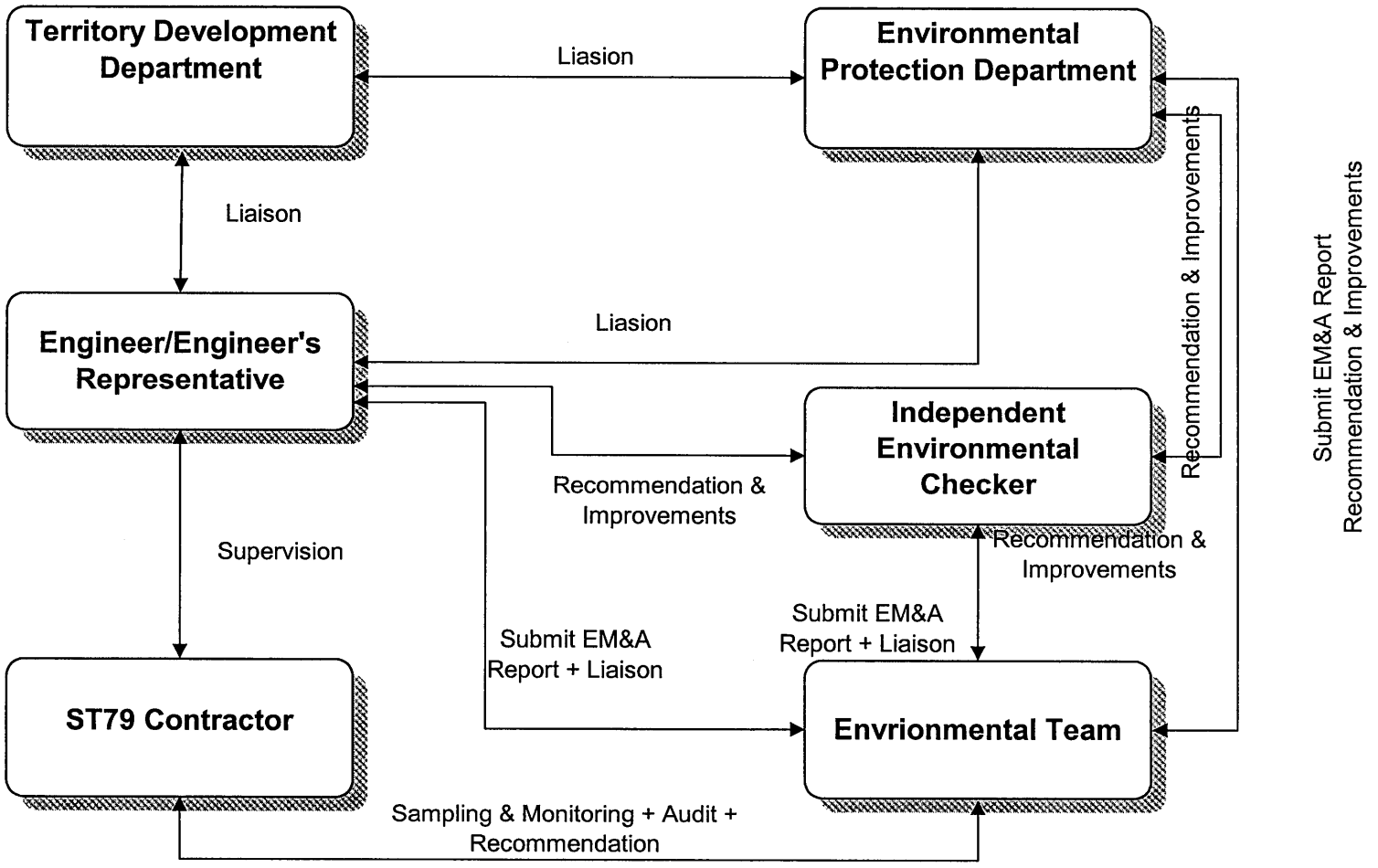
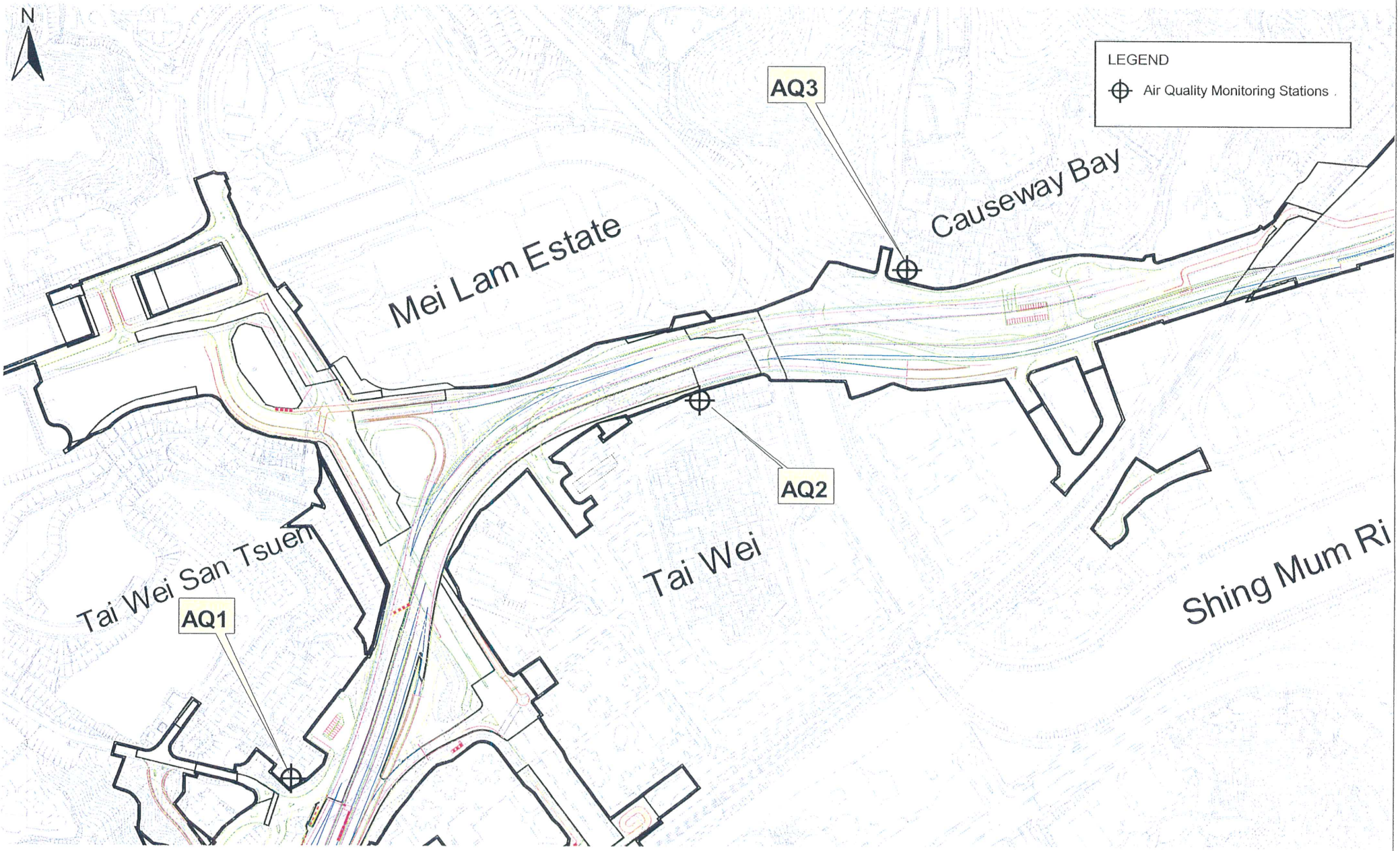


Title	Sha Tin New Town Stage II Road T3 and Associated Roadworks	Scale N.T.S	Propo No. MA2027
	Updated EM&A Manual Project Organization Chart	Date Oct-02	Figure 1.2

CINOTECH



Title: SHA TIN NEW TOWN - STAGE II ENVIRONMENTAL TEAM TRUCK ROAD T3 (SHATIN SECTION) LOCATIONS OF AIR QUALITY MONITORING STATIONS	Scale: 1 : 5 000	Project No.: MA2027	CINOTECH
	Date: Oct 2002	Figure No.: 2.1	

