

Maeda Corporation



# Upgrading of Ting Kok Road Pumping Station No. 5

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Monthly EM&A Report  
(February 2006)

March 2006

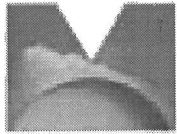
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Maeda Corporation



MAEDA

# Upgrading of Ting Kok Road Pumping Station No. 5

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Monthly EM&A Report (February 2006)

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Report no: EA01284R0082

Date: March 2006

This report has been prepared for in accordance with the terms and conditions of Maeda Corporation appointment for the Upgrading of Ting Kok Road Pumping Station No. 5 in October 2005. Hyder Consulting Ltd (Incorporated in Hong Kong with limited liability—COI Number 126012) cannot accept any responsibility for any use of or reliance on the contents of this report by any third party.

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Certified by Landfill Gas Team Leader  
Alexi Bhanja

Hyder   
Consulting

# Contents

<b>1</b>	<b>Executive Summary .....</b>	<b>1</b>
<b>2</b>	<b>Introduction .....</b>	<b>2</b>
2.1	Basic Project Information .....	2
2.2	Management Structure and Project Organisation .....	3
2.3	Construction Programme .....	3
2.4	Works Undertaken during the Month.....	3
<b>3</b>	<b>Environmental Status .....</b>	<b>3</b>
3.1	Works Undertaken during the Month with Illustrations .....	3
3.2	Project Area and Monitoring Locations.....	4
<b>4</b>	<b>Brief Summary of EM&amp;A Requirements.....</b>	<b>4</b>
4.1	Monitoring Parameters .....	4
4.2	Monitoring Equipment .....	4
4.3	Event and Action Levels/Plans .....	5
4.4	Mitigation Measures and Requirements in Contract Documents .....	5
<b>5</b>	<b>Implementation Status of Landfill Gas Hazard Control Measures.....</b>	<b>5</b>
<b>6</b>	<b>Monitoring Results.....</b>	<b>6</b>
6.1	Fixed Locations .....	6
6.2	Variable Locations.....	6
<b>7</b>	<b>Report on Non-Compliance and Complaints.....</b>	<b>6</b>
<b>8</b>	<b>Others.....</b>	<b>7</b>
8.1	Future Key Issues .....	7
8.2	Comments, Recommendations and Conclusions.....	7

## List of Tables

Table 2-1	Contact Details for Key Project Personnel	3
Table 3-2	Monitoring Locations for LFG EM&A	4
Table 4-3	Equipment List for LFG Monitoring	4
Table 4-4	Action and Limit Levels and Action Plan for Landfill Gas	5
Table 6-5	Monitoring Results at Fixed Locations	6

## List of Appendices

- [Appendix 1 Project Organisation](#)
- [Appendix 2 Construction Programme](#)
- [Appendix 3 Location of Works and Project Area](#)
- [Appendix 4 Fixed Monitoring Locations](#)
- [Appendix 5 Updated Implementation Schedule](#)
- [Appendix 6 Calibration Records](#)
- [Appendix 7 Field Measurement Recording Sheets](#)

# 1 Executive Summary

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Drainage Services Department awarded the contract for the Upgrading of Ting Kok Road Pumping Station No. 5 to Maeda Corporation in September 2005. Maeda appointed Hyder Consulting Limited as the Contractor's Landfill Gas (LFG) Team during the construction period. The construction contract commenced in September 2005 and the total construction period is approximately 28 months.

This report recorded the results and findings of the required EM&A works undertaken during February 2006. All relevant mitigation measures and requirements were implemented. There have been no exceedances in A/L Levels at either fixed or variable monitoring locations except for a carbon dioxide level of 1% at Manhole M1. This level is within expected norms and is not of concern. As this is a fixed location, not part of the excavation works, there are no safety-related issues. There was no need to ventilate the manhole. Location M1 is not affected by any ongoing Works and so this exceedance is not considered to be due to the construction activities on site. No exceedance of the monitoring parameters was found.

## Event and Action Levels

The baseline monitoring results documented in the baseline monitoring report for the Project (our report ref.: EA01284R0022) provided the Action and Limit (A/L) Levels for LFG impact monitoring and also the Action Plan. For methane, A/L Levels are 0.5%/1.0%; for carbon dioxide, A/L Levels are 0.5%/1.5%; and for oxygen, A/L Levels are 19.0%/18.0%.

## Complaint Log

There were no non-compliances during the reporting period and no complaints regarding LFG were received.

## Reporting Changes

There have been no reporting changes during the reporting period.

## Future Key Issues

Based on anticipated construction activities for next month, on the construction programme and on the review of relevant Contractor's method statements by the LGT, no significant future key issues in terms of LFG have been identified at this time.

