香港貿易發展局
Hong Kong Trade Development Council

Hong Kong Convention and Exhibition Centre, Atrium Link Extension

Project Profile

October 2005

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PROJECT PROFILE

Hong Kong Trade Development Council

Hong Kong Convention and Exhibition Centre, Atrium Link Extension: *Environmental Impact Assessment Ordinance (CAP499)S.5(1)(a)*

October 2005

For and on behalf of
Environmental Resources Management

Approved by: Dr Andrew Jackson

Signed:

Position: Managing Director

Date: 31 October 2005

CONTENTS

1 BASIC INFORMATION

1.1 PROJECT TITLE

Hong Kong Convention and Exhibition Centre, Atrium Link Extension.

1.2 PURPOSE AND NATURE OF THE PROJECT

The Hong Kong Trade Development Council (TDC) has proposed to expand the existing facilities to provide essential room for Hong Kong's leading trade fairs to be held at the Hong Kong Convention and Exhibition Centre. The Atrium Link Extension (ALE) will be constructed in place of the present link between the Phase I and Phase II buildings of the HKCEC and will provide accommodation for Hong Kong's mega fairs. *Figure 1.2a* shows the existing Atrium Link and a computer-rendered view of the proposed Project.

1.3 NAME OF PROJECT PROPONENT

Hong Kong Trade Development Council

1.4 NAME AND TELEPHONE NUMBERS OF CONTACT PERSONS

1.4.1 *Project Proponent*

Mr KF Chan, Hong Kong Trade Development Council
Tel: 2584 4105

1.4.2 *Project Manager*

Mr Walter Chan, Maunsell Consultants Asia Ltd
Tel: 3105 8686

1.4.3 *Environmental Consultant*

Mr Jon Pyke, ERM-Hong Kong, Ltd
Tel: 2271 3000

1.5 NUMBER AND TYPE OF DESIGNATED PROJECTS TO BE COVERED BY THE PROJECT PROFILE

Under Schedule 2, Part I, Category A9 of the *Environmental Impact Assessment Ordinance* (EIAO), a road fully enclosed by decking above and by structure on the sides for more than 100m is a Designated Project. Such an arrangement may have an adverse impact to air quality and the human environment beneath decking and will therefore be subject to assessment and permitting

under the Ordinance. The ALE will cover the Convention Avenue for about 120m between Expo Drive and the Expo Drive East.

Temporary marine works are necessary for the construction of the ALE above the existing sea channel. This channel provides a flushing movement to waters discharged to the local coastal area. The temporary piles to be installed in the sea bed are expected to occupy less than five per cent of the cross section of the sea channel.

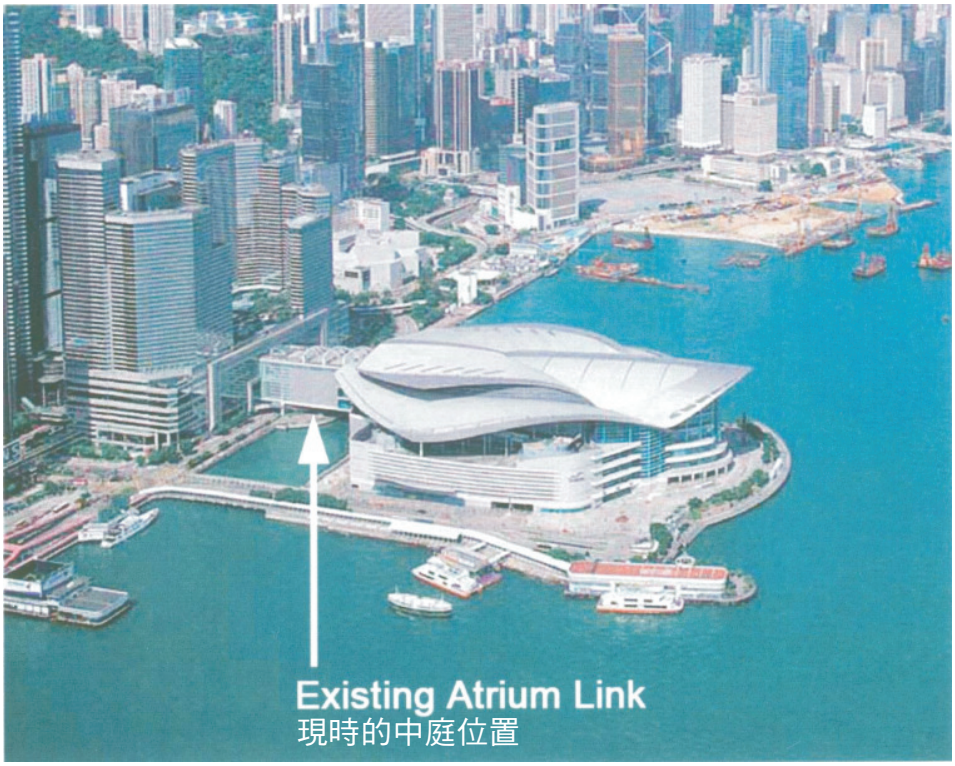
Removal of the piles after the works could, in the worst case, involve the excavation of a small quantity of sediment. There are sea water intake locations along the sea channel and near to the works. Methods that avoid excavation and disruption of the sediment will be examined in the EIA study to avoid excavation of the sea bed around the pile. If they are practicable and proven, then they will be adopted to minimise environmental impact. Due regard is therefore made of the Designated Project Category C3, reclamation work resulting in a decrease of 5% in cross sectional area calculated on the basis of 0.0 mPD in a sea channel, and Category C12(b) a dredging operation which is less than 100m from a seawater intake point. The maximum number of designated projects to be addressed by the EIA study is three.