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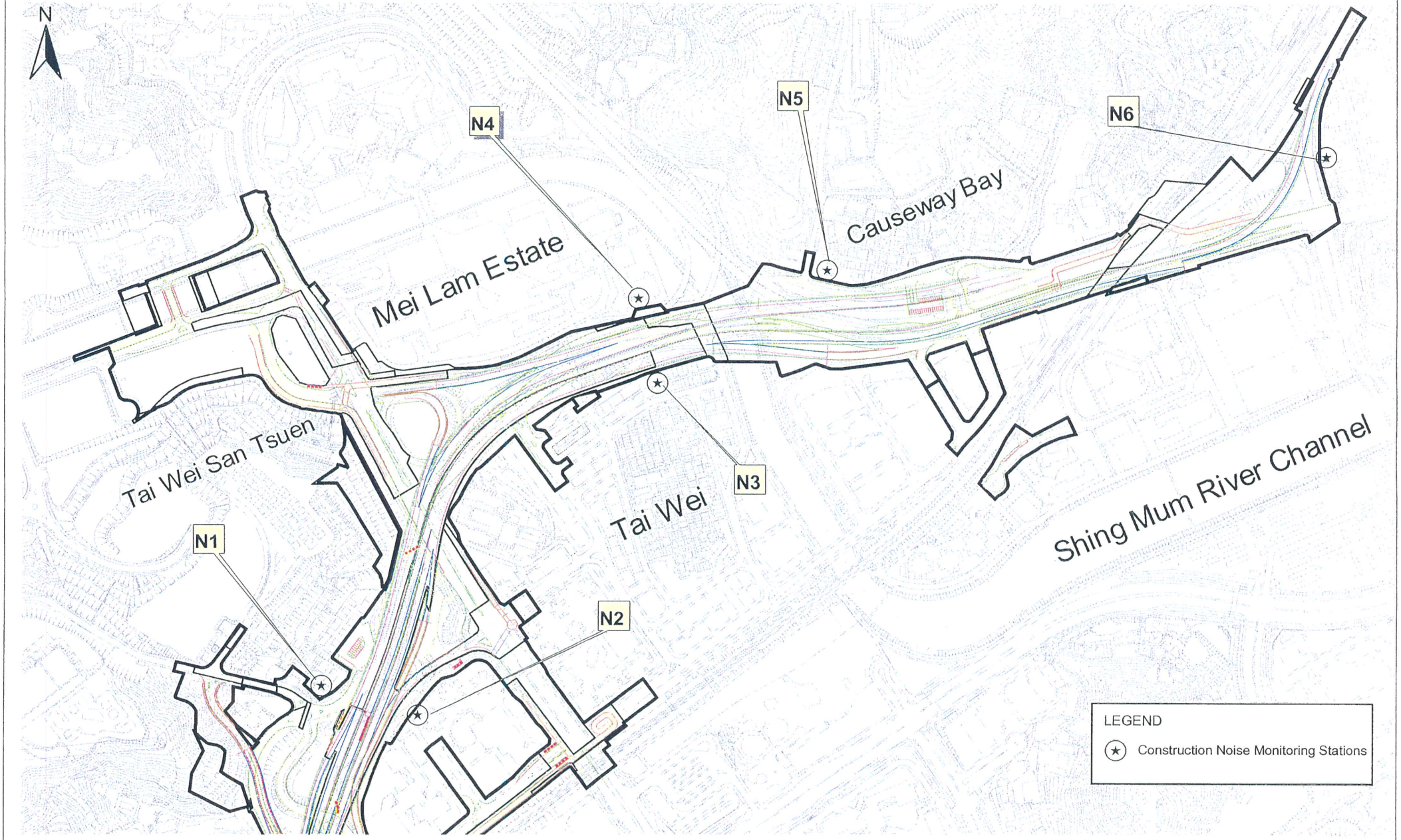


Title

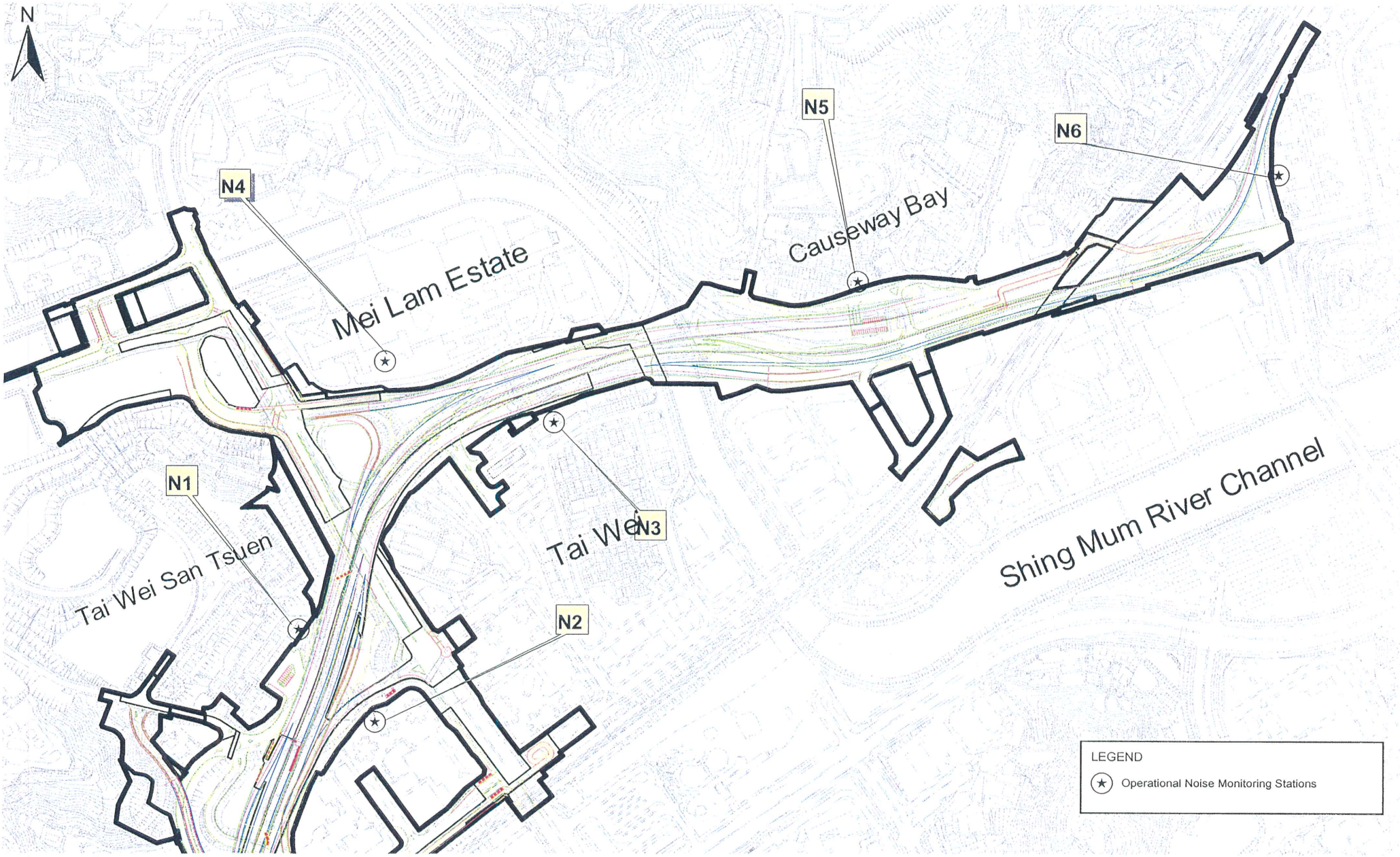
SHA TIN NEW TOWN - STAGE II ENVIRONMENTAL TEAM TRUCK ROAD T3 (SHATIN SECTION)

LOCATIONS OF CONSTRUCTION NOISE MONITORING STATIONS

Scale	1 : 6 000	Project No.	MA2027
Date	Oct 2002	Figure No.	3.1

CINOTECH

F:\Projects\MA2027\Report\Drawings\MA2027_T3_Fig3_1.apr



Title	SHA TIN NEW TOWN - STAGE II ENVIRONMENTAL TEAM TRUCK ROAD T3 (SHATIN SECTION)	Scale 1 : 6 000	Project No. MA2027
	LOCATIONS OF OPERATIONAL NOISE MONITORING STATIONS	Date Oct 2002	Figure No. 3.2

