PROJECT PROFILE OF PROPOSED EXTENSION OF KWAI CHUNG CREMATORIUM

(Project No : 3031RB)

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1. BASIC INFORMATION

1.1 Project Title

Extension of Kwai Chung Crematorium

1.2 Purpose and Nature of the Project

The purpose of this project is to design and construct a new crematorium as an extension of the existing Kwai Chung Crematorium to be provided in two phases with Phase II temporarily suspended. The scope of the two phases is as follows:

Phase I Construction of a new crematorium building on the lawn area within the existing boundary of Kwai Chung Crematorium to incorporate four single cremators. These cremators will provide a total installed capacity of 760 kg/hr. Appendix 1 shows the location of the existing Kwai Chung Crematorium and the site for Phase I.

Phase II Demolition of the existing crematorium.
Construction of a new crematorium at the site of the existing crematorium building, which will be equipped with four single cremators and having the same installed capacity as Phase I.

Although Phase II of the project is temporarily suspended, the existing crematorium will cease operation as soon as Phase I of the project comes into operation.

The scope of Phase I of the project also includes the provision of a full range of ancillary facilities required for the operation of a crematorium, including :

- air pollution control systems to control the emission of the cremators
- two service halls
- two joss paper burners
- underground fuel tanks
- pulverizing room
- mortuary
- office accommodation with ancillary facilities including a pantry, staff toilet, rest room and changing room
- store rooms
- public toilets
- parking spaces for coaches and private cars
- ancillary Service Rooms including Battery Fork Lift, Transformer and Switch Room, Emergency Generator Room, Fuel Tank and Pump Rooms, Smoke Extraction Room, Stores, Refuse Storage Room
- Two hydraulic lifts and lift machine room for coffin transfer
- Vehicular access for coffin vans, coach, etc. to the Crematorium

1.3 Name of Project Proponent

The Food & Environmental Hygiene Department (FEHD) is the project proponent and Architectural Services Department (ASD) is the works agent.

1.4 Location and Scale of Project

The proposed crematorium for Phase I of the project is located in the north-eastern part of the existing Kwai Chung Crematorium site. Four cremators will be installed in the new crematorium and the maximum cremation loading for the new crematorium is 760kg per hour. The land uses surrounding the site are mainly industrial, a residential estate, a typhoon shelter and a proposed park. The location plan of the project is given in Appendix 1.

1.5 History of the Site

The proposed site for Phase I of the project is located at the north-eastern part of the existing Kwai Chung Crematorium site. It is the open lawn area of the existing crematorium. The existing crematorium, built 20 years ago, consists of two twin cremators.

1.6 Number and Types of Designated Projects to be Covered by the Project Profile

The proposed extension of Kwai Chung Crematorium is classified as a Designated Project under Category N.4 (a crematorium) in Part 1 of Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO).

1.7 Names and Telephone Numbers of Contact Persons

The names and telephone numbers of the contact persons of this project are given below :

Project Team	Organization
Works Agent	Architectural Services Department
Environmental Consultant	Hyder Consulting Limited

2. OUTLINE OF PLANNING AND IMPLEMENTATION PROGRAMME

2.1 The FEHD has an intention to renew the existing facility of Kwai Chung Crematorium. ASD is the works agent and is responsible for the management and design of all technical aspects relating to the project. Both external & in-house consultants and contractors will be employed to respectively design and build the proposed crematorium. In particular, Hyder Consulting Limited has been employed as the Environmental Consultant of this project.

2.2 The tentative broad schedule for Phase I of the project is summarized below. The Master Programme is included in Appendix 2.

Item	Activity	Start Month	End Month
1	Appointment of consultants	Jan. 1999	Feb. 1999
2	Sketch and detail design	Mar. 1999	Apr. 2000
3	Tendering documents and Tendering	May. 2000	Nov. 2000
4	Construction	Nov. 2000	Apr. 2002
5	Decommissioning of the entire complex of the existing crematorium	After the commissioning of Phase I in mid-2002	-

3. POSSIBLE IMPACT ON THE ENVIRONMENT

3.1 A Checklist for Identification of Key Environmental Issues (Appendix 3)

3.2 Construction Phase

3.2.1 Dust

Dust will be mainly contributed by exposed earth; dusty materials such as cement & pulverized fuel ash; stockpiling, loading, unloading or transfer of dusty materials; dusty vehicles; pneumatic or power driven drilling, cutting and polishing; debris; excavation or earth moving and site clearance.

3.2.2 Construction Noise

Construction noise will be mainly contributed by the use of powered mechanical equipment in various construction activities. The severity of the construction noise impacts will be influenced by the chosen construction methods, and the duration of any noisy activities such as excavation and piling activities.