## 2 Introduction

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### 2.1 Basic Project Information

Upgrading of Ting Kok Road Pumping Station No. 5 (TKRPS) under North District and Tolo Harbour Sewerage, Sewage Treatment and Disposal – High Priority Works is implemented based on the findings of the Study *Review of North District and Tolo Harbour Sewerage Master Plan*.

The purpose of the Project is to upgrade the existing TKRPS to cope with the sewerage needs of both existing and future developments along Ting Kok Road up to Tai Mei Tuk. The design pumping capacity of TKRPS has to be increased from 2,888m<sup>3</sup>/day to 11,520m<sup>3</sup>/day in order to serve the increasing sewage flow along Ting Kok Road. The Project is of high priority and needs to commence as soon as possible because full commissioning of the upstream sewerage facilities along Ting Kok Road is dependent on the completion of this Project.

The proposed scope of works includes construction of a new pumping station, laying of about 350m long twin 450mm diameter rising mains and 250m long 600mm diameter gravity sewer, and demolition of the existing pump pit. The main pumping station, transformer room, gravity sewers, manholes and boundary wall (except the twin rising mains) will be located outside the existing passive vent trench of Shuen Wan Landfill and the three existing Landfill Gas (LFG) monitoring probes within the Project site will not be affected by the works.

There are six village houses located about 60m away from the boundary of the proposed pumping station. The proposed pumping station upgrading works therefore constitutes a Designated Project under type F.3(b)(i) in Schedule 2 of the Environmental Impact Assessment Ordinance. A Project Profile (PP) for direct application of the Environmental Permit (EP) (Application No.DIR-115/2005) was approved by the Environmental Protection Department (EPD) in March 2005 and an EP (EP-212/2005) was granted in April 2005, prior to the commencement of the upgrading works.

Drainage Services Department awarded the contract for the upgrading of TKRPS to Maeda Corporation in September 2005. Maeda appointed Hyder Consulting Limited as the Contractor's Landfill Gas Team (LGT) during the construction period. The construction contract commenced in September 2005 and the total construction period is approximately 28 months.

Close proximity of the Project to Shuen Wan Landfill (within the 250m Consultation Zone of Shuen Wan Landfill) may also suggest the possibility of landfill gas being released during excavation works for substructure of pumping station, transformer room and associated rising mains and gravity sewers. As such, a *Report on Landfill Gas Hazard Assessment* has been prepared previously (as Appendix E to the PP) in accordance with EPD's *Landfill Gas Hazard Assessment Guidance Note* and the *Practice Note for Professional Persons – Landfill Gas Hazard Assessment for Development Adjacent to Landfills*.

## 2.2 Management Structure and Project Organisation

The Engineer (DSD) is responsible for overseeing the construction works and ensuring that they are undertaken by the Contractor (Maeda) in accordance with the specification and contractual requirements. The Contractor shall report to the Engineer. The LGT is employed by the Contractor and responsible for conducting the EM&A programme. The IC(LG) shall advise the Engineer on LFG issues related to the Project.

The key personnel contact names and telephone number are summarised in Table 2-1. The project organisation is shown in Appendix 1.

Party	Position	Name:	Tel. No.:
Project Proponent – DSD	Project Manager	Raymond LEE	2594 7457
	Engineer's Representative	Tim TSOI	2594 7460
Contractor – Maeda	Site Agent	George CHEUNG	9268 1918
LGT – Hyder Consulting	LGT Leader	Alexi BHANJA	2911 2916
IC(LG) – CH2M-IDC	IC(LG)	Adlex LEE	2507 2203

Table 2-1 Contact Details for Key Project Personnel

## 2.3 Construction Programme

Construction programme of the Project is attached in Appendix 2. As can be seen, all works carried out during the reporting period have been conducted with the required LFG control measures in place (e.g. LFG monitoring for “hot works”).

## 2.4 Works Undertaken during the Month

Works undertaken during the reporting period included:

- Construction of permanent piles
- Loading test
- Sheet piling work and temporary work for trenchless method

There was no excavation deeper than 1m or works within trench deeper than 1m undertaken during the reporting month.

# 3 Environmental Status

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## 3.1 Works Undertaken during the Month with Illustrations

Works undertaken during the reporting period are identified in Section 2.4. Illustrations of these works, such as location of works, are provided in Appendix 3.

## 3.2 Project Area and Monitoring Locations

The site is located at Ting Kok Road in Tai Po, and the major items to be constructed are located outside the existing passive vent trench of the adjacent Shuen Wan Landfill.

The impact monitoring locations specified in the *Report on Landfill Gas Hazard Assessment* comprise “utilities’ manholes and chambers” (i.e. fixed locations for purposes of environmental protection) and at excavations of 1m depth or more (i.e. variable locations for purposes of worker safety), which vary from month to month.