CINOTECH

F:\Projects\MA2027\Report\Drawings\MA2027_T3_Fig3_2.apr

Title	SHA TIN NEW TOWN - STAGE II ENVIRONMENTAL TEAM TRUCK ROAD T3 (SHATIN SECTION)	Scale 1 : 5 000	Project No. MA2027
	LOCATIONS OF WATER QUALITY MONITORING STATIONS	Date Oct 2002	Figure No. 4.1

CINOTECH

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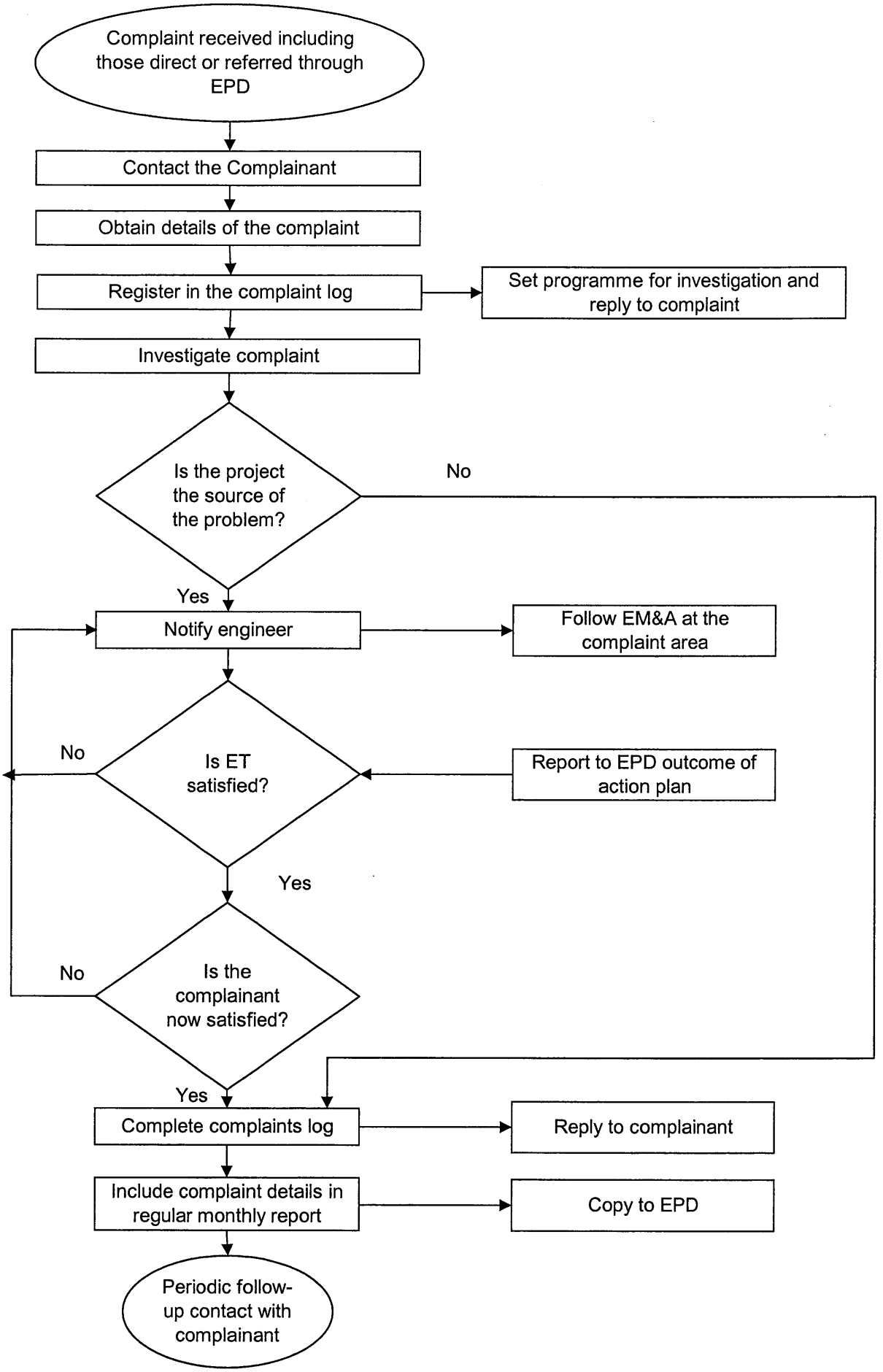


Title	Scale	Project No.	
Sha Tin New Town Stage II Road T3 and Associated Roadworks Updated EM&A Manual Flow Chart of the Complaint Response Procedures	N.T.S	MA2027	CINOTECH
	Date: Oct-02	Figure: 7.1	

APPENDIX A
ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE (EMIS)

Appendix A - Implementation Schedule of Environmental Mitigation Measures

Mitigation Measures	EIA/ ERR Ref.	Location	Timing for Implementation	Party Responsible
Noise – Construction Phase				
Where available, the Contractor shall use quiet items of PME or model of plants that are quieter than those specified in the EPD's Technical Memorandum (GW-TM) for undertaking construction works. Where practicable, the Contractor shall use movable noise barriers and avoid simultaneous noisy activities.	2.5.4 / 2.3	At active construction locations.	Throughout the construction period	The Contractor
Construction noise monitoring	* 3.1 – 3.7/ 7.2	As described in the EM&A Manual, March 1998 and this report	Throughout the construction period	TDD / The Contractor
Noise – Operational Phase				
Low noise road surfacing (LNRS)	2.6.3/ 2.4.29	On Trunk Road T3 (see Figure 2-7)	Before completion of road works	TDD
A 5.8m high with 3m cantilever of approx. 55m long (see segment no. 1 in Figure 2-6), A 5.8m high with 5m cantilever of approx. 90m long (see segment no. 2 in Figure 2-6), A 5.8m high with 3m cantilever of approx. 95m long (see segment no. 3 in Figure 2-6), A 3m high vertical barrier of approx. 130m long (see segment no. 4 in Figure 2-6), and A 5.8m high with 3m cantilever of approx. 660m long (see segment no. 5 in Figure 2-6).	2.6.3/ 2.4	near Hilton Plaza, Scenery Court and Villa le Parc	Before completion of road works	TDD

Appendix A - Implementation Schedule of Environmental Mitigation Measures

Mitigation Measures	EIA/ ERR Ref.	Location	Timing for Implementation	Party Responsible
A 4m high vertical barrier of approx. 150m long (see segment no. 6 in Figure 2-6), and A 3.5m high vertical barrier of approx. 155m long (see segment no. 7 in Figure 2-6).	2.6.3/ 2.4	near Hilton Plaza, Scenery Court and Villa le Parc	Before completion of road works	TDD
A 5.8m high with 2m cantilever of approx. 100m long (see segment no. 8 in Figure 2-6), A 5.8m high with 1.5m cantilever of approx. 255m long (see segment no. 9 in Figure 2-6), and A 2.5m high vertical barrier of approx. 80m long (see segment no. 13 in Figure 2-6).	2.6.3/ 2.4	near Sha Tin Clinic, Sha Tin Government School and Caritas School	Before completion of road works	TDD
A 5m high vertical barrier of approx. 120m long (see segment no. 10 in Figure 2-6), A 4m high vertical barrier of approx. 150m long (see segment no. 11 in Figure 2-6), A 5m high vertical barrier of approx. 275m long (see segment no. 12 in Figure 2-6), A 5m high vertical barrier of approx. 145m long (see segment no. 14 in Figure 2-6), A 6m high vertical barrier of approx. 105m long (see segment no. 15 in Figure 2-6), and A 5m high vertical barrier of approx. 215m long (see segment no. 16 in Figure 2-6).	2.6.3/ 2.4	near Pine Ridge Church, Villa Maria, Man Lin Villa, On Ting Terrace and Tung Lo Wan Village	Before completion of road works	TDD

Appendix A - Implementation Schedule of Environmental Mitigation Measures

Mitigation Measures	EIA/ ERR Ref.	Location	Timing for Implementation	Party Responsible
A 3m high vertical barrier of approx. 330m long (see segment no. 17 in Figure 2-6), A partial enclosure of approx. 235m long (see segment no. 18 in Figure 2-6), A 5.8m high with 5m cantilever of approx. 150m long (see segment no. 19 in Figure 2-6), A 5.8m high vertical barrier of approx. 17m long (see segment no. 20 in Figure 2-6), A 5.8m high with 5m cantilever of approx. 85m long (see segment no. 21 in Figure 2-6), A 3m high vertical barrier of approx. 120m long (see segment no. 22 in Figure 2-6), A 5.5m high vertical barrier of approx. 85m long (see segment no. 23 in Figure 2-6), A 5.8m high with 1.5m cantilever of approx. 215m long (see segment no. 24 in Figure 2-6), A full enclosure of approx. 130m long (see segment no. 25 in Figure 2-6), A partial enclosure of approx. 190m long (see segment no. 26 in Figure 2-6), A 5m high vertical barrier of approx. 75m long (see segment no. 27 in Figure 2-6), and A 5.8m high with 5m cantilever of approx. 145m long (see segment no. 28 in Figure 2-6).	2.6.3/ 2.4	near Chik Chuen Street, Kam Shan Building, Sha Tin Public School and Mei Lam Estate	Before completion of road works	TDD

