

Proposed Temporary Bus Depot at Hing Wah Street West, West Kowloon Reclamation

-Project Profile

(January 2006)

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Hing Wah Street West, West
Kowloon Reclamation
-Project Profile (Issue No.:1)**

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TABLE OF CONTENTS

INTRODUCTION	4
1.1 PROJECT TITLE.....	4
1.2 PURPOSE AND NATURE OF PROJECT	4
1.3 NAME OF PROJECT PROPONENT	4
1.4 LOCATION, SCALE OF PROJECT AND HISTORY OF SITE	4
1.5 NUMBER AND TYPES OF DESIGNATED PROJECTS COVERED BY THE PROJECT PROFILE	5
1.6 NAME AND TELEPHONE NUMBER OF CONTACT PERSON(S).....	5
2. OUTLINE OF PLANNING AND IMPLEMENTATION PROGRAMME.....	5
3. MAJOR DEVELOPMENTS IN SURROUNDING AREA.....	6
4. POTENTIAL IMPACTS ON THE ENVIRONMENT	7
4.1 CONSTRUCTION PHASE	7
4.1.1 AIR QUALITY IMPACTS.....	7
4.1.2 NOISE IMPACTS	8
4.1.3 LIQUID EFFLUENTS, DISCHARGE, OR CONTAMINATED RUNOFF.....	9
4.1.4 MATERIAL WASTE.....	9
4.1.5 CHEMICAL WASTE	9
4.1.6 DANGEROUS GOODS AND HAZARDOUS MATERIALS	9
4.1.7 DISPOSAL OF SPOIL MATERIAL AND POTENTIALLY CONTAMINATED MATERIAL.....	9
4.1.8 UNSIGHTLY VISUAL APPEARANCE	10
4.1.9 ECOLOGICAL IMPACTS	10
4.2 OPERATIONAL PHASE.....	10
4.2.1 POTENTIAL ENVIRONMENTAL IMPACTS FROM ON-ROAD TRAFFIC	11
4.2.1.1 AIR QUALITY IMPACTS	11
4.2.1.2 NOISE IMPACTS.....	12
4.2.2 POTENTIAL ENVIRONMENTAL IMPACTS FROM OPERATIONS WITHIN DEPOT	13
4.2.2.1 AIR QUALITY IMPACTS	14
4.2.2.2 NOISE IMPACTS.....	14
4.2.3 LIQUID EFFLUENTS, DISCHARGE, OR CONTAMINATED RUNOFF	15
4.2.4 MATERIAL WASTE.....	16
4.2.5 DANGEROUS GOODS	16
4.2.6 DISPOSAL OF SPOIL MATERIAL AND POTENTIALLY CONTAMINATED MATERIAL.....	16

4.2.7	UNSIGHTLY VISUAL APPEARANCE	16
4.2.8	ECOLOGICAL IMPACTS	17
5.	SUMMARY AND RECOMMENDATIONS	17
5.1	AIR QUALITY IMPACTS.....	18
5.2	NOISE IMPACTS	18
5.3	WATER TREATMENT/ RECYCLIBILITY.....	19
6	USE OF PREVIOUSLY APPROVED EIA REPORTS.....	19

LIST OF TABLES

Table 1	Background Noise Measurements taken at Hoi Chi House
Table 2	Predicted Traffic Noise for year 2009
Table 3	Noise Source and Sound Power Level for Operations within Depot
Table 4	Resultant Noise Levels at Hoi Chi House due to Noise from Operations within Depot

LIST OF FIGURES

Figure 1	Layout showing Subject Site and Surrounding Environment
Figure 2	Proposed Layout Plan for Bus Depot
Figure 3	Photos showing Outlook of overall Subject Site
Figure 4	Photos showing Major Developments around Subject Site
Figure 5	Photos showing Existing Noise Barriers below the 10/F level of Hoi Lai Estate
Figure 6 – 7	Photos showing View of Subject Site from Hoi Chi House on Different Floors
Figure 8	Photos showing the Lighting System at Tseung Kwan O Depot
Figure 9	Photos showing the Existing Lighting Systems in areas around Subject Site
Figure 10	Bus Route Ratio Going In and Out of Depot

LIST OF APPENDICES

Appendix A	Part-print from the Outline Zoning Plan No.S/SC/8 showing the zoning of the Subject Site
Appendix B	Previous Land Uses of Subject Site
Appendix C	Tentative Work Program
Appendix D	Assessment for Construction Noise Levels at Hoi Chi House
Appendix E	Traffic Forecast Data for year 2009
Appendix F	Baseline Noise Monitoring Results and Traffic Noise Prediction Results for Hoi Nga Hse, Hoi Wai Hse & Hoi Chi Hse using RoadNoise 2000
Appendix G	Details of SWL Determination for the Process of Refueling and Bus Washing
Appendix H	Assessment for Fixed Noise Impacts at Hoi Chi House due to Operations within Depot

INTRODUCTION

1.1 PROJECT TITLE

New World First Bus Temporary Bus Depot at West Kowloon Reclamation

1.2 PURPOSE AND NATURE OF PROJECT

This project involves the construction and operation of a temporary bus depot at Hing Wah Street West, West Kowloon Reclamation. The proposed temporary bus depot shall operate for 3 years according to the short-term tenancy condition (ref: LND KW KX2245) from a tentative date in November 2006 to November 2009, however the service life of the depot can be up to 20 years with proper maintenance. During the tenancy period, the bus depot shall provide services such as coin collection, octopus reading, parking, minor repairs and servicing, cleaning and refueling.

1.3 NAME OF PROJECT PROPONENT

New World First Bus Services Limited

1.4 LOCATION, SCALE OF PROJECT AND HISTORY OF SITE

The subject site is located in the southern part of Lai Chi Kok, bounded by Hing Wah Street West, Lai Po Road and Lin Cheung Road and covers an area of 8,200 square meters. The location of the subject site and its surrounding environment is given in Figure 1. The majority of the site is zoned 'industrial' ('I') with a small western corner zoned 'Road' on the approved Stonecutters Island Outline Zoning Plan No. S/SC/8 ('OZP') given in Appendix A.

The subject site is situated on reclaimed land that was previously used as a Works area for the Strategic Sewage Disposal Scheme by Drainage Services Department and WKR Contract, from 20th September, 1996 to 30th June, 1997 and from 24th January, 1997 to 31st December, 1999 respectively. It was finally leased to a franchised bus company and used as a parking area from 7th July, 1999 up until 15th May, 2004. It is currently vacant as shown in a recent photo given in Figure 3. A letter from the Lands Department advising previous land uses is given in Appendix B.

The proposed temporary bus depot will comprise of the following facilities:-

1. 54-55 open bus parking spaces on concrete floor slabs
2. 3 above-ground fuel tanks and 2 refueling bays
3. 1 washing bay
4. 2 covered maintenance bays
5. A single storey building for ancillary offices, security rooms, toilets, store rooms, F.S. pump room, switch room and bus washing control room
6. An octopus room, coin box room and bus captain room

1.5 NUMBER AND TYPES OF DESIGNATED PROJECTS COVERED BY THE PROJECT PROFILE

This project profile covers one designated project. According to Part 1 Schedule 2 Section A.6(a) (Roads, railways and depot) of the Environmental Impact Assessment Ordinance (EIAO), "A transport depot located less than 200 m from the nearest boundary of an existing or planned--- residential area" is categorized as a Designated Project. The proposed temporary bus depot at West Kowloon Reclamation is located at a horizontal distance less than 200m from the site boundary of the nearest residential development, Hoi Lai Estate. As a result, it constitutes as a Designated Project and requires an Environmental Permit for its construction and operation.

1.6 NAME AND TELEPHONE NUMBER OF CONTACT PERSON(S)

Project Team	Company	Contact	Telephone	Fax
Project Proponent	New World First Bus Services Limited	Mr. Alfee Au	2136 2140	2136 2296
Project Manager	BMMK, Ratcliffe, Hoare & Company Limited	Mr. N D Ratcliffe	2865 7266	2866 0472
Environmental Consultant	Allied Environmental Consultants Limited	Ms. Grace Kwok	2815 7028	2815 5399

2. OUTLINE OF PLANNING AND IMPLEMENTATION PROGRAMME

The temporary bus depot is being planned and designed by New World First Bus Services Limited and its appointed Consultants. Construction work shall tentatively commence in March 2006, and last for approximately 5 months. The construction

program for the proposed bus depot is presented in Appendix C. Details of the construction work arrangement shall be proposed by the Main Contractor prior to the actual commencement of works.

Construction work for the proposed temporary bus depot shall be divided into two main stages: foundation and superstructure. During the foundation stage, minimal site clearance work is to be expected as the terrain at the subject site is fairly uniform and flat. Site clearance work shall be followed by concrete paving which will then lead to the superstructure stage. The superstructure stage shall include the construction of above ground structures such as single storey buildings and shelters to be followed by E/M, plumbing, and drainage works.

After construction work is completed, the proposed temporary bus depot shall tentatively commence operation in November 2006.

3. MAJOR DEVELOPMENTS IN SURROUNDING AREA

The subject site is located in the industrial area of the West Kowloon Reclamation area where the majority of land in adjacent locations is used for industrial purposes. These industrial purposes include a permanent bus depot, a cargo handling area at Stonecutter Island, industrial buildings, a storage area for prefabricated concrete elements, shipyards, jetties and a ferry terminal. In addition, there are major railway lines and a highway network located in close proximity to the subject site as shown in Figure 3 and Figure 4.

The cargo handling area at Stonecutter Island located approximately 100m from the subject site to the southwest, is an industrial area comprised of open storage area, workshops, shipyards, jetties and offices. These industrial areas are separated from nearby residential areas by major transportation infrastructure, most notably - Lin Cheung Road and Hing Wah Street West. Other transportation systems close by include the West Kowloon Expressway, MTRC Tung Chung Line & Airport Express Line, and the underground KCRC West Rail located to the north east of the subject site. Also, plans to construct a new highway - Route number 8, with an elevated section across the existing West Kowloon Expressway near Lai Po Road, are in progress and a tentative projected completion date is set for mid 2008.

A proposed school adjacent to Hoi Chi House of Hoi Lai Estate is currently under construction by the Architectural Services Department and completion is scheduled

for the third quarter of 2006, which is after the construction phase of the proposed bus depot. As a result, the school is unlikely be affected by construction works of the bus depot. During the operational phase of the bus depot, the school will operate between 0800 – 1700 hours which does not coincide with the peak operational hours of the bus depot.

Hoi Lai Estate is the nearest residential area located to the north of the proposed temporary bus depot. It is a public housing estate containing twelve 40-storey residential blocks where three residential blocks: Hoi Chi House, Hoi Wai House and Hoi Nga House are located within 200m of the subject site of proposed temporary bus depot. The nearest residential block is Hoi Chi House, approximately 150m (refer to Figure 1) from the subject site. It is separated from the proposed bus depot by the West Kowloon Expressway and MTRC Tung Chung Line & Airport Express Line.

4. POTENTIAL IMPACTS ON THE ENVIRONMENT

4.1 CONSTRUCTION PHASE

4.1.1 AIR QUALITY IMPACTS

Construction activities that may create dust emission usually stem from material handling, small scale excavation, and vehicles operating on unpaved roads. The subject site at West Kowloon Reclamation is situated on flat terrain that is to be concrete-paved with no major excavation work expected, as only minimal underground installation of piping work is required.

The distance between the subject site and nearest sensitive receiver: Hoi Lai Estate, is approximately 150m. This distance is much further than the typical drift distance of dust particles, which can be expressed as a function of particle diameter and mean wind speed. For a mean wind speed of 4m/s, dust particles larger than 100 μ m are likely to settle within 20 to 30 ft (6 to 9 m) from point of emission. Particles that are 30 to 100 μ m in diameter are likely to undergo impeded settling and, depending on the extent of atmospheric turbulence, are likely to settle within a hundred feet (100 ft = 30m). Consider 30m as the maximum drift distance; a buffer distance of approximately 150m is more than adequate for dust particles to settle.