3.3 Operation Phase

3.3.1 Air Emissions from Cremation

Most crematoria have two combustion chambers, the primary and secondary chambers. The primary chamber (main chamber), which receives the coffin, is usually fitted with a forced air supply and a oil fired burner. The combustion of the coffin and cadaver occurs on the grate of the primary chamber. Combustion gases and projects of incomplete combustion, such as, carbon monoxide and nitrogen oxides together with particulates, then pass to the secondary chamber. The secondary combustion chamber may have provision for the introduction of make-up air and a afterburner system for the elevation of chamber gas temperature. The products of incomplete combustion should be destroyed when gas phase combustion is completed in the secondary chamber. Combustion gases are normally drawn from the cremator by an induced draught fan. The exhaust gases are discharged directly to atmosphere from a stack discharge.

Cremation units are manually charged and de-ashed and fitted with combustion control devices.

3.3.2 Source Emission Data

The emission rates are given in table 3.1. The SO_2 emission factor is based on the fuel consumption rate at Cape Collinson Crematorium. It is expected that new cremators will consume less fuel than the existing cremators in Kwai Chung. The SO_2 emission should be much lower than the BPM as light diesel will be used. Diesel fuel with sulphur content <0.5% by weight will be used.

The predicted SO_2 levels within the crematorium (at the breathing zone and about 1.5m above ground) are 342μg/m^3 and 127μg/m^3 for an exposure period of one hour and 24 hours, respectively. All these levels do not exceed the AQO criteria of 800μg/m^3 for one hour and 350μg/m^3 for 24 hours.

Table 3.1 Estimated Pollutant Emission Factors from Each Incinerator Stack

Parameter	Emission Factors
Particulates	0.405
Hydrogen chloride (HCI)	0.405
Carbon monoxide (CO)	0.405
Total organic compounds	0.081
Dioxins	4.1 ng/s
Sulphur Dioxide	0.222 (for cremators with design capacity of 170Kg), 0.26 (for cremators with design capacity of 250Kg)

-Emission rate is obtained by multiplying BPM by volume flow rate except for SO_2 which is based on fuel consumption rate at Cape Collinson Crematorium
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3.3.2 Visual Impact

In the new crematorium design, it is intended that the visual impact of the chimney stack on the surrounding environment would be minimized. Particular measures are given in Section 5.2.6

3.3.3 Dust

Dust would be generated by the removal of ash & non-combustible residues when remains in the cremators are moved and during treatment of cremated remains.

3.3.4 Waste

The small amount of waste generated from people using the joss burners during the operation of the proposed crematorium will be properly disposed of in metal bins. Significant impact on the environment therefore is not expected.

4. MAJOR ELEMENTS OF THE SURROUNDING ENVIRONMENT

4.1 The Hong Kong Planning Standards and Guidelines (HKPSG) define air sensitive receivers (ASR) as land uses which, by virtue of the nature of the activities thereon or resources therein, are susceptible to the influence of residuals or physical changes generated by polluting uses. Examples are schools, hospitals and clinics and residential areas. As identified from the survey maps, the nearby ASR are factory buildings along Wing Lap Street, Gin Drinkers Bay Landfill (proposed Kwai Chung park), Kwai Shing West Estate (including some primary and secondary schools), Typhoon Shelter, etc. Appendix 4 shows these ASR locations, and Table 4.1 gives the approximate distances of these ASR from the site.

Table 4.1 Air Sensitive Receivers in the Vicinity of Kwai Chung Crematorium

ASR Name	Co-ordinates	Distance from Site
1. Factory Buildings along Wing Lap Street	824220N, 830290E	75m
2. Gin Drinkers Bay Landfill (Kwai Chung Park)	830300N, 824255E	200m
3. Typhoon Shelter	829850N, 824250E	300m
4. Kwai Shing West Estate	830505N, 824290E	700m

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4.2 Cancer Health Risk Assessment

Cadmium, nickel and arsenic are toxic air pollutants (TAPs) and potential sources of cancer health impacts. The acceptability of the resultant lifetime cancer health risks due to the exposure of these TAPs emitted from Kwai Chung Crematorium should satisfy the guidelines in Table C.1 of Appendix 5.

4.3 Existing Surrounding Pollution Sources

4.3.1 There are 2 twin cremators currently in operation in the existing Kwai Chung Crematorium. (The existing crematorium will cease operation after commissioning of Phase I of the Project. Demolition of the existing crematorium building and the construction of a new crematorium will be Phase II of the project which is temporarily suspended.)

4.3.2 Kwai Chung is one of the major industrial areas of Hong Kong. It is expected that road traffic, industrial emissions and construction are the dominant sources of the ambient air quality in Kwai Chung area. Road traffic emissions contribute to the ambient nitrogen oxides, carbon monoxide and suspended particulate matters; industrial emissions due to the combustion of fossil fuels contribute sulphur dioxide, nitrogen oxides and particulates; and construction activities give rise to dust emissions which increase the ambient levels of suspended particulates. However, sulphur dioxide, carbon monoxide and total suspended particulates are the only relevant pollutants which need to be considered with respect to the air pollutant limits given in the EPD BPM and the AQO.