Appendix A - Implementation Schedule of Environmental Mitigation Measures

Mitigation Measures	EIA/ ERR Ref.	Location	Timing for Implementation	Party Responsible
A 4m high vertical barrier of approx. 75m long (see segment no. 29 in Figure 2-6), A 2m high vertical barrier of approx. 40m long (see segment no. 49 in Figure 2-6), A 2m high vertical barrier of approx. 50m long (see segment no. 50 in Figure 2-6), and A 4.5m high vertical barrier of approx. 50m long (see segment no. 54 in Figure 2-6).	2.6.3/ 2.4	near Chik Chuen Street, Kam Shan Building, Sha Tin Public School and Mei Lam Estate	Before completion of road works	TDD
A 5m high vertical barrier of approx. 35m long (see segment no. 30 in Figure 2-6), and A 5.8m high with 1.5m cantilever of approx. 350m long (see segment no. 31 in Figure 2-6).	2.6.3/ 2.4	near Tai Wai New Village	Before completion of road works	TDD
A 5.8m high with 3m cantilever of approx. 350m long (see segment no. 32 in Figure 2-6), A partial enclosure of approx. 295m long (see segment no. 33 in Figure 2-6), A partial enclosure of approx. 125m long (see segment no. 34 in Figure 2-6), A 5.8m high with 1.5m cantilever of approx. 120m long (see segment no. 35 in Figure 2-6), A 5.5m high vertical barrier of approx. 75m long (see segment no. 36 in Figure 2-6), and A 5.8m high with 5m cantilever of approx. 115m long (see segment no. 37 in Figure 2-6).	2.6.3/2.4.	near Glamour Garden, Grandeur Garden, Holford Garden, Lau Pak Lok Secondary School, Cheng Wing Gee College and planned development at Tai Wai Depot	Before completion of road works	TDD

Appendix A - Implementation Schedule of Environmental Mitigation Measures

Mitigation Measures	EIA/ ERR Ref.	Location	Timing for Implementation	Party Responsible
A partial enclosure of approx. 50m long (see segment no. 38 in Figure 2-6), A 5.8m high with 5m cantilever of approx. 170m long (see segment no. 39 in Figure 2-6), A 4m high vertical barrier of approx. 140m long (see segment no. 40 in Figure 2-6), A 3m high vertical barrier of approx. 50m long (see segment no. 41 in Figure 2-6), A 4m high vertical barrier of approx. 80m long (see segment no. 42 in Figure 2-6), A 5.8m high with 1.5m cantilever of approx. 70m long (see segment no. 52 in Figure 2-6), and A 5m high vertical barrier of approx. 35m long (see segment no. 53 in Figure 2-6).	2.6.3/ 2.4	near Glamour Garden, Grandeur Garden, Holford Garden, Lau Pak Lok Secondary School, Cheng Wing Gee College and planned development at Tai Wai Depot	Before completion of road works	TDD
A 5m high vertical barrier of approx. 120m long (see segment no. 43 in Figure 2-6), A 6m high vertical barrier of approx. 135m long (see segment no. 44 in Figure 2-6), A full enclosure of approx. 85m long (see segment no. 45 in Figure 2-6), A 3m high vertical barrier of approx. 180m long (see segment no. 46 in Figure 2-6), and A 6m high vertical barrier of approx. 170m long (see segment no. 51 in Figure 2-6).	2.6.3/ 2.4	near planned development at Vista Do Vale, Area 37 and Area 38	Before completion of road works	TDD

Appendix A - Implementation Schedule of Environmental Mitigation Measures

Mitigation Measures	EIA/ ERR Ref.	Location	Timing for Implementation	Party Responsible
A partial enclosure of approx. 40m long (see segment no. 47 in Figure 2-6), and A 5m high vertical barrier of approx. 55m long (see segment no. 48 in Figure 2-6).	2.6.3/ 2.4	near planned development at Mui Lee	Before completion of road works	TDD
Road traffic noise monitoring	-/ 7.2	Designated noise monitoring stations (see Figure 7-1)	Upon operation of Trunk Road T3	TDD
Air – Construction Phase				
Watering the works area at least twice a day	3.5.3/ 3.4.5	Work site	Throughout the construction period	The Contractor
Environmental pollution control measures for minimizing construction dust impact as stipulated in the Air Pollution Control Regulation.	3.5.4/ 3.4.5	Work site	Throughout the construction period	The Contractor
Construction dust monitoring	* 2.1 – 2.8/ 7.3	As described in the EM&A Manual, March 1998	Refer to the EM&A Mauual, March 1998 for details	TDD / The Contractor
Waste Management – Construction Phase				
Environmental pollution control measures for minimizing waste arising from the construction works	5.2 - 5.6/ 4.5	Within the works boundary	Throughout the construction period	The Contractor
Construction waste stream auditing	* 5.0/ 7.4	As described in the EM&A Manual, March 1998	Refer to the EM&A Mauual, March 1998 for details	TDD / The Contractor
Water Quality – Construction Phase				
Environmental pollution control measures for minimizing impacts on water quality	4.5.1/ 5.5.1	Within the works boundary	Throughout the construction period	The Contractor
A section of Upper Shing Mun River Channel under the works area and a margin up to 50m on either side should be covered to prevent any material entering the watercourse	4.5.1/ 5.5.3	Within the works boundary	Throughout the construction period	The Contractor
Water quality monitoring	* 4.1 – 4.8/ 7.5	As described in the EM&A Manual, March 1998	Refer to the EM&A Manual, March 1998 for details	TDD / The Contractor

Appendix A - Implementation Schedule of Environmental Mitigation Measures

Mitigation Measures	EIA/ ERR Ref.	Location	Timing for Implementation	Party Responsible
Water Quality – Operational Phase				
Sumps and soakways are required at each end of the overpass and at the bottom of each slip road to receive the road runoff	4.5.2/ 5.5.4	Within the works boundary	Before completion of road works	TDD
Landscape and Visual – Construction Phase				
Erection of decorative screen hoarding particularly in areas adjacent to existing developments.	-/Table 6-1	Project site	Throughout the construction period	The Contractor
Storage of materials and plant shall be limited to areas less visible to receivers.	-/Table 6-1	Project site	Throughout the construction period	The Contractor
Control of night-time lighting.	-/Table 6-1	Project site	Throughout the construction period	The Contractor
Preservation wherever possible of existing trees and transplanting wherever practical of trees affected by the Works.	-/Table 6-1	Project site	Throughout the construction period	The Contractor
Stripping, storing and re-use of topsoil.	-/Table 6-1	Project site	Throughout the construction period	The Contractor

Appendix A - Implementation Schedule of Environmental Mitigation Measures

Mitigation Measures	EIA/ ERR Ref.	Location	Timing for Implementation	Party Responsible
Landscape and Visual - Operational Phase (General)				
The alignment and configuration of the road and slip roads must be designed so as to minimise land-take and interference with the existing topography and vegetation.	Table 6-4 and App. 12/ Table 6-1	Project site	Prior to the commencement of construction	TDD
Sensitive design of retaining walls (e.g. reinforced fill structures) with screen planting at their base *(e.g. Ficus pumilla / Parthenocissus spp.)* as far as practicable *in accordance with GEO Publication 1/2000, WBTC 17/2000 and ACABAS approved designs.*	As above	Project site	Before the completion of works	TDD
Careful grading on man-made slopes to enable extensive woodland planting, using primarily native species as far as practicable *in accordance with GEO Publication 1/2000 & WBTC 17/2000.*	As above	Project site	Before the completion of works	TDD
Around underpass portals, steep cut slopes should not be sprayed with concrete but must be given sensitive hard or soft landscape treatment *in accordance with GEO Publication 1/2000 & WBTC 17/2000.*	As above	Project site	Before the completion of works	TDD
Sensitive architectural treatment of elevated road structures, including parapets, columns and underside of road decks *in accordance with ACABAS approved designs.* Climbing plants *(e.g. Ficus pumilla / Parthenocissus spp.)* will be included at base of columns whenever possible.	As above	Project site	Before the completion of works	TDD

