

Hong Kong Jockey Club

**Upgrading of
Quarantine Stables for
the 2008 Olympic
Equestrian Event**

Project Profile

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February 2007

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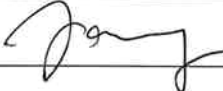


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1 Basic Information

1.1 Project Title

Upgrading of Quarantine Stables for the 2008 Olympic Equestrian Event (hereafter called "the Project")

1.2 Project Description

Under the master plan of the 2008 Olympic Equestrian Event, the existing Quarantine B at Shatin Racecourse would be used for housing the reserved Olympic horses. The precinct, which has a total area of 8,200m² and can accommodate up to 70 horses, was originally built for the risk management control of the Hong Kong Jockey Club (HKJC) horse population against potential threat of disease from imported horses of other origins. It is one of the designated facilities approved by AFCD for undertaking quarantine processes for horses in Hong Kong.

Since its operation in 1993, Quarantine B has been successful in performing its function of preventing equine disease from being introduced to or exported from Hong Kong by undertaking appropriate quarantine procedures. No failure record of the quarantine system at Quarantine B has been reported thus far.

While it may be possible to present a case to the Federation Equestre International (FEI) to use the existing stables in Quarantine B as the accommodation for Olympic reserved horses, the Technical Delegate from FEI has suggested that all stables used at the Core Venue during the Olympic Event should be of similar standard, thus avoiding the potential for backlash from Olympic teams due to the disparity between facilities and issues associated with horse safety. This is also in line with the HKJC long-term business planning of upgrading and expanding the quarantine facilities at Sha Tin Racecourse to cater for the general increase in the number of horses being imported to and exported from Hong Kong due to a more competitive racing environment.

The HKJC therefore proposes to rebuild and expand Quarantine B in two stages to provide necessary stabling facilities for Olympic as well as adequate quarantine facilities for future uses. To maintain an uninterrupted quarantine process and facility, the Olympic Stables in Hong Kong Sports Institute (HKSI) will be used for housing horses under quarantine during the first construction phase of the Project. All these quarantine stables will be operated and managed in accordance with a series of AFCD approved standard operating procedures maintained by HKJC. Figure 1-1 shows the location and extent of the Project site.

The new quarantine precinct is designed about a central access way shared by horses and service vehicles alike. It is divided into two zones: Zone 1 and Zone 2, which are separated by a trotting ring. Each zone is served by its own entry, office area, loading/ unloading area and parking area. This is to minimise the amount of flow connection between the two zones. A new water chiller plant is proposed to service the air conditioning needs of the quarantine stables. It will be located at the northern end of the new quarantine precinct where the 1000m chute joins the racecourse. All existing facilities and superstructures on the site will need to be demolished and reconstructed.

Major physical features for converting the Olympic Stables to quarantine stables include vector screens on openable windows and doors, footbath at the entrance and disinfectant hand-washing bucket inside each stable.

1.3 Nature of the Project

The nature of the Project is to demolish the existing Quarantine B stables for construction of an expanded new quarantine precinct with associated facilities to fulfil quarantine requirements and the temporary use of the Olympic Stables for quarantine during the first

Quarantine B construction phase. The proposed layout of the new Quarantine B and the Olympic Stables are shown in Figures 1-2a and 1-2b. Details of the proposed addition, modification or alteration at Quarantine B are given in Section 1.7.

In accordance with the Environmental Impact Assessment Ordinance (EIAO) (Cap. 499), the Project is a Designated Project (DP) under item N.2 Part 1 of Schedule 2 of the Ordinance - “A quarantine station, or quarantine lairage, for animals”.

The existing Quarantine B precinct has been in operation since 1993, which was well before the enactment of the EIAO, and is therefore an exempted DP under S.9(2) of the Ordinance.

In accordance with S.9(4) of the EIAO, an environmental permit (EP) is required for an exempted DP when there are material changes to the project. The definition of a material change is given in Section 6.1 of the Technical Memorandum on Environmental Impact Assessment Process (TM-EIAO). Evaluation against the criteria under Section 6.1 of the TM-EIAO suggested that the Project constitutes a material change as it involves “a change to physical alignment, layout or design of project causing an environmental impact likely to affect existing or planned community, ...” (S6.1(a)). An EP is therefore required for construction and operation of the Project.

This project profile is prepared in accordance with S5(10) of the EIAO and Annex 2 of the TM-EIAO to describe the impact of the material changes and the corresponding mitigation measures for “Permission to Apply Directly for an Environmental Permit” (DIR).

1.4 Name of Project Proponent

The name of Project Proponent is the Hong Kong Jockey Club.

1.5 Location of the Project

The Project is located at the existing Quarantine B in the HKJC Shatin Racecourse and the Olympic Stables at the HKSI. The existing Quarantine B precinct, which was built in 1993, is located on the eastern side of the 1000m chute to the south of the racecourse and is a part of the Sha Tin Racecourse facilities owned and operated by the HKJC. The Olympic Stables, where quarantine will take place during the first construction phase of Quarantine B, is located at the north-eastern part of the HKSI.

1.6 Name and telephone number of contact person(s)

Name and telephone number of contact person are as follows:

Mr. John Phillip Ridley 1 Sports Road, Happy Valley, Hong Kong

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Fax : 2966-6801

E-mail : jpripley@hkjc.org.hk

1.7 Proposed Addition, Modification and Alteration

1.7.1 Quarantine B

Table 1-1 shows the proposed addition, modification and alteration works on the Quarantine B site.

Table 1-1: Summary of facilities at Quarantine B of Sha Tin Racecourse

Facility	No. of units		Function
	Existing	Future	
Stable Buildings (Stalls)	11 (70)	18 (108)	House horses in isolated batches
Sand Yards	8	7	Horse down time
Horse Walkers	2	3	Horse exercise

Facility	No. of units		Function
	Existing	Future	
Wash Bay	4	6	Horse washing facilities
Scales	1	1	Horse weighing
Trotting Ring	1	1	Horse exercise
Loading / Unloading	2	2	Horse transport
Office	1	2	Staff break, administration
Feed and General Storage	--	1	Feed, bedding bulk and equipment storage
Central Exercise Walkway	--	1	Access to precinct facilities
Chiller Plant	--	1	Central AC chiller
Parking	12	12	Visitor and staff parking

1.7.1.1 Stable Buildings

The new quarantine stables will need to be operational for the 2008 Olympic and Paralympic Equestrian Event for about four weeks and then for equine quarantine use thereafter. Eighteen stable buildings, which are divided into two zones (Zone 1 and Zone 2), will be built at the new quarantine precinct. There are 6 stable buildings of 6 horses each in Zone 1 giving a maximum population of 36 horses. There are 12 stable buildings of 6 horses each in Zone 2, giving a maximum population of 72 horses. Combined, the precinct has a maximum theoretical population of 108 horses, an increase over existing accommodation of 38 stalls. However, given that horses do not always arrive in batches of six, the realistic maximum population is somewhat less than 108 horses.

Stable buildings will be separated from each other by at least 15m between window faces. The new quarantine stables are designed as single storey structures, with similar materials, finishes, style and aesthetic as the Olympic Stable Complex at HKSI. They will be designed to a high standard of full enclosure construction and equipped with activated carbon filter of minimum 90% odour removal efficiency at the exhaust.

Each stable building will be provided a 3.6m x 3.6m feed, bedding and tack store, combined with staff workstation and a toilet with hand-washing facility. To fulfil the quarantine requirements, every stable building will be equipped with fly screen door, disinfectant foot bath at the entrance and hand washing buckets. In two of the stable buildings a cupboard will be located in the feed/tack storage area for the dedicated use of veterinary equipment. The building will be laid out on a 3.6m x 3.6m grid to ensure that a proprietary stalling system can be easily accommodated. Each stall, the entry way and the feed/ bedding/ tack store are all 3.6m x 3.6m. The central aisle inside each stable building is also 3.6m wide.

The stable entry has two sets of doors, the first being a set of solid sliding double doors, the second being an inward swinging vector screened set. A recess is provided in the floor near the entry for the provision of a disinfectant foot bath. Walls, floors and the joints between them are impervious to minimise bacteria and disease harbouring spaces.

1.7.1.2 Sand Yards

Seven sand yards with dimensions of 9.5m x 7m will be built at the quarantine precinct. The number and size of sand yards is slightly reduced.

1.7.1.3 Horse Walkers

There will be three horse walkers planned for the new Quarantine B. The diameter of each new horse walker is 16m, slightly smaller than the existing ones which have a diameter of 18m. This size of horse walker will accommodate up to 6 horses.

1.7.1.4 Wash Bays

The number of wash bays will be increased from four to six. Each horse wash bay will be equipped with facilities enabling the washing of four horses at the same time.

1.7.1.5 Trotting Ring

The new trotting ring will be relocated to a position to separating the new quarantine precinct into two zones. It will be of the same size as the existing one.

1.7.1.6 Loading / Unloading Areas

There will be a horse loading/unloading area associated with each of the two zones. These areas are similar in size and setup to the current loading/unloading area located at the southern end of the existing quarantine precinct.

1.7.1.7 Office / Amenities

The office buildings will be an extension of a standard stable block. A stable block will be extended by two bays or 7.2m giving an administration area of approximately 80m² at each of the precinct entries. The administration area will not share any facilities (including air conditioning system) with the stable block that it is adjoined to.

1.7.1.8 Feed and General Storage

A single large feed and general store will be located in the middle of the precinct. With openings proposed to each of the long sides, large trucks can unload goods into the store without entering the precinct itself. Goods are then distributed throughout the precinct from doors located on the inside of the store.

1.7.1.9 Central Exercise Walkway

The stable modules will be set out in two rows separating by a constant 15m gap. A central access way of 6m in width is used as a horse exercise walkway. It is separated from the stable buildings by fences to ensure horses are not walking directly past the door into stable building of horses from another quarantine batch. Horses can access horse walkers, sand yards, wash bays and the trotting ring through the central exercise walkway. Access out of the quarantine precinct onto the track will also be achieved by walking up the central exercise walkway.

1.7.1.10 Chiller Plant

A new chiller plant will be built at the northern end of the precinct where the 1000m chute joins the course. In accordance with HKJC's latest energy efficiency policy, the chiller plant will be a water-cooled type.

The water-cooled chiller will be designed, operated and maintained in accordance with the Code of Practice for Water-cooled Air Conditioning System published by EMSD and the Code of Practice on "Prevention of Legionnaires' Disease."

1.7.1.11 Parking

Twelve parking spaces will be provided at the precinct for visitor and staff parking.

1.7.2 Olympic Stables

Minor fitting out works necessary for the conversion of the Olympic Stables to a quarantine facility include installation of disinfectant footbath at the entrance of each stable building, provision of disinfectant hand-washing bucket and vector screens on the entrance doors to each stable block.

1.8 Timetable for Addition, Modification or Alteration

HKJC is the Project Proponent with overall responsibility for the planning, design, construction and operation of the Project. Ove Arup & Partners Hong Kong Ltd. (Arup) was commissioned as the engineering and environmental consultant. The proposed works will be implemented by contractor(s) to be appointed by HKJC.

The new Quarantine B precinct will be constructed in 2 stages, with Stage 1 being predominantly from September 2007 to March 2008 and Stage 2 from October 2008 to April 2009. The Project will take a total of approximately 20 months to complete, including 14 months of construction activities and 6 months of the Olympic and Paralympic Equestrian

Events and the associated preparation works. Table 1-2 gives the tentative project timetable and phasing. Figure 1-3 shows the demarcation of the construction phases.

Table 1-2: Project timetable

Task	Duration	Start	Finish
Quarantine B			
Stage 1 Construction (Stables and Chiller)	7 months	Sep 07	Mar 08
Olympic Overlay Construction, Olympic Event and Paralympic Event	6 months	Apr 08	Sep 08
Stage 2 Construction (Stables)	7 months	Oct 08	Apr 09
Olympic Stables			
Fitting-out works	1 month	Aug 07	Aug 07
Temporary use as quarantine facility	7 months	Sep 07	Mar 08

During Stage 1 construction of Quarantine B, horses under quarantine will be housed in the Olympic Stables in HKSI for approximately 7 months. During the Olympic period, both the newly completed Stage 1 Quarantine B stables and the Olympic Stables will be used for housing horses for the Olympic Equestrian Event, no regular quarantine of horses arising from import/export will take place at these premises. During Stage 2 construction of Quarantine B, horses under quarantine will be housed in the newly built premises constructed in Stage 1, which will be separated from the Stage 2 construction site by a trotting ring.

2 Possible Impact on the Environment

2.1 Major Elements of the Surrounding Environment

The Project area is situated in Fo Tan, Sha Tin adjoining a mixture of high rise residential buildings, industrial areas and recreational facilities. Major elements of the surrounding environment include Sha Tin Racecourse and Penfold Park to the northeast, Hong Kong Sports Institute to the southeast, Fo Tan industrial area to northwest and high-rise residential buildings in various directions. Tai Po Road – Sha Tin section is located along the northwest of the site at a distance of about 100m. The air and noise sensitive receivers (ASRs and NSRs) are shown in Table 2-1 and Table 2-2 respectively. Figure 2-1 shows the locations of the ASRs surrounding the Project site and Figure 2-2 shows the locations of the NSRs.

Table 2-1: List of air sensitive receivers

ASR ID.	ASR Description	Use	Shortest Horizontal Distance to Project Boundary (m)
A1	Hong Kong Institute of Vocational Education (Sha Tin)	Educational	420
A2	Sha Tin Fire Station	Office	290
A3	Jockey Club Ti-I College	Educational	270
A4	KCRC House	Office	190
A5	HKJC Staff Quarters	Residential	30
A6	Racecourse Villa	Residential	70
A7	Jubilee Court Shopping Centre	Commercial	190
A8	Jubilee Garden	Residential	230
A9	Royal Ascot Shopping Centre	Commercial	200
A10	Royal Ascot	Residential	230
A11	Ravana Garden	Residential	290
A12	Leung Kui Kau Lutheran Primary School	Educational	260
A13	Garden Vista	Residential	250

ASR ID.	ASR Description	Use	Shortest Horizontal Distance to Project Boundary (m)
A14	Pictorial Garden Phase I	Residential	270
A15	Pictorial Garden Phase II	Residential	340
A16	Pictorial Garden Phase III	Residential	440
A17*	Penfold Park	Recreational	170
A18*	Hong Kong Sports Institute	Educational	20

*A17 & A18 will be ASRs after Olympic and Paralympic Event

Table 2-2: List of noise sensitive receivers

NSR ID.	NSR Description	Use	Shortest Horizontal Distance to Project Boundary (m)
N1	Jockey Club Ti-I College	Educational	270
N2	HKJC Staff Quarters	Residential	30
N3	Racecourse Villa	Residential	70
N4	Jubilee Garden	Residential	230
N5	Royal Ascot	Residential	230
N6	Ravana Garden	Residential	290
N7	Leung Kui Kau Primary School	Educational	260
N8	Garden Vista	Residential	250
N9	Pictorial Garden Phase I	Residential	270

The surrounding area of the Project site is urbanised supporting residential, industrial and educational activities. The only habitat known to have ecological importance within 500m from the Project boundary is the egret in Penfold Park, which is approximately 400m from Quarantine B and 430m from Olympic Stables.

Existing facilities on the Quarantine B site include carpark, quarantine stables and associated facilities. There is no underground fuel storage tank, petrol filling station or chemical storage in both the Quarantine B site and HKSI site. Land contamination is therefore not an issue for this Project.

There is no known archaeological site and declared monument within the 500m zone of the proposed Project, no adverse cultural heritage impact is anticipated.

2.2 Environmental Impacts During Construction Phase

2.2.1 Air Quality

Construction activities at the Quarantine B site will involve demolition of existing quarantine stables, trotting ring, car park and associated facilities, ground formation works, superstructure works, and installation of utilities and associated facilities for the quarantine stables. All the above activities are not expected to generate significant amount of construction dust. With the implementation of the control measures as stipulated in the Air Pollution Control (Construction Dust) Regulation, construction dust impact to the surrounding air sensitive receivers would be minimal.

Only minor fitting-out works such as installation of disinfectant footbath at the entrance of each stable building and provision of disinfectant hand-washing buckets will be carried out at the Olympic Stables, no adverse air quality impact is anticipated.

Although the construction activities of the Project will coincide with the modification works at HKSI for the Main Arena of 2008 Olympic Equestrian Event, most civil and structural works would have been completed by the time the Project starts. Remaining works at the HKSI site will be erection of high light masts and installation of temporary toilets and stadium

seating, which will not generate significant amount of fugitive dust. Cumulative dust impact from HKSI is therefore considered minimal.

2.2.2 Noise Impact

Construction noise will be generated from demolition of existing facilities on the Quarantine B site, ground formation works, superstructure works, and installation of utilities and associated facilities for the quarantine stables. The use of Powered Mechanical Equipment (PME) in the open areas of the Project site will be limited so as to minimize construction noise.

The schedule of construction works is indicated in Table 1-2. In general, there would be no construction activities undertaken outside 7am - 7pm. Should night time works be required, the Contractor must apply for a Construction Noise Permit (CNP) and ensure full compliance with the NCO requirements. The Technical Memorandum on Noise from Construction Work other than Percussive Piling (TM-GW) details the procedures adopted by EPD for assessing such application.

Despite any description or assessment made in this Project Profile on construction noise aspects, there is no guarantee that a CNP will be issued for the construction of the Project. The noise control authority will consider a well-justified CNP application, once filed, for construction works within restricted hours as guided by the relevant TMs issued under the NCO. The noise control authority will take into account contemporary conditions / situations of adjoining land uses and any previous complaints against construction activities at the site before making a decision in granting a CNP. If a CNP is to be issued, the noise control authority shall include in it any conditions demanded. Failure to comply with any of such conditions will lead to cancellation of the CNP and prosecution action under the NCO.

To further protect the environment, quiet plant will be employed in this project. The use of quiet plant associated with the construction works is prescribed in British Standard "Noise Control on Construction and Open Sites, BS5228: Part 1: 1997" which contains the Sound Power Levels (SWLs) for specific quiet PME. The SWLs of each PME are given in Table 2-3. The plant inventory provided in **Appendix A** indicates the total number of PME for each construction activity. Prediction is made with respect to the distance of NSRs from the notional source locations. **Appendix B** shows the locations of NSRs and their respective distances from the notional sources.

Table 2-3: Sound power levels of specific PME

Quiet PME / PME	TM / BS 5228 Part 1 Identification	SWL, dB(A)
Air Compressor	CNP 002	102
Breaker (handheld)	CNP 024	108
Concrete Truck Mixer	BS Table C6 REF 33	96
Crane Lorry	BS Table C7 REF 101	94
Excavator	BS Table C3 REF 35	106
Lorry	CNP 141	112
Mobile Crane	CNP 048	112
Pneumatic Breaker	BS Table C8 REF 1	114
Poker, vibratory, hand-held	BS Table No. C6 REF 40	98
Bending machine	CNP 021	90
Roller / Compactor	BS Table C8 REF 30	101
Saw cutting machine	BS Table C7 REF 78	108

Practically, the PMEs on a worksite are not employed in full utilisation. Similar utilisation rates as those adopted in the approved EIA report for the Main Arena of the 2008 Olympic Equestrian Event (Register No.: AEIAR-097/2006) have been assumed in this Study. The assumed utilisation rates for different PME are summarised in Table 2-4 below:

Table 2-4: Utilisation rates of PME

PME	Utilisation Rate
Roller	50%
Hand-held breaker, Pneumatic breaker	80%
Mini-piling (earth auger), Lorries, Excavators and Crane Lorries	65%
Mobile Crane	30%

Representative NSRs within 300m of the Project site have been identified and construction noise assessment at these receivers has been conducted. Results are summarised in Table 2-5 and detailed in **Appendix C**. Assessment indicates that there will be no adverse construction noise impact at the NSRs under “unmitigated” scenario. The maximum predicted construction level is 75dB(A) at the HKJC Staff Quarters during demolition work for a duration of about 1 month.

Table 2-5: Predicted maximum construction noise levels at the NSRs – “unmitigated” scenario

NSR	Description	TM-EIAO Noise Criteria, L_{eq} (30mins), dB(A)	Predicted Maximum Noise Level, dB(A)		Exceedance, dB(A)
			Stage 1 Construction	Stage 2 Construction	
N1	Jockey Club Ti-I College	70/65*	60	54	0
N2	HKJC Staff Quarters	75	75	59	0
N3	Racecourse Villa		73	63	0
N4	Jubilee Garden		63	62	0
N5	Royal Ascot		63	61	0

* Noise criterion during examination period.

Although the construction activities of the Project will coincide with the modification works at HKSI for the Main Arena of the 2008 Olympic Equestrian Event, most civil and structural works would have been completed by the time the Project starts. Remaining works at the HKSI site will be erection of high light masts and installation of temporary toilets and stadium seating, which will not generate significant noise.

The impact of construction noise from the Main Arena of the 2008 Olympic Equestrian Event has been assessed in the approved EIA report AEIAR-097/2006. Cumulative noise level at NSRs are summarised in Table 2-6 and Table 2-7 below.

Table 2-6: Cumulative construction noise impacts – Stage 1 Construction

NSR No.	NSR Description	Predicted Noise Level, dB(A)			Noise Criteria	Exceedance, dB(A)
		The Project	Concurrent Project ^[1]	Cumulative		
N1	Jockey Club Ti-I College	60	53	61	70	0
N2	HKJC Staff Quarters	75	42	75	75	0
N3	Racecourse Villa	73	40	73	75	0
N4	Jubilee Garden	63	36	63	75	0
N5	Royal Ascot	63	36	63	75	0

Note:

^[1] Predicted noise level for concurrent project is extracted from approved EIA report (Register No.: AEIAR-097/2006)

Table 2-7: Cumulative construction noise impacts – Stage 2 Construction

NSR No.	NSR Description	Predicted Noise Level, dB(A)			Noise Criteria	Exceedance, dB(A)
		The Project	Concurrent Project ^[1]	Cumulative		
N1	Jockey Club T1-I College	54	60	61	70	0
N2	HKJC Staff Quarters	59	57	61	75	0
N3	Racecourse Villa	63	55	64	75	0
N4	Jubilee Garden	62	52	62	75	0
N5	Royal Ascot	61	52	62	75	0

Note:

^[1] Predicted noise level for concurrent project is extracted from approved EIA report (Register No.: AEIAR-097/2006)

Construction noise assessment results show that the predicted cumulative noise levels are all within the noise criteria stipulated in the TM-EIAO and cumulative noise impact is not anticipated.

Only minor fitting-out works such as installation of disinfectant footbath at the entrance of each stable building and provision of disinfectant hand-washing buckets will be carried out at the Olympic Stables, no adverse noise impact is anticipated.

2.2.3 Water Quality

Potential major sources of water quality impact may arise from the discharge of construction run-off and sewage effluent due to workforce during the construction phase. The Contractor is required to implement good site practices and appropriate mitigation measures as stipulated in ProPECC Note 1/94 “Construction Site Drainage” and Recommended Pollution Control Clauses for Construction Contracts” to control the construction site discharges. It is anticipated that there will be no adverse water quality impact.

Only minor fitting-out works such as installation of disinfectant footbath at the entrance of each stable building and provision of disinfectant hand-washing buckets will be carried out at the Olympic Stables, no adverse water quality impact is anticipated.

2.2.4 Waste Management

Wastes generated during construction phase mainly comprise Construction and Demolition (C&D) material arising from site clearance and excavation works, chemical waste arising from construction plants and machinery, and general refuse.

The C&D material consists of two portions:

- Inert portion (Public Fill) – excavated soil, rock, rubbles, concrete, etc.
- Non-inert portion (C&D Waste) – timber, bamboo scaffoldings, etc.

The amount of public fill and C&D waste generated from the Project site is estimated to be 10,000m³ and 5,000m³ respectively. The Contractor should be responsible for sorting the C&D material into inert and non-inert portions. The inert portion of C&D material should be reused on site as much as practicable. Surplus public fill will be transported to public fill bank at Tseung Kwan O Area 137 or other appropriate facilities as assigned by CEDD. Non-inert C&D waste should be reused and recycled whenever possible before disposal at strategic landfill sites. Proprietary horse stalls may be reused in the new facility.

Chemical wastes of residual oil and lubricating fluids may be generated from maintenance and servicing of construction plant and equipment. The chemical waste may pose potential environmental, health and safety hazards if not stored and not disposed of appropriately as

stipulated in the Waste Disposal (Chemical Waste) (General) Regulation. Chemical waste requires special handling and storage arrangements before removal for treatments at the Chemical Waste Treatment Facility in Tsing Yi. Wherever possible, opportunities for the reuse and recycling of chemicals will be taken. Owing to the small scale of the construction activities, the quantity of chemical waste will be minimal and in the order of less than a hundred litres per month.

Provided that the wastes generated from the Project are properly handled, stored, recycled as far as possible, and that they will be disposed of in accordance with relevant regulations and requirements under the Waste Disposal Ordinance, no adverse impact arising from waste management during construction stage of the Project is anticipated.

Waste generated from the fitting-out works at the Olympic Stables is expected to be of a minimal amount and will be handled and disposed of properly. No adverse impact due to waste management is anticipated.

2.2.5 Ecology

The only habitat known to have ecological importance within 500m from the project boundaries of both Quarantine B and Olympic Stables is the egretty at Penfold Park, which is located at approximately 400m from Quarantine B and 430m from Olympic Stables. Potential impact of the project may include flight path obstruction and noise. A plan showing the location of the project sites, their 500m envelope and the location of the egretty in Penfold Park is presented in Figure 2-3.

Observations from the ongoing bird survey conducted for Penfold Park indicate that the majority of birds from the egretty fly to/from the direction of Tolo Harbour and Shing Mun River Channel (i.e. from the eastern and north-eastern direction). The flight-path of the birds will therefore not be obstructed by the subject project sites, which are located to the southwest of the egretty.

Given the separation distance between the construction and demolition activities at the Quarantine B site and the egretty, construction and demolition noise impact is not expected. In addition, the construction and demolition activities at Quarantine B span from September 2007 to March 2008 for Stage 1 and October 2008 to April 2009 for Stage 2, which are both outside the peak breeding season of egrets. Adverse impact on the subject egretty would be minimal.

Only minor fitting-out works such as installation of disinfectant footbath at the entrance of each stable building and provision of disinfectant hand-washing buckets will be carried out at the Olympic Stables, no adverse ecological impact is anticipated.

2.2.6 Landscape and Visual

Landscaped area of the existing site is small. The site character after upgrading will be similar to the existing one. A change in landscape character is anticipated as a result of stable expansion into the existing carpark area. There will also be loss of trees resulting from widening of the Emergency Vehicular Access (EVA) and provisions for the central access way and the northern access route. Such impact could be mitigated by compensatory planting. Details of mitigation measures proposed are described in Section 3.1.5.

There will be approximately 79 trees on the site affected by the construction activities of the Project. Of those affected trees, 68 will be transplanted either on site or to other areas within the Shatin Racecourse while 11 will need to be felled. Compensatory planting ratio of at least 1:1 will be provided within the footprint of Shatin Racecourse. Landscaping improvement works after the completion of construction works will be carried out. **Appendix D** shows the detail information and locations of the trees to be affected.

Only minor fitting-out works such as installation of disinfectant footbath at the entrance of each stable building and provision of disinfectant hand-washing buckets will be carried out at the Olympic Stables, no adverse landscape and visual impact is anticipated.

2.3 Environmental Impacts During Operational Phase

2.3.1 Air Quality

One of the key concerns associated with the operation of the quarantine stables is the potential impact of odour emission. To establish the assessment for potential odour impact, the existing site condition at Quarantine B in term of odour intensity has been reviewed. The future quarantine stables will incorporate odour removal design as well as implement the current waste management practices to further prevent potential odour impact.

2.3.1.1 Existing Site Condition

The existing site condition was reviewed by means of odour patrol. The patrol was conducted along different routes around the existing Quarantine B by technicians from The Hong Kong Polytechnic University in November 2006, with an aim to determine the existing odour intensity around the quarantine stables and the shortest distance beyond which odour is undetectable.

On the day of odour patrol, the number of horses housed in Quarantine B has attained the maximum of its capacity. Three sessions of odour survey was conducted in the morning, at noon and in the afternoon to cover all types of activities in the quarantine area as shown in Table 2-13. In addition, the indoor conditions of all existing and future stable buildings are normally maintained at a temperature of about 22°C and relative humidity of about 70%, significant variation of the odour source emission strength due to variation of ambient condition in different seasons is not anticipated.

The odour panellists from Polytechnic University have identified three types of olfactory stimulants, namely horse feed, excreta and fresh grass during the patrol. The findings of odour patrol concluded that odour detected at all points along Route 2 and Route 3, which covered the access road between the nearest ASR (i.e. HKSI) and the Quarantine B precinct, was insignificant. Details of the odour patrol report are presented in **Appendix E**.