1.6 LOCATION AND SCALE OF THE PROJECT

The Project is located in the North Wan Chai District and will occupy the aerial space between Phase I and Phase II of the HKCEC as shown by the layout of the site in *Figure 1.6a.*

The new Extension will span across the waterway (*Figure 1.6b*) and will have three main levels. A northern row of permanent supporting columns will be located on land close to Expo Drive Central and similarly a southern row will land near to Convention Avenue. There will be no permanent intermediate columns in the waterway and as the columns will rest on existing dry land, no reclamation is necessary.

Maintaining an uninterrupted pedestrian link between the Phase I and Phase II will be a necessary element of the Project. For this purpose, a temporary footbridge and a temporary working platform will be constructed at the locations are shown by *Figure 1.6c.* The temporary footbridge will provide an alternative access for pedestrians to Phase II and the waterfront areas. These temporary structures will be supported in their construction by marine piles which will be installed into the seabed of the waterway between Phase I and Phase II of the HKCEC. Temporary marine piles will be installed for the demolition of the existing Atrium Link as well as construction of the new building. The marine piles will be removed after completion of the construction works.



The Hong Kong Convention and Exhibition Centre, with the existing Atrium Link between Phase I and II
香港會議展覽中心第一期與第二期之間現時的中庭位置圖

Computer rendering of Hong Kong Convention and Exhibition Centre after the proposed Atrium Link Extension
香港會議展覽中心中庭擴建工程的電腦模擬效果圖