Moreover, mitigation measures such as wetting of the temporary access road, working surfaces and stockpiles shall be implemented to minimize dust emission.

A wheel washing facility shall also be provided on site to clean the tire tread of trucks leaving the site. As a result, fugitive dust emission from construction work is unlikely to create any adverse air impact on nearby sensitive receivers.

4.1.2 NOISE IMPACTS

During the construction phase, noise generated from the use of powered mechanical equipment (PME) during construction work is a potential source of noise impacts.

Construction work for the proposed temporary bus depot shall be restricted to daytime working hours, from Monday to Saturday between 07:00 - 19:00 hours. At any other time, no construction work shall be carried out.

The minimum horizontal distance between the construction site boundary and the nearest noise sensitive receiver, Hoi Chi House, is approximately 150m as illustrated in Figure 1. Trackside noise barriers along MTRC rail lines and the West Kowloon Expressway as shown in Figure 5 & 6 provide full screening for residential units below 10/F at Hoi Chi House and partial screening for units between 20/F and 30/F. The distance separation and screening by these existing structures also effectively reduce the noise impacts from construction activities at the subject site on nearby sensitive receivers.

Construction noise was assessed with regard to the *Technical Memorandum on Noise from Construction Work other than Percussive Piling* to ascertain that there would be no adverse impact on the nearest noise sensitive receiver, Hoi Chi House. Assessment results indicate that the predicted worst-case construction noise levels shall be well within the noise limit of 75 dB(A) for domestic premises. In fact, construction noise level experienced at Hoi Chi House, will be at least 7 dB(A) below the limit. Therefore, it is concluded that there will be no adverse noise impact on the sensitive receivers during construction of the proposed bus depot. Calculations for the construction noise assessment are given in Appendix D.

In order to minimize any potential noise nuisance, the construction program shall be well scheduled and managed to avoid simultaneous operation of noisy equipment and to situate the operation of noisy equipment as far as practicable from nearby sensitive receivers.

4.1.3 LIQUID EFFLUENTS, DISCHARGE, OR CONTAMINATED RUNOFF

During construction, site run-off will mainly be composed of suspended solids, grit, and possibly a small amount of oil. The amount of effluent discharge is expected to be low. Appropriate mitigation measures shall be implemented on-site to ensure no adverse water quality impacts due to the construction work. They include the provision of temporary drainage to contain or collect silt-laden runoff for treatment at an on-site sedimentation tank to reduce the concentration of suspended solids in the runoff prior to discharge. The treated effluent shall satisfy the discharge requirements stipulated in the Technical Memorandum published under the Water Pollution Control Ordinance. Furthermore, a valid water discharge license shall be obtained before any discharge from the construction site takes place.

4.1.4 MATERIAL WASTE

Waste, such as wooden boards and excavated soil, are likely to be generated during construction. Separation of inert and non-inert portions of construction waste shall be carried out on site to promote the recycling and reuse of waste generated whenever possible. Good housekeeping and waste management practices shall be implemented during construction.

4.1.5 CHEMICAL WASTE

During construction, a small quantity of chemical waste may be generated, such as lubrication oil. A licensed collector shall be contracted to handle and dispose of such waste at an EPD licensed facility where Chemical Waste Regulations shall be observed at all times.

4.1.6 DANGEROUS GOODS AND HAZARDOUS MATERIALS

Dangerous goods and hazardous materials such as acetylene and oxygen tanks, which may be used during construction works, shall be located in a secure dangerous goods storage area when not in use. The storage and usage of such materials shall follow the requirements stipulated under the Dangerous Goods Ordinance (Cap. 295) and relevant safety standards.

4.1.7 DISPOSAL OF SPOIL MATERIAL AND POTENTIALLY CONTAMINATED MATERIAL

The subject site was previously used as a Works area for Government projects and a parking area for bus parking by a franchised bus company. The ground surface of the site is currently concrete-paved. In view of the nature of previous uses and the fact that the lease condition generally requires lease holder to reinstate the site condition, it is considered that the presence of contaminated materials is not likely. Further previous land use information for the subject site is given in Appendix B.

4.1.8 UNSIGHTLY VISUAL APPEARANCE

The project site shall be enclosed around its perimeter by hoarding during construction activities to minimize unwanted visual impacts that may affect nearby sensitive receivers. Unwanted visual effects are further reduced by the screening provided by the West Kowloon Expressway, the trackside noise barrier along the MTRC Tung Chung Line and Route 8 currently under construction. As a result, it is unlikely that the construction of the bus depot will create any adverse visual impact on nearby sensitive receivers.

4.1.9 ECOLOGICAL IMPACTS

The subject site is a concrete-paved brown field site on a reclaimed land in an urban area, thus of insignificant ecological value and no adverse ecological impact is expected.

4.2 OPERATIONAL PHASE

During the operational phase, the proposed temporary bus depot shall operate 24 hours a day and provide cleaning, coin collection, servicing, refueling, and parking for buses. However, the majority of the operational activities shall take place at night between 23:00 – 01:00 hours and in the morning between 05:00 – 07:00 when buses will either return to the depot for parking and servicing or leave the depot for running daily routes respectively. During the daytime, the depot is generally vacant as all the buses are out providing on-road services.

Key environmental concerns arising from the operation of the bus depot are the potential impacts associated with noise and vehicular emission from the increased numbers of buses traveling to and from the depot and also by the operational activities occurring within the depot. Detailed evaluation of these issues is given in the following sections.

4.2.1 POTENTIAL ENVIRONMENTAL IMPACTS FROM ON-ROAD TRAFFIC

4.2.1.1 AIR QUALITY IMPACTS

For air quality impact assessment, the study area shall lie within a 500m radius from the boundary of the subject site. It has been assigned an urban land use classification as the area consists of residential/commercial development and industrial establishments. The background air quality level in the area is predominantly affected by vehicular emission from nearby road network including the West Kowloon Expressway, Hing Wah Street West, and Lin Cheng Road. Miscellaneous industrial establishments in the area are also considered potential sources of air pollution affecting the assessment area.

- **Vehicular Emission from Buses**

For bus arrivals at and departures from the proposed bus depot, the majority of buses will enter and exit via the West Kowloon Expressway, while the minority will use Hing Wah Street West. The approximate ratio for buses taking these two routes shall be 4 to 1 for arrivals and 5 to 2 for departures.

The forecasted hourly traffic flow for year 2009 for the West Kowloon Expressway and Hing Wah Street West during morning peak hours between 05:00 – 07:00 is 820 vehicles where 34% are heavy vehicles and 50 vehicles where 61% are heavy vehicles respectively. This traffic forecast includes the addition of buses that will be traveling on nearby roads due to the presence of the bus depot. Traffic forecast data for year 2009 is given in Appendix E.

During the peak operation hour of the proposed depot, an addition of 16 and 4 buses will be traveling on the West Kowloon Expressway and Hing Wah Street West. They represent 2% and 8% of total traffic count for the West Kowloon Expressway and Hing Wah Street West respectively. As the increments represent a small fraction of existing traffic flow, it is anticipated that the minor increase in vehicular emission shall not cause any noticeable deterioration to existing air quality conditions.

Furthermore, the distance between West Kowloon Expressway and Hing Wah Street West to the nearest sensitive receiver, Hoi Chi House is approximately 65m and 80m respectively, both of which are greater than the buffer distance of 20m, recommended in the Hong Kong Planning Standards and Guidelines (HKPSG) for a trunk road and primary distributor. Therefore, vehicular

emission from buses during operation of the proposed bus depot is unlikely to cause any adverse air quality impacts on nearby air sensitive receivers.

4.2.1.2 NOISE IMPACTS

- **Background Noise Climate**

To investigate the background noise climate, noise surveys were conducted at different floors of Hoi Chi House of Hoi Lai Estate between 23:00 and 01:00 hours on 27th June 2005. The selected building houses the nearest noise sensitive receiver to the proposed depot and therefore represents the potentially worst-affected location.

Microphones were placed at 1m away from the building façade facing the proposed temporary bus depot to measure the background noise levels experienced at the noise sensitive receiver. It was observed that the background noise climate is predominantly affected by the traffic on the highway network. The background noise measurement results are summarized in the table below:

Table 1 – Background Noise Measurements taken at Hoi Chi House

Noise measurement locations	$L_{eq(15mins)}$, dB(A)	$L_{10(15mins)}$, dB(A)
1/F – Hoi Chi House	58.8	62.3
10/F – Hoi Chi House	61.7	63.5
20/F – Hoi Chi House	66.8	69.0
30/F – Hoi Chi House	68.0	70.1
40/F – Hoi Chi House	67.7	69.7

Figures 6 and 7 showed the view of the subject site for the proposed temporary bus depot from different floors of Hoi Chi House.

- **Noise Emission from Buses using the Depot**

Based on the traffic flow forecast for year 2009 given in Appendix E for the roads around the subject site, worst-case traffic noise levels were predicted at the representative noise sensitive receivers for scenarios with and without traffic from the proposed bus depot. Traffic noise predictions were performed using the computer model RoadNoise 2000, which implements the method prescribed in the Calculation of Road Traffic Noise (CRTN) published by the UK Department of Transport. Seven representative receivers were identified

for noise predictions at each location: Hoi Chi House, Hoi Wai House, and Hoi Nga House. The table below summarizes the lowest and highest predicted traffic noise level:-

Table 2 – Predicted Traffic Noise for year 2009

Predicted Traffic Noise Level	Location	Without traffic from the proposed Depot in 2009	With the additional traffic from the proposed bus Depot in 2009
Lowest predicted traffic noise level	1/F, Hoi Nga House	$L_{10(1hr)} = 55.1 \text{ dB(A)}$	$L_{10(1hr)} = 55.2 \text{ dB(A)}$
Highest predicted traffic noise level	38/F – 40/F, Hoi Chi House	$L_{10(1hr)} = 66.9 \text{ dB(A)}$	$L_{10(1hr)} = 67.1 \text{ dB(A)}$

Under the two scenarios, traffic noise assessment results predicted a negligible increase of 0.2 dB(A) at Hoi Chi House. This shows that the additional buses using the proposed bus depot shall not cause any noticeable deterioration to the existing noise climate. Furthermore, the highest predicted traffic noise level of 67.1 dB(A) is well below the noise limit of 70 dB(A) specified in the *Technical Memorandum on Environmental Impact Assessment Process*. Since Hoi Chi House is the closest NSR, assessment results for this location predict for the worst case scenario during the peak operation hour of the bus depot in the early morning. It is anticipated that the operation of the proposed bus depot is unlikely to cause any adverse noise impacts on all noise sensitive receivers in its vicinity, including Hoi Wai House and Hoi Nga House. Detailed traffic noise prediction results are given in Appendix F.

4.2.2 POTENTIAL ENVIRONMENTAL IMPACTS FROM OPERATIONS WITHIN DEPOT

Operational activities within the bus depot are briefly described as follows. When buses enter the temporary bus depot at night, they will be driven to the refueling area, where octopus reading, coin collection and refueling shall take place. The buses will then be driven through the washing bay and upon entering; be sprayed with water and cleaning detergent, followed by a cleaning process utilizing brushes mounted onto washing machines. Buses will be rinsed when leaving the washing bay and then parked overnight.

4.2.2.1 AIR QUALITY IMPACTS

Since the ground surface of the proposed bus depot shall be concrete-paved, activities occurring within the depot are unlikely to cause any significant impact to the surrounding environment with regard to fugitive dust emission. As mentioned in section 4.1.1., a buffer distance of 150m between the proposed depot and the closest sensitive receiver is sufficient for dust particles to settle as the maximum drift distance is only 30m. Moreover, vehicular emission from traveling buses within the depot shall have negligible impact on nearby sensitive receivers due to limited maneuvering area and the substantial separation distance. Idling buses should have their engines shut off when parked to eliminate idling emission.

