Architectural Services Department

Programme No. 272RS

Kai Tak Multi-purpose Sports Complex

Environmental Monitoring and Audit Manual

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1 INTRODUCTION

1.1 Background

1.1.1 Hong Kong as a whole sees a general shortage of sports grounds and indoor sports centres. In particular, a shortfall of sports centres and standard sports grounds in East Kowloon is anticipated based on population projection. In 2006, the Hong Kong SAR Government proposed the development of a multi-purpose sports complex at Kai Tak with the strong support from sports communities and local communities including district councils. It is anticipated that the Kai Tak Multi-purpose Sports Complex (MPSC or the Project) will provide high-quality sports facilities that will help to alleviate Hong Kong's shortage of public sports facilities and will also provide new venues suitable for hosting major local and international sports events.

1.1.2 A Comprehensive Planning and Engineering Review of South East Kowloon Development (SEKD) was commissioned in 2004 and a Preliminary Outline Development Plan (PODP) was first prepared as part of Kai Tak Planning Review (KTPR) by the Planning Department. In 2007, Civil Engineering and Development Department (CEDD) of HKSAR commissioned the "Kai Tak Development Engineering Study" including a Schedule 3 Environmental Impact Assessment (EIA) study, to confirm the feasibility of the PODP. The EIA was prepared as part of the engineering study and approved under the Environmental Impact Assessment Ordinance (EIAO) on 4 March 2009. The Project is one of the key components in the PODP.

1.2 The Project

1.2.1 The Project site covers a land area of about 28.2 hectares situated in the North Apron Area of the former Kai Tak International Airport. It is bounded by the Central Kowloon Route to the south and dissected by Road D2 (Shing Kai Road) in the middle. The scope of the Project includes a multi-purpose complex comprising a 50,000 seat Main Stadium, a 7,000-seat Public Sports Ground, an Indoor Sports Centre, and other ancillary/supporting facilities such as car parking spaces, commercial area for retail, food and beverage outlets, office spaces for sports-related organizations and a hotel. The Main stadium shall be multi-functional to meet the specific requirements of different events, promote high utilisation and deliver a good spectator experience. While priority will be given to major sports events, non-sporting events such as concerts, exhibitions, carnivals, etc. may also be held in the main stadium. An indicative master layout plan of the Project is shown in **Figure 1-1**.

1.2.2 The construction works of the Project are scheduled to commence in 2017 for completion in 2020/2021. The tentative construction programme is shown in **Appendix E**.

1.3 Designated Projects

1.3.1 The potential environmental impacts of the Project have been broadly addressed in the Schedule 3 EIA report for the Kai Tak Development (KTD). The approved EIA report for the KTD recommended that a further EIA study be required under the EIAO to address the environmental impacts of the Project in detail given that the Project has been identified as a designated project under the following sub-items of

Part I, Schedule 2 of the EIAO (Cap. 499):

- The Main Stadium of the Project under item O.6 "An open air concert venue with a capacity to accommodate more than 10 000 persons"
- The Main Stadium of the Project under item O.7 "An outdoor sporting facility with a capacity to accommodate more than 10 000 persons"

1.3.2 A project profile (No. PP-509/2014) was submitted to the Environmental Protection Department (EPD) on 3 June 2014 and a study brief (No. ESB- 274/2014) specifying the scope of the required environmental impact assessment was issued by EPD on 16 July 2014.

1.3.3 Subsequently, an EIA study was carried out in July 2014. The purpose of the EIA study was to provide information on the nature and extent of environmental impacts arising from the construction and operation of the Project and associated works that will take place concurrently.

1.4 Purpose of this Environmental Monitoring and Audit (EM&A) Manual

1.4.1 The purpose of this EM&A Manual (hereafter called the "Manual") is to guide the establishment of an EM&A programme to assure compliance with the standards and predictions in the EIA study involving the construction and operation of Kai Tak Multi-Purpose Sports Complex. The environmental performance will be routinely monitored and audited for evaluating the effectiveness of the recommended mitigation measures and to investigate any further need for additional mitigation measures or remedial action.

1.4.2 This EM&A Manual is prepared based on the findings and recommendations in the EIA report and with reference to the requirements stipulated in Annex 21 of the Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM):

(i) To propose EM&A programme to monitor the environmental performance of the Project;

(ii) To check the implementation status of mitigation measures to minimize construction and operational impacts on the environment;

(iii) To identify the need for additional mitigation measures;

(iv) To advise the responsibilities of different parties involved in the Project and communication flow among them;

(v) To detail monitoring requirements (locations, environmental parameters, frequency, duration) before and during the construction period and in the operational period;

(vi) To propose monitoring equipment required and quality assurance;

(vii) To determine Action and Limit Levels of each environmental parameter based on the legislative criteria and standards for compliance checking;

(viii) To set up Event and Action Plan for remedial actions if exceedance of compliance is identified;

(ix) To devise procedures for handling complaint/consultation; and

(x) To detail reporting requirements

1.5 Structure of EM&A Manual

1.5.1 This EM&A Manual comprises the following Chapters:

- Ch. 1 Introduction
- Ch. 2 Project Organization
- Ch. 3 Air Quality Impact
- Ch. 4 Hazard to Life
- Ch. 5 Noise Impact
- Ch. 6 Water Quality Impact
- Ch. 7 Sewerage and Sewage Treatment Implications
- Ch. 8 Waste Management Implications
- Ch. 9 Land Contamination
- Ch. 10 Terrestrial Ecological Impact
- Ch. 11 Landscape and Visual Impact
- Ch. 12 Cultural Heritage Impact
- Ch. 13 Environmental Audit
- Ch. 14 Reporting
- Ch. 15 Conclusion

2 PROJECT ORGANIZATION

2.1 Introduction

2.1.1 The implementation of the recommended EM&A programme requires participation of relevant parties in a correlative and collaborative manner. The project organization and lines of communication with respect to the recommended EM&A works are shown in **Figure 2-1**. The roles and responsibilities of the key EM&A programme participants involved are described in the following sections.