Appendix A - Implementation Schedule of Environmental Mitigation Measures

Mitigation Measures	EIA/ ERR Ref.	Location	Timing for Implementation	Party Responsible
Sensitive architectural design of noise barriers *in accordance with ACABAS approved designs*, with soft landscape screening where appropriate.	Table 6-4 and App. 12/ Table 6-1	Project site	Prior to the commencement of construction	TDD
Screen tree planting and soft landscape treatment along realigned sections of existing roads and new engineering structures, including noise barriers and retaining walls as far as practicable.	As above	Project site	Before the completion of works	TDD
Sensitive architectural treatment of the full and partial noise enclosures, including all associated structures in accordance with approved ACABAS designs.	-/Table 6-1	Project site	Before the completion of works	TDD
Landscape and Visual - Operational Phase (Site Specific)				
Reprovision and high quality contemporary design of 71/2 Miles Rest Garden.	Table 6-4 and App. 12/ Table 6-1	As shown on figure 6-2a, OM1	Before the completion of works	TDD
Reprovision of Chik Wan Street Rest Garden.	-/Table 6-1	As shown on figure 6-2a, OM2	Before the completion of works	TDD
Provision of amenity shrub and tree planting adjacent to footpath and cycle track between Slip Road 'J', T3 mainline and Mei Tin Road.	As above	As shown on figure 6-2b, OM3	Before the completion of works	TDD
Provision of flowering tree and shrub planting within proposed car park and surrounding amenity areas.	As above	As shown on figure 6-2b, OM4	Before the completion of works	TDD
Provision of fast growing tree species within amenity areas between the northern boundary of Sha Tin Public School and the elevated slip roads, where light levels are sufficient.	As above	As shown on figure 6-2b, OM5	Before the completion of works	TDD

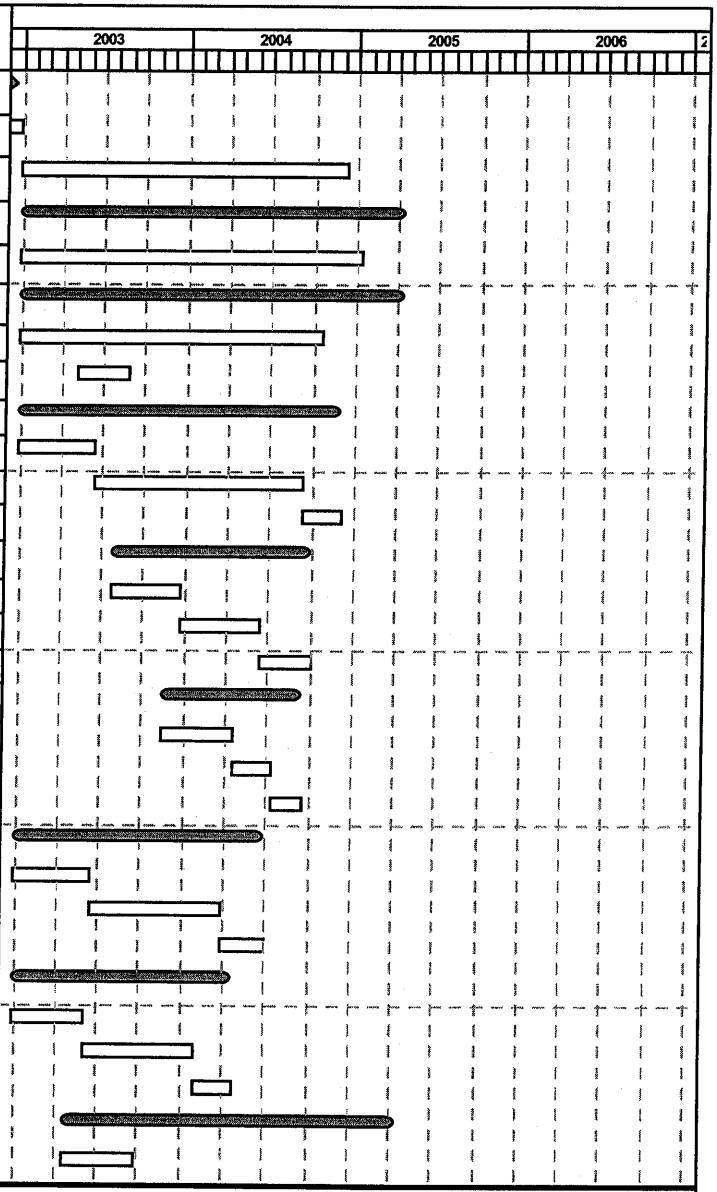
Appendix A - Implementation Schedule of Environmental Mitigation Measures

Mitigation Measures	EIA/ ERR Ref.	Location	Timing for Implementation	Party Responsible
Provision of tree species to reflect existing plant palette within Mei Tin Road roundabout and loop road embankments (e.g. Washingtonia robusta) set within lawn area.	-/Table 6-1	As shown on figure 6-2b, OM6	Before the completion of works	TDD
Provision of landscaped areas throughout the entire Tai Po Road – Tai Wai to Lion Rock Tunnel Road corridor including areas beneath viaducts.	Table 6-4 and App. 12/ Table 6-1	As shown on figure 6-2b-d, OM7	Before the completion of works	TDD
Provision of shrub and tree planting between the Shing Mun River Channel and the western end of Shing Wan Road.	Table 6-4 and App. 12/ Table 6-1	As shown on figure 6-2c, OM8	Before the completion of works	TDD
Reprovision of Tung Lo Wan Playground facilities and associated sitting out areas.	As above	As shown on figure 6-2c-d, OM9	Before the completion of works	TDD

Note: EIA Ref. refers to Trunk Road T3 (Tai Wai) - Updated Final Environmental Impact Assessment Report, March 1998
* Refers to Trunk Road T3 (Tai Wai) – Environmental Monitoring and Audit Manual, March 1998

APPENDIX B
TENTATIVE CONSTRUCTION PROGRAMME AND IMPLEMENTATION SCHEDULE

Act ID	Description	Orig Dur	Early Start	Early Finish
A1000	Contract Award	0	30NOV02	
A1010	Mobilisation	20	30NOV02	27DEC02
A1020	Bridge Segment Casting	505	30DEC02	09DEC04
B1000	ShaTin Heights & Tai Wai Area - PHASE 1	595 *	30DEC02	14APR05
B1010	Roadworks	530	30DEC02	13JAN05
B1400	Structures	595 *	30DEC02	14APR05
B1410	Route 9 Underpass	470	30DEC02	21OCT04
B1420	Bridge MLS4 (Part - Substructure)	80	06MAY03 *	26AUG03
B1430	Bridge MLS5	500 *	30DEC02	02DEC04
B1491	MLS5 Substucture	120	30DEC02	16JUN03
B1493	MLS5 Superstructure	320	17JUN03	09SEP04
B1495	MLS5 Noise Barrier and Finishing Works	60	10SEP04	02DEC04
B1440	Bridge MLS6	310 *	23JUL03	30SEP04
B1501	MLS6 Substructure	110	23JUL03 *	23DEC03
B1503	MLS6 Superstructure	120	24DEC03	10JUN04
B1505	MLS6 Noise Barrier and Finishing Works	80	11JUN04	30SEP04
B1450	Bridge MLS7	220 *	12NOV03	16SEP04
B1511	MLS7 Substructure	110	12NOV03 *	15APR04
B1513	MLS7 Superstructure	60	16APR04	08JUL04
B1515	MLS7 Noise Barrier and Finishing Works	50	09JUL04	16SEP04
B1460	Bridge MLS8	390 *	30DEC02	01JUL04
B1521	MLS8 Substructure	120	30DEC02 *	16JUN03
B1523	MLS8 Superstructure	200	17JUN03	25MAR04
B1525	MLS8 Noise Barrier and Finishing Works	70	26MAR04	01JUL04
B1470	Bridge MLS9	340 *	30DEC02	22APR04
B1531	MLS9 Substructure	110	30DEC02 *	02JUN03
B1533	MLS 9 Superstructure	170	03JUN03	29JAN04
B1535	MLS9 Noise Barrier and Finishing Works	60	30JAN04	22APR04
B1480	Bridge MLS10	515 *	22APR03	14APR05
B1541	MLS10 Substructure	110	22APR03 *	23SEP03