In terms of fixed monitoring locations, the Baseline Report identified two existing manholes. A third location – a deep borehole – was installed by the Contractor to provide further coverage.

The fixed monitoring locations are summarised in Table 3-2:

Monitoring Station ID	Description
M1	New Deep Borehole (11m deep)
M2	Existing Manhole (2m deep)
M3	Existing Manhole (2m deep)

**Table 3-2 Monitoring Locations for LFG EM&A**

Project area is shown in Appendix 3 and the fixed monitoring locations are shown in Appendix 4.

## 4 Brief Summary of EM&A Requirements

### 4.1 Monitoring Parameters

During the construction phase, impact monitoring of LFG is to be carried out in accordance with the *Report on Landfill Gas Hazard Assessment* at the selected locations. LFG parameters to be monitored comprise oxygen, methane and carbon dioxide. Temperature is also recorded but this is not a LFG parameter.

### 4.2 Monitoring Equipment

Table 4-3 shows the equipment list for LFG monitoring.

Equipment	Manufacturer / Serial Nos.
Gas Analyser GA 2000	Geotechnical Instruments / GA 08277

**Table 4-3 Equipment List for LFG Monitoring**



### 4.3 Event and Action Levels/Plans

The baseline monitoring results documented in the baseline monitoring report for the Project (our report ref.: EA01284R0022) provided the Action and Limit (A/L) Levels for LFG impact monitoring and also the Action Plan. As per the *Report on Landfill Gas Hazard Assessment*, and in keeping with the standard presentation of LFG EM&A in other projects, both the A/L Levels and Action Plan are shown in the same table.

Table 4-4 shows the combined A/L Level and Action Plan for the Project, to be triggered if the LFG criteria are exceeded:

Parameter	A/L Level	Action Plan
Oxygen	<19%	– Ventilate to restore oxygen to > 19%
	<18%	– Stop works – Evacuate personnel/prohibit entry – Increase ventilation to restore oxygen to >19%
Methane	>10% LEL (i.e. > 0.5 % by volume)	– Prohibit hot works – Ventilate to restore methane to < 10% LEL
	> 20% LEL (i.e. > 1% by volume)	– Stop works – Evacuate personnel/prohibit entry – Increase ventilation to restore methane to < 10% LEL
Carbon Dioxide	>0.5%	– Ventilate to restore carbon dioxide to <0.5%
	>1.5%	– Stop works – Evacuate personnel/prohibit entry – Increase ventilation to restore carbon dioxide to >0.5%

**Table 4-4 Action and Limit Levels and Action Plan for Landfill Gas**

### 4.4 Mitigation Measures and Requirements in Contract Documents

Measures for mitigating LFG hazards during the construction works have been stated clearly in the *Report on Landfill Gas Hazard Assessment*, which forms part of the contract documents Specification. Relevant excerpts could be referred to the Project Profile for Upgrading of Ting Kok Road Pumping Station No. 5.

Section 5 and Appendix 5 summarise the mitigation measures and requirements as well as the implementation status.

## 5 Implementation Status of Landfill Gas Hazard Control Measures

The status of the mitigation measures implemented by the Contractor is listed in Appendix 5. All LFG hazard control measures have been implemented as stipulated in the contract documents and in the *Report on Landfill Gas Hazard Assessment*.

## 6 Monitoring Results

Calibration records for the equipment used for LFG monitoring are provided in Appendix 6. *Original Field Measurement Recording Sheets* for both fixed locations and variable locations are provided in Appendix 7.

### 6.1 Fixed Locations

During the reporting period, LFG was monitored at the three fixed locations for purposes of environmental protection). These are shown in Table 6-5, below (**bold** indicates an exceedance of Action Level and **bold** indicates an exceedance of Limit Level):

Fixed Monitoring Station ID	Date	Gas Concentration (%)			Temperature (°C)	Remarks
		Methane	Carbon Dioxide	Oxygen		
M1	3 Feb 06	0	<b>1.0</b>	20.3	19.0	Nil
M2	3 Feb 06	0	0	20.6	18.8	
M3	3 Feb 06	0	0	20.7	18.8	

**Table 6-5 Monitoring Results at Fixed Locations**

Appendix 4 shows the position of each fixed monitoring station. The concentration of carbon dioxide exceeded the action level of 0.5% at M1 during the monitoring period. This level is within expected norms and is not of concern. As this is a fixed location, not part of the excavation works, there are no safety-related issues. There was no need to ventilate the manhole. Location M1 is not affected by any ongoing Works and so this exceedance is not considered to be due to the construction activities on site.

### 6.2 Variable Locations

During the reporting period, LFG was monitored at variable locations (for purposes of worker safety). These comprised Portions 4, 5 and 7, as shown in Appendix 3.

