CONTRACT NO. HY/99/02
WIDENING OF FO TAN ROAD AND RELATED IMPROVEMENT MEASURES IN FO TAN

ENVIRONMENTAL MONITORING AND AUDIT REPORT NO. 38
(for the month of March 2003)

APRIL 2003

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Issue & Revision Record

Rev.	Date	Originator	Checked By	Approved	Description
A	April 2002	Danny Ng	Anne Watker-Zeris (Environmental Team Leader)	K W Lee (Engineer)	Monthly Progress Report
Signature					

Project Title:

Contract No.: HY/99/02
Widening of Fo Tan Road and
Related Improvement Measures in Fo Tan

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CONTENTS

1. EXECUTIVE SUMMARY

Background

1.1 Highways Department Contract HY/99/02, "Widening of Fo Tan Road and Related Improvement Measures in Fo Tan", has been awarded to Shun Yuen Construction/CNCEC Joint Venture, and work commenced on 1st Dec 1999. Physical works, as stated in Part B of the Variation of Environmental Permit, EP No.: VEP-015/2000/B/EP-030, commenced in Feb 2000 for completion by end of 2002.

Air Quality Monitoring

1.2 Air quality impact monitoring was carried out at one monitoring station (Rooftop of House No. 76 in Fo Tan Village) as shown in Figure 5.1 in March 2003. The results are summarized in Table 1.1.

Table 1.1 Summary of Air Quality Monitoring Results

Parameter	Range of Results	No. of Exceedances	
		Action Levels	Limit Levels
1-hr TSP	76 $\mu g/m^3$ – 167 $\mu g/m^3$	0	0
24-hr TSP	48 $\mu g/m^3$ – 195 $\mu g/m^3$	1	0

Noise Level Monitoring

1.3 The results for noise level impact monitoring at locations CN3, CN6, CN8, CN11, CN12 and CN13 as shown in Figure 6.2 during the Unrestricted Period in March 2003 are summarized as Table 1.2.

Table 1.2 Summary of Noise Level Monitoring Results

Parameter	Location	Range of Results	No. of date of exceedance	
			Action Levels	Limit Levels
Unrestricted Period L_{eq} (30min)	CN3	All below baseline	0	0
	CN6	52.9 dB(A) – 63.8 dB(A)	0	0
	CN8	All below baseline	0	0
	CN11	All below baseline	0	0
	CN12	68.3 dB(A) – 69.6 dB(A)	0	0
	CN13	59.0 dB(A) – 67.0 dB(A)	0	0

Water Quality Monitoring

1.4 No water samples were taken from Sedimentation Pond Nos. 1, 2, 3, 4 and 5 in this reporting month, as there was no generation of wastewater from construction activities (i.e. no pre-bored H-piling works were carried out for the month of March 2003).

Observations

1.5 No site inspection was conducted by EPD, LCO in the month of November 2002.

1.6 The wind data monitoring equipment recorded data at 5-minute intervals for the month of March 2003. The wind data recorded in the reporting month are contained in Appendix G.

Complaints

1.7 No complaints were received during March 2003.

1.8 A total of three (3) complaints have been received since the start of the Contract.

2. INTRODUCTION

Scope of Works

2.1 Fo Tan Road is the only road providing access to the Fo Tan Industrial Area and the residential area of Sui Wo. According to the findings in the Working Paper 13 (September 94) of the Shatin and Ma On Shan (STMOS) District Traffic Study commissioned by Transport Department (TD), the critical junctions along Fo Tan Road were overloaded by between 10 % and 30 % in the morning peak hours and by between 10 % and 20% in the evening peak hours in 1994. The study predicted that upon full development of the Fo Tan area, the Fo Tan Road will be operating beyond its design capacity, and recommended that the existing Fo Tan Road was widened as a measure to improve the traffic congestion problems in Fo Tan, Shatin.

2.2 The proposed Sui Wo Road extension from Fo Tan Road to Kwei Tei Street also provides an additional access from Fo Tan Road to the eastern part of the industrial area. The additional entry route would help spread the traffic loading amongst the two critical junctions at Fo Tan Road/Tsung Tau Ha Road and Fo Tan Road/Min Fong Street which are currently overloaded by 10% during the morning peak hour.

2.3 At present, traffic accessing the south-eastern part of the Fo Tan industrial area have to use the two junctions at Fo Tan Road/Tsung Tau Ha Road and Fo Tan Road/Min Fong Street for ingress and egress. These two junctions are currently overloaded by 10% during the morning peak hour. The proposed new road linking Tsung Tau Ha Road and Min Fong Street will provide an additional route connecting the north-eastern part and the south-eastern part of the industrial area, thus alleviating the traffic congestion problem currently being experienced at these junctions.