2.3.1.2 Existing Waste Management Practices

Waste generated from Quarantine B mainly consists of bedding paper scraps, horse feed and horse excretion. Stable wastes are being cleared from stalls at least once every day. The bedding materials for stables will be replaced more frequently in high humidity weather due to hygiene concerns and therefore a greater amount of stable waste is likely to be generated during these seasons. Wastes cleared from stables are stored in covered plastic bins placed outside each stable building and collected by licensed waste collector engaged by HKJC daily. The collected waste is delivered to the landfill sites in Hong Kong by refuse collection vehicles for final disposal. Details of the waste collection procedures at Quarantine B are described in Section 3.2.4.

2.3.1.3 Future Stable Design and Operation

The new quarantine stable will adopt a higher standard of full enclosure design. Air conditioning will be provided at all stable buildings. Activated carbon filter of minimum 90% odour removal efficiency will be installed at the exhaust of ventilation system. The existing waste management practices adopted at Quarantine B will be maintained at the expanded precinct. Properly enclosed containers will be provided for storage of the stable waste.

2.3.1.4 Potential Odour Impact from the new Quarantine B Precinct

Based on the odour patrol observation, the existing waste management practices and the new stable designs, the new quarantine stable precinct will unlikely cause adverse odour impact to the nearby ASRs given the following justifications:

- The capability of odour emission control at the new stable buildings will be improved by adopting a full-enclosure stable design, providing all-weather air-conditioning and installing odour removal filters at the exhaust of ventilation system.
- The provision of installing odour removal filters of 90% efficiency will be more than adequate to offset the increase in source emission strength from the current 70 horses to the future accommodation of 108 horses.
- The current waste management practices adopted at Quarantine B, which has been proven to be effective, will be maintained.
- The odour patrol results, which represent the worst-case source emission scenario, showed that odour detected along the access road between nearest ASR (i.e. HKSI) and the Quarantine B precinct was insignificant. Given the above observation and that the quality of the stable buildings will be much improved, odour at all ASRs would be undetectable.

2.3.1.5 Cumulative Odour Impact

During Stage 1 construction of Quarantine B, horses under quarantine will be housed in the Olympic Stables in HKSI, with not more than 216 horses at a time. The potential odour impact arising from the operation of the Olympic Stables has been assessed in Sections 3.6 and 3.7 of the approved EIA report for the Main Arena of the 2008 Olympic Equestrian Event (Register No.: AEIAR – 097/2006), which concluded that no adverse odour impact on the surrounding ASRs was anticipated.

During the Olympic period, both Stage 1 of the new Quarantine B, which will accommodate up to 36 horses, and the Olympic Stables will be used for housing horses for the Olympic Equestrian Event. The cumulative odour impact of this operation mode has been assessed in Section 3.7.2 of the approved EIA report AEIAR-097/2006, which concluded that no cumulative odour impact was anticipated.

During Stage 2 construction of Quarantine B after the Olympic period, the Olympic Stables will be vacated and horses under quarantine will be housed in the Stage 1 stable buildings at Quarantine B. No cumulative odour impact will be resulted.

Upon completion of Stage 2 construction, Quarantine B will be operated within its full capacity of not more than 108 horses at a time. A conservative evaluation of potential cumulated odour impact from the full operations of both Quarantine B and Olympic Stables has been conducted. By constructing a line of “shortest distance of insignificant odour” for both the Olympic Stables (i.e. 100m as determined in s3.7.1 of the approved EIA report AEIAR-97/2006) and the new Quarantine B (i.e. Route 2) as shown in Figure 2-4, it can be demonstrated that cumulative impact is not anticipated.

2.3.2 Noise

2.3.2.1 Quarantine B

Potential operational noise sources are the ventilation systems for the quarantine stables and the offices. The noise impact prediction considers maximum allowable SWLs for all fixed noise sources with respect to the separation distances and orientation from the nearest NSRs; cumulative noise impacts from other noise sources; as well as tonality, impulsiveness, and intermittency in accordance with the Technical Memorandum for the Assessment of Noise from Places other than Domestic Premises, Public Place or Construction Site (TM-Places). These predicted maximum allowable SWLs will be taken into account in the detailed design for compliance with the relevant legislative requirements.

The maximum allowable SWLs are summarised in Table 2-8 and detailed calculations are presented in **Appendix F**.

Table 2-8: Summary of SWLs criteria for major fixed noise sources

Locations of Noise Sources	Maximum allowable Sound Power Level, dB(A)	
	Daytime	Night-time
Stables – MVAC Plant	79	74
Chiller	94	94
Split A/C Unit for Office	70	70

The above SWL criteria should be implemented and refined during the design development by the Contractor. Any new NSRs should also be identified and taken into consideration in the design as necessary. The Contractor shall install sound attenuators, noise barriers and acoustic enclosures as necessary to ensure that the specified maximum SWLs in Table 2-8 will be achieved. The predicted noise levels at NSRs due to fixed plant operations at Quarantine B are presented in Table 2-9. Detailed calculations are presented in **Appendix F**.

Table 2-9: Summary of predicted noise level due to operation of Quarantine B

NSR No.	NSR Description	Predicted Noise Levels at NSRs, Leq (30min), dB(A)		Criteria, Leq (30min), dB(A)	
		Daytime	Night-time	Daytime	Night-time
N1	Jockey Club Ti-I College	36	36	60	50
N2	HKJC Staff Quarters	44	44	56	50
N3	Racecourse Villa	44	44	56	50
N4	Jubilee Garden	43	43	60	50
N5	Royal Ascot	45	45	60	50
N6	Ravana Garden	36	36	59	50
N7	Leung Kui Kau Primary School	37	37	55	50
N8	Garden Vista	38	38	55	50
N9	Pictorial Garden	38	38	55	50

With proper design and noise control treatment, no significant noise impact is anticipated during operation of the quarantine stables.

2.3.2.2 Olympic Stables

Potential operational noise generated from the Olympic Stables has been assessed in Section 4.7 of the approved EIA report for the Main Arena of the 2008 Olympic Equestrian Event (Register No.: AEIAR-097/2006) which concluded that no adverse operational noise impact was anticipated. Table 2-10 summarises the operational noise levels at various NSRs during the operation of the Olympic Stables.

Table 2-10: Summary of predicted daytime noise level due to operation of Olympic Stables

NSR No.	NSR Description	Predicted Noise Levels at NSRs, Leq (30min)		Criteria	
		Daytime	Night-time	Daytime	Night-time
N1	Jockey Club Ti-I College	41	41	60	50
N2	HKJC Staff Quarters	43	43	56	50
N3	Racecourse Villa	48	48	56	50
N4	Jubilee Garden	49	49	60	50
N5	Royal Ascot	46	46	60	50
N6	Ravana Garden	46	46	59	50
N7	Leung Kui Kau Primary School	48	48	55	50
N8	Garden Vista	49	49	55	50
N9	Pictorial Garden	49	49	55	50

2.3.2.3 Cumulative Impact

During Olympic period, Phase 1 of Quarantine B, which will consist of 10 stable blocks, and the Olympic Stables will be operated concurrently. In assessing cumulative operational noise impact, noise contribution from Quarantine B is taken from the full operation mode (i.e. 18 stable blocks) to be conservative. Operational noise generated from the Olympic Stables and the Olympic Equestrian Event (i.e. public address system and crowd noise) has been assessed in Section 4.7 of the EIA report AEIAR-097/2006. Tables 2-11 & Table 2-12 summarise the cumulative operational noise levels at various NSRs during daytime, evening and night time.

Table 2-11: Summary of predicted cumulative daytime & evening noise levels due to operation of Quarantine B, the Olympic Stables and Olympic Equestrian Events

NSR No.	NSR Description	Predicted Noise Levels at NSRs, Leq (30min), dB(A)			Noise Criteria Leq (30min), dB(A)	Exceedance, dB(A)
		Quarantine B	Olympic Event and Stables	Cumulative		
N1	Jockey Club Ti-I College	36	48	48	60	0
N2	HKJC Staff Quarters	44	50	51	56	0
N3	Racecourse Villa	44	55	55	56	0
N4	Jubilee Garden	43	54	54	60	0
N5	Royal Ascot	45	51	52	60	0
N6	Ravana Garden	36	53	53	59	0
N7	Leung Kui Kau Primary School	37	53	53	55	0
N8	Garden Vista	38	53	53	55	0
N9	Pictorial Garden	38	52	52	55	0

Table 2-12: Summary of predicted cumulative night time noise levels due to operation of Quarantine B, Olympic Stables and Olympic Equestrian Events

NSR No.	NSR Description	Predicted Noise Levels at NSRs, Leq (30min), dB(A)			Noise Criteria Leq (30min), dB(A)	Exceedance, dB(A)
		Quarantine B	Olympic Event and Stables	Cumulative		
N1	Jockey Club Ti-I College	36	41	42	50	0
N2	HKJC Staff Quarters	44	43	47	50	0
N3	Racecourse Villa	44	48	50	50	0
N4	Jubilee Garden	43	49	50	50	0
N5	Royal Ascot	45	46	48	50	0
N6	Ravana Garden	36	46	46	50	0
N7	Leung Kui Kau Primary School	37	48	48	50	0
N8	Garden Vista	38	49	49	50	0
N9	Pictorial Garden	38	49	49	50	0

Tables 2-11 and 2-12 show that the cumulative noise levels during daytime, evening and night time are all within the noise criteria. No adverse cumulative impact arising from the Project is anticipated.

2.3.3 Water Quality

The site of the existing quarantine precinct is serviced by an existing storm water drainage system. Potential sources of water pollution include contaminated rainwater runoff from above ground structures and the Stabling Precinct. Horse manure in these areas would be a potential source of rainwater contamination. To mitigate this, a drainage system will connect to a low flow interceptor similar to the one used at the Olympic Stables. Its function

is to collect surface runoff from the quarantine areas immediately adjacent to the stables in low flow interceptor drainage system to intercept the first foul flush and convey it to a storage tank from where it is pumped to the foul drainage system. The same type of low flow interceptor as assessed in the approved EIA report under Main Arena for the 2008 Olympic Equestrian Event will be adopted. In addition, there will not be any increase in the impermeable area of the site. Adverse water quality impact is not anticipated.

In addition, drainage and sewerage of the quarantine site will not be connected to other facilities in Shatin Racecourse to prevent the potential transfer of disease from quarantine horses to the local population.

Potential water quality impact during the operational phase of the Olympic Stables has been assessed in the approved EIA Report for the Main Arena of the 2008 Olympic Equestrian Event (Register No.: AEIAR-097/2006), which concluded that no adverse water quality impact was anticipated. A low flow interceptor covering the Olympic Stable precinct has already been installed to intercept the first foul flush and convey it to a storage tank from where it is pumped to the foul drainage system. The drainage and sewerage of the Olympic Stable area will not be connected to other facilities in Shatin Racecourse to prevent potential transfer of disease from the Olympic Stables to the local horse population. Sections 5.5.2 and 5.6.2 of the EIA Report presented the potential water quality impact and proposed mitigation measures respectively.

2.3.4 Waste Management

Wastes generated from the existing Quarantine B at Sha Tin Racecourse mainly consists of bedding materials, horse feed and horse manure. They will be cleared by HKJC staff regularly and collected by licensed waste collector engaged by HKJC daily. The total daily amount of waste generated by the quarantine stables is subject to variations depending on seasonal factors, horse population and horse habit. For example, bedding materials will be replaced more frequently during wet seasons due to hygiene concerns and therefore a greater amount of stable waste is likely to be generated during these seasons. In addition, a small amount of waste, dust and horse manure is collected from walkway, trotting ring, horse walkers and sand yard outside the stables. All wastes from the quarantine stables will be collected by licensed waste collector registered with Environmental Protection Department (EPD) for disposal at landfill sites in Hong Kong. Table 2-13 shows the current daily operation schedule for Quarantine B at Sha Tin Racecourse.

Table 2-13: Operation schedule for the existing Quarantine B at Shatin Racecourse

Time	Activities / Operations
4:00am	Cleansing of stable, removing beddings containing horse manure out of the stables
8:00am	Horses having morning exercises
12:45am - 2:30pm	Cleansing of stable, removing beddings containing horse manure out of the stables
6:00pm	Waste collector to collect stable wastes
6:00pm – 4:00am	Resting time for horses, no activities in stables

It is anticipated that the mode of operation of the new quarantine stables will be similar to the existing one. The composition of waste generated from the new precinct will therefore not vary significantly.

Currently, approximately 7.4 tonnes per day of solid waste are generated from Quarantine B when it is fully occupied (i.e. 70 horse are kept inside). The pro rata waste amount produced from the new precinct, which can accommodate up to a theoretical maximum of 108 horses, is therefore estimated to be 11 tonnes on the days of full house accommodation. The waste generated will then be collected by a refuse collection vehicle daily. With the implementation of current operation schedule and solid waste management practices as described in section 3.2.4 during operational phase of the new stables, no adverse impact from waste is anticipated.

The pattern of usage will remain the same during the temporary use of the Olympic Stables as quarantine. Similar amount of waste will be generated and same waste management practice and procedures will be applied at the Olympic Stables. No adverse impact from waste is anticipated.

2.3.5 Landscape and Visual

Roof of the Quarantine B stables will be constructed of a material similar to the Olympic Stables and in a low reflectivity colour scheme to complement the surrounding environment. Adverse visual impact is therefore not expected.

2.3.6 Health Risk Management

The capacity of the new Quarantine B will be increased from the existing 70 stalls to 108 stalls. The footprint of the new quarantine precinct will be extended to include the existing car parking area outside Quarantine B. Although the new quarantine precinct will be expanded in capacity, the health risk management protocol adopted by HKJC under the AFCD endorsed standard operation procedures (SOP) will ensure any risk to the local environment is minimal and controlled to international standards and practices. The same health risk management procedures will apply to the Olympic Stables during quarantine use. A detailed review of the health risk management for Quarantine B and temporary use of Olympic Stables is given in **Appendix G**.

3 Description of Mitigation Measures

3.1 Construction Phase

3.1.1 Air Quality

The Contractor is obliged to follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation. The following dust suppression measures will also be incorporated in the contract document to control the dust nuisance throughout the construction phase:

- Any excavated dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading;
- Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads or streets;
- The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle;
- Where practicable, vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores;
- When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided as far as practicable along the site boundary with provision for public crossing. Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period;
- The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials;
- Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet;

- Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding; and
- Any skip hoist for material transport should be totally enclosed by impervious sheeting.

3.1.2 Noise

A combination of measures will be incorporated into the Contract Specification to control construction noise impacts. Typically, they include:

- Implementation of good site practices to limit noise emissions at the source;
- The use of quiet powered mechanical equipment (PME) and working methods (as stated in the EPD's quality powered mechanical equipment inventory);
- The use of site hoarding as barrier to screen noise at ground level of NSRs;
- The use of baffles / temporary barriers to screen noise from relatively static stationary PMEs;
- Locating noise source away from sensitive receivers;
- Scheduling of construction works outside school examination periods; and
- Alternative use of plant items within project site, wherever practicable.

The above mitigation measures will be implemented in the work sites as good practices to further reduce any potential of construction noise impacts.

3.1.3 Water Quality

In order to control surface runoff satisfactorily without adverse impact during the construction stage, the Contractor should comply with the Water Pollution Control Ordinance (WPCO) and its subsidiary regulations. The key control measures are as follows:

- The Contractor should design and implement all the mitigation measures and practices specified in the ProPECC PN 1/94 "Construction Site Drainage" and "Recommended Pollution Control Clauses for Construction Contracts" issued by EPD.
- All runoffs arising from the construction site should be properly collected and treated to ensure the discharge standards as stipulated in WPCO are met. Silt trap and oil interceptor should be provided to remove the oil, lubricants, grease, silt, grit and debris from the wastewater before being pumped to the public stormwater drainage system. The silt traps and oil interceptors should be cleaned and maintained regularly by the Contractor.
- Any foul effluent should not be discharged into any public sewer and stormwater drain, unless an effluent discharge permit is obtained under the WPCO by the Contractor.
- Covering excavated materials or stockpiles with tarpaulin or similar fabric during rainstorms;

Site toilet facilities, if needed, should be chemical toilets or should have the foul water effluent directed to a foul sewer.

3.1.4 Waste Management

The Contractor shall comply with the Waste Disposal Ordinance (WDO) and its subsidiary regulations, especially the Waste Disposal (Chemical Waste) (General) Regulation, and implement necessary waste management measures. A Waste Management Plan should be included by the Contractor in the construction contract. A combination of mitigation measures will be incorporated into the Contract Specifications to manage waste. Typically, they include:

- Sorting C&D materials into inert portion and non-inert portion. The inert portion should be reused in earth filling, or should be transported to public fill bank at Tseung Kwan O Area 137 while the non-inert portion should be disposed of at SENT landfill;
- Recycling C&D materials as much as possible. The recycled materials should include paper/cardboard, timber, metal, etc.
- Providing waste separation facilities for paper, aluminium cans and plastic bottles to facilitate reuse or recycling of materials and their proper disposal;
- Reusing items such as hoardings, formworks, scaffoldings;
- Avoiding and minimising the generation of waste from construction work. This can be achieved through changing or improving design and practices, careful planning and good site management;
- Preventing any sewage, wastewater or effluent containing sand, cement, silt or any other suspended or dissolved material to flow from the site onto any adjoining land or preventing any waste matter which is not part of the final product from any waste processing plants to be deposited anywhere within any site or onto any adjoining land;
- Handling chemical waste in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes;
- Segregating and storing general refuse in enclosed bins or compaction units separately from construction and chemical wastes to prevent odour, pest and litter impact; and
- Adopting trip-ticket system to avoid fly-tipping and ensuring the disposal of waste being properly documented and verified.

A charging policy for the disposal of waste to landfill has been implemented since December 2005. This would provide additional incentive to reduce waste generation and to increase the reuse of inert materials. With the implementation of the recommended mitigation measures for handling, transportation and disposal of waste arising, unacceptable residual impacts are not expected during the construction phase of the proposed Project.

3.1.5 Landscape and Visual

The affected trees will be transplanted either on site or to other areas within the Shatin Racecourse. Tree felling application will be submitted to District Lands Office (DLO) for approval before any felling or transplantation takes place. Compensatory planting will be provided with a ratio not less than 1:1 in terms of quantity. Works will be properly audited throughout the construction. Landscape area will be provided within the Quarantine B area as far as practicable without compromising the quarantine protocol. Figure 3-1 shows the preliminary master plan of the upgraded Quarantine B precinct. Residual landscape and visual impact is not expected.

3.2 Operational Phase

3.2.1 Air Quality

The full-enclosure design of the proposed Quarantine B stables and the installation of odour removal system, such as carbon filter at the exhaust of ventilation system of stables will provide additional control on any potential of odour impact. Notwithstanding this, the current housekeeping rules will be applied to ensure a consistent good practice. They include:

- A sanitary environment will always be maintained in the stable area. Detailed design of quarantine stable will cater for the health, safety and environmental protection considerations in accordance with the HKJC policy and practice;
- Regular maintenance of the odour removal system, such as carbon filter system will be carried out to maintain the odour removal efficiency;

- Locations of the exhausts will be reviewed during the detailed design stage, and will be away from nearby ASRs as far as practicable; and
- The current waste management practices will continue to apply for the new quarantine stables with enclosed container continued to be used for the storage of waste until their collection by licensed waste collector. Waste storage areas in the precinct will be located away from nearby air sensitive receivers as far as practicable.

The same standards of odour removal system and stable operation practices will be applied to the Olympic Stables during its operation as quarantine.

3.2.2 Noise

Good practice should be incorporated in the design of ventilation system in order to minimise the operational noise nuisance on the neighbouring NSRs. Adequate direct noise mitigation measures including silencers, acoustic louvers, acoustic enclosures should be adopted. With proper design of louvers and implementation of the noise control measures, adverse operational noise impacts are not anticipated.

3.2.3 Water Quality

Separate low flow interceptor systems will be placed within the footprints of Quarantine B and Olympic Stables respectively and maintained by HKJC. The low flow interceptor systems will be used for collecting the first foul flush and conveying it to the public sewerage system. The design requirements of the system at Quarantine B in terms of performance standard will be the same as that adopted for the system being implemented at the Olympic stables. Figure 3-2 shows the catchment area for the low flow interceptor systems.

3.2.4 Waste Management

The use of recyclable materials should be encouraged in the office area, whenever practicable, for example, provision of recycle bins in office to recycle office paper and toner cartridges for laser printers.

Waste from quarantine stables will be collected on a regular basis following HKJC's sanitary and cross contamination prevention practices including the following:

- Bedding materials and paper scraps contaminated with horse manure will be cleared and replaced by clean bedding materials every day. The removed bedding materials and paper straps with horse manure together with any removed remains of horse feed will then be collected by stable attendants, disinfected if required and stored in wheeled and lidded plastic bins. The fully enclosed container will be properly stored in designated storage area outside each stable building for collection at least daily by licensed waste collector registered with EPD. The waste collected should be disposed of in government landfill sites and be deeply buried, unless advised by the government otherwise. Leakage should be avoided during the transportation and disposal process.
- Briefings will be given to stable staff on the sanitary and cross contamination prevention practices;
- Transport for feed, bedding, manure, etc. must not visit the Quarantine B units and the Racing Stables with shared loads. The vehicle's tyres must be hosed with disinfectant prior to entering and leaving the Quarantine B unit;
- All waste collection procedures are supervised by HKJC officers to ensure the proper collection, handling and disposal of stable waste; and
- Clinical waste from stables, if any, will be handled in accordance with EPD's recommended good practices and collected by clinical waste collector holding a valid Clinical Waste Disposal Permit;
- In the event of a horse being destroyed, the carcasses will be carefully handled and disposed of in accordance with HKJC's current procedures.

The current waste management control measures adopted by HKJC are effective and adequate in reducing nuisance and waste impact to environment. These waste management practices would be duly followed in the new Quarantine B and Olympic Stables during its operation as quarantine.

3.2.5 Health Risk

Import of horses into Hong Kong is subject to stringent control for preventing the introduction of equine disease. The Public Health (Animals and Birds) Ordinance Cap 139 and the Rabies Ordinance, Cap 421, which are both enforced by AFCD, regulate the import of horses into Hong Kong. Horses and equine animals are not allowed to be brought into Hong Kong unless a Special Permit to do so is obtained in advance from AFCD. All permit terms and veterinary health protocol established between Hong Kong and the Veterinary Authority of the country of export must be fully complied with. All horses imported to Hong Kong must be accompanied by a duly completed "Horse Information Document" signed by the official veterinarian of the country of dispatch.

When considering a special permit application, AFCD will carry out thorough evaluation on the current status of the country of export in terms of effectiveness of disease control measures taking place in that country and any other factors of health risk concern.

Notwithstanding that a Special Permit has been issued, if the senior veterinary officer of AFCD is of opinion that a horse is or may be dangerous, he may still prohibit the animal to be removed from any vessel or aircraft until he is satisfied that the arrangements for the reception in Hong Kong could preclude risk of injury to persons or property.

Only horses holding a special permit issued by AFCD and satisfying all the pre-export quarantine (PEQ) and health certification requirements are permitted to be imported to Hong Kong. On arrival, all horses must undergo a minimum of 14 days of post-arrival quarantine (PAQ) at designated quarantine facilities. The health condition of the horses under quarantine is closely monitored by HKJC's veterinary surgeon. Horses will only be released from PAQ when all compulsory tests, vaccinations and treatments have been satisfactorily completed and all horses have been examined and cleared under signature by the veterinary surgeon.

Quarantine B and the Olympic Stables where PAQ takes place will be operated under AFCD's monitoring and in accordance with two sets of AFCD approved Standard Operating Procedures (SOP) developed and maintained by HKJC.

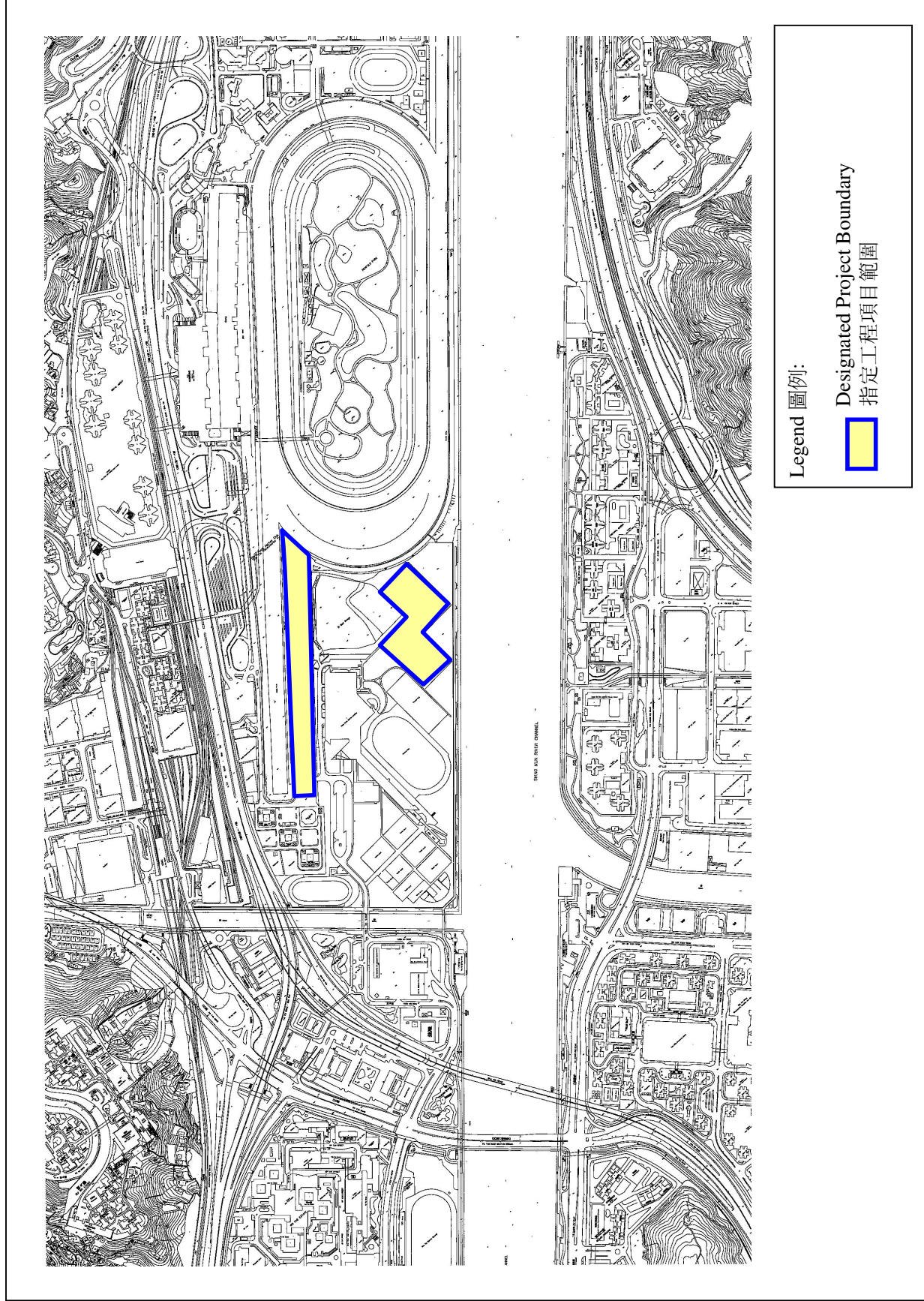
With the effective monitoring programme and protective measures in place, the potential health risk associated with the operation of the new Quarantine B as well as the temporary use of Olympic Stables for quarantine can be contained to a minimum level. Detailed preventive and protective measures to be adopted on the sites are described in **Appendix G**.