Figure 1.2a
圖1.2a

Pictures of Existing Atrium Link and Proposed Atrium Link Extension
現時與擬建的中庭照片圖

FILE/檔案: 0038173k
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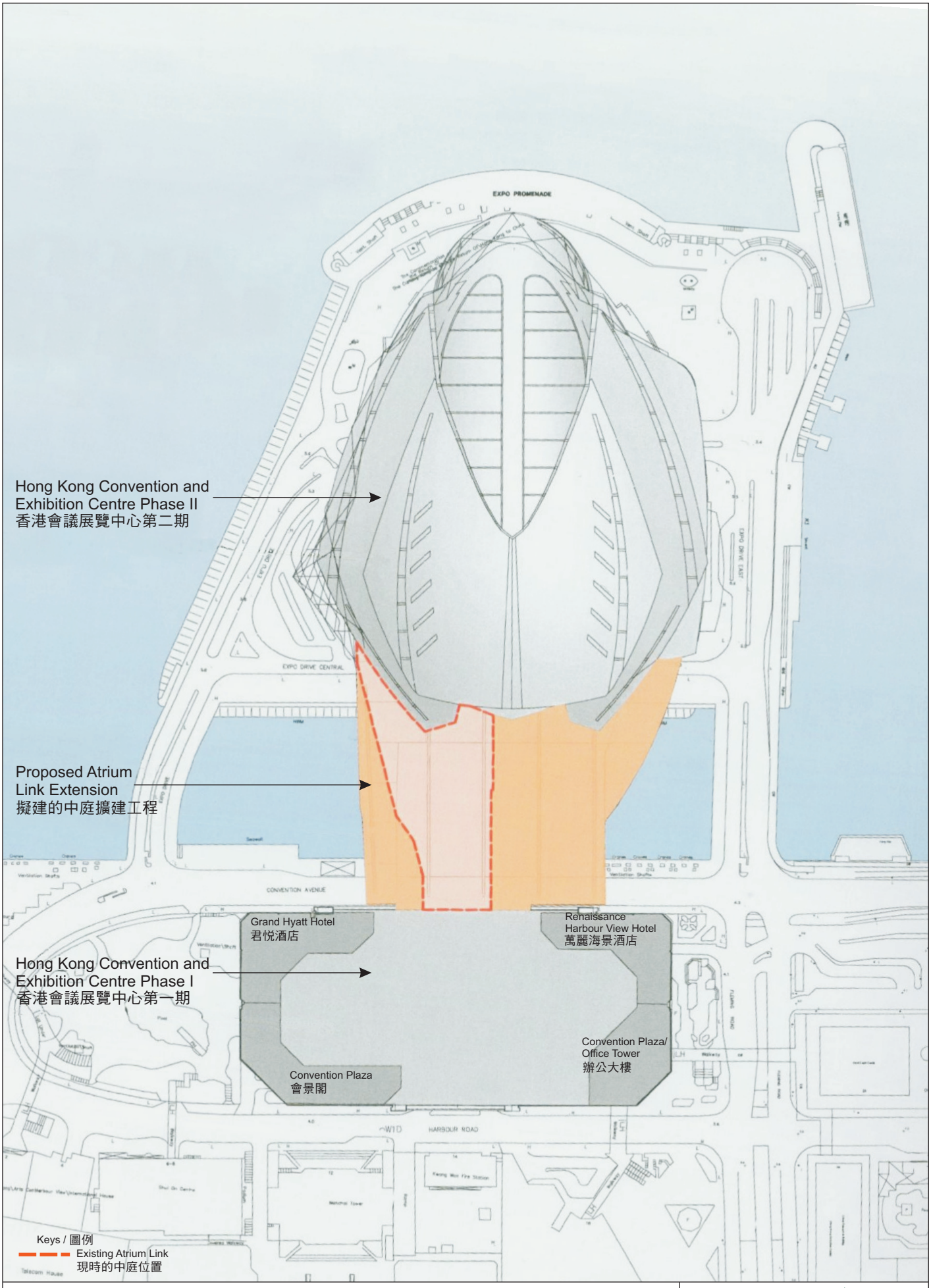

