ENVIRONMENTAL PERMIT NO. EP-286/2007/A AND EP-01/286/2007/A

EXPANSION OF HELIPORT FACILITIES AT MACAU FERRY TERMINAL

Monthly EM&A Report No. 6 (10 Sep 2008 – 9 Oct 2008)

Prepared for:
Hip Hing Construction Company Limited

Prepared by:
ENVIRON Hong Kong Limited

Date: October 2008

Reference: R0199_V1.0

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Certified by:

David Yeung
Environmental Team Leader

Verified by:

Anne F Kerr
Independent Environmental Checker

Date: 21 October 2008

Pursuant to Condition 1.9 of the Environmental Permits EP-286/2007/A and EP-01/286/2007/A, this Monthly EM&A Report No. 6 has been reviewed and certified by the Environmental Team Leader and verified by the Independent Environmental Checker.

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EXECUTIVE SUMMARY

The Expansion of Heliport Facilities at Macau Ferry Terminal (hereinafter referred to as "The Project") has been awarded to Hip Hing Construction Company Limited by Heli Express Limited. The construction works under this Contract has commenced on 10 April 2008.

ENVIRON Hong Kong Limited has been appointed by Hip Hing Construction Company Limited (hereinafter referred to as "The Contractor") as the Environmental Team (hereinafter referred to as "ET") to implement the Environmental Monitoring and Audit (hereinafter referred to as "EM&A") programme as identified in the EIA Report and the Final EM&A Manual for the Project (EIA Register No.: AEIAR-095/2006) approved by EPD on 8 February 2006.

The EM&A programme for the Project has commenced on 10 April 2008. This is the 6th Monthly EM&A report for the construction phase of the Project covering the reporting period between 10 September 2008 and 9 October 2008. This report documents the environmental monitoring and audit works, results and findings, list of activities, and environmental mitigation measures implemented in the reporting period.

As according to the EM&A Manual for the Project, no impact monitoring of air, noise and water quality is required to be carried out during the construction phase of the Project. Site inspection is to be carried out on a weekly basis to monitor proper implementation of environmental mitigation measures and to identify possible environmental discrepancies arising from the Project.

The weekly site inspections have been conducted on 11, 18, 25 September 2008 and 2, 9 October 2008 in the reporting period.

EPD inspected the site on 6 Oct 2008 and no non-compliance with environmental legislation was recorded.

Regular inspection and surveillance have been conducted by the ET during the reporting period to monitor the site effluent conditions especially at the discharge point.

Daily inspection for the discharge effluent was carried out by the Contractor and the inspection record has been checked and reviewed by the ET.

In general, the Contractor has prepared to implement all required environmental mitigation measures and has been responsive to ET's recommendations on the environmental discrepancies observed during the weekly environmental site inspections within the reporting period.

No environmental complaints, notification of summons and prosecution of the Project were received in the reporting period.

No non-compliances with regard to site environmental inspections were observed in the reporting period.

1 INTRODUCTION

1.1 Basic Project Information

1.1.1 This Project – "Expansion of Heliport Facilities at Macau Ferry Terminal" (hereinafter referred as "MFT") is categorized as a Designated Project under the EIA Ordinance. Environmental Permit is required to construct and operate the Project. An Environmental Permit (EP No. EP-286/2007) was issued to Heli Express Limited by EPD on 27 September 2007. This Contract for the construction of the project has been awarded to the Contractor – Hip Hing Construction Company Limited. A Further Environmental Permit (EP No. FEP-01/286/2007) was issued to Hip Hing Construction Company Limited by EPD on 20 February 2008. These two Environmental Permits were subsequently varied as EP-286/2007/A and EP-01/286/2007/A respectively (hereinafter referred to as "EP") and were granted by EPD on 31 March 2008.

1.1.2 In accordance with Condition 1.11 of the EP, the Contractor has notified EPD in writing the commencement date of the Project to be on 10 April 2008. According to Special Condition 2.1 of the EP and the contract requirement, the Contractor has appointed ENVIRON Hong Kong Limited as the Environmental Team (ET) of the Project to implement the EM&A programme as identified in the approved EIA report for the Project. Mott Connell Limited, on the other hand, has been appointed as the Independent Environmental Checker (IEC).

1.1.3 At present, there is an elevated landing/take-off helipad located at the rooftop of the Inner Pier of MFT which can accommodate Class 1 performance helicopters up to the 12-passenger S76C+. Civil Aviation Department (CAD) commissioned a consultancy study on Helicopter Traffic Demand and Heliport Development in Hong Kong in 2001. This study concluded that expansion works for the existing heliport at MFT should be carried out as soon as possible to meet the anticipated growth in cross-boundary helicopter services.

1.1.4 The Project therefore aims to expand the existing cross-boundary heliport at the rooftop of the MFT by adding one landing/take-off pad and a new taxiway to connect the existing and proposed new helipads connecting taxiway to the existing helipad. Upon completion of the Project, there will be two helipads operating at the MFT.

1.1.5 The development and operation of the Project comprises the following major items:

- Construction of a new elevated landing/take-off helipad of size of about 42m x 42m to the east of the existing helipad;
- Construction of a taxiway to connect the existing and proposed new helipads;
- Renovation, extension and re-location of the existing heliport supporting facilities, e.g. passenger lounge, crew office and flight control room;
- Provision of additional means of access, e.g. escalators and access to/from the helipads; and
- Expansion of the existing helipad from size of about 29.75m x 29.75m to about 32m x 32m.

1.1.6 The layout of the Project site, with the locations of the existing and proposed landing/take-off helipads and the proposed taxiway are shown in Figure 1.

1.2 Coverage of this EM&A Report

1.2.1 The EM&A programme commenced with the construction of the Project on 10 April 2008. This report is the 6th Monthly EM&A report for the construction phase of the Project covering the reporting period from 10 September 2008 to 9 October 2008 inclusive. This report documents the environmental monitoring and audit works, results and findings, list of activities, and environmental mitigation measures implemented in the reporting period.

1.3 Project Organization and Management Structure

1.3.1 The Project organization chart is presented in Appendix A. The different project parties with their contact details are tabulated below in Table 1.

Table 1 Key Personnel Contact Details of Different Project Parties

Designation	Company	Name	Telephone Number
Project Proponent	Heli Express Limited	Mr. Harris Ho	2108 9947
Project Manager	Mott Connell Limited	Mr. David Ho	2828 5865
The Contractor	Hip Hing Construction Company Limited	Mr. Simon Heo	2525 9251
Environmental Team (ET) Leader	ENVIRON Hong Kong Limited	Mr. David Yeung	3743 0717
Independent Environmental Checker (IEC)	Mott Connell Limited	Dr. Anne F Kerr	2828 5793

