



**BASELINE MONITORING REPORT**

**FOR**

**EXPANSION AND EXTENSION OF  
FILL BANK AT TUEN MUN AREA 38**

Fill Management Division  
Civil Engineering & Development Department

A) **Baseline Air Quality Monitoring Report**

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\* extracted from the “*Baseline Air Quality Monitoring Report for Contract No. CV/2002/13 Fill Bank at Tuen Mun Area 38*” dated June 2003

## 1. INTRODUCTION

### 1.1 Purpose of Document

This report outlines the air quality data to be employed as baseline monitoring data for the project "Expansion and Extension of Fill Bank at Tuen Mun Area 38". It aims to provide data in terms of 24-hour and 1-hour Total Suspended Particulate (TSP) for ambient air quality conditions prior to the commencement of any activities under the project.

The baseline monitoring data shall then be used for the determination of the appropriate Action Level with the Limit Level being set in accordance with the Table 5.1 of the Project Profile produced for this project.

This report has been produced with reference to the "*Project Profile for Expansion and Extension of Fill Bank at Tuen Mun Area 38*" (hereinafter referred to as the Project Profile) dated December 2004 and the "*Baseline Air Quality Monitoring Report for Contract No. CV/2002/13 - Fill Bank at Tuen Mun Area 38*" dated June 2003.

### 1.2 Project Background

The operation of Fill Bank at Tuen Mun Area 38 has been carried out since 28 June 2003 under the Environmental Permit No. EP-153/2003 (later varied as No. EP-153/2003/A). The works mainly comprise the receiving, stockpiling and removal of public fill materials.

In order to extend the lifespan of the Fill Bank in receiving material from the public, it is proposed that its stockpiling capacity be expanded and its operation be extended up to March 2009. To this end, a new Environmental Permit No. EP-210/2005 was granted by EPD in February 2005 for the subject project.

The proponent of the project is the Fill Management Division, Civil Engineering and Development Department, Government of the Hong Kong Special Administrative Region.

### 1.3 Scope of Baseline Air Quality Monitoring Programme

As stated in Section 5.1.5 of the Project Profile, the existing monitoring stations A1 and A2 will continue to be adopted to monitor the TSP levels during the course of the project. As such, the scope of the baseline air quality monitoring programme is to establish the baseline 24-hour and 1-hour TSP levels at the respective location of the aforesaid monitoring stations.

## 2. PROJECT ORGANIZATION

### 2.1 General

The environmental permit for the project requires that an Environmental Team (ET) and an ET Leader (ETL) be employed to conduct air quality monitoring and auditing works during the course of the works.

In addition, an Independent Environmental Checker (IEC) shall also be appointed to verify those submissions made under the environmental permit and to audit the implementation of EM&A programme and environmental mitigation measures for the project.

### 2.2 Project Organization

The Engineer appointed to oversee the project is from the Fill Management Division of the Civil Engineering and Development Department. The current Engineer's Representative is Mr. L M Chan who can be contacted at telephone no. 2762 5602 and fax no. 2714 0113.

The current main Contractor for the project is Penta-Ocean Construction Co. Ltd.

The Environmental Team Leader (ETL) for the project is Mr. Jeff Tsang of Stanger Asia Ltd. (Tel. 2682 1203, Fax 2682 0046).

The Independent Environmental Checker (IEC) for this project is Mr. Joseph Poon of Materialab Consultants Ltd. (Tel. 2450 8238, Fax 2450 6138).

### 3. MONITORING PROGRAMME

#### 3.1 Monitoring Locations

Two monitoring stations, namely A1 and A2, are being utilized for the carrying out of air quality monitoring for the ongoing Fill Bank operation. They shall continue to be adopted for the monitoring under the EM&A programme for this project.

Station A1 is fixed in the vicinity of the site office, whilst A2 is located at the western boundary of the site. Their locations were indicated in Figure 8 of the Project Profile, which is also appended as Figure 3.1 of this report.

The wind speed and direction logging equipment have been established at the location of Station A1.

The ET shall review the location of the monitoring locations regularly in regard to its suitability, taking into account the changes in the surrounding environment and the nature of works in progress. Alternative monitoring locations proposed by ET shall be approved by the Engineer's Representative and agreed by the IEC, as stipulated in Section 5.1.5 of the Project Profile.

#### 3.2 Baseline Monitoring Schedule

It is the conventional practice that the baseline air quality monitoring be carried out for an extended period, say 14 days, continuously prior to commencement of the project activities. During this period 24-hour TSP shall be measured every day giving 14 data points for this parameter, with 1-hour TSP being measured 3 times every day when the highest level of dust generation is to be expected giving 42 data points for this parameter.

Since the Fill Bank has been under continuous operation since June 2003 and this project is essentially an extension of the ongoing operation, it is deemed impracticable to carry out the baseline air quality monitoring before the project commencement as in the conventional manner. Instead, it is proposed that the most recent monitoring data produced for the previous works contract at the site, "Contract No. CV/2000/01 – Tuen Mun Area 38 Reclamation, Stage 2" is employed as the baseline air quality data for this project.

Therefore, statistical analysis of data for the monitoring of 24-hour and 1-hour TSP from the monthly Environmental Monitoring and Audit (EM&A) reports for the months of March, April and May 2003 (i.e. the 3 months before the operation of the Fill Bank commenced) produced for Contract CV/2000/01 was carried out. The relevant Action levels are then derived according to the procedures recommended in Table 5.1 of the Project Profile.

At the designated monitoring station DM1 (refer to Figure 3.1 for its location) of CV/2000/01, 24-hour TSP samples were taken once every 6 days, with 1-hour TSP being samples being taken 3 times every 6 days when the highest levels of dust generation were to be expected.

**Table 3.1 – Monitoring Schedule**

Monitoring Location	Parameter	Period	Frequency
DM 1 (Contract CV/2000/01)	24-hr TSP	March, April & May 2003	Once every 6 days
	1-hr TSP	March, April & May 2003	3 times every 6 days

The same methodology and data set have been adopted previously in establishing the baseline air quality and deriving the Action levels for the existing Fill Bank operation. As discussed in the “*Baseline Air Quality Monitoring Report for Contract No. CV/2002/13 - Fill Bank at Tuen Mun Area 38*” dated June 2003, there was little or no major construction activities in the vicinity of the location of DM1 during March to May 2003. It is deemed that the monitoring data from DM1 could constitute a reasonable and acceptable basis for establishing the baseline levels for the project.

#### **4. MONITORING RESULTS AND OBSERVATIONS**

##### **4.1 Monitoring Results**

The results of the relevant monitoring data of DM1 are tabulated in Appendix I and graphically presented in Figures 4.1 and 4.2, respectively. The statistical summary of the TSP levels is tabulated below.



**Table 4.1 – Statistical Summary of 24-hr and 1-hr TSP Baseline Monitoring Data**

Monitoring Location	Average 24-hr TSP Level (Range), $\mu\text{g}/\text{m}^3$	Average 1-hr TSP Level (Range), $\mu\text{g}/\text{m}^3$
DM 1 (CV/2000/01)	95.3 (29-193)	144.5 (35-440*)

\* four data points from May 2003 which exceeded the Limit level were excluded from this data

## 5. DETERMINATION OF ACTION AND LIMIT LEVELS

### 5.1 Methodology of Establishing the Action and Limit Levels

Based on the criteria laid out in the Project Profile, the Action levels for this project shall be calculated according to Table 5.1 below.

**Table 5.1 – Action and Limit Levels for Air Quality**

Parameters	Action	Limit
24-hr TSP in $\mu\text{g}/\text{m}^3$	<ul style="list-style-type: none"> <li>♦ For baseline level <math>\leq 200 \mu\text{g}/\text{m}^3</math>, Action level = (Baseline level x 1.3 + Limit level) / 2;</li> <li>♦ For baseline level <math>&gt;200 \mu\text{g}/\text{m}^3</math>, Action level = Limit level;</li> </ul>	260 $\mu\text{g}/\text{m}^3$
1-hr TSP in $\mu\text{g}/\text{m}^3$	<ul style="list-style-type: none"> <li>♦ For baseline level <math>\leq 384 \mu\text{g}/\text{m}^3</math>, Action level = (Baseline level x 1.3 + Limit level) / 2;</li> <li>♦ For baseline level <math>&gt;384 \mu\text{g}/\text{m}^3</math>, Action level = Limit level;</li> </ul>	500 $\mu\text{g}/\text{m}^3$

### 5.2 Derived Action and Limit Levels

According to the Table 5.1 and the results obtained in Section 4.1, the Action and Limit levels for the project are thus calculated and summarized in the following table.