A total of 89 readings at variable locations were taken for safety-related reasons, including hot work, sheet piling and excavation. There were no exceedances for Action or Limit Level at any variable locations during the reporting period.

The LFG monitoring results for variable locations are provided on the *Field Measurement Recording Sheets* in Appendix 7.

## 7 Report on Non-Compliance and Complaints

There were no non-compliances during the reporting period and no complaints regarding LFG were received.

## 8 Others

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### 8.1 Future Key Issues

Construction activities for next month are anticipated to include:

- permanent piles at pumping station and transformer house
- sheet piling work and temporary work for trenchless method
- trench excavation

Based on the above, on the construction programme (shown in Appendix 2) and on the review of relevant Contractor's method statements by the LGT, no significant future key issues in terms of LFG have been identified at this time.

LFG monitoring will be continued and the monitoring schedule for the next three months is shown below:

- 1 March 2006
- 1 April 2006
- 2 May 2006

### 8.2 Comments, Recommendations and Conclusions

The LFG mitigation measures adopted by the Contractor during the reporting period are considered to have been implemented in a satisfactory manner. There have been no exceedances in A/L Levels at either fixed or variable monitoring locations except for a carbon dioxide level of 1% at Manhole M1. This level is within expected norms and is not of concern. As this is a fixed location, not part of the excavation works, there are no safety-related issues. There was no need to ventilate the manhole. Location M1 is not affected by any ongoing Works and so this exceedance is not considered to be due to the construction activities on site.

The EM&A programme is considered to be performed acceptably and there are no recommendations for improvements or modifications at this time.

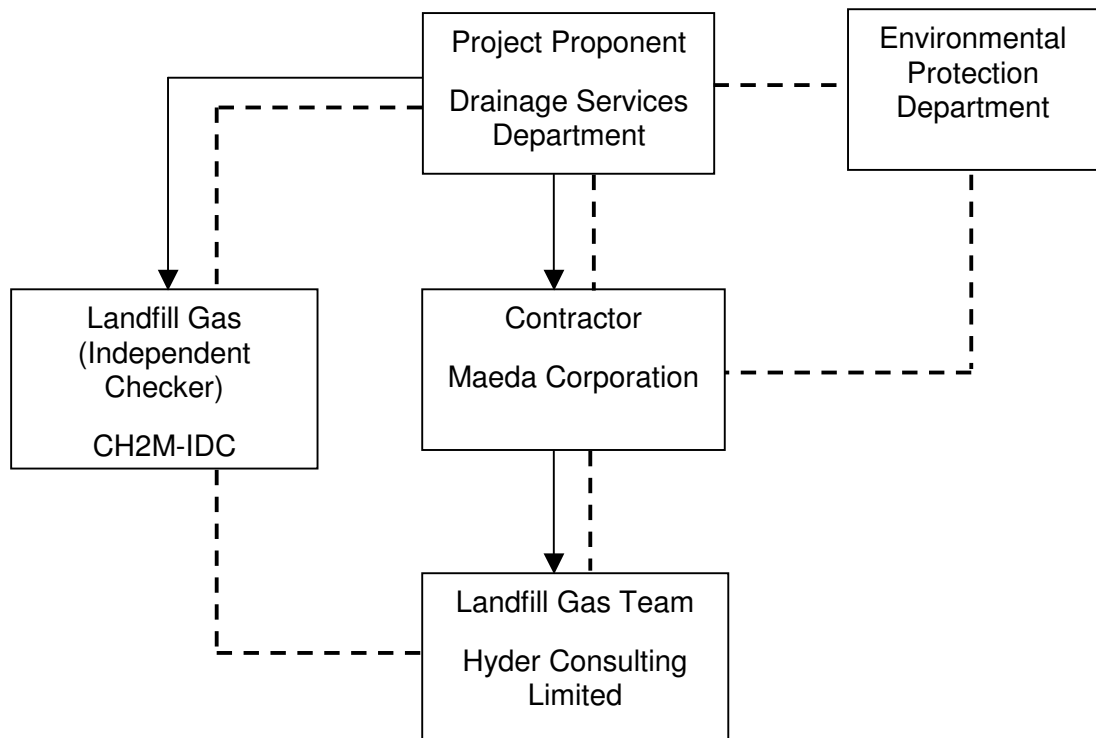
In conclusion, there have been no significant issues relating to LFG hazard during the reporting period.

# Appendix 1

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## Project Organisation

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- - - - - Line of communication

—> Line of Authority

# Appendix 2

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Construction Programme

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# Appendix 3

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Location of Works and Project Area

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# Appendix 4

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## Fixed Monitoring Locations

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# Appendix 5

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## Updated Implementation Schedule

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# Appendix 6

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## Calibration Records

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# Appendix 7

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Field Measurement Recording Sheets

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