2.2 The Contractor

2.2.1 The Contractor implies all construction contractors and sub-contractors working on the Project site. He should:

(i) Engage the Environmental Team (ET) to carry out EM&A works

(ii) Notify the ET the construction activities that may have environmental concern

(iii) Participate in the site inspection carried out by the ET and to rectify any environmental deficiency identified

(iv) Propose and implement necessary measures to mitigate any exceedance in Action/Limit Levels recorded in accordance to the Event and Action Plans

(v) Investigate complaints according to the agreed procedures

2.3 Architect's Representatives (AR)

2.3.1 The AR shall be responsible to oversee the construction work of all contractors to ensure that the contract specifications are met. He should:

(i) Supervise the Contractor's activities to ensure that they comply with the requirements in the approved EIA report, EM&A Manual, Environmental Permit (EP) and the contract specifications

(ii) Employ the Independent Environmental Checker (IEC) to audit and check the EM&A works carried out by the ET

(iii) Follow the agreed procedures in the Event and Action Plan in case of any exceedance and instruct the Contractor to carry out remedial actions

(iv) Participate in joint site inspections and audits undertaken by the ET

(v) Investigate complaints according to the agreed procedures and instruct the Contractor to follow up

(vi) Assist the ET in implementation of EM&A programme when required

2.4 Independent Environmental Checker (IEC)

2.4.1 The IEC shall be appointed by the AR to audit and verify the EM&A works carried out by the ET and to oversee the environmental performance of the project site. He shall not have any association with the Contractor or ET. The IEC should possess at least 7 years of experience in EM&A. The IEC should:

(i) Review and verify EM&A Reports and submissions for EP prepared by the ET and advise for improvement

(ii) Audit and confirm the validity and accuracy of monitoring activities and results. He may carry out random sample check and audit on monitoring data and sampling procedures, etc.

(iii) Audit the EIA recommendations and requirements against the status of implementation of environmental protection measures on site

(iv) Review the implementation status and effectiveness of mitigation measures onsite and ensure that they are carried out properly

(v) Conduct monthly and ad-hoc site inspections

(vi) Investigate complaints according to the agreed procedures

(vii) Review the proposal of mitigation measures by the Contractor in an event of exceedance according to the Event and Action Plan

2.5 Environmental Team (ET)

2.5.1 The ET shall be led and managed by the ET Leader. The ET Leader shall be an independent party from the Contractor and have relevant professional qualifications, or have sufficient relevant EM&A experience subject to the approval of the Architect's Representative (AR). The ET Leader shall possess at least 7 years of experience in EM&A and/or environmental management. The ET should carry out the EM&A programme and to check the Contractor's compliance with the environmental protection requirements in the EIA, EM&A Manual and EP. The ET should:

(i) Set up monitoring stations to carry out monitoring, statistical analysis and compliance checking against legislative standard and guidelines

(ii) Repeat field measurement in case of exceedance and propose mitigation measures for improvement

(iii) Conduct weekly and ad-hoc site inspections to audit the Contractor's site practice on pollution prevention and the effectiveness and adequacy of mitigation measures

(iv) Advise the Contractor rectification work required when environmental deficiency is identified

(v) Prepare monthly, quarterly and final EM&A reports to summarise environmental performance and to anticipate future key issues

(vi) Review and comment on work schedule and methodology as necessary

(vii) Support the Contractor for submissions required under the EP

(viii) Investigate complaints and propose corrective measures according to the agreed procedures

(ix) Liaise with the IEC on environmental performance matters and timely submission of all EM&A proforma for IEC's approval

2.5.2 The ET Leader shall keep a contemporaneous logbook for recording each and every instance or circumstance or change of circumstances that may affect the compliance

with the recommendations of the EIA report. This logbook shall be kept readily available for inspection by the IEC, and the Director of Environmental Protection (DEP) or his authorised officers.

3 AIR QUALITY IMPACT

3.1 Introduction

3.1.1 The EIA report assessed the air quality impact which would be induced by the Project. With proper implementation of mitigation measures, no adverse impact on air quality during construction phase is anticipated. Monitoring on air quality shall cover the construction phase. Operational phase air quality is mainly affected by the background pollutant level and offsite air pollutant sources. Monitoring during operational phase is not required. This chapter outlines the proposed mitigation measures, and details the environmental monitoring and audit programme.

3.2 Monitoring Parameters

3.2.1 Levels of 1-hour Total Suspended Particulates (TSP) shall be measured by the ET in order to monitor the construction air quality impact.

3.3 Monitoring Equipment

3.3.1 1-hour TSP levels will be measured in accordance to the standard high volume sampling method as set out in the Title 40 of the Code of Federal Regulations, Chapter 1 (Part 50), Appendix B.

3.3.2 Other than using high volume sampler, 1-hour TSP levels can be measured alternatively by direct reading from portable dust meters upon approval from AR. The meters should be capable of producing comparable results as that by the high volume sampling method, to indicate short event impacts.

3.4 Monitoring Requirements

<u>High Volume Sampler</u>

3.4.1 The ET shall provide sufficient number of high volume samplers (HVSs) for measurement at the various ASRs during each monitoring event. The HVSs shall comply with the following specifications for carrying out the 1-hour TSP monitoring:

(a) 0.6 - 1.7 m^3 per minute adjustable flow range;

(b) equipped with a timing / control device with +/- 5 minutes accuracy for 24 hours operation;

(c) installed with elapsed-time meter with +/- 2 minutes accuracy for 24 hours operation;

(d) capable of providing a minimum exposed area of 406 cm^2;

(e) flow control accuracy: +/- 2.5% deviation over 24-hour sampling period;

(f) equipped with a shelter to protect the filter and sampler;

(g) incorporated with an electronic mass flow rate controller or other equivalent devices;

(h) equipped with a flow recorder for continuous monitoring;

(i) provided with a peaked roof inlet;

(j) incorporated with a manometer;

(k) able to hold and seal the filter paper to the sampler housing at horizontal position;

(l) equipped with easily changeable filter; and

(m) capable of operating continuously for a 24-hour period.

3.4.2 Clearly labelled calibration kit and filter papers shall also be provided. The HVSs should be equipped with an electronic mass flow controller and be calibrated against a traceable standard at regular intervals.

3.4.3 Calibration should first be conducted after installing the HVSs and repeated on a bi-monthly basis. The transfer standard shall be traceable to the internationally recognised primary standard and be calibrated annually. The concern parties such as IEC shall properly document the calibration data for future reference. All the data should be converted into standard temperature and pressure condition.

3.4.4 The flow-rate of the sampler before and after the sampling exercise with the filter in position shall be verified to be constant and be recorded in the data sheet in **Appendix B**.