Figure 1.6a
圖1.6a

Location of Proposed Atrium Link Extension
擬建的中庭位置圖

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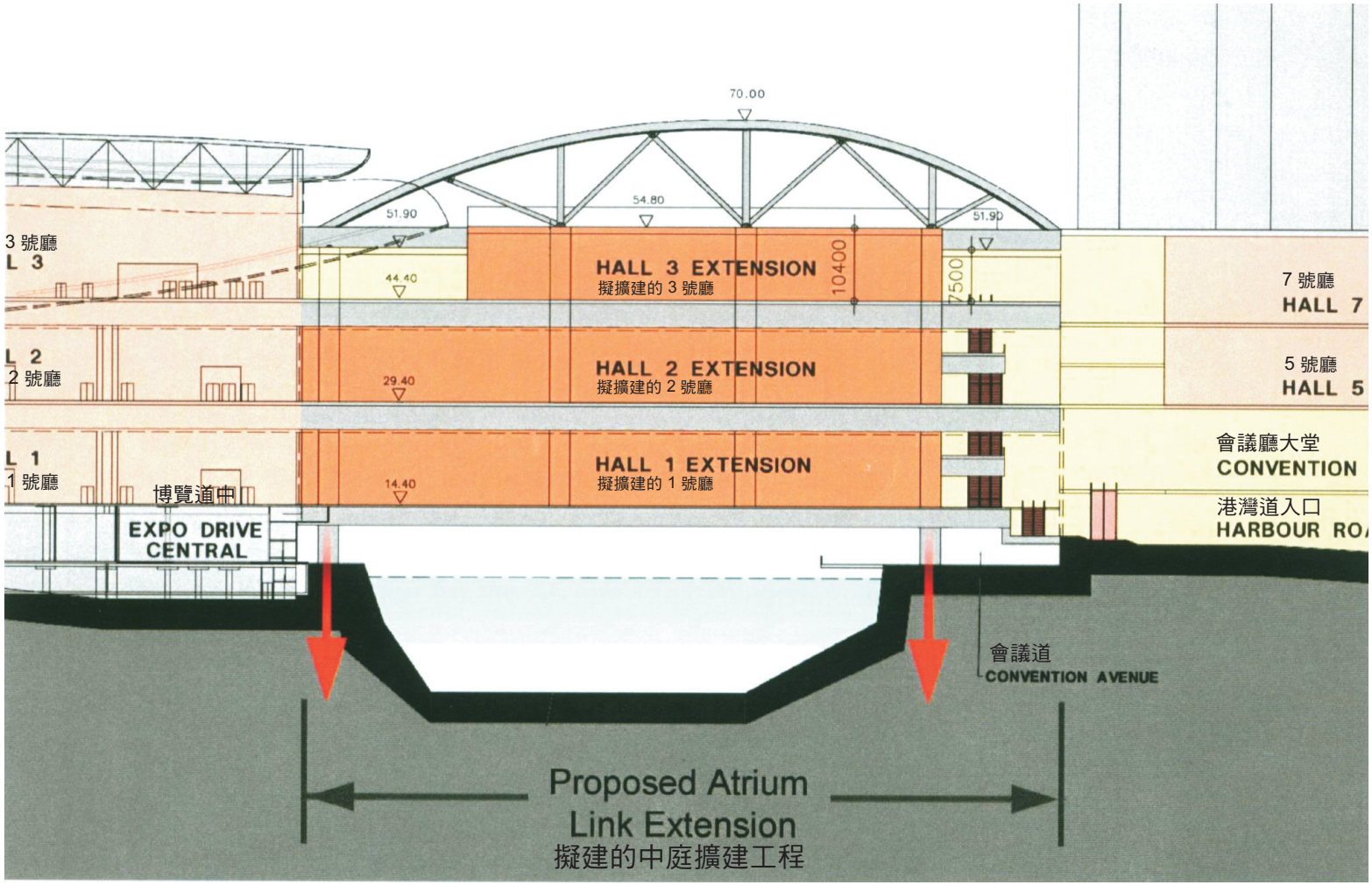

Figure 1.6b
圖1.6b

Layout Plan of the Three-Storey Structure of Proposed Atrium Link Extension
擬建的中庭擴建工程縱切面圖

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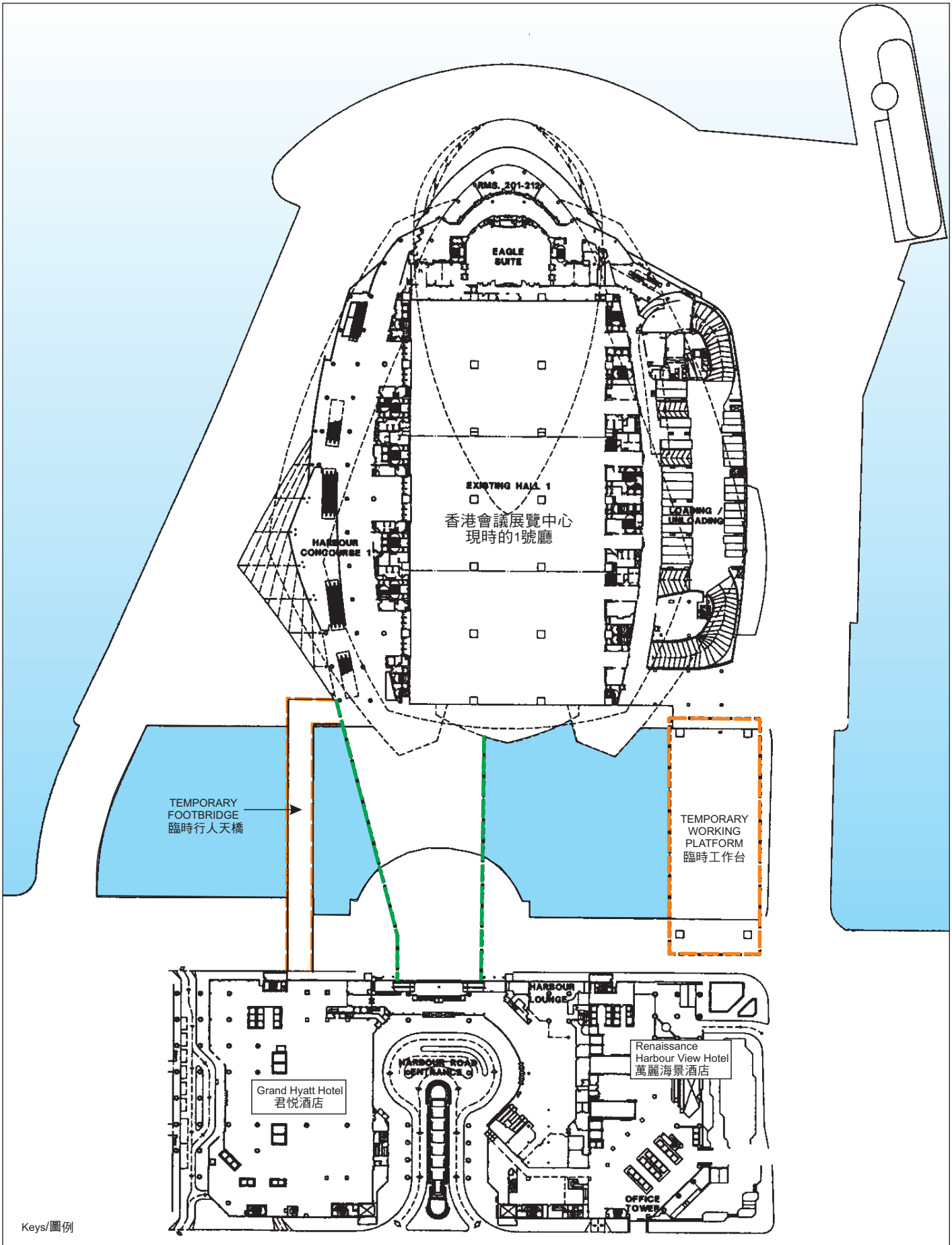