4 Use of Previously Approved EIA Reports

The following approved EIA Report has been referred to:

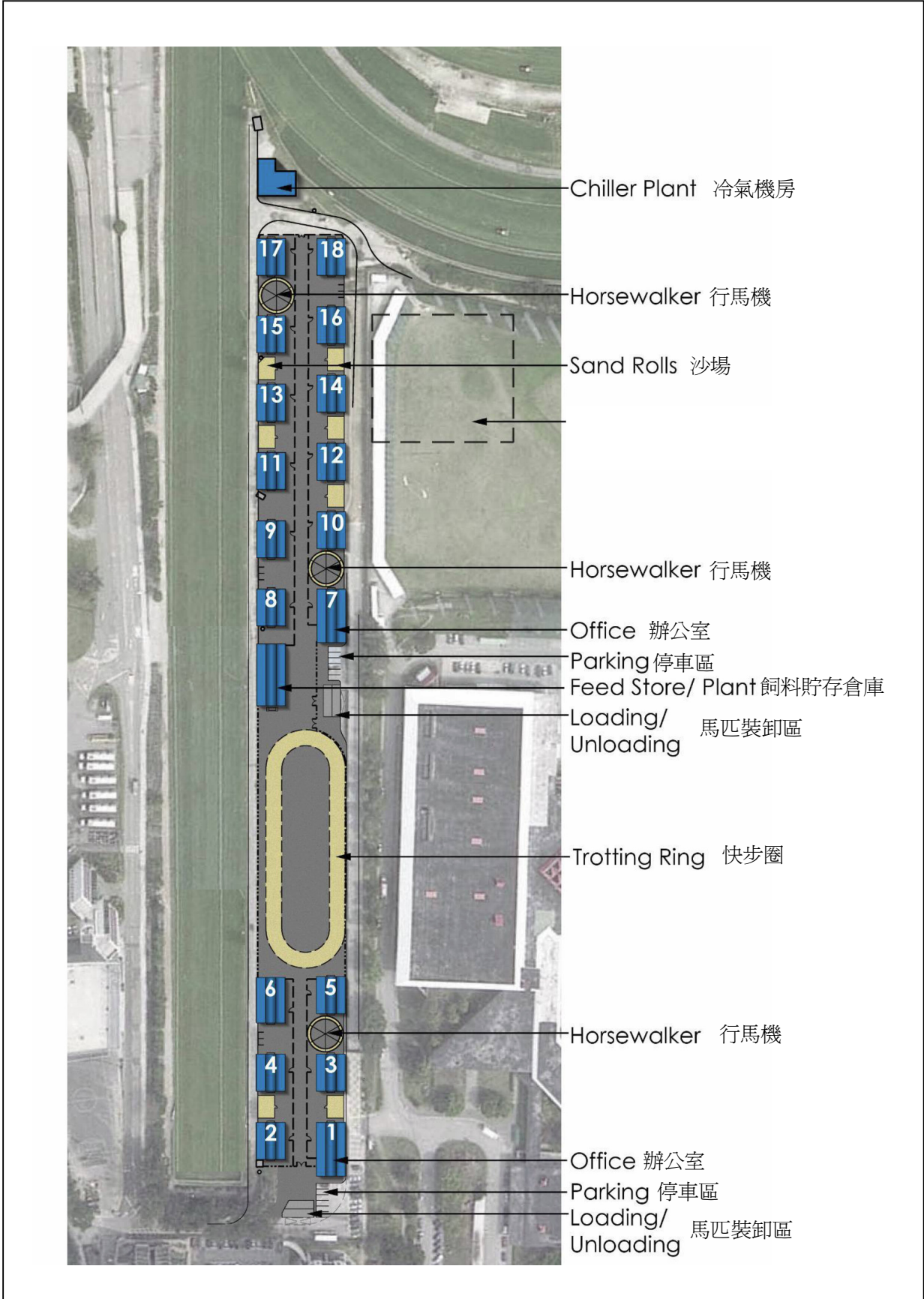
- Main Arena of the 2008 Olympic Equestrian Event (EIA Register No.: AEIAR-097/2006, approved without conditions on 24 March 2006).

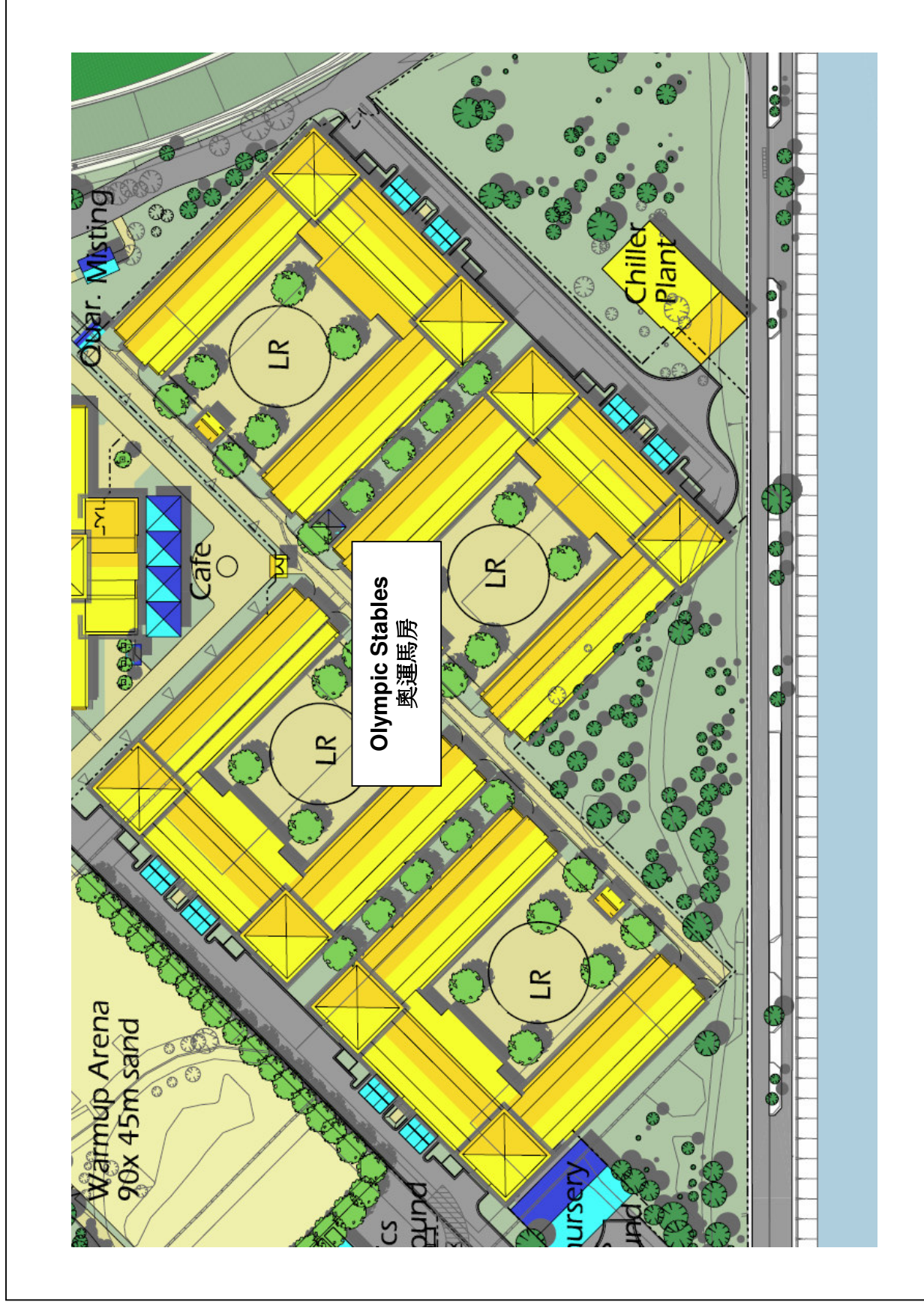
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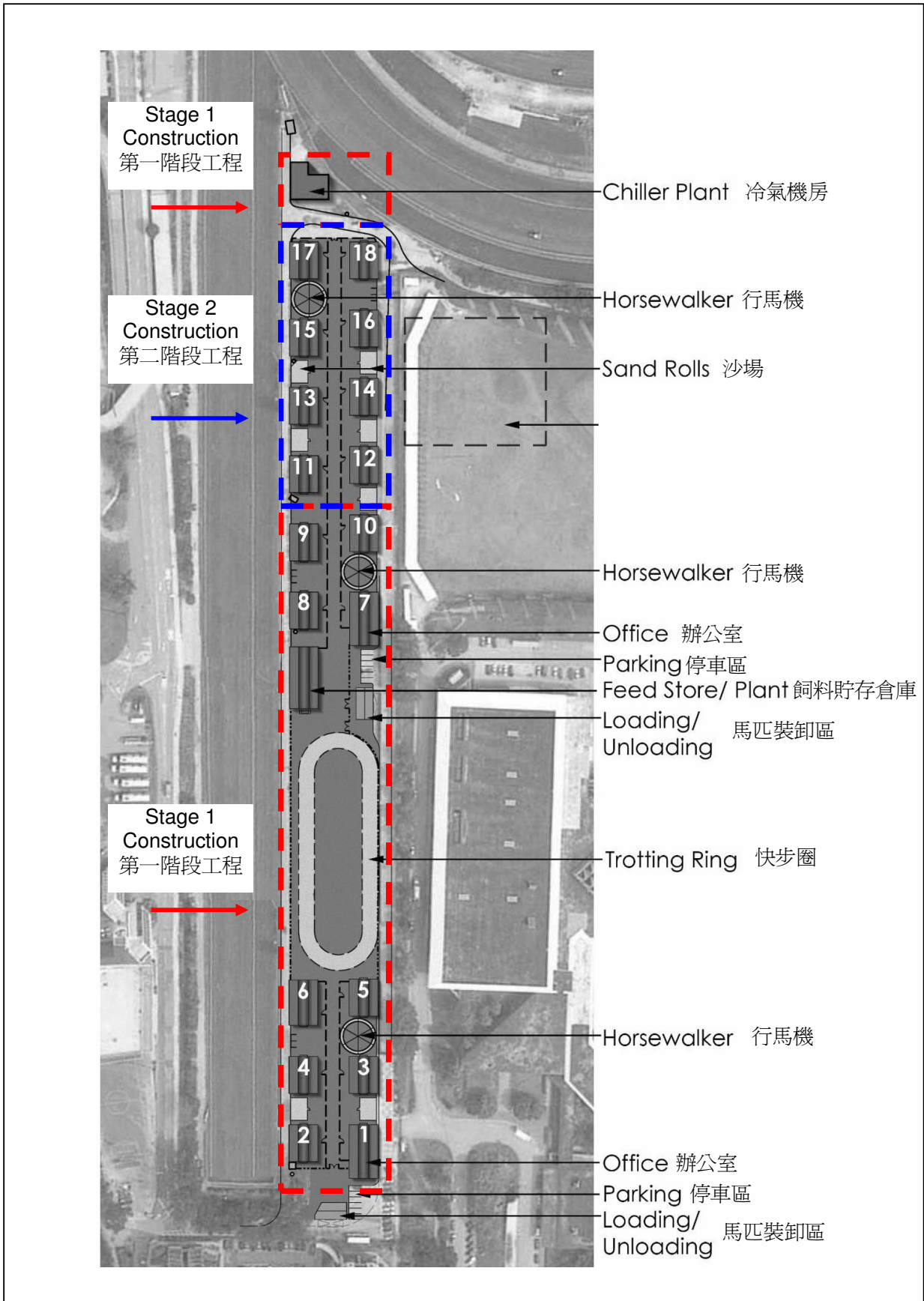


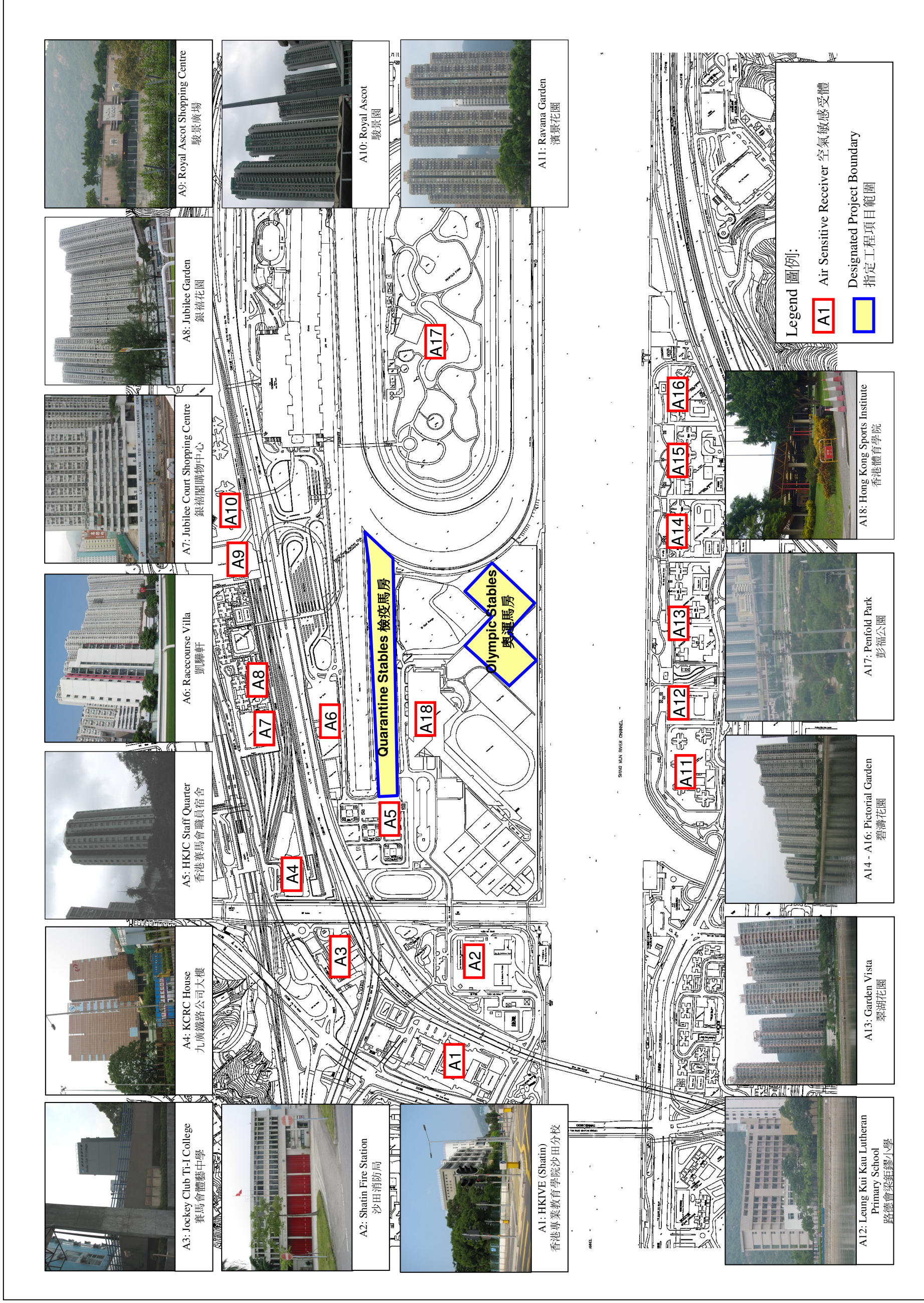
ARUP Project Location Plan
工程位置圖

Figure 圖 1-1



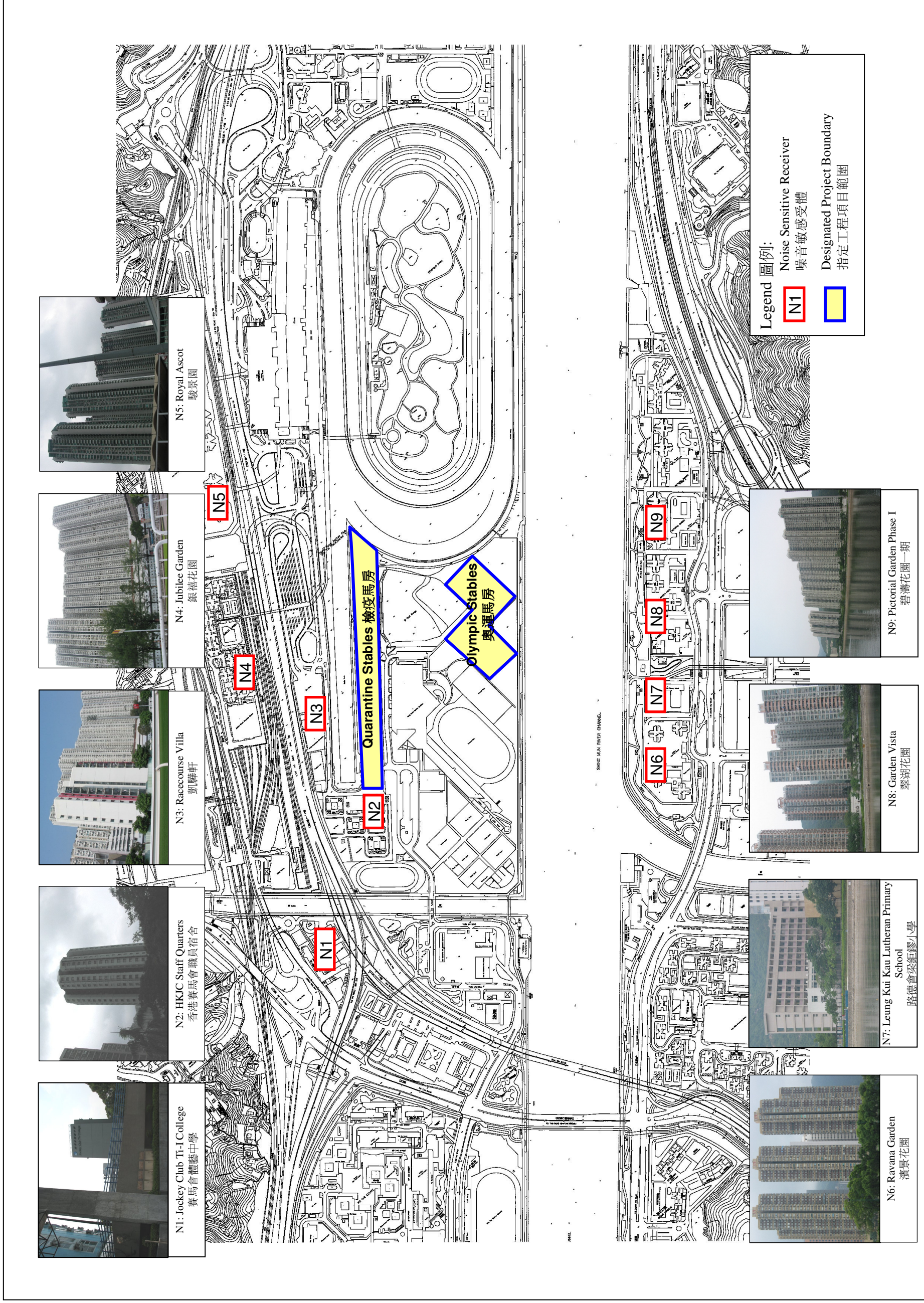






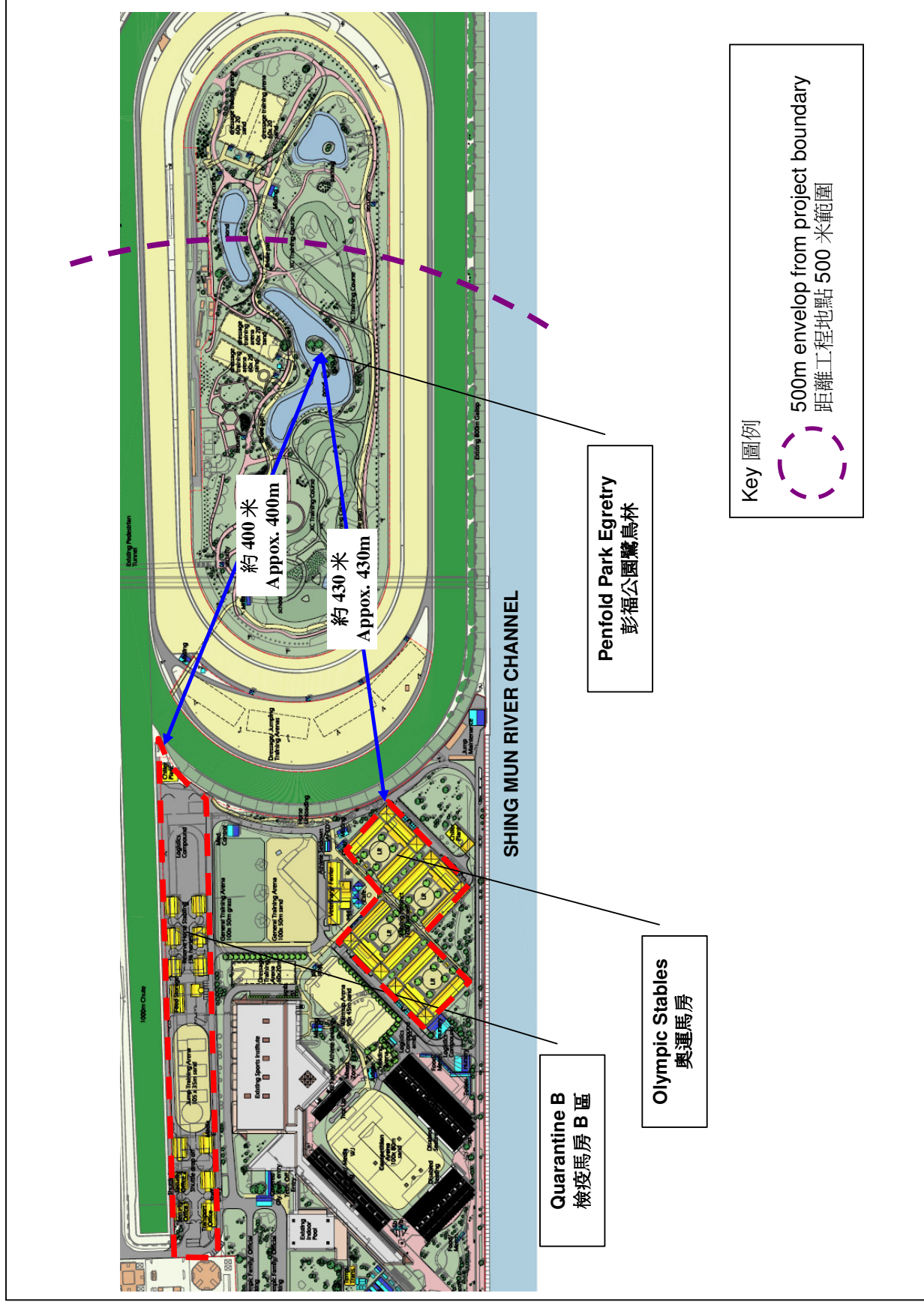
Locations of Air Sensitive Receivers
空氣敏感受體位置