4.2.2.2 NOISE IMPACTS

- **Operational Noise Sources**

In order to assess the noise impact due to the operational activities within the proposed temporary bus depot on nearby sensitive receivers, a noise survey was conducted at the existing New World First Bus Tseung Kwan O Bus Depot to obtain noise data for in-depot operations. It is expected that operations at future temporary bus depot in the West Kowloon Reclamation shall be largely similar to those taking place at the existing Tseung Kwan O Bus Depot.

Noise surveys, performed at the existing temporary bus depot at Tseung Kwan O (TKO) Area 85, quantify the noise source in terms of operational activities within the depot. The actual sound power levels of the operations or equipment were determined with reference to the methodology recommended in ISO3746: 1995. Details of the on-site noise survey, acoustic calculations, and photographs are given in Appendix G.

Potential operational noise sources at the Tseung Kwan O bus depot were determined to be from the washing bay, refueling bay. The table below lists the noise source and corresponding sound power level.

Table 3 – Noise Source and Sound Power Level of Operations within Depot

Number of Items	Noise Source	Sound Power Level dB(A)
1	Washing Bay	101
2	Refueling Bay	98

- Noise from Operational Activities within Bus Depot

In the proposed temporary bus depot, there shall be 1 washing bay and 2 refueling bays. 5m high concrete walls shall be installed on both sides of the bus washing bay to prevent splashing of water and a sheltered refueling bay shall be provided to enhance rainfall protection during the refueling process. These structures shall provide effective screening close to the noise sources and reduce the noise emission for the washing and refueling operations.

Resultant noise levels at different levels of Hoi Chi House due to operations of: refueling and washing were determined. To predict for the worst-case scenario, the nearest sensitive receiver, Hoi Chi House, was used under the assumption that all depot operations occur simultaneously. Results are summarized in the following table, which includes the noise limit for ease of comparison.

Table 4 – Resultant Noise Levels at Hoi Chi House due to Noise from Operations within Depot

	Different levels of Hoi Chi House				
	1/F	10/F	20/F	30/F	40/F
Resultant noise levels due noisy operations, L_{eq} in dB(A)	45	49	50	49	48
Noise Criterion*	55	55	55	55	55
Difference	10	6	5	6	7

*Note : *The Noise Criterion [55dB(A)] for fixed noise impact assessment is 5dB(A) below the appropriate Acceptable Noise Levels, which is 60dB(A) for the sensitive receiver has an Area Sensitivity Rating of C.*

The assessment results for noise from operational activities within the depot indicate that the noise levels are well below the limit stipulated in the *Technical Memorandum on Environmental Impact Assessment Process*. Since Hoi Chi House is the potentially worst-affected location, assessment results indicate that potential noise impacts from operational activities within the depot on the other sensitive receivers: Hoi Wai House and Hoi Nga House, are unlikely to be adverse. Details of the fixed noise assessment are given in Appendix G and Appendix H..

4.2.3 LIQUID EFFLUENTS, DISCHARGE, OR CONTAMINATED RUNOFF

The wastewater generated during the operation of the bus depot will mainly be from water used to wash vehicles and equipment. Other minor sources of wastewater result from sewage generated from site staff and run-off from site surface. The bus washing bay shall be incorporated with the provision of water recycling and the water used for bus washing shall be recycled and reused. On the other hand, sewage generated on-site shall be discharged into communal foul sewers for treatment at government sewage treatment facilities. Surface runoff from the site shall be collected by drainage channels and petrol oil interceptors shall be incorporated into the drainage system of the depot. The amount of effluent discharge is expected to be small and therefore unlikely to cause any adverse water quality impact to the environment.

4.2.4 MATERIAL WASTE

Waste is expected to be generated during vehicle repairs, though the amount is expected to be small since only minor repairs are to be carried out on-site. A suitably sized temporary refuse storage area shall be provided on-site and separation of recyclable wastes shall be practiced to achieve sustainable waste management.

During operation, a small quantity of chemical waste may be generated, such as lubrication oil. A licensed collector shall be engaged to handle and dispose of these wastes at an EPD licensed facility. The Chemical Waste Regulations shall be observed at all time.

4.2.5 DANGEROUS GOODS

Storage of vehicle fuel within the depot shall follow the requirements stipulated in the Dangerous Goods Ordinance. A steel wall tank, situated within a rectangular steel tray, design shall be adopted for the above-ground diesel tank. Details are submitted separately in DG submission.

4.2.6 DISPOSAL OF SPOIL MATERIAL AND POTENTIALLY CONTAMINATED MATERIAL

No disposal of spoil material is anticipated.

4.2.7 UNSIGHTLY VISUAL APPEARANCE

During daytime hours, the proposed bus depot is generally vacant as the majority

of buses shall be out providing on-road services therefore any visual impact during the day is unlikely. On the other hand, during nighttime hours when the depot lights are activated, the depot may become more noticeable.

Trackside noise barriers along MTRC rail lines and the West Kowloon Expressway restrict view of the subject site from the 10/F and below with respect to nearby sensitive receivers. On the other hand, there is potential for occupants situated on residential units above 10/F who may notice the lights of the depot. However, it is unlikely to cause any glare problem in view of the relatively high background light levels in urban area contributed by buildings and streetlights along the West Kowloon Expressway and Hing Wah Street West.

Referring to measurements taken at the existing temporary bus depot at Tseung Kwan O (TKO) Area 85, the highest level of luminescence measured inside depot was approximately 200Lux, where all lighting systems were orientated towards the ground areas inside the depot to minimize the potential glare impact on surrounding areas. Selection and arrangement of the lighting system at the proposed temporary bus depot at the West Kowloon Reclamation shall be largely similar to that at TKO Area 85, therefore nearby residential areas of Hoi Lai Estate are unlikely to experience unwanted visual impacts. Please refer to Figure 8 and 9 for photographs showing the existing conditions at the Tseung Kwan O Bus Depot.

4.2.8 ECOLOGICAL IMPACTS

The subject site is a concrete-paved brown field site on reclaimed land in an urban area, thus of insignificant ecological value and no adverse ecological impact is expected.

5. SUMMARY AND RECOMMENDATIONS

In conclusion, construction and operation of the proposed bus depot at the West Kowloon Reclamation are unlikely to cause adverse environmental impacts to nearby sensitive receivers. A review of the potential environmental impacts associated with the project as well as recommended mitigation measures to minimize any environmental nuisances is summarized below.

5.1 AIR QUALITY IMPACTS

- **Construction Phase**

Air quality impacts on nearby sensitive receivers during the construction phase are unlikely to be adverse due to the substantial separation distance between the subject site and nearby sensitive receivers in the vicinity. Moreover, with the implementation of appropriate mitigation measures such as frequent water wetting of tire tread and the use of paved roads during the construction phase, potential impacts from fugitive dust emission will be further alleviated.

- **Operational Phase**

During the operational phase of the bus depot, it is expected that there will be an addition of 16 and 4 buses traveling on nearby roads, namely West Kowloon Expressway and Hing Wah Street West. This represents only a small fraction of total vehicle count for the road network in the area; therefore it is anticipated that such a small increment will cause insignificant vehicular emission impacts.

Furthermore, the distance between West Kowloon Expressway and Hing Wah Street West to the nearest sensitive receiver, Hoi Chi House is approximately 65m and 80m respectively, both of which are greater than the buffer distance of 20m, recommended in the Hong Kong Planning Standards and Guidelines (HKPSG) for a trunk road and primary distributor. Therefore, vehicular emission from buses using the depot is unlikely to cause any adverse impact on nearby the air sensitive receivers.

5.2 NOISE IMPACTS

- **Construction Phase**

Assessment results indicate that the predicted worst-case noise levels, where all construction plants are assumed to operate simultaneously, shall be well below the noise limit of 75 dB(A) for domestic premises shall not be exceeded. The construction noise level experienced at Hoi Chi House will be at least 7 dB(A) below the limit. Furthermore, the implementation of appropriate mitigation measures, such as the use of silenced construction equipment and good management practice to avoid simultaneous operation of noisy equipment further mitigate noise nuisances from construction. Therefore, it is concluded that any adverse noise impact due to construction work on nearby sensitive receivers is unlikely.

- **Operational Phase**

Traffic noise prediction results indicate that there shall be insignificant increase in traffic noise level (0.2 dB(A)) due to the presence of the depot. This is attributed to the fact that the addition of 20 buses during peak operational hours represents a small fraction of the existing traffic flow in the area. Furthermore, the highest predicted noise level of 67.1 dB(A) is well below the traffic noise limit of 70 dB(A) specified in the *Technical Memorandum on Environmental Impact Assessment Process*.

Assessment results for potential noise impacts due to operational activities within the depot indicate that the operational noise levels are well below prevailing background noise levels and the limit stipulated in the *Technical Memorandum for Environmental Impact Assessment Process*. As the assessment predicts for the worst-case scenario, operational activities within the depot are unlikely to cause any adverse noise impact on nearby sensitive receivers.

5.3 WATER TREATMENT/ RECYCLIBILITY

- **Construction Phase**

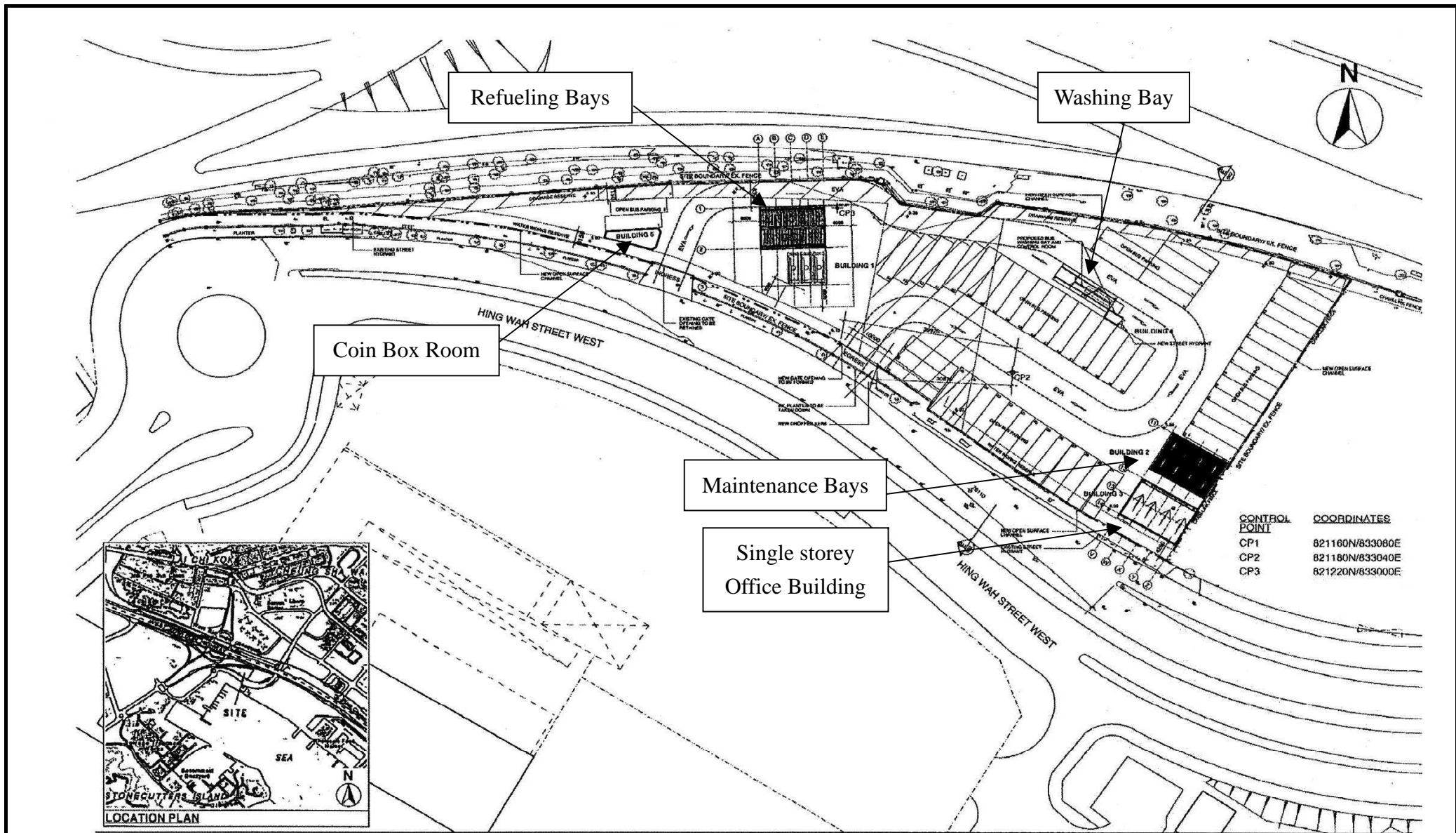
Mitigation measures that shall be implemented include the provision of temporary drainage to contain or collect silt prior to discharge which will then be treated using an on-site sedimentation tank to reduce the concentration of suspended solids in the runoff to satisfy the requirements stipulated in the Technical Memoranda published under the Water Pollution Control Ordinance. Furthermore, a valid water discharge license shall also be obtained before any discharge from the construction site takes place. With these mitigation measures in place, any adverse impact to water quality is unlikely.