**Table 5.2 – Derived Action and Limit Levels for the Project**

Parameter Monitored	Monitoring Locations	Action Level ( $\mu\text{g}/\text{m}^3$ )	Limit Level ( $\mu\text{g}/\text{m}^3$ )
24-hr TSP	A1 & A2	192	260
1-hr TSP	A1 & A2	344	500

Note: All the figures given in the above table are used for reference only and the EPD may amend the figures whenever it is considered necessary.

## 6. CONCLUSION

Statistical analysis of the air quality monitoring data recorded from previous works Contract No. CV/2000/01 at the site for the period of March to May 2003 was carried out, with the aim to establish baseline levels and thereby deriving appropriate Action levels for this project.

The Action level for 24-hour TSP for either of monitoring locations A1 and A2 was calculated to be  $192\mu\text{g}/\text{m}^3$ .

The Action level for 1-hour TSP for either of monitoring locations A1 and A2 was calculated to be  $344\mu\text{g}/\text{m}^3$ .

The Limit level for 24-hour TSP is set at  $260\mu\text{g}/\text{m}^3$ , with the Limit level for 1-hour TSP being set at  $500\mu\text{g}/\text{m}^3$ . The Limit levels for the parameters were taken from the Project Profile prepared for the project.

The site was subject to fugitive dust generated mainly by the road traffic and various material handling activities within the site.

No major construction activities were conducted during the baseline period adopted in this report.

## FIGURES

Station	Coordinates (Easting) *	Coordinates (Northing) *
A1	811368	825593
A2	810812	825096
DMI	811369	825592

\* All coordinates refer to HK Metric Grid

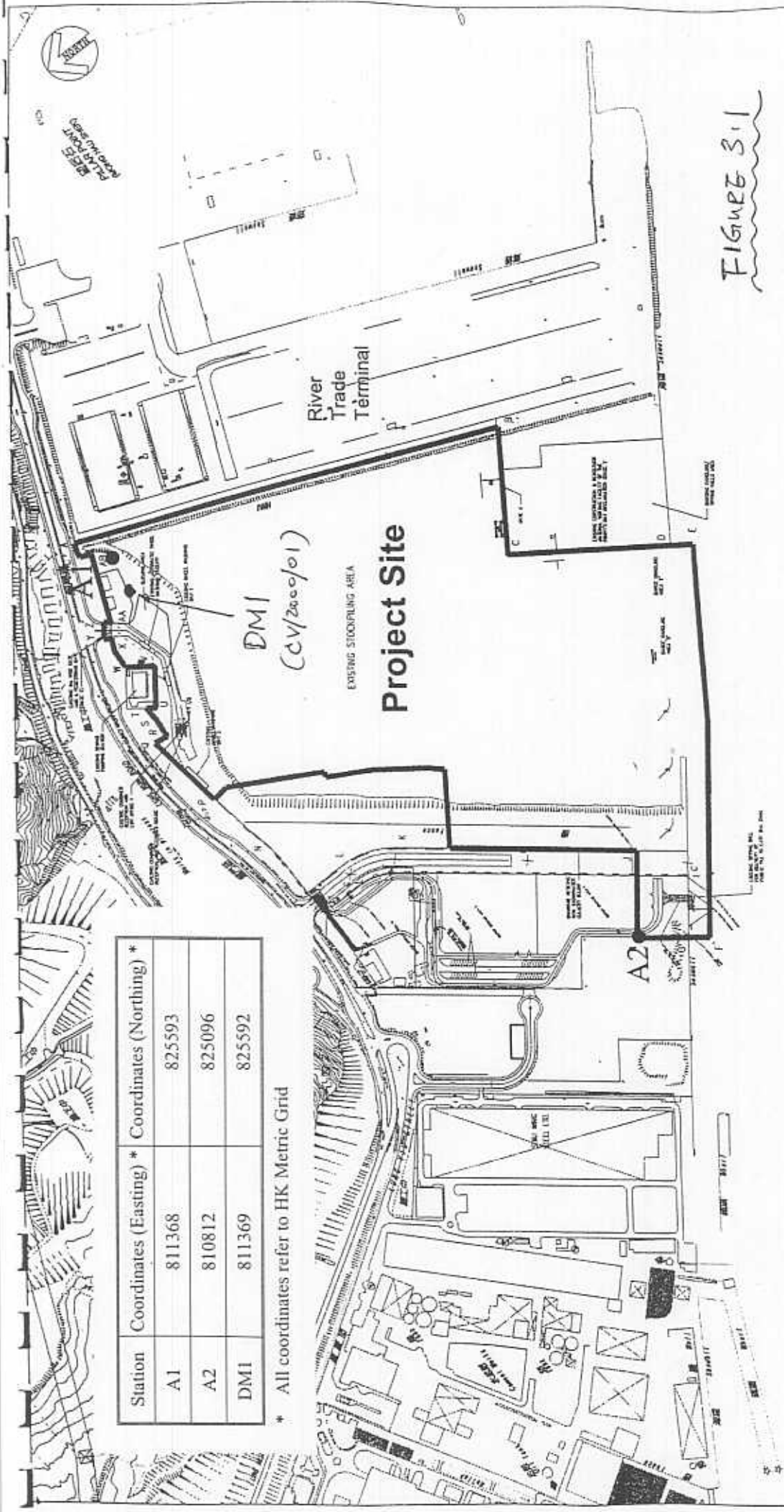


FIGURE 3.1

A1, A2 - Existing TSP Monitoring Station

CH2M-DC Hong Kong Limited

PROJECT PROFILE FOR EXPANSION AND EXTENSION OF FILL BANK AT TUEN MUN AREA 38

Location of the Existing TSP Monitoring Stations for the Fill Bank at Tuen Mun Area 38