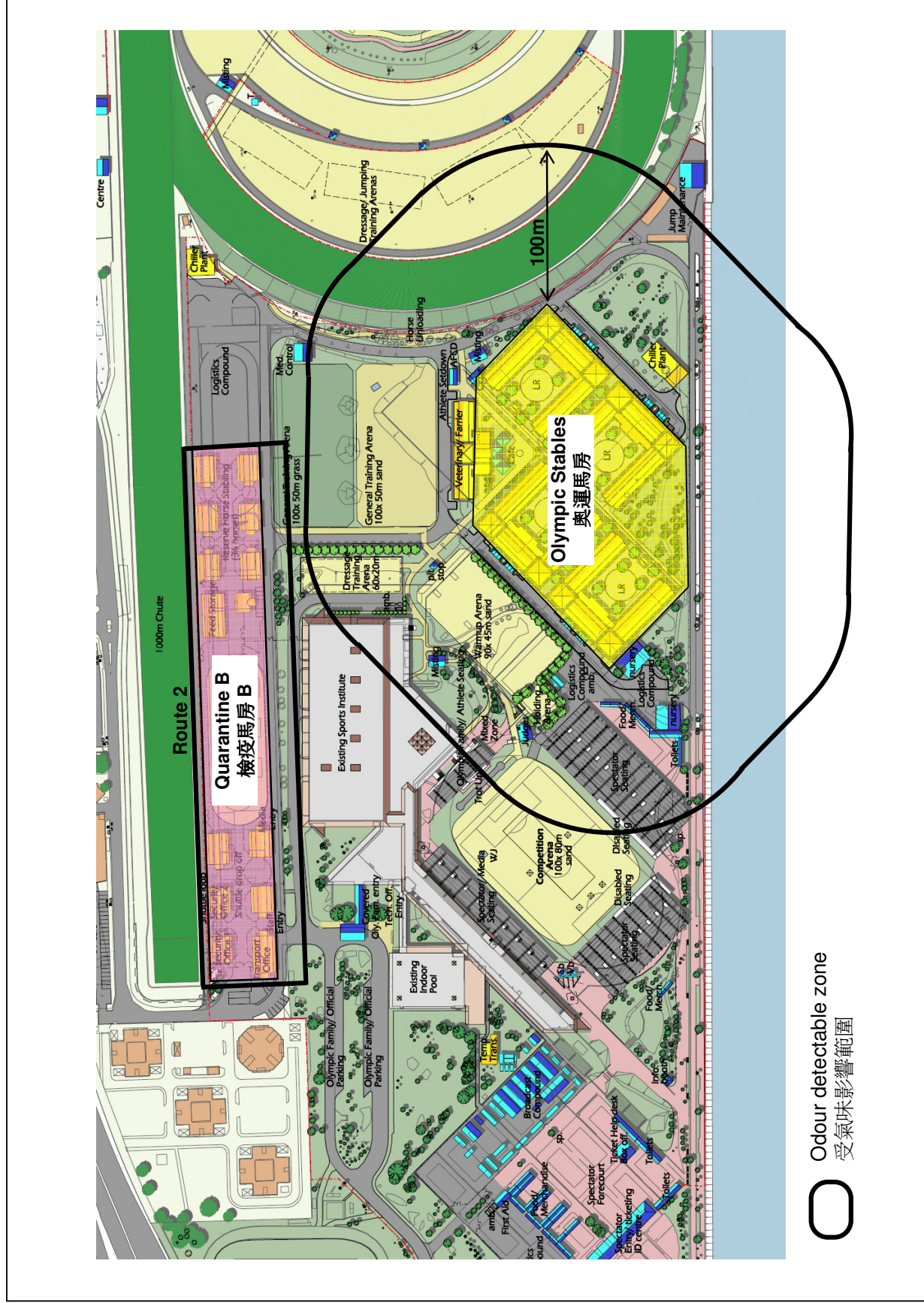
Figure 圖 2-1



Locations of Noise Sensitive Receivers
噪音敏感受體位置

Figure 圖 2-2





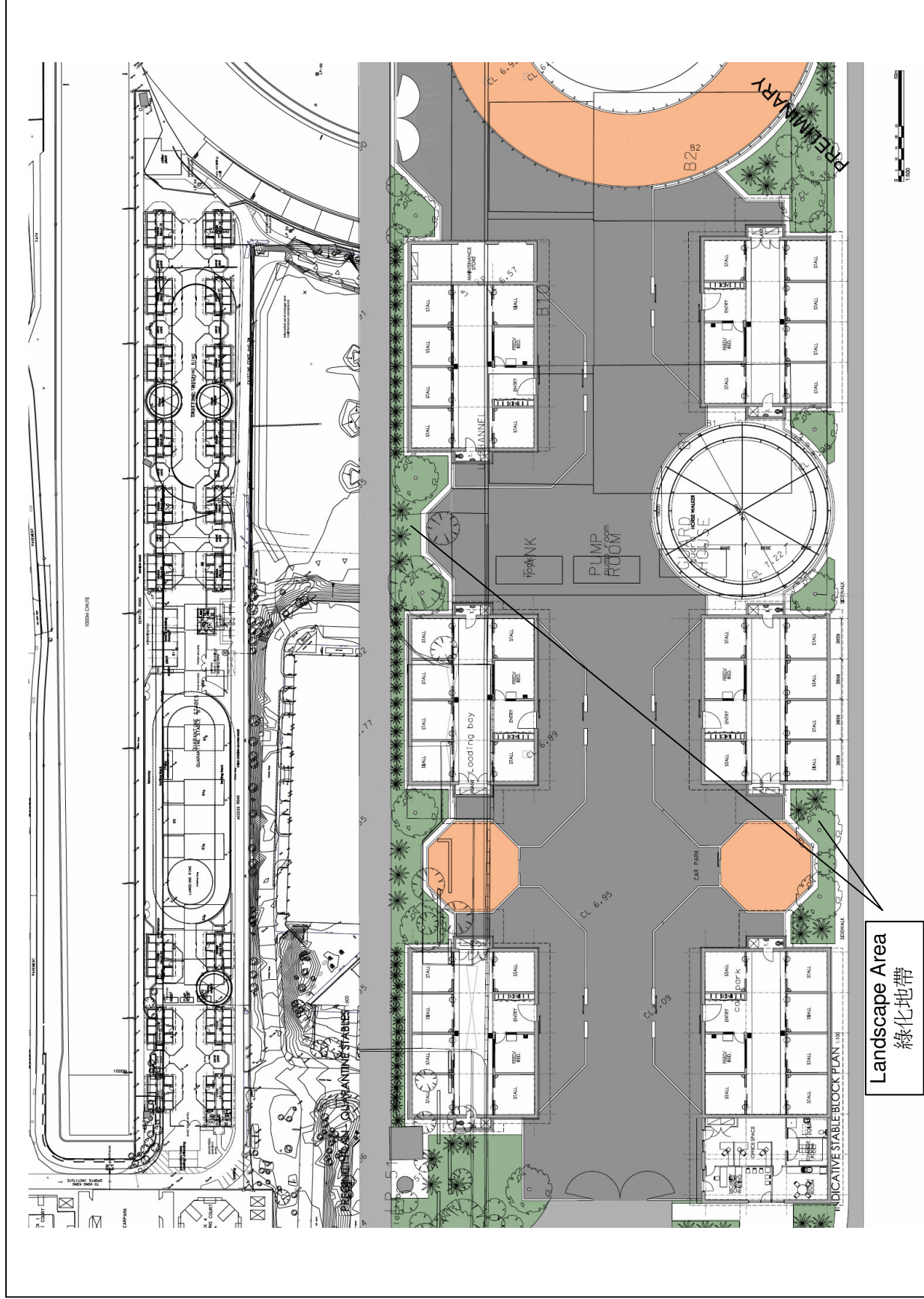
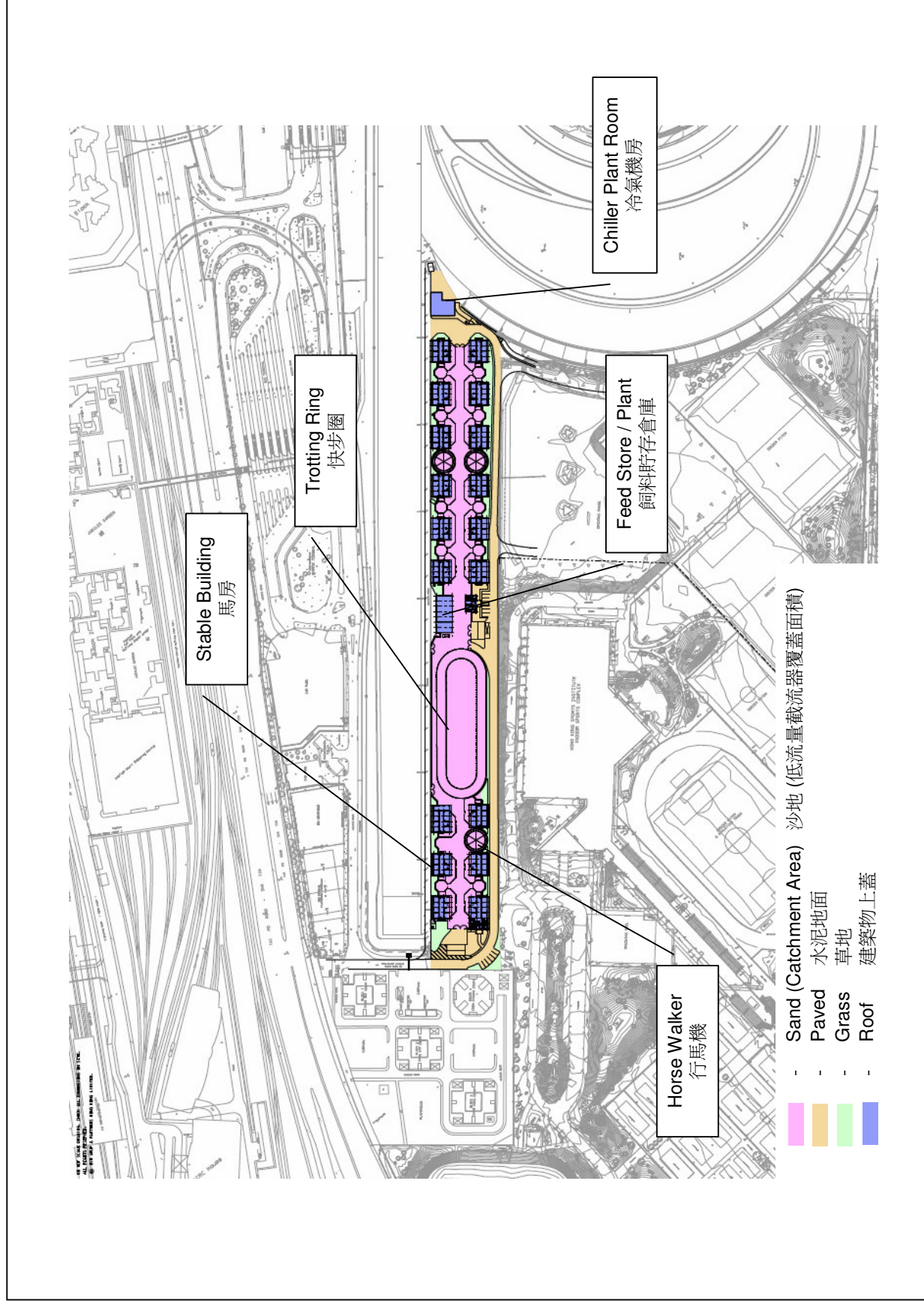


Figure 圖 3-1

Preliminary Master Plan of Quarantine B
 檢疫馬房 B 區初步規劃圖



APPENDICES

Appendix A

**Construction Plant
Inventory**

Job Title : Upgrading of Quarantine Stables for the 2008 Olympic Equestrian Events

Title : Plant Inventory

Stage 1 Construction

Description	Activity Ref. No.	Tentative Period	PME	Unit
Demolish Existing Stables	A1	16 Sep 07 to 15 Oct 07	Mobile Crane Pneumatic Breaker Air Compressor Dump Truck Backhoe	1 1 1 1 1
Excavation & Footings	A2	16 Oct 07 to 14 Nov 07	Backhoe Pneumatic Breaker Air Compressor Dump Truck Concrete Truck Mixer Poker, vibratory, hand-held Roller / Compactor	1 1 1 1 1 1 1
New Stable Buildings & Chiller Construction (RC wall construction)	A3	15 Nov 07 to 14 Dec 07	Mobile Crane Concrete Truck Mixer Saw cutting machine for formwork Poker, vibratory, hand-held Reinforcement bending machine Excavator	1 1 1 1 1 1
New Stable Buildings (Steel roof)	A4	15 Dec 07 to 13 Jan 08	Mobile Crane Welding Machine	1 1
New Stable Building (Fit out M&E)	A5	14 Jan 08 to 12 Feb 08	Lorry Welding Machine	1 4
Utilities & Road Works	A6	16 Oct 07 to 13 Mar 08	Breaker handheld Crane Lorry Roller / Compactor Concrete Truck Mixer Poker, vibratory, hand-held	1 1 1 1 1

Stage 2 Construction

Description	Activity Ref. No.	Tentative Period	PME	Unit
Excavation, Footings	A7	13 Oct 08 to 21 Nov 08	Backhoe Pneumatic Breaker Air Compressor Dump Truck Concrete Truck Mixer Poker, vibratory, hand-held Roller / Compactor	1 1 1 1 1 1 1
New Stable Buildings (RC wall construction)	A8	24 Nov 08 to 2 Jan 09	Mobile Crane Concrete Truck Mixer Saw cutting machine for formwork Poker, vibratory, hand-held Reinforcement bending machine Excavator	1 1 1 1 1 1
New Stable Buildings (Steel roof)	A9	5 Jan 09 to 30 Jan 09	Mobile Crane Welding Machine	1 1
New Stable Building (Fit out M&E)	A10	21 Feb 09 to 27 Feb 09	Lorry Welding Machine	1 4
Utilities & Road Works	A11	29 Sep 08 to 13 Mar 09	Breaker handheld Crane Lorry Roller / Compactor Concrete Truck Mixer Poker, vibratory, hand-held	1 1 1 1 1

Note: Welding Machine is not PME

Appendix B

**Locations of Notional
Sources and Distance
to NSRs**

Project: Upgrading of Quarantine Stables for the 2008 Olympic Equestrian Events

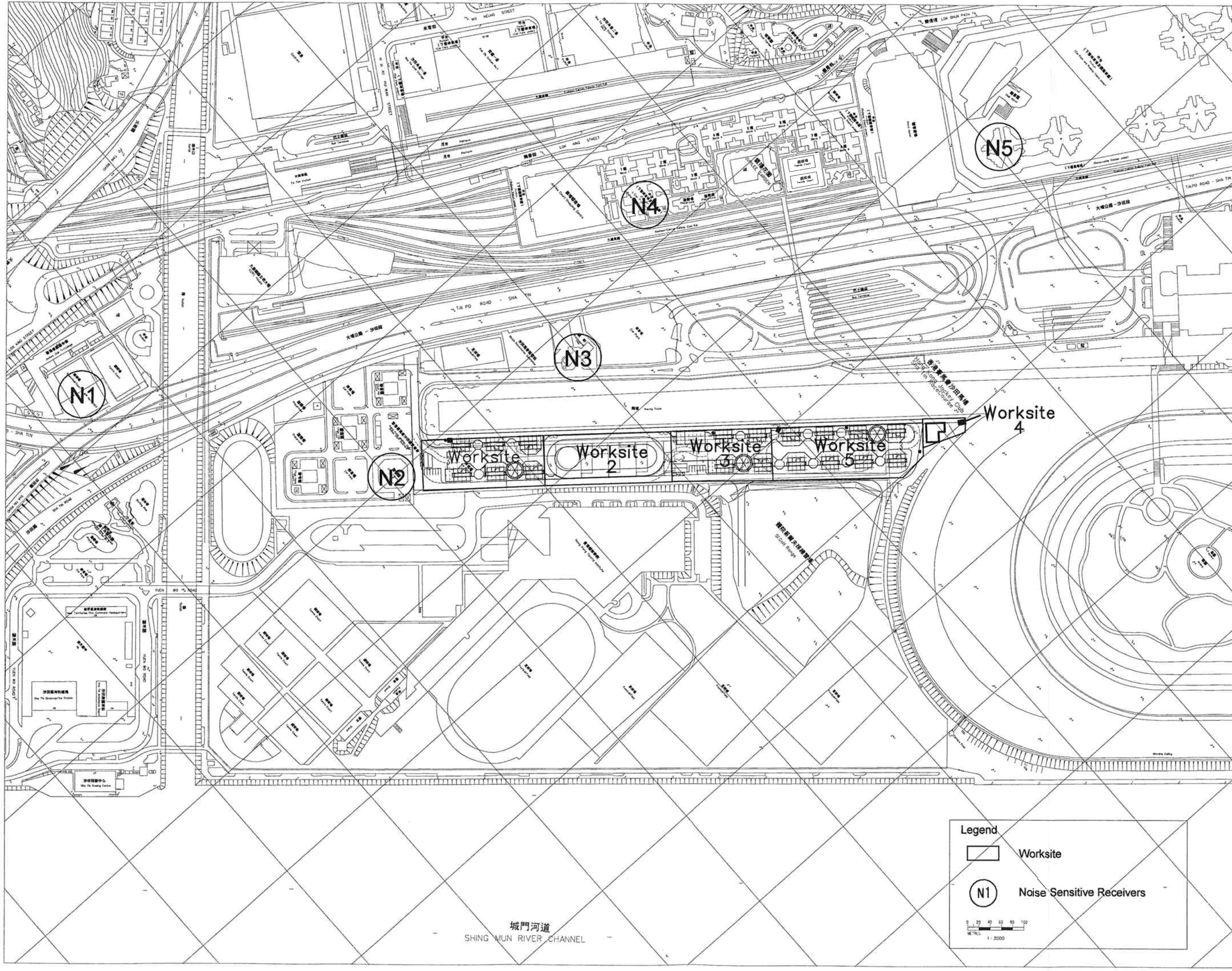
Distance between notional source position and NSRs (slant distance), m

Description	WorkSite	NSR No.				
		N1	N2	N3	N4	N5
Stage 1 Construction - Worksite 1	1	308	55	99	290	508
Stage 1 Construction - Worksite 2 (Trotting Ring)	2	416	166	71	236	415
Stage 1 Construction - Worksite 3	3	523	273	129	223	340
Stage 1 Construction - Chiller	4	736	489	329	309	233
Stage 2 Construction	5	623	374	220	257	275

Distance Correction, dB(A)

Description	WorkSite	NSR No.				
		N1	N2	N3	N4	N5
Stage 1 Construction - Worksite 1	1	-58	-43	-48	-57	-62
Stage 1 Construction - Worksite 2 (Trotting Ring)	2	-60	-52	-45	-55	-60
Stage 1 Construction - Worksite 3	3	-62	-57	-50	-55	-59
Stage 1 Construction - Chiller	4	-65	-62	-58	-58	-55
Stage 2 Construction	5	-64	-59	-55	-56	-57

Distance correction = $-20 \log r - 8$ based on hemi-spherical radiation, where r = distance



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NO.	REV.	REVISION DESCRIPTION	DATE



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PROJECT
**2008 OLYMPIC
EQUESTRIAN VENUES**

NAME
HKS

TITLE
Notional Source Location

APPENDIX
Appendix B

PROJECT NO. 24469	SCALE 1 : 3000 @ A3
DATE NOV 2006	DRAWN BY FAI
CHECKED BY ST	APP'D BY ST

Legend

- Worksite
- Noise Sensitive Receivers

0 20 40 60 80 100
METERS
1 : 3000

城門河道
SHING MUN RIVER CHANNEL

Appendix C

**Results of Construction
Noise Assessment
(Unmitigated Scenario)**

Project: Upgrading of Quarantine Stables for the 2008 Olympic Equestrian Events
Title: Calculation Sound Power Level

Stage 1 Construction

Activity No.	Description	PME	Unit	TM Identification	SWL/unit	Utilisation	Sub-total SWL	Total SWL
A1	Demolish Existing Stables (16 Sept 07 to 15 Oct 07)	Mobile Crane	1	BS Table C7 REF 112	102	30%	97	114
		Pneumatic Breaker	1	BS Table C8 REF 1	114	80%	113	
		Air Compressor	1	CNP 002	102		102	
		Dump Truck	1	BS Table C9 REF 24	104	65%	102	
		Excavator	1	BS Table C3 REF 35	106	65%	104	
A2	Excavation & Footings (16 Oct 07 to 14 Nov 07)	Excavator	1	BS Table C3 REF 35	106	67%	104	114
		Pneumatic Breaker	1	BS Table C8 REF 1	114	80%	113	
		Air Compressor	1	CNP 002	102		102	
		Dump Truck	1	BS Table C9 REF 24	104	65%	102	
		Concrete Truck Mixer	1	BS Table C6 REF 33	96		96	
		Poker, vibratory, hand-held	1	BS Table No. C6 REF 40	98		98	
		Roller / Compactor	1	BS Table C8 REF 30	101	50%	98	
A3	New Stable Buildings & Chiller Construction - RC wall construction (15 Nov 07 to 14 Dec 07)	Mobile Crane	1	BS Table C7 REF 112	102	30%	97	109
		Concrete Truck Mixer	1	BS Table C6 REF 33	96		96	
		Saw cutting machine for formwork	1	BS Table C7 REF 78	108	50%	105	
		Poker, vibratory, hand-held	1	BS Table No. C6 REF 40	98		98	
		Reinforcement bending machine	1	CNP 021	90		90	
A4	New Stable Buildings - Steel roof (15 Dec 07 to 13 Jan 08)	Mobile Crane	1	BS Table C7 REF 112	102	30%	97	97
A5	New Stable Building - Fit out M&E (14 Jan 08 to 12 Feb 08)	Lorry	1	BS Table C9 REF 19	102		102	102
A6	Utilities & Road Works (16 Oct 07 to 13 Mar 08)	Breaker handheld	1	CNP 024	108	80%	107	108
		Crane Lorry	1	BS Table C7 REF 101	94	65%	92	
		Roller / Compactor	1	BS Table C8 REF 30	101	50%	98	
		Concrete Truck Mixer	1	BS Table C6 REF 33	96		96	
		Poker, vibratory, hand-held	1	BS Table No. C6 REF 40	98		98	

Summary of SWL for Stage 1 Construction

Group No. (Activity No.) ⁽¹⁾⁽²⁾	Description	SWL
G1 (A1+A6)	Demolish existing stables, utilities & road works	115
G2 (A2+A6)	Excavation, footing, utilities & road works	115
G3 (A3+A6)	New Stable Buildings & Chiller Construction, utilities & road works	112
G4 (A4+A6)	New Stable Buildings - Steel roof, utilities & road works	108
G5 (A5+A6)	New Stable Building - Fit out M&E, utilities & road works	109
G6 (A6)	Utilities & Road Works	108
Max. Sound Power Level ⁽³⁾		115

Note:

- (1) Construction activities no. A1 to A5 will overlap with Construction activity no. A6.
(2) Only one group of PMEs will be operated at Stage 1 construction. G1 to G5 will not overlap with each other for Stage 1 Construction.
(3) For worst-case assessment, sound power level 115dB(A) was adopted for assessment.

Stage 2 Construction

Activity No.	Description	PME	Unit	TM Identification	SWL/unit	Utilisation	Sub-total SWL	Total SWL
A7	Excavation & Footings (13 Oct 08 to 21 Nov 08)	Backhoe	1	BS Table C3 REF 35	106	65%	104	114
		Pneumatic Breaker	1	BS Table C8 REF 1	114	80%	113	
		Air Compressor	1	CNP 002	102		102	
		Dump Truck	1	BS Table C9 REF 24	104	65%	102	
		Concrete Truck Mixer	1	BS Table C6 REF 33	96		96	
		Poker, vibratory, hand-held	1	BS Table No. C6 REF 40	98		98	
		Roller / Compactor	1	BS Table C8 REF 30	101	50%	98	
A8	New Stable Buildings & Chiller Construction - RC wall construction (24 Nov 08 to 1 Jan 08)	Mobile Crane	1	BS Table C7 REF 112	102	30%	97	110
		Concrete Truck Mixer	1	BS Table C6 REF 33	96		96	
		Saw cutting machine for formwork	1	BS Table C7 REF 78	108		108	
		Poker, vibratory, hand-held	1	BS Table No. C6 REF 40	98		98	
		Reinforcement bending machine	1	CNP 021	90		90	
A9	New Stable Buildings - Steel roof (4 Jan 09 to 30 Jan 08)	Mobile Crane	1	BS Table C7 REF 112	102	30%	97	97
A10	New Stable Building - Fit out M&E (21 Feb 09 to 27 Feb 09)	Lorry	1	BS Table C9 REF 19	102		102	102
A11	Utilities & Road Works (29 Sept 08 to 13 Mar 09)	Breaker handheld	1	CNP 024	108	80%	107	108
		Crane Lorry	1	BS Table C7 REF 101	94	65%	92	
		Roller / Compactor	1	BS Table C8 REF 30	101	50%	98	
		Concrete Truck Mixer	1	BS Table C6 REF 33	96		96	
		Poker, vibratory, hand-held	1	BS Table No. C6 REF 40	98		98	

Summary of SWL for Stage 2 Construction

Group No. (Activity No.) ⁽¹⁾⁽²⁾	Description	SWL
G7 (A7+A11)	Excavation, footing, utilities & road works	115
G8 (A8+A11)	New Stable Buildings & Chiller Construction, utilities & road works	112
G9 (A9+A11)	New Stable Buildings - Steel roof, utilities & road works	108
G10 (A10+A11)	New Stable Building - Fit out M&E, utilities & road works	109
G11 (A11)	Utilities & Road Works	108
Max. Sound Power Level ⁽³⁾		115

Note:

- (1) Construction activities no. A7 to A10 will overlap with Construction activity no. A11.
(2) Only one group of PMEs will be operated at Stage 2 construction. G7 to G10 will not overlap with each other for Stage 2 Construction.
(3) For worst-case assessment, sound power level 115dB(A) was adopted for assessment.

Project: Upgrading of Quarantine Stables for the 2008 Olympic Equestrian Events
Title: Calculation Construction Noise Level, Leq(30min)

Distance between notional source positions and NSRs, m

Description	Worksite	SWL	NSR				
			N1	N2	N3	N4	N5
Stage 1 Construction - Worksite 1	1	115	308	55	99	290	508
Stage 1 Construction - Worksite 2 (Trotting Ring)	2	115	416	166	71	236	415
Stage 1 Construction - Worksite 3	3	115	523	273	129	223	340
Stage 1 Construction - Chiller	4	115	736	489	329	309	233
Stage 2 Construction	5	115	623	374	220	257	275

Distance correction, dB(A)

Description	Worksite	SWL	NSR				
			N1	N2	N3	N4	N5
Stage 1 Construction - Worksite 1	1	115	-58	-43	-48	-57	-62
Stage 1 Construction - Worksite 2 (Trotting Ring)	2	115	-60	-52	-45	-55	-60
Stage 1 Construction - Worksite 3	3	115	-62	-57	-50	-55	-59
Stage 1 Construction - Chiller	4	115	-65	-62	-58	-58	-55
Stage 2 Construction	5	115	-64	-59	-55	-56	-57

Distance correction = - 20 log r - 8 based on hemi-spherical radiation, where r = distance.

Screening/Noise Barrier correction, dB(A)

Description	Worksite	SWL	NSR				
			N1	N2	N3	N4	N5
Stage 1 Construction - Worksite 1	1	115	0	0	0	0	0
Stage 1 Construction - Worksite 2 (Trotting Ring)	2	115	0	0	0	0	0
Stage 1 Construction - Worksite 3	3	115	0	0	0	0	0
Stage 1 Construction - Chiller	4	115	0	0	0	0	0
Stage 2 Construction	5	115	0	0	0	0	0

Total Sound pressure level calculation, Leq (dB(A))

Description	Worksite	SWL ^[1]	NSR				
			N1	N2	N3	N4	N5
Stage 1 Construction - Worksite 1	1	115	60	75	70	61	56
Stage 1 Construction - Worksite 2 (Trotting Ring)	2	115	58	66	73	63	58
Stage 1 Construction - Worksite 3	3	115	56	61	68	63	59
Stage 1 Construction - Chiller	4	115	53	56	60	60	63
Sound pressure level for the worst-case scenario ^{[2][3]}			60	75	73	63	63
Stage 2 Construction	5	115	54	59	63	62	61

- Note:
- [1] Total Sound Pressure Level (SPL) = Total SWL + Distance Correction + Screening + 3 dB facade correction.
 - [2] Only one group of PMEs will be operated at Stage 1 construction area. All PMEs are assumed operate at the notional source position of the nearest worksite from the NSRs for worst-case assessment.
 - [3] Sound pressure level is presenting the worst-case assessment with above assumption of [2].

Summary Corrected Noise Level

Construction Activity	NSR				
	N1	N2	N3	N4	N5
Stage 1 Construction	60	75	73	63	63
Stage 2 Construction	54	59	63	62	61

Appendix D

**Tree Schedule and
Tree Survey Plan**

TREE NO.	BOTANICAL NAME	CHINESE NAME	JURISDICTION	SIZE (m)			HEALTH CONDITION Good/Fair/Poor/ Very Poor/Dead	FORM Good/Fair/ Poor	Specific Value* A C E H S	Overall Value## E/H/M/L/N	Feasibility of Successful Transplantation# A/B/C/D	RECOMMENDATION Retain/Transplant/Fell
				Height	Spread	DBH						

Abbreviations in the tree schedule

*** Specific Value (Refer to Methodology for details):**

- A: Amenity value
- C: Cultural value
- E: Ecological value
- H: Historical value
- S(##): Significant tree (refer to Methodology for detailed categories)

**** Justification for Tree Felling:**

1. Tree is in direct conflict with the proposed works.
2. Root ball preparation not practical due to the topography (e.g. on rock, steep slope, structures).
3. Invasive weedy species / common, fast growing species without special ecological significance.
4. Tree with poor health and/or form for transplantation.
5. Lack of access for transplantation machinery.
6. Species of low post-transplantation survival rate.

Feasibility of Successful Transplantation: (refer to Methodology for detailed justification)

- A: Feasible
- B: Feasible with significant cost implications
- C: Feasible with very high cost implications
- D: Not Feasible

##Overall Value:

- E: Exceptionally High
- H: High
- M: Medium
- L: Low
- N: Negligible

^ General Remarks:

FORM

- br broken branches
- fe felled down
- fo forked
- db dead branches
- he head cut
- le leaning
- mu multi-trunks / 2 main trunks
- se seriously leaning
- sh shrubby
- tw twisting trunk
- un unbalance

HEALTH

- ab abnormally few green leaves
- co covered by climbers
- pe pest infected
- tr trunk is rotten

LOCATION

- con on concrete
- roc on rock
- sho on shotcrete
- slo on slope
- toe on toe of wall / slope
- top on top of wall
- wal on wall

ROOT

- exp root exposed
- spr root spreading on wall

^^ Other remarks

Tree surveyer: Mike Leung

Tree Survey Schedule

TREE NO.	BOTANICAL NAME	CHINESE NAME	JURISDICTION	SIZE (m)			HEALTH CONDITION	FORM	Specific Value*	Overall Value##	Feasibility of Successful Transplantation#	RECOMMENDATION
				Height	Spread	DBH						
T755	<i>Aleurites moluccana</i>	石栗	ASD	9.0	6.0	0.27	Fair	Fair	M L	Medium	B	Transplant
T756	<i>Ficus viren</i>	大葉榕	ASD	10.0	10.0	0.50	Fair	Fair	M M	Medium	B	Transplant
T757	<i>Aleurites moluccana</i>	石栗	ASD	7.0	5.0	0.30	Fair	Fair	M L	Medium	B	Transplant
T758	<i>Aleurites moluccana</i>	石栗	ASD	9.0	7.0	0.28	Fair	Fair	M L	Medium	B	Transplant
T759	<i>Aleurites moluccana</i>	石栗	ASD	9.0	7.0	0.29	Fair	Fair	M L	Medium	B	Transplant
T760	<i>Aleurites moluccana</i>	石栗	ASD	6.0	6.0	0.30	Poor	Poor	L L	Low	B	Fell
T761	<i>Aleurites moluccana</i>	石栗	ASD	7.0	2.0	0.20	Poor	Poor	L L	Low	A	Fell
T762	<i>Aleurites moluccana</i>	石栗	ASD	8.0	3.0	0.15	Poor	Poor	L L	Low	A	Fell
T763	<i>Aleurites moluccana</i>	石栗	ASD	8.0	6.0	0.22	Fair	Fair	M L	Medium	A	Transplant
T764	<i>Aleurites moluccana</i>	石栗	ASD	10.0	7.0	0.30	Fair	Fair	M L	Medium	B	Transplant
T765	<i>Aleurites moluccana</i>	石栗	ASD	12.0	7.0	0.40	Fair	Fair	M L	Medium	B	Transplant
T766	<i>Aleurites moluccana</i>	石栗	ASD	12.0	7.0	0.37	Fair	Fair	M L	Medium	B	Transplant
T767	<i>Aleurites moluccana</i>	石栗	ASD	12.0	7.0	0.22	Fair	Fair	M L	Medium	A	Transplant
T768	<i>Aleurites moluccana</i>	石栗	ASD	12.0	7.0	0.25	Fair	Fair	M L	Medium	A	Transplant
T828	<i>Aleurites moluccana</i>	石栗	ASD	5.0	3.0	0.28	Fair	Poor	L L	Low	B	Transplant
T829	<i>Aleurites moluccana</i>	石栗	ASD	5.0	3.0	0.23	Fair	Poor	L L	Low	A	Transplant
T830	<i>Aleurites moluccana</i>	石栗	ASD	10.0	7.0	0.45	Fair	Fair	M L	Medium	B	Transplant
T831	<i>Aleurites moluccana</i>	石栗	ASD	7.0	6.0	0.30	Fair	Fair	M L	Medium	B	Transplant
T832	<i>Aleurites moluccana</i>	石栗	ASD	5.0	3.0	0.27	Fair	Poor	L L	Low	B	Transplant
T833	<i>Aleurites moluccana</i>	石栗	ASD	5.0	4.0	0.35	Fair	Poor	L L	Low	B	Transplant
T834	<i>Aleurites moluccana</i>	石栗	ASD	5.0	3.0	0.30	Fair	Poor	L L	Low	B	Transplant
T835	<i>Aleurites moluccana</i>	石栗	ASD	5.0	3.0	0.30	Fair	Poor	L L	Low	B	Transplant
T836	<i>Aleurites moluccana</i>	石栗	ASD	5.0	2.0	0.28	Fair	Poor	L L	Low	B	Transplant
T837	<i>Aleurites moluccana</i>	石栗	ASD	5.0	3.0	0.23	Fair	Poor	L L	Low	A	Transplant
T838	<i>Aleurites moluccana</i>	石栗	ASD	3.0	2.0	0.16	Fair	Poor	L L	Low	A	Transplant
T839	<i>Aleurites moluccana</i>	石栗	ASD	5.0	4.0	0.23	Fair	Poor	L L	Low	A	Transplant
T840	<i>Aleurites moluccana</i>	石栗	ASD	3.0	2.0	0.20	Fair	Poor	L L	Low	A	Transplant
T841	<i>Aleurites moluccana</i>	石栗	ASD	2.0	1.0	0.18	Fair	Poor	L L	Low	A	Transplant
T843	<i>Aleurites moluccana</i>	石栗	ASD	4.0	2.0	0.22	Fair	Poor	L L	Low	A	Transplant
T844	<i>Aleurites moluccana</i>	石栗	ASD	4.0	3.0	0.25	Poor	Poor	L L	Low	A	Fell
T845	<i>Ficus microcarpa</i>	細葉榕	ASD	2.0	1.0	0.18	Fair	Poor	L M	Medium	A	Transplant
T846	<i>Ficus microcarpa</i>	細葉榕	ASD	2.0	2.0	0.25	Fair	Poor	L M	Medium	A	Transplant
T847	<i>Ficus microcarpa</i>	細葉榕	ASD	3.0	3.0	0.32	Fair	Poor	L M	Medium	B	Transplant
T848	<i>Ficus microcarpa</i>	細葉榕	ASD	2.0	2.0	0.20	Fair	Poor	L M	Medium	A	Transplant
T849	<i>Ficus viren</i>	大葉榕	ASD	4.0	4.0	0.40	Fair	Poor	L M	Medium	B	Transplant
T850	<i>Ficus viren</i>	大葉榕	ASD	2.0	1.0	0.15	Fair	Poor	L M	Medium	A	Transplant
T851	<i>Ficus viren</i>	大葉榕	ASD	3.0	2.0	0.30	Fair	Poor	L M	Medium	B	Transplant
T852	<i>Ficus viren</i>	大葉榕	ASD	4.0	4.0	0.25	Fair	Poor	L M	Medium	A	Transplant
T853	<i>Ficus viren</i>	大葉榕	ASD	3.0	3.0	0.40	Fair	Poor	L M	Medium	B	Transplant
T854	<i>Aleurites moluccana</i>	石栗	ASD	3.0	2.0	0.18	Fair	Poor	L L	Low	A	Transplant
T855	<i>Aleurites moluccana</i>	石栗	ASD	3.0	2.0	0.10	Fair	Poor	L L	Low	A	Transplant
T856	<i>Aleurites moluccana</i>	石栗	ASD	3.0	2.0	0.20	Fair	Poor	L L	Low	A	Transplant
T857	<i>Aleurites moluccana</i>	石栗	ASD	3.0	2.0	0.20	Poor	Poor	L L	Low	A	Fell
T858	<i>Ficus viren</i>	大葉榕	ASD	4.0	4.0	0.40	Fair	Poor	L M	Medium	B	Transplant
T859	<i>Aleurites moluccana</i>	石栗	ASD	3.0	2.0	0.20	Fair	Poor	L L	Low	A	Transplant
T860	<i>Ficus microcarpa</i>	細葉榕	ASD	2.0	1.0	0.15	Fair	Poor	L M	Medium	A	Transplant
T861	<i>Ficus microcarpa</i>	細葉榕	ASD	2.0	1.0	0.25	Fair	Poor	L M	Medium	A	Transplant
T862	<i>Aleurites moluccana</i>	石栗	ASD	4.0	2.0	0.22	Poor	Poor	L L	Low	A	Fell
T863	<i>Ficus viren</i>	大葉榕	ASD	2.0	1.0	0.23	Fair	Poor	L M	Medium	A	Transplant
T865	<i>Aleurites moluccana</i>	石栗	ASD	9.0	6.0	0.40	Fair	Fair	M L	Medium	B	Transplant
T866	<i>Aleurites moluccana</i>	石栗	ASD	9.0	4.0	0.25	Fair	Fair	M L	Medium	A	Transplant
T867	<i>Aleurites moluccana</i>	石栗	ASD	10.0	6.0	0.40	Fair	Fair	M L	Medium	B	Transplant
T868	<i>Casuarina equisetifolia</i>	木麻黃	ASD	17.0	10.0	0.40	Fair	Fair	M L	Medium	D	Fell
T869	<i>Casuarina equisetifolia</i>	木麻黃	ASD	23.0	10.0	0.40	Fair	Fair	M L	Medium	D	Fell
T870	<i>Casuarina equisetifolia</i>	木麻黃	ASD	15.0	8.0	0.28	Fair	Fair	M L	Medium	D	Fell
T927	<i>Livistonia chinensis</i>	蒲葵	ASD	10.0	3.0	0.25	Fair	Fair	M L	Medium	A	Transplant