Figure 1.6c
圖1.6c

Location of Temporary Works
臨時工程位置圖

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The construction activities may be summarised as following.

- Construction and demolition of the temporary footbridge;
- Demolition of the existing Atrium Link;
- Construction and demolition of a temporary working platform;
- Construction of foundations and pile caps for the Atrium Link Extension; and,
- Construction of superstructure for the Atrium Link Extension.

The sequence of the works is described below.

1.6.1 Construction and Demolition of Temporary Footbridge

The temporary footbridge will be 130m long, 14 m wide and made of a steel / concrete composite construction. Located beside the construction works area, the bridge will be in use until pedestrians can use the new ALE for access.

Construction of the footbridge will be supported by temporary marine piles that will be driven into the seabed by percussive method. The piles will be cylindrical in shape to minimise disruption to the flow of water through the channel. Besides, due consideration will be given to the layout of the piles to minimise disruption to the flow of the water through the sea channel. To remove the piles when the works have been completed, they will be cut off below the seabed level and the top sections lifted away.

1.6.2 Demolition of Existing Atrium Link

Cylindrical temporary marine piles will be installed in the sea channel for the demolition works as well as to support the construction of the new building. The disassembly of the structure will be assisted by barge mounted cranes and hydraulic cutter will be used where needed.

The temporary marine piles will be removed after the works as described before.

1.6.3 Construction of Temporary Working Platform

A temporary working platform will be constructed on a further set of cylindrical piles installed by percussive means. The typical bay sections of the structure, hanger trusses and the structural modules will be set up on this platform prior to being installed in place.

After the construction of the superstructure has been completed, this temporary working platform will be demolished. The temporary piles will be removed after the works as described before.

1.6.4 Construction of Permanent Foundation and Pile Cap

The ALE structure will be supported by five trusses spanning the sea channel. Since no intermediate columns will be constructed in the water, permanent foundations will be rest on land on both sides of the channel.

Foundations to columns on the northern side on Expo Drive Central will be piled percussively and an earth auger used where practicable. On the southern side near the Convention Avenue, bored pile foundations will be formed using the reverse circulation drill method.

The construction of pile caps and columns will involve a common method of reinforced concreting work.

1.6.5 Construction of Superstructure for Atrium Link Extension

Having been set up on the temporary platform, the structural modules will be skidded into place for connection to the adjoining bays and existing buildings. After the superstructure has been completed, fitting out and electrical and mechanical systems will be installed mostly within the building.

The tentative work programme for the extension of the Atrium Link is provided in *Table 2.1a*. Works are expected to be completed in 2008.