5. ENVIRONMENTAL PROTECTION MEASURES TO BE INCORPORATED IN THE DESIGN AND ANY FURTHER ENVIRONMENTAL IMPLICATIONS

5.1 Construction Phase

Considering the small scale of this project and the nature of land use (mainly of industrial) around the crematorium, environmental impacts due to the construction work of new crematorium building should not be a key constraint to this project. Although the Hong Kong Planning Standards and Guidelines (HKPSG), and relevant environmental legislation do not specify a crematorium itself as air and noise sensitive, the construction noise and dust should be minimized during the period of time when a funeral service is being held within the existing crematorium.

However, it should be noted that implementation of on site dust mitigation measures and controls (Section 5.1.2) is required according to Air Pollution Control Ordinance.

5.1.1 Noise

The following construction noise mitigation recommendations should be provided, and these assume construction work as the Kwai Chung Crematorium will be carried out during normal daytime working hours:

- use silenced PME if possible;
- keep the total number of PME operating simultaneously as few as possible;
- use of noise barriers or enclosure for the PME if appropriate; and
- spot checking of resultant noise levels at nearby noise sensitive receivers.

A guideline of 75dB(A) in terms of L_{Aeq} 5 minutes measured at the building facade of the crematorium is recommended for controlling the noise emissions from the construction work to minimize the noise nuisance during a funeral is held.

5.1.2 Air

The dust arising from the construction phase of this project is controlled by the Air Pollution Control (Construction Dust) Regulation. It is expected that the following 'notifiable works' will be undertaken during the construction and demolition of the crematorium:

- site formation;
- demolition of a building;
- construction of the foundation of a building ; and
- construction of the superstructure of a building.

It should be noted that a contractor is responsible to notify EPD for undertaking any of the above noticeable works prior to its commencement. In addition, the contractor is required to fulfill specific dust control requirements given in the Regulation's Schedule for the specific job.

5.1.3 Dust Control Requirements for Construction Work

A list of requirements for Construction of the Superstructure of the Building, General Requirements, Site Boundary and Entrance, Exposed Earth, Dusty Materials, Stockpiling of Dusty Materials, Loading, Unloading or Transfer of Dusty Materials, Use of Vehicles, Pneumatic or Power-Driven Drilling, Cutting and Polishing, Debris Handling, Excavation or Earth Moving, and Site Clearance are given in Appendix 6.

5.2 Operation Phase

The environmental concern matrix of the HKPSG suggests that air quality and odour are potential issues to cause concern due to the operation of a crematorium. It is understood that consideration should be given to the EPD Notes on Best Practicable Means Requirements for Incinerators for the planning of this project. A specified process license is required for operating the new cremators. Such licence will include all cremators in Kwai Chung Crematorium.

The air quality impact due to the future operation of the expanded crematorium was assessed and presented in the Crematoria Air Quality (CAQ) Study Final Report. In addition, the assessment of potential health risk associated with its operations was also included in the CAQ Study. The CAQ Study shows that adverse air quality impact and health risk should be unlikely provided that the design and operation of the crematorium strictly follow the CAQ Study's recommendations. A summary of these recommendations is given in Sections 5.2.1, 5.2.2, 5.2.3, 5.2.5 and 5.2.7.

5.2.1 Cremator Design

The cremator design should ensure that the resultant stack emissions from the new crematorium during its normal operation satisfy all BPM limits. The Kwai Chung Crematorium requires a more stringent requirement for the type of low sulphur diesel fuel to be used (sulphur content not more that 0.5% by weight), the BPM for sulphur dioxide is therefore not specified.

The recommended stack dimension is 30m above ground and 700mm in diameter, or any dimension which can achieve a stack gas exit velocity of at least 22m/s. Note that the stack of proposed Crematorium Phase I should be located at least 35m away from the slope and at least 30m from the factories along Wing Lap Street.

Other design requirements include:

- The efflux temperature at full load condition should not be less than 453k.
- Each cremator should have a secondary combustion chamber. The residence time of the flue gas should be at least two seconds. The combustion temperature and oxygen content within the secondary chamber should be at least 850°C and 6 per cent, respectively.

It is recommended that the cremator's charging system should have an interlocking mechanism to prevent a coffin from being fed into the primary combustion chamber until the temperature within the secondary combustion chamber is above 850°C.

5.2.2 General Operation

A high standard of housekeeping should always be maintained. There should be an effective preventive maintenance for all plant and equipment concerned with the control of air pollutant emissions. Essential spare parts and consumable should be kept on site, or should be readily available from suppliers so that problems due to equipment failure of breakdown of plant can be rectified within a short time. Any malfunction or breakdown that leads to abnormal emissions should be fixed promptly until normal operation can be restored. Typical reporting requirements set in a specified process licence is to inform EPD within two hours from the incident, followed by a written notification within three working days. In this case, FEHD will be responsible for these reporting, and need to inform EPD in writing who is the responsible staff for the operational control of the crematorium.

Air quality monitoring should be undertaken in a regular basis to confirm the emissions from the cremators are within the BPM limits.

5.2.3 Fuel Restriction

Low sulphur liquid fuel must be used. The sulphur content of the liquid fuel should be at least less that 0.5 per cent by weight, and its viscosity not to exceed 6 centistokes at 40°C.