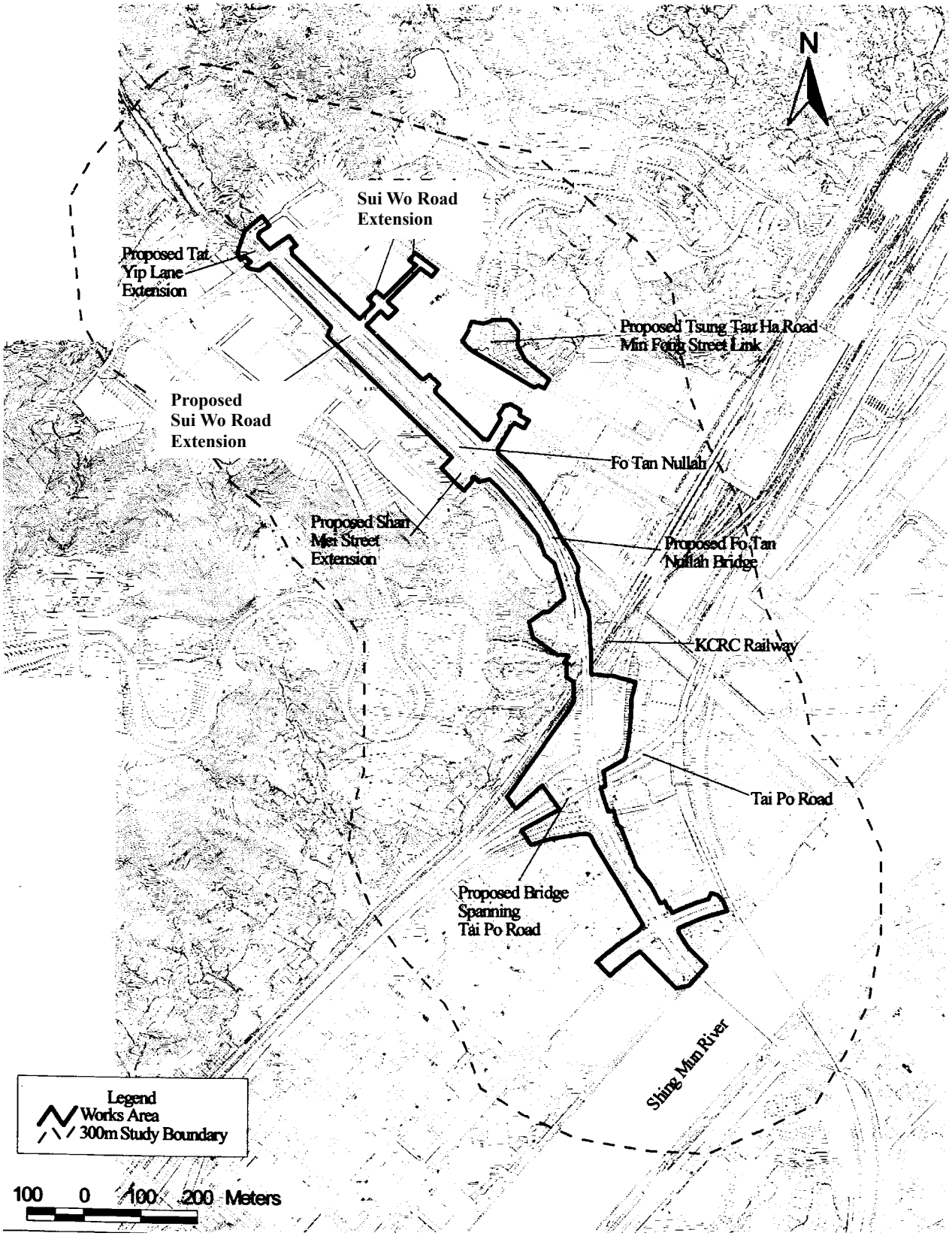
2.4 The existing Tat Yip Lane comprises two cul-de-sac. Heavy goods vehicles, in particular container trucks, often experience difficulties when reversing in the cul-de-sac and cause obstructions to other vehicles entering and leaving the adjacent industrial buildings. The proposed extension of Tat Yip Lane to Kwei Tei Street will remove the cul-de-sac on the western half thus alleviating the traffic problems resulting from the reversing of heavy goods vehicles.

2.5 In May 1995, TD proposed implementation of the above improvement works to include the Project in the 1996 CWRF RAE for completion within the following five years (2 years for planning and design works plus another 3 years for construction). The tentative scheduling for the construction period is between 1999 and 2002.

2.6 The works area of the Contract: HY/99/02 is shown in Figure 2.1

2.7 The key environmental issues of this project include air quality, water quality and construction noise. Air and water quality monitoring has been performed by the Contractor, under the supervision of Engineer's Representative (ER). Noise level monitoring is carried out by the Resident Site Staff (RSS) using equipment and qualified assistants provided by the Contractor.

2.8 According to section 1.4 of the revised EM&A Manual (Revision C), the ET will report directly to the Engineer. Hence, all EM&A reports, including the subject report, are prepared on behalf of the Engineer.



Mott Connell 萬宜	Title: **Fo Tan Road Study Area**	Mott Connell Limited
		Contract No.: HY/99/02
		Drawing No.: Figure 2.1

Project Organization

2.9 The project organization of the Contract is shown as follows:

THE CLIENT (HyD/NT, Government of HKSAR)		
Contact Person:	Mr Greg Leung	(Tel.: 2762 3518) (Fax.:2715 3573)

THE ENGINEER (Mott Connell Limited – MCL)			
Director:	Mr K W Lee	(Tel.: 2828 5757) (Fax.: 2827 1823)	
Head Office		Resident Site Staff	
Project Engineer: Dr H T Cheng	(Tel.: 2828 5898)	Senior Resident Engineer: Mr Bill Reynolds	(Tel.: 21454909)
Environmental Team Leader: Dr Anne Watker-Zeris	(Tel.: 2828 5793)		

Contractor: Shun Yuen Construction & CNCEC JV		
Site Agent:	Mr K. O. Sheng	(Tel.: 2690 1293) (Fax.:2690 1639)