Table 2.1a Tentative Programme for Extension of Existing Atrium Link

	Period
Construction of Temporary Footbridge	May to October 2006
Temporary Marine Piles for Demolition of Existing Atrium Link	July to September 2006
Construction of Temporary Working Platform	September to October 2006
Demolition of Existing Atrium Link	November 2006 to April 2007
Permanent Foundations on Land	February to June 2007
Construction of Superstructure for Atrium Link Extension *(superstructure defined here as any works above ground)*	April 2007 to September 2008
Demolition of Temporary Footbridge	September to October 2008
Demolition of Temporary Working Platform	August to September 2008
Removal of Temporary Marine Piles	October to November 2008

3 MAJOR ELEMENTS OF THE SURROUNDING ENVIRONMENT

3.1 AIR QUALITY

3.1.1 Baseline Conditions

The air quality of the along the waterfront of the northern Wanchai area is affected by the vehicle emission from surrounding road network. Gloucester Road and Harbour Road are major sources of nitrogen dioxide (NO_2) and Respirable Suspended Particulates (RSP). For the assessment of the construction works, Total Suspended Particulates (TSP) are used as an indication of the impact of wind blown dust.

The nearest Air Quality Monitoring Station is located in Central / Western District and the EPD publish annual average concentrations of air pollutants measured here [1].

3.1.2 Air Sensitive Receivers

Existing as well as planned Air Sensitive Receivers (ASRs) will be assessed for potential impact from the construction and operational phases of the ALE. It is expected that the potential for adverse dust emission is small because the works will mostly use prefabricated elements. No large quantity of excavated spoil or fill material will be stored on site and so the likelihood of adverse impact is low.

In the operational phase, the covering of Convention Avenue will potentially elevate existing pollution levels. The impact to localised sensitive receivers such as the public use of the area covered by the ALE and the adjacent pedestrian plaza, as well as the intakes to ventilation systems of the nearby buildings and the planned North Island Line railway will be addressed by the EIA study.

3.2 NOISE

3.2.1 Baseline Conditions

Road traffic noise is the dominant of noise in the background environment. Vehicles using Convention Avenue and Expo Drive as well as the bus terminus to the east of the site contribute to the existing noise climate in the vicinity of the Project.

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(1) Air Quality in Hong Kong 2003, Air Services Group, Environmental Protection Department.

3.2.2 Noise Sensitive Receivers

The closest of the Noise Sensitive Receivers (NSR) to the Project are Renaissance Harbour View and Grand Hyatt hotels which are supplied by centralised ventilation systems and therefore these buildings are less sensitive to noise than property that relies upon open windows. The nearest properties relying upon openable windows are located within the Causeway Centre some 300m from the ALE and behind two rows of non noise sensitive buildings. Consequently, noise impacts during the construction and operational phases of the Project are not expected. The EIA study will address the statutory requirements for the control of construction noise and emissions from building services plant in the operational phase.

3.3 WATER QUALITY

3.3.1 Baseline Conditions

Water quality monitoring is regularly undertaken by EPD in the Victoria Harbour WCZ in the vicinity of the proposed location of the Atrium Link Extension. The latest information available is the published EPD monitoring data collected in 2003 from Station VM5 (1). The data showed full compliance with WQO for all parameters in 2003, except for Total Inorganic Nitrogen (TIN).

3.3.2 Water Quality Sensitive Receiver

There are a number of Water Quality Sensitive Receivers (WQSRs) in the vicinity of the proposed works. These consist of intakes within Victoria Harbour and their respective pump houses which are sensitive to suspended solids in the water abstracted. Silt may be disrupted during the extraction of the temporary marine piles and this will be addressed by the EIA study.

Additionally, the harbour and, in particular, the waters to the east of the HKCEC are potentially sensitive to changes in the flushing provided by the sea channel. The dispersion of the pollution discharged into Victoria Harbour from the drainage channel outside the works area to the east may be influenced by a change in the flushing of the sea channel. The EIA study will address these potential impacts and the requirements for temporary and permanent sewage discharged from the project as well as the avoidance of other discharge from construction working over the harbour and on the shoreline.

3.4 WASTE IMPACT

Landfill resources are quickly being spent in Hong Kong and should be conserved to minimize the extent of new disposal resources being developed. The handling of waste, particularly loading and transporting, may also be a

(1) Data Published in EPD's website: www.epd.gov.hk

source of air pollution and noise. The type and quantity of waste will be addressed by the EIA study to promote minimisation and reuse.