5.2.4 TAP Control

Although the TAP emissions during the future operation of the Kwai Chung Crematorium should not pose a cancer risk to the nearby community, the best available control technology should be adopted to ensure these emissions will be as low as reasonably practicable.
In order to meet the hourly criterion of Ni, the source emission of Ni should be limited to be at least 0.15 times of the existing BPM limit. This corresponds to a Ni concentration at the stack exit point of 82.2 μg/m (@473K, 101.3kPa, 17.9% O_2 and 2.13 % moisture). Such emission level is within the typical range for the existing cremators (see Table 4.1) which are not equipped with pollution control equipment. Therefore, it suggests the above control limit is realistic and achievable. We expect the health issue of Ni at the nearest ASR will be resolved if the design of the new cremators adopt the best available control technology to limit its pollutant emissions to be as low as possible. It should be noted that the same recommendation is made for minimizing the cancer health risk related to the crematorium operations.

5.2.5 Material Handling, Storage and Disposal

The removal of ash and non combustible residues should be handled with care in order to avoid fugitive dust emission:

- Remains in the cremators should only be moved when each incineration is completed.
- Cremated remains should be moved and stored in a covered container.
- Local extraction hoods connecting to a bag filter should be provided above workstations where treatment of cremated remains usually takes place.

5.2.6 Landscape and Visual Impact

- Proposed landscaping of the outdoor areas and the transplanting of trees will act as green buffer particularly blocking views to existing industrial building to the East of Phase 1 site.
- The main entrances of the Service Halls are orientated away from the existing industrial buildings and screened by extensive tree planting.
- The building plan form minimizes disturbance to existing trees and slope within the site.
- The EVA/Service Access and access road along Phase 1 building leading to the existing Columbarium will be landscaped and paved with appropriate p.c. concrete unit paving material to effectively pedestrianise the area.
- The scale, massing, colour and texture of the buildings are finely articulated to break down the scale.
- The location of the chimney is away from the main access areas and the concrete shafts to the steel exhaust pipes are architecturally modeled to reduce its apparent bulk.
- The design of the exhaust pipes and emissions will comply with EPD's requirements.

5.2.6 Staff Training

Proper training and clear instruction should be provided to crematorium staff who have responsibilities to control the cremation process. Such training should consist of start up, shut down and handling procedures for abnormal conditions in order to avoid unacceptable air pollutant emissions. These procedures should be in strict compliance to the equipment's manufacturer instructions.

5.2.7 Monitoring, Sampling and Measurement of Emissions

In-stack levels of particulate matters and carbon monoxide should be monitored and recorded continuously. The oxygen levels and gas temperature at the outlet of the secondary combustion chamber should be monitored and recorded continuously as well. The monitors for continuous monitoring of particulate matters, carbon monoxide, oxygen and gas temperature should provide immediate displays to the operating staff, and fitted with audible and visual alarms. The alarm triggering levels for the four parameters are as follows:

Table 5.2 The Alarm Triggering Levels for Particulate Matter, Carbon Monoxide, Oxygen and Temperature

Sampling Point Location	Parameter to be Monitored	Alarm Trigger Level
In stack	Particulate matters Carbon monoxide	> 100 mg/m^3 > 100 mg/m^3
Outlet of secondary combustion chamber	Oxygen Flue gas temperature	< 6 % < 850°C

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During the commissioning and operational phase of the facility, sampling and analyses of the stack emissions should be undertaken to confirm the compliance of the BPM limits.

The recommended frequency of compliance monitoring during the operational phase is every six months. All monitoring instrument should be checked for correct functioning, and calibrated prior to use.

Any subsequent laboratory analyses for air samples should be carried out by an independent HKOLAS (Hong Kong Laboratories Accreditation Scheme) accredited laboratory. The report of the commissioning test and routine compliance monitoring should be submitted to EPD for record.