Direct Reading Meter

3.4.5 If the ET prefers to adopt direct reading method for 1-hour TSP, he should provide adequate support to the IEC for verifying the capacity of the meter as with the HVSs in obtaining comparable measurements. The meter shall be calibrated at regular intervals in accordance to the specification in the manufacturer's manual. The calibration certificates shall be available to the IEC for checking upon request. The validity and accuracy of the meter shall also be tested against the results by the HVS periodically.

Collection of Wind Data

3.4.6 For recording wind speed and wind direction, the ET shall install wind data monitoring equipment near the dust monitoring locations. The installation location shall be proposed by the ET and agreed with the IEC. The installation and operation of the equipment shall meet the following criteria:

(a) The wind sensors should be installed 10 m above ground so that they are clear of obstructions or turbulence caused by buildings.

(b) The wind data should be captured by a data logger. The data shall be downloaded for analysis at least once a month.

(c) The wind data monitoring equipment should be re-calibrated at least once every six months.

(d) Wind direction should be divided into 16 sectors of 22.5 degrees each.

3.4.7 If agreed by the AR and the IEC, the ET may obtain wind data using alternative method.

Laboratory Testing

3.4.8 Filter paper to be placed in the HVSs should have a size of 8" x 10" and be labelled before sampling. It should be clean without pinholes, and be conditioned in a humidity-controlled chamber for over 24-hours and be pre-weighed before use for

the sampling.

3.4.9 After air is passed through the HVSs, the filter paper inside will be loaded with dust. It shall be collected inside a clean and tightly sealed plastic bag for transporting to a laboratory. It shall be reconditioned in the humidity-controlled chamber followed by accurate weighing by an electronic balance with accuracy up to 0.1 mg. The balance shall be regularly calibrated against a traceable standard.

3.4.10 All samples should be kept in good condition for 6 months before disposal.

3.4.11 The testing laboratory should be HOKLAS accredited. It should be clean and should maintain a stable temperature and humidity. Measuring and conditioning instruments should be readily available for handling the dust samples. It should carry out result analysis, equipment calibration and maintenance.

3.4.12 If a site or non-HOKLAS laboratory will be responsible for conducting the testing, the laboratory equipment shall be approved by the AR and the measurement procedures shall be witnessed by the IEC. Any measurement performed by the laboratory shall be demonstrated to the satisfaction of the AR and the IEC. The IEC shall regularly audit the measurement performed by the laboratory to ensure the accuracy of measurement results. The ET Leader shall provide the AR with one copy of the Title 40 of the Code of Federal Regulations, Chapter 1 (Part 50), Appendix B for his reference.

3.5 Monitoring Location

3.5.1 Five representative Air Monitoring Stations (AMSs) are proposed. Their details and locations are shown in **Table 3.1** and **Figure 3-1** respectively.

Table 3.1 Proposed Air Monitoring Stations

Monitoring Stations	Location
Existing Air Sensitive Receivers	
AMS1	The Hong Kong Society For The Blind Workshop And Hostel, 160 To Kwa Wan Road
AMS2	Sky Tower, Tower 7, 38 Sung Wong Toi Road
Planned Air Sensitive Receivers	
AMS3	Kai Tak Area 2B Site 4 (2B4) (residential use)
AMS4	Kai Tak Area 1K Site 3 (1K3) (residential use)
AMS5	Kai Tak Area 1L Site 3 (1L3) (residential use)

3.5.2 As AMS3 to AMS5 are planned air sensitive receivers, monitoring works should be conducted when these residential buildings in Kai Tak Area Sites 2B4, 1K3 and 1L3 have been completed and being occupied.

3.5.3 Nevertheless, since Kai Tak has many planned and ongoing construction activities, the status and locations of dust sensitive receivers may change after issuing this manual. The ET Leader shall propose alternative monitoring locations taking into account the following considerations and seek approval from the AR and the IEC:

(a) locate at the site boundary or such locations close to the major dust emission source;

(b) locate close to the sensitive receivers; and

(c) take into account the prevailing meteorological conditions.

3.6 Placement of Equipment

3.6.1 The ET shall agree with the AR in consultation with the IEC on the position of the HVS for the installation of the monitoring equipment. When positioning the samplers, the following points shall be noted:

(a) a horizontal platform with appropriate support to secure the samplers against gusty wind should be provided;

(b) no two samplers should be placed less than 2 meters apart;

(c) the distance between the sampler and an obstacle, such as buildings, must be at least twice the height that the obstacle protrudes above the sampler;

(d) a minimum of 2 meters of separation from walls, parapets and penthouses is required for rooftop samplers;

(e) a minimum of 2 meters separation from any supporting structure, measured horizontally is required;

(f) no furnace or incinerator flue is nearby;

(g) airflow around the sampler is unrestricted;

(h) the sampler is more than 20 meters from the dripline;

(i) any wire fence and gate, to protect the sampler, should not cause any obstruction during monitoring;

(j) permission must be obtained to set up the samplers and to obtain access to the monitoring stations; and

(k) a secured supply of electricity is needed to operate the samplers.

3.7 Baseline Monitoring

3.7.1 Baseline monitoring shall be conducted to determine the existing air quality in terms of 1-hour levels before commencement of construction work. A consecutive measurement for 14 days should be carried out at all monitoring stations. At least 3 sets of 1-hour TSP data shall also be collected every day during this period, at the predicted time in which greatest impact is expected.

3.7.2 During the baseline monitoring, there should be no major construction or dust generating activities near the monitoring stations. The ET shall propose a monitoring schedule to the IEC so that he can conduct onsite audit to ensure the accuracy of the measurement where necessary.

3.7.3 Alternative baseline AMS that can give representative baseline result may be proposed for AR and IEC's approval with justifications.

3.7.4 In exceptional cases, when insufficient baseline monitoring data or questionable results are obtained, the ET shall liaise with the IEC and AR to agree on an appropriate set of data to be used as a baseline reference and submit to EPD for approval.

3.7.5 The baseline monitoring data shall be reviewed once every three months. When there is seasonal change to ambient conditions, the baseline condition may need to be updated. Repeated measurement shall be conducted during which no dust generating activity is being carried out near the AMS. If a change in ambient condition is recorded, the baseline levels and therefore air quality criteria should be revised accordingly and agreed with the IEC and EPD.