Programme

2.10 The most up-to-date Master Programme which has been submitted by the contractor is attached as Figure 2.2.

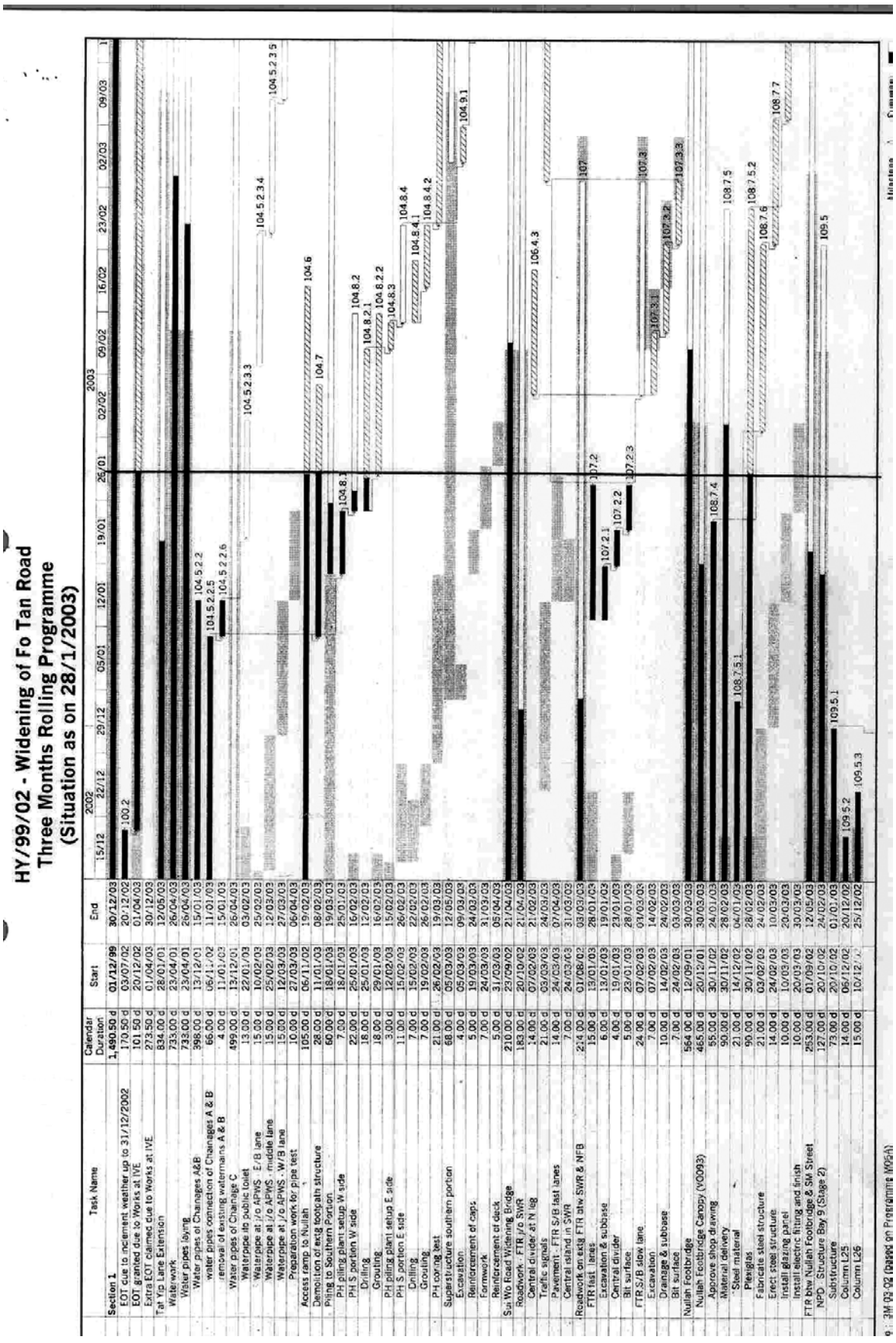