土木工程拓展署  
Civil Engineering and  
Development Department

SCALE	NTS	DATE	NOV 2004
DESIGNED	CC	DRAWN	WAN
FIGURE 3			
REV			1



1-hour

2/6/2003

Figure 4.1 - Graphical Plot of 24-hour TSP

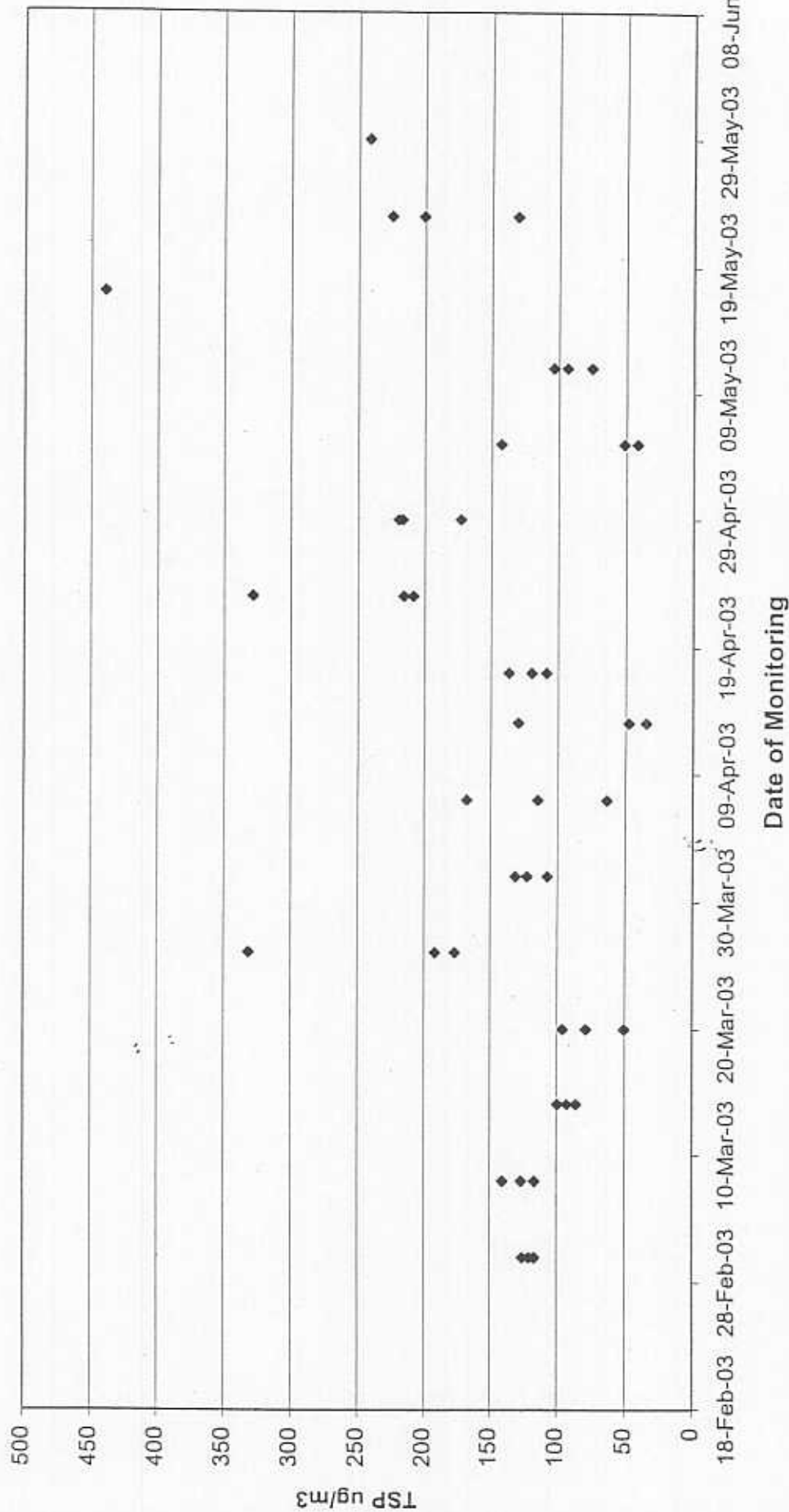
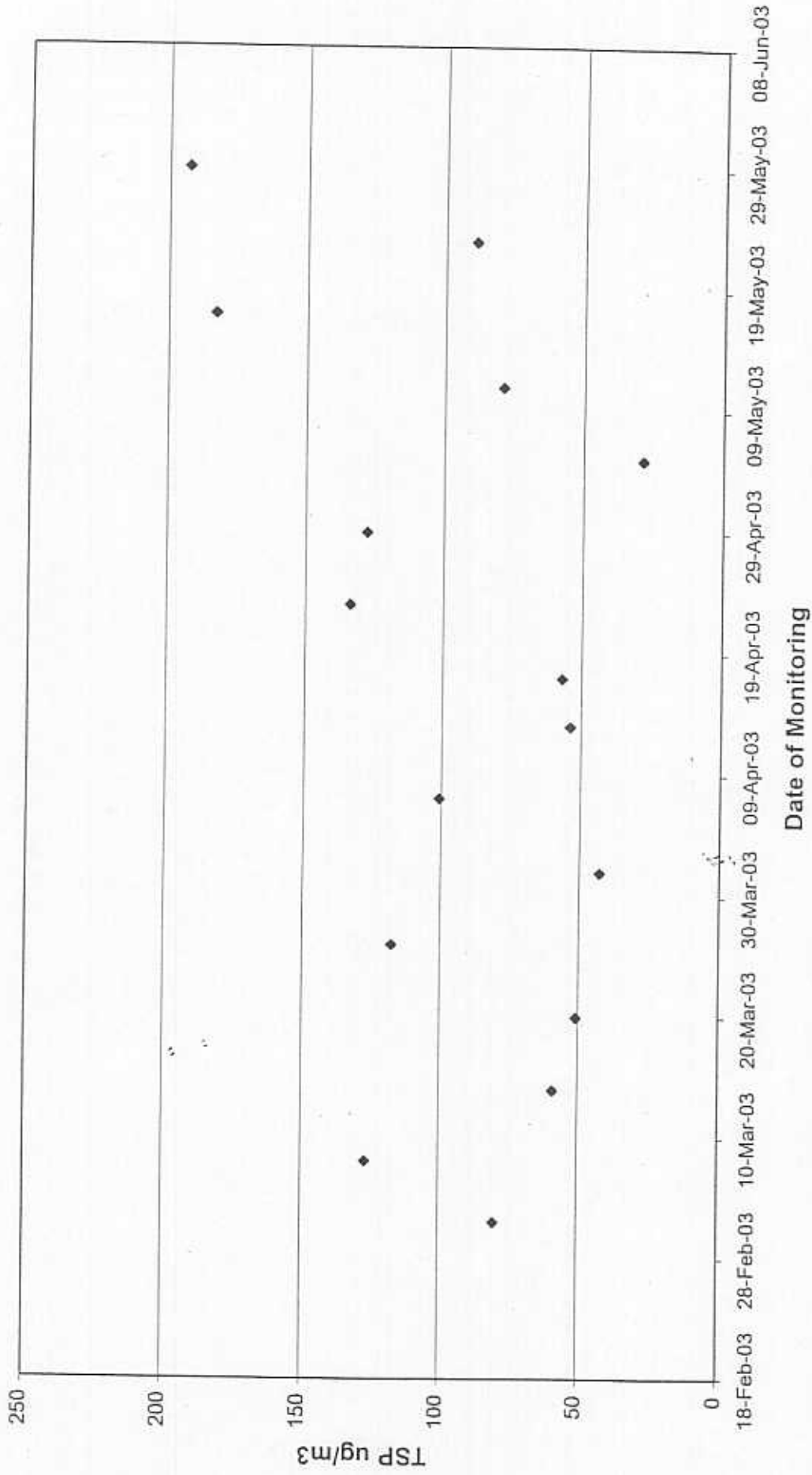




Figure 4.2 - Graphical Plot of 24-hour TSP



## APPENDIX I


Tabulation of 24-hour TSP monitoring data for location DM1.

Date	Result in $\mu\text{g}/\text{m}^3$
03/03/2003	80
08/03/2003	127
14/03/2003	59
20/03/2003	51
26/03/2003	118
01/04/2003	43
07/04/2003	101
13/04/2003	54
17/04/2003	57
23/04/2003	134
29/04/2003	128
05/05/2003	29
11/05/2003	79
17/05/2003	183
23/05/2003	89
29/05/2003	193

Lowest value =  $29\mu\text{g}/\text{m}^3$

Highest value =  $193\mu\text{g}/\text{m}^3$

Mean value = ~~96.4~~  $\mu\text{g}/\text{m}^3$

96.3  
*[Signature]* 14/06/2003  






Tabulation of 1-hour TSP monitoring data for location DMI.

Date	Result in $\mu\text{g}/\text{m}^3$
02/03/2003	117
	121
	126
08/03/2003	117
	141
	127
14/03/2003	93
	86
	100
20/03/2003	96
	79
	51
26/03/2003	332
	177
	192
01/04/2003	108
	123
	132
07/04/2003	115
	64
	168
13/04/2003	130
	48
	35
17/04/2003	120
	109
	137
23/04/2003	209
	216
	329
29/04/2003	173
	217
	220
05/05/2003	143
	42
	52
11/05/2003	104
	76
	94
17/05/2003	440
	1641*
	785*



Date	Result in $\mu\text{g}/\text{m}^3$
23/05/2003	201
	225
	131
29/03/2003	242
	531*
	576*

\* - not included in the calculation lowest and highest and mean values as exceeds the Limit level.