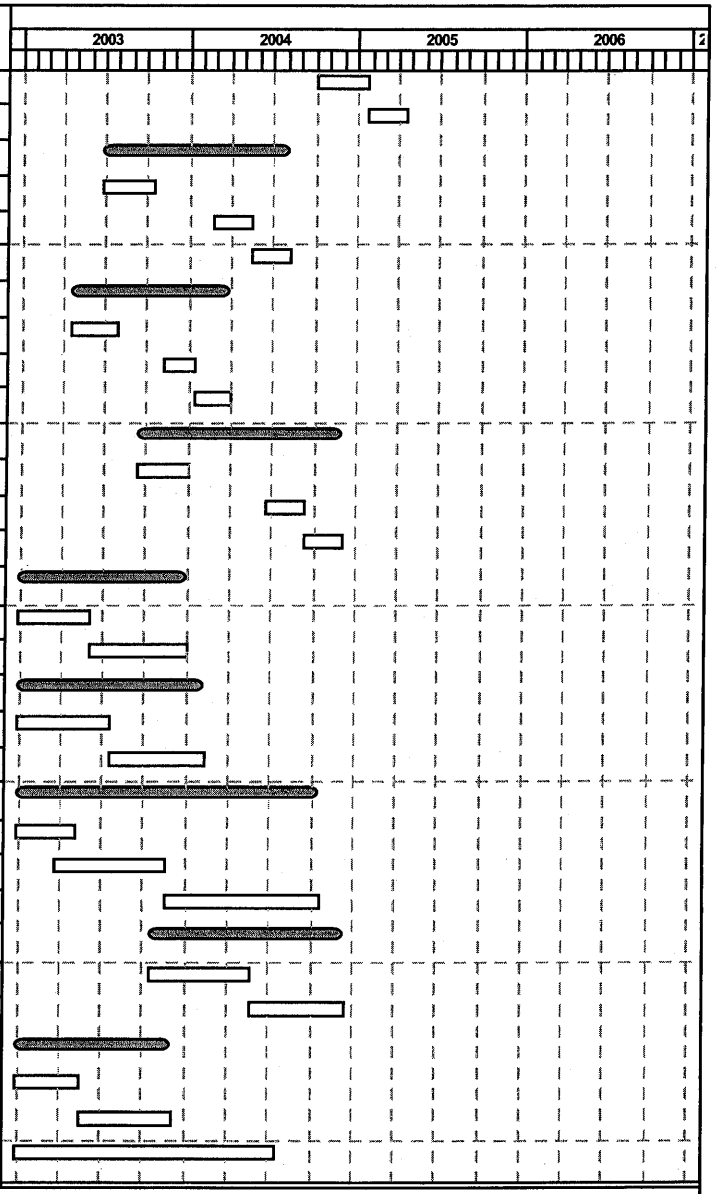
Start date	14OCT02
Finish date	31OCT06
Data date	30NOV02
Run date	05SEP02
Page number	1A

Sha Tin Trunk Road T3
Construction Programme

Appendix B-1

- Early bar
- Progress bar
- Critical bar
- Summary bar
- Start milestone point
- Finish milestone point

Act ID	Description	Orig Dur	Early Start	Early Finish
B1543	MLS10 Superstructure	80	01OCT04 *	20JAN05
B1545	MLS10 Noise Barrier and Finishing Works	60	21JAN05	14APR05
B2010	Bridge MLN7	290 *	24JUN03	05AUG04
B2021	MLN7 Substructure	80	24JUN03 *	14OCT03
B2023	MLN7 Superstructure	60	20FEB04 *	13MAY04
B2025	MLN7 Noise Barrier and Finishing Works	60	14MAY04	05AUG04
B2500	Bridge TPRE	245 *	22APR03	01APR04
B2521	TPRE Substructure	70	22APR03 *	29JUL03
B2523	TPRE Superstructure	50	05NOV03 *	15JAN04
B2525	TPRE Noise Barrier and Finishing Works	55	16JAN04	01APR04
B2510	Bridge TPRW	320 *	10SEP03	02DEC04
B2531	TPRW Substructure	80	10SEP03 *	31DEC03
B2533	TPRW Superstructure	60	18JUN04 *	09SEP04
B2535	TPRW Noise Barrier and Finishing Works	60	10SEP04	02DEC04
B3000	Shing Mun River Channel Bridge	260 *	30DEC02	31DEC03
B3011	SMRCB Substructure	110	30DEC02 *	02JUN03
B3013	SMRCB Superstructure	150	03JUN03	31DEC03
B5010	Footbridge B	290 *	30DEC02	12FEB04
B5031	Footbridge B Substructure	140	30DEC02 *	15JUL03
B5033	Footbridge B Superstructure	150	16JUL03	12FEB04
B5020	Footbridge C	470 *	30DEC02	21OCT04
B5021	Utility diversions	90	30DEC02 *	05MAY03
B5032	Footbridge C Substructure	170	25MAR03	18NOV03
B5034	Footbridge C Superstructure	240	19NOV03	21OCT04
B7910	Footbridge D	305 *	15OCT03	16DEC04
B7890	Footbridge D Substructure	155	15OCT03 *	20MAY04
B7900	Footbridge D Superstructure	150	21MAY04	16DEC04
B7840	Loop Road H	240 *	30DEC02	02DEC03
B7850	Loop Road H Substructure	100	30DEC02 *	19MAY03
B7860	Loop Road H Superstructure	140	20MAY03	02DEC03
B7800	Slopeworks	400	30DEC02	15JUL04



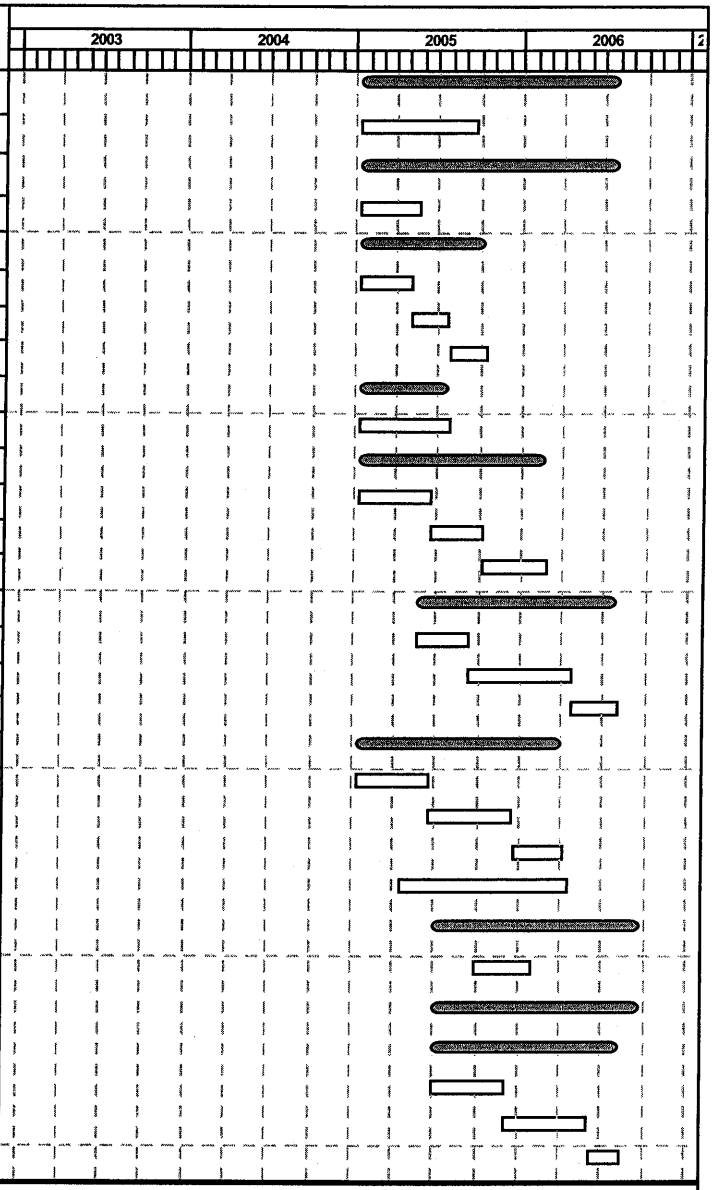
Start date	14OCT02
Finish date	31OCT06
Data date	30NOV02
Run date	05SEP02
Page number	2A