* / ^ Refer to the first page of schedule for details

Tree Survey Schedule

TREE NO.	BOTANICAL NAME	CHINESE NAME	JURISDICTION	SIZE (m)			HEALTH CONDITION <small>Good/Fair/Poor/ Very Poor/Dead</small>	FORM <small>Good/Fair/ Poor</small>	Specific Value* <small>A C E H S</small>	Overall Value## <small>E/H/M/L/N</small>	Feasibility of Successful Transplantation# <small>A/B/C/D</small>	RECOMMENDATION <small>Retain/Transplant/Fell</small>
				Height	Spread	DBH						
T928	<i>Livistonia chinensis</i>	蒲葵	ASD	10.0	3.0	0.25	Fair	Fair	M L	Medium	A	Transplant
T929	<i>Livistonia chinensis</i>	蒲葵	ASD	10.0	4.0	0.20	Fair	Fair	M L	Medium	A	Transplant
T930	<i>Livistonia chinensis</i>	蒲葵	ASD	4.0	3.0	0.17	Fair	Fair	M L	Medium	A	Transplant
T931	<i>Livistonia chinensis</i>	蒲葵	ASD	4.0	3.0	0.17	Fair	Fair	M L	Medium	A	Transplant
T932	<i>Livistonia chinensis</i>	蒲葵	ASD	8.0	2.0	0.23	Fair	Fair	M L	Medium	A	Transplant
T933	<i>Livistonia chinensis</i>	蒲葵	ASD	10.0	4.0	0.22	Fair	Fair	M L	Medium	A	Transplant
T934	<i>Livistonia chinensis</i>	蒲葵	ASD	8.0	4.0	0.24	Fair	Fair	M L	Medium	A	Transplant
T935	<i>Livistonia chinensis</i>	蒲葵	ASD	8.0	4.0	0.22	Fair	Fair	M L	Medium	A	Transplant
T936	<i>Livistonia chinensis</i>	蒲葵	ASD	10.0	4.0	0.23	Fair	Fair	M L	Medium	A	Transplant
T937	<i>Livistonia chinensis</i>	蒲葵	ASD	10.0	4.0	0.23	Fair	Fair	M L	Medium	A	Transplant
T938	<i>Livistonia chinensis</i>	蒲葵	ASD	10.0	4.0	0.25	Fair	Fair	M L	Medium	A	Transplant
T939	<i>Livistonia chinensis</i>	蒲葵	ASD	10.0	4.0	0.25	Fair	Fair	M L	Medium	A	Transplant
T940	<i>Livistonia chinensis</i>	蒲葵	ASD	10.0	4.0	0.25	Fair	Fair	M L	Medium	A	Transplant
T941	<i>Livistonia chinensis</i>	蒲葵	ASD	5.0	4.0	0.20	Fair	Fair	M L	Medium	A	Transplant
T942	<i>Livistonia chinensis</i>	蒲葵	ASD	8.0	4.0	0.22	Fair	Fair	M L	Medium	A	Transplant
T943	<i>Livistonia chinensis</i>	蒲葵	ASD	8.0	4.0	0.22	Fair	Fair	M L	Medium	A	Transplant
T944	<i>Livistonia chinensis</i>	蒲葵	ASD	8.0	4.0	0.22	Fair	Fair	M L	Medium	A	Transplant
T945	<i>Livistonia chinensis</i>	蒲葵	ASD	8.0	4.0	0.22	Fair	Fair	M L	Medium	A	Transplant
T946	<i>Livistonia chinensis</i>	蒲葵	ASD	5.0	4.0	0.20	Fair	Fair	M L	Medium	A	Transplant
T947	<i>Livistonia chinensis</i>	蒲葵	ASD	5.0	4.0	0.20	Fair	Fair	M L	Medium	A	Transplant
T948	<i>Livistonia chinensis</i>	蒲葵	ASD	6.0	4.0	0.22	Fair	Fair	M L	Medium	A	Transplant
T949	<i>Acacia confusa</i>	台杉相思	ASD	8.0	6.0	0.30	poor	poor	L L	Low	D	Fell
T950	<i>Litsea glutinosa</i>	潺槁木	ASD	3.0	2.0	0.2	poor	poor	L L	Low	D	Fell

* / ^ Refer to the first page of schedule for details

KEY PLAN

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REV	DATE	DESCRIPTION

THE HONG KONG JOCKEY CLUB
 香港賽馬會

TTC & Co.
 LANDSCAPE ARCHITECTS

ARUP
 CONSULTING ENGINEERS

ronald lu & partners
 DOCUMENTATION ARCHITECT

Levett & Bailey
 LEVETT & BAILEY QUANTITY SURVEYERS LIMITED

2008 OLYMPIC EQUESTRIAN VENUES

QUARANTINE STABLE

TREE SURVEY PLAN (SHEET 1 OF 2)

PROJECT NO: **ST/L/THK/5/516**

SCALE: 1:500 & A1
 1:1000 & A3

DATE: 12 FEB 07

DESIGNED BY: JSP

CHECKED BY: JSP

DATE: 0

PROJECT NO: 24469

DATE: 12 FEB 07

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FOR CONTINUATION
 SEE DRG ST/L/THK/5/517

MATCH LINE

LEGEND:
 ○ RETAINED TREE
 × PROPOSED FELL TREE
 △ PROPOSED TRANSPLANT TREE
 ⊗ DEAD TREE

0 5 10 15 20 25
 METERS
 1" = 500'




91823

KEY PLAN

INTERNATIONAL SYMBOLS FOR THE PROTECTION OF THE ENVIRONMENT
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REV	DATE	DESCRIPTION



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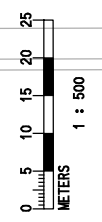
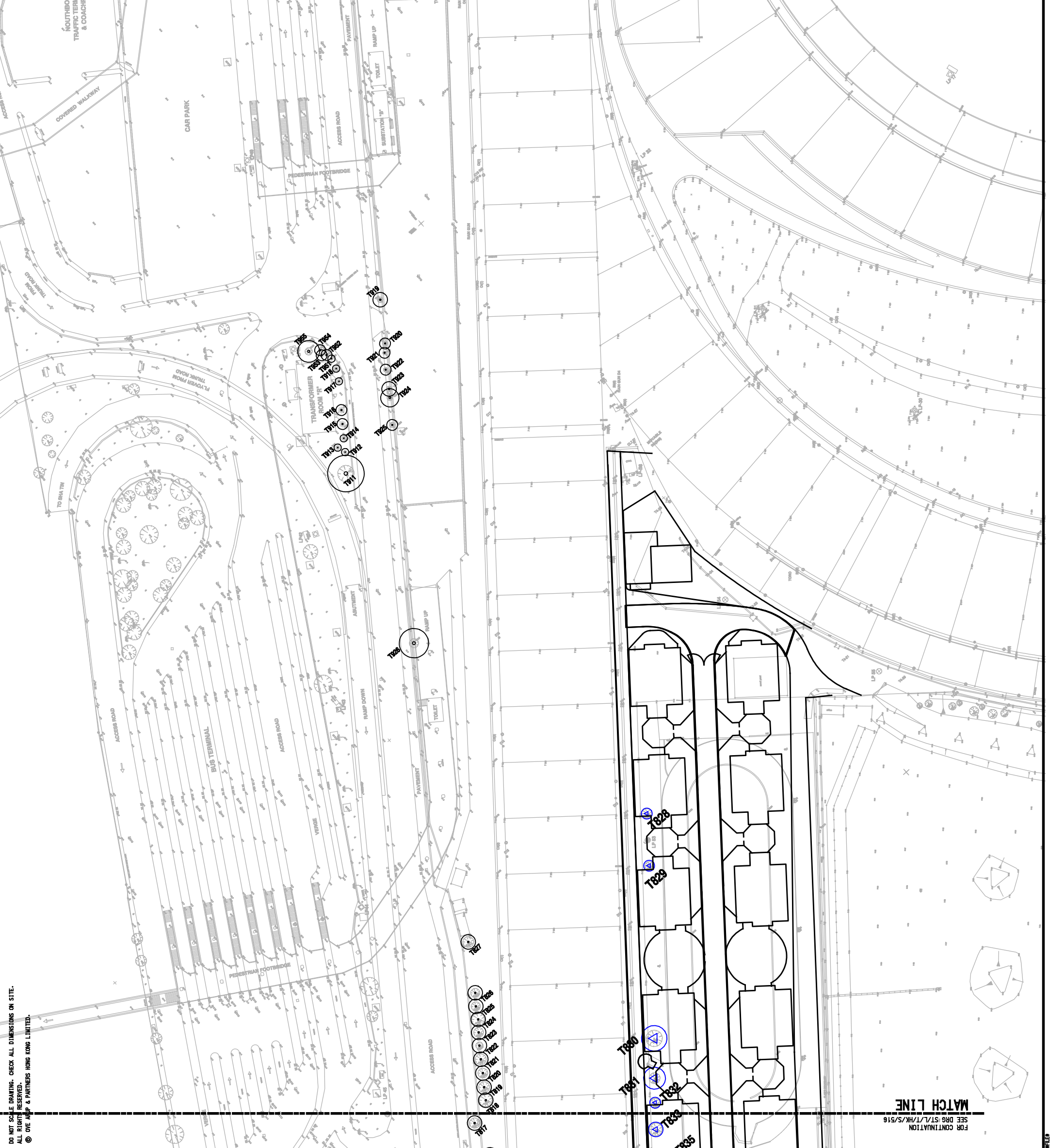
Quantity Surveyors
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PROJECT	2008 OLYMPIC EQUESTRIAN VENUES
PACKAGE	
DATE	QUARANTINE STABLE
TITLE	TREE SURVEY PLAN (SHEET 2 OF 2)
DATE	
SCALE	1 : 500 & A1
PROJECT NO.	24469
DATE	12 FEB 07
DESIGNED BY	
CHECKED BY	
DATE	
PROJECT NO.	ST/L/T/HK/S/517
SCALE	0
PROJECT NO.	
DATE	
DESIGNED BY	
CHECKED BY	
DATE	
PROJECT NO.	
SCALE	
PROJECT NO.	
DATE	
DESIGNED BY	
CHECKED BY	
DATE	

LEGEND:

- RETAINED TREE
- PROPOSED FELL TREE
- PROPOSED TRANSPLANT TREE
- DEAD TREE

TRAFFIC LIGHTS
 TRAFFIC SIGNALS
 & COACHES



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FOR CONTINUATION
 SEE DRG ST/L/T/HK/S/516
 MATCH LINE

Appendix E

Odour Patrol Report

For Ove Arup & Partners Hong Kong Limited

Odour Patrol Survey at Quarantine B Shatin Racecourse

Final Report

6 December 2006

Odour Research Laboratory
Department of Civil & Structural Engineering
The Hong Kong Polytechnic University



On behalf of
PolyU Technology & Consultancy Co. Ltd.

1. Background

An odour survey service was required by the Ove Arup & Partners Hong Kong Limited to conduct an one-day odour patrol exercise at the Quarantine B of Shatin Racecourse.

2. Scope of the Work

The scope of the work includes the following:

Odour Patrol

Monitoring Date	: 15 Nov 2006
Monitoring Periods	: 0900 to 1000, 1230 to 1330 and 1600 to 1700
Patrol Route	: Quarantine B of Shatin Racecourse and its surrounding area
Odour Panelists	: Three
Monitoring Parameter	: Wind speed, wind direction and identification of odour sources

3. Odour Patrol

- 3.1. Odour patrol means a simple judgment by observers patrolling and sniffing around to detect any odour at different hours.
- 3.2. Three qualified odour panel members from the Odour Laboratory of PolyU conducted the odour patrol as observers. The qualified odour panel members have their individual n-butanol thresholds in the range of 20 to 80 ppb/v required by the European Standard Method for olfactometry test (EN13725). They are free from any respiratory diseases and are not normally working at or living in the area in the vicinity of Quarantine B of Shatin Racecourse. The certificates of the odour panel members are attached as Appendix A.
- 3.3. A one-day odour patrol exercise at the area in the vicinity of the Quarantine B of Shatin Racecourse was carried out on 15 Nov. 2006. Three patrol trips were conducted during 0900 to 1000, 1230 to 1330 and 1600 to 1700, respectively. The patrol routes were proposed by the client as shown in Figure 1. Route 1 followed the path passing through identified ASRs around the project site. Route 2 included the access road between HKSI and Quarantine B taking into account HKSI as the nearest ASR location. Route 3 followed the boundary of the existing Quarantine B.
- 3.4. The observers patrolled slowly along the routes and use their olfactory senses to detect any odour. During the odour patrol, the observers brought along a logbook to record the findings, including the locations where odour is spotted, the possible sources of odour, the perceived intensity of the odour, and the characteristics of the odour detected. In the meantime, wind direction and wind speed were also measured by using a portable anemometer (Lutron AM-4201).
- 3.5. The perceived intensity is to be divided into 5 levels which are ranked in the descending order as follows:

0	Not detected	No odour perceived or an odour so weak that it cannot be easily characterised or described
1	Slight	Identifiable odour, slight
2	Moderate	Identifiable odour, moderate
3	Strong	Identifiable odour, strong
4	Extreme	Severe odour

3.6. The detailed odour patrol results at all locations are summarized in the following table

Results of Odour Patrol on 15 Nov. 2006

Route No	Location	Time	WS (m/s)	WD	Odour Intensity						Observation	
					OI-1	OI-2	OI-3	Min	Max	Mean	Nature	Source
1	1-a	8:55	1.5	E-NE	0	0	0	0	0	0	-	-
		12:57	1.4	E-NE	0	0	0	0	0	0	-	-
		16:20	0.0	E-NE	0	0	0	0	0	0	-	-
	1-b	9:00	1.7	E-NE	0	0	0	0	0	0	-	-
		13:00	0.4	E-NE	0	0	0	0	0	0	-	-
		16:23	0.1	E-NE	0	0	0	0	0	0	-	-
	1-c	9:04	0.5	E-NE	0	0	0	0	0	0	-	-
		13:02	0.3	E-NE	0	0	0	0	0	0	-	-
		16:27	0.0	E-NE	0	0	0	0	0	0	-	-
	1-d	9:07	0.7	E-NE	0~1	1	1	0~1	1	0.83	A	L1
		13:05	0.9	E-NE	0~1	0~1	0~1	0~1	0~1	0.5	A	L1
		16:30	0.0	E-NE	0	0	0	0	0	0	-	-
Route 1 overall:							0	1	0.08			
2	2-a	9:11	0.1	E-NE	0	0	0	0	0	0	-	-
		13:08	0.3	E-NE	0	0	0	0	0	0	-	-
		16:06	0.0	E-NE	0	0	0	0	0	0	-	-
	2-b	9:26	1.2	E-NE	0~1	0~1	0~1	0~1	0~1	0.5	B	L2
		12:22	1.4	E-NE	0	0	0	0	0	0	-	-
		16:10	0.0	E-NE	0	0	0	0	0	0	-	-
	2-c	9:32	2.1	E-NE	0	0	0	0	0	0	-	-
		12:25	1.1	E-NE	0~1	0	0~1	0	0~1	0.33	-	-
		16:13	0.2	E-NE	0	0	0	0	0	0	-	-
	2-d	9:55	2.0	E-NE	0	0	0	0	0	0	-	-
		12:47	0.9	E-NE	0	0	0	0	0	0	-	-
		16:32	0.0	E-NE	0	0	0	0	0	0	-	-
	2-e	12:50	0.2	E-NE	0	0	0	0	0	0	-	-
		16:17	0.1	E-NE	0	0	0	0	0	0	-	-
	Route 2 overall:							0	0~1	0.06		
3	3-a	9:33	2.1	E-NE	0	0	0	0	0	0	-	-
		12:26	1.1	E-NE	0	0	0~1	0	0~1	0.17	-	-
		16:14	0.2	E-NE	0	0	0	0	0	0	-	-
	3-b	9:27	1.2	E-NE	0~1	0~1	0~1	0~1	0~1	0.5	B	L2

		12:23	1.4	E-NE	0	0	0	0	0	0	-	-
		16:11	0.0	E-NE	0	0	0	0	0	0	-	-
	3-c	9:40	0.0	E-NE	2	2	2~3	2	2~3	2.17	B	L2
		12:36	0.2	E-NE	1~2	1~2	1~2	1~2	1~2	1.5	B	L2
		15:56	0.0	E-NE	0~1	1~2	1~2	0~1	0~1	1.5	B	L2
3	3-d	9:44	0.4	E-NE	2	1~2	1~2	1~2	2	1.67	B	L2
		12:39	0.1	E-NE	1~2	1	1	1	1~2	1.17	B	L2
		16:00	0.0	E-NE	2	2	2	2	2	2	B	L2
	3-e	9:47	0.2	E-NE	1	1~2	1	1	1~2	1.17	B	L2
		12:41	0.0	E-NE	1~2	1~2	1~2	1~2	1~2	1.5	B	L2
		16:02	0.0	E-NE	2	2	2	2	2	2	B	L2
	3-f	9:51	0.6	E-NE	0	0	0	0	0	0	-	-
		12:44	0.3	E-NE	0	0	0	0	0	0	-	-
		16:03	0.0	E-NE	0	0	0	0	0	0	-	-
Route 3 overall:							0	2	0.852			

Remark: WS: Wind speed; WD: Wind direction; OI-1, OI-2, and OI-3: Odour intensity detected by individual odour panel members; A: Fresh grass smell; B: Mixed smell of horse feed and excreta; L1: Grass field in HKSI; L2: Stable

3.7. The odour patrol results indicate that:

- an odour intensity of below 1 was detected at all points along Route 1 (20~65 m from the site).
Odour along Route 1 was insignificant;
- an odour intensity of below 1 was detected at all points along Route 2 (15~20 m from the site).
Odour along Route 2 was insignificant; and
- an odour intensity of below 1 was detected at 3a, 3b and 3f on Route 3 (5~10 m from the site) while an intensity of between 1 and 2 was detected at 3c, 3d and 3e on the route. Odour along Route 3 was moderate.

3.8. The odour patrol results also indicate that odour strength at different time periods from high to low is ranged as morning session > noon session > afternoon session.

3.9. According to the on-site observations by the three odour panel members, a mixed smell of horse feed and excreta was detected at several locations of 2b, 3a, 3b, 3d, and 3e, resulting from the nearby stables. In addition, a fresh grass smell was detected at one location of 1d, resulting from the grass field of HK Sports Institute.

Prepared by: Professor X. Z. Li

Signed:

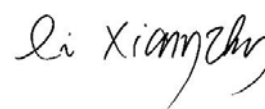
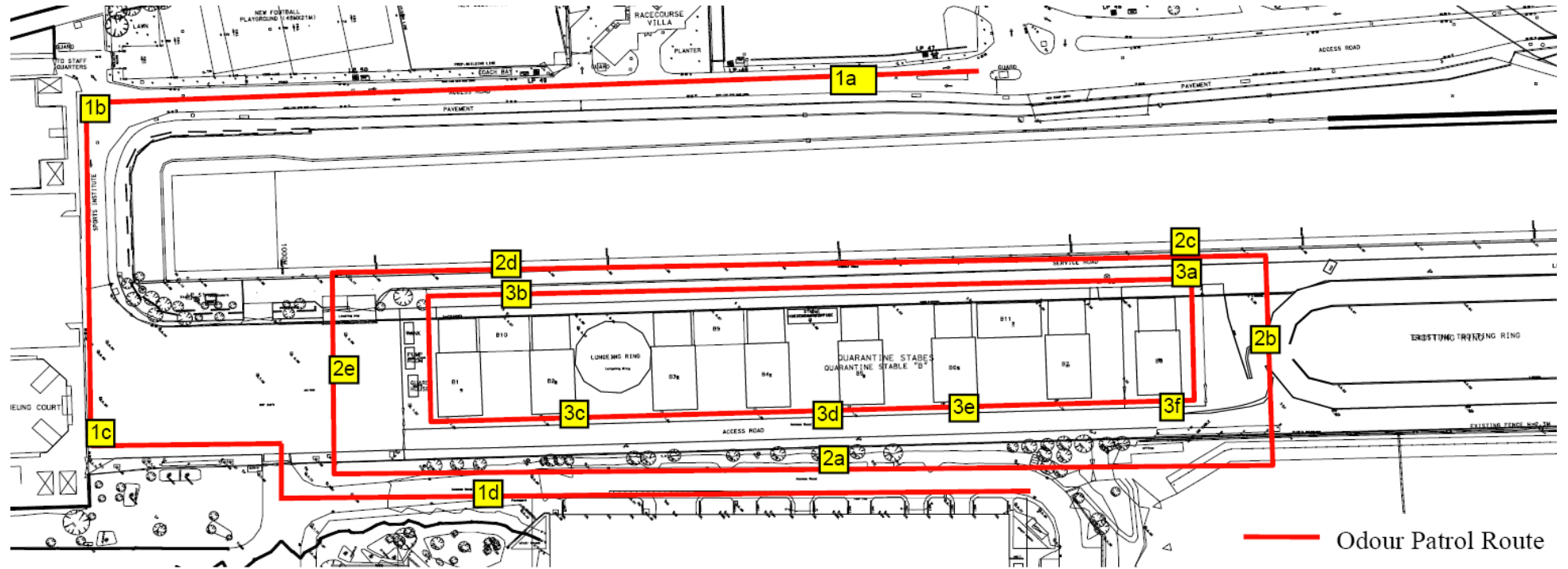


Figure 1. Odour Patrol Routes



Appendix A: Certificates of Odour Panel Members



Odour Research Laboratory
The Hong Kong Polytechnic University,
Hung Hom, Kowloon, Hong Kong
Tel: (852) 2766 6016 Fax: (852) 2334 6389

26 September 2006

Re: A Certificate for a Qualified Odour Panel Member

This is to certify that Mr. X.W. WANG participated in a set of n-butanol screening tests in our laboratory during May-August 2006 and his odour threshold of n-butanol in nitrogen gas was found to be in the range of 20 – 80 ppb/v. According to the requirement of the European Standard Method of Air Quality – Determination of Odour Concentration by Dynamic Olfactometry (EN13725), he is qualified to participate our odour patrol or odour concentration analysis.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Li Xianzhu'.

Professor X. Z. Li
Odour Research Laboratory
The Hong Kong Polytechnic University



Odour Research Laboratory
The Hong Kong Polytechnic University,
Hung Hom, Kowloon, Hong Kong
Tel: (852) 2766 6016 Fax: (852) 2334 6389

26 September 2006

Re: Re: A Certificate for a Qualified Odour Panel Member

This is to certify that Mr. K. H. NG participated in a set of n-butanol screening tests in our laboratory during May-August 2006 and his odour threshold of n-butanol in nitrogen gas was found to be in the range of 20 – 80 ppb/v. According to the requirement of the European Standard Method of Air Quality – Determination of Odour Concentration by Dynamic Olfactometry (EN13725), he is qualified to participate our odour patrol or odour concentration analysis.

Yours sincerely

Professor X. Z. Li
Odour Research Laboratory
The Hong Kong Polytechnic University



Odour Research Laboratory
The Hong Kong Polytechnic University,
Hung Hom, Kowloon, Hong Kong
Tel: (852) 2766 6016 Fax: (852) 2334 6389

26 September 2006

Re: Re: A Certificate for a Qualified Odour Panel Member

This is to certify that Mr. K. Y. WONG participated in a set of n-butanol screening tests in our laboratory during May-August 2006 and his odour threshold of n-butanol in nitrogen gas was found to be in the range of 20 – 80 ppb/v. According to the requirement of the European Standard Method of Air Quality – Determination of Odour Concentration by Dynamic Olfactometry (EN13725), he is qualified to participate our odour patrol or odour concentration analysis.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Li Xianzhu'.