Lowest value =  $35\mu\text{g}/\text{m}^3$

Highest value =  $440\mu\text{g}/\text{m}^3$

Mean value =  ~~$344\mu\text{g}/\text{m}^3$~~

144-S

*S. S. S.* 14/06/2003

**B) Baseline Water Quality Monitoring Report**

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Appendix I – Tabulation of Water Quality Monitoring Data from Monthly EM&A Reports of Contract No. CV/2000/01 \*

\* extracted from the “*Baseline Water Quality Monitoring Report for Contract No. CV/2002/13 Fill Bank at Tuen Mun Area 38*” dated June 2003

## 1. INTRODUCTION

### 1.1 Purpose of Document

This report outlines the water quality data to be employed as baseline monitoring data for the project "Expansion and Extension of Fill Bank at Tuen Mun Area 38". It aims to provide data in terms of dissolved oxygen, turbidity and suspended solids for water quality conditions prior to the commencement of any activities under the project.

The baseline monitoring data shall then be used for the determination of the appropriate Action and Limit levels in accordance with the procedures laid down in Table 5.2 of the Project Profile prepared for this project.

This report has been produced with reference to the "*Project Profile for Expansion and Extension of Fill Bank at Tuen Mun Area 38*" (hereinafter referred to as the Project Profile) dated December 2004 and the "*Baseline Water Quality Monitoring Report for Contract No. CV/2002/13 - Fill Bank at Tuen Mun Area 38*" dated June 2003.

### 1.2 Project Background

The operation of Fill Bank at Tuen Mun Area 38 has been carried out since 28 June 2003 under the Environmental Permit No. EP-153/2003 (later varied as No. EP-153/2003/A). The works mainly comprise the receiving, stockpiling and removal of public fill materials.

In order to extend the lifespan of the Fill Bank in receiving material from the public, it is proposed that its stockpiling capacity be expanded and its operation be extended up to March 2009. To this end, a new Environmental Permit No. EP-210/2005 was granted by EPD in February 2005 for the subject project.

The proponent of the project is the Fill Management Division, Civil Engineering and Development Department, Government of the Hong Kong Special Administrative Region.

### 1.3 Scope of Baseline Water Quality Monitoring Programme

The existing control stations (FC1 and FC2) and impact monitoring stations (FM1 and FM2) will continue to be adopted to monitor the water quality during the course of the project. The scope of the baseline water quality monitoring programme is to establish baseline quality levels for the specified parameters at the aforesaid monitoring stations.

## 2. PROJECT ORGANIZATION

### 2.1 General

The environmental permit for the project requires that an Environmental Team (ET) and an ET Leader (ETL) be employed to conduct air quality monitoring and auditing works during the course of the works.

In addition, an Independent Environmental Checker (IEC) shall also be appointed to verify those submissions made under the environmental permit and to audit the implementation of EnviM&A programme and environmental mitigation measures for the project.

### 2.2 Project Organization

The Engineer appointed to oversee the project is from the Fill Management Division of the Civil Engineering and Development Department. The current Engineer's Representative is Mr. L M Chan who can be contacted at telephone no. 2762 5602 and fax no. 2714 0113.

The current main Contractor for the project is Penta-Ocean Construction Co. Ltd.

The Environmental Team Leader (ETL) for the project is Mr. Jeff Tsang of Stanger Asia Ltd. (Tel. 2682 1203, Fax 2682 0046).

The Independent Environmental Checker (IEC) for this project is Mr. Joseph Poon of Materialab Consultants Ltd. (Tel. 2450 8238, Fax 2450 6138).

### 3. MONITORING PROGRAMME

#### 3.1 Monitoring Locations

Two impact monitoring stations FM1 and FM2 and two control stations FC1 and FC2 have been adopted for the carrying out of water quality monitoring for the ongoing Fill Bank operation. Control station FC1 has acted as upstream control stations on the mid-ebb tide with control station FC2 acting as upstream control stations for the mid-flood tide.

As proposed in Section 5.1.13 of the Project Profile, the existing control and impact monitoring stations shall continue to be adopted for monitoring works under the Environmental Monitoring and Auditing (EM&A) programme for this project. The monitoring locations are shown in Figure 10 of the Project Profile, which is reproduced in this report as Figure 3.1.

The ET shall review the location of the monitoring locations regularly in regard to its suitability, taking into account the changes in the surrounding environment and the nature of works in progress. Alternative monitoring locations proposed by ET shall be approved by the Engineer's Representative, IEC and Director of Environmental Protection, as stipulated in Section 5.1.13 of the Project Profile.

#### 3.2 Monitoring Schedule

Since the Fill Bank has been under continuous operation since June 2003 and this project is essentially an extension of the ongoing operation, it is deemed impracticable to carry out the baseline monitoring before the project commencement as in the conventional manner. Instead, it is proposed that the baseline water quality conditions be established by a review of the most recent monitoring data obtained from the EM&A programme carried out for the previous works contract at the site, "Contract No. CV/2000/01 – Tuen Mun Area 38 Reclamation, Stage 2".

Therefore, a statistical analysis of water quality monitoring data obtained from the monthly EM&A reports of Contract CV/2000/01 for the last two weeks of May 2003 and for the first two weeks of June 2003 (i.e. a period shortly before the operation of the Fill Bank commenced) is carried out. The relevant Action and Limit levels are then derived according to the procedures stipulated in the Project Profile.



A summary of the monitoring schedule with respect to the data set used for the determination of baseline levels is given in the following table.

**Table 3.1 – Monitoring Schedule**

Monitoring Locations	Monitoring Parameters	Frequency	Requirements
4 monitoring stations (MS1-MS4) and 4 control stations (CS1-CS4)	Dissolved oxygen Turbidity Suspended solids	3 days per week	At three depths during mid-ebb and mid-flood tides

The same approach and data set have been adopted previously in establishing the baseline water quality and deriving the Action and Limit levels for the existing Fill Bank operation. In fact, such use of water quality monitoring data obtained from Contract No. CV/2000/01 was specifically allowed for in the Project Profile prepared for the present Fill Bank operation and the Environmental Permit (No. EP-153/2003) issued subsequently. As discussed in Section 4.1 of the *“Baseline Water Quality Monitoring Report for Contract No. CV/2002/13 - Fill Bank at Tuen Mun Area 38”* dated June 2003, there was little or no major construction activities expected to affect water quality during the period when the monitoring data were recorded. Therefore, it is deemed that the existing monitoring data from CV/2000/01 shall constitute a reasonable and acceptable basis for establishing the baseline levels for the project.

#### **4. MONITORING RESULTS AND OBSERVATIONS**

##### **4.1 Monitoring Results**

The relevant water quality monitoring data from CV/2000/01 for the last two weeks of May 2003 and the first two weeks of June 2003 in terms of dissolved oxygen, turbidity and suspended solids are tabulated in Appendix I and graphically presented in Figures 4.1 - 4.4. The statistical summary of these parameters is tabulated below.

Table 4.1 – Statistical Summary of Water Quality Parameters

Monitoring Location *	Surface & Middle Average Dissolved Oxygen (Range), mg/L	Bottom Average Dissolved Oxygen (Range), mg/L	Average Turbidity (Range), NTU	Average Suspended Solids (Range), mg/L
CS1 (FC1)	5.75 (4.81-7.29)	4.73 (4.01-5.73)	7.01 (3.46-10.32)	7.17 (4.33-10.67)
MS2 (FM1)	5.59 (4.58-7.14)	4.77 (4.05-6.65)	6.86 (3.60-9.86)	6.49 (4.33-8.67)
MS3 (FM2)	5.51 (4.66-7.11)	4.77 (4.16-6.91)	6.98 (3.21-10.26)	6.65 (4.00-9.33)
CS3 (FC2)	5.52 (4.66-7.05)	4.69 (4.14-5.47)	6.72 (3.57-10.07)	6.50 (4.00-9.67)

\* ( ) indicates the corresponding monitoring station for this project

## 5. DETERMINATION OF ACTION AND LIMIT LEVELS

### 5.1 Methodology for Establishing the Action and Limit Levels

Based on Section 5.1.15 of the Project Profile, the Action and Limit levels for this project shall be calculated according to the table below.