Figure 2.2 – Sheet 1 of 5

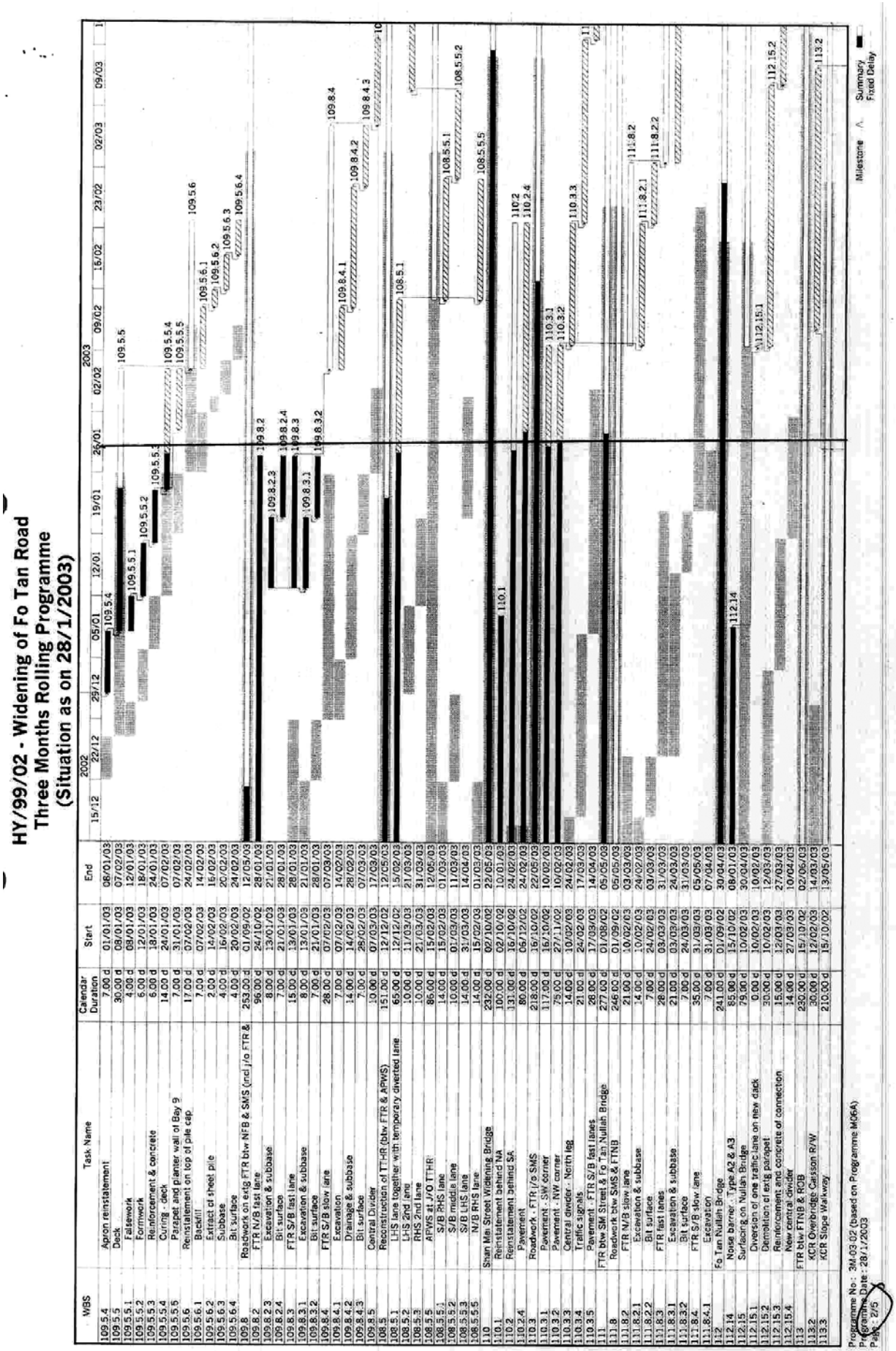


Figure 2.2 – Sheet 2 of 5

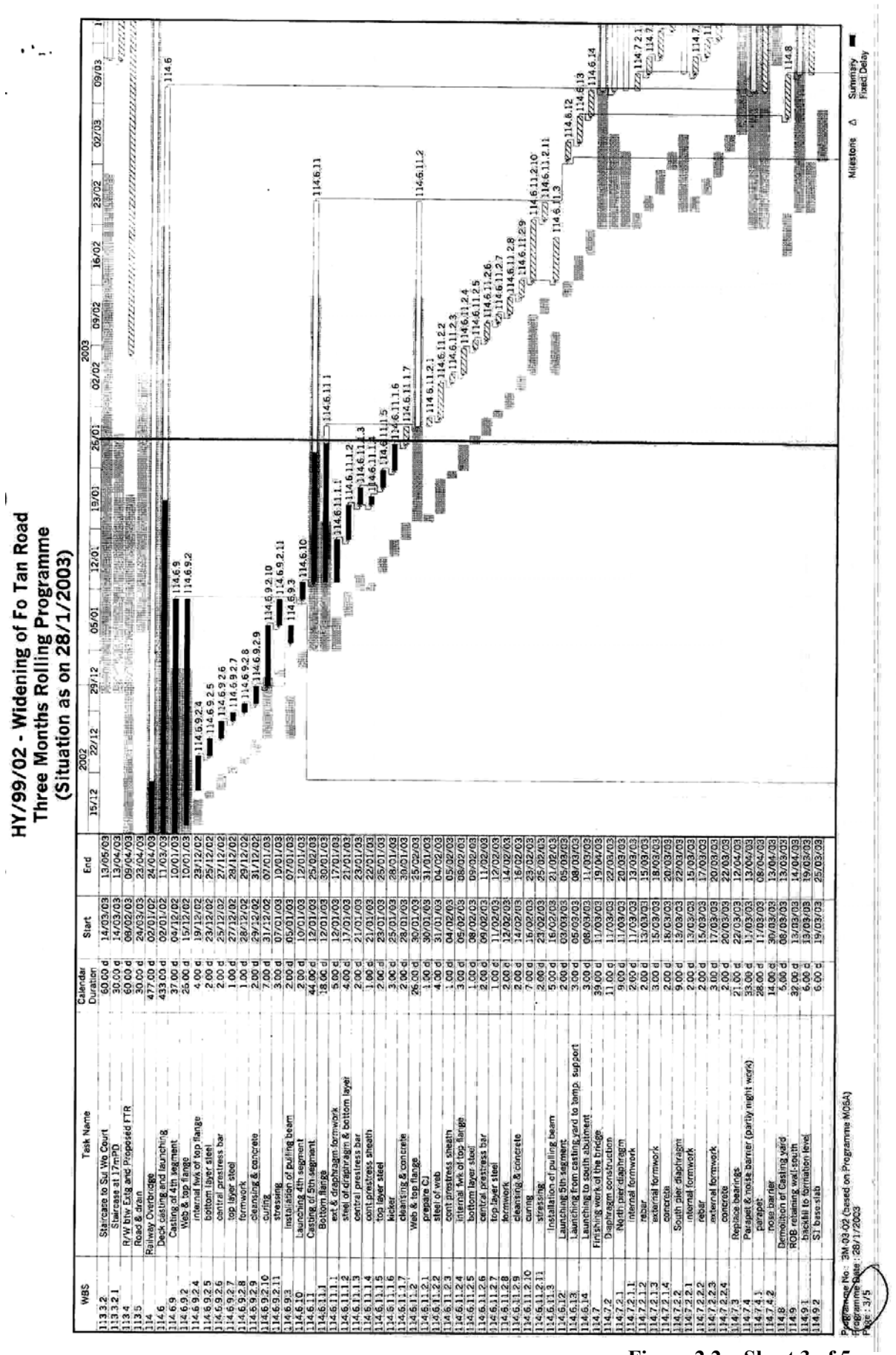
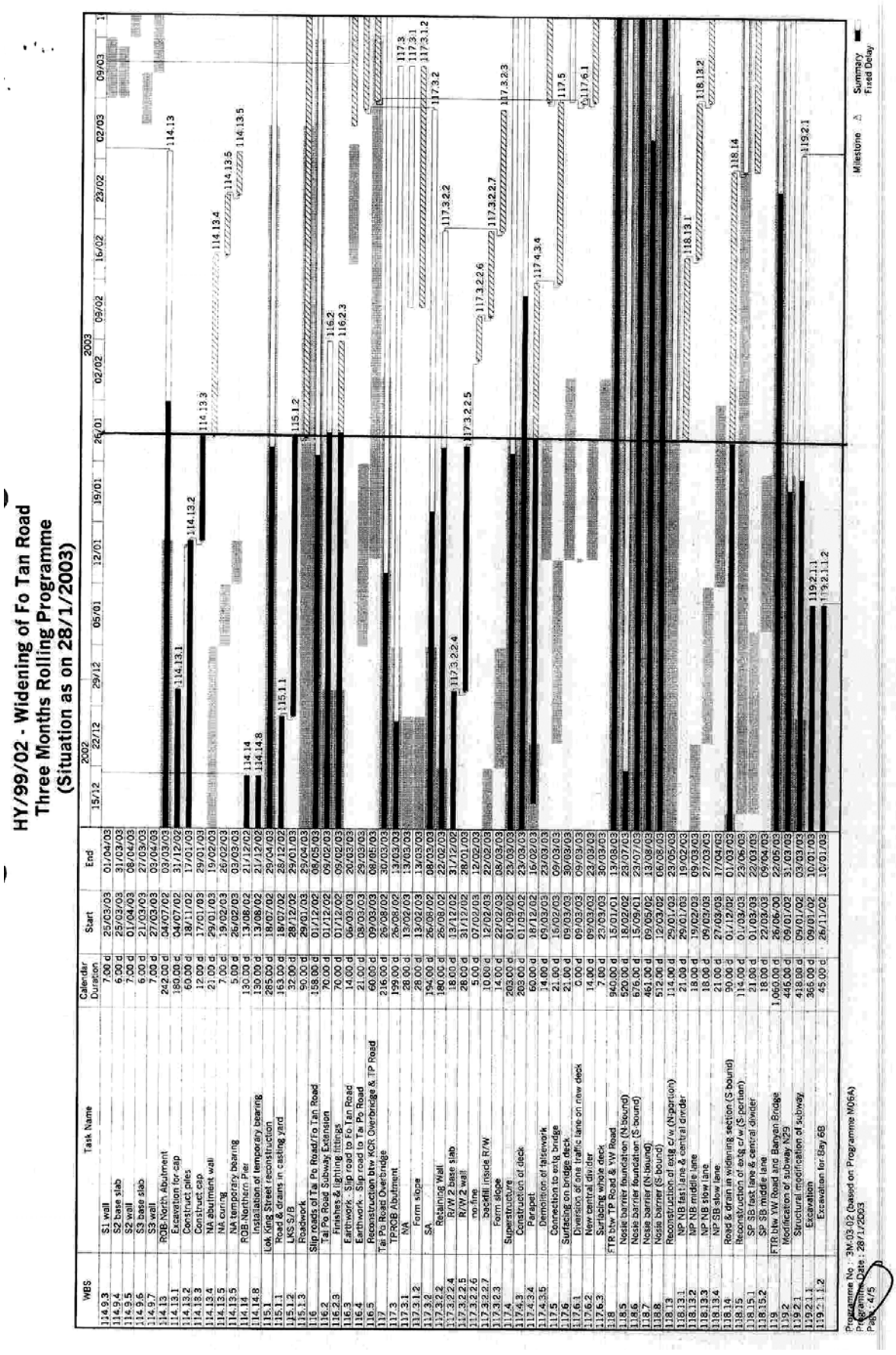