Professor X. Z. Li
Odour Research Laboratory
The Hong Kong Polytechnic University

Appendix F

**Calculation of
Maximum Allowable
Sound Power Levels for
Fixed Noise Sources**

Project: Upgrading of Quarantine Stables for the 2008 Olympic Equestrian Events
Title: Noise criteria for operational noise

Time Period: Daytime (0700 - 1900)and Evening Time (1900 - 2300)

NSR	Description	Area Sensitivity Rating	Prevailing Noise Level, dB(A) (1)	ANL-5, dB(A) (2)	Criteria, dB(A) Min. of (1) & (2)
N1	Jockey Club Ti-I College	B	69	60	60
N2	HKJC Staff Quarters	B	56	60	56
N3	Racecourse Villa	B	56	60	56
N4	Jubilee Garden	B	66	60	60
N5	Royal Ascot	B	68	60	60
N6	Ravana Garden	B	59	60	59
N7	Leung Kui Kau Primary School	B	55	60	55
N8	Garden Vista	B	55	60	55
N9	Pictorial Garden	B	55	60	55

Time Period: Nighttime (2300 - 0700)

NSR	Description	Area Sensitivity Rating	Prevailing Noise Level, dB(A) (1)	ANL-5, dB(A) (2)	Criteria, dB(A) Min. of (1) & (2)
N1	Jockey Club Ti-I College	B	64	50	50
N2	HKJC Staff Quarters	B	51	50	50
N3	Racecourse Villa	B	52	50	50
N4	Jubilee Garden	B	62	50	50
N5	Royal Ascot	B	65	50	50
N6	Ravana Garden	B	51	50	50
N7	Leung Kui Kau Primary School	B	50	50	50
N8	Garden Vista	B	51	50	50
N9	Pictorial Garden	B	50	50	50

Project: Upgrading of Quarantine Stables for the 2008 Olympic Equestrian Events
 Title: Maximum allowable SWL at Stable

Receiver	Affected by IF (Y/N)	ASR ^[1]	Noise Levels / Criteria			Contributing Noise Sources ^[2]	Apportioned Criteria (d) adds up to (c) or less	Propagation		Corrections, dB(A)				Permissible SWL, dB(A)							
			ANL-5 (a)	Prevailing (b)	Design (c) = min of (a) & (b)			Dist, m	Dir, deg	Facade	Dist	Dir	Ton		Int						
N2 - HKJC Staff Quarters Daytime / Evening	N	B	60	56	56	Stable 1 - MVAC Plant	42	54	180	3	-43	0	3	0	79						
						Stable 2 - MVAC Plant	42	65	180	3	-44	0	3	0	80						
						Stable 3 - MVAC Plant	42	84	180	3	-47	0	3	0	83						
						Stable 4 - MVAC Plant	42	91	180	3	-47	0	3	0	83						
						Stable 5 - MVAC Plant	42	119	180	3	-49	0	3	0	85						
						Stable 6 - MVAC Plant	42	119	180	3	-50	0	3	0	86						
						Stable 7 - MVAC Plant	42	289	180	3	-57	0	3	0	93						
						Stable 8 - MVAC Plant	42	291	180	3	-57	0	3	0	93						
						Stable 9 - MVAC Plant	42	323	180	3	-58	0	3	0	94						
						Stable 10 - MVAC Plant	42	321	180	3	-58	0	3	0	94						
						Stable 11 - MVAC Plant	42	354	180	3	-59	0	3	0	95						
						Stable 12 - MVAC Plant	42	351	180	3	-59	0	3	0	95						
						Stable 13 - MVAC Plant	42	384	180	3	-60	0	3	0	96						
						Stable 14 - MVAC Plant	42	381	180	3	-60	0	3	0	96						
						Stable 15 - MVAC Plant	42	414	180	3	-60	0	3	0	96						
						Stable 16 - MVAC Plant	42	411	180	3	-60	0	3	0	96						
						Stable 17 - MVAC Plant	42	444	180	3	-61	0	3	0	97						
						Stable 18 - MVAC Plant	42	445	180	3	-61	0	3	0	97						
						Chiller	48	488	180	3	-62	0	3	0	104						
						Split A/C Unit - 1	30	53	180	3	-42	0	3	0	66						
						Split A/C Unit - 2	30	282	180	3	-57	0	3	0	81						
											55										
						Night-time	N	B	50	51	50	Stable 1 - MVAC Plant	37	54	180	3	-43	0	3	0	74
												Stable 2 - MVAC Plant	37	65	180	3	-44	0	3	0	75
												Stable 3 - MVAC Plant	37	84	180	3	-47	0	3	0	78
												Stable 4 - MVAC Plant	37	91	180	3	-47	0	3	0	78
												Stable 5 - MVAC Plant	37	119	180	3	-49	0	3	0	80
												Stable 6 - MVAC Plant	37	119	180	3	-50	0	3	0	81
												Stable 7 - MVAC Plant	37	289	180	3	-57	0	3	0	88
												Stable 8 - MVAC Plant	37	291	180	3	-57	0	3	0	88
												Stable 9 - MVAC Plant	37	323	180	3	-58	0	3	0	89
												Stable 10 - MVAC Plant	37	321	180	3	-58	0	3	0	89
												Stable 11 - MVAC Plant	37	354	180	3	-59	0	3	0	90
												Stable 12 - MVAC Plant	37	351	180	3	-59	0	3	0	90
												Stable 13 - MVAC Plant	37	384	180	3	-60	0	3	0	91
												Stable 14 - MVAC Plant	37	381	180	3	-60	0	3	0	91
												Stable 15 - MVAC Plant	37	414	180	3	-60	0	3	0	91
												Stable 16 - MVAC Plant	37	411	180	3	-60	0	3	0	91
												Stable 17 - MVAC Plant	37	444	180	3	-61	0	3	0	92
												Stable 18 - MVAC Plant	37	445	180	3	-61	0	3	0	92
Chiller	43	488	180	3	-62							0	3	0	99						
Split A/C Unit - 1	30	53	180	3	-42							0	3	0	66						
Split A/C Unit - 2	30	282	180	3	-57							0	3	0	81						
					50																
N3 - Racecourse Villa Daytime / Evening	N	B	60	56	56							Stable 1 - MVAC Plant	42	144	180	3	-51	0	3	0	87
												Stable 2 - MVAC Plant	42	129	180	3	-50	0	3	0	86
												Stable 3 - MVAC Plant	42	122	180	3	-50	0	3	0	86
												Stable 4 - MVAC Plant	42	104	180	3	-48	0	3	0	84
												Stable 5 - MVAC Plant	42	102	180	3	-48	0	3	0	84
												Stable 6 - MVAC Plant	42	83	180	3	-46	0	3	0	82
												Stable 7 - MVAC Plant	42	154	180	3	-52	0	3	0	88
												Stable 8 - MVAC Plant	42	140	180	3	-51	0	3	0	87
												Stable 9 - MVAC Plant	42	183	180	3	-53	0	3	0	89
												Stable 10 - MVAC Plant	42	168	180	3	-52	0	3	0	88
												Stable 11 - MVAC Plant	42	210	180	3	-54	0	3	0	90
												Stable 12 - MVAC Plant	42	196	180	3	-54	0	3	0	90
												Stable 13 - MVAC Plant	42	237	180	3	-56	0	3	0	92
												Stable 14 - MVAC Plant	42	224	180	3	-55	0	3	0	91
												Stable 15 - MVAC Plant	42	265	180	3	-56	0	3	0	92
												Stable 16 - MVAC Plant	42	253	180	3	-56	0	3	0	92
												Stable 17 - MVAC Plant	42	294	180	3	-57	0	3	0	93
												Stable 18 - MVAC Plant	42	286	180	3	-57	0	3	0	93
						Chiller	50	328	180	3	-58	0	3	0	102						
						Split A/C Unit - 1	30	145	180	3	-51	0	3	0	75						
						Split A/C Unit - 2	30	152	180	3	-52	0	3	0	76						
											56										
						Night-time	N	B	50	52	50	Stable 1 - MVAC Plant	35	144	180	3	-51	0	3	0	80
												Stable 2 - MVAC Plant	35	129	180	3	-50	0	3	0	79
												Stable 3 - MVAC Plant	35	122	180	3	-50	0	3	0	79
												Stable 4 - MVAC Plant	35	104	180	3	-48	0	3	0	77
												Stable 5 - MVAC Plant	35	102	180	3	-48	0	3	0	77
												Stable 6 - MVAC Plant	35	83	180	3	-46	0	3	0	75
												Stable 7 - MVAC Plant	35	154	180	3	-52	0	3	0	81
												Stable 8 - MVAC Plant	35	140	180	3	-51	0	3	0	80
												Stable 9 - MVAC Plant	35	183	180	3	-53	0	3	0	82
												Stable 10 - MVAC Plant	35	168	180	3	-52	0	3	0	81
												Stable 11 - MVAC Plant	35	210	180	3	-54	0	3	0	83
												Stable 12 - MVAC Plant	35	196	180	3	-54	0	3	0	83
												Stable 13 - MVAC Plant	35	237	180	3	-56	0	3	0	85
												Stable 14 - MVAC Plant	35	224	180	3	-55	0	3	0	84
												Stable 15 - MVAC Plant	35	265	180	3	-56	0	3	0	85
												Stable 16 - MVAC Plant	35	253	180	3	-56	0	3	0	85
												Stable 17 - MVAC Plant	35	294	180	3	-57	0	3	0	86
												Stable 18 - MVAC Plant	35	286	180	3	-57	0	3	0	86
Chiller	47	328	180	3	-58							0	3	0	99						
Split A/C Unit - 1	30	145	180	3	-51							0	3	0	75						
Split A/C Unit - 2	30	152	180	3	-52							0	3	0	76						
					50																

[1] ASR = Area Sensitivity Rating
 [2] MVAC = Mechanical Ventilation and Air Conditioning System
 [3] The lowest Sound Power Levels (SWL) of MVAC plant would be taken for a conservative assessment.
 [4] The Central Water-Cooled Chiller plant is assumed to be 94dB(A) and acoustic treatment will be provided as required.
 [4] The split A/C unit for Office is assumed to be 70dB(A) and acoustic treatment will be provided as required.

Period	Plant	Max SWL ^[3] , dB(A)
Daytime	Stables MVAC Plant	74
	Chiller	94
	Split A/C Unit	70
Night-time	Stables MVAC Plant	74
	Chiller	94
	Split A/C Unit	70

Project: Upgrading of Quarantine Stables for the 2008 Olympic Equestrian Events
Title: Calculated fixed plant noise level at NSR

Distance between source and NSRs, m

Description	N1	N2	N3	N4	N5	N6	N7	N8	N9
Stable 1 - MVAC Plant	311	54	144	331	562	509	532	584	664
Stable 2 - MVAC Plant	305	65	129	311	551	536	558	609	686
Stable 3 - MVAC Plant	340	84	122	311	536	511	526	572	646
Stable 4 - MVAC Plant	334	91	104	291	523	537	552	596	667
Stable 5 - MVAC Plant	373	119	102	291	506	516	520	558	626
Stable 6 - MVAC Plant	364	119	83	272	497	540	546	584	650
Stable 7 - MVAC Plant	542	289	154	247	369	569	525	522	548
Stable 8 - MVAC Plant	538	291	140	220	351	593	551	549	573
Stable 9 - MVAC Plant	575	323	183	251	346	585	532	522	538
Stable 10 - MVAC Plant	568	321	168	225	330	607	557	548	564
Stable 11 - MVAC Plant	605	354	210	259	327	601	541	523	530
Stable 12 - MVAC Plant	598	351	196	232	309	621	565	549	557
Stable 13 - MVAC Plant	635	384	237	270	309	618	551	526	524
Stable 14 - MVAC Plant	628	381	224	244	290	637	574	551	551
Stable 15 - MVAC Plant	665	414	265	283	294	635	562	530	520
Stable 16 - MVAC Plant	658	411	253	258	273	654	585	556	547
Stable 17 - MVAC Plant	695	444	294	300	281	654	575	537	518
Stable 18 - MVAC Plant	692	445	286	278	257	675	599	563	545
Chiller	735	488	328	306	241	702	618	574	544
Split A/C Unit - 1	308	53	145	331	564	564	564	564	564
Split A/C Unit - 2	535	282	152	251	378	378	378	378	378

Distance correction, dB(A)

Description	N1	N2	N3	N4	N5	N6	N7	N8	N10
Stable 1 - MVAC Plant	-58	-43	-51	-58	-63	-62	-63	-63	-64
Stable 2 - MVAC Plant	-58	-44	-50	-58	-63	-63	-63	-64	-65
Stable 3 - MVAC Plant	-59	-47	-50	-58	-63	-62	-62	-63	-64
Stable 4 - MVAC Plant	-58	-47	-48	-57	-62	-63	-63	-64	-64
Stable 5 - MVAC Plant	-59	-49	-48	-57	-62	-62	-62	-63	-64
Stable 6 - MVAC Plant	-59	-50	-46	-57	-62	-63	-63	-63	-64
Stable 7 - MVAC Plant	-63	-57	-52	-56	-59	-63	-62	-62	-63
Stable 8 - MVAC Plant	-63	-57	-51	-55	-59	-63	-63	-63	-63
Stable 9 - MVAC Plant	-63	-58	-53	-56	-59	-63	-63	-62	-63
Stable 10 - MVAC Plant	-63	-58	-52	-55	-58	-64	-63	-63	-63
Stable 11 - MVAC Plant	-64	-59	-54	-56	-58	-64	-63	-62	-62
Stable 12 - MVAC Plant	-64	-59	-54	-55	-58	-64	-63	-63	-63
Stable 13 - MVAC Plant	-64	-60	-56	-57	-58	-64	-63	-62	-62
Stable 14 - MVAC Plant	-64	-60	-55	-56	-57	-64	-63	-63	-63
Stable 15 - MVAC Plant	-64	-60	-56	-57	-57	-64	-63	-62	-62
Stable 16 - MVAC Plant	-64	-60	-56	-56	-57	-64	-63	-63	-63
Stable 17 - MVAC Plant	-65	-61	-57	-58	-57	-64	-63	-63	-62
Stable 18 - MVAC Plant	-65	-61	-57	-57	-56	-65	-64	-63	-63
Chiller	-65	-62	-58	-58	-56	-65	-64	-63	-63
Split A/C Unit - 1	-58	-42	-51	-58	-63	-63	-63	-63	-63
Split A/C Unit - 2	-63	-57	-52	-56	-60	-60	-60	-60	-60

Project: Upgrading of Quarantine Stables for the 2008 Olympic Equestrian Events
Title: Calculated fixed plant noise level at NSR

Noise Level at NSR, dB(A) - Daytime & Evening Time

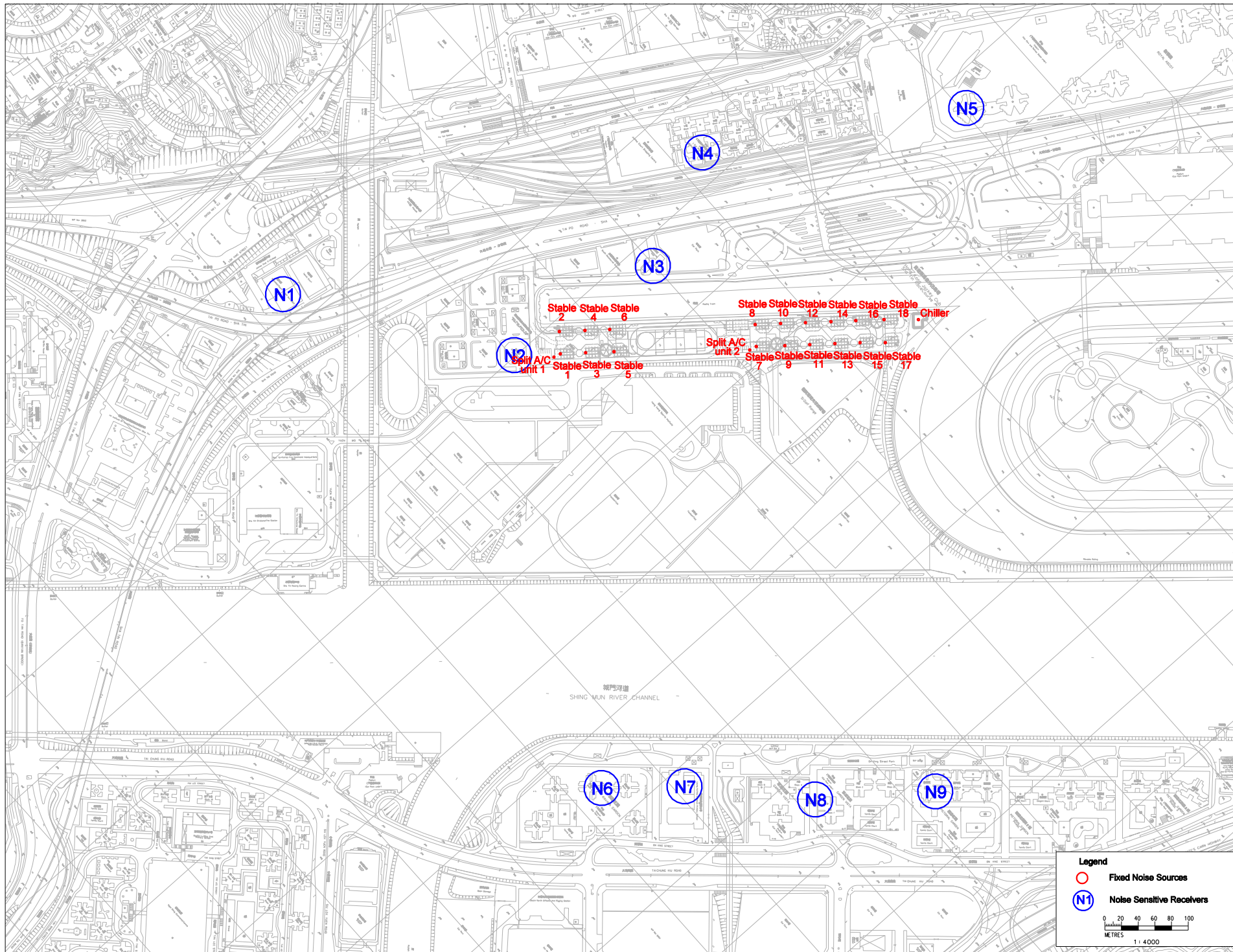
Description	Max SWL ^[1] , dB(A)	Noise Level, dB(A)								
		N1	N2	N3	N4	N5	N6	N7	N8	N10
Stable 1 - MVAC Plant	74	16	31	23	16	11	12	11	11	10
Stable 2 - MVAC Plant	74	16	30	24	16	11	11	11	10	9
Stable 3 - MVAC Plant	74	15	27	24	16	11	12	12	11	10
Stable 4 - MVAC Plant	74	16	27	26	17	12	11	11	10	10
Stable 5 - MVAC Plant	74	15	25	26	17	12	12	12	11	10
Stable 6 - MVAC Plant	74	15	24	28	17	12	11	11	11	10
Stable 7 - MVAC Plant	74	11	17	22	18	15	11	12	12	11
Stable 8 - MVAC Plant	74	11	17	23	19	15	11	11	11	11
Stable 9 - MVAC Plant	74	11	16	21	18	15	11	11	12	11
Stable 10 - MVAC Plant	74	11	16	22	19	16	10	11	11	11
Stable 11 - MVAC Plant	74	10	15	20	18	16	10	11	12	12
Stable 12 - MVAC Plant	74	10	15	20	19	16	10	11	11	11
Stable 13 - MVAC Plant	74	10	14	18	17	16	10	11	12	12
Stable 14 - MVAC Plant	74	10	14	19	18	17	10	11	11	11
Stable 15 - MVAC Plant	74	10	14	18	17	17	10	11	12	12
Stable 16 - MVAC Plant	74	10	14	18	18	17	10	11	11	11
Stable 17 - MVAC Plant	74	9	13	17	16	17	10	11	11	12
Stable 18 - MVAC Plant	74	9	13	17	17	18	9	10	11	11
Chiller	94	29	32	36	36	38	29	30	31	31
Split A/C Unit - 1	70	12	28	19	12	7	7	7	7	7
Split A/C Unit - 2	70	7	13	18	14	10	10	10	10	10
Total Noise Level at NSR, dB(A) ^[2]		36	44	44	43	45	36	37	38	38
Daytime & evening time criteria, dB(A)		60	56	56	60	60	59	55	55	55

Noise Level at NSR, dB(A) - Nighttime

Description	Max SWL ^[1] , dB(A)	Noise Level, dB(A)								
		N1	N2	N3	N4	N5	N6	N7	N8	N10
Stable 1 - MVAC Plant	74	16	31	23	15	11	12	11	10	9
Stable 2 - MVAC Plant	74	16	29	24	16	11	11	11	10	9
Stable 3 - MVAC Plant	74	15	27	24	16	11	12	11	11	9
Stable 4 - MVAC Plant	74	15	27	25	16	11	11	11	10	9
Stable 5 - MVAC Plant	74	14	24	25	16	12	11	11	11	10
Stable 6 - MVAC Plant	74	14	24	27	17	12	11	11	10	9
Stable 7 - MVAC Plant	74	11	16	22	18	14	11	11	11	11
Stable 8 - MVAC Plant	74	11	16	23	19	15	10	11	11	11
Stable 9 - MVAC Plant	74	11	16	20	18	15	10	11	11	11
Stable 10 - MVAC Plant	74	11	16	21	19	15	10	11	11	11
Stable 11 - MVAC Plant	74	10	15	19	17	15	10	11	11	11
Stable 12 - MVAC Plant	74	10	15	20	18	16	10	11	11	11
Stable 13 - MVAC Plant	74	10	14	18	17	16	10	11	11	11
Stable 14 - MVAC Plant	74	10	14	19	18	16	10	11	11	11
Stable 15 - MVAC Plant	74	9	13	17	17	16	10	11	11	11
Stable 16 - MVAC Plant	74	9	13	18	17	17	9	10	11	11
Stable 17 - MVAC Plant	74	9	13	16	16	17	9	11	11	11
Stable 18 - MVAC Plant	74	9	13	17	17	18	9	10	11	11
Chiller	94	29	32	36	36	38	29	30	31	31
Split A/C Unit - 1	70	12	28	19	12	7	7	7	7	7
Split A/C Unit - 2	70	7	13	18	14	10	10	10	10	10
Total Noise Level at NSR, dB(A) ^[2]		36	44	44	43	45	36	37	38	38
Nighttime criteria, dB(A)		50	50	50	50	50	50	50	50	50

[1] Based on Max. Allowable Sound Power Level (SWL)

[2] Noise Level at NSR = SWL + Distance Correction + 3dB(A) Facade Correction + 3dB(A) Tonality



REVISION

REV	AMT	REVISION DESCRIPTION	DATE

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REV	AMT	REVISION DESCRIPTION	DATE



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PROJECT
**2008 OLYMPIC
 EQUESTRIAN VENUES**

PACKAGE

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HKSI

TITLE
Fixed Noise Source Location

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Appendix F

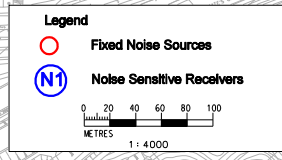
PROJECT NO.
24469

SCALE
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FEB 2007

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Appendix G

**Health Risk
Management**

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1 Introduction

To prevent the transmission of equine diseases among horse population and from horse to human, the import and export arrangements of equine animals in Hong Kong is subject to stringent control. Specific quarantine requirements have to be fulfilled before a horse can be permanently or temporarily imported to / exported from Hong Kong. Agriculture, Fisheries and Conservation Department (AFCD) of the Government of Hong Kong Special Administrative Region (HKSAR Government) has authorized the Hong Kong Jockey Club (HKJC) to operate quarantine for horses. HKJC is the only organisation in Hong Kong that can provide facilities to carry out quarantine for horses.

Quarantine B of Sha Tin Racecourse, which was built in 1993, is one of the designated facilities authorized by AFCD to undertake quarantine for horses. The total area of the existing quarantine precinct is approximately 8,200m² and it can accommodate up to 70 horses. HKJC plan to upgrade the existing Quarantine B by reconstructing all stable buildings and associated facilities on the site in two phases to cater for the need during the Olympic period and the HKJC's long-term plan. To maintain an uninterrupted quarantine process, the Olympic Stables in Hong Kong Sports Institute (HKSJ) will be used for housing horses under quarantine during the first construction phase of Quarantine B. Major physical features for converting the Olympic Stables to quarantine stables include vector screens on openable windows and doors, footbath at the entrance and disinfectant hand-washing bucket inside each stable.

Since its operation in 1993, Quarantine B has been performing its function of preventing equine disease from being introduced to or exported from Hong Kong by undertaking appropriate quarantine procedures.

The health risk management issue of Upgrading of Quarantine B (The Project) is studied in detail in this review. This study concludes that the special building designs within the new stables and the implementation of a series of quarantine standard operating procedures are satisfactory in managing and minimizing the risks associated with human health and animal health (in particular equine health). Reviews of equine quarantine facilities in other countries suggested that the quarantine facilities in Quarantine B is of a high standard among international practices.

2 Equine Quarantine System in Hong Kong

2.1 Relevant Parties

2.1.1 AFCD

The Agriculture, Fisheries and Conservation Department (AFCD) is the inspection and quarantine authority for animals in Hong Kong. It has the legislative responsibility on the import control of horses, horse feeds and bedding materials of plant origin.

The Public Health (Animals and Birds) Ordinance Cap. 139 and the Rabies Ordinance Cap. 421 are enforced by AFCD through regulating the import of animals including equines for the prevention of introduction of animal diseases including rabies into Hong Kong.

AFCD is also the authority responsible for issuing Special Permit to applicants for importing equine animals to Hong Kong. No horses or other equine animals are allowed to be brought into Hong Kong unless such Permit is obtained. Details of the Special Permit system for controlling horse import are elaborated in Section 2.3.

To assist local exporters in meeting the veterinary health requirements of the importing country, AFCD provides services of issuing and endorsing health certificates to facilitate the exportation. The rationale behind the Health Certificate system is further explained in Section 2.3 of this report.

AFCD is also the enforcing authority for Plant (Importation and Pest Control) Ordinance Cap. 207 and Pesticides Ordinance Cap 133. Cap 207 regulates the import of hay and other material of plant origin as horse feed or bedding material during international horse racing events by issuing Plant Import Licence to importers. Cap 133 regulates the import, supply and sale of pesticides in Hong Kong. Under the ordinance, only pesticides that are registered can be freely used in Hong Kong.

2.1.2 HKJC

AFCD has authorized The Hong Kong Jockey Club (HKJC) to operate quarantine for equine animals in Hong Kong. Being the only organisation possessing approved equine quarantine facilities in Hong Kong, HKJC has been responsible for the daily operation and management of quarantine stables for equine animals in Hong Kong under AFCD's monitoring.

HKJC has formulated two sets of regulations to regulate the daily operations of quarantine facilities in Hong Kong, namely the "Compulsory Quarantine Regulations for All Equines in Hong Kong" and the "Compulsory Health Regulations for All Equines in Hong Kong". Details of these standard operating procedures (SOP) are described in Section 4.1.

2.1.3 EPD

Environmental Protection Department is the authority for Environmental Impact Assessment Ordinance (EIAO) Cap 499 which provides for assessing the environmental impact of a Designated Project as defined under the Ordinance. "A *quarantine station, or quarantine lairage, for animals*" is a Designated Project under item N2, Part 1, Schedule 2 of EIAO and requires an environmental permit (EP) for its construction and operation. When considering an application under the EIAO, EPD shall take advices from the relevant authorities such as AFCD on plant and animal health, and DH on human health according to the Technical Memorandum on EIAO Process (TM-EIAO). EPD is responsible for deciding whether the environmental impacts of the quarantine stables has been adequately assessed and mitigated where necessary to meet the criteria of TM-EIAO and the provision of EIAO before issuing the EP.

2.1.4 Department of Health

Department of Health (DH) is the Government's health advisor and agency to execute health care policies and statutory functions. It safeguards the health of the community. It operates a disease surveillance system which covers statutory notifiable infectious diseases and voluntary reporting of communicable diseases of public health significance.

Although very unlikely, quarantine stations for horses may pose health threat to human, either staff working inside or the general public, if the facilities were not strictly operated and managed in accordance with the associated standard operation procedures.

When approving an EP application for a designated project (including a quarantine station), the Director of Environmental Protection (DEP) shall take advice from DH on human health matters.

2.2 The Risks to be Guarded

2.2.1 General

The health risk associated with the re-development of Quarantine B mainly lies on the equine diseases that are potentially carried by the importing equines. A series of known equine diseases of concern are described in this Section, their respective transmission paths, incubation periods and infected species are also discussed.

2.2.2 Transmission Pathways

Equine disease can be spread from animal to animal or from animal to human, and vice versa, through five main routes of transmission: aerosol, oral, direct contact, fomite and vector [CFSPH]. By having a better understanding of how infectious diseases are transmitted, the most effective way of controlling their transmissions could then be identified.

2.2.2.1 Aerosol

The ability of pathogens to survive and be transmitted varies by organism as well as other factors such as temperature, humidity and wind speed. The greater the separation distance between an infected and susceptible individual, the less likely transmission will occur. Appropriate ventilation is extremely important in reducing airborne disease transmission.

2.2.2.2 Oral

Oral transmission can occur through contaminated feed, water or object in the environment that horses may contact with their mouth. It is therefore important to control the source of feed and the feed quality.

2.2.2.3 Direct Contact

A susceptible individual becomes exposed when the disease agent directly touches open wounds, mucous membranes, or the skin through blood, saliva, faeces, nose to nose contact, rubbing, or biting.

2.2.2.4 Fomites

A fomite is any inanimate object or substance capable of absorbing, retaining, and transporting contagious or infectious organisms from one individual to another. The use of tools that have not been properly disinfected between use, such as towels, eating utensils and surfaces such as floors and walls may all serve to spread disease.