3.8 Impact Monitoring

3.8.1 Impact monitoring shall be carried out throughout the construction period at all AMSs. 1-hour TSP shall be carried out at least 3 times in every 6 days when the highest dust impact takes place. Similar to baseline monitoring, the ET shall submit a monitoring schedule to the IEC for onsite audit of the accuracy of the monitoring result where necessary.

3.8.2 If exceedance of air quality criteria is recorded, more frequent measurement shall be carried out within the specified timeframe in accordance with the Action Plan. The additional monitoring shall be continued until the excessive dust emission or the deterioration in air quality is rectified, and upon agreement with the IEC. A sample of the field record sheet for air quality monitoring can be found at **Appendix B**.

3.9 Air Quality Performance Limit

3.9.1 The following table shows the action and limit levels for 1-hour TSP.

Table 3.2 Action and Limit Levels for Air Quality

Parameters	Action	Limit
1-hour TSP Level in $\mu g\ m^{-3}$	For baseline level ≤ 384 $\mu g\ m^{-3}$, Action level = (baseline level * 1.3 + Limit level)/2; For baseline level > 384 $\mu g\ m^{-3}$, Action level = Limit level	500$\mu g/m^3$

3.10 Event and Action Plan

3.10.1 Should non-compliance of the air quality criteria occur, actions in accordance with the Action Plan in **Appendix C** shall be carried out.

3.11 Mitigation Measures

3.11.1 The EIA proposed a number of construction phase mitigation measures in Section 3.7 and operational phase mitigation measures in Section 3.8. Dust control measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site

practice shall be adopted. Examples of dust suppression measures for controlling the dust nuisance throughout the construction phase are listed below:

Construction Phase

(a) Dusty materials (e.g. debris) should be wetted by misting / water-spraying before any loading, unloading, transfer or transport operation;

(b) Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously;

(c) Excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet, and then removed, backfilled or reinstated where practicable within 24 hours of the excavation or unloading;

(d) Haulage and delivery vehicles should be confined to designated roads;

(e) Provide vehicle washing (e.g. wheel washing bay & high pressure water jet where practicable) at every vehicle exit point for cleaning vehicle body and wheels;

(f) The vehicle washing area and the road between washing area and site exit should be paved with concrete, bituminous or other hardcores;

(g) Dusty materials on every vehicle's body and wheels should be removed in washing area before leaving the site;

(h) Regular maintenance of all plant equipment;

(i) Throttle down or switch off unused machines or machine in intermittent use;

(j) If the site is adjacent to area where accessible to the public (e.g. road and service lane etc.), hoarding of not less than 2.4 m high from ground level should be erected along the adjoining section, except for a site entrance or exit. The hoarding should be well maintained throughout the construction period;

(k) 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

(l) Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies

Operational Phase

(a) Fresh air intake point of the hotel in MPSC should be located at least 5m above ground (outside the annual NO_2 exceedance zone).

(b) The entry of heavy goods vehicles should avoid peak hours, weekdays from 7 am to 10 am and from 4 pm to 7 pm, except for major events (i.e. more than 20,000 persons);

(c) Provision of electrical vehicle (EV) charging facilities in at least one-third of the car parking spaces for private cars;

(d) Provision of EV charging enabling facilities in all car parking spaces provided for private cars.;

(e) Giving priority to EV to use the car parking spaces as far as practicable;

(f) If the operator provides transport services for the staff and/or guests, electric saloon cars, coaches, etc. should be used under normal operation; and,

(g) Reduction of car parking space.

3.11.2 Mitigation measures are detailed in the Environmental Mitigation Implementation Schedule (EMIS) (see **Appendix A**). Implementation status and the effectiveness of the proposed construction phase mitigation measures shall be audited through weekly site inspection.

4 HAZARD TO LIFE

4.1 Introduction

4.1.1 Based on the latest available information, no new Potentially Hazardous Installation is proposed in KTD area and all existing/planned hazardous sources within or in vicinity of KTD have been considered in the approved EIA Report for the KTD. The project site falls outside all the Consultation Zones / study areas of the identified hazardous sources. Hence, no adverse potential hazard to life impact on the Project is anticipated, and no environmental monitoring or audit is proposed.

5 NOISE IMPACT

5.1 Introduction

5.1.1 The EIA report assessed the noise impact which would be induced by the Project. With proper implementation of mitigation measures, no adverse noise impact is anticipated during both construction and operational phases. Monitoring on noise levels shall be carried out throughout the construction phase, while monitoring of music, singing and instrument performing activities (hereafter music events) during operational phase is required. This chapter outlines the proposed mitigation measures, and details the EM&A programme for noise.

5.2 Monitoring Parameters

5.2.1 Construction noise level shall be measured in terms of the A-weighted equivalent continuous sound pressure level (Leq). Leq (30min) for the time period between 0700 and 1900 hours on normal weekdays. For all other time periods, Leq (5min) shall be employed for comparison with the Noise Control Ordinance (NCO) criteria.

5.2.2 For music events held during daytime or evening time periods (i.e. 7 a.m. to 11 p.m.), noise level from the events shall be measured in terms of A-weighted Leq (5 min) and Leq (15 min), rounded up or down to the nearest integer. Background noise level shall be measured in terms of A-weighted Leq (5 min).

5.2.3 As supplementary information for data auditing, statistical results such as L_{10} and L_{90} shall also be obtained for reference.

5.3 Monitoring Equipment

5.3.1 Sound level meters shall be employed to measure construction noise levels. It should comply with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications in accordance with the Technical Memorandum (TM) issued under the NCO and the Noise Control Guidelines for Music, Singing and Instrument Performing Activities.

5.3.2 An acoustic calibrator shall be used to validate the accuracy of the sound level meter before and after each noise measurement. The calibrator can generate a known sound pressure level at a known frequency. The noise recorded will only be accepted if the calibration levels before and after the noise measurement agree to within 1.0 dB.

5.3.3 Sufficient number of the above equipment shall be provided by the ET, who should also be responsible for installation, operation, maintenance and dismantlement. All equipment and instrumentation shall be clearly labelled.