- **Operational Phase**

Water discharge is expected to be low during the operational phase due to the recycling of wash water in the vehicle washing bay. A drainage system with petrol oil interceptors shall be installed to divert all wastewater into communal sewers. Any adverse impact from water discharge is unlikely.

6 USE OF PREVIOUSLY APPROVED EIA REPORTS


No previously approved EIA reports, relevant to this project were used.



PROPOSED NEW WORLD FIRST BUS DEPOT AT WEST KOWLOON RECLAMATION

Proposed Layout Plan for the Bus Depot

Figure No.	2	Rev:	0
Scale	NTS	Date	01/06





Night-time outlook of the Proposed Site viewed from Hoi Lai Estate on 40/F



Day-time outlook of the Proposed Site viewed from Hoi Lai Estate on 40/F

THE NEW WORLD FIRST BUS TEMPORARY BUS DEPORT AT WEST KOWLOON RECLAMATION
 Photos showing Overall Outlook of the Subject Site

Figure No.

3

Rev.:

0

Scale

NTS

Date

07/05





Hoi Chi House

**West Kowloon Expressways &
Route 8 under construction**

**ASD School
Project under
construction**

ASD Construction Site for School and Hoi Lai Estate in the Northeast



Kowloon Motor Bus Depot Southwest of the Subject Site

**THE NEW WORLD FIRST BUS TEMPORARY BUS DEPOT AT WEST
KOWLOON RECLAMATION**

Photos showing the major developments around the Subject Site

Figure No.

4

Rev.:

0

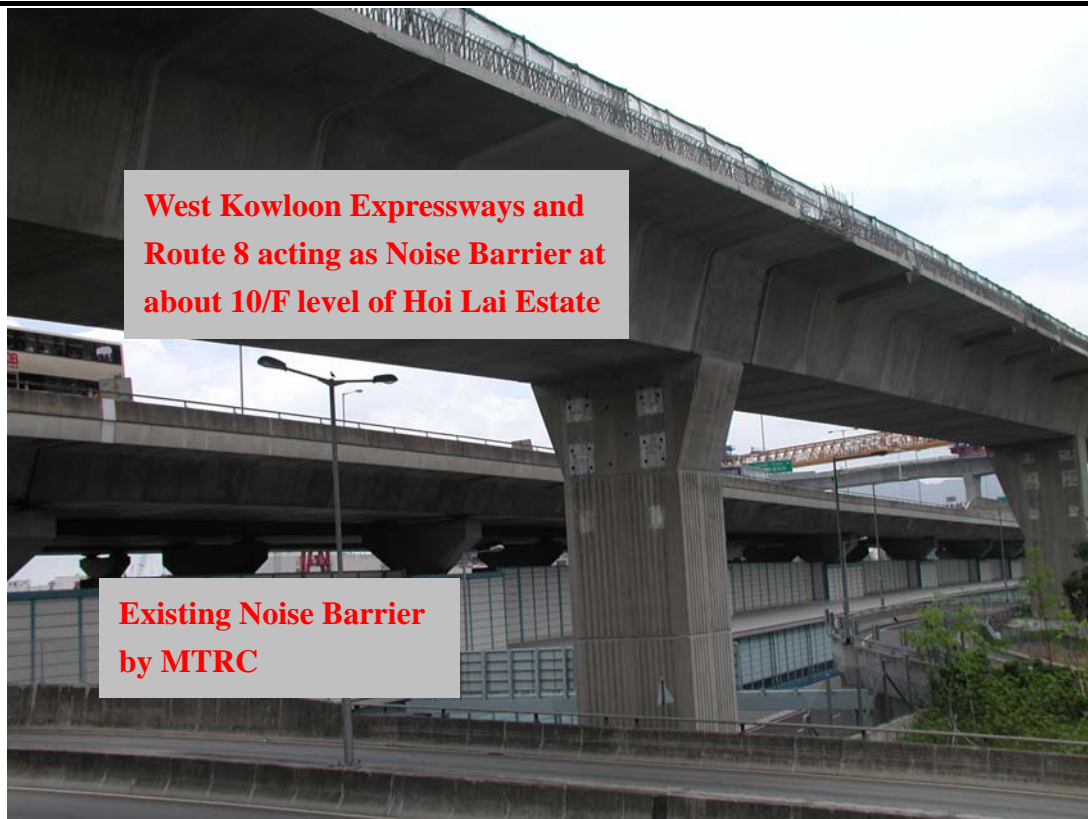
Scale

NTS

Date

07/05





**West Kowloon Expressways and
Route 8 acting as Noise Barrier at
about 10/F level of Hoi Lai Estate**

**Existing Noise Barrier
by MTRC**

Existing Noise Barriers



West Kowloon Expressways and Route 8

**About 10/F level
of Hoi Lai Estate**

Hoi Lai Estate viewed from the Subject Site

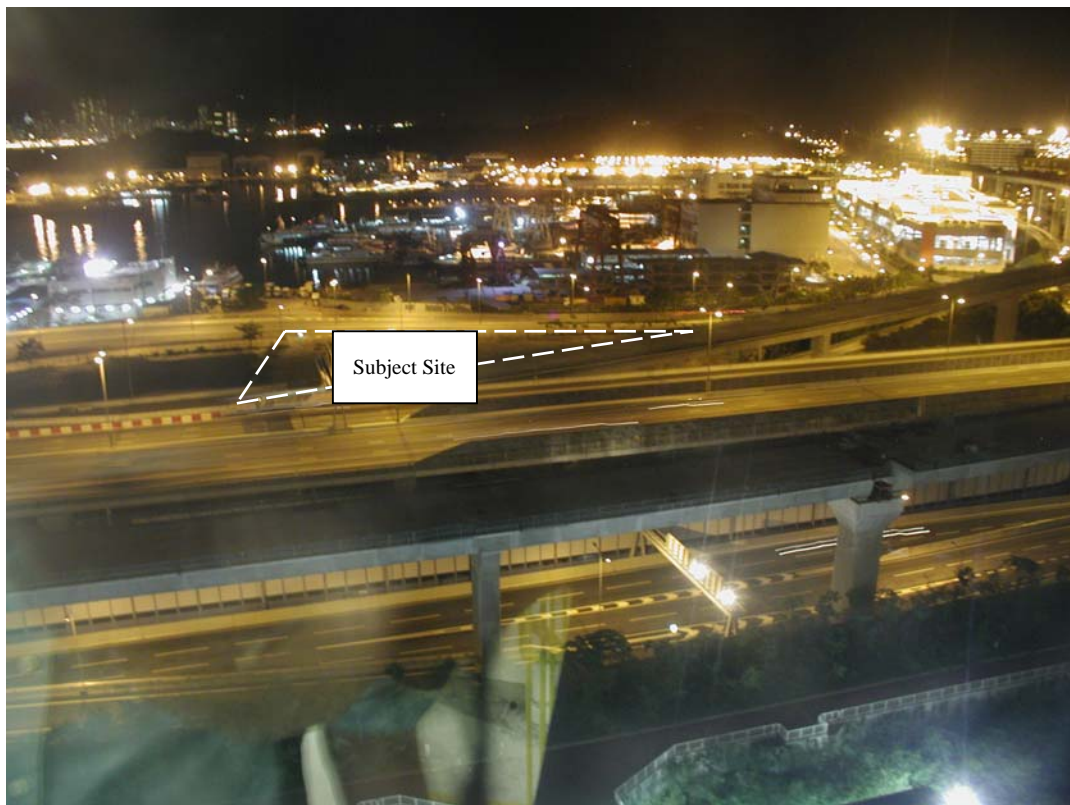
**PROPOSED NEW WORLD FIRST BUS TEMPORARY BUS DEPOT AT
WEST KOWLOON RECLAMATION**
Photos showing Existing Noise Barriers

Figure No.	Rev.:
5	0
Scale	Date
NTS	07/05





View from Hoi Chi House on 10/F during on-site noise measurement



View from Hoi Chi House on 20/F during on-site noise measurement

**PROPOSED NEW WORLD FIRST BUS TEMPORARY BUS DEPOT AT
WEST KOWLOON RECLAMATION**

Photos showing view of Subject Site from Hoi Chi House
during on-site noise measurement

Figure No.

6

Rev.:

0

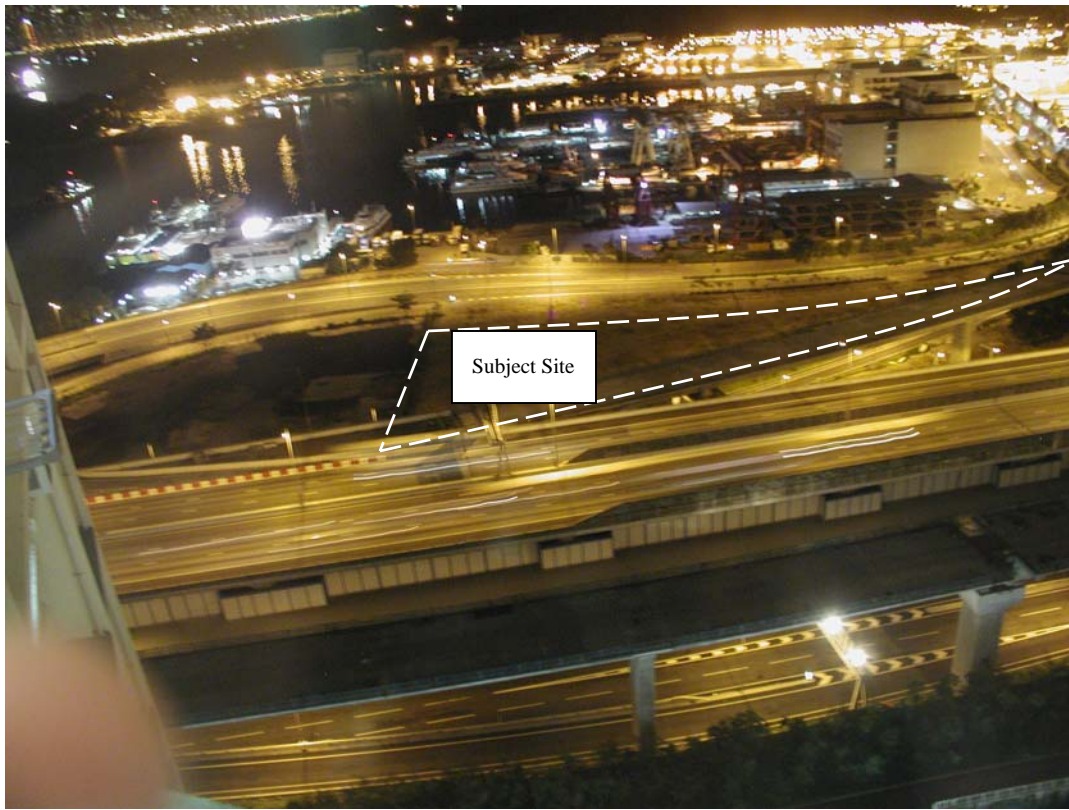
Scale

NTS

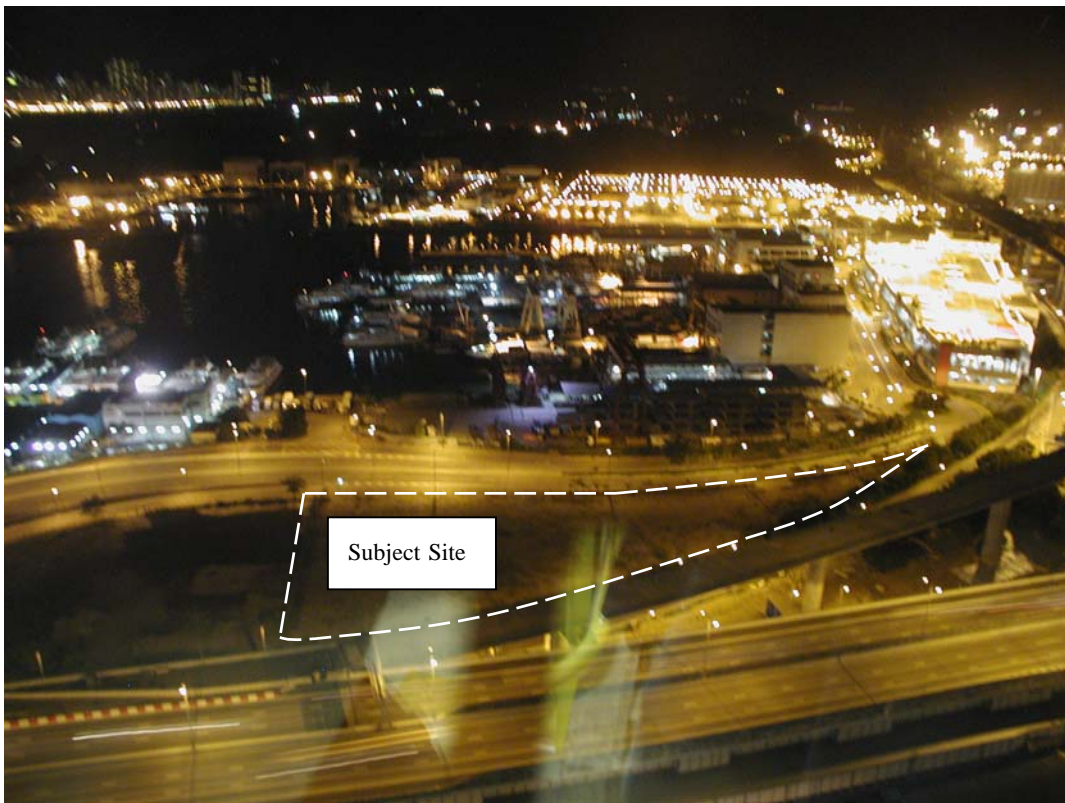
Date

07/05





View from Hoi Chi House on 30/F during on-site noise measurement



View from Hoi Chi House on 40/F during on-site noise measurement

**PROPOSED NEW WORLD FIRST BUS TEMPORARY BUS DEPOT AT
WEST KOWLOON RECLAMATION**

Photos showing View of Subject Site from Hoi Chi House
during on-site noise measurement

Figure No.

7

Rev.:

0

Scale

NTS

Date

07/05





View showing the lighting system at TKO bus depot



View showing the lighting system at TKO bus depot

**PROPOSED NEW WORLD FIRST BUS TEMPORARY BUS DEPOT AT
WEST KOWLOON RECLAMATION**
Photos showing Lighting System at Tseung Kwan O Depot

Figure No. 8	Rev.: 0
Scale NTS	Date 07/05





View showing the existing lighting systems at the surrounding area



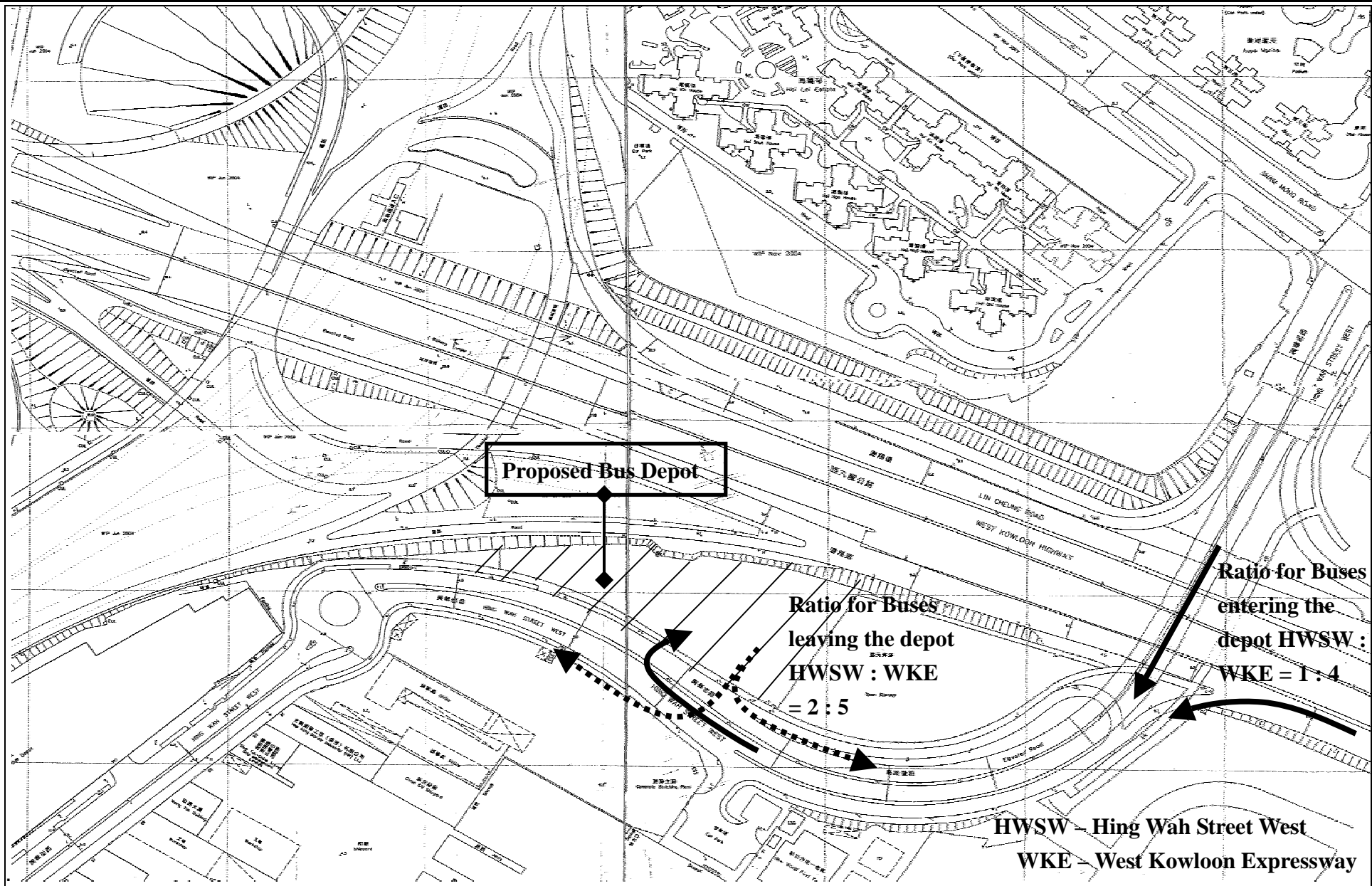
View showing the existing lighting systems at the surrounding area

**PROPOSED NEW WORLD FIRST BUS TEMPORARY BUS DEPOT AT
WEST KOWLOON RECLAMATION**

Photos showing Existing Lighting Systems of areas around the Subject Site

Figure No.	Rev.:
9	0
Scale	Date
NTS	07/05





THE PROPOSED NEW WORLD FIRST BUS TEMPORARY BUS DEPOT AT WEST KOWLOON RECLAMATION
 Bus Route Ratio Going In and Out of Depot

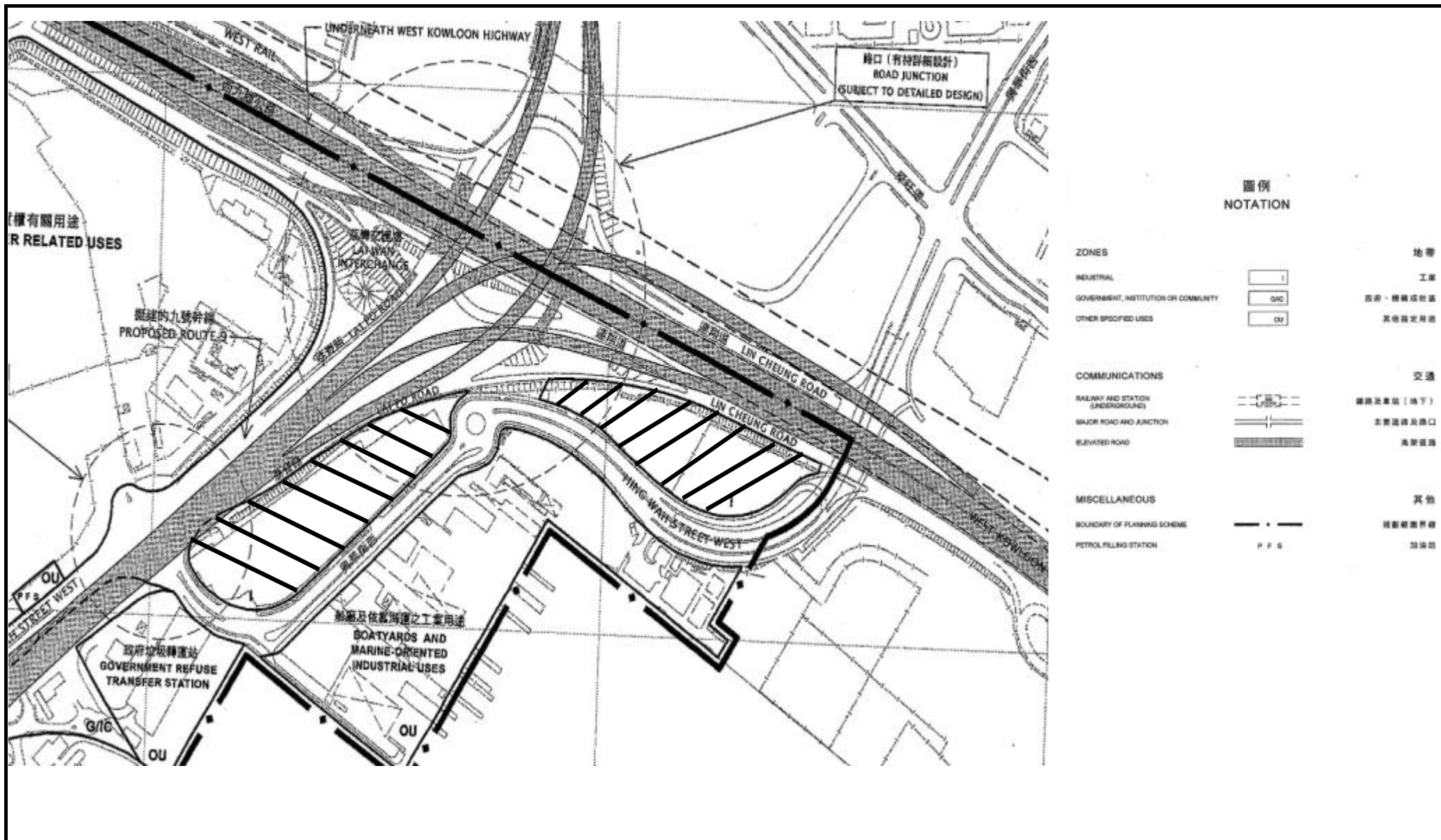
Figure No.	Rev:
10	0
Scale	Date
NTS	08/05



Appendix A

Zoning of Subject Site

Part-print from the Outline Zoning Plan No.S/SC/8



**PROPOSED TEMPORARY BUS DEPOT AT HING WAH STREET WEST, WEST KOWLOON
RECLAMATION**

Part-print of Outline Zoning Plan No. S/SC/8 showing the zoning of the Subject Site

Appendix:

A

Rev:

0

Scale

NTS

Date

09/05



Appendix B

Previous Land Uses of Subject Site



地政總署
九龍西區地政處
DISTRICT LANDS OFFICE,
KOWLOON WEST
LANDS DEPARTMENT

我們矢志努力不懈，提供妥善優質的土地行政服務。
We strive to achieve excellence in land administration.