While the excavation of marine sediments may be avoided in the temporary works, should this prove to be necessary, the method of sediment disposal will be addressed by the EIA study. A small volume is only expected in this eventuality.

3.5 LANDSCAPE AND VISUAL IMPACT

3.5.1 Baseline Conditions

Reference to the earlier *Figure 1.2a* shows the existing Atrium Link nestled within the widths and rooflines of the HKCEC Phase 1 and Phase 2 Buildings. The Phase II building is one of Hong Kong's foremost architectural achievements and has become a landmark feature that is well regarded by the public. Land around the building is also an attraction to visitors enjoying the waterfront.

Waterfront areas covered by the existing Atrium Link provide a pleasant area for passive recreation as well as being used by pedestrians and there is some landscaping feature here.

3.5.2 Landscape and Visually Sensitive Receivers

During the construction phase, the works will be visible to the sensitive receivers noted above plus the visitors to the HKCEC as parts of the existing centre would need to be blanked off to facilitate construction work.

Once completed, viewers from across Victoria Harbour would not be aware of the ALE's presence. Viewers along the north shores of Hong Kong Island would be able to see the Extension and pedestrians on the Wanchai Seafront Promenade and drivers along Convention Avenue will see the Extension. The occupants of the upper floors of nearby buildings: the HKCEC office tower, the two hotels and service apartments and Central Plaza will have direct sightline on the roof of the Extension.

The extended area beneath the ALE creates opportunity for enhancement, particularly for the benefit of passive recreation and the more transient reception by pedestrians and motorists. The EIA study will address the conceptual landscaping requirement for this space as well as part of the roof area which could be greened for visual impression from nearby buildings.

4 POSSIBLE IMPACTS ON THE ENVIRONMENT

With regard to the environmental impact performance criteria guided by the *Technical Memorandum on the Environmental Impact Assessment* Process (EIAOTM) and the nature and location of the project, the following areas of potential impacts will be addressed by the EIA study.

4.1 AIR QUALITY

4.1.1 Construction Phase

In view of nature of the construction activity described before, there is no source of dust emission that with implementation of the dust control measures stipulated in the *Air Pollution Control (Construction Dust) Regulation* is likely to exceed accepted levels for dust impact. Good site practice to minimise dust emissions will be specified by the EIA study for the contractor to implement.

4.1.2 Operational Phase

The sources of air pollutants to be included in a quantitative assessment of their impact upon sensitive receivers are the following.

- Vehicle emissions from the open sections of existing and future roads proposed as part of the Central Wanchai Bypass and Wanchai Development II projects;
- Portal emissions from the eastbound (EB) and westbound (WB) lanes of Convention Avenue that will be covered by the ALE;
- Dispersion of emissions in the vicinity of the existing HKCEC loading and unloading areas;
- Portal emission from future Slip Road F under WDII Study; and
- Ventilation building emissions from Central Ventilation Building, extracting vitiated tunnel air from Slip Road F and Wanchai Bypass WB proposed under WDII Study.

Reference will be made of the *Air Pollution Control Ordinance* (*APCO*) (Cap. 311) and the guiding *Hong Kong Air Quality Objectives* (AQOs) for the accepted levels of pollution for the sensitive receivers previously described. Mitigation measures will be developed in concept to address any exceedance found and the necessary performance and implementation of these will be documented by the EIA study.

4.2 NOISE

4.2.1 Construction Phase

Noise will be generated by the powered mechanical equipment and percussive piling rigs to be employed in the works. A method of working that could be followed by the Contractor will be assessment quantitatively. The

need for mitigation measures to comply with the *Noise Control Ordinance* (NCO) and *EIAOTM* will be identified. Proven and practicable means will be proposed and the implementation of these will be documented by the EIA study together with good site practice.

4.2.2 Operational Phase

Noise from the new building services to be provided for the ALE will be assessed and good practice measures will be recommended. The services will comprise chiller plant for the central air conditioning system, pumps and flushing systems.

Limits at the source of the emissions will be documented by the EIA study to ensure compliance with the NCO as well as to regard open areas that will be accessible to the public by the adoption of good practice.