5.4 Monitoring Requirement

5.4.1 Noise measurement shall normally be carried out at a point 1 m from the exterior of the sensitive receiver building façade and 1.2 m above the ground. If the normal monitoring position cannot be accessed, an alternative position may be chosen, and a correction to the measurements shall be made. For reference, a correction of +3 dB(A) shall be made to the free field measurements. The ET shall agree with the IEC on the monitoring position and the corrections adopted. The agreed position shall be chosen in subsequent baseline and impact monitoring.

5.4.2 Noise measurements should be made in accordance with standard acoustical principles and practices in relation to weather conditions.

5.5 Monitoring Location

Construction phase

5.5.1 Seven representative Noise Monitoring Stations (NMSs) are proposed. Their details and locations are shown in **Table 5.1** and **Figure 5-1** respectively.

Table 5.1 Proposed Construction Noise Monitoring Stations

Monitoring Stations	Location
Existing Noise Sensitive Receiver	
NMS1*	The Hong Kong Society for The Blind Workshop and Hostel, 19 Mok Cheong Street
NMS2*	Sky Towers, 38 Sung Wong Toi Road
Planned Noise Sensitive Receiver	
NMS1A*	Sung Wong Toi Road Public Housing Site
NMS2A*	Sung Wong Toi Road CDA Site (mixed use)
NMS3	Kai Tak Area 2B Site 4 (2B4) (residential use)
NMS4	Kai Tak Area 1K Site 3 (1K3) (residential use)
NMS5	Kai Tak Area 1L Site 3 (1L3) (residential use)

* Since NMS1A & NMS2A are planned (i.e. not existing) noise sensitive receivers, noise monitoring should be carried out at NMS1 & NMS2 respectively before the population intake of the planned developments. Once the planned developments are completed and occupied, NMS1A shall replace NMS1, while NMS2A shall replace NMS2.

5.5.2 As NMS3 to NMS5 are planned noise sensitive receivers, monitoring works should be carried out when these residential buildings in Kai Tak Area 2B Site 4, 1K Site 3 and 1L Site 3 have been completed and being occupied.

Operation phase

5.5.3 Three representative NMSs are proposed for measurement for music events held during daytime or evening time periods at the Main Stadium. Their details and locations are shown in **Table 5.2** and **Figure 5-2** respectively.

Table 5.2 Proposed Music Event Noise Monitoring Stations

Monitoring Stations	Location
Planned Noise Sensitive Receiver	
NMS1A	Sung Wong Toi Road Public Housing Site
NMS3	Kai Tak Area 2B Site 4 (2B4) (residential use)
NMS5	Kai Tak Area 1L Site 3 (1L3) (residential use)

5.5.4 Since Kai Tak has many planned and ongoing construction activities, the status and locations of noise sensitive receivers (NSRs) may change after this manual is issued. The ET Leader shall propose alternative monitoring locations taking into account the following considerations and seek approval from the AR and the IEC:

(a) locate close to the major site activities which are likely to have noise impacts;

(b) locate close to the most affected existing NSRs; and

(c) take into account the possibility of minimizing disturbance to occupants at the NSRs during monitoring.

5.6 Baseline Monitoring

5.6.1 Baseline noise measurement shall be conducted to determine the background noise level before commencement of work. Daily measurement of A-weighted levels Leq, L_{10} and L_{90} shall be carried out for at least two weeks. The sample period shall be 30 minutes between 0700 and 1900.

5.6.2 During the baseline monitoring, there should be no major construction or noise generating activities near the monitoring stations. The ET shall propose a monitoring schedule to the IEC so that he can conduct onsite audit to ensure the accuracy of the measurement where necessary.

5.6.3 Alternative baseline NMS that can give representative baseline result may be proposed for AR and IEC's approval with justifications.

5.6.4 In exceptional cases, when insufficient baseline monitoring data or questionable results are obtained, the ET shall liaise with the IEC and AR to agree on an appropriate set of data to be used as a baseline reference.

5.6.5 No baseline noise monitoring is required for operation phase.

5.7 Impact Monitoring

Construction phase

5.7.1 For daytime construction work on normal weekdays (0700-1900 Monday to Saturday), one set of 30-min measurement shall be carried out at each NMS every week based on the measurement procedures under the Noise Control Ordinance-TM. Similar to baseline monitoring, the ET shall submit a monitoring schedule to the IEC beforehand.

5.7.2 If noise exceedance is recorded, additional noise monitoring shall be carried out in accordance with the Event and Action Plan. The monitoring shall be considered completed if the exceedance is being rectified or proved to be from source other than from the Project's construction works. Similar to baseline monitoring, the ET shall submit a monitoring schedule to the IEC for onsite audit of the accuracy of the monitoring result where necessary.

5.7.3 A sample of the noise monitoring data sheet can be found in **Appendix B**.

Operation phase

5.7.4 No noise monitoring is required for sports events. For music events held in the daytime or evening time period, the event organizer shall appoint an appropriate person to measure the noise level at each NMS for every 5 minutes and every 15 minutes period throughout the event. The prevailing background noise level should be measured before and after the event. The background noise level measured before the event will be used to determine the Action Level for the monitoring of that event. A sample of the noise monitoring form can be found in **Appendix B**.

5.7.5 If noise exceedance is recorded at any NMS, the appropriate person should provide immediate feedback to event organiser. The event organiser shall take subsequent agreed action(s) in accordance with the Event and Action Plan.

5.8 Noise Performance Limit

5.8.1 The EIAO-TM sets the statutory limit for noise from construction works. The Noise Control Guideline for Music, Singing and Instrument Performing Activities sets the requirements for noise from music events.

Table 5.3 Action and Limit Levels for Construction Noise

Time Period	Action Level	Limit Level
0700-1900 hours on normal weekdays	When one documented complaint is received	75dB(A)

Table 5.4 Trigger and Action Levels for Noise from Music Events

Time Period	Trigger Level	Action Level
7 a.m. to 11 p.m. during music events (including rehearsal and main event)	Measured in Leq(15min), 7 dB above the background noise level at the NMS (as determined in Section 5.7)	Measured in Leq(5min), 10 dB above the background noise level at the NMS (as determined in Section 5.7)

5.9 Event and Action Plan

5.9.1 Should non-compliance of the noise criteria occur, actions in accordance with the Event and Action Plan in **Appendix C** shall be carried out.

5.10 Mitigation Measures

5.10.1 The EIA proposed a number of mitigation measures. Some examples are provided below.

Construction Phase

(a) Adopt good site practice, such as throttle down or switch off equipment unused or intermittently used between works.