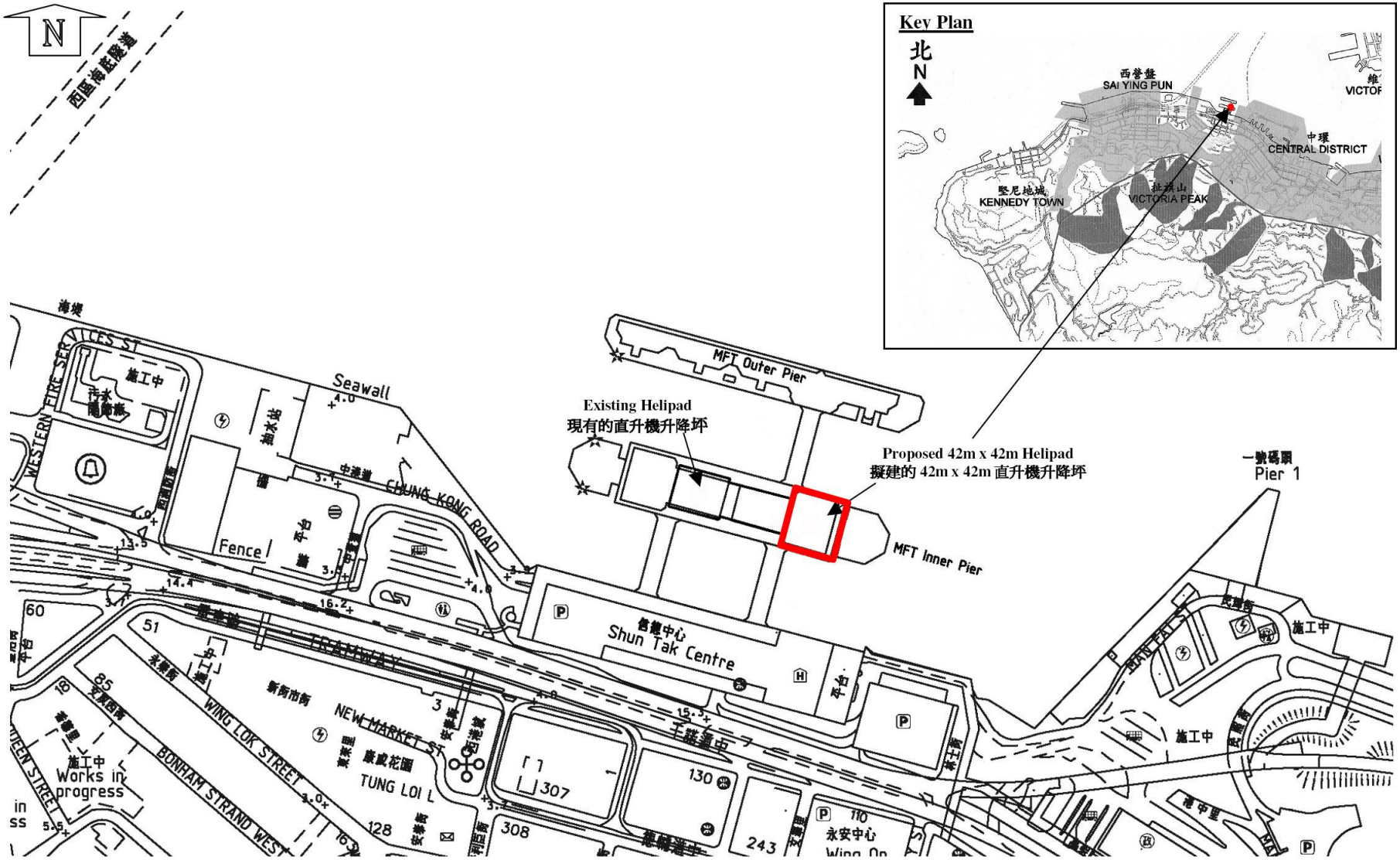


Figure:	1	ENVIRON
Title:	The Project Site Layout	Drawn by: ZL
		Checked by: CC
Project:	Expansion of Heliport Facilities at Macau Ferry Terminal	Rev.: 1.0
		Date: Jul 2008

2. ENVIRONMENTAL STATUS

2.1 Works Undertaken in the Reporting Period

2.1.1 The following construction activities have been undertaken in the reporting period:

- Structural steel erection;
- Lifting structural steel;
- Durasteel installation;
- Painting; and
- Construction of lift shaft.

2.2 Works Anticipated for the Next Reporting Period

2.2.1 The following construction activities are anticipated for the next reporting period:

- Structural steel erection;
- Lifting structural steel;
- Durasteel installation;
- Painting;
- Construction of lift shaft;
- E&M installation;
- Screeding; and
- Façade installation.

2.2.2 The tentative construction programme showing the major construction activities is given in Appendix B.

2.3 Environmental Permits and Licenses

2.3.1 A summary of all the environmental permits, licenses and/or notifications to EPD for the Project is presented in Table 2 below.

Table 2 Summary of Environmental Permits, Licenses and Notification to EPD for the Project

Permit Type	Licenses / Permit No.	Date of Issuance by EPD	Expiry Date	Concerned Location	Status
Environmental Permit	EP-286/2007/A	31 Mar 2008	N/A	-	Valid
Environmental Permit	EP-01/286/2007/A	31 Mar 2008	N/A	-	Valid
Notification pursuant to Section 3(1) of the Air Pollution Control Ordinance (APCO) (Construction Dust) Regulation	Legislative requirement	4 Feb 2008	N/A	-	Valid
Construction Noise Permit Application under Noise Control Ordinance (NCO)	CNP No. GW-RS0468-08	8 Jul 2008	10 Oct 2008	Construction site and Zone A	Valid
	CNP No. GW-RS0660-08	19 Sep 2008	10 May 2009		Effective on 11 Oct 2008
Application for Wastewater Discharge License under Water Pollution Control Ordinance (WPCO)	EP880/W10/XX 0318	8 Jul 2008	31 Jul 2013	Within the site areas of the Project	Valid
Register as a Waste Producer under Waste Disposal Ordinance	WPN: 5213-121-H2652-83	11 Jun 2008	N/A	Within the site areas of the Project	Valid

2.4 Environmental Submissions

2.4.1 A summary of the environmental related document submission made for the Project in the reporting period is presented in Table 3 below.

Table 3 Summary of Environmental Related Document Submission for the Project

Date	Issue	EP/EIA Condition	Certified by ETL	Verified by IEC	Status
10 Mar 2008	Commencement of Construction of the Project	Condition 1.11	-	-	-
10 Mar 2008	Submission of Management Organization	Condition 2.3	-	-	-
1 Apr 2008	Submission of Complaint Investigation Procedure	Condition 3.2	N/A	N/A	Valid
4 Aug 2008	Submission of Quarterly EM&A Summary Report	-	Yes	Yes	Quarterly Submission
23 Sep 2008	Submission of Monthly EM&A Report	Condition 3.4	Yes	Yes	Monthly Submission

2.5 Environmental Meetings

2.5.1 No environmental meeting among different project parties has been held in the reporting period.

3. EM&A REQUIREMENTS

3.1 Summary of Construction Phase EM&A Requirements

3.1.1 The EM&A programme requires environmental audit for air quality, noise, water quality and waste management during construction phase of the Project as specified in the Final EM&A Manual. The EM&A requirements are presented below.

Air Quality

3.1.2 Site audits are required to ensure that the dust control measures presented in the EIA Report are properly implemented. Environmental audit of dust generation from the site should 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. The objectives of the site audit of air quality impacts shall be:

- to identify the extent of any construction dust impacts on sensitive receivers;
- to determine the effectiveness of mitigation measures to control fugitive dust emission from activities during construction phase;
- to audit the compliance of the Contractor with regard to dust control and contract conditions;
- to recommend further mitigation measures if found to be necessary.

3.1.3 The air quality mitigation measures recommended in the EIA report and stipulated in the Air Pollution Control (Construction Dust) Regulation should be implemented to control potential dust emission from the construction site. The major dust control measures are listed below:

- every stock of more than 20 bags of cement should be covered entirely by impervious sheeting and placed in an area sheltered on the top and the 3 sides;
- all dusty materials should be sprayed with water prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet;
- the load of dusty materials leaving the construction site should be covered entirely by clean impervious sheeting to ensure no leakage of the dusty materials;
- the contractor shall not burn debris or other materials on the work areas.

Construction Noise

3.1.4 In accordance with the EIA of the Project, insignificant construction noise impact would be anticipated, therefore noise monitoring during construction phase of the Project is not required. The only construction activities for the Project which could be a potential source of construction noise would be:

- Piling for support the steel framework structure for proposed new helipad;

- Reinforcement works for the proposed new helipad and the minor expansion of existing helipad.