Table 5.1 – Calculation of Action and Limit Levels for Water Quality Parameters

Parameters	Action level	Limit level
D.O. in mg/L (Surface, Middle & Bottom)	<u>Surface &amp; Middle</u> 5%-ile of baseline data for surface and middle layer.  <u>Bottom</u> 5%-ile of baseline data for bottom layer	<u>Surface &amp; Middle</u> 4mg/L except for 5mg/L for Fish Culture Zone or 1%-ile of baseline data for surface and middle layer. <u>Bottom</u> 2mg/L or 1%-ile of baseline data for bottom layer
Suspended Solids (SS), in mg/L (Depth-averaged)	95%-ile of baseline data or 120% of upstream control station's SS at the same tide of the same day	99%-ile of baseline, 130% of upstream control station's SS at the same tide of the same day and specific sensitive receiver water quality requirements.
Turbidity (Tby) In NTU (Depth-averaged)	95%-ile of baseline data or 120% of upstream control station's Tby at the same tide of the same day	99%-ile of baseline or 130% of upstream control station's Tby at the same tide of the same day.

## 5.2 Derived Action and Limit Levels

According to the Table 5.1 and the results obtained in Section 4.1, the Action and Limit levels for the project are thus calculated and summarized in the following table.

**Table 5.2 – Derived Action and Limit Levels for the Project**

Parameter	Action Level	Limit Level
Dissolved Oxygen in mg/L		
Surface & Middle	< 4.78 mg/L	< 4 mg/L
Bottom	< 4.16 mg/L	< 2 mg/L
Suspended Solids (SS) in mg/L (depth-averaged)	> 120% of upstream control station's SS at the same tide of the same day	> 130% of upstream control station's SS at the same tide of the same day
Turbidity (Tby) in NTU	> 120% of upstream control station's Tby at the same tide of the same day	> 130% of upstream control station's Tby at the same tide of the same day

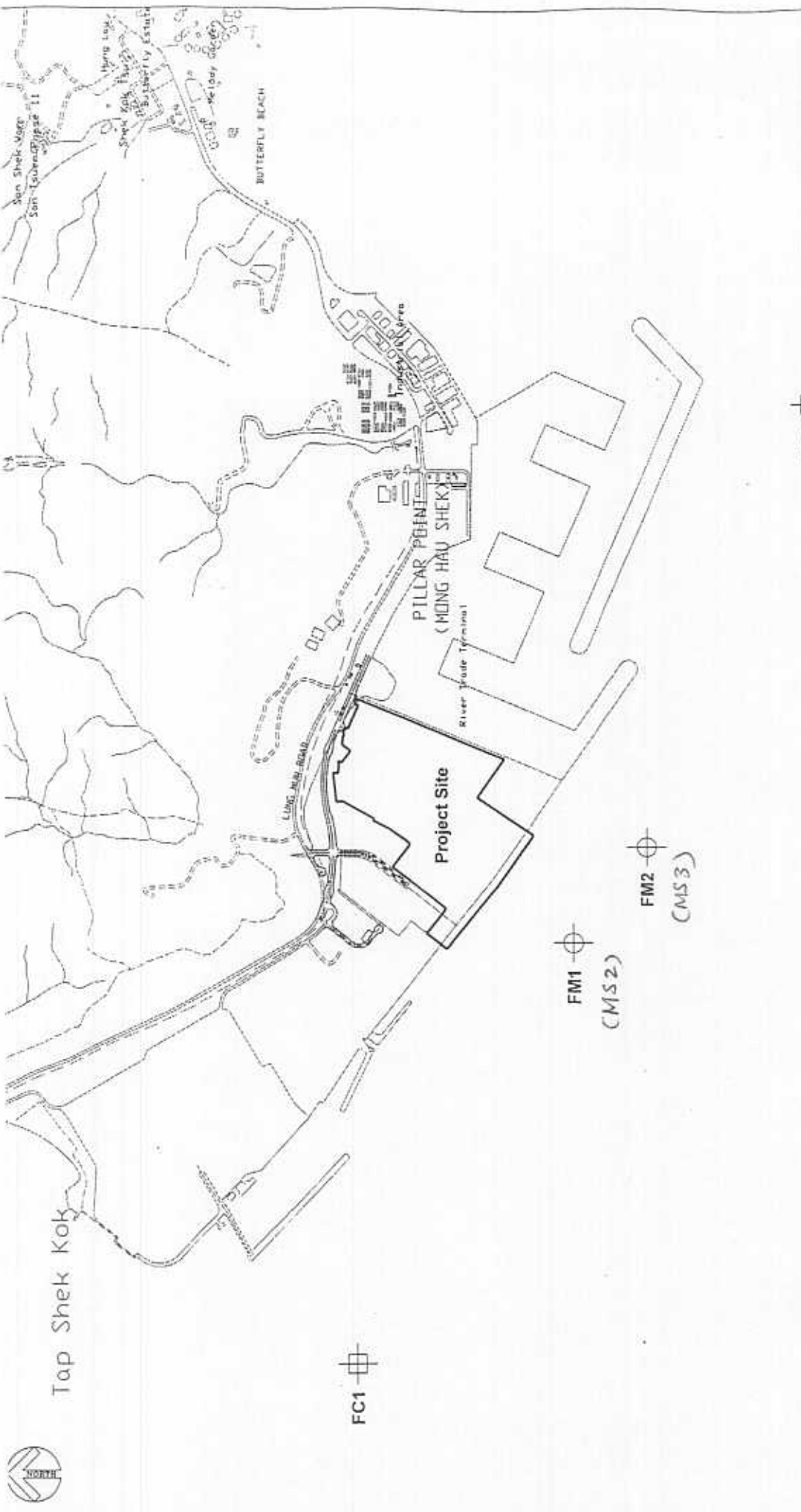
Note: All the figures given in the above table are used for reference only and the EPD may amend the figures whenever it is considered necessary.

## 6. CONCLUSION

Statistical analysis of the water quality monitoring data recorded from previous works Contract No. CV/2000/01 for the period of the last two weeks in May 2003 and the first two weeks of June 2003 was carried out, with the aim to establish baseline levels and thereby deriving appropriate Action and Limit levels in respect of the specified parameters for this project.

The Action and Limit levels for dissolved oxygen, suspended solids and turbidity set up for the project are summarized in the above Table 5.2.