(b) Regular maintenance of equipment to prevent noise emission due to impair.

(c) Position mobile noisy equipment in location and point the noise sources to directions away from NSRs.

(d) Use silencer or muffler for equipment.

(e) Make good use structures for noise screening.

(f) Use Quality Powered Mechanical Equipment (QPME) and quiet equipment which produce lower noise level.

(g) Erect movable noise barriers of 3m height to shed large plant equipment (breaker, backhoe, mobile crane) or hand-held items (poker, wood saw, power rammer & compactor) near low-rise NSR, with special design where necessary, e.g. with noise absorbing material or bend top. Its length should be at least five times greater than its height. The minimum surface density of the movable noise barrier is 10 kg/m^2. It is anticipated that a noise reduction of at least 5 dB can be achieved. Alternatively, acoustic shed/enclosure/silencer (generator, air compressor, concrete pump) or acoustic mat (piling) can be adopted. A noise reduction of 10 dB can be achieved.

(h) Carry out regular site inspection to audit the implementation of mitigation measures.

(i) Carry out noise monitoring and audit throughout the construction period.

Operational Phase

(a) The structure of the Main Stadium shall be soundproofing and complete. The entrances of the stadium shall have special acoustic design (e.g. double acoustic door) such that the soundproofing performance of the structure is not compromised.

(b) The retractable roof, which forms part of the design of the Main Stadium, shall comprise of four panels of equal size along the North-South direction. The roof will be closed under circumstances described in the Event and Action Plan.

(c) There should be no air-gap between the base structure of the stadium and the fixed roof to avoid noise leakage. Rubber bearing or other devices with similar function shall be used to avoid the noise leakage between the fixed roof and the retractable roof.

(d) A distributed public address system shall be adopted with the loudspeakers directed towards spectator stand.

(e) A cover shall be built over the spectator stand of the Public Sports Ground. To increase the soundproofing performance of the cover, sound absorption panels shall be attached underneath the entire cover.

(f) For noise from fixed plant of the ventilation system, partial enclosures and silencers can effectively reduce the noise level by 10-20dB.

(g) Crowd management measures should be adopted for major events which finish at or later than 10:30 p.m. Crowd shall be managed and dispersed according to the pre-determined routes and towards the future Kai Tak Station and To Kwa Wan Station with minimal noise nuisance.

(h) No organised events should be held concurrently in the Main Stadium and the Public Sports Ground.

5.10.2 Detailed mitigation measures are listed out in the EMIS in **Appendix A**. Implementation status and the effectiveness of these measures shall be audited through regular site inspection.

6 WATER QUALITY IMPACT

6.1 Introduction

6.1.1 Potential water pollution sources from construction and operation of MPSC have been identified including construction runoff, sewage, possible contamination due to oil and grease, use of fertilizers, pesticides and waste construction materials. Sewage generated during construction and operation will be disposed offsite and ultimately to Stonecutters Island Sewage Treatment Works. Other sources of polluted water will be intercepted for reuse, or disposal as chemical waste, or discharge into stormwater system. It can be concluded that there is no significant water quality impact to the sensitive receivers provide that the mitigation measures are properly implemented during construction and operation phases.

6.1.2 As mitigation is required, site audit should be carried out to ensure the effectiveness of the mitigation measures.

6.2 Construction Phase

6.2.1 No off-site marine water quality impact would be expected from the Project and there would not be any marine-based works for the proposed works. Subject to the requirements in the effluent discharge licence to be issued under the Water Pollution Control Ordinance, regular water quality monitoring will be carried out at representative water discharge locations to ensure that relevant water quality standard can be met.

6.2.2 Weekly site audit should be carried out to check the implementation status of the recommended water quality impact mitigation measures throughout construction period.

6.3 Operation Phase

6.3.1 The sewerage and storm water system should be designed and constructed to separate the sewage from the uncontaminated surface runoff. Rainwater harvesting system shall be adopted for the Project as far as practicable. Provisions shall be made to collect the contaminated surface runoff, such as the use of interception system and oil and petrol interceptors. As the Project area would be serviced by public sewers, no unacceptable water quality impact is anticipated. No operational phase monitoring or audit is proposed.

6.3.2 In the case when natural turf is adopted in the Main Stadium or the Public Sports Ground, the operator shall prepare a Stormwater Re-use Management Plan stating the management of fertilizers and pesticides following the Pesticide Ordinance, LCSD and AFCD guidelines, safe and proper use and handling of fertilizers and pesticides, the reuse of surface runoff and monitoring and audit requirements, so that the application of fertilizer and pesticide are properly controlled and implemented in order to protect the Victoria Harbour Water Control Zone. The management plan shall include the management and operation of the intercepting system, stating that the storage tanks should be emptied prior to application of pesticides and fertilizers. It is necessary to include selection of sampling points at suitable locations in the management plan. The content of the Stormwater Re-use Management Plan is listed in **Appendix F**.

6.4 Mitigation Measures

6.4.1 The EIA proposed a number of construction phase mitigation measures. Some examples are provided below.

a) Provide drainage channels in construction site

b) Register as a chemical waste producer

c) Provide sufficient number of chemical toilets if necessary and employ licensed contractor for regular clean-up and maintenance

d) Cover slope and loose materials with tarpaulin before rainstorm and inspect the area afterwards

e) Cover manhole to prevent silty runoff from entering the foul sewer

6.4.2 Examples of operational phase mitigation measures are provided below:

a) Separate sewerage and stormwater systems shall be properly maintained

b) Oil interceptor shall be provided in car parking areas

c) All manholes, sand traps and oil interceptors shall be cleaned and maintained regularly

d) Rubbish and litter shall be cleaned regularly

e) Use artificial turf. If natural turf is used and the application of fertilizers and pesticides is needed, the surface water from the turf that may contain residual fertilizers and pesticides shall be intercepted for reuse or treatment.

6.4.3 Detailed mitigation measures are listed out in the EMIS in **Appendix A**. Implementation status and the effectiveness of these measures shall be audited through regular site inspection.

7 SEWERAGE AND SEWAGE TREATMENT IMPLICATIONS

7.1 Introduction

7.1.1 Based on the estimated sewage flow of the Project, and the sewerage and sewage treatment capacity in Kai Tak Development area, no adverse sewerage impact caused by the Project is anticipated. No monitoring or audit is proposed.