九龍上海街二百五十號油蔴地停車場大廈十一樓
10TH FLOOR, YAUMATEI CARPARK BUILDING,
250 SHANGHAI STREET, KOWLOON

電話 Tel: 2300 1316
圖文傳真 Fax: 2782 5061 / 2374 2709
電郵地址 Email: eskwssp@landsd.gov.hk
本署檔號 Our Ref: (127) in LND KW KX 2245
來函檔號 Your Ref:

Allied Environmental Consultants Limited
1001 Shanghai Industrial Investment Building
48 Hennessy Road, Wanchai
Hong Kong
(Attn. : Mr. Patrick LEUNG)

28 September 2005

Dear Sirs,

**Enquiry on the History of Site at Hing Wah Street
West in West Kowloon Reclamation**

I refer to your facsimile dated 22 August 2005.

After investigation, it is found that the subject site was formed by reclamation. There were three parties previously occupying the subject site :-

<u>Period</u>	<u>User</u>	<u>Concerned parties</u>	<u>Remarks</u>
1. from 20.9.1996 to 30.6.1997	Works area for Strategic Sewage Disposal Scheme (SSDS) - Stage I Contract DE/93/16 - Sludge Treatment Facilities Proposed Water Main Connecting from Road D2, D16 CP3 to SCISSTW	Drainage Services Department	Occupied portion of the site
2. from 24.1.1997 to 31.12.1999	Works area for WKR Contract No. WK 25/96 - Contractor's Works Compound	Territory Development Department	- ditto -
3. from 7.7.1999 to 15.5.2004	Parking of public buses licensed under the Road Traffic Ordinance (Cap. 374) and operated by the KMB Co. (1933) Ltd.	KMB	Occupied whole of the site

Yours faithfully,

(Frederick KONG)

for District Lands Officer/Kowloon West

Appendix C

Tentative Work Program

Appendix D

*Assessment of Construction Noise Levels at
Hoi Chi House*

Appendix D - Acoustic Assessment for Noise Levels at Hoi Chi House due to Construction Work

Site Reference: 695

Site Reference: Proposed New World First Bus Temporary Bus Depot
at West Kowloon Reclamation

STEP						UNITS		
1	NSR	NSR as at the nearest housing estate on different floors NSR location / address	Domestic Premises 1/F Hoi Chi House <u>R1</u> 10/F Hoi Chi House <u>R2</u> 20/F Hoi Chi House <u>R3</u> 30/F Hoi Chi House <u>R4</u> 40/F Hoi Chi House <u>R5</u>					
2	Distance	Horizontal distance between source and receiver Vertical distance above G.L. Slant distance, d	150 0 150	150 30 153	150 60 162	150 90 175	150 120 192	m m m
3	SPME Item		SWL					
	Code	Description	No. of items	dB(A)				
	CNP 081	Excavator	1	108				
	CNP 186	Roller	1	112				
	CNP 141	Lorry	1	112				
CNP 044	Concrete Lorry Mixer	1	109	***PMEs assumed to operate simultaneously to predict worst case scenario				
		Total Lw	117					
4	Correction Factor	Distance Correction	-52	-52	-52	-53	-54	dB(A)
5	Correction Factor	Acoustic Reflection: Façade Effect	+3	+3	+3	+3	+3	dB(A)
6	CNL	(3) + (4) + (5) =	<u>R1</u> 68	<u>R2</u> 68	<u>R3</u> 68	<u>R4</u> 67	<u>R5</u> 66	dB(A)
7	Correction Factor	Acoustic Barrier: West Kowloon Expressway	-10 Full screen (from 1/F to 10/F)	-5 Partial screen (from 10/F to 20/F)	0	0	0	dB(A)
8	Resultant		<u>R1</u> 58	<u>R2</u> 63	<u>R3</u> 68	<u>R4</u> 67	<u>R5</u> 66	dB(A)
9	Non-Statutory Standard	Domestic Premise 0700 - 1900 hours on any day not being a Sunday or general holiday	75	75	75	75	75	dB(A)
10	Difference in Noise Levels	(9) - (8) =	<u>R1</u> 17	<u>R2</u> 12	<u>R3</u> 7	<u>R4</u> 8	<u>R5</u> 9	dB(A)
Conclusion: No adverse noise impact on Hoi Chi House or on any other identified sensitive receiver.								

Appendix E

Traffic Forecast Data for year 2009

**CKM Asia Limited**

Traffic and Transportation Planning Consultants

21st Floor, Methodist House, 36 Hennessy Road, Wan Chai, Hong Kong

Phone: (852) 2520 5990 Fax: (852) 2528 6343 Email: mail@ckmasia.com.hk

FAX MESSAGE

Our Ref:	J5140/1	Date:	13 July 2005
To:	Allied Environmental Consultants Limited	Fax:	2815 5399
Attention:	Mr Patrick Leung	Total Pages:	1 (incl. cover sheet)
From:	Mr William Ip		
Subject:	NWFB Bus Depot at Hing Wah Street West		

Dear Mr Leung,

Please find below the traffic data as per your request.

Road	2009 No. of Vehicles (2-way) and percentage of heavy vehicles in early morning
West Kowloon Highway	820 (34%)
Lin Cheung Road	212 (32%)
Lai Po Road	70 (70%)
Hing Wah Street West	50 (61%)
Sham Mong Road	40 (56%)
Route 8	240 (62%)

Should you have any queries, please do not hesitate to contact the undersigned.

Thank you for your attention.

Yours sincerely,

William Ip
Senior Traffic Engineer

PS Please note our new office address.

KIMICK/dp

Appendix F

*Baseline Noise monitoring Results and
Traffic Noise Prediction Results for Hoi Nga House,
Hoi Wai House, and Hoi Chi House
Using RoadNoise 2000*

General Information

Date	27-6-05		Remark: 1m away from building facade
Measurement Location	Hoi Chi House		
Weather Condition	Fine		
Time	Start: 23:00	Finish: 01:00	
Investigator(s)	R1, JK		
Sound Level Meter (Model, S/N)	Rion NA-27		
Calibrator (Model, S/N)			
Vibration Meter (Model, S/N)			
Calibration (@1k Hz)	Start: 93.9	Finish: 94.0	

Measurements Results

Measurement No.	Measurement Location	Time Period	Leq, dB(A)	Store	Remark
	Hoi Chi House				
1	401P	15 mins	67.7	135	L10 = 69.7 dB(A)
2	301P	"	68.0	136	L10 = 70.1 dB(A)
3	201P	"	66.8	137	L10 = 69.0 dB(A)
4	101P	"	61.7	138	L10 = 63.5 dB(A)
5	11P	"	58.8	139	L10 = 62.3 dB(A)

Made by: R1/JK Signature: [Signature] Date: 27/6/05

Allied Environmental Consultants Ltd
Acousticians & Environmental Engineers

Rm 1001 10/F, Shanghai Industrial Investment Bldg, 48 Hennessy Rd, Wan Chai, Hong Kong
Tel: (852) 2815 7028 Fax: (852) 2815 5399 e-mail: info@aechk.com



沛然環境評估
工程師有限公司

Floor Predicted Traffic Noise Level (dB(A))