## FIGURES



FM1, FM2 - Impact Monitoring Stations  
 FC1, FC2 - Control Stations

FC2

Figure 3.1

CH2M-IDC Hong Kong Limited

PROJECT PROFILE FOR EXPANSION AND EXTENSION OF FILL BANK AT TUEN MUN AREA 38

土木工程拓展署  
 Civil Engineering and Development Department

SCALE	NTS	DATE	NOV 2004
DESIGNED	CC	DRAWN	WAN
FIGURE			10
REV			7

Locations of the Existing Control and Impact Water Quality Monitoring Stations

Figure 4.1 - Graphical Plot of Surface & Middle Depth Dissolved Oxygen

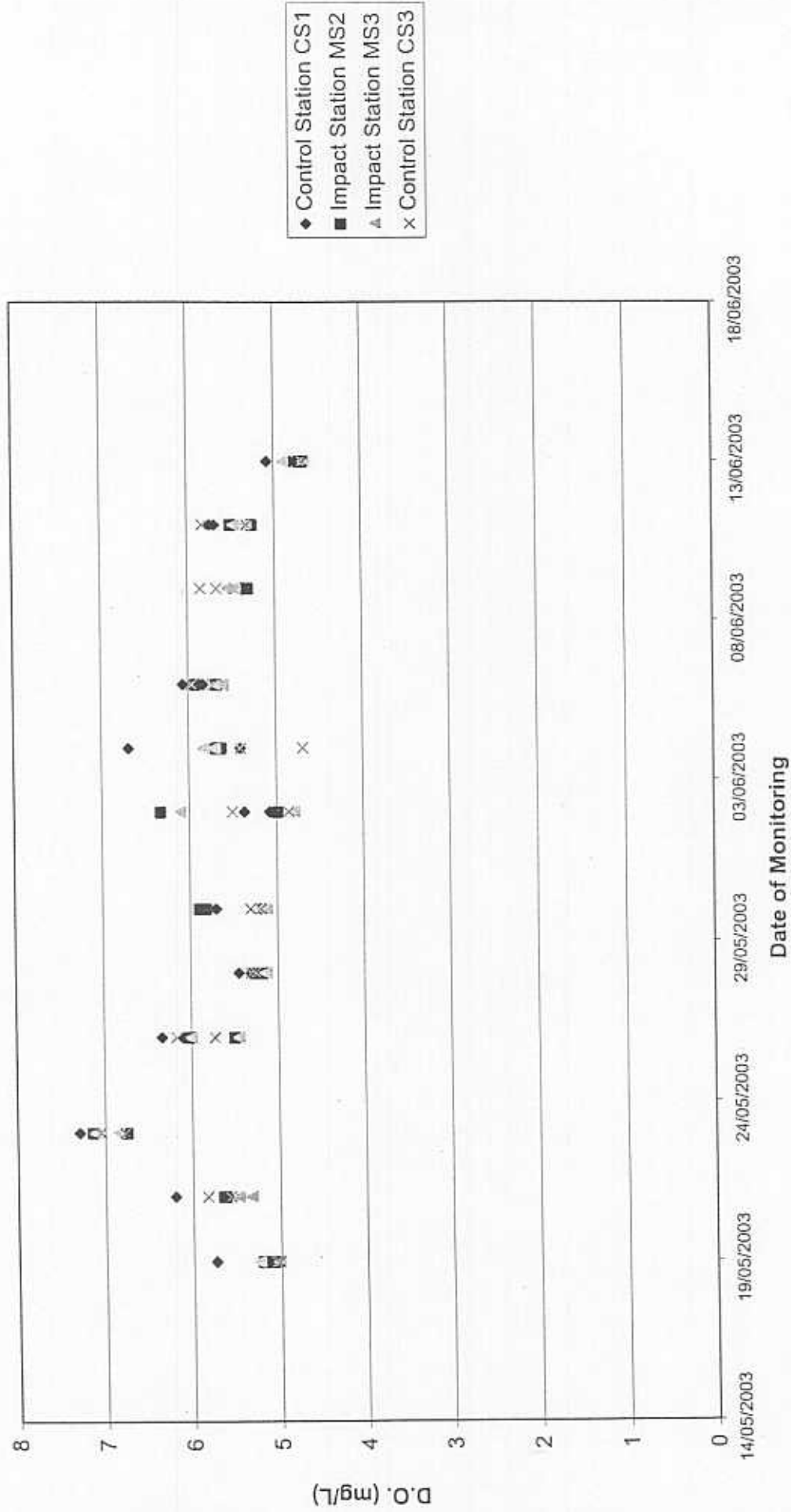




Figure 4.2 - Graphical Plot of Bottom Depth Dissolved Oxygen

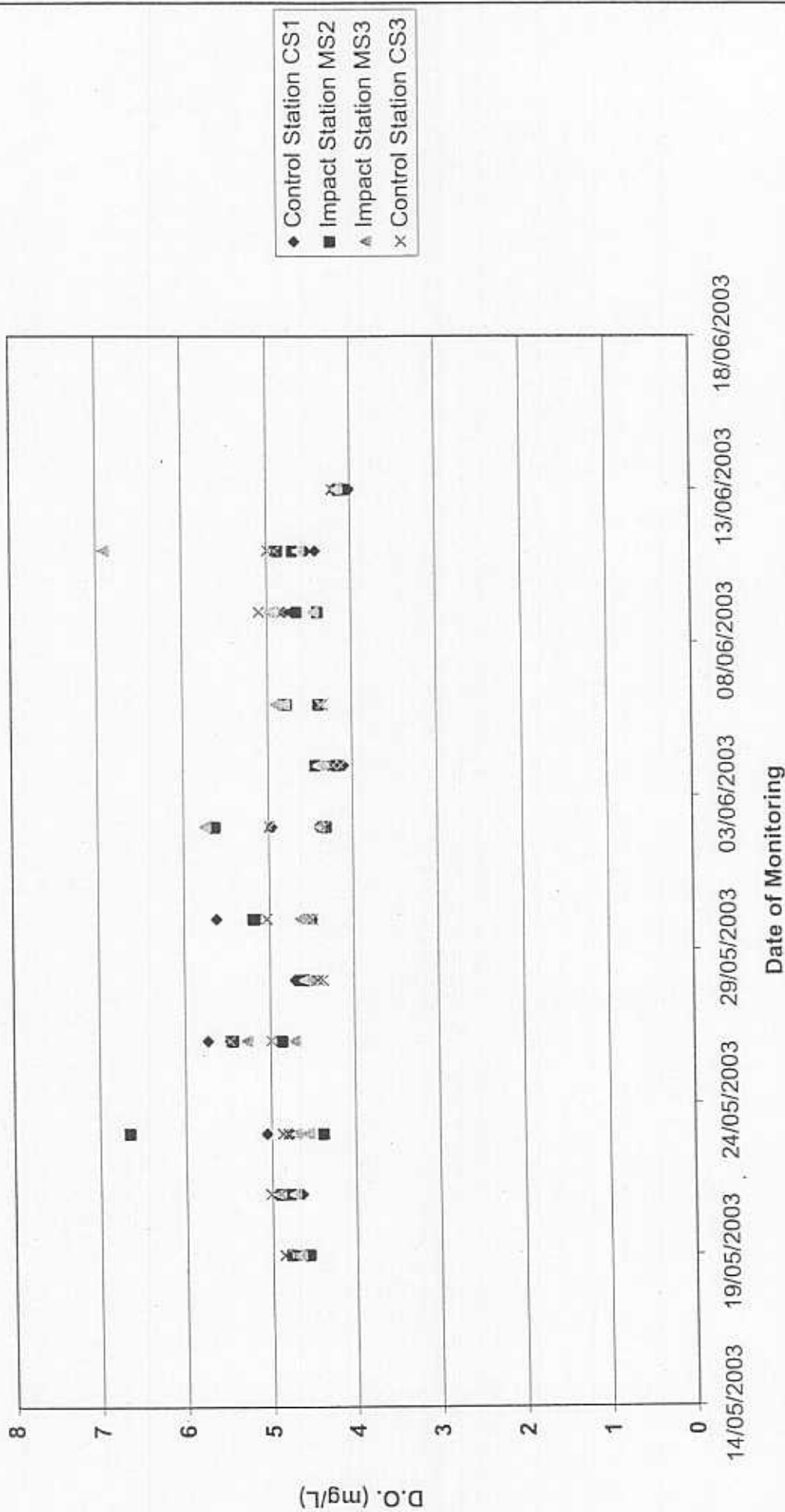




Figure 4.3 - Graphical Plot of Depth Averaged Turbidity