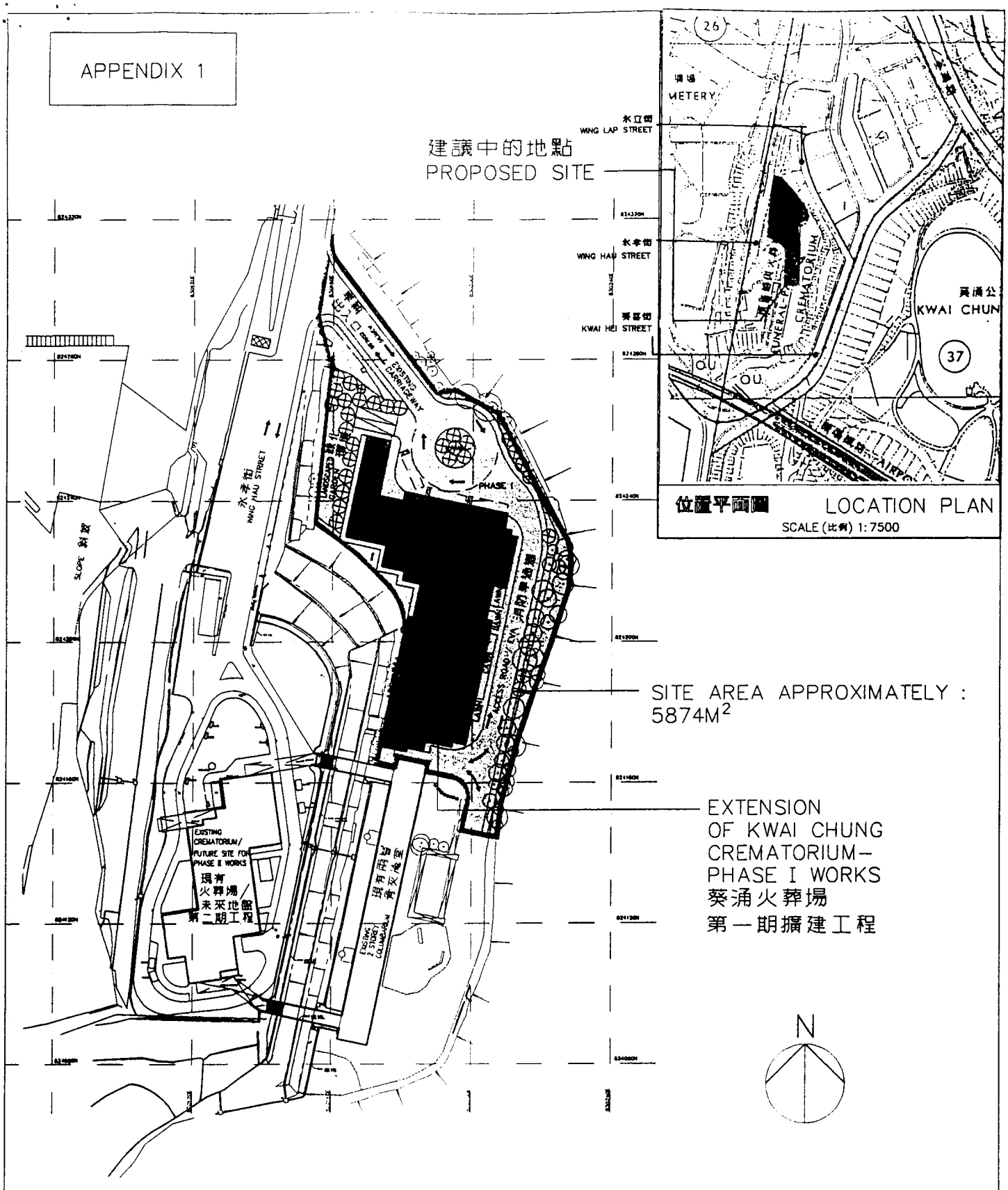
6. POSSIBLE SEVERITY, DISTRIBUTION AND DURATION OF ENVIRONMENTAL EFFECTS

Operation air quality is the key issue for this project. According to the CAQ Study, it confirms that the resultant air pollutant concentrations and health risk at the nearby air sensitive receivers would be within the established standards and is negligible. Construction noise and dust impacts are considered to be minor. A detailed EIA study is not suggested to undertake at a later stage. (Appendix 7)

7. USE OF PREVIOUSLY APPROVED EIA REPORTS

There have been no previous approved EIA Reports. A Preliminary Environmental Review from the Senior Environmental Protection Officer is enclosed in Appendix 7.