8 WASTE MANAGEMENT IMPLICATIONS

8.1 Introduction

8.1.1 Wastes generated during the construction phase includes Construction and Demolition (C&D) materials from excavation, site formation and demolition, bentonite from piling works, chemical waste from equipment maintenance and general refuse from workers. It is the Contractor's responsibility to ensure all the waste arising from the Project is handled, stored and disposed of in accordance with good waste management practices, relevant legislation and waste management guidelines. Provided that the waste is handled, transported and disposed of using approved methods and that the recommended good site practices are strictly followed, adverse environmental impact is not anticipated. General refuse and chemical waste will be generated from maintenance of equipment during operational phase.

8.2 Mitigation Measures

8.2.1 Examples of construction and operational phases mitigation measures are given as follows and details are listed out in the EMIS in **Appendix A**. Implementation status and the effectiveness of these measures shall be audited through regular site inspection.

a) Adopt good site practice such as providing sufficient waste collection points and regular removal.

b) Allocate area for proper storage and sorting of construction materials to prevent contamination.

c) General refuse should be stored in enclosed bins or compaction units separate from C&D materials. A reputable waste collector should be employed by the contractor to remove general refuse from the site, separately from C&D materials.

d) An enclosed and covered area is preferred to reduce the occurrence of 'windblown' light material.

e) If chemical wastes were to be produced at the construction site, the Contractor would be required to register with the EPD as a Chemical Waste Producer, and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.

f) Minimize unnecessary waste generation by means of promotion materials, such as wider use of information technology and announcements.

8.3 Environmental Audit and Monitoring

Construction phase

8.3.1 The contractor should formulate waste management measures on waste minimization, storage, handling and disposal in a Waste Management Plan as part of Environmental Management Plan in accordance with the Environment, Transport and Works Bureau Technical Circular (Works) No. 19/2005. Weekly site audit should be conducted to check the implementation status of the recommended waste management measures throughout construction period.

Operation Phase

8.3.2 During the operational phase of the Project, no adverse waste impact is expected if the mitigation measures are implemented properly. No monitoring or audit is required.

9 LAND CONTAMINATION

9.1 Introduction

9.1.1 The land contamination issues in the Project Site have been reviewed and assessed. Basically, the land contamination previously identified in the North Apron had been cleaned up and the site is considered clean for the intended use. Also, there will be no use with potential land contamination in the Project site. Environmental monitoring in relation to land remediation is not required.

10 TERRESTRIAL ECOLOGICAL IMPACT

10.1 Introduction

10.1.1 The EIA report assessed the ecological impact which would be induced by the Project. With proper implementation of mitigation measures, no significant impact on ecology is anticipated. This chapter outlines the proposed mitigation measures and the environmental monitoring and audit programme.

10.2 Mitigation Measures

10.2.1 Mitigation measures proposed for air quality, noise, water quality and landscape and visual impacts are also applicable to terrestrial ecology. In addition, the following mitigation measures should be implemented:

(a) Erection of hoarding, fencing or provision of clear demarcation of work zones; and

(b) Designation of areas for placement of equipment, building materials and wastes which should be away from drainage channels

10.2.2 With proper implementation of mitigation measures, un-acceptable terrestrial ecological residual impact is not expected. Detailed mitigation measures are listed out in the EMIS in **Appendix A**.

10.3 Environmental Monitoring & Audit

10.3.1 Implementation status and the effectiveness of these measures shall be audited through regular site inspection during the construction phase. No specific environmental monitoring programme on terrestrial ecology for construction and operational phases are required.

11 LANDSCAPE AND VISUAL IMPACT

11.1 Introduction

11.1.1 EM&A for landscape and visual and glare resources should be undertaken during the design, construction and operational phases of the Project. This is particularly important at detail design stage since many potential adverse landscape, visual and glare impacts need to be addressed prior to construction phase. The further design, implementation and maintenance of landscape and glare mitigation measures needs to be checked to ensure that they are fully realised and that potential conflicts between the proposed landscape measures and any other project works and operational requirements are resolved at the earliest possible date and without compromise to the intention of the mitigation measures. In addition, implementation of the recommended mitigation measures will be monitored through the site audit programme.

11.2 Audit Requirements

11.2.1 The design, implementation and maintenance of mitigation measures should be checked regularly to ensure that they are fully realised and compliant with the intended aims of the measures. Any potential conflicts among the proposed mitigation measures, the project works, and operational requirements should also be identified and resolved early.

11.3 Design Phase Audit

11.3.1 The landscape and glare measures proposed to mitigate the landscape, visual and glare impacts of the scheme should be embodied into the detailed landscape and engineering design specifications, drawings and contract documents including the protection of identified valuable landscape resources and the requirements for successful establishment and growth of new tree planting and shrubs, so as to ensure the effectiveness of the mitigation measures described above. A Registered Landscape Architect shall be appointed by the Project Proponent independently to check the landscape design to ensure that the proposed landscape measures and additional measures (if required), are fully incorporated for mitigating the landscape and visual impacts and for resolving any potential conflicts with civil engineering, geo-technical, structural, lighting, signage, drainage, underground utility and operational requirements prior to construction.

11.3.2 The design phase EM&A requirements for landscape and visual resources comprise the audit of detailed landscape works specifications to be prepared during the detailed design stage together with ensuring that the design is sensitive to landscape and visual impacts and that landscape resources are retained as far as practicable. Monitoring of design works against the recommendations of the landscape and visual impact assessments should be undertaken as and when the designs are produced to ensure that they fulfil the intentions of the mitigation measures.

11.3.3 Landscape proposals and details of architectural design, chromatic treatment and visual and landscape mitigation measures for all above ground structures, including stadia and ancillary buildings, should be submitted to Planning Department for review to demonstrate that they would be sensibly designed in a manner that

responds to the existing urban context. The proposals should be submitted well in advance of the commencement of project construction.

11.3.4 The Registered Landscape Architect shall review the designs as and when they are prepared and liaise with the Project Engineer and Project Landscape Architect to ensure all measures have been incorporated in the design in a format that can be specified to the Contractor for implementation. In the event of a non-conformity, the Event and Action plan as detailed in **Appendix C** should be followed.