3.1.5 In view of the limited scale of the project works and screening effect from Shun Tak Centre, significant construction noise impact on the nearest NSRs, would not be expected. However, environmental site audit was recommended to monitor the implementation of good site practices during construction phase of the Project.

3.1.6 As detailed in the EIA report, the following mitigation measures and site practices are recommended during the construction phase of the Project.

- Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme;
- Silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction programme;
- Mobile plant, if any, should be sited as far away from NSRs as possible;
- Machines and plant that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum;
- Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs.

Water Quality

3.1.7 The construction phase water quality impact was anticipated to be temporary and localized during construction, no unacceptable residual water quality impacts were expected during the construction phase of the Project, provided that all the mitigation measures recommended in the EIA and Final EM&A Manual are properly implemented.

3.1.8 According to the Final EM&A Manual, implementation of regular site audits was recommended to ensure that the recommended mitigation measures are properly implemented during the construction phase of the Project. It also helps to provide an effective control of any malpractices and therefore achieve continual improvement of the environmental performance on site. Site audits shall include site inspections and compliance audits.

3.1.9 Site inspections shall be carried out by the ET and shall be based on the mitigation measures for water pollution control recommended in the Final EM&A Manual and presented in Section below. In the event that the recommended mitigation measures are not fully or properly implemented, deficiency shall be recorded and reported to the site management. Suitable actions are to be carried out to:

- Investigate the problems and the causes;
- Issue action notes to the Contractor who is responsible for the works;
- Implement remedial and corrective actions immediately;

- Re-inspect the site conditions upon completion of the remedial and corrective actions;
- Record the event and discuss with the Contractor for preventive actions.

3.1.10 Compliance audit by means of monitoring of the quality of effluent from the Works Areas, if any, is required during the construction phase of the Project. The monitoring shall be carried out at the pre-determined discharge point. Compliance audits are to be undertaken to ensure that a valid discharge license has been issued by EPD prior to any discharge of effluent from the Project site. The monitoring frequency and parameters specified in the discharge license shall be fully considered during the monitoring. All monitoring requirements shall be approved by EPD. The audit results reflect whether the effluent quality is in compliance with the discharge license requirements. The audit results are summarized in Appendix F. In case of non-compliance, suitable actions shall be undertaken to:

- Notify the site management for the non-compliance;
- Identify the sources of pollution;
- Check the implementation status of the recommended mitigation measures;
- Investigate the operating conditions of the on-site treatment systems;
- Implement corrective and remedial actions to improve the effluent quality;
- Increase monitoring frequency until the effluent quality is in compliance with the discharge licence requirements;
- Record the non-compliance and propose preventive measures.

3.1.11 Mitigation measures for water quality control during construction phase of the Project were recommended in the EIA report to minimize the adverse impacts on water quality arising from the construction works of the Project. The Contractor is responsible for the design and implementation of these mitigation measures.

3.1.12 The water quality control and mitigation measures recommended in the EIA report are presented below:

<u>Construction Site Runoff and General Construction Activities</u>

3.1.13 The practices outlined in *ProPECC PN 1/94 Construction Site Drainage* should be adopted where applicable, to minimise the potential water quality impacts from construction site runoff and various construction activities.

3.1.14 There is a need to apply to EPD for a discharge licence for discharging effluent from the construction site, if any. The discharge quality is required to meet the requirements specified in the discharge licence. Any wastewater generated from the works areas should be treated so that it satisfies all the standards listed in the *Technical Memorandum on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters* (TM-DSS).

3.1.15 Good site practices should be adopted to collect the rubbish and litter on the construction sites so as to prevent the rubbish and litter from spreading from the site area. It is recommended to clean the construction sites on a regular basis.

Sewage from Workforce

3.1.16 The presence of construction workers generates sewage. The construction workers can make use of the existing toilet facilities within the MFT, as necessary. If required, sufficient portable chemical toilets should be provided in the works areas, and a licensed collector should be deployed for appropriate disposal and maintenance of the toilets on a regular basis.

3.1.17 Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the nearby environment during the construction phase of the Project.

Accidental Spillage of Chemicals

3.1.18 Any service shop and maintenance facilities should be located within a bunded area, and sumps and oil interceptors should be provided. Maintenance of equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.

Waste Management

3.1.19 Waste materials generated during construction activities are recommended to be audited at regular intervals to ensure that proper storage, transportation and disposal practices are being implemented. The monitoring of waste management practices would ensure that solid wastes generated during construction are not disposed of into the nearby marine waters. The Contractor shall be responsible for the implementation of any mitigation measures to minimize waste or redress problems arising from the waste materials.

3.1.20 Mitigation measures for waste management recommended in the EIA report are summarized below. With the appropriate handling, storage and removal of waste during the construction works as defined below, the potential to cause adverse environmental impacts could be minimized. During the site inspections, the ET shall pay special attention to the issues relating to waste management and check whether the Contractor has implemented the recommended good site practices and other mitigation measures.

Good Site Practices

3.1.21 Recommendations for good site practices during the construction activities include:

- nomination of an approved personnel, such as a site manager, to be responsible for the implementation of good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site;

- training of site personnel in site cleanliness, appropriate waste management procedures and concepts of waste reduction, reuse and recycling;
- provision of sufficient waste disposal points and regular collection for disposal;
- appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers;
- regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors.

General Refuse

3.1.22 General refuse should be stored in enclosed bins or compaction units. A reputable waste collector should be employed by the contractor to remove general refuse from the site. An enclosed and covered area is preferred to reduce the occurrence of 'wind blown' light material.

Chemical Wastes

3.1.23 If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a Chemical Waste Producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations, in particular the Waste Disposal (Chemical Waste) (General) Regulation, should be observed and complied with for control of chemical wastes. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the Chemical Waste Treatment Centre at Tsing Yi, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.

3.1.24 Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows:

- Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport;
- Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents;
- Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.

3.2 Implementation of Environmental Mitigation Measures

3.2.1 The Contractor is required to implement the mitigation measures listed in the latest EP, EIA Report and Final EM&A Manual. During regular site inspections, the Contractor's implementation of the mitigation measures is to be reviewed and inspected. A copy of the implementation schedule of recommended mitigation measures are presented in Appendix C.

4. MONITORING AND AUDIT RESULTS

4.1 Impact Monitoring and Audit in the Reporting Period

4.1.1 Regular site inspections were carried out on 11, 18, 25 September 2008 and 2, 9 October 2008 in the reporting period to monitor proper implementation of environmental mitigation measures and to identify possible environmental discrepancies arising from the Project. The joint site inspection with the representatives IEC, Engineer and Contractor was carried out on 18 September 2008.

4.1.2 No impact monitoring for air quality and noise were conducted as they are not required during the construction phase of the project in accordance with the Final EM&A Manual.

4.1.3 Regular inspection and surveillance have been conducted on site by the ET during the reporting period to monitor the site effluent conditions especially at the discharge point. The effluent was observed in good quality prior to discharge into the drainage system. As part of the compliance audit, self-monitoring would be conducted by collecting effluent samples at the site's discharge point on a quarterly basis. The effluent samples would be sent to a HOKLAS certified laboratory to analyse the effluent discharge qualities in terms of SS, COD and pH to ensure that they are in compliance with the discharge limits as specified in the Wastewater Discharge Licence (No. EP880/W10/XX0318). In addition, the Contractor had conducted daily inspection and pH check on the discharge effluent to ensure the discharge effluent is of good quality. Inspection records for the effluent discharge are presented in Appendix F.

4.1.4 The next sampling for the discharge effluent will be scheduled in November 2008.

4.2 Waste Management

4.2.1 The quantity of waste generated in September 2008 is summarized in Table 4 below. The summary of waste flow table in September 2008 is given in Appendix D.