Figure 2.2 – Sheet 3 of 5



WBS	Task Name	Calendar Duration	Start	End
114.9.3	S1 wall	7.00 d	25/03/03	01/04/03
114.9.4	S2 base slab	6.00 d	25/03/03	31/03/03
114.9.5	S2 wall	7.00 d	01/04/03	08/04/03
114.9.6	S3 base slab	6.00 d	21/03/03	27/03/03
114.9.7	S3 wall	7.00 d	27/03/03	03/04/03
114.13	ROB-North Abutment	242.00 d	04/07/02	03/03/03
114.13.1	Excavation for cap	180.00 d	04/07/02	31/12/02
114.13.2	Construct piles	60.00 d	18/11/02	17/01/03
114.13.3	Construct cap	12.00 d	17/01/03	29/01/03
114.13.4	NA abutment wall	21.00 d	29/01/03	15/02/03
114.13.5	NA curing	7.00 d	19/02/03	26/02/03
114.14	ROB-Northern Pier	5.00 d	26/02/03	03/03/03
114.14.8	Installation of temporary bearing	130.00 d	13/08/02	21/12/02
115.1	Lok King Street reconstruction	130.00 d	13/08/02	21/12/02
115.1.1	Road & drains in casting yard	285.00 d	18/07/02	29/04/03
115.1.2	LKS S/B	163.00 d	18/07/02	28/12/02
115.1.3	Roadwork	32.00 d	28/12/02	29/01/03
116	Slip roads of Tai Po Road/Fo Tan Road	90.00 d	29/01/03	29/04/03
116.2	Tai Po Road Subway Extension	158.00 d	01/12/02	08/05/03
116.2.3	Finishes & lighting fittings	70.00 d	01/12/02	09/02/03
116.3	Earthwork - Slip road to Fo Tan Road	70.00 d	01/12/02	09/02/03
116.4	Earthwork - Slip road to Tai Po Road	14.00 d	06/03/03	20/03/03
116.5	Reconstruction btw KCR Overbridge & TP Road	21.00 d	08/03/03	29/03/03
117	Tai Po Road Overbridge	60.00 d	09/03/03	08/05/03
117.3	TPROB Abutment	216.00 d	26/08/02	30/03/03
117.3.1	NA	199.00 d	26/08/02	13/03/03
117.3.1.2	Form slope	28.00 d	13/02/03	13/03/03
117.3.2	SA	28.00 d	13/02/03	13/03/03
117.3.2.2	Retaining Wall	194.00 d	26/08/02	08/03/03
117.3.2.2.4	R/W 2 base slab	180.00 d	26/08/02	22/02/03
117.3.2.2.5	R/W 2 wall	18.00 d	13/12/02	31/12/02
117.3.2.2.6	backfill inside R/W	28.00 d	31/12/02	28/01/03
117.3.2.2.7	Form slope	5.00 d	07/02/03	12/02/03
117.3.2.3	Superstructure	10.00 d	12/02/03	22/02/03
117.4	Construction of deck	14.00 d	22/02/03	08/03/03
117.4.3	Parapet	203.00 d	01/09/02	23/03/03
117.4.3.4	Demolition of falsework	203.00 d	01/09/02	23/03/03
117.5	Connection to exig. bridge	60.00 d	18/12/02	16/02/03
117.6	Surfacing on bridge deck	21.00 d	05/03/03	23/03/03
117.6.1	Diversion of one traffic lane on new deck	21.00 d	05/03/03	09/03/03
117.6.2	New central divider	0.00 d	09/03/03	09/03/03
117.6.3	Surfacing whole deck	14.00 d	09/03/03	23/03/03
118	FTR btw TP Road & YW Road	7.00 d	23/03/03	30/03/03
118.5	Nosie barrier foundation (N-bound)	940.00 d	15/01/01	13/08/03
118.6	Nosie barrier foundation (S-bound)	520.00 d	18/02/02	23/07/03
118.7	Nosie barrier (N-bound)	676.00 d	15/09/01	23/07/03
118.8	Nosie barrier (S-bound)	461.00 d	09/05/02	13/08/03
118.13	Reconstruction of exig c/w (N-portion)	512.00 d	12/03/02	06/08/03
118.13.1	NP NB fast lane & central divider	114.00 d	29/01/03	23/05/03
118.13.2	NP NB middle lane	21.00 d	29/01/03	19/02/03
118.13.3	NP NB slow lane	18.00 d	19/02/03	09/03/03
118.13.4	NP SB slow lane	18.00 d	09/03/03	27/03/03
118.14	Road & drain in widening section (S-bound)	21.00 d	27/03/03	17/04/03
118.15	Reconstruction of exig c/w (S-portion)	90.00 d	01/12/02	01/03/03
118.15.1	SP SB fast lane & central divider	114.00 d	01/03/03	23/06/03
118.15.2	SP SB middle lane	21.00 d	01/03/03	22/03/03
119	FTR btw YW Road and Banyan Bridge	18.00 d	22/03/03	09/04/03
119.2	Modification of subway N29	1,060.00 d	26/06/00	22/05/03
119.2.1	Structural modification of subway	446.00 d	09/01/02	31/03/03
119.2.1.1	Excavation	418.00 d	09/01/02	03/03/03
119.2.1.1.2	Excavation for Bay 6B	366.00 d	09/01/02	10/01/03
		45.00 d	26/11/02	10/01/03