APPENDIX 1



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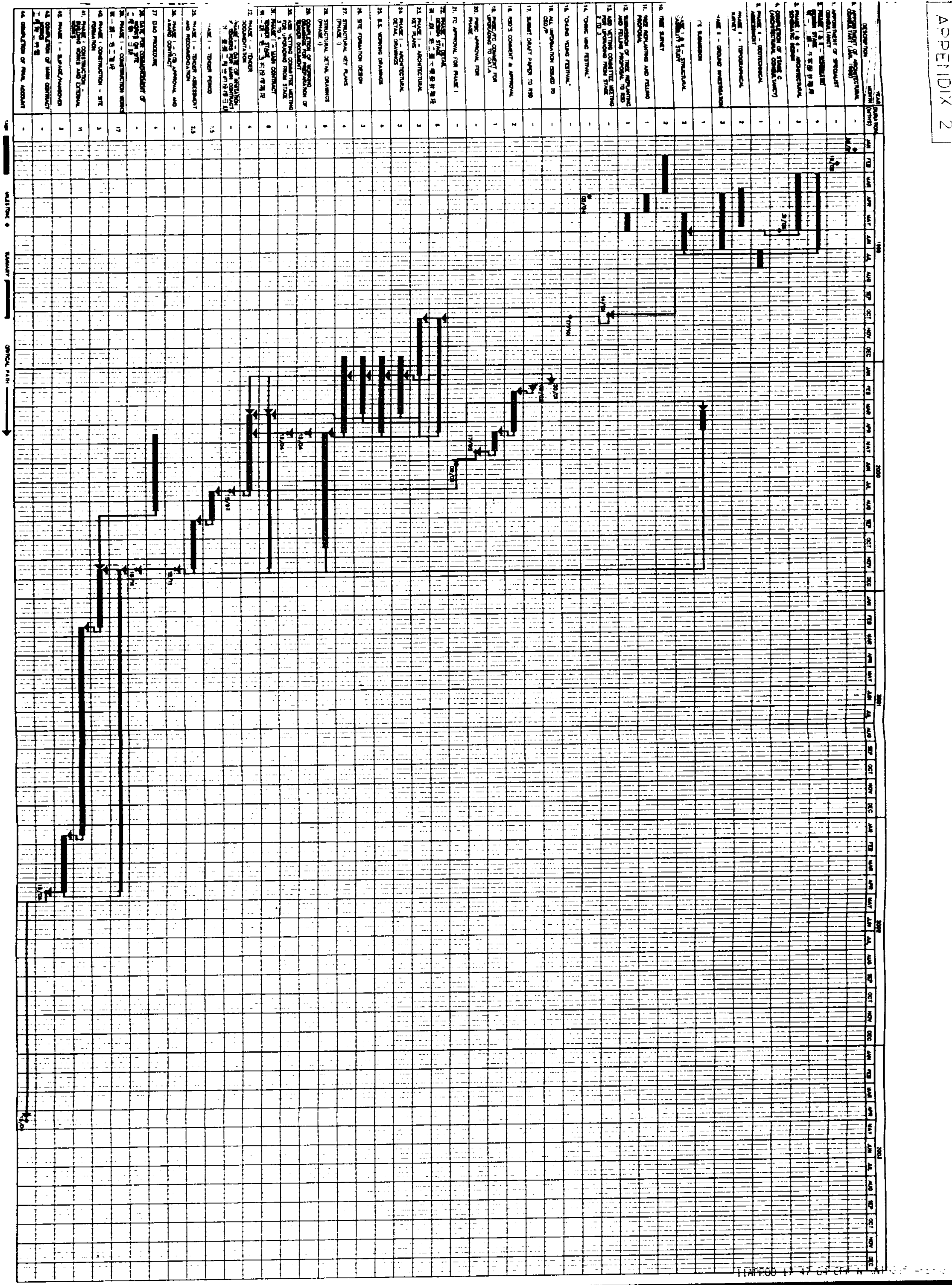
APPENDIX 2



Rev No	Date	Particulars	Drawn	Checked	Approved
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B1	26.03.99	GENERAL REVISION	DW	[illegible]	[illegible]
B2	26.04.99	GENERAL REVISION	[illegible]	[illegible]	[illegible]
B	14.06.99	ASD APPROVED	DW	[illegible]	[illegible]
C1	19.10.99	GENERAL REVISION	[illegible]	[illegible]	[illegible]
C	16.11.99	ASD APPROVED	[illegible]	[illegible]	[illegible]
D	[illegible]	EFC SUBMISSION	[illegible]	[illegible]	[illegible]

Job Title EXTENSION OF KWAI CHUNG CREMATORIUM-PHASE I WORKS 葵涌火葬場第一期擴建工程 Job No NT9835

Drawing Title MASTER PROGRAMME (KWAI CHUNG) 總工程進度表

(1) Do not scale drawing. Figured dimensions are to be followed. Read this drawing in conjunction with all other relevant drawings and specifications. The architect shall be notified immediately if any discrepancy is found therein.

(2) This drawing shall not be used for construction purposes unless otherwise certified. The contractor shall verify all dimensions on site prior to commencement of work.

Scale NIL

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HO & PARTNERS ARCHITECTS ENGINEERS & DEVELOPMENT CONSULTANTS LIMITED