Sha Tin Trunk Road T3
Construction Programme

Appendix B-1

- Early bar
- Progress bar
- Critical bar
- Summary bar
- Start milestone point
- Finish milestone point

Act ID	Description	Orig Dur	Early Start	Early Finish
C1000	Sha Tin Heights & Tai Wai Area - PHASE 2	400 *	14JAN05	31JUL06
C1010	Roadworks	180	14JAN05	23SEP05
C1400	Structures	400 *	14JAN05	31JUL06
C1405	Demolish Tai Po Road Bridge & Ramp	90	14JAN05	19MAY05
C1410	Bridge MLS4	195 *	14JAN05	14OCT05
C1421	MLS4 Substructure	80	14JAN05	05MAY05
C1423	MLS4 Superstructure	55	06MAY05	22JUL05
C1425	MLS4 Noise Barrier and Finishing Works	60	25JUL05	14OCT05
C2000	Bridge MLN3	140 *	14JAN05	29JUL05
C2041	MLN3 Substructure	140	14JAN05	29JUL05
C2010	Bridge MLN4	290 *	14JAN05	24FEB06
C2051	MLN4 Substructure	110	14JAN05	16JUN05
C2043	MLN4Superstructure	80	17JUN05	07OCT05
C2045	MLN4 Noise Barrier and Finishing Works	100	10OCT05	24FEB06
C2020	Bridge MLN5	310 *	20MAY05	31JUL06
C2061	MLN5 Substructure	80	20MAY05	09SEP05
C2053	MLN5 Superstructure	160	12SEP05	21APR06
C2055	MLN5 Noise Barrier and Finishing Works	70	24APR06	31JUL06
C2030	Bridge MLN6	320 *	14JAN05	07APR06
C2071	MLN6 Substructure	110	14JAN05	16JUN05
C2063	MLN6 Superstructure	130	17JUN05	16DEC05
C2065	MLN6 Noise Barrier and Finishing Works	80	19DEC05	07APR06
C7000	Slopeworks	260	15APR05	14APR06
D1000	Sha Tin Heights & Tai Wai Area - PHASE 3	320 *	01JUL05	25SEP06
D1010	Roadworks	90	26SEP05	27JAN06
D1400	Structures	320 *	01JUL05	25SEP06
D1410	Loop Road G	290 *	01JUL05	14AUG06
D1441	Loop Road G Substructure	110	01JUL05 *	02DEC05
D1443	Loop Road G Superstructure	130	05DEC05	02JUN06
D1445	Loop Road G Noise Barrier and Finishing Works	50	05JUN06	14AUG06



Start date	14OCT02
Finish date	31OCT06
Data date	30NOV02
Run date	05SEP02
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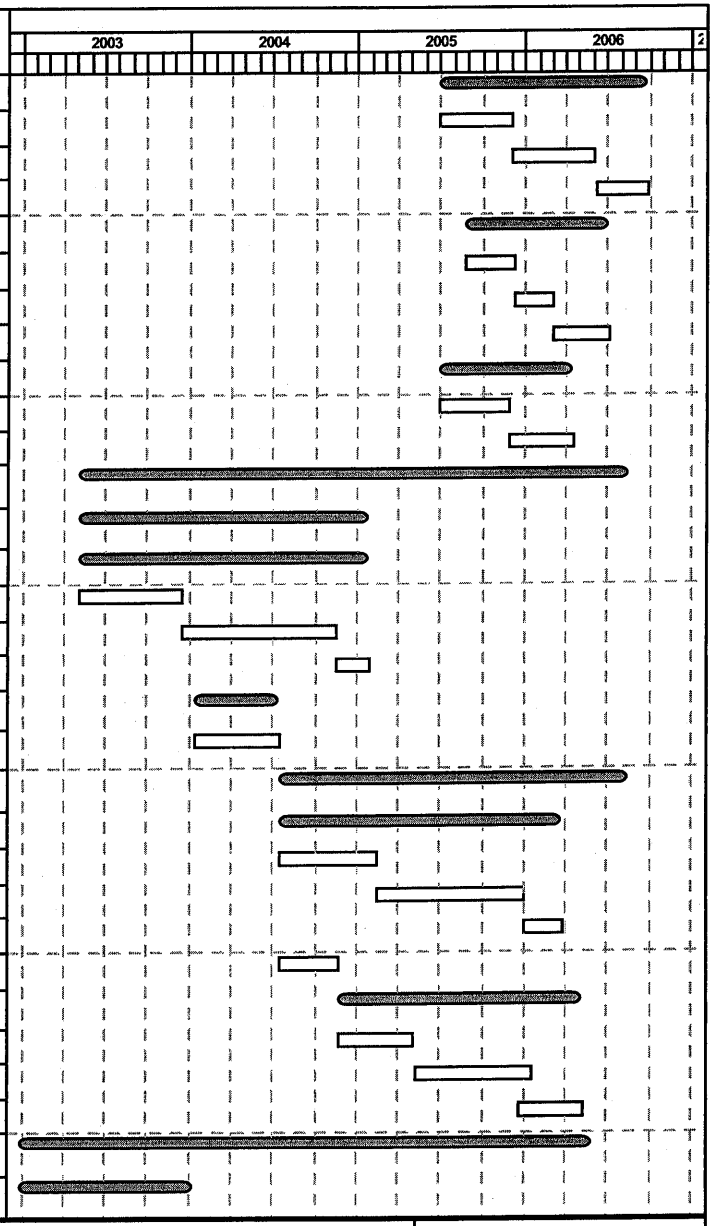
Sha Tin Trunk Road T3
Construction Programme

Appendix B-1

- Early bar
- Progress bar
- Critical bar
- Summary bar
- Start milestone point
- Finish milestone point

Act ID	Description	Orig Dur	Early Start	Early Finish
D1420	Slip Road F	320 *	01JUL05	25SEP06
D1451	Slip Road F Substructure	110	01JUL05 *	02DEC05
D1453	Slip Road F Superstructure	130	05DEC05	02JUN06
D1455	Slip Road F Noise Barrier and Finishing Works	80	05JUN06	25SEP06
D1430	Ramp C	225 *	25AUG05	06JUL06
D1461	Ramp C Substructure	75	25AUG05 *	07DEC05
D1463	Ramp C Superstructure	60	08DEC05	01MAR06
D1465	Ramp C Noise Barrier and Finishing Works	90	02MAR06	06JUL06
D1490	Bridge MLN3	205 *	01JUL05	14APR06
D1503	MLN3 Superstructure	105	01JUL05 *	25NOV05
D1505	MLN3 Noise Barrier and Finishing Works	100	28NOV05	14APR06
E1000	Tung Lo Wan Area	853 *	06MAY03	17AUG06
E1010	Phase 1 Construction	450 *	06MAY03	27JAN05
E1020	Bridge MLN2 (Southern Portion)	450 *	06MAY03	27JAN05
E1031	MLN2 Substructure	160	06MAY03 *	16DEC03
E1033	MLN2 Superstructure	240	17DEC03 *	18NOV04
E1023	MLN2 Noise Barrier and Finishing Works	50	19NOV04	27JAN05
E1100	Phase 2 Construction	130 *	16JAN04	15JUL04
E1110	Chung Ling Road Temporary Ramp	130	16JAN04 *	15JUL04
E1200	Phase 3 Construction	543 *	16JUL04	17AUG06
E1210	Bridge MLN2 (Northern Portion)	440 *	19JUL04	27MAR06
E1231	MLN2 Substructure	150	19JUL04 *	11FEB05
E1233	MLN2 Superstructure	230	14FEB05	02JAN06
E1235	MLN2 Noise Barrier and Finishing Works	60	03JAN06	27MAR06
E1230	Demolish Existing Ramp	90	19JUL04 *	19NOV04
E1220	Bridge MLN1	380 *	22NOV04	08MAY06
E1241	MLN1 Substructure	120	22NOV04 *	06MAY05
E1243	MLN1 Superstructure	180	09MAY05	16JAN06
E1245	MLN1 Noise Barrier and Finishing Works	100	20DEC05	08MAY06
F1000	KCRC Crossing Works	890 *	30DEC02	02JUN06
F1010	Phase K1 Works	270 *	30DEC02	15JAN04



Start date	14OCT02
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Sha Tin Trunk Road T3
Construction Programme