Figure 2.2 – Sheet 4 of 5

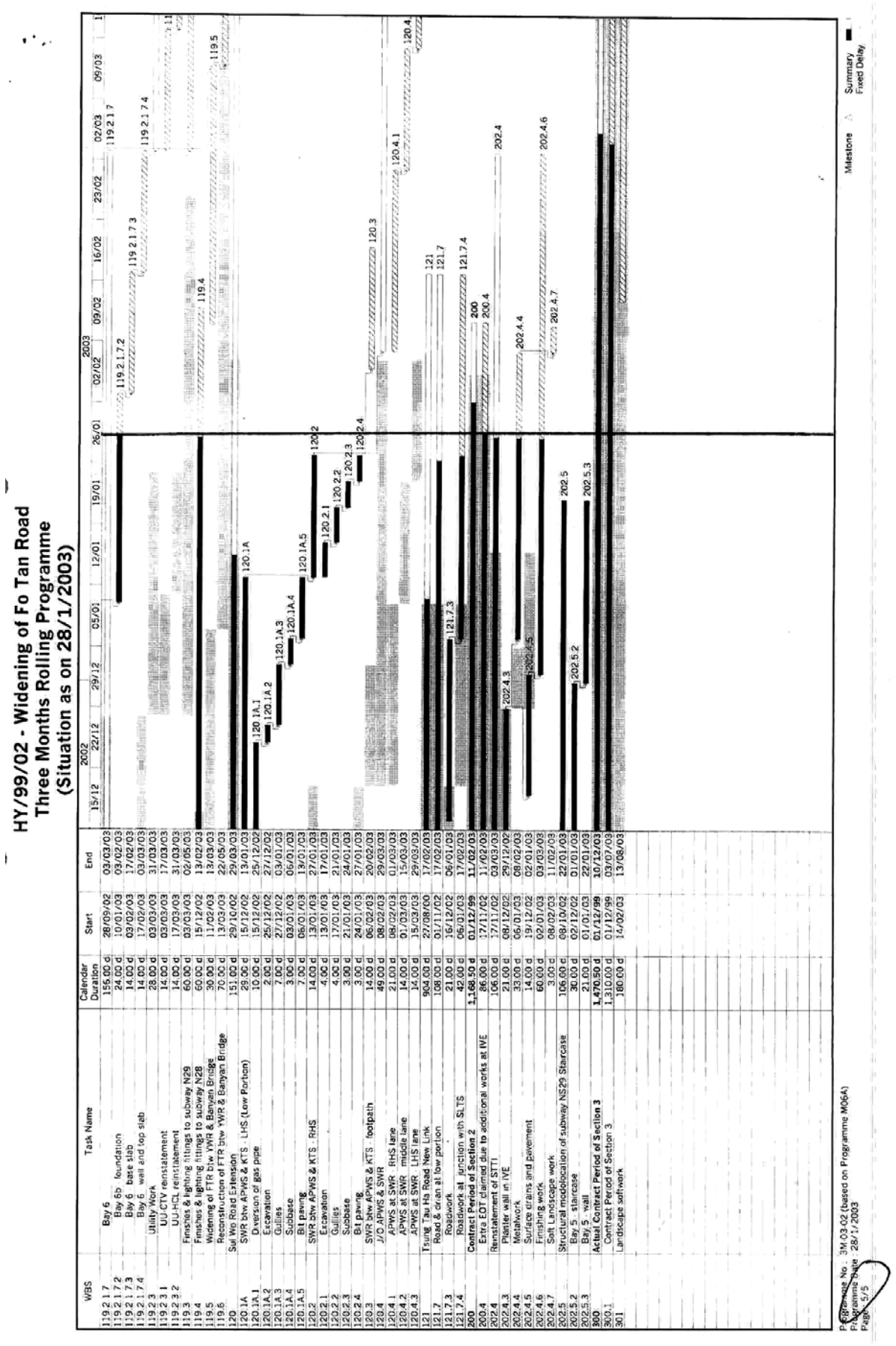
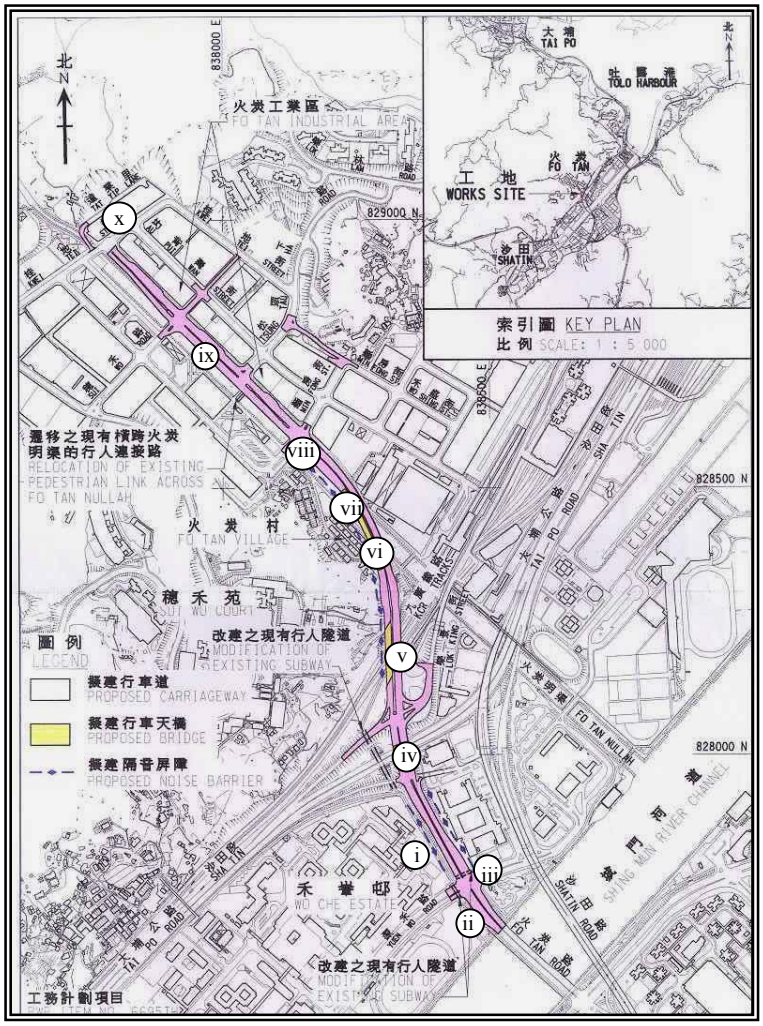


Figure 2.2 – Sheet 5 of 5

3. WORK UNDERTAKEN DURING THIS MONTH

3.1 Major works carried out in Contract HY/99/02 Contractor in this reporting period included:

(i) Construction of noise barriers adjacent to Wo Che Estate and IVE(ST) – anticipated to be completed by 29/5/03.
(ii) Installation of roof canopy of Subway NS29 adjacent to Sha Tin Sports Ground – anticipated to be completed by 31/4/03.
(iii) Finishes and lighting fittings to Subway NS28 adjacent to IVE(ST) – anticipated to be completed by 31/4/03.
(iv) Construction of parapet of Tai Po Road Overbridge – has been completed.
(v) Construction of bridge segments of Railway Overbridge – has been completed.
(vi) Deck stitching between new and existing Fo Tan Nullah Bridge – has been completed.
(vii) Construction of staircase at Turning Tee "A" at Fo Tan Village –has been completed.
(viii) Construction of pavement of Shan Mei Street Widening Bridge – has been completed.
(ix) Re-construction of existing carriageway at Nullah Partial Decking – anticipated to be completed by 31/4/03.
(x) Deck construction at Tat Yip Lane Extension – anticipated to be completed by 31/4/03.