Table 4 Summary of Waste Generated in September 2008

Waste Generated	Quantity
Inert C&D Material Generated to Public Fill (m^3)	0
Metals Generated (kg)	0
Chemical Waste (kg)	0
General Refuse (m^3)	3.0
Paper / Cardboard Packaging (kg)	0

4.2.2 To promote a green construction culture, the Contractor encouraged the supplier to provide the collection of the used paint buckets for recycling as therefore no chemical waste was disposed of during the reporting period.

4.3 Summary of Environmental Complaints, Notifications of Summons and Prosecutions

4.3.1 A Community Liaison Office was set up and operated by the Contractor throughout the construction of the Project to receive and respond to complaints or enquiries on environmental nuisances or pollution caused by the Project and to implement remedial mitigation measures. All environmental complaints shall be referred to the ET leader and complaint investigation procedures shall be undertaken by the ET leader immediately upon receipt of environmental complaints. The complaint investigation procedures, complaint log, flow diagram and details of the Community Liaison Office are shown in Appendix E.

4.3.2 No environmental complaints were received in the reporting period. Furthermore, no notifications of summons and successful prosecution arising from the Project were received in the reporting period. Table 5 below presents the statistical summary of environmental complaints, notifications of summons and successful prosecution since the commencement of the Project.

Table 5 Statistical Summary of Environmental Complaints, Notifications of Summons and Successful Prosecution

Reporting Period	Complaints Logged		Notification of Summons		Successful Prosecution	
	Number	Cumulative	Number	Cumulative	Number	Cumulative
10 Apr 2008 to 9 Sep 2008	0	0	0	0	0	0
10 Sep 2008 to 9 Oct 2008	0	0	0	0	0	0

4.4 Environmental Exceedances / Non-Compliances

4.4.1 No impact monitoring for air quality, noise and water quality was required during the construction phase of the Project in accordance with the EM&A Manual, environmental exceedances on air quality, noise and water quality during the construction phase of the Project are not applicable.

4.4.2 No non-compliances were observed during the weekly site inspections in the reporting period. The major findings from the site inspections were summarized in Table 6 below.

Table 6 Summary of the Findings from the Environmental Site Inspections

Date of Inspection	ET Checklist Reference	Observations and Recommendations	Status
11 Sep 2008	HHCHELIPEM00-110908	No environmental impact was observed during the site inspection.	-
18 Sep 2008	HHCHELIPEM00-180908	The discharge effluent was observed clean and the pH value checked within discharge limit.	Regular check
25 Sep 2008	HHCHELIPEM00-250908	Some cans were observed filled with water and discarded on the ground. Rubbish bin was overloaded and the general refuses were scattered on the ground. The Contractor was requested to rectify the situation immediately and reminded to dispose of regularly on site.	Follow-up action to be taken by the Contractor
2 Oct 2008	HHCHELIPEM00-021008	The discarded cans were removed off-site by the Contractor. Rubbish bin was properly covered at site and no general refuse was observed on the ground. Paint spraying work was carrying out during the site inspection which entirely enclosed by the impervious sheeting.	Rectified
9 Oct 2008	HHCHELIPEM00-091008	The Contractor informed that EPD inspected the site on 6-Oct-2008. The site was observed clean and tidy during the site inspection. Effluent was treated on-site prior to discharge the drainage system.	-

5. FUTURE KEY ISSUES

5.1 Key Issues to be Considered for the Coming Month

5.1.1 The following construction activities have been undertaken in the reporting period:

- Structural steel erection;
- Lifting structural steel;
- Durasteel installion;
- Painting; and
- Construction of lift shaft.

5.1.2 The key issues to be considered for the coming month include:

- Potential noise emission from structural steel work and durasteel installation work;
- Handling of the painting materials; and
- Spray drift during the paint spraying work.

5.2 Construction Programme for Upcoming Periods

5.2.1 The tentative construction programme for the upcoming periods of the Project is provided in Appendix B. ET will follow the Contractor's proposed construction programme to carry out waste management audit, identify major construction works, key environmental issues and suggest mitigation measures to be implemented to ensure the compliance of environmental performance and to monitor the proper implementation of all necessary environmental mitigation measures.

6. CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

6.1.1 The EM&A programme of the Project commenced on 10 April 2008.

6.1.2 Five weekly environmental site inspections were carried out in the reporting period. Recommendations on environmental remedial actions were given to the Contractor to rectify the environmental deficiencies observed during the site inspection.

6.1.3 EPD inspected the site on 6 Oct 2008 and no non-compliance with environmental legislation was recorded.

6.1.4 Regular inspection and surveillance have been conducted by the ET during the reporting period to monitor the site effluent conditions especially at the discharge point.

6.1.5 Daily inspection for the discharge effluent was carried out by the Contractor and the inspection record has been checked and reviewed by the ET.

6.1.6 All the monitoring and audit results, if any, were checked and reviewed regularly to ensure the compliance of environmental performance and proper implementation of all necessary environmental mitigation measures.

6.1.7 No environmental complaints, notification of summons and successful prosecution arising from the Project were received in the reporting period.