Approved for Dispatch Construction

Drg Rev No ________

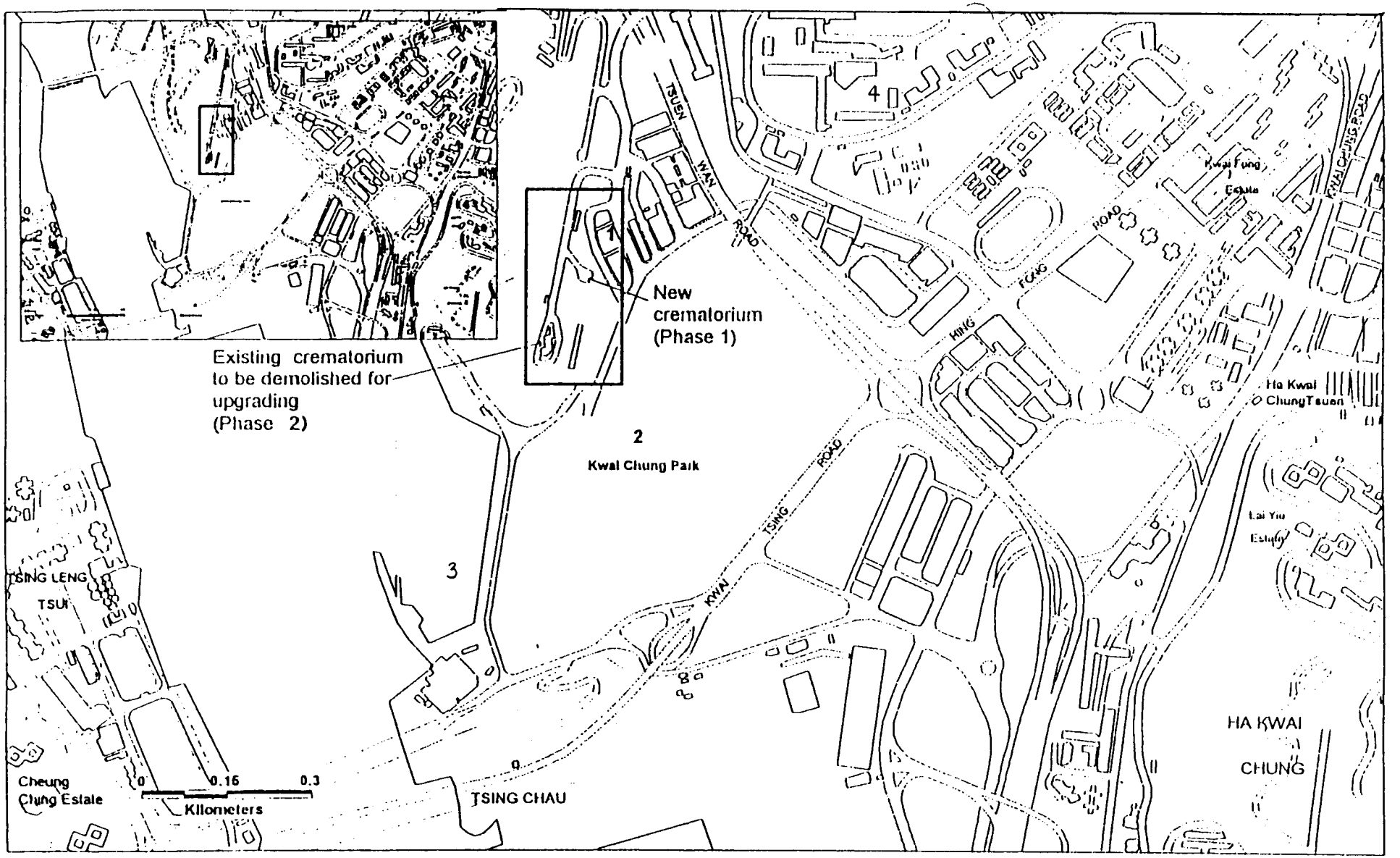
Approved by ________

Signed ________ Date ________

Appendix 3 A Checklist for Identification of Key Environmental Issues

The following environmental issues given in the Planning, Environmental and Lands Branch Technical Circular No. 2/92 were considered.

No.	Types of likely environmental issues	Construction Phase	Operation Phase
1.	Gaseous emissions	☒	☑
2.	Dust	☑	☑
3.	Odour	☒	☑
4.	Noisy operations	☑	☒
5.	Night-time operations	☒	☒
6.	Traffic generation	☒	☒
7.	Liquid effluents, discharges, or contaminated runoff	☒	☒
8.	Generation of waste or by-products	☒	☒
9.	Storage, handling, transport, or disposal of hazardous materials or wastes	☒	☒
10.	Risk of accidents which would result in pollution or hazard	☒	☒
11.	Disposal of spoil material, including potentially contaminated material	☒	☒
12.	Disruption of water movement	☒	☒
13.	Unsightly visual appearance	☒	☒
	Key :	☑Potential to cause concern	☒ Unlikely



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Appendix 4 Locations of Air Sensitive Receivers in the Vicinity of Kwai Chung Crematorium

Appendix 5 Cancer Risk Criteria

Table C.1 Acceptability of Cancer Risks

Reference Levels
(i) Individual TAP Exposure
Maximum Acceptable : To bring the risk from exposure to individual TAP to below 10^{-5} per year (Lifetime = 7×10^{-5})
ALARP : For those TAPs with risk level between 10^{-5} per year and 10^{-3} per year (Lifetime between 7×10^{-3} - 7×10^{-5}), the best available control technology should be adopted to ensure emissions of individual TAP are as low as reasonably practicable.
Negligible : Ultimate goal would be to bring the risk form exposure to individual TAP to below the negligible risk level of 10^{-3} per year (Lifetime = 7×10^{-7}).
(ii) Multiple TAPs Exposure
Total risk from the facility should not exceed a level of 10^{-5} per year (Lifetime risk of 7×10^{-4})

Appendix 6 Dust Control Requirements for Construction Work

Construction of the superstructure of a building

In the case of the construction of the superstructure of a building

i. where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting shall be provided to enclose the scaffolding from the ground floor level of the building, or if a canopy is provided at the first floor level, from the first floor level, up to the highest level of the scaffolding;

ii. any skip hoist for material transport shall be totally enclosed by impervious sheeting; and