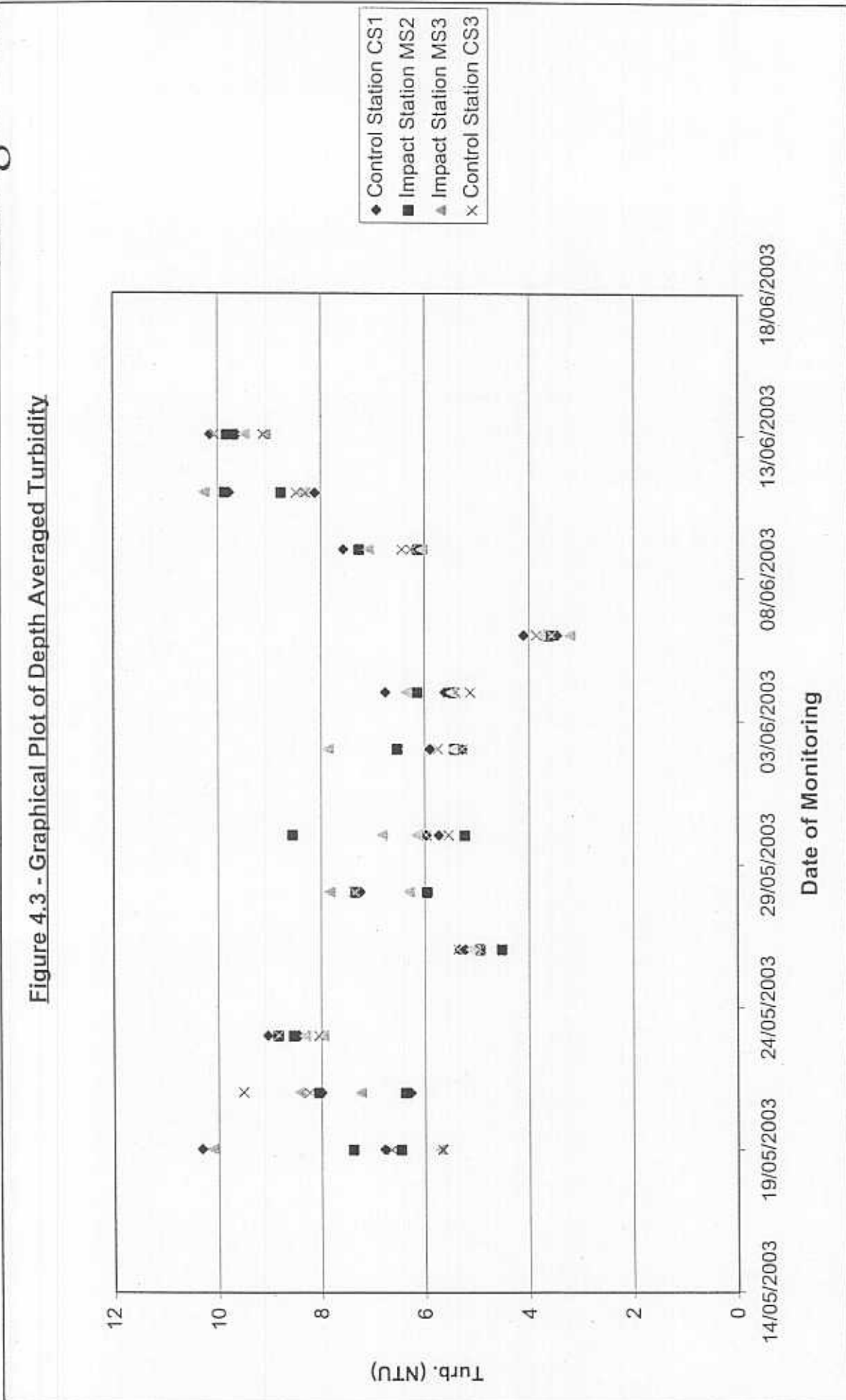
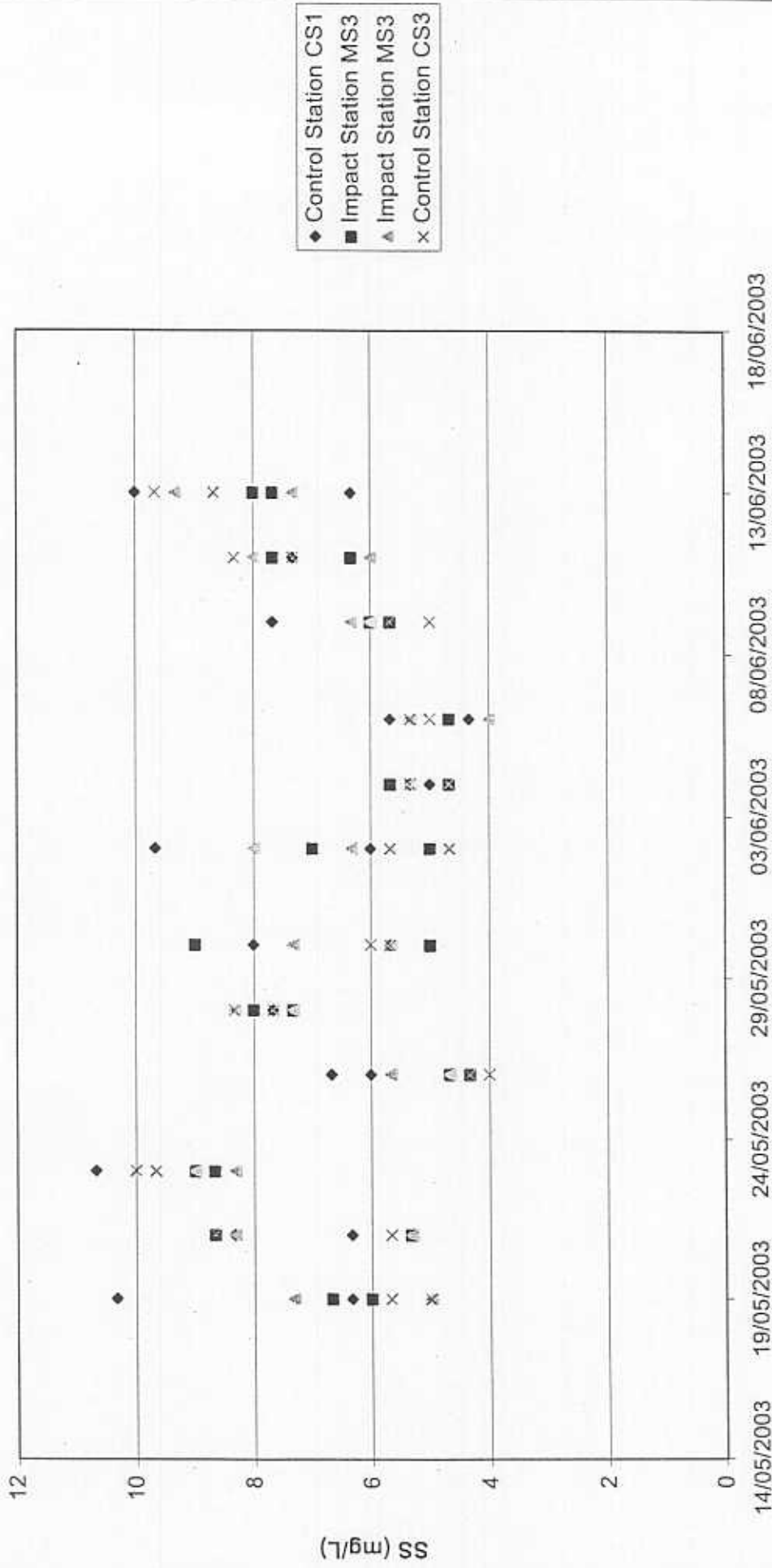






Figure 4.4 - Graphical Plot of Depth Averaged Suspended Solids



## APPENDIX I

Summary of Water Quality Monitoring Data

Contract CV/2001/01

Monitoring stations: CS1, MS2, MS3 & CS3.

Parameter	Mean Value	Lowest Value	Highest Value	1% - ile	5% - ile	95% - ile	99% - ile
D.O. (mg/L) Surface & middle depth	5.59	4.58	7.29	4.66	4.78	N/A	N/A
D.O. (mg/L) Bottom depth	4.74	4.01	6.91	4.01	4.16	N/A	N/A
Turbidity (NTU) Depth averaged	6.89	3.21	10.32	N/A	N/A	10.03	10.26
SS (mg/L) Depth averaged	6.7	4	10.67	N/A	N/A	9.4	10.34

N/A - not applicable to this parameter.