2.2.2.5 Vector

A disease vector is an organism that transmits a disease or a parasite without necessarily being affected itself. The prevalence of vector-borne diseases is dependent upon the prevalence of the disease agent and the presence, distribution, abundance, life expectancy and feeding habits of the vector. The most effective means to prevent transmission is the elimination of the vector organism (often an insect), or at least separation from the host.

2.2.3 Equine Diseases

Being the veterinary authority for the import and export of animals in Hong Kong, AFCD is responsible for setting up import health requirements to protect Hong Kong from unwanted animal diseases. After appropriate risk analysis for the different diseases of horses from different countries/places of export/residency, different health status of the horses/premises/area/zone/country/place and different treatment/testing/vaccination history, specific health certification and import requirements including relevant quarantine measures are established by AFCD in agreement with the country/place of export/residency bilaterally. The following equine diseases have also been taken into consideration by AFCD in formulating the relevant protocol for the import of horses into Hong Kong. Information on each equine disease was extracted from the fact sheets published by the Center for Food Security & Public Health of Iowa State University in collaboration with OIE, unless otherwise stated.

Notwithstanding the typical pre-export quarantine (PEQ) duration of 21 days and import certification requirements as specified in the Health Information Document (HID) for each horse, AFCD's senior veterinary officer may, under the provisions of Public Health (Animals and Birds) Ordinance Cap. 139, impose additional quarantine requirements to any horse to be imported and/or vary the duration of PEQ as necessary.

Diseases marked with an asterisk (*) below denote that they must be compulsorily notifiable in the country of export, i.e. all cases or suspected cases must be notified to the regulatory veterinary authority.

2.2.3.1 African horse sickness*

African horse sickness (AHS) is a highly infectious and deadly disease. It commonly affects horses, mules, donkeys and zebras. This disease is not directly contagious, but is known to be spread by culicoides insect vectors. The incubation period of the sub-acute form of the disease is 7 to 12 days after infection. Humans are not natural hosts for the AHS virus, and

no cases have been seen after contact with field strains. AHS has never been reported in Eastern Asia or Australasia.

Residency in an AHS Free Zone for a minimum of 60 days with a minimum PEQ period of 40 days in a culicoides vector proof facility is required for importing horses which have been in any country where AHS has occurred in the last 2 years, and testing will be carried out during the quarantine period.

2.2.3.2 Anthrax*

Anthrax is an acute, infectious disease of a variety of mammals while horses are considered to be less susceptible than ruminants such as cattle, sheep, goats, camels and antelopes. Anthrax can also occur in humans when they are exposed to infected animals. Anthrax can enter the human body through ingestion, inhalation or in cutaneous form (skin contact). However, it is not-contagious and is unlikely to spread from person to person. Occupational exposure to infected animals is the usual pathway of exposure.

The incubation period for anthrax is 1 to 20 days. Most infections become apparent after 3 to 7 days.

2.2.3.3 Contagious equine metritis*

Contagious equine metritis (CEM) is a highly contagious venereal disease of horses which poses no risk to human health. CEM is commonly transmitted directly during sexual intercourse between undetected CEM positive breeding mares and stallions. Transmission may also occur indirectly by artificial insemination or contact with fomite, such as contaminated hands or instrument.

Horse breeding does not occur in Hong Kong and HKJC's SOP stipulates that each set of grooming and feeding equipment must only be used by one horse, thus, the risk of transmission of CEM into Hong Kong could be reduced.

2.2.3.4 Dourine*

Dourine is a serious, often chronic, venereal disease of horses. It is transmitted almost exclusively during breeding, usually from stallions to mares. There is no evidence that the bacteria that cause dourine can infect humans.

Measures for prevention of dourine are similar to that for CEM in Section 2.2.3.3, and testing is required if non-occurrence of the disease for 6 months in the country of export cannot be certified.

2.2.3.5 Eastern equine encephalomyelitis (EEE)*

Eastern equine encephalomyelitis virus (EEEV) is a mosquito-borne viral disease and is capable of infecting a wide range of animal including mammals, birds, reptiles and amphibians, but not all animals develop high enough levels of EEEV to be contagious to humans. Horses are susceptible to EEE and some cases are fatal. However, the EEE infection in horses is not a significant risk factor for human infection because horses are considered to be a "dead-end" host for the virus as the amount of EEEV in their bloodstream is usually insufficient to infect mosquitoes.

Symptoms of EEE usually appear 4 to 10 days after the bite of an infected mosquito. AFCD's import certification requires non-occurrence of the disease for 2 years in the country of export, or the horse to be vaccinated against the disease, or 2 negative tests or no increase in titre.

2.2.3.6 Epizootic lymphangitis

Epizootic lymphangitis (horse mange) is a contagious and eruptive disease that mainly affects horses and mules. The fungus may be spread directly or indirectly by flies, or use of contaminated grooming equipment. The skin form infection of the disease could result from wound contamination by organisms in the soil. The incubation period of the disease is usually several weeks. Rare cases of human infections have been reported.

Installation of vector screens and prohibition of the use of shared grooming and feeding equipment would assist to prevent the horses from being infected.

2.2.3.7 Equine ehrlichiosis

Equine ehrlichiosis is a member of the ehrlichiosis disease group. There are two types of equine ehrlichiosis diseases, namely equine monocytic ehrlichiosis and equine granulocytic ehrlichiosis. The incubation period for equine granulocytic ehrlichiosis is 1 to 14 days. It is believed that human exposure to the disease occurs through tick bites and not by direct transmission from horses to people.

Every equine will be treated with an insecticide effective against ticks within 2 days of entering post-arrival quarantine (PAQ), this could assist to eliminate the transmission of the disease by tick bites.

2.2.3.8 Equine encephalosis

Equine encephalosis (EE) is a viral disease of horses in southern parts of Africa. Clinical signs can vary from no obvious signs to elevated temperature and congestion of the mucous membrane after an incubation period of 2-6 days. In more acute cases, neurological, respiratory and cardiac signs may occur. The transmission pattern of EE is similar to African Horse Sickness, which are both transmitted by insect vectors.

Installation of vector screen at the PAQ facility in Hong Kong could assist to reduce the possibility of transmission of the disease.

2.2.3.9 Equine herpes virus infection

Equine herpes virus (EHV) is a highly infectious viral disease that causes abortion, respiratory disease and paralysis in horses. (Infection of EHV type 4 is also known as equine rhinopneumonitis.) The EHV is spread via the respiratory tract and can survive in a wide range of temperature. It can live on buckets, grooming equipment and human hands. Although humans can carry the virus from horse to horse, they are not susceptible to the virus themselves. The incubation period of EHV-1 is typically 2 to 10 days. A very high percentage of horses carry the virus in a latent form in the same manner as humans.

Provision of disinfection with approved disinfectant and prohibition of using shared grooming and feeding equipment, in accordance with the SOP instructions, are some of the essential ways of controlling the EHV.

2.2.3.10 Equine infectious anaemia (EIA)*

Equine infectious anaemia (EIA) is a viral disease affecting horses which can be transmitted through blood, saliva, milk, and body secretions. Transmission is usually through blood-sucking insects such as the horse-fly and deer-fly. EIA can also be transmitted by shared use of blood-contaminated materials on different horses. Other animals including humans are not known to be affected by the EIA virus.

Horses are tested for EIA and must produce negative results during the PEQ period before they can be exported to Hong Kong. During the PAQ, shared use of grooming and feeding equipment is strictly prohibited in accordance with the SOP.

2.2.3.11 Equine influenza

Equine influenza, also known as horse flu, is endemic in horses throughout most of the world. The virus can be spread easily from horse to horse as a result of aerosol droplets and also from nasal discharge. The disease is very contagious and there is almost 100% infection rate in a population that has not been exposed to the virus previously or is unvaccinated. Infected horses become ill, cough and are reluctant to eat or drink for several days but usually recover in 2 to 3 weeks. The incubation time for equine influenza is one to five days. The equine influenza virus H3N8 poses no known threat to human health.

AFCD's import certification requires non-occurrence of the disease for 2 years in the country of export and/or vaccination against the disease. In addition, all horses after arrival will be

vaccinated with equine influenza vaccines during the PAQ period. They are also all subjected to the Directigen Flu-A rapid diagnostic test which must be negative prior to their release from PAQ. The risk of a large-scale outbreak is therefore minimal.

2.2.3.12 Equine piroplasmosis

Equine piroplasmosis is a tick-borne protozoal infection of horses. The incubation period for the disease is 10 to 30 days, depending on the type of infection. It has been implicated in human infection, but infrequently.

Prevention of blood transfer from one animal to another is vital for controlling the transmission of this disease. This could be achieved by prohibiting the use of shared grooming and feeding equipment by different horses. Inspection for elimination and prevention of contact with the tick vector is necessary to control the disease. AFCD's import certification requires non-occurrence of the disease for 2 years in the country of export or testing against equine piroplasmosis.

2.2.3.13 Equine viral arteritis

Equine viral arteritis (EVA) is an infectious viral disease of horses that causes a variety of clinical symptoms, such as fever, depression, edema, conjunctivitis, nasal discharges and abortions. The disease is transmitted through both respiratory and reproductive systems. Equine arteritis virus can also be carried by fomites. The incubation period for EVA varies from 1 to 13 days, with an average incubation period of 7 days. There is no indication that equine arteritis virus can infect humans.

EVA can be destroyed by most common disinfectants. Disinfection at quarantine stables would therefore be effective in controlling its spread.

2.2.3.14 Glanders*

Glanders results from infection by an aerobic, non-motile bacteria. Transmission of the disease is usually by ingestion in horses. The infection can also be spread by inhalation or through skin abrasions and conjunctiva. The bacteria of glanders is spread on fomites, including harnesses, grooming tools, food and water troughs. Humans can become infected after contact with sick animals or infectious materials but natural human infections are rare. The incubation period for glanders is 2 to 6 weeks.

AFCD's import certification requires non-occurrence of the disease for 2 years in the country of export or the horse has not been in any country for past 2 years where glanders occurs or a negative test result against the disease.

2.2.3.15 Hendra virus infection

Hendra virus has only been documented in Australia. The hendra virus does not appear to be highly contagious, and close contact seems to be necessary for it to spread. Humans can be infected by having close contact with ill horses, e.g. contact with bodily fluids or aerosols. Human to human spread, however, has not been seen. The incubation period in horses is 8 to 18 days.

AFCD's import certification requires non-occurrence of the disease for 2 years in the country of export or a negative test result against the disease.

2.2.3.16 Horse mange

There are six types of horse mange, with Sarcoptic Mange being the most severe type of mange. Mange is a disease caused by the infestation by microscopic arthropods parasites, generally called mites. The disease is due to allergic reaction. Both human and horses are the susceptible species. Mange is very contagious by direct and indirect contact. Mites can survive up to 2 weeks in the environment.

Transmission of horse mange can be prevented by avoiding the shared use of grooming and feeding equipment. Proper insecticides can be applied to treat horse mange.

2.2.3.17 Horse pox

Horse pox is a viral disease usually benign and rare. It used to occur in Europe where it has not been recorded recently. Its transmission pathway is through contact with infected grooming tools, harness and by handling. The disease went extinct in the early 20th century.

2.2.3.18 Japanese encephalitis

Japanese encephalitis is a mosquito-borne viral infection of horses, pigs and humans and is endemic in South-East Asia, including Hong Kong. Under natural conditions, humans and horses appear to be the dead-end hosts. In other words, there has been no sign that the virus can be transmitted from horse to human, and vice versa. The incubation period in horses is 8-10 days.

AFCD's import certification requires either the horse not to have been on premises in the 30 days pre-export where a case of Japanese encephalitis has occurred within 100 kilometers or to have been vaccinated against the disease. During the PAQ period, removal of stagnant water around the quarantine precinct and installation of mosquito screen, in accordance with the SOP requirements, and use of insecticides would assist to protect human and horses from mosquito bites.

2.2.3.19 Nipah virus infection

Nipah is a newly recognized zoonotic virus and is closely related to the Hendra virus as antibodies to the Nipah virus cross-react with the Hendra virus. The mode of its transmission from animal to animal, and from animal to human is uncertain, but appears to require close contact with contaminated tissue or body fluid from infected animal. It is unlikely that Nipah virus is easily transmitted to man, although previous outbreak reports suggest that Nipah virus is transmitted from animals to human more readily than Hendra virus. Nipah virus does not appear to be spread from human to human, and transmission from horses to humans is rare. The incubation period is between 4 and 18 days.

AFCD's import certification requires non-occurrence of the disease in the country of export for 2 years or a negative test result against the disease.

2.2.3.20 Rabies

Rabies is a zoonotic viral disease which infects domestic and wild animals. It is transmitted to other animals and humans through close contact with saliva from infected animals (i.e. bites, scratches, licks on broken skin and mucous membranes). Once symptoms of the disease develop, rabies is fatal to both animals and humans. Horses can become infected with rabies but the virus would rarely be transmitted to other animal and humans. The incubation varies from 2 to 10 weeks depending on what part of the body is bitten.

AFCD's import certification requires that the country of export has had no case of rabies in the last 2 years and that the horse has not been exposed to rabies or on any premises infected with rabies during the 6 months prior to exporting.

2.2.3.21 Salmonella abortus equi

Salmonella abortus equi, also known as equine paratyphoid, is specifically associated with horses and donkeys and is not considered to be a significant zoonosis, i.e. it is unlikely be transmitted from animal to human, and *vice versa*. The disease is usually transmitted by ingestion of pasture or food contaminated by uterine discharge from carriers or recently aborted mares.

2.2.3.22 Scabies

Scabies is a transmissible skin infection characterised by superficial burrows, intense itching and secondary infection caused by the microscopic mite *Sarcoptes scabiei*. Scabies is transmitted by direct, prolonged skin-to-skin contact with an individual already infested with scabies. Both humans and animals can be infested but with different kind of scabies mite. If a person has close contact with a horse infested with scabies, the mite can get under his

skin and cause itching and skin irritation. However, the mite dies in a couple of days and does not reproduce.

Transmission of scabies can be prevented by avoiding the shared use of grooming and feeding equipment. Proper chemicals can be applied to treat scabies if it was found during the quarantine period.

2.2.3.23 St. Louis encephalitis

St Louis encephalitis (SLE) is a serious viral disease that is found in birds and spread by infected mosquitoes. This disease mainly affects the United States, with occasional cases being reported from Canada and Mexico. Humans and mammals such as horses can also be infected but are the dead-end hosts and therefore the virus is not transmitted from person to person or from animal to person. The incubation period for SLE is usually 5 to 15 days.

Installation of mosquito screens at the entrance of quarantine stables, in accordance with the SOP, would assist to prevent the transmission of SLE during the PAQ period.

2.2.3.24 Strangles

Strangles is a highly contagious and serious disease of horses caused by the bacterium *Streptococcus equi*. Transmission of Strangles is either by direct or indirect contact of susceptible animal with an infected horse, e.g. use of shared water source, contaminated stalls and buckets. Strangles is only transmitted among horses and is not known to be a threat to humans. The incubation period of Strangles varies from 7 to 14 days.

Prohibition of using shared grooming and feeding equipment, in accordance with the SOP, would reduce the possibility of Strangles being transmitted among horses.

2.2.3.25 Surra

Surra is a chronic disease of horses, mules, donkeys and camels. The incubation period is 5-60 days. The disease is usually transmitted by horse-flies. Surra is not known to pose threat to human health.

Provision of vector screen at each quarantine stable during both PEQ and PAQ periods would be effective in controlling Surra. It is the requirement of AFCD that importing horse should not have been in any country where Surra has occurred in the previous 2 years.

2.2.3.26 Venezuelan equine encephalomyelitis*

Venezuelan equine encephalomyelitis (VEE) is highly pathogenic for horses and can cause illness in humans. Person-to-person transmission has not been reported. The VEE viruses are spread mainly by mosquitoes. The incubation period for VEE is usually 1 to 5 days.

AFCD's import certification requires that the horse has not been in any country where the disease has occurred during the previous 2 years and it has not been vaccinated against VEE. During the PAQ period in Hong Kong, provision of vector screens and removal of stagnant water around the quarantine precinct would be the primary ways of controlling mosquito population and activity.

2.2.3.27 Vesicular stomatitis*

Vesicular stomatitis is an important livestock disease in the Americas. Horses, donkeys, mules, cattle, swine and human can be affected by vesicular stomatitis virus (VSV). VSV is thought to be transmitted by insect vectors, particularly sand flies and blackflies. Humans may be infected by contact with the vesicular fluid or saliva from infected animals. The incubation period is 2 to 8 days; most often animals become symptomatic in 3 to 5 days.

AFCD's import certification requires non-occurrence of the disease for 12 months in country of export or the horse during the 30 days prior to exporting has not been on any premises within 50 kilometers of where a clinical case of VSV has been confirmed and the horse was tested negative for VSV. Transmission of the disease by mosquito bites could be eliminated

by providing vector screens at the entrance of each stable block and removing stagnant water around the precinct.

2.2.3.28 Western equine encephalomyelitis*

The Western equine encephalitis (WEE) virus can cause disease in humans, horses and some species of bird. The WEE virus is transmitted mainly by mosquitoes. Normally the virus cycles between birds and mosquitoes. Human and horses are the dead-end hosts as they do not develop high enough level of the WEE virus in their blood to be contagious to other animals or humans. The incubation for WEE is 5 to 14 days.

AFCD's import certification requires non-occurrence of the disease for 2 years in the country of export, or the horse to be vaccinated, or 2 negative tests or no increase in titre. Provision of vector screens at all stable blocks would be the most effective way of preventing transmission of WEE virus by mosquitoes during the PAQ period in Hong Kong.

2.2.3.29 West Nile / Kunjin virus infection*

West Nile fever results from infection by the West Nile virus, a mosquito-borne arbovirus. Birds are the primary reservoir hosts and the virus is maintained in an enzootic cycle between mosquitoes and birds. When environmental conditions favour high viral amplification, significant numbers of "bridge vector" mosquitoes become infected and can spread the virus to humans, horses and other hosts. Infected humans and horses however do not seem to spread the virus to other mammals. The incubation period in horses appears to be 5 to 15 days.

AFCD's import certification requires the horse during the 30 days prior to exporting not to have been on premises either within 100 kilometres or within the country of export where a clinical case of the disease has been officially reported, or the horse has been vaccinated against the disease. During the PAQ period, removal of stagnant water around the quarantine precinct, application of insect repellent/insecticide and installation of mosquito screen, in accordance with SOP requirements, would be effective in protecting human and horses from mosquito bites.

2.2.4 Plant Pests and Diseases

During international horseracing events, horses will be imported temporarily along with a certain amount of hay and other material of plant origin as horse feed and bedding material. The imported hay and material of plant origin may pose threat to local agricultural production, native plants and the ecology by spreading plant pests and diseases. Measures for controlling the introduction and spread of plant pests and diseases from this source are described in Section 2.3.7.

2.3 Quarantine Policy for Horses in Hong Kong

2.3.1 Import of Horses into Hong Kong from Scheduled Countries

Only horses from a schedule of countries/places of residency which have established import/export protocol with Hong Kong are to be imported. All the seventeen scheduled countries/places have their own qualified quarantine facilities to provide the PEQ services which are recognised by AFCD. The seventeen scheduled countries are:

- Argentina
- Australia
- Canada
- Denmark
- France
- Germany

- Italy
- Japan
- Macau
- Malaysia
- New Zealand
- The Republic of Ireland
- The Republic of South Africa
- Singapore
- The United Arab Emirates
- The United Kingdom
- The United States of America

Importation of horses from places other than these scheduled countries would require a prior risk assessment by AFCD.

2.3.2 Special Permit for Horses Imported into Hong Kong

Any person who wishes to import horses to Hong Kong must obtain a Special Permit from AFCD. A "Horse Information Document" detailing the health information of the horse to be imported must be submitted together with the application.

2.3.3 Horse Information Document for Horses Imported into Hong Kong

The Horse Information Document (HID) specifies the PEQ, testing and vaccination requirements for all horses to be imported to Hong Kong. The fulfilment of all requirements as specified in the HID would help eliminate most risks associated with introduction of equine diseases as the HID has been prepared and regularly updated by AFCD in accordance with the information and guidelines provided in the Terrestrial Animal Health Code (2006) (the Code) which makes recommendations for quarantine, testing and vaccination with respect to each type of equine disease. The isolation period / observation period for a particular disease specified in the HID was determined with reference to the corresponding incubation period of that disease as advised by the Code. Only horses having passed all tests and fulfilling all requirements of the HID are permitted to be imported to Hong Kong.

The Terrestrial Animal Health Code is a comprehensive documentation of identified animal diseases (including multiple species diseases and equine diseases). World Organisation for Animal Health (OIE), the organisation which publishes the Code and updates it regularly, is an intergovernmental organisation founded in 1924. The organisation now has 167 Member Countries.

2.3.4 Export of Horses from Hong Kong

Export of horses from Hong Kong is subject to AFCD certification of the import requirements of the destination countries by issue of a Health Certificate for the horses normally performed within 24 hours prior to departure. The format and contents of the Health Certificate vary by country.

2.3.5 Pre-Export Quarantine (PEQ) for Horses Imported into Hong Kong

The requirement for PEQ immediately before export is specified in the HID. In general, a horse should be isolated in an official government approved quarantine facility for a minimum period of 21 days before it could be permanently exported to Hong Kong. During the isolation period, the horse should be supervised by a veterinary surgeon from the government or accredited by the government.

While the horse is in PEQ, blood samples must be tested for specified diseases with negative results or no rise in anti-body titre if vaccinated. Which diseases to be tested for will vary depending upon the exporting country's ability to certify specified non-occurrence period/distance for the particular disease.

All tests for diseases must be carried out in accordance with the latest version of the OIE Manual of Standards for Diagnostic Tests and Vaccines for Terrestrial Animals (Terrestrial Manual).

2.3.6 Post-Arrival Quarantine (PAQ) in Hong Kong

All equines to be imported into Hong Kong must undergo a minimum of 14 days of PAQ at designated quarantine facilities. PAQ is operated on an "all in – all out" principle for each stable block, which means no horse may be added to a block of horses after quarantine has commenced and the entire block of horses must be released together. Horses will only be released from PAQ when all compulsory tests, vaccinations and treatments have been satisfactorily completed and all horses have been examined and cleared under signature by the veterinary surgeon. If one or more horses cannot be cleared to leave PAQ, all horses in the quarantine block will remain in the quarantine until such clearance can be given. The specific PAQ requirements for various categories of horses (permanent import, temporary import and re-entry) are described in Sections 4.1.6 to 4.1.8.

2.3.7 Plant Import Licence

During international horseracing and equestrian events, horses will be imported temporarily along with a certain amount of hay and other material of plant origin as horse feed and bedding material. The importation of hay and material of plant origin is regulated by the Plant (Importation and Pest Control) Ordinance. A Plant Import Licence (PIL) issued by AFCD and a valid Phytosanitary Certificate issued by the plant protection authority of the exporting country are required for such plant importation. The ordinance protects the local agricultural production, native plant and the ecology by preventing the introduction and spread of plant pests and diseases.

For re-export of unused horse feed and bedding material of plant origin, importer / user may apply to AFCD for a Phytosanitary Certificate should the importing country require such.

3 Review of Equine Quarantine Systems in Other Countries

3.1 Introduction

To evaluate the standards of equine quarantine facilities design and equine quarantine procedures adopted at Quarantine B, reference has been made to the operations in other countries with quarantine facilities of similar nature and scale. Singapore and Melbourne of Australia were selected to be the reference cities as they share a certain similarity with Hong Kong as a metropolitan urban city.

Hong Kong and Singapore are always brought together for comparison in many aspects for their similarities in international status, economic achievement, living standards and population density. The above similarities form the basis of comparison on quarantine policies and facilities of these two cities. Hong Kong and Singapore also share the similarity of having their equine quarantine facilities operated by a private horse-racing company (HKJC / Singapore Turf Club) and regulated by a governmental agent (AFCD / AVA).

Australia has the largest horse-racing industry in the Asia-Pacific Region. The equine quarantine system in the country is robust to cater for the huge demand for horse imports and exports every year. With the vast experience in staging international equestrian / horse-racing events (e.g. 2000 Sydney Olympic Equestrian Event, Melbourne Cup, etc.), the Australian quarantine system has been proven to be one of the best in practice and of the

highest international standard. Melbourne of Victoria is the home of racing in Australia staging many events of international races from time to time. It is therefore chosen as the second city for reference.

Information searched from the internet and obtained from email communication with local operators and government officials has been compiled for the comparison in the subsequent sections.

3.2 Singapore

3.2.1 General

Import, export and transshipment of animals and the associated quarantine arrangements in Singapore are regulated by the Agri-Food & Veterinary Authority of Singapore (AVA) under the provisions of Animals and Birds (Quarantine) Rules, the subsidiary legislation of Animal and Birds Act.

AVA is the governmental agent responsible for inspecting quarantine stations for horses in Singapore. It also provides the service of issuing Veterinary Health Certificate to facilitate horse exportation.

Similar to Hong Kong, AVA of Singapore has delegated the Singapore Turf Club (STC) to take over the daily operation of the Singapore Equine Quarantine Station (SEQS) near Singapore Racecourse.

STC is fully in charge of the operation of SEQS and seeks AVA's advice on any veterinary or disease management matters as and when arise.

3.2.2 Import Protocols with Other Countries

Similar to Hong Kong, Singapore only allows horses to be imported from a schedule of countries. Those 14 countries are:

- Argentina
- Australia
- Canada
- Denmark
- France
- Germany
- Hong Kong SAR
- Japan
- Ireland
- Malaysia
- New Zealand
- United Arab Emirates
- United Kingdom
- United States of America

3.2.3 PEQ and PAQ Requirement

Similar to Hong Kong, Singapore has a single set of PEQ requirement for the export of horses from the above list of countries of origin. A general PEQ period of 14 days is required for any horses to be exported to Singapore from other countries of origin.

Equine diseases of concern to be checked during PEQ period include:

- African horse sickness,
- Venezuelan equine encephalomyelitis,
- Eastern and western equine encephalomyelitis,
- Glanders, trypanosomes,
- Contagious equine metritis,
- Equine infectious anaemia,
- Equine viral arteritis,
- Equine piroplasmiasis,
- Rabies,
- Hendra virus infection,
- Nipah virus infection and
- West Nile virus infection

All imported horses are required to be quarantined for a PAQ period of not less than 14 days and may be subjected to testing and treatment before release from quarantine.

3.2.4 Requirement on Quarantine Premises

Officials from the STC advised that guidelines for quarantine premises are based on international standards and/or as outlined by Australian Quarantine Inspection Services (AQIS).

3.2.5 Example – Singapore Equine Quarantine Station (SEQS)

The Singapore Equine Quarantine Station (SEQS) run by the Singapore Turf Club (STC) is located approximately 10km away from the Singapore Race Course at Kranji. **Figure F1** shows the location map of SEQS.

The premises were built in 1998 with 3 blocks of stables separated by 100 metres apart. The stable buildings were constructed with brick walls and tile roof and were a mixture of open air and air-conditioned insect-proof stables. There are also facilities such as lunging area at each of the three blocks.

- Block 1: 19 stables (8 air-conditioned and insect proofed; 11 open air stables)
- Block 2: 19 stables (Open stables)
- Block 3: 4 stables (air-conditioned and insect proofed)

Strict protocols are in place. They include:

- Any person entering the stables are required to wear a disposable gown.
- Foot wear are dipped and cleaned with chlorexidine solution in foot dip tray prior to entering stables and leaving quarantine station.
- Club staff and trainers who are working in the quarantine station are required to take a shower prior to leaving the premises.
- Stable staff are not allowed to go into the racecourse throughout the duration of the quarantine period of their horses.

3.3 Australia

3.3.1 General

Quarantine of animals and plants are dealt with under the Australian legislation Quarantine Act 1908 and the associated regulations and proclamations. The Quarantine Proclamation 1998 under this legislation proclaims a list of designated quarantine stations for animals.

The equine importation and exportation policies in Australia are developed and reviewed by Biosecurity Australia (BA), a governmental body within Agriculture, Fisheries and Forestry – Australia (AFFA). The Australian Quarantine and Inspection Service (AQIS), which is also an agent within AFFA, is responsible for providing quarantine inspection services for the arrival of equines into Australia and certification for equines exported from Australia. These two governmental bodies play the major roles in managing and executing the equine quarantine system in Australia.

3.3.2 Import Protocols with Other Countries

Unlike Hong Kong which has the same quarantine requirements for importing horses from all scheduled countries (except South Africa), BA has developed a unique set of import conditions for each country of export. Under the set of import conditions for each country, the requirements on the contents and format of the health certificate, the durations of PEQ and PAQ, and the standards of PEQ premises have been explicitly specified.

3.3.3 PEQ and PAQ Requirement

BA has specified different PEQ durations for different countries of export. Table 3.1 summaries the Australian PEQ and PAQ requirement on permanently imported horses from different countries.