4.3 WATER QUALITY & DISRUPTION OF WATER MOVEMENT OR BOTTOM SEDIMENT

4.3.1 Construction Phase

Marine piling activities have the potential to cause disturbance to the seabed and as a result lead to increases in suspended solids within the vicinity of the proposed works. In the event of adverse impacts being identified as likely, specific as well as good practice mitigation measures will be specified by the EIA study for implementation by the contractor.

Qualitative as well as quantitative assessment of the temporary existence of marine piles will be undertaken to recommend a conceptual layout that will minimise potential influence upon the already degraded localised water quality. Engineering consideration may be necessary to ensure the requirements of the EIA study remain practicable for the contractor to implement. Housekeeping measures that include the collection from the sea channel of entrapped debris will also be specified for the contractor to adopt while the piles are in place.

Good site practice to avoid unacceptable water quality impacts due to surface runoff and drainage will be documented for implementation by the contractor. This will ensure that litter, fuels and solvents are managed, stored and handled properly as well as adequate and appropriate toilet facilities used by the workforce.

The mitigation measures to be specified by the EIA study will provide for the maintenance of water quality in and the vicinity of the Sea Channel.

4.3.2 Operational Phase

Surface runoff from the new Atrium Link Extension and sewage effluent will be assessed qualitatively to specify appropriate good practice. Compliance with the *Water Pollution Control Ordinance Technical Memorandum* discharge

standards will prevent water quality impacts. Measures to be adopted in the design of the ALE to comply with discharge standards will be documented by the EIA study.

4.4 WASTE MANAGEMENT

4.4.1 Construction Phase

Recyclable materials such as paper waste, metal, and wood waste will be retrieved and separated from the demolished materials and construction by wastes. The remaining construction and demolition waste will be disposed of in accordance with the *Waste Disposal Ordinance*. Chemical wastes will be properly stored and disposed of in a manner to minimise environmental, health and safety hazards. Reference will be made to the Code *of Practice on the Packaging, Labelling and Storage of Chemical Waste* published by the EPD An adverse waste impact is not expected during the construction of the Atrium Link Extension but the EIA study will document the necessary procedures and good site practice to minimise its generation and the quantity that is eventually sent to landfill.

4.4.2 Operational Phase

General refuse will be generated from the exhibition halls and mainly consist of paper, plastic, packaging and decoration materials and food waste. The EIA study will document the arrangements to be made by the TDC with licensed contractors to collect the generated waste as an extension of the existing practice. Waste impact is not expected in the operating phase of the Project.

4.5 LANDSCAPE AND VISUAL IMPACTS

4.5.1 Construction Phase

During construction, portions of the existing Centre will be blanked-off by full height hoardings and partitions from the inside. Visitors to the Centre will see these walls at the southern end of Phase 2 and on the north face of Phase 1 Building. The building site itself will span between the north and south sides of the existing water channel dividing the two phases of the Centre. The building site will be closed off by hoardings and covered walkways. The EIA study will document the measures to be taken to ensure the area surrounding the temporary works is tidy and will not unnecessarily provide unpleasing views to visitors. Temporary lighting will be provided where appropriate.

4.5.2 Operational Phase

In the main, distant viewers will not be impacted by the ALE and over time the building will become integrated with the well regarded architectural fabric of the Phase 2 building. Attention is however necessary to provide for open space users below the extended covering of Convention Avenue. The EIA

study will document the landscape treatment in concept for application to this space as well as the roof. This will include greenery and tree planting to enhance the landscape setting as well as to light the covered area so that it is not unattractive to pedestrians and the pubic that may use it for sun and rain shelter as well as passive recreation.

5 USE OF PREVIOUSLY APPROVED EIA REPORTS

The following approved EIA reports are referenced during the preparation of this Project Profile:

- Territory Development Department (2001) *Wanchai Development Phase II, EIA Report, 2001* (EIA-058/2001); and,
- Highways Department (2001) *Central - Wan Chai Bypass and Island Eastern Corridor Link*, (EIA-057/2001).

In addition, the following documents are also referenced during the preparation of this Project Profile:

- Wong & Ouyang (HK) Ltd (2005) *The Proposed Hong Kong Convention and Exhibition Centre Atrium Link Extension - Planning Application Under Section 16 Town Planning Ordinance – Volumes 1& 2*, June 2005; and
- Territory Development Department (1994) *Central and Wan Chai Reclamation Development – Focused Study for the Proposed Extension to the Hong Kong Convention and Exhibition Centre, Final Report*, 1994.