Appendix B-1

- Early bar
- Progress bar
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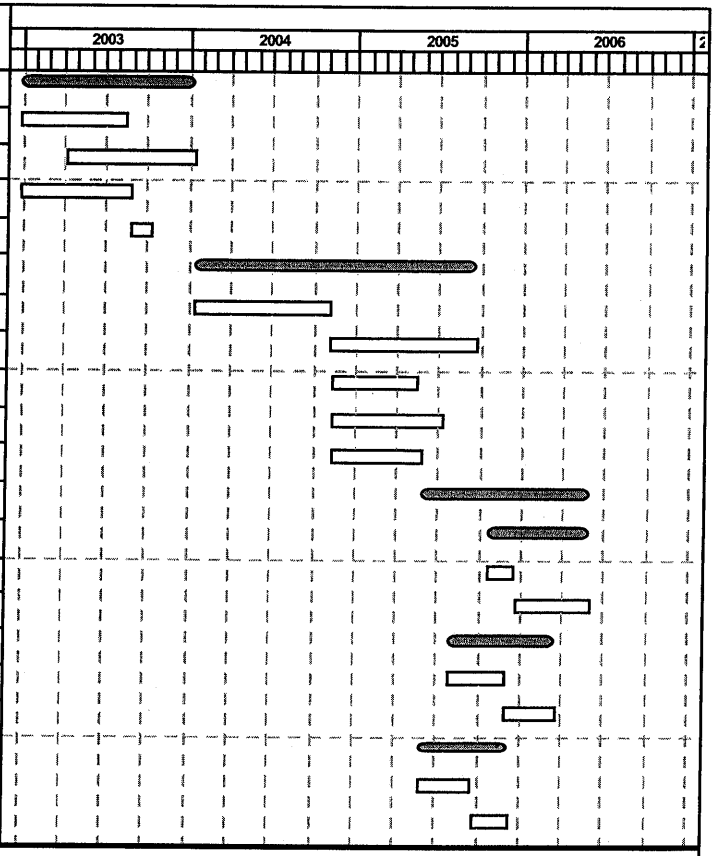
Act ID	Description	Orig Dur	Early Start	Early Finish
F1030	Footbridge A	270 *	30DEC02	15JAN04
F1080	Footbridge A Substructure	160	30DEC02	12AUG03
F1090	Footbridge A Superstructure	200	08APR03	15JAN04
F1100	KCRC Bridge Eastbound Widening	170	30DEC02	26AUG03
F1200	KCRC Bridge Median Removal	30	27AUG03	07OCT03
F2000	Phase K2 Works	440 *	16JAN04	23SEP05
F2100	KCRC Bridge Westbound Reconstruction	210	16JAN04	04NOV04
F2200	KCRC Bridge Eastbound Realignment	230	05NOV04	23SEP05
F2400	Bridge MLS1 Substructure	130	12NOV04 *	12MAY05
F2500	Bridge MLS2 Substructure	170	12NOV04 *	08JUL05
F2600	Bridge MLS3 Substructure	140	12NOV04 *	26MAY05
F3000	Phase K3 Works	265 *	27MAY05	02JUN06
F3100	Bridge MLS1	165 *	17OCT05	02JUN06
F3170	MLS1 Superstructure	45	17OCT05 *	16DEC05
F3180	MLS1 Noise Barrier and Finishing Works	120	19DEC05	02JUN06
F3200	Bridge MLS2	170 *	25JUL05	17MAR06
F3270	MLS2 Superstructure	90	25JUL05 *	25NOV05
F3280	MLS2 Noise Barrier and Finishing Works	80	28NOV05	17MAR06
F3300	Bridge MLS3	140 *	27MAY05	09DEC05
F3370	MLS3 Superstructure	80	27MAY05	16SEP05
F3380	MLS3 Noise Barrier and Finishing Works	60	19SEP05	09DEC05



Start date	14OCT02
Finish date	31OCT06
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Sha Tin Trunk Road T3
Construction Programme

Appendix B-1

- Early bar
- Progress bar
- Critical bar
- Summary bar
- Start milestone point
- Finish milestone point

APPENDIX C
SAMPLE AIR QUALITY MONITORING
FIELD DATA SHEET

TSP Monitoring
Sample Data Sheet

Monitoring Location		
Details of Location		
Sampling Date and Time		
Weather Condition		
Site Conditions		
Elapsed-time Meter Reading	Start (min.)	
	Stop (min.)	
Total Sampling Time (hrs)		
Initial Flow Rate, Qsi	Pi (mmHg)	
	Ti (°C)	
	Hi (in.)	
	Qsi (Std. m^3)	
Final Flow Rate, Qsi	Pi (mmHg)	
	Ti (°C)	
	Hi (in.)	
	Qsi (Std. m^3)	
Average Flow Rate (Std. m^3)		
Total Volume (Std. m^3)		
Filter Identification no.		
Initial Weight of Filter (g)		
Final Weight of Filter (g)		
Weight of Particulate (g)		
Measured TSP Level ($\mu g/m^3$)		

	Name & Designation	Signature	Date
Field Operator			
Laboratory Staff			
Checked By			

APPENDIX D
SAMPLE CONSTRUCTION NOISE MONITORING FIELD DATA SHEET

Construction Noise Monitoring

Sample Data Sheet

Monitoring Location		
Description of Location		
Date of Monitoring		
Measurement Start Time (hh:mm)		
Measurement Time Length (min)		
Noise Meter Model/Identification		
Calibrator Model/Identification		
Measurement Results	L90 (dB(A))	
	L10 (dB(A))	
	Leq (dB(A))	
Major Construction Noise Source(s) During Measurement		
Other Noise Source(s) During Measurement		
Remarks		

	Name & Designation	Signature	Date
Recorded By:			
Checked By:			

APPENDIX E
SAMPLE OPERATIONAL STAGE TRAFFIC NOISE MONITORING FIELD DATA SHEET

Operational Stage Traffic Noise Monitoring - Sample Data Sheet

General

Monitoring Location	
Person-in-charge	
Date and Day of monitoring	
Measurement Time	From To
Description of location	
Microphone Position	

Weather Conditions

Weather Conditions	
Temperature (°C)	
Wind Speed ms^{-1}	

Equipment

Instrument	Type	Serial No.	Setting
Sound Level Meter			
Calibrator			

Calibration

Before measurement:	After measurement:

Raw Data

Time	Traffic data*				Noise level (30min) dB(A)				Average speed kph a/b| c/d#
	Near Side		Far Side						
	LV	HV	LV	HV	L_{10}	L_{90}	L_{eq}	L_{max}	

Note: LV - light vehicle (i.e. private car, motorcycle, taxis and vans)

HV - heavy vehicle (i.e. other than LV)

• - traffic count for a duration of 15 minutes

- a/b| c/d = near side LV/near side HV | far side LV/far side HV

Others

Mitigation measures in place near measurement location	
Other noise source(s) during monitoring	
Remarks	

	Name & Designation	Signature	Date
Recorded By:			
Checked By:			

APPENDIX F
SAMPLE WATER QUALITY MONITORING FIELD DATA SHEET

Water Quality Monitoring

Sample Data Sheet

Location				
Date of Monitoring				
Start Time (hh:mm)				
Weather				
Sea Conditions				
Tide Mode				
Water Depth (m)				
Monitoring Depth		Surface	Middle	Bottom
Salinity				
Temperature (C)				
DO Saturation (%)				
DO (mg/L)				
Turbidity (NTU)				
SS Sample Identification				
SS (mg/L)				
Observed Construction Activities	<100m from location			
	>100m from location			
Other Observations				

	Name & Designation	Signature	Date
Recorded By:			
Checked By:			

Note: the SS results are to be filled up once they are available from the laboratory.

APPENDIX G
SAMPLE OF THE INTERIM NOTIFICATIONS OF EXCEEDANCES

Sample Template for Interim Notifications of Environmental Quality Limits Exceedances

Incident Report on Action Level or Limit Level Non-compliance

Project		
Date		
Time		
Monitoring Location		
Parameter		
Action & Limit Levels		
Measured Level		
Possible reason for Action or Limit Level Non-compliance		
Action taken / to be taken		
Remarks		

Location Plan

Prepared by: _____

Designation: _____

Signature: _____

Date: _____

APPENDIX H
SAMPLE OF COMPLAINT LOG

Sample Complaint Log

Log Ref.	Date/Location	Complainant/ Date of Contact	Details of Complaint	Investigation/ Mitigation Action	File Closed

Filed by Environmental Team Leader:_____ Date:_____