## Summary of Water Quality Monitoring Data

### Contract CV/2001/01

Station CS1

Date	Tide	DO (mg/L) (S&M)	DO (mg/L) (B)	Turb (NTU) (D/A)	SS (mg/L) (D/A)
19/05/2003	mid-flood	5.14	4.73	6.78	6.33
19/05/2003	mid-ebb	5.74	4.8	10.32	10.33
21/05/2003	mid-flood	5.61	4.64	6.28	6.33
21/05/2003	mid-ebb	6.2	4.85	8	8.33
23/05/2003	mid-flood	7.29	5.05	8.44	10.67
23/05/2003	mid-ebb	7.12	4.76	9.04	8.67
26/05/2003	mid-flood	6.34	5.73	5.22	6
26/05/2003	mid-ebb	6.11	5.47	5.33	6.67
28/05/2003	mid-flood	5.31	4.7	7.31	7.67
28/05/2003	mid-ebb	5.45	4.6	7.24	7.67
30/05/2003	mid-flood	5.7	5.62	5.73	5.67
30/05/2003	mid-ebb	5.19	4.49	5.97	8
02/06/2003	mid-flood	5.08	4.96	5.27	6
02/06/2003	mid-ebb	5.37	4.4	5.9	9.67
04/06/2003	mid-flood	5.41	4.1	6.75	5
04/06/2003	mid-ebb	6.69	4.23	5.61	5.33
06/06/2003	mid-flood	5.83	4.86	3.46	4.33
06/06/2003	mid-ebb	6.06	4.77	4.1	5.67
09/06/2003	mid-flood	5.51	4.7	6.17	6
09/06/2003	mid-ebb	5.51	4.79	7.56	7.67
11/06/2003	mid-flood	5.69	4.53	9.77	6.33
11/06/2003	mid-ebb	5.74	4.42	8.11	7.33
13/06/2003	mid-flood	5.08	4.19	9.63	10
13/06/2003	mid-ebb	4.81	4.01	10.15	6.33
Mean value		5.75	4.73	7.01	7.17
Lowest value		4.81	4.01	3.46	4.33
Highest value		7.29	5.73	10.32	10.67

S&M = surface and middle depth sample.

B = bottom depth sample.

D/A = depth averaged sample.



## Summary of Water Quality Monitoring Data

### Contract CV/2001/01

Station MS2

Date	Tide	DO (mg/L) (S&M)	DO (mg/L) (B)	Turb (NTU) (D/A)	SS (mg/L) (D/A)
19/05/2003	mid-flood	5.2	4.77	6.47	6.67
19/05/2003	mid-ebb	5.08	4.56	7.39	6
21/05/2003	mid-flood	5.65	4.79	6.38	5.33
21/05/2003	mid-ebb	5.63	4.9	8.06	8.67
23/05/2003	mid-flood	7.14	6.65	8.83	8.67
23/05/2003	mid-ebb	6.75	4.38	8.54	9
26/05/2003	mid-flood	6.03	5.44	4.94	4.67
26/05/2003	mid-ebb	5.51	4.86	4.52	4.33
28/05/2003	mid-flood	5.27	4.58	5.96	7.33
28/05/2003	mid-ebb	5.17	4.65	7.34	8
30/05/2003	mid-flood	5.89	5.19	5.23	5
30/05/2003	mid-ebb	5.82	5.17	8.56	9
02/06/2003	mid-flood	6.33	5.63	5.43	5
02/06/2003	mid-ebb	4.99	4.32	6.53	7
04/06/2003	mid-flood	5.63	4.19	5.46	4.67
04/06/2003	mid-ebb	5.69	4.44	6.14	5.67
06/06/2003	mid-flood	5.92	4.4	3.6	4.67
06/06/2003	mid-ebb	5.68	4.78	3.61	4.67
09/06/2003	mid-flood	5.31	4.4	6.13	5.67
09/06/2003	mid-ebb	5.33	4.65	7.26	6
11/06/2003	mid-flood	5.51	4.87	9.86	6.33
11/06/2003	mid-ebb	5.26	4.69	8.77	7.67
13/06/2003	mid-flood	4.71	4.14	9.82	7.67
13/06/2003	mid-ebb	4.68	4.05	9.69	8
Mean value		5.59	4.77	6.86	6.49
Lowest value		4.68	4.05	3.6	4.33
Highest value		7.14	6.65	9.86	8.67

S&M = surface and middle depth sample.

B = bottom depth sample.

D/A = depth averaged sample.



## Summary of Water Quality Monitoring Data

### Contract CV/2001/01

Station MS3

Date	Tide	DO (mg/L) (S&M)	DO (mg/L) (B)	Turb (NTU) (D/A)	SS (mg/L) (D/A)
19/05/2003	mid-flood	5.25	4.71	5.73	5
19/05/2003	mid-ebb	5.03	4.67	10.12	7.33
21/05/2003	mid-flood	5.48	4.73	7.25	5.33
21/05/2003	mid-ebb	5.33	4.91	8.42	8.33
23/05/2003	mid-flood	7.11	4.71	8.32	8.33
23/05/2003	mid-ebb	6.85	4.57	7.97	9
26/05/2003	mid-flood	6	5.28	5.05	5.67
26/05/2003	mid-ebb	5.46	4.72	5.1	4.67
28/05/2003	mid-flood	5.14	4.58	6.3	7.33
28/05/2003	mid-ebb	5.15	4.52	7.84	8.33
30/05/2003	mid-flood	5.13	4.64	6.16	5.67
30/05/2003	mid-ebb	5.2	4.55	6.82	7.33
02/06/2003	mid-flood	6.11	5.75	5.46	6.33
02/06/2003	mid-ebb	4.8	4.4	7.86	8
04/06/2003	mid-flood	5.71	4.4	5.47	5.33
04/06/2003	mid-ebb	5.84	4.34	6.36	5.33
06/06/2003	mid-flood	5.61	4.9	3.21	4
06/06/2003	mid-ebb	5.69	4.81	3.79	5.33
09/06/2003	mid-flood	5.46	4.45	6.05	6
09/06/2003	mid-ebb	5.55	4.97	7.08	6.33
11/06/2003	mid-flood	5.33	6.91	10.26	6
11/06/2003	mid-ebb	5.47	4.62	8.34	8
13/06/2003	mid-flood	4.9	4.19	9.48	7.33
13/06/2003	mid-ebb	4.66	4.16	9.07	9.33
Mean value		5.51	4.77	6.98	6.65
Lowest value		4.66	4.16	3.21	4
Highest value		7.11	6.91	10.26	9.33

S&M = surface and middle depth sample.

B = bottom depth sample.

D/A = depth averaged sample.



## Summary of Water Quality Monitoring Data

### Contract CV/2001/01

Station CS3

Date	Tide	DO (mg/L) (S&M)	DO (mg/L) (B)	Turb (NTU) (D/A)	SS (mg/L) (D/A)
19/05/2003	mid-flood	5.05	4.86	5.67	5
19/05/2003	mid-ebb	5.02	4.74	6.65	5.67
21/05/2003	mid-flood	5.57	4.9	9.52	5.67
21/05/2003	mid-ebb	5.83	5.01	8.24	8.67
23/05/2003	mid-flood	7.05	4.87	8.83	9.67
23/05/2003	mid-ebb	6.77	4.8	8.05	10
26/05/2003	mid-flood	6.17	5.47	5.36	4
26/05/2003	mid-ebb	5.73	4.99	4.94	4.33
28/05/2003	mid-flood	5.31	4.37	7.36	7.67
28/05/2003	mid-ebb	5.26	4.43	7.33	8.33
30/05/2003	mid-flood	5.31	5.03	5.54	5.67
30/05/2003	mid-ebb	5.19	4.49	5.97	6
02/06/2003	mid-flood	5.51	4.99	5.27	4.67
02/06/2003	mid-ebb	4.86	4.34	5.75	5.67
04/06/2003	mid-flood	4.69	4.14	5.4	5.33
04/06/2003	mid-ebb	5.41	4.23	5.12	4.67
06/06/2003	mid-flood	5.96	4.35	3.86	5.33
06/06/2003	mid-ebb	5.72	4.38	3.57	5
09/06/2003	mid-flood	5.67	4.82	6.43	5.67
09/06/2003	mid-ebb	5.85	5.09	6.25	5
11/06/2003	mid-flood	5.83	4.99	8.47	7.33
11/06/2003	mid-ebb	5.32	4.9	8.29	8.33
13/06/2003	mid-flood	4.68	4.22	10.07	9.67
13/06/2003	mid-ebb	4.66	4.21	9.12	8.67
Mean value		5.52	4.69	6.72	6.5
Lowest value		4.66	4.14	3.57	4
Highest value		7.05	5.47	10.07	9.67

S&M = surface and middle depth sample.

B = bottom depth sample.

D/A = depth averaged sample.