General requirements

i. Any air pollution control system, equipment or measure required by any provision of this Schedule shall be operated or implemented (as the case may be) properly and effectively whenever the plant or process concerned is in operation or the activity concerned is engaged in.

ii. In the event of a malfunctioning or breakdown of any air pollution control system or equipment, the plant, process or activity concerned shall be stopped as soon as practicable until such time as the air pollution control system or equipment is restored to proper functioning.

iii. Except for cleaning formwork or other surfaces receiving concrete prior to concreting, a compressed air jet shall not be used for cleaning or clearing dust from any vehicle, equipment, other materials or person.

iv. Any proposal to use a dust suppression chemical for the purpose of this Regulation within or in the immediate vicinity of any water storage or gathering ground of the Water Supplies Department shall be submitted to the Director of Water Supplies for approval.

v. The use of any particular dust suppression chemical within a location referred to in subsection (iv) shall be subject to the prior approval of the Director of Water Supplies.

Site boundary and entrance

Except for road opening or resurfacing work, or for construction work carried out in a construction site that is completely paved or completely covered with hardcore.

i. vehicle washing facilities including a high pressure water jet shall be provided at every discernible or designated vehicle exit point;

ii. the area where vehicle washing takes place and the section of the road between the washing facilities and the exit point shall be paved with concrete, bituminous materials or hardcores;

iii. where a site boundary adjoins a road, street, service lane or other area accessible to the public, boarding of not less than 2.4m high from ground level shall be provided along the entire length of that portion of the site boundary except for a site entrance or exit.

Exposed earth

Exposed earth shall be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen or other suitable surface stabilizer within 6 months after the last construction activity on the construction site or part of the construction site where the exposed earth lies.

Dusty materials

Cement, pulverized fuel ash or any other dusty materials collected by fabric filters or other air pollution control system or equipment shall be disposed of in totally enclosed containers.

Stockpiling of dusty materials

Any stockpile of dusty materials shall be either

i. covered entirely by impervious sheeting;

ii. placed in an area sheltered on the top and the 3 sides; or

iii. sprayed with water or a dust suppression chemical so as to maintain the entire surface wet.

Loading, unloading or transfer of dusty materials

Except for cement and pulverized fuel ash and for cases where the moisture content of the dusty materials is a matter of concern, all dusty materials shall be sprayed with water or a dust suppression chemical immediately prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet.

Use of vehicles

Immediately before leaving a construction site, every vehicle shall be washed to remove any dusty materials from its body and wheels.

Where a vehicle leaving a construction site is carrying a load of dusty materials, the load shall be covered entirely by clean impervious sheeting to ensure that the dusty materials do not leak from the vehicle.

Pneumatic or power-driven drilling, cutting and polishing

Water or a dust suppression chemical shall be continuously sprayed on the surface where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation that causes dust emission is carried out, unless the process is accompanied by the operation of an effective dust extraction and filtering device.

Debris handling

i. Any debris shall be covered entirely by impervious sheeting or stored in a debris collection area sheltered on the top and the 3 sides.

ii. Every debris chute shall be enclosed by impervious sheeting or similar materials.

iii. Before debris is dumped into a debris chute, it shall be sprayed with water or a dust suppression chemical so that it remains wet when it is dumped.

Excavation or earth moving

The working area of any excavation or earth moving operation shall be sprayed with water or a dust suppression chemical immediately before, during and immediately after the operation so as to maintain the entire surface wet.

Site clearance

i. The working area for the uprooting of trees, or vegetation or for the removal of boulders, poles, pillars or temporary or permanent structures shall be sprayed with water or a dust suppression chemical immediately before, during and immediately after the operation so as to maintain the entire surface wet.

ii. All demolished items (including trees, shrubs, vegetation, boulders, poles, pillars, structures, debris, rubbish and other items arising from site clearance) that may dislodge dust particles shall be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides within a day of demolition.

Appendix 7

Project Title : Proposed Extension of Kwai Chung Crematorium

SECTION 9 - Preliminary Environmental Review

(A) Broad Description of Review :

A preliminary environmental review (PER) has been carried out by consultants engaged by the Architectural Services Department to assess the potential environmental impacts of the proposed expanding and upgrading works for the existing Kwai Chung Crematorium, during both the construction and operation phases.

(B) Key Findings of Review :

Construction Phase

DArchS will implement appropriate pollution control measures in the construction contract to control noise, dust and site run-off nuisance to within established standards and guidelines.

Operation Phase

Air emissions will be a concern. DArchS should implement mitigation measures including the implementation of Best Practical Means, good housekeeping management, use of low sulphur fuel or gas and proper handling procedures to control the emissions impacts to within established standards and guidelines.

(c) Environmental Impact/Risk Assessment needed in Later Stage:

An Environmental Impact Assessment is not required.

Signed : B.I. Dubin

Name : B.I. Dubin

EPD/Post : Senior Environmental Protection Officer

Date : 31 MAR 1998

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