Without additional Bus Traveling Flow

Road Noise 2000

Floor	Hoi Nga Hse							Hoi Wai Hse							Hoi Chi Hse						
	R1	R2	R3	R4	R5	R6	R7	R1	R2	R3	R4	R5	R6	R7	R1	R2	R3	R4	R5	R6	R7
1/F	60.2	58.9	58.8	60.4	55.9	55.3	55.1	60.6	59.4	59.4	60.9	56.4	55.8	56	61.3	60.3	60.2	62.1	59.4	59.6	60.5
2/F	60.2	58.9	58.8	60.4	55.9	55.3	55.2	60.6	59.5	59.4	60.9	56.4	55.8	56	61.3	60.3	60.2	62.1	59.4	59.6	60.6
3/F	60.2	59	58.9	60.4	55.9	55.3	55.2	60.7	59.5	59.5	60.9	56.5	55.8	56.1	61.4	60.3	60.2	62.2	59.4	59.7	60.6
4/F	60.3	59	58.9	60.4	56	55.4	55.3	60.7	59.6	59.5	61	56.5	55.9	56.1	61.4	60.4	60.3	62.2	59.5	59.7	60.6
5/F	60.3	59.1	58.9	60.5	56	55.4	55.3	60.8	59.6	59.6	61	56.5	55.9	56.1	61.4	60.4	60.3	62.2	59.5	59.7	60.6
6/F	60.3	59.1	59	60.5	56	55.4	55.3	60.8	59.6	59.6	61.1	56.6	55.9	56.2	61.5	60.4	60.3	62.3	59.5	59.8	60.6
7/F	60.4	59.1	59	60.6	56.1	55.5	55.4	60.8	59.6	59.6	61.1	56.6	55.9	56.2	61.5	60.5	60.4	62.3	59.5	59.8	60.7
8/F	60.4	59.2	59	60.6	56.1	55.5	55.4	60.8	59.7	59.7	61.1	56.7	56	56.3	61.5	60.5	60.4	62.3	59.5	59.8	60.7
9/F	60.4	59.2	59.1	60.7	56.1	55.6	55.5	60.9	59.8	59.7	61.1	56.7	56.1	56.3	61.6	60.5	60.5	62.3	59.6	59.8	60.7
10/F	60.5	59.3	59.1	60.7	56.1	55.6	55.5	60.9	59.8	59.7	61.2	56.7	56.1	56.3	61.6	60.6	60.5	62.4	59.6	59.8	60.7
11/F	60.5	59.3	59.2	60.7	56.2	55.6	55.5	61	59.8	59.8	61.2	56.7	56.1	56.4	61.7	60.7	60.5	62.4	59.6	59.9	60.7
12/F	60.5	59.3	59.2	60.7	56.2	55.7	55.6	61	59.9	59.9	61.3	56.8	56.2	56.4	61.7	60.7	60.6	62.5	59.6	59.9	60.8
13/F	60.6	59.4	59.2	60.8	56.3	55.7	55.7	61.1	60	60	61.4	56.9	56.2	56.4	61.8	60.8	60.7	62.5	59.7	59.9	60.8
14/F	60.7	59.5	59.3	60.9	56.3	55.8	55.7	61.1	60.1	60.1	61.4	56.9	56.3	56.5	61.9	60.9	60.8	62.7	59.7	60	60.9
15/F	60.8	59.6	59.4	61	56.4	55.8	55.8	61.3	60.2	60.2	61.6	57	56.4	56.7	62	61.1	61	62.8	59.8	60	61
16/F	60.9	59.7	59.5	61.1	56.5	56	56	61.4	60.3	60.3	61.7	57.1	56.5	56.8	62.2	61.2	61.1	62.9	59.8	60.1	61
17/F	61	59.8	59.7	61.2	56.6	56.1	56.1	61.5	60.5	60.5	61.9	57.3	56.6	57	62.3	61.4	61.3	63	59.9	60.2	61.2
18/F	61.1	60	59.8	61.3	56.7	56.2	56.4	61.6	60.7	60.6	62	57.4	56.8	57.1	62.4	61.5	61.5	63.2	60	60.3	61.2
19/F	61.2	60.2	60	61.4	56.9	56.4	56.6	61.8	60.8	60.8	62.1	57.5	56.9	57.3	62.6	61.7	61.6	63.3	60	60.4	61.4
20/F	61.3	60.3	60.1	61.6	57	56.5	56.7	61.9	60.9	60.9	62.3	57.6	57.1	57.5	62.7	61.8	61.8	63.5	60.2	60.5	61.4
21/F	61.5	60.4	60.2	61.7	57.1	56.7	57	62	61.1	61.1	62.4	57.7	57.2	57.6	62.8	62	62	63.6	60.3	60.6	61.5
22/F	61.6	60.6	60.3	61.8	57.2	56.8	57.1	62.2	61.2	61.2	62.5	57.8	57.3	57.7	63	62.1	62.1	63.7	60.3	60.7	61.6
23/F	61.7	60.7	60.5	61.9	57.3	56.9	57.3	62.3	61.4	61.3	62.7	57.9	57.4	57.8	63.2	62.3	62.3	63.9	60.5	60.8	61.7
24/F	61.8	60.8	60.6	62	57.4	57	57.4	62.4	61.5	61.5	62.8	58.1	57.5	58	63.3	62.4	62.5	64.1	60.6	60.9	61.8
25/F	61.9	60.9	60.6	62.2	57.4	57.1	57.5	62.6	61.6	61.6	63	58.2	57.6	58.1	63.5	62.7	62.7	64.4	60.7	61	61.9
26/F	62	61	60.8	62.3	57.6	57.2	57.6	62.7	61.8	61.8	63.1	58.3	57.7	58.2	63.8	62.9	63	64.7	60.9	61.2	62.1
27/F	62.1	61.1	60.9	62.4	57.6	57.3	57.7	62.9	61.9	61.9	63.3	58.5	57.9	58.4	64.2	63.3	63.4	64.9	61.2	61.3	62.3
28/F	62.2	61.3	61	62.6	57.8	57.5	57.9	63.1	62.1	62.1	63.6	58.7	58	58.5	64.4	63.6	63.5	65	61.4	61.6	62.4
29/F	62.4	61.4	61.2	62.7	57.9	57.6	58	63.3	62.4	62.5	63.9	59	58.2	58.7	64.5	63.6	63.6	65.2	61.5	62	62.8
30/F	62.5	61.5	61.3	62.9	58.1	57.7	58.1	63.6	62.7	62.7	64.1	59.5	58.5	58.9	64.7	63.8	63.8	65.5	61.6	61.9	62.9
31/F	62.7	61.7	61.5	63.2	58.3	57.9	58.3	63.8	63	62.9	64.2	59.4	58.8	59.1	64.9	64.1	64.2	65.8	61.8	62	62.9
32/F	62.9	61.9	61.7	63.5	58.6	58.1	58.4	63.9	63	62.9	64.4	59.5	59	59.4	65.2	64.3	64.4	66	62	62.2	63.1
33/F	63.2	62.2	62	63.6	58.9	58.3	58.6	64.1	63.2	63.1	64.6	59.6	58.9	59.6	65.5	64.7	64.7	66.3	62.3	62.5	63.3
34/F	63.4	62.5	62.1	63.7	58.9	58.6	58.8	64.3	63.3	63.3	64.8	59.9	59.1	59.6	65.7	64.8	64.9	66.4	62.5	62.7	63.5
35/F	63.5	62.5	62.2	63.8	59	58.9	59.2	64.5	63.6	63.6	65.1	60.2	59.2	59.7	65.9	65	65	66.5	62.6	62.9	63.8
36/F	63.6	62.6	62.4	64	59	58.9	59.4	64.8	63.8	63.8	65.3	60.4	59.5	59.8	66.1	65.2	65.2	66.7	62.8	63.1	63.9
37/F	63.7	62.7	62.4	64.2	59.2	58.9	59.3	65	64.1	64	65.5	60.7	59.8	60.1	66.2	65.4	65.3	66.7	62.9	63.2	64.2
38/F	63.9	62.9	62.6	64.5	59.5	59.1	59.4	65.2	64.3	64.2	65.7	60.8	60	60.3	66.3	65.5	65.5	66.9	63	63.4	64.3
39/F	64.1	63.1	62.8	64.6	59.7	59.3	59.4	65.3	64.5	64.4	65.9	61	60.2	60.6	66.4	65.6	65.5	66.9	63.1	63.4	64.4
40/F	64.3	63.3	63.1	64.9	60	59.5	59.7	65.5	64.6	64.5	66	61.1	60.4	60.8	66.5	65.7	65.6	66.9	63.1	63.6	64.5

MAX. VALUE

MIN. VALUE

Floor Predicted Traffic Noise Level (dB(A))

With additional Bus Traveling Flow

Road Noise 2000

Floor	Hoi Nga Hse							Hoi Wai Hse							Hoi Chi Hse						
	R1	R2	R3	R4	R5	R6	R7	R1	R2	R3	R4	R5	R6	R7	R1	R2	R3	R4	R5	R6	R7
1/F	60.2	58.9	58.8	60.4	55.9	55.3	55.2	60.6	59.5	59.4	60.9	56.4	55.8	56.1	61.3	60.3	60.2	62.2	59.5	59.7	60.6
2/F	60.2	59	58.9	60.4	55.9	55.3	55.2	60.7	59.5	59.5	60.9	56.4	55.8	56.1	61.4	60.3	60.2	62.2	59.5	59.8	60.7
3/F	60.3	59	58.9	60.4	56	55.3	55.2	60.7	59.6	59.5	61	56.5	55.9	56.1	61.4	60.4	60.2	62.2	59.6	59.8	60.7
4/F	60.3	59	58.9	60.5	56	55.4	55.3	60.8	59.6	59.5	61	56.5	55.9	56.2	61.4	60.4	60.3	62.3	59.6	59.8	60.7
5/F	60.3	59.1	59	60.5	56	55.4	55.3	60.8	59.6	59.6	61	56.5	55.9	56.2	61.5	60.4	60.3	62.3	59.6	59.9	60.7
6/F	60.4	59.1	59	60.6	56.1	55.5	55.4	60.8	59.7	59.6	61.1	56.6	56	56.2	61.5	60.4	60.3	62.3	59.6	59.9	60.7
7/F	60.4	59.2	59	60.6	56.1	55.5	55.4	60.9	59.7	59.7	61.1	56.6	56	56.3	61.5	60.5	60.4	62.4	59.7	59.9	60.8
8/F	60.4	59.2	59.1	60.6	56.1	55.5	55.5	60.9	59.7	59.7	61.1	56.7	56.1	56.3	61.6	60.5	60.4	62.4	59.6	59.9	60.8
9/F	60.5	59.3	59.1	60.7	56.1	55.6	55.5	60.9	59.8	59.8	61.2	56.7	56.1	56.3	61.6	60.6	60.5	62.4	59.7	59.9	60.8
10/F	60.5	59.3	59.2	60.7	56.2	55.6	55.5	61	59.8	59.8	61.2	56.7	56.2	56.4	61.7	60.6	60.5	62.5	59.7	60	60.8
11/F	60.5	59.3	59.2	60.7	56.2	55.6	55.6	61	59.9	59.9	61.3	56.8	56.2	56.4	61.7	60.7	60.6	62.5	59.7	60	60.9
12/F	60.6	59.4	59.2	60.8	56.3	55.7	55.6	61.1	60	59.9	61.3	56.9	56.2	56.5	61.8	60.8	60.7	62.6	59.8	60	60.9
13/F	60.7	59.5	59.3	60.8	56.3	55.8	55.7	61.1	60.1	60	61.4	56.9	56.3	56.5	61.9	60.9	60.8	62.6	59.8	60.1	60.9
14/F	60.7	59.5	59.4	60.9	56.4	55.9	55.8	61.2	60.1	60.1	61.5	57	56.4	56.6	62	61	60.9	62.8	59.8	60.1	61
15/F	60.8	59.7	59.5	61	56.5	55.9	55.9	61.3	60.3	60.2	61.6	57.1	56.5	56.7	62.1	61.1	61	62.9	59.9	60.2	61.1
16/F	60.9	59.8	59.6	61.1	56.5	56	56.1	61.4	60.4	60.4	61.8	57.1	56.6	56.9	62.2	61.3	61.2	63	60	60.3	61.2
17/F	61	59.9	59.7	61.3	56.7	56.2	56.2	61.6	60.6	60.5	61.9	57.3	56.7	57.1	62.4	61.5	61.4	63.1	60.1	60.4	61.3
18/F	61.2	60.1	59.9	61.4	56.8	56.3	56.4	61.7	60.7	60.7	62.1	57.4	56.9	57.2	62.5	61.6	61.6	63.3	60.1	60.4	61.4
19/F	61.3	60.3	60.1	61.5	56.9	56.5	56.7	61.9	60.9	60.9	62.2	57.6	57	57.4	62.7	61.8	61.7	63.4	60.2	60.5	61.5
20/F	61.4	60.4	60.2	61.7	57.1	56.6	56.8	62	61	61	62.4	57.7	57.2	57.6	62.9	62	61.9	63.6	60.3	60.6	61.6
21/F	61.6	60.5	60.3	61.8	57.2	56.8	57.1	62.1	61.2	61.2	62.5	57.8	57.3	57.8	63	62.1	62.1	63.7	60.4	60.7	61.7
22/F	61.7	60.7	60.4	61.9	57.3	56.9	57.3	62.3	61.3	61.3	62.6	57.9	57.4	57.9	63.1	62.3	62.2	63.8	60.5	60.8	61.8
23/F	61.8	60.8	60.6	62	57.4	57.1	57.4	62.4	61.5	61.4	62.8	58	57.5	58	63.3	62.4	62.4	64.1	60.6	60.9	61.9
24/F	61.9	60.9	60.7	62.2	57.5	57.2	57.5	62.5	61.6	61.6	62.9	58.2	57.7	58.2	63.5	62.6	62.6	64.3	60.7	61	62
25/F	62	61	60.7	62.3	57.6	57.2	57.6	62.7	61.8	61.7	63.1	58.3	57.8	58.2	63.7	62.8	62.8	64.5	60.9	61.2	62.1
26/F	62.1	61.2	60.9	62.4	57.7	57.4	57.7	62.8	61.9	61.9	63.3	58.5	57.9	58.4	63.9	63	63.2	64.9	61.1	61.3	62.3
27/F	62.2	61.2	61	62.6	57.8	57.5	57.9	63	62.1	62.1	63.5	58.6	58	58.5	64.3	63.4	63.6	65	61.3	61.5	62.4
28/F	62.4	61.4	61.2	62.7	57.9	57.6	58	63.2	62.3	62.3	63.8	58.8	58.2	58.6	64.6	63.7	63.6	65.2	61.6	61.8	62.6
29/F	62.5	61.5	61.3	62.9	58.1	57.7	58.1	63.5	62.5	62.6	64.1	59.2	58.4	58.8	64.6	63.8	63.7	65.4	61.7	62.1	63
30/F	62.7	61.7	61.4	63.1	58.2	57.9	58.3	63.8	62.8	62.8	64.2	59.6	58.6	59	64.8	63.9	64	65.7	61.8	62.1	63.1
31/F	62.8	61.9	61.6	63.4	58.4	58	58.4	64	63.1	63	64.3	59.6	59	59.3	65.1	64.2	64.3	65.9	62	62.2	63.1
32/F	63.1	62.1	61.8	63.6	58.7	58.2	58.6	64.1	63.2	63.1	64.6	59.7	59.2	59.6	65.4	64.5	64.6	66.2	62.2	62.4	63.3
33/F	63.3	62.3	62.2	63.7	59	58.5	58.7	64.2	63.3	63.3	64.8	59.8	59.1	59.8	65.6	64.8	64.9	66.4	62.5	62.6	63.5
34/F	63.6	62.6	62.3	63.9	59.1	58.8	58.9	64.4	63.5	63.5	65	60.1	59.3	59.8	65.8	65	65.1	66.6	62.7	62.8	63.7
35/F	63.6	62.7	62.4	64	59.1	59.1	59.3	64.7	63.7	63.8	65.3	60.4	59.4	59.9	66.1	65.2	65.2	66.7	62.8	63.1	63.9
36/F	63.7	62.8	62.5	64.2	59.2	59	59.5	64.9	64	64	65.5	60.6	59.7	60	66.2	65.4	65.4	66.9	63	63.2	64.1
37/F	63.8	62.9	62.6	64.4	59.4	59.1	59.4	65.1	64.2	64.2	65.7	60.8	59.9	60.3	66.4	65.6	65.5	66.9	63.1	63.4	64.3
38/F	64	63.1	62.8	64.6	59.7	59.2	59.5	65.4	64.4	64.4	65.8	61	60.2	60.5	66.5	65.7	65.7	67	63.2	63.5	64.5
39/F	64.3	63.3	63	64.8	59.9	59.4	59.6	65.5	64.7	64.6	66	61.2	60.4	60.7	66.5	65.8	65.7	67.1	63.2	63.6	64.6
40/F	64.5	63.5	63.3	65	60.2	59.7	59.8	65.7	64.8	64.7	66.1	61.3	60.6	60.9	66.7	65.9	65.7	67.1	63.3	63.8	64.7