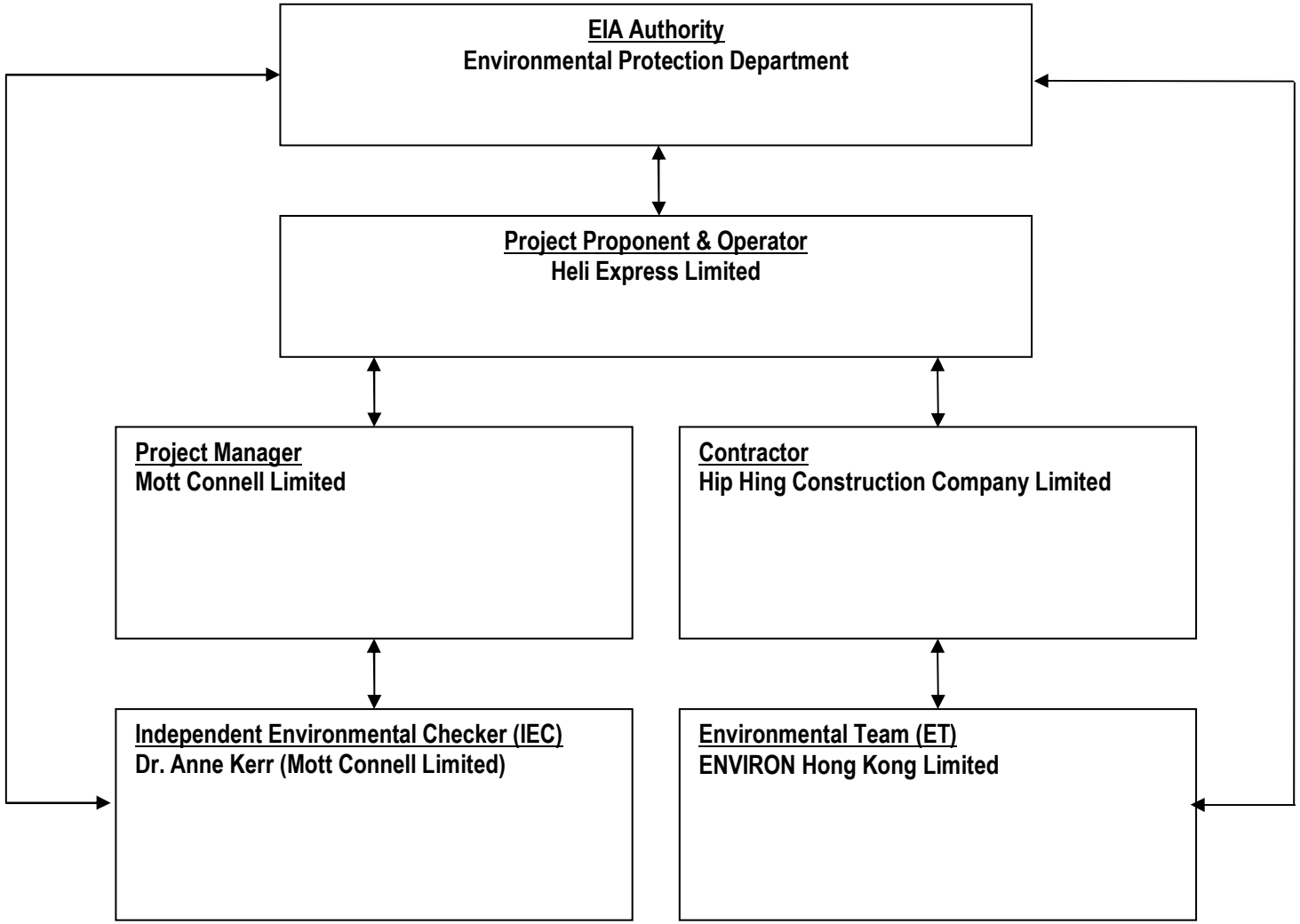
6.2 Recommendations

6.2.1 The Contractor was recommended to implement, as far as practicable, the relevant environmental mitigation measures as stated in the EP, EM&A manual and EIA Report to prevent any non-compliance throughout the construction period and to provide construction programme and waste flow table for at least the next three months.

APPENDIX A

Project Organization Chart

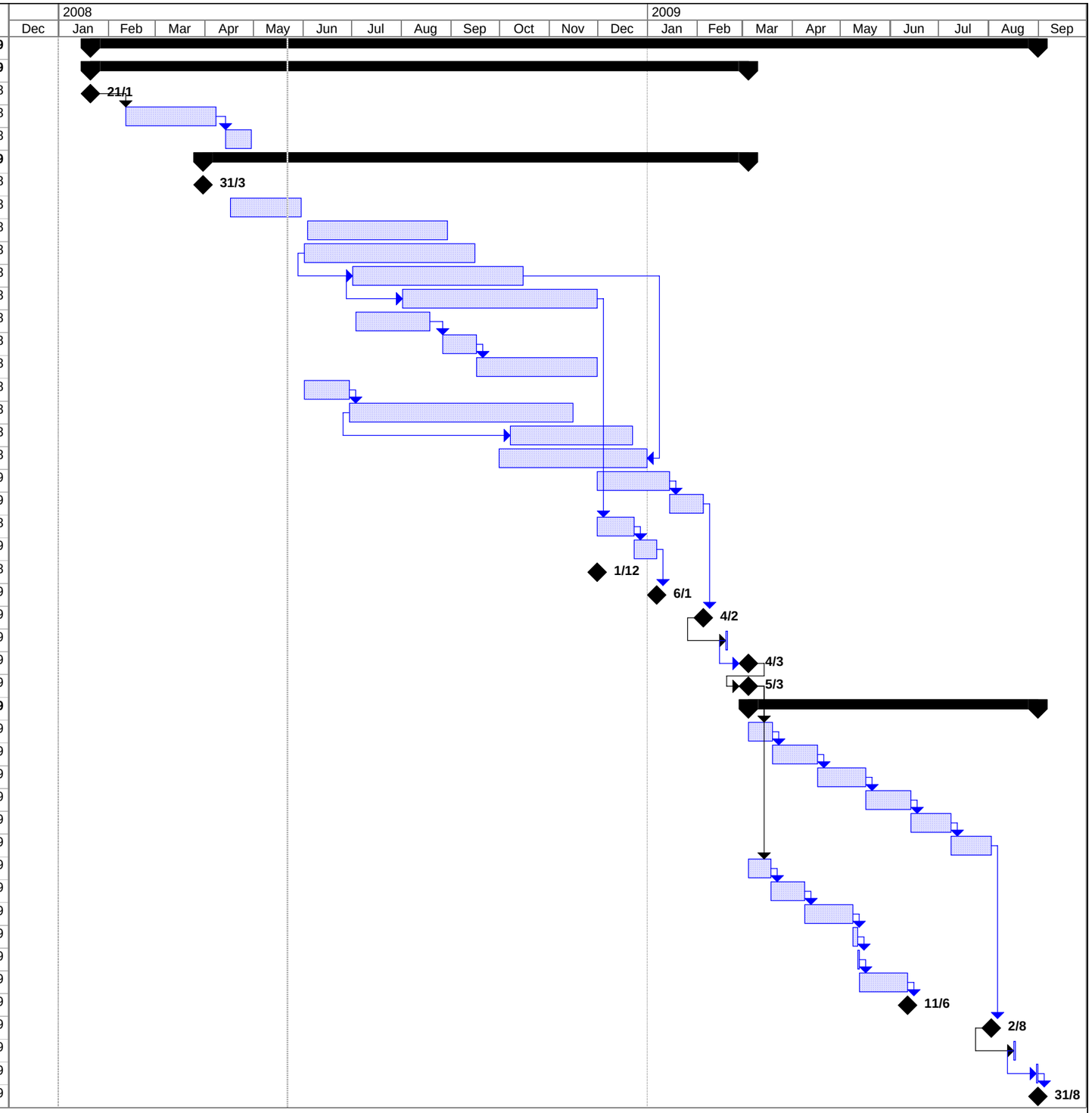
Environmental Permit No. EP-286/2007/A and EP-01/286/2007/A - Expansion of Heliport Facilities at Macau Ferry Terminal