4. BRIEF SUMMARY OF EM&A REQUIREMENTS

Air Quality Monitoring

4.1 The following air quality parameters are required:

(a) 24 - hr TSP; and
(b) 1 - hr TSP.

4.2 Environmental quality performance limits (Action and Limit levels)

Table 4.1 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

4.3 Event-Action Plans

Table 4.2 Action Plan for Air Quality

Event	Response		
	ET	Engineer	Contractor
ACTION LEVEL			
1 Exceedance for one sample	1 Identify source 2 Inform Engineer 3 Repeat measurement to confirm finding 4 Increase monitoring frequency to daily	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 Engineer 3 Repeat measurements to confirm findings 4 Increase monitoring frequency to daily 5 Discuss with Engineer for remedial actions required 6 If exceedance continues, arrange meeting with Engineer 7 If exceedance stops, cease additional monitoring	1 Confirm receipt of notification of failure in writing 2 Notify Contractor 3 Check monitoring data and Contractor's working methods 4 Discuss with Environmental Supervisor and Contractor on potential remedial actions 5 Ensure remedial actions properly implemented	1 Submit proposals for remedial actions to Engineer within 3 working days of notification 2 Implement the agreed proposals 3 Amend proposal if appropriate

Event	Response		
	ET	**Engineer**	**Contractor**
LIMIT LEVEL			
1. Exceedance for one sample	1 Identify source 2 Inform Engineer 3 Repeat measurement to confirm finding 4 Increase monitoring frequency to daily 5 Assess effectiveness of Contractor's remedial actions and keep the Engineer informed of the results	1 Confirm receipt of notification of failure in writing 2 Notify Contractor 3 Check monitoring data and Contractor's 4 Discuss with Environmental Team Leader and Contractor potential remedial actions 5 Ensure remedial actions properly implemented	1 Take immediate action and avoid further exceedance 2 Submit proposals for remedial actions to Engineer 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 Engineer of the causes and actions taken for the exceedance 3 Repeat measurement to confirm findings 4 Increase monitoring frequency to daily 5 Investigate the causes of exceedance 6 Arrange meeting with the Engineer to discuss the remedial actions to be taken 7 Assess effectiveness of Contractor's remedial actions and keep the Engineer informed of the results 8 If exceedance stops, cease additional monitoring	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 Environmental Team Leader and the Contractor potential remedial actions 5 Review Contractor's remedial actions whenever necessary to assure their effectiveness 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 Engineer 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 Engineer until the exceedance is abated

4.4 Environmental mitigation measures

The EIA report has recommended construction air pollution control and mitigation measures. The Contractor shall be responsible for the design and implementation of dust suppression measures such as:

- use of regular watering to reduce dust emissions from exposed site surfaces and unpaved roads. Up to 75% reduction in dust emission can be achieved by watering once every 1.5 hours with complete coverage;

- use of frequent watering for particularly dusty static construction areas and areas where construction operations are taking place;

- side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering should be applied to aggregate fines;

- tarpaulin covering of all dusty vehicle loads transported to, from and between site locations;

- imposition of speed controls for vehicles on unpaved site roads. The recommended limit is 20 kmh^{-1};

- establishment and use of vehicle wheel and body washing stations at the exit points of the site, combined with cleaning of public roads where necessary; and

- instigation of a dust monitoring and audit plan in order to enforce controls and modify methods of work if dusty conditions arise.

If the above measures are not sufficient to restore the air quality to acceptable levels the ET Leader, will advise the Contractor on alternative mitigation measures.

Noise Level Monitoring

4.5 The following noise level monitoring parameters are required:

a) L_{eq}(30 min),
b) L_{10}(30 min),
c) L_{90}(30 min).

Note: 1) All construction noise level shall be measured in terms of the A-weighted level.
2) Measuring Time: 0700 – 1900 (normal weekdays)

4.6 Environmental quality performance limits (Action and Limit levels)

Table 4.3 Action and Limit Levels for Noise Level Monitoring

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 on all days		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.

4.7 Event-Action Plans

Table 4.4 Action Plan for Noise Level Monitoring

Event	Action	
	ET Leader or Engineer	**Contractor**
Action Level	1 Notify Contractor 2 Analyse investigation 3 Require Contractor to propose measures for the analysed noise problem 4 Increase monitoring frequency to check mitigation effectiveness	1 Submit noise mitigation proposals to Environmental Team Leader/Engineer's Representative 2 Implement noise mitigation proposals
Limit Level	1 Notify Contractor 2 Require contractor to implement mitigation measures. Increase monitoring frequency to check mitigation effectiveness	1 Implement mitigation measures 2 Prove to Environmental Team Leader and the Engineer effectiveness of measures applied

4.8 Environmental mitigation measures

The EIA report has recommended construction noise control and mitigation measures. The Contractor shall be responsible for the design and implementation of measures recommended in the EIA, such as:

- A rigorous EM&A programme should be undertaken, and should focus on those Noise Sensitive Receivers (NSRs) of particular concern, in order to identify and rectify any problems at the earliest possible stage;

- conditions from EPD's Recommended Pollution Control Clauses should be incorporated into future contract documents and implemented;

- the appointed contractor should liaise with those that are affected by noise to identify areas of particular concern. For example, in practice it may be the case that only certain items of PME cause the most annoyance to residents;

- construction activities should be programmed so that parallel operation of several sets of equipment close to a given receiver is avoided unless essential;

- noisy equipment and activities should be sited by the contractor as far from sensitive receivers as is practical. Also, temporary site office etc. should be located, as far as is possible, such that sensitive receivers are screened from the line of sight of the construction areas;

- noisy plant or processes should be replaced by quieter alternatives where possible. For example, pneumatic concrete breakers can be silenced with mufflers and bit dampers. Silenced diesel and gasoline generators and power units, as well as silenced and super-silenced air compressors, can be readily obtained. The power units of non-electric stationary plant and earth-moving plant can be quieted by vibration isolation and partial or full acoustic enclosures for individual noise-generating components;

- intermittent noisy activities should be scheduled to minimise exposure of nearby NSRs to high levels of construction noise. For example, noisy activities can be scheduled at times coinciding with periods when dwellings are unoccupied. Prolonged operation of noisy equipment close to dwellings should be avoided;

- idle equipment should be turned off or throttled down. Noisy equipment should be properly maintained and used no more than is necessary; and

- construction plant should be properly maintained and operated. Construction equipment often has silencing measures built in or added on, eg bulldozer silencers, compressor panels, and mufflers. Silencing measures should be properly maintained and utilized.