Table 3-1: Australian PEQ and PAQ durations for different country of export

Country	PEQ (days)	PAQ (days)
United States of America	21	14
European countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and United Kingdom	21	
Canada	21	
Japan	21	
Fiji	21	
Hong Kong	14	
Singapore	14	
New Zealand	No PEQ or PAQ requirements	

The PAQ requirements for the importation of horses from other countries into Australia are summarised below:

- Each imported horse must undergo PAQ in a Government animal quarantine station or other approved premises for a period of 14 days.
- Each imported horse must be thoroughly examined for ticks within 48 hours of arrival in Australia under the direct supervision of a Quarantine Officer.
- If ticks are found, the whole consignment must be treated with a product registered for use in horses as an acaricide.
- During PAQ and while the imported horses remain under quarantine surveillance, they may be subjected to any testing or treatment prescribed by the AQIS at the importers expense.

- If any horse fails a test or shows signs of disease, that horse and any or all other horses in the PAQ premises may be detained in quarantine for further testing and/or observation or exported at the importer's expense, or destroyed without recompense.

3.3.4 Requirements on Quarantine Premises

Although the Australian live horse import conditions only specifies the requirements on PEQ premises, it is considered that PEQ and PAQ premises should achieve the same standards in terms of disease control capability. In essence, a quarantine station may serve as a facility for either PEQ or PAQ, depending on the importation/exportation need at that time.

The Australian requirements on the PEQ premises vary by countries. Taking its requirements on Hong Kong's quarantine facilities as an example, the Australian standards for quarantine premises generally include the following:

Location

- The premises have been free for the previous 2 years from African horse sickness, Venezuelan equine encephalomyelitis and vesicular stomatitis.
- For the duration of PEQ, other equines must not be held or exercised within 20 metres of horses on the premises.
- The premises must be close to the port of embarkation and must be conveniently located for supervision by an Official Veterinarian.

Facilities

- The premises must be surrounded by two stock-proof fences at least 5 metres apart except where the wall of building forms part of the perimeter.
- The premises must have an area for the cleaning and disinfection of vehicles well separated from stables, holding pens and the loading area, and facilities for the safe unloading and loading of horses.
- Stables on the premises must be constructed so that they can be readily cleaned and disinfected.
- Stables, yards, fences, and feeding and watering arrangements must be constructed so that the horses are protected from injury, and other welfare needs are met.
- The premises must have facilities for veterinary examination and the collection of samples.

The SOPs adopted at the existing and the new Quarantine B are comparable with the above Australian requirements. Detailed descriptions of the SOPs for Hong Kong quarantine facilities are presented in Section 4.1.

3.3.5 Example – Sandown Quarantine Facility (SQF)

Located at 25km from Melbourne's central business district, the Sandown Quarantine Facility (SQF) is a quarantine facility owned and operated by Racing Victoria Limited, a private company which runs horse-racing business in Australia. **Figure F2** shows the location map of SQF.

SQF has two quarantine areas which are used as separate quarantine facilities, namely the Woodlands and Tabaret complexes. Facilities offered by each complex are summarised in Table 3-2. The SQF is operated to a much higher standard than any other approved quarantine facilities currently operating in Australia.

Table 3-2: Facilities offered by each complex at Sandown Quarantine Facility (SQF)

Facilities	Tabaret	Woodlands
Day yard	1	3
Stable	2 stables with 4 boxes each	3 stables:

Facilities	Tabaret	Woodlands
	2 tack rooms per stable	2 with 3 boxes & 1 tack room 1 with 8 boxes & 4 tack rooms
Hand walking track / ring	1	2
Sand roll	1	1
Isolation box	1	1
Weighing scales	Yes	Yes
Storage shed for feed	Yes	Yes
Security hut	Yes	Yes

3.3.5.1 Routine Operations of SQF

Routine operations of SQF are based on the following rules:

- Access to the quarantine facility will only be given to approved persons.
- Only approved persons will be issued with an electronic access card.
- Entry into, and exit from, the quarantine station will only be permitted via the security building after signing the entry/exit log and registering with the electronic access card.
- Grooms and attendants are not required to wear protective clothing but must disinfect hands and feet when leaving the quarantine station and are advised not to have contact with local horse population.
- A daily health record is to be kept for all horses. This will involve taking and recording temperature twice daily and recording general health observations. Any abnormality is to be immediately reported to the quarantine or official veterinarian on duty.
- Access to the racetrack for training will only be allowed under the supervision of a quarantine officer.
- Electronic security devices are installed within the quarantine facility and 24-hour video surveillance is in place. A security guard will be on site 24 hours per day.
- The quarantine facility will be kept clean and tidy.
- After leaving the quarantine facility, grooms and attendants must return directly to their accommodation to shower and change into clean clothing.
- During the quarantine period, grooms and attendants are not to have any contact with the local animal population.

The above procedures are similar the SOP being adopted at the Hong Kong quarantine facilities.

4 HKJC's Planning for Quarantine B at Sha Tin Racecourse

4.1 Routine Operations of Quarantine B

4.1.1 General

The new Quarantine B will be operated and managed in accordance with two sets of regulations formulated by the HKJC, namely the "Compulsory Quarantine Regulations for All Equines in Hong Kong" and the "Compulsory Health Regulations for All Equines in Hong Kong". These two sets of regulations, which are reviewed and updated annually, outline the standard operating procedures (SOP) for the operation and management of all equine quarantine facilities in Hong Kong with an aim to minimising the risk of equine diseases being spread among equine population as well as to the general public in Hong Kong. Only horses with the AFCD import permit will be housed in the new Quarantine B.

4.1.2 Staff

Staff will be appointed to oversee the daily operation of Quarantine B. They must not contact non-quarantined horses for the 24 hour periods prior to and after work. The staff shall take all necessary and appropriate precautions when moving between quarantine stables and normal stables, to ensure that neither they nor their equipment act as vector of disease.

All persons entering Quarantine B will, if required, wear the protective clothing supplied in each block. On entering and leaving each stable block, they are required to wash their hands with the hand-washing facilities provided in each stable building, disinfect their hands with the disinfectant hand washing buckets and walk through the disinfectant foot bath at the entrance.

The protective clothing supplied in each stable block will be laundered on a weekly basis, or after every use with an infectious horse.

4.1.3 Security

Quarantine B will be manned by security staff when horses are resident. Only authorised persons will be permitted entry to Quarantine B and all persons entering and exiting must be properly recorded by the logging system currently in force.

4.1.4 Disease Control

All stables and facilities in Quarantine B will be kept scrupulously clean in every aspect at all times. This especially includes the drains both inside and outside Quarantine B and water must never be permitted to stagnate anywhere in order to prevent mosquito breeding.

Each stable building will be thoroughly cleaned (all feed, bedding and debris will be completely removed and properly disposed of), disinfected with approved disinfectant and left empty for as long as possible (not less than 24 hours) between batches of horses.

The disinfectant foot bath at the entrance to each stable building and the disinfectant hand washing buckets will be thoroughly cleaned and replenished on a daily basis.

The wire mesh swinging dividers of the horse walking machine will be disinfected after use by each batch of horses. The entire machine will be disinfected at weekly intervals.

Approved insecticide registered under the Pesticides Ordinance Cap 133 that is effective against ticks will be applied in the Quarantine B precinct including all common and grassed areas on a weekly basis.

There will be one set of grooming and feeding equipment for each horse, which must not be used on another horse, or in another quarantine stable.

The fly screen doors at all blocks and the gates between stable blocks will be kept closed when access is not required.

Transport for feed, bedding, manure, etc. must not visit Quarantine B and the Main Stables with shared loads. The vehicles' tyres must be hosed with disinfectant prior to entering and leaving Quarantine B.

4.1.5 Veterinary

Every horse residing at Quarantine B will have a Quarantine Monitoring Chart (QMC) which will be displayed outside its stable. Its body temperature will be taken twice daily and the result will be recorded on its QMC.

All equines imported into, and exported from, Hong Kong must have blood samples collected on the first working day following arrival in PAQ or the day of departure.

Routine veterinary visits for inspection, examination, testing or treatment purposes will be conducted between 9:00am and 11:00am. Any problems with the horses must be reported immediately to Stables and Veterinary Clinical Services Departments of the HKJC.

All diagnostic test and vaccination will be conducted in accordance with the instructions and guidelines described in the Terrestrial Manual published by OIE.

Any horse suspected or confirmed as suffering from an infectious disease must be immediately reported to the HKJC's Head of Veterinary Regulation & International Liaison (HVR&IL) or his delegate via the club's Head of Veterinary Clinical Services or his delegate, who will consult with the Senior Veterinary Officer of AFCD or his delegate. Horses with infectious signs must not use the sand yards/rolls, horse walking machines or the trotting ring.

4.1.6 Quarantine Regulations for Permanently Imported Equines

In addition to the PAQ requirements as described in Section 2.3.6, every permanently imported horse will be weighed within 24 hours of arrival and thereafter at weekly intervals and finally on the day of release and the result will be recorded on its QMC.

No mixing or contact whatsoever is permitted between horses from different quarantine batches. Horses may not at any time be taken outside the perimeter fence of Quarantine B unless with approval.

During the PAQ period, every equine will be vaccinated with vaccines of:

- Equine Influenza
- Equine herpesvirus
- Japanese encephalitis
- Tetanus

Equines will have faecal worm egg counts and be de-wormed in accordance with the schedule specified in the SOP.

Equines will be inspected for the presence of external parasites, including ticks, within 24 hours of arrival in PAQ and again within 24 hours prior to releasing from PAQ. They will be treated with an insecticide effective against ticks within 2 days of entering PAQ.

4.1.7 Quarantine Regulations for Temporarily Imported Equines

The equine health protocols for temporary importation has been formulated in accordance with the "Guidelines to Facilitate the Temporary Movement of Registered Racehorses for International Racehorses" developed by the International Movement of Horse Committee (IMHC) and issued by the International Federation of Horseracing Authorities (IFHA).

The IFHA "Guidelines" recommends the use of the term "isolation" for this class of imports rather than "quarantine". Visiting horses will be allocated specific isolation stables, training times and places. All notices and instructions (written and verbal) issued by the HKJC and Government Officials relating to these matters must be strictly complied with.

Access to the isolation stables is strictly restricted to authorised persons only. All temporarily imported horses will stay in Hong Kong for not more than 30 days.

4.1.8 Quarantine Regulations for Permanently or Temporarily Exported Equines

PEQ are carried out at Quarantine B for horses to be exported either permanently or temporarily. PEQ periods and requirements vary according to the destination country. Taking Australia as an example, the PEQ requirements are as follows:

- The premises for PEQ must be approved by an Official Veterinarian authorised by the Veterinary Administration (i.e. AFCD) prior to the commencement of each PEQ.
- Stables must be cleaned and disinfected. Exercise yards, holding yards and paddocks must be cleaned to the satisfaction of an Official Veterinarian, prior to the commencement of each PEQ.
- The PEQ must be supervised by an Official Veterinarian.

- The PEQ period will start from the time of entry of the last horse. Horses must not leave the premises during PEQ.
- During the PEQ the premises must only be occupied by horses of this export consignment unless otherwise agreed by the supervising Official Veterinarian.
- All equipment used in the feeding, handling and treatment of the horses in PEQ must be new or cleaned and disinfected before use and must be used only in the premises for the duration of the PEQ.
- Personnel attending the horses must wear outer clothing and footwear used exclusively in the premises during PEQ, and wash hands, before handling the animals.
- Any health problems affecting horses or other stock on the premises during PEQ must be reported within 48 hours to the supervising Official Veterinarian.
- A detailed health record must be kept for each horse on the premises during the PEQ period. The health records must be available to the supervising Official Veterinarian.
- Entry to the premises must be prevented unless specifically authorised by the supervising Official Veterinarian. All visitor entries must be recorded.
- Vehicles for transport of horses from the premises to the port of embarkation must be cleaned and disinfected to the satisfaction of the Official Veterinarian prior to loading.

These operation procedures are very similar to those listed in HKJC's SOPs. This shows that the operational standards of the quarantine facilities for Hong Kong are comparable with the international standards.

4.1.9 Plant Inspection and Quarantine

All hay and material of plant origin as horse feed and bedding material imported into Hong Kong for use at Quarantine B should obtain a PIL from AFCD and be accompanied by a valid Phytosanitary Certificate issued by the plant protection authority of the exporting country. These materials should be labelled with the importer and user information before putting into the feed store / distribution. Quarantine officers from AFCD will carry out inspection on the imported material at Quarantine B to ensure that the material are free of deleterious plant pests and diseases and that no plant material without a valid PIL and Phytosanitary Certificate is imported.

Quarantine officers may seize, cause the consignment to be removed, treated, destroyed, disposed or returned to the country of origin if the importer fails to deliver the PIL and Phytosanitary Certificate, or any plant pests or diseases are detected in the consignment.

4.2 New Designs Adopted at Quarantine B

The new stable buildings at Quarantine B will be designed as single storey structures, with similar materials, finishes, style and aesthetic as the Olympic stables. Each stable building is designed to house a batch of 6 horses and is separated from each other by at least 15m. Should a separation distance of more than 15m between stable buildings be required by the importing country, horses will be housed in alternate stable buildings, leaving the stable blocks in between empty, hence attaining the required separation distance. The following designs will be adopted in the new stable buildings in order to meet the quarantine protocol:

- all openable windows, if any, will be provided with full vector screen;
- There will be two sets of doors at the entry, the first being a set of solid sliding double doors, the second being an inward swinging vector screened set;
- Shallow dish drains will be provided along each side of the central aisle to facilitate the easy wash out of the aisle and stables;

- A recess will be provided on the floor near the entry for the provision of disinfectant foot bath;
- Walls and floors will be impervious; and
- Joints between walls and floors will be covered.

All the above designs will assist in minimising bacteria/virus/fungal growth and the spread of disease. In addition, the administration buildings, which will be attached to standard stable blocks as an extension, will not share any facilities (including air conditioning system) with the stable block that they adjoin. This would prevent the transmission of airborne infectious agent from horse to human through air conditioning system.

4.3 Temporary Use of Olympic Stables for Quarantine

To maintain an uninterrupted quarantine process and facilities, the Olympic Stables in HKSI will be used for housing horses under quarantine during the first construction phase of Quarantine B. Prior to its operation as temporary quarantine facility, the Olympic Stables in HKSI will be installed with vector screens on openable windows and doors, footbath at the entrance and disinfectant hand-washing bucket inside each stable to fulfil the quarantine requirements.

The pattern of usage will remain unchanged during the period of temporary quarantine relocation. The operating procedures as mentioned in Section 4.1 will be fully maintained and the activities of horses under quarantine will be confined to the Olympic Stables precinct only during this period.

Special stable designs for fulfilling quarantine protocols as mentioned in Section 4.2 will be adopted in the Olympic Stables. No additional health risk associated with the operation of the Olympic Stables for quarantine is anticipated.

4.4 Comparison of Quarantine Facilities between Hong Kong, Singapore and Australia

Comparison of Quarantine B at Shatin Racecourse with similar facilities in Singapore and Australia is summarised in Table 4-1.

Table 4-1: Comparison of quarantine facilities between Hong Kong, Singapore and Australia

Country / City	Hong Kong		Singapore	Australia
Name of Quarantine Facility	Quarantine B, Shatin Racecourse		Singapore Equine Quarantine Station (SEQS)	Sandown Quarantine Facility (SQF)
Operator	HKJC		STC	Racing Victoria Limited
Regulatory Body	AFCD		AVA	AQIS, BA
Location	Inside Shatin Racecourse		10km from Singapore Racecourse	Inside Sandown Racecourse
Requirement on minimum separation distance from residential areas	Nil		Nil	Nil
Year of Build	Existing 1993	New New Facility	1998	1997
Capacity (no. of horses)	70	108	41	22
Modules	11 stable	18 stable	3 blocks	2 complexes

Country / City	Hong Kong		Singapore	Australia
	blocks	blocks		
Min. PEQ period	21 days		14 days	Varies by exporting countries from 14 days to 21 days
Min PAQ period	14 days		14 days	14 days
Building material and special building design	Steel, concrete, modular design, impervious walls and floors, coved corners, etc.		Brick walls and tile roof. No special designs	Aluminium, steel and concrete (prefabricated / modular design)
Ventilation	Fully air-conditioned stables with controlled temperature and humidity		Mixture of open air and air-conditioned	Ventilation and temperature control by breezeway-style design (i.e. no air-conditioning)
Quarantine regulations - Security	<ul style="list-style-type: none"> The Quarantine Units will be manned by Security staff when horses are resident. Only authorised persons will be permitted entry to the quarantine units. All persons entering and exiting must be properly recorded by the logging system. 		Information not available	<ul style="list-style-type: none"> Access to the quarantine facility will only be given to approved persons (e.g. trainers, attendants and grooms). Only approved persons will be issued with an electronic access card. Entry into, and exit from, the quarantine station will only be permitted via the security building after signing the entry/exit log and registering with the electronic access card. Electronic security devices are installed within the quarantine facility and 24-hour video surveillance is in place. A security guard will be on site 24 hours a day.
-Disease Control	<ul style="list-style-type: none"> Quarantine unit staff will not contact non-quarantined horses for the 24 hour periods prior to and after working. Quarantine unit staff must take all necessary and appropriate precautions when moving between quarantine/stables to ensure that neither they nor their equipment act as vectors of disease. The quarantine unit and all the facilities will be kept clean in every 		<ul style="list-style-type: none"> Any person entering the stables are required to wear a disposable gown. Footwear are dipped and cleaned with Chlorhexidine solution in a foot dip tray prior to entering stables and leaving quarantine station. Staff and trainers who are working in the quarantine station are required to take a shower prior to leaving the premises. 	<ul style="list-style-type: none"> Grooms and attendants must disinfect hands and feet when leaving quarantine station, and are advised not to have contact with the local horse population. After leaving the quarantine facility, grooms and attendants must return to their accommodation to shower and change into clean clothing. During quarantine period, grooms and

Country / City	Hong Kong	Singapore	Australia
	<p>aspect all the time, especially including the drains both inside and outside the quarantine unit and no stagnant water will be permitted in order to prevent mosquito breeding.</p> <ul style="list-style-type: none"> • All quarantine block will be thoroughly cleaned and left empty for at least 24 hours between batches of horses. • On a daily basis, the disinfectant foot bath and disinfectant hand washing buckets will be thoroughly cleaned and replenished. • The wire mesh swinging dividers of the horse walking machine will be disinfected after use by each batch of horses and completely disinfected at weekly intervals. • There will be 1 set of grooming and feeding equipment for each horse. • All persons entering the quarantine units will, if required, wear protective clothing supplied in each block. • On entering and leaving each block of stables, staff will wash their hands with the hand-washing facilities provided in each stable building, disinfect their hands with the materials provided and walk through the disinfectant foot bath at the entrance. • The protective clothing supplied in each quarantine block will be laundered on a weekly basis or after every use with an infectious horse. 	<ul style="list-style-type: none"> • They are not allowed to enter the racecourse throughout the duration of the quarantine period of their horses. 	<p>attendants are not to have any contact with the local animal population.</p> <ul style="list-style-type: none"> • Grooms and attendants are not required to wear protective clothing (overalls) but must disinfect hands and feet (footbath provided) when leaving the quarantine station and are advised not to have contact with the local horse population.

Country / City	Hong Kong	Singapore	Australia
- Horse Health	<ul style="list-style-type: none"> • Every horse will have its temperature taken twice daily. • All equines imported into and exported from Hong Kong must have blood samples collected on the first working day following arrival or the day of departure. • Routine veterinary visit for inspection will be conducted daily. • Any problems with the horses must be reported to the stables and veterinary clinical services departments. • Any horse suspected or confirmed as suffering from an infectious disease must be immediately reported to HKJC's HVR&IL and AFCD. 	Based on international standards and/or as outlined by Australian Quarantine Inspection Services (AQIS)	<ul style="list-style-type: none"> • A daily health record is to be kept for all horses. This will involve taking and recording temperature twice daily and recording general health observations. Any abnormality (coughing, nasal discharge, poor appetite etc.) is to be immediately reported to the quarantine or official veterinarian on duty.

5 Emergency Management

5.1 Introduction

PEQ and PAQ measures are the frontline barriers to minimise the risk of introducing potential infectious agents to the resident equine population in Hong Kong. However, "new" infectious agents or those with a long incubation period or local infectious agents may well escape the existing control measures and transmit disease after arrival. A disease monitoring system has been in place for active surveillance of any potential disease outbreak.

5.2 Current Control Measures

The current measures being in place for controlling the introduction of equine disease are explicitly outlined in the SOPs "Compulsory Health Regulations for All Equines in Hong Kong" and "Compulsory Quarantine Regulations for All Equines in Hong Kong" and have been discussed in Section 4.1. The risk of an equine disease outbreak occurring could be minimised and adequately managed by adhering to the procedures specified in the SOPs.

5.3 Action Plan for a Suspected or Confirmed Equine Disease Outbreak

5.3.1 Animal Health

In case of detection of suspected or confirmed equine infectious disease cases, the sick/suspected individual(s) should be isolated in the isolation quarantine block and the following procedures should be carried out:

- The past clinical history of the horse reviewed, which would include daily temperature records;
- The movement of horses should be reviewed by HKJC's HVR&IL and AFCD's Senior Veterinary Officer and appropriate restriction applied if appropriate;
- Strict control over access by personnel should be enforced until approval for clearance by the government authority has been given;
- More stringent disinfection procedures such as using separate disinfection buckets for hand and boot wash, and using separate protective overalls for individual quarantine blocks should be adopted to minimise spread of infection;
- HKJC shall update AFCD's Senior Veterinary Officer with all relevant information;
- HKJC shall discuss with AFCD the collection and submission of samples to both local and overseas laboratories for analysis;
- HKJC shall tabulate results to update available report findings; and
- In the case of sudden death / euthanasia as a result of undiagnosed severe illness, bodily fluid such as cerebro-spinal fluid and serum should be collected and submitted for serological screening.

5.3.2 Plant Pests and Diseases

In case of detection of deleterious plant pests or diseases in horse feed and bedding material, the following procedures should be carried out:

- No horse feed and bedding material in which the plant pest or disease is detected shall be moved away; and
- HKJC shall notify AFCD's Plant and Pesticides Regulatory Division for following up action.

5.3.3 Human Health

All HKJC staff including veterinarian and quarantine staff are entitled to free medical health care scheme under their employment contracts.

In accordance with the Quarantine and Prevention of Disease Ordinance (Cap.141), there are 32 notifiable infectious diseases. Of these notifiable infectious diseases, Japanese encephalitis, Rabies are the equine diseases of concern as discussed in section 2.2.3. All registered medical practitioners are required to notify the Centre for Health Protection (CHP) all suspected or confirmed cases of these diseases. Anthrax is not on the list of notifiable infectious disease, but it is a communicable disease of topical public health concern and any suspected or confirmed case of such disease should be reported. Medical practitioners are also advised to report other diseases and conditions that are of public health concern. The CHP will conduct surveillance and control of these diseases.

Among the equine diseases of concern, Anthrax and Glanders are also classified as notifiable occupational diseases. Any confirmed or suspected diagnosis shall be reported to Occupational Health Services of Labour Department. Though not an equine disease, Legionnaires' Disease may be associated with poor operation and maintenance of water-cooled chiller, and is a notifiable occupational disease as well as a notifiable infectious disease.

Public health and staff health are safeguarded by the above disease notification mechanisms and relevant disease control measures.

5.3.3.1 Report of Accident

In accordance with the HKJC's stable staff handbook, within 72 hours of the occurrence of any incident that has caused or would likely cause staff injury, quarantine staff are required to submit an incident report to the stable officer. The stable officer should then report the

incident to the HKJC security department. At anytime when ambulance service is needed, HKJC will provide all needed staff with its in-house on-site ambulance service, or admit the victim to government hospitals nearby.

6 Conclusion

The existing quarantine system for equine import and export in Hong Kong has been reviewed. It demonstrates that the quarantine system regulated by AFCD and executed by the HKJC is compatible with the selected representative equine quarantine facilities for reference and is in compliance with the internationally recognised standards (e.g. OIE's Terrestrial Animal Health Code and Manual of Diagnostic Tests and Vaccines for Terrestrial Animals). Furthermore, past records have demonstrated HKJC's success in controlling the transmission of equine diseases in Hong Kong since its operation.

The new Quarantine B at Sha Tin Racecourse and the temporary use of Olympic Stables quarantine during Stage 1 construction of Quarantine B will be operated and managed in accordance with all HKJC SOPs. The new designs adopted in the stable buildings for Quarantine B will further enhance the sanitary standards of the facility, thus making it a top-class equine quarantine facility in the world.

7 References

7.1 Internet Resources

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<http://www.cdc.gov/ncidod/dvbid/arboreeefact.htm>
- Eastern equine encephalitis virus, Wikipedia -
http://en.wikipedia.org/wiki/Eastern_equine_encephalitis
- WHO Fact Sheets - <http://www.who.int/mediacentre/factsheets/en/>
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- Scabies Fact Sheet, CDC -
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Horse Mange - <http://www.spc.int/rahs/Manual/Equine/HORSEMANGEE.htm>

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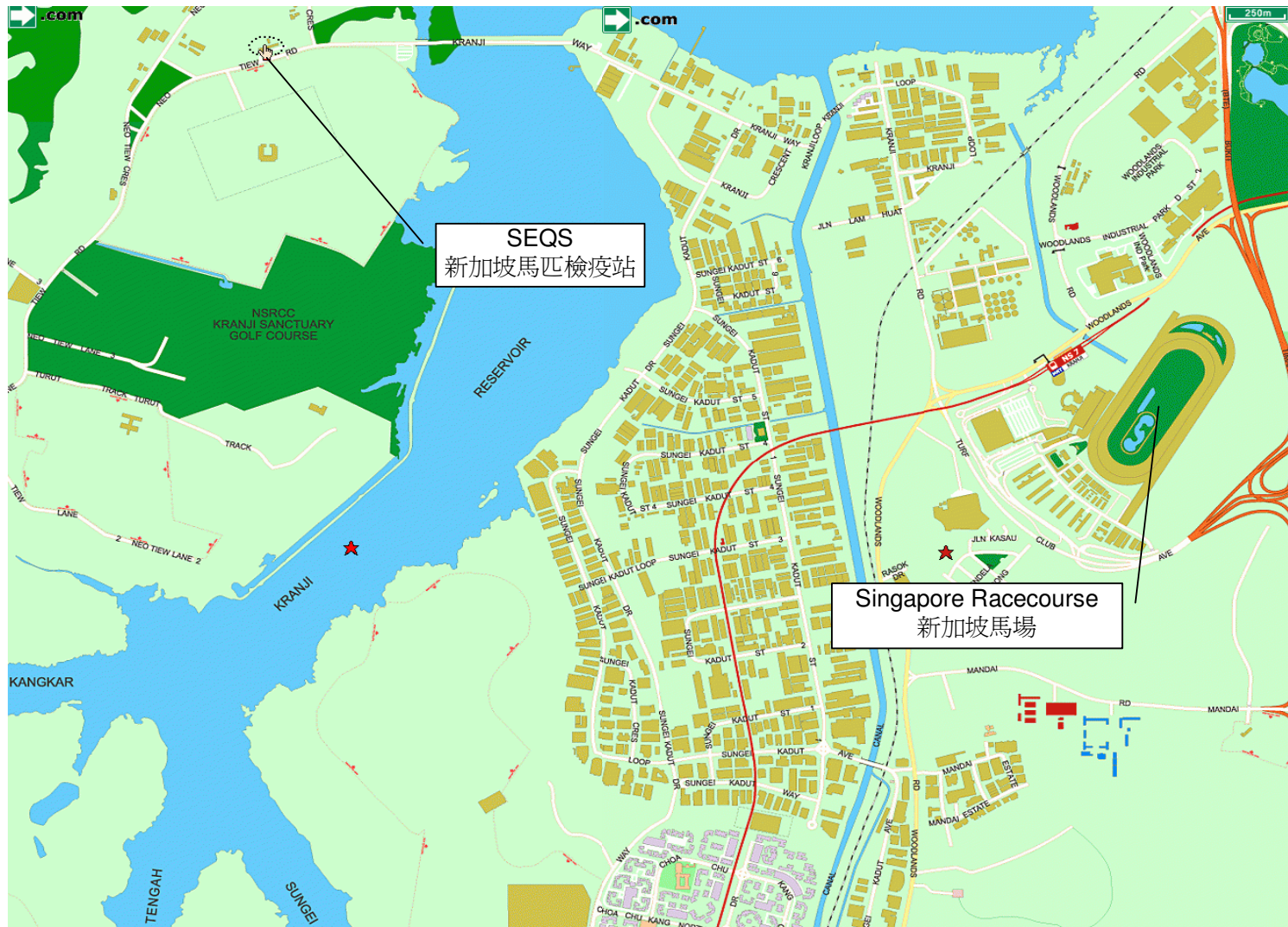
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