APPENDIX B

Tentative Construction Programme of the Project

ID	Task Name	Duration	Start	Finish
1	**Contract Duration**	**589 days**	**Mon 21/1/08**	**Mon 31/8/09**
2	**Phase 1 Work**	**409 days**	**Mon 21/1/08**	**Thu 5/3/09**
3	Contract Commencement	0 days	Mon 21/1/08	Mon 21/1/08
4	Section A1 Work	56 days	Tue 12/2/08	Mon 7/4/08
5	Section A2 Work	16 days	Mon 14/4/08	Tue 29/4/08
6	**Section A3 Work**	**339 days**	**Mon 31/3/08**	**Thu 5/3/09**
7	Issue of Construction Dwgs	0 days	Mon 31/3/08	Mon 31/3/08
8	Shop Dwg Preparation	44 days	Thu 17/4/08	Fri 30/5/08
9	Off Site Fabrication	87 days	Wed 4/6/08	Fri 29/8/08
10	Structural Frame Erection	106 days	Mon 2/6/08	Mon 15/9/08
11	Durasteel slab installation	106 days	Wed 2/7/08	Wed 15/10/08
12	E&M 1st Fixing	121 days	Sat 2/8/08	Sun 30/11/08
13	BD submission for Curtain Wall/Al. Cladding	46 days	Fri 4/7/08	Mon 18/8/08
14	Consent for Curtain Wall	21 days	Wed 27/8/08	Tue 16/9/08
15	Curtain Wall/Al Cladding Inst.	75 days	Wed 17/9/08	Sun 30/11/08
16	BD amendment	28 days	Mon 2/6/08	Sun 29/6/08
17	Fabrication	139 days	Mon 30/6/08	Sat 15/11/08
18	Heilpad Installation	76 days	Wed 8/10/08	Mon 22/12/08
19	Interior Fitting Out	92 days	Wed 1/10/08	Wed 31/12/08
20	Lift and Escalators Inst.	45 days	Mon 1/12/08	Wed 14/1/09
21	Form 5 & Form 6 Inst.	21 days	Thu 15/1/09	Wed 4/2/09
22	E&M 2nd fixing	23 days	Mon 1/12/08	Tue 23/12/08
23	T & C	14 days	Wed 24/12/08	Tue 6/1/09
24	Form FS314a submission	0 days	Mon 1/12/08	Mon 1/12/08
25	Form FS251 submission	0 days	Tue 6/1/09	Tue 6/1/09
26	BA14 Submission	0 days	Wed 4/2/09	Wed 4/2/09
27	BD Inspection	1 day	Thu 19/2/09	Thu 19/2/09
28	Issue Acknowledge Letter	0 days	Wed 4/3/09	Wed 4/3/09
29	Completion of Phase 1	0 days	Thu 5/3/09	Thu 5/3/09
30	**Phase 2 Work**	**180 days**	**Thu 5/3/09**	**Mon 31/8/09**
31	Precautionary Measures	15 days	Thu 5/3/09	Thu 19/3/09
32	Consent for Demolition	28 days	Fri 20/3/09	Thu 16/4/09
33	Demolition of Existing Helipad	30 days	Fri 17/4/09	Sat 16/5/09
34	Consent for Erection	28 days	Sun 17/5/09	Sat 13/6/09
35	Structural Frame Erection	25 days	Sun 14/6/09	Wed 8/7/09
36	New Helipad Installation	25 days	Thu 9/7/09	Sun 2/8/09
37	Demolish of Existing lounge & office	14 days	Thu 5/3/09	Wed 18/3/09
38	Structural Strengthening Work	21 days	Thu 19/3/09	Wed 8/4/09
39	TX Room Installation	30 days	Thu 9/4/09	Fri 8/5/09
40	HEC Inspection	3 days	Sat 9/5/09	Mon 11/5/09
41	Delivery Transformer	1 day	Tue 12/5/09	Tue 12/5/09
42	HEC Installation	30 days	Wed 13/5/09	Thu 11/6/09
43	Energization	0 days	Thu 11/6/09	Thu 11/6/09
44	BA14 Submission	0 days	Sun 2/8/09	Sun 2/8/09
45	BD Inspection	1 day	Mon 17/8/09	Mon 17/8/09
46	Issue Acknowledge Letter	1 day	Mon 31/8/09	Mon 31/8/09
47	Completion of Phase 2	0 days	Mon 31/8/09	Mon 31/8/09



Project: Outline Programme
Date: Thu 22/5/08

Task | Progress | Summary | External Tasks | Deadline
Split | Milestone | Project Summary | External Milestone

APPENDIX C

Implementation Schedule of Recommended Mitigation Measures

Table C.1 Implementation Schedule for Noise Control

EIA Ref #	Environmental Protection Measures	Location / Timing	Implementation Agent	Implementation Stages *			Relevant Legislation and Guidelines
				D	C	O	
Construction Phase							
3.78	The following good site practices shall be implemented: • Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme • Silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction programme • Mobile plant, if any, should be sited as far away from NSRs as possible • Machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum • Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs • Material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities.	Work site / during construction period	Contractor		√		Noise Control Ordinance
Operation Phase							
3.83	The maximum allowable flight number to be operated at both existing and proposed helipad should be controlled so as to ensure same noise performance found in the EIA Report.	Operation phase	Heliport/ Helicopter Operator			√	EIAO-TM
3.82	The helicopter type of S76C+ or other helicopter types with lower noise emission level than S76C+ should be used at proposed helipad.	Operation phase	Heliport/ Helicopter Operator			√	EIAO-TM
3.88	Helicopter noise monitoring is recommended at three Noise Sensitive Receivers during the first six years of operation of the new proposed helipad. The detail EM&A requirement for noise monitoring refer to standalone EM&A Manual.	First six years of operation	Heliport/ Helicopter Operator			√	EIAO-TM

All recommendations and requirements resulted during the course of EIA / EA Process, including ACE and / or accepted public comment to the proposed Project.
* D = Design, C = Construction and O = Operation

Table C.2 Implementation Schedule for Water Quality Control

EIA Ref #	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages *			Relevant Legislation and Guidelines
				D	C	O	
Construction Phase							
S4.18 – S4.20	*Construction Site Runoff and General Construction Activities* • The practices outlined in ProPECC PN 1/94 Construction Site Drainage should be adopted where applicable, to minimise the potential water quality impacts from construction site runoff and various construction activities. • There is a need to apply to EPD for a discharge licence for discharging effluent from the construction site, if any. The discharge quality is required to meet the requirements specified in the discharge licence. Any wastewater generated from the works areas should be treated so that it satisfies all the standards listed in the TM-DSS. It is anticipated that the wastewater generated from the works areas, if any, would be of small quantity. • Good site practices should be adopted to collect the rubbish and litter on the construction sites so as to prevent the rubbish and litter from spreading from the site area. It is recommended to clean the construction sites on a regular basis. • Scavenging service for collecting any materials/ waste loss from the site into the sea should be provided on a need basis.	Work site / during construction period	Contractor		√		ProPECC PN 1/94; WPCO

\# All recommendations and requirements resulted during the course of EIA / EA Process, including ACE and / or accepted public comment to the proposed Project.
* D = Design, C = Construction and O = Operation

EIA Ref #	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages *			Relevant Legislation and Guidelines
				D	C	O	
S4.21 – S4.22	*Sewage from Workforce* • The presence of construction workers generates sewage. The construction workers can make use of the existing toilet facilities within the MFT, as necessary. If required, sufficient portable chemical toilets should be provided in the works areas, and a licensed collector should be deployed for appropriate disposal and maintenance of the toilets on a regular basis. • Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the nearby environment during the construction phase of the Project. Regular environmental audit on the construction site can provide an effective control of any malpractices and can achieve continual improvement of environmental performance on site. It is anticipated that sewage generation during the construction phase of the Project would not cause water pollution problem after undertaking all required measures.	Work site / during construction period	Contractor		√		ProPECC PN 1/94; WPCO
S4.23	*Accidental Spillage of Chemicals* Any service shop and maintenance facilities should be located within a bunded area, and sumps and oil interceptors should be provided. Maintenance of equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	Work site / during construction period	Contractor		√		WPCO
Operation Phase							
S4.24	*Handling of Site Drainage and Effluent* For operational stage effluent handling, treatment and disposal, the practices outlined in ProPECC PN 5/93 should be adopted where applicable.	Project site/ during design stage and operational phase	Project proponent	√		√	WPCO, Building Regulations, Waste Disposal Ordinance

All recommendations and requirements resulted during the course of EIA / EA Process, including ACE and / or accepted public comment to the proposed Project.
* D = Design, C = Construction and O = Operation

Table C.3 Implementation Schedule for Air Quality Control

EIA Ref #	Environmental Protection Measures	Location / Timing	Implementation Agent	Implementation Stages *			Relevant Legislation and Guidelines
				D	C	O	
Construction Phase							
S5.26	Dust mitigation measures stipulated in the *Air Pollution Control (Construction Dust) Regulation* shall be incorporated to control dust emission. Major control measures relevant to this Project are listed below: • skip hoist for material transport should be totally enclosed by impervious sheeting; • any furnace, boiler or other plant or equipment or use any fuel that might in any circumstance produce smoker should not be installed; • the contractor shall not burn debris or other materials on the work areas.	Work site / during construction period	Contractor		√		Air Pollution Control (Construction Dust) Regulation
Operation Phase							
N/A	N/A	N/A	N/A				

All recommendations and requirements resulted during the course of EIA / EA Process, including ACE and / or accepted public comment to the proposed Project.
* D = Design, C = Construction and O = Operation
N/A Not applicable