MAX. VALUE

MIN. VALUE

Appendix G

*Details of SWL Determination for
Refueling and Bus Washing Operations*

Appendix G

Determination of sound power levels of Washing Bay at existing Tseung Kwan O Area 85 using sound pressure with reference to ISO 3746



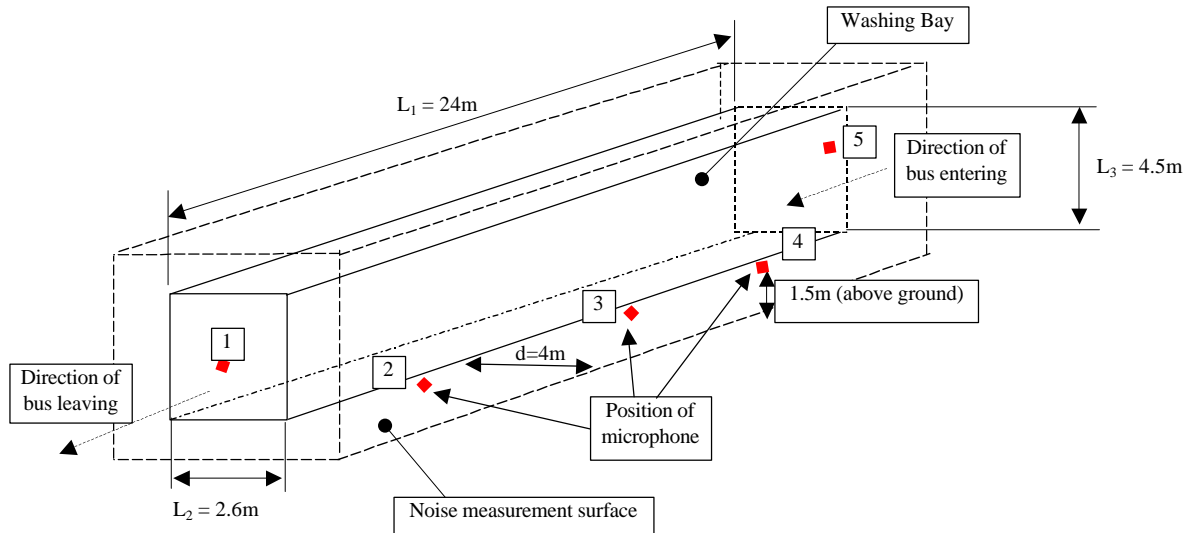
Operation of the Washing Machine in progress



Noise Measurement in Progress aside Bus Washing Bay

Noise measurements were taken place for the entire process of bus washing. The operation of washing machine started automatically when bus entered the specified location in front of the bus washing bay, and stopped when the bus left. Entire process lasted for around 1 minunte on the average, depending on the speed of bus travelling through the washing bay.

Locations of microphone for noise measurements were located around 4m away from the washing bay as shown schematically in the following figure:-



Area of measurement surface [S]
(in dotted line outside) = $4(ab+bc+ca)$ (using Eq. 3 in ISO 3746)

where $a = 0.5L_1+d$	$b = 0.5L_2+d$	$c = L_3+d$
$= 0.5(24)+4$	$= 0.5(2.6)+4$	$= 4.5+4$
$= 16$	$= 5.3$	$= 8.5$

Thus, area of noise measurement surface [S] = $4[(16)(5.3)+(5.3)(8.5)+(8.5)(16)]$
= 1063.4 sq. m

Average measured sound pressure level at each location -	Locations	1	2	3	4	5
	dB(A)	70.9	70.7	72.5	70.3	71.4

Average sound pressure level $L'_{pA} = 10 \log[1/5(10^{7.09}+10^{7.07}+10^{7.25}+10^{7.03}+10^{7.14})]$ (using Eq. 4 in ISO 3746)
= 71.2 dB(A)

Background noise level $L''_{pA} = 60$ dB(A)

$L_A = 71.2 - 60 = 11.2$ dB(A)

Since $L_A > 10$ dB, no correction is required.

Therefore, $L_{WA} = L'_{pA} + 10 \log S$ (using Eq. 8 in ISO 3746)
= $71.2 + 10 \log(1063.4)$
= 101 dB(A)

Appendix G

Determination of sound power levels of Refueling Bay at existing Tseung Kwan O Area 85 using sound pressure with reference to ISO 3746

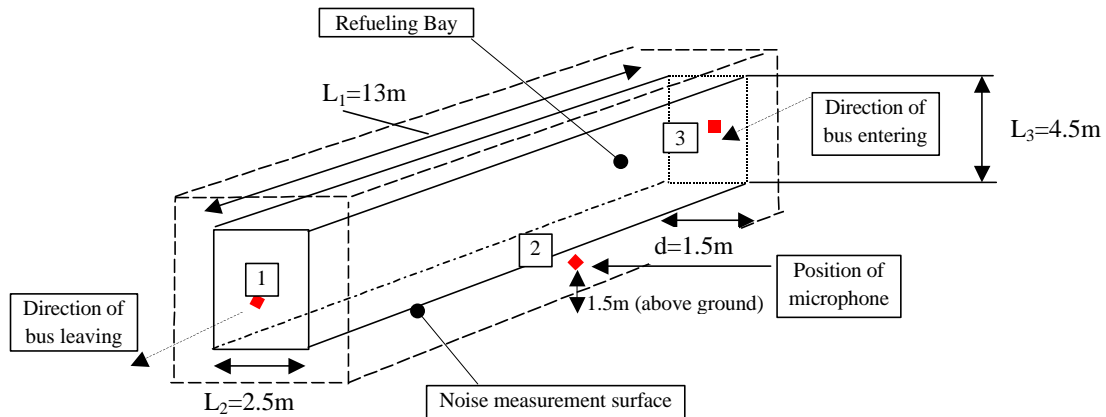


Refueling in Progress



Noise Measurement in Progress at Refueling Bay

Noise measurement was taken place when the bus was driven through, stopped and refueled. Locations of microphone for noise measurements were located around 1.5m away from the refueling bay as shown schematically in the following figure:-



Area of measurement surface [S]
(in dotted line outside) = $4(ab+bc+ca)$ (using Eq 3 in ISO 3746)

$$\begin{aligned} \text{where } a &= 0.5L_1+d & b &= 0.5L_2+d & c &= L_3+d \\ &= 0.5(13)+1.5 & &= 0.5(2.5)+1.5 & &= 4.5+1.5 \\ &= 8 & &= 2.75 & &= 6 \end{aligned}$$

Thus, area of noise measurement

$$\begin{aligned} \text{surface [S]} &= 4[(8)(2.75)+(2.75)(6)+(6)(8)] \\ &= 346 \text{ sq.m} \end{aligned}$$

Average measured sound pressure level at each location -

Locations	1	2	3
dB(A)	71.3	70.7	73.6

Average sound pressure level

$$L'_{pA} = 10 \log [1/3(10^{7.13} + 10^{7.07} + 10^{7.36})] \quad (\text{using Eq. 4 in ISO 3746})$$

$$= 72.1 \text{ dB(A)}$$

Background noise level

$$L''_{pA} = 60 \text{ dB(A)}$$

$$L_A = 72.1 - 60 = 12.1 \text{ dB(A)}$$

Since $L_A > 10 \text{ dB}$, no correction is made

$$\begin{aligned} L_{WA} &= L'_{pA} + 10 \log S \text{ dB} & (\text{using Eq 8 in ISO 3746}) \\ &= 72.1 + 10 \log 346 \\ &= \underline{\underline{98 \text{ dB(A)}}} \end{aligned}$$

Appendix H

*Assessment of Fixed Noise Impacts at
Hoi Chi House due to Operations within Depot*

Appendix H

Acoustic Assessment for Noise Levels at Hoi Chi House due to Operational Activities within Depot

Job Reference: 695
 Site Reference: Proposed New World First Bus Temporary Bus Depot at West Kowloon Reclamation

Table 1

STEP						UNITS				
1	NSR	NSR as at the nearest housing estate on different floors NSR location / address			Domestic Premises 1/F Hoi Chi House <u>R1</u> 10/F Hoi Chi House <u>R2</u> 20/F Hoi Chi House <u>R3</u> 30/F Hoi Chi House <u>R4</u> 40/F Hoi Chi House <u>R5</u>					
2	Distance	Horizontal distance between source and receiver Vertical distance above G.L. Slant distance, d			150	150	150	150	150	m m m
3	SPME Item			SWL						
	Code	Description	No. of items	dB(A) per item						
		Washing Bay	1	101*	*Actual SWL measured on site for NWFS Depot at TKO with reference to ISO 3746: 1995					
		Refueling Bay	2	98**	**Actual SWL measured on site for NWFS Depot at TKO with reference to ISO 3746: 1995					
	Total Lw			104	#Assuming all activities are carried out at the same time					
4	Correction Factor	Distance Correction			-52	-52	-52	-53	-54	dB(A)
5	Correction Factor	Acoustic Reflection: Façade Effect			3	3	3	3	3	dB(A)
6	CNL (LAeq)	(3) + (4) + (5) =			<u>R1</u> 55	<u>R2</u> 55	<u>R3</u> 55	<u>R4</u> 54	<u>R5</u> 53	dB(A)
7	Barrier Effect	Effective Acoustic Barriers by elevated shelters or parallel walls (5m high)			-5	-5	-5	-5	-5	dB(A)
8	Barrier Effect	West Kowloon Expressway and MTRC Tung Chung Line & Airport Express Line			-10 Completely screened	-5 Partially screened	0	0	0	dB(A)
9	Resultant (LAeq)	(6) + (7) + (8)			<u>R1</u> 40	<u>R2</u> 45	<u>R3</u> 50	<u>R4</u> 49	<u>R5</u> 48	dB(A)