If the above measures are not sufficient to restore the construction noise level to an acceptable level the ET Leader will advise the Contractor on other mitigation measures.

Water Quality Monitoring

4.9 The following water quality parameters are required:

(a) pH (pH units);
(b) Suspended Solids, SS (mg/l);
(c) Oil & Grease (mg/l);
(d) Dissolved Oxygen, DO (mg/l);
(e) Turbidity (NTU); and
(f) Temperature (^{o}C).

4.10 Event and Action Plan for Surface Water Quality

All effluent subject to control by the TM is required to be licensed. Therefore, the discharges shall be required to comply with the effluent standard of effluent discharged into Tolo Harbour Coastal Waters and is shown in Table 4.5.

Table 4.5 Selection of Effluent Standards Discharged into Coastal Waters of Tolo Water Control Zone

Measurement Parameter	Effluent Standard
pH	6-9 (pH units)
Suspended solids	30 (mg/l)
Oil & Grease	20 (mg/l)

Source: Technical Memorandum on Effluent Standards, Table 7

4.11 Event-Action Plans

Table 4.6 Action Plan for Water Quality Monitoring

Event	ET	Contractor	Engineer
Limit level being exceeded by one sampling day	1 Repeat in-situ measurement to confirm findings; 2 Identify source(s) of impact; 3 Inform contractor; 4 Check monitoring data, all plant, equipment and Contractor's working methods; 5 Discuss mitigation measures with Engineer and Contractor; 6 Ensure mitigation measures are implemented; and 7 Increase the monitoring frequency to daily until no exceedance of Limit level	1 Inform the Engineer and confirm notification of the non-compliance in writing; 2 Rectify unacceptable practice 3 Check all plant and equipment; 4 Consider changes of working methods; 5 Propose mitigation measures to Engineer within 3 working days and discuss with ET and Engineer; 6 Implement the agreed mitigation measures.	1 Discuss with ET and Contractor on the proposed mitigation measures; 2 Repeat Contractor to critically review the working methods; 3 Make agreement on the mitigation measures to be implemented; and 4 Assess the effectiveness of the implemented mitigation measures
Limit level being exceeded by more than two consecutive sampling days	1 Repeat in-situ measurement to confirm findings; 2 Identify source(s) of impact; 3 Inform contractor; 4 Check monitoring data, all plant, equipment and Contractor's working methods; 5 Discuss mitigation measures with Engineer and Contractor; 6 Ensure mitigation measures are implemented; and 7 Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days.	1 Inform the Engineer and confirm notification of the non-compliance in writing; 2 Rectify unacceptable practice 3 Check all plant and equipment; 4 Consider changes of working methods; 5 Propose mitigation measures to Engineer within 3 working days and discuss with ET and Engineer; 6 Implement the agreed mitigation measures; and 7 As directed by the Engineer, to slow down or stop all or part of the construction activities.	1 Discuss with ET and Contractor on the proposed mitigation measures; 2 Repeat Contractor to critically review the working methods; 3 Make agreement on the mitigation measures to be implemented; and 4 Assess the effectiveness of the implemented mitigation measures; and 5 Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the work until no exceedance of Limit Level.

4.12 Environmental mitigation measures

The Practice Note for Professional Persons with regard to site drainage (ProPECC PN 1/94) advises that the following mitigation measures should be undertaken, where applicable, to minimize the impact on water quality during construction:

- Construction of the foundations for the deck above the nullah, and its related flow diversion works, should be carried out carefully to prevent contaminants from entering the nullah. Potential impact from activities that would not be protected by sheet piles should be reduced by a stringent programme and careful timing of the activities. It is recommended to shorten the duration of these activities as much as possible in order to mitigate the impacts;

- For site areas that are close to the nullah and are not enclosed by sheet piles, it is recommended to construct a silt fence along the boundary of the nullah to trap any silts/ sediments from accidentally entering into the waters of the nullah;

- Before commencing any demolition works, all sewer and drainage connections should be sealed to prevent debris, soil, sand etc. from entering public sewers/drains;

- Site surface runoff should be settled to remove sand/silt before it is discharged into the existing storm drains. It is recommended that the sand/silt removal facilities (silt traps, sediment basins) and oil interceptors should be carefully planned to ensure that they would be installed at appropriate locations to capture all surface water generated on site. It is also recommended that, where necessary, temporary catchpits, and perimeter channels be constructed in addition to the existing channel system within the site prior to the site formation works and earthworks;

- Wastewater generated from concreting, clearing of works and similar activities should not be discharged into the stormwater drains. All storm catch basins/inlets, if any, receiving stormwater runoff from construction areas should be covered with wire mesh filters, which have on their upper surface crushed stone, in order to prevent sediment from entering inlet structure and to reduce potential sediment loading to the receiving waters. It is recommended this wastewater should be discharged into foul sewers, after the removal of settleable solids, and pH adjustment as necessary. All sewage discharges from the study area should meet the TM standards and approval from EPD through the licensing process is required;

- Grease traps should be provided with sufficient retention time for canteen effluent;

- Sand traps, oil interceptors and other pollution prevention installations should be properly cleaned and maintained;

- Open stockpiles should be covered with tarpaulin or similar materials to avoid weather erosion which may wash fines into stormwater during the wet season, and prevent dust arisings during the dry season;

- Any wash-water from the wheel washing basins located at each site exit should have sand and silt settled out before discharging into storm drains; and

- All fuels should be stored in bunded areas such that spillage can be easily collected.

With the above mitigation measures properly undertaken, the potential water quality impact of the scheme should be local and minimal.