Table C.4 Implementation Schedule for Waste Management

EIA Ref #	Environmental Protection Measures/Mitigation Measures	Location/ Timing	Implementation Agent	Implementation Stages *				Relevant Legislation and Guidelines
				Des	C	O	Dec	
S6.20	*Good Site Practices* Good site practices during the construction activities include: • Nomination of an approved personnel, such as a site manager, to be responsible for the implementation of good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site. • Training of site personnel in site cleanliness, appropriate waste management procedures and concepts of waste reduction, reuse and recycling. • Provision of sufficient waste disposal points and regular collection for disposal. • Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers. • Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors. • A Waste Management Plan shall be prepared in accordance with ETWB TCW No. 15/2003 and submitted to the Engineer for approval.	Work site / During the construction period	Contractor		√			Waste Disposal Ordinance (Cap.54), ETWB TCW No. 15/2003
S6.21	*General Refuse* General refuse shall be stored in enclosed bins or compaction units. A reputable waste collector shall be employed by the contractor to remove general refuse from the site. An enclosed and covered area is preferred to reduce the occurrence of 'wind blown' light material.	Work site / During the construction period	Contractor		√			Public Health and Municipal Services Ordinance (Cap. 132)
S6.22 – S6.23	*Chemical Wastes* If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a Chemical Waste Producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations, in particular the Waste Disposal (Chemical Waste) (General) Regulation, should be observed and complied with for control of chemical wastes. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either	Work site / During the construction period	Contractor		√			

EIA Ref #	Environmental Protection Measures/Mitigation Measures	Location/ Timing	Implementation Agent	Implementation Stages *				Relevant Legislation and Guidelines
				Des	C	O	Dec	
	the Chemical Waste Treatment Centre at Tsing Yi, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation. Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows: • Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport. • Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents. • Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.							

All recommendations and requirements resulted during the course of EIA / EA Process, including ACE and / or accepted public comment to the proposed Project.
* Des = Design, C = Construction, O = Operation and Dec = Decommissioning

APPENDIX D

Summary of Waste Flow Table

Contract Title: New heliport at Hong Kong – Macau Ferry Terminal

Appendix D - Monthly Summary Waste Flow Table for 2008

Month	Actual Quantities of Inert C&D Materials Generated Monthly										Actual Quantities of C&D Wastes Generated Monthly									
	Total Quantity Generated		Broken Concrete (see Note 3)		Reused in the Contract		Reused in other Projects		Disposed as Public Fill		Metals		Paper/ cardboard packaging		Plastics (see Note 2)		Chemical Waste		Others, e.g. general refuse	
	(in '000m^3)		(in '000m^3)		(in '000m^3)		(in '000m^3)		(in '000m^3)		(in '000 kg)		(in '000kg)		(in '000kg)		(in '000kg)		(in '000m^3)	
	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.
Jan																				
Feb																				
Mar																				
Apr	0.0070	0.0057	0	0	0	0	0	0	0.0070	0.0057	0.8	0.91	0	0	0	0	0	0	0.0030	0.0020
May	0.0070	0.0038	0	0	0	0	0	0	0.0070	0.0038	0.8	0	0	0	0	0	0	0	0.0030	0.0020
June	0.0070	0.0036	0	0	0	0	0	0	0.0070	0.0036	0	3.35	0	0	0	0	0	0	0.0030	0.0025
Sub-total	0.0210	0.0131	0	0	0	0	0	0	0.0210	0.0131	1.6	4.26	0	0	0	0	0	0	0.0090	0.0065
July	0.0040	0.0105	0	0	0	0	0	0	0.0040	0.0105	2.0	0	0	0	0	0	0	0	0.0030	0.0030
Aug	0.0070	0.0026	0	0	0	0	0	0	0.0070	0.0026	1.0	0	0	0	0	0	0	0	0.0030	0.0030
Sept	0.0040	0.0000	0	0	0	0	0	0	0.0040	0.0000	1.0	0	0	0	0	0	0	0	0.0030	0.0030
Oct	0.0020		0		0		0		0.0020		0		0		0		0		0.0030	
Nov																				
Dec																				
Total	0.0380	0.0262	0	0	0	0	0	0	0.0380	0.0262	5.6	4.26	0	0	0	0	0	0	0.021	0.0155

Notes:

1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
2) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material
3) Broken concrete for recycling into aggregates

APPENDIX E

Complaint Investigation Procedures, Complaint Log, Flow Diagram and Details of Community Liaison Office

Complaint Investigation Procedures

A Community Liaison Office shall be set up and operated throughout the construction of the Project to receive and respond to complaints or enquires on environmental nuisances or pollution caused by the Project and to implement remedial mitigation measures.

All complaints should be referred to the ET Leader for action. The ET Leader shall undertake the following procedures upon receipt of any complaint:

(i) log complaint and date of receipt onto the complaint database and inform the IC(E) immediately;
(ii) investigate the complaint to determine its validity, and assess whether the source of the problem is due to works activities;
(iii) identify mitigation measures in consultation with the IC(E) if a complaint is valid and due to works;
(iv) advise the Contractor if mitigation measures are required;
(v) review the Contractor's response to identified mitigation measures, and the updated situation;
(vi) if the complaint is transferred from the EPD, submit interim report to the EPD on status of the complaint investigation and follow-up action within the time frame assigned by the EPD;
(vii) undertake additional monitoring and audit to verify the situation if necessary, and review that circumstances leading to the complaint do not recur;
(viii) report investigation results and subsequent actions to complainant (if the source of complaint is transferred from EPD, the results should be reported within the timeframe assigned by the EPD);
(ix) record the complaint, investigation, the subsequent actions and the results in the monthly EM&A reports.

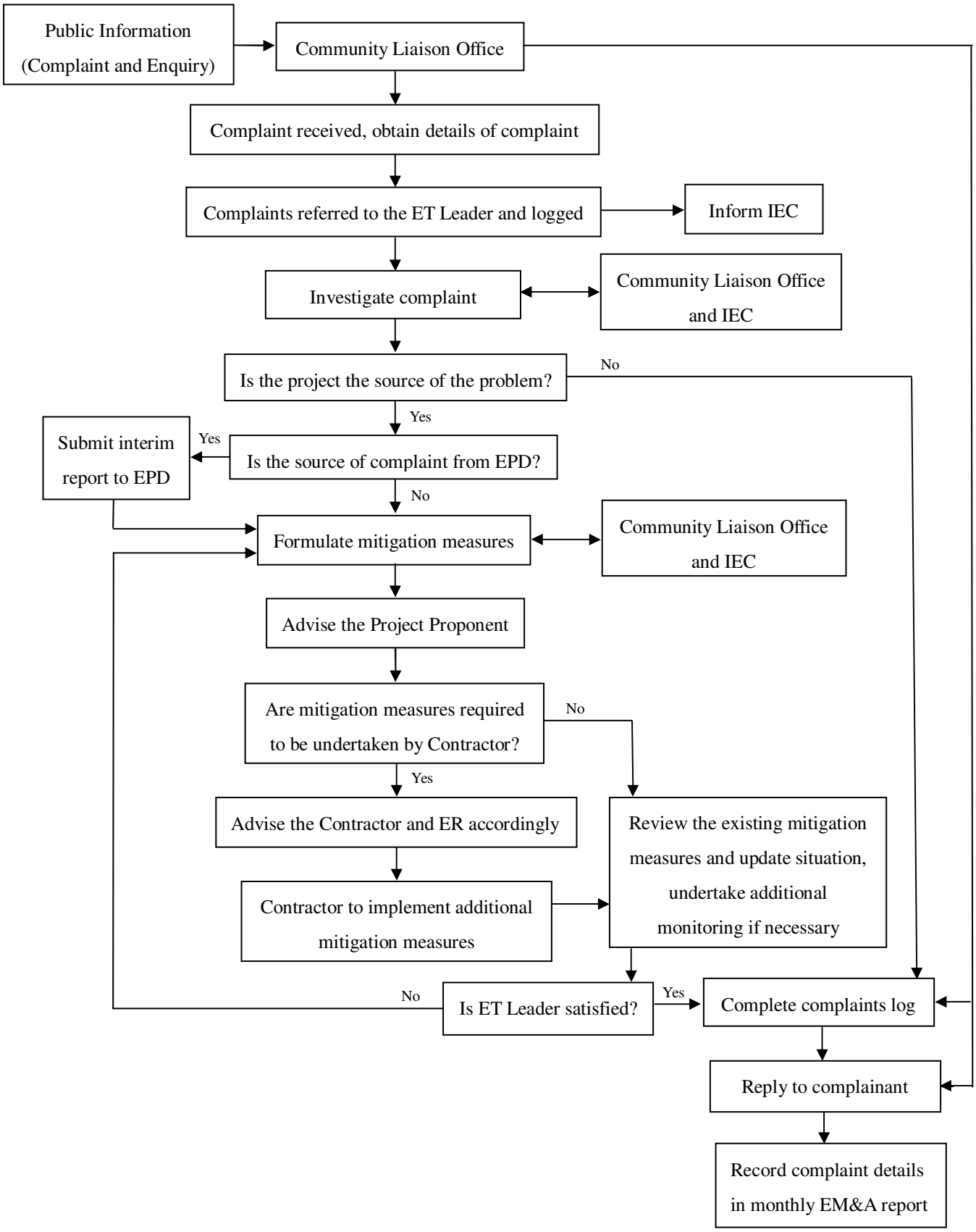
During the complaint investigation work, the Contractor, ER and Community Liaison Office shall cooperate with the ET Leader in providing all the necessary information and assistance for completion of the investigation. If mitigation measures are identified in the investigation, the Contractor shall promptly carry out the mitigation. The ER shall ensure that the measures have been carried out by the Contractor.

After the complaint is settled, the Community Liaison Office should respond to the complainant and close the complaint.

A complaint log form is shown in Appendix A while an environmental complaint flow diagram is shown in Figure E1. Details of the Community Liaison Office is shown in Figure E2.

COMPLAINT LOG

Log Ref.	Location	Received Date	Details of Complaint	Investigation / Mitigation Action	Status



Appendix: E1	ENVIRON
Title: Environmental Complaint Flow Diagram	Drawn by: JL Checked by: CC
Project: Environmental Consultancy for New Heliport at HK Macau Ferry Terminal	Rev.: 1.0 Date: Mar 2008

Community Liaison Office

Heli Express Limited
Room 1603, China Merchants Tower,
Shun Tak Centre, 200 Connaught Road,
Central, Hong Kong.

Hotline and Contact Person

Hotline	: 2108-9947
Fax	: 2108-9938
Contact Person	: Mr. Ivan Fong

Appendix: E2	ENVIRON
Title: Details of the Community Liaison Office	Drawn by: JL Checked by: CC
Project: Environmental Consultancy for New Heliport at HK Macau Ferry Terminal	Rev.: 1.0 Date: Mar 2008

APPENDIX F

Inspection Records for the Effluent Discharge and the Test Report

協興建築有限公司
HIP HING CONSTRUCTION CO LTD
新創建集團成員 Member of NWS Holdings

工地每日污水排放和處理機檢查記錄表

1. 機工須定出一個指定時段(例如上午九時至十一時)為每日污水排放檢查時間，在這個時間檢查污水處理機之運作和污水排放的水質。
2. 依照檢查表的項目去檢查污水處理機，觀察污水排放的水質，決定是否需要排泥、清洗、調節添加化學劑數量。
3. 根據 "EOCP C05 工地 水每天清濁檢查及酸鹼測試程序" 測試水質。
4. 將檢查結果記錄於表格內。 (✓) 表示滿意/附合標準、(×) 表示須要改善/不合標準 (N/A) 表示不適用
5. 若污水處理機發生故障不能正常運作，機工須立刻停止排水，並通知工程項目經理或工地環境代表發出不符合報告，直至污水處理機修理好污水合符標準後才可排放。
6. 工地環境代表須將不符合報告的編號記錄在備註列中。
7. 機工須要每月清洗污水處理機至少一次，以確保處理機正常運作。
8. 機工須要每星期用清水沖洗酸鹼值感應器，以保持其敏感度。

工地名稱 ： 港澳碼頭直昇機場擴建　　工地編號 ： H200802

機工姓名 ： 鄧國宜　　檢查/測試時段： 9:00

污水處理機型號 ： N/A

排放標準：

懸浮固體 (SS) = 少於 50 mg/L

酸鹼值 (pH) = 6-9

日期	檢查事項					污水處理機的維修		排放水質檢查		檢查員簽署	備註
	污水處理機已接上電源	進水系統沒有阻塞	化學劑投加泵操作正常	污水處理機喉管沒有泄漏	酸鹼值顯示正常	已清洗污水處理機	已清洗酸鹼值感應器	排放污水的清濁度	污水的酸鹼值		
9月1日	不適用	不適用	不適用	不適用	不適用	不適用	不適用	清/濁	7	徐	
9月2日	不適用	不適用	不適用	不適用	不適用	不適用	不適用	清/濁	7	徐	
9月3日	不適用	不適用	不適用	不適用	不適用	不適用	不適用	清/濁	7.5	徐	
9月4日	不適用	不適用	不適用	不適用	不適用	不適用	不適用	清/濁	7.5	徐	
9月5日	不適用	不適用	不適用	不適用	不適用	不適用	不適用	清/濁	8	徐	
9月6日	不適用	不適用	不適用	不適用	不適用	不適用	不適用	清/濁	8	徐	
9月8日	不適用	不適用	不適用	不適用	不適用	不適用	不適用	清/濁	7.5	徐	
9月9日	不適用	不適用	不適用	不適用	不適用	不適用	不適用	清/濁	7.5	徐	

9月10日	不適用	不適用	不適用	不適用	不適用	不適用	不適用	清/濁	7.5	孫	
9月11日	不適用	不適用	不適用	不適用	不適用	不適用	不適用	清/濁	8	孫	
9月12日	不適用	不適用	不適用	不適用	不適用	不適用	不適用	清/濁	8	孫	
9月13日	不適用	不適用	不適用	不適用	不適用	不適用	不適用	清/濁	8	孫	
9月16日	不適用	不適用	不適用	不適用	不適用	不適用	不適用	清/濁	8	孫	
9月17日	不適用	不適用	不適用	不適用	不適用	不適用	不適用	清/濁	8	孫	
9月18日	不適用	不適用	不適用	不適用	不適用	不適用	不適用	清/濁	8	孫	
9月19日	不適用	不適用	不適用	不適用	不適用	不適用	不適用	清/濁	7	孫	
9月20日	不適用	不適用	不適用	不適用	不適用	不適用	不適用	清/濁	7	孫	
9月22日	不適用	不適用	不適用	不適用	不適用	不適用	不適用	清/濁	7.5	孫	
9月23日	不適用	不適用	不適用	不適用	不適用	不適用	不適用	清/濁	7	孫	
9月24日	不適用	不適用	不適用	不適用	不適用	不適用	不適用	清/濁	8	孫	
9月25日	不適用	不適用	不適用	不適用	不適用	不適用	不適用	清/濁	7.5	孫	
9月26日	不適用	不適用	不適用	不適用	不適用	不適用	不適用	清/濁	7	孫	
9月27日	不適用	不適用	不適用	不適用	不適用	不適用	不適用	清/濁	8	孫	
9月29日	不適用	不適用	不適用	不適用	不適用	不適用	不適用	清/濁	8	孫	
9月30日	不適用	不適用	不適用	不適用	不適用	不適用	不適用	清/濁	8	孫	