11.4 Construction and Operational Phase Audit

11.4.1 A specialist landscape contractor should be employed by the Project Proponent prior to the undertaking of the main contract in order to facilitate the advance preparation and relocation of any trees in conflict with the proposed works. A lead in time of up to 18 months may be necessary in this advance works period in order to prepare trees suitably for transplantation should it be necessary.

11.4.2 A specialist landscape sub-contractor shall be employed by the works Contractor for the implementation of tree and soft landscape works and subsequent maintenance operations during a 12 month establishment period. The planting should commence during the construction contract and monitoring of the planting establishment should be undertaken for a 12 month period through the first operational year of the project.

11.4.3 All measures undertaken by the advance works specialist contractor as well as those by the works contractor and the specialist landscape sub-contractor during the construction phase and first year of the operational phase shall be audited by a Registered Landscape Architect, as a member of the Environmental Team (ET), on a regular basis to ensure compliance with the intended aims of the measures. Site inspections should be undertaken once every two weeks throughout the construction period and once every two months during the operational phase. The broad scope of the audit is detailed below but should also be undertaken with reference to the more specific checklist provided in **Table 11.1**. Operational phase auditing will be restricted to the 12 months of the establishment of the landscape works and thus only the items below concerning this period are relevant to the operational phase.

- the extent of the agreed works areas should be regularly checked during the construction phase. Any trespass by the contractor outside the limit of the works, including any damage to existing trees shall be prohibited;
- the progress of the engineering works should be regularly reviewed on site to identify the earliest practical opportunities for the landscape works to be undertaken;
- the methods of protecting vegetation proposed by the contractor are acceptable and enforced;
- all landscape works are carried out in accordance with the specifications;
- the planting of new trees, shrubs, groundcover, climbers, ferns, grasses and other plants, together with the replanting of any transplanted trees are carried out properly and during the appropriate season;

- all necessary horticultural operations and replacement planting are undertaken at the earliest possible opportunity throughout the Establishment Period, to ensure the healthy establishment and growth of both transplanted trees and all newly established plants.

Table 11.1 Construction/Operational Phase Audit Checklist

Area of Works	Items to be Monitored
Advance planting	monitoring of implementation and maintenance of planting, and against possible incursion, physical damage, fire, pollution, surface erosion, etc.
Clearance of existing vegetation	identification and demarcation of trees / vegetation to be cleared, checking of extent of works to minimise damage, monitoring of adjacent areas against possible incursion, physical damage, fire, pollution, surface erosion, etc.
Plant supply	monitoring of operations relating to the supply of specialist plant material (including the collecting, germination and growth of plants from seed) to ensure that plants will be available in time to be used within the construction works.
Soiling, planting, etc.	monitoring of implementation and maintenance of soiling and planting works and against possible incursion, physical damage, fire, pollution, surface erosion, etc.
Decorative treatment of site hoarding	implementation and maintenance, to ensure compliance with agreed designs and check that it matches the surrounding environment and does not cause visual intrusion.
Architectural treatment of structures, retaining walls, elevated road structures and other engineering works.	implementation and maintenance of mitigation measures, to ensure compliance with agreed designs.
Establishment Works	monitoring of implementation of maintenance operations during Establishment Period

11.4.4 In the event of non-compliance the responsibilities of the relevant parties is detailed in the Event and Action Plan provided in **Appendix C**.

11.5 Mitigation and Enhancement Measures

11.5.1 The Landscape and Visual Impact Assessment of the EIA report recommended a series of mitigation and enhancement measures to ameliorate the landscape and visual impacts of the Project. The measures include the following:

Table 11.2 Recommended Construction Phase Landscape and Visual Mitigation/Enhancement Measures

ID No.*	Type	Landscape / Visual Mitigation Measure	Funding / Implementation	Management / Maintenance
CM1	*Visual / Glare*	**Controlled Night-Time Lighting** (to mitigate adverse visual and glare impact)	Project Proponent	Contractor
All security floodlights for construction sites shall be equipped with adjustable shield, frosted diffusers and reflective covers, and be carefully controlled to minimize light pollution and night-time glare to nearby receivers				
CM2	*Visual*	**Temporary Landscape Treatments** (to mitigate adverse visual impact)	Project Proponent	Contractor
Including vertical greening, pot planting and application of green roofing to site offices, Hydroseeding of site formation areas and short term greening of site boundaries and land not immediately developed.				
CM3	*Visual*	**Decoration of Hoarding** (to mitigate adverse visual impact)	Project Proponent	Contractor
Erection of screen hoardings should be designed appropriately to be compatible with the existing urban context, either brightly and imaginatively or with visually unobtrusive design and colours where more appropriate.				

Table 11.3 Recommended Operational Phase Landscape and Visual Mitigation / Enhancement Measures

ID No.*	Type	Landscape / Visual Mitigation Measure	Funding / Implementation	Management / Maintenance
OM1	*Landscape Resources / Visual*	**Greening of Walkways, Ramps and Decks** (to mitigate against potential deterioration of landscape resources and visual amenity)	Project Proponent	Facility Management Departments
Greening shall be incorporated into at-grade areas and as raised planting areas on pedestrian walkways, ramps and decks.				
OM2	*Landscape Resources / Visual*	**Green Roofs and Vertical Greening** (to mitigate against lost landscape resources and provide visual amenity)	Project Proponent	Facility Management Departments
Green roofs and vertical greening should be provided to all built structures where feasible and opportunities should be maximised for incorporation on covered walkways and shade structures.				
OM3	*Landscape Resources*	**Compensatory Tree Planting** (to mitigate against lost landscape resources)	Project Proponent	Facility Management Departments
A new parkland area is created in the project development to be used for the implementation of compensatory tree planting to offset the net loss of key landscape resources. It is recommended that 340 trees be planted in this regard and a compensatory tree planting proposal outlining the locations of tree compensation will be submitted separately in seeking relevant government department's approval in accordance with DEVB TC No.7/2015.				
OM4	*Landscape Character / Visual*	**Responsive Building Design** (to enhance landscape character and mitigate against visual inconformity)	Project Proponent	Facility Management Departments
All above ground structures, including, stadia, hotel and ancillary buildings, shall be sensitively designed in a manner that responds to the existing and planned urban context in terms of scale, height and bulk (visual weight) as well as use of appropriate building materials and colour to create a cohesive visual mass. Subdued tones should be considered for the colour palette with non-reflective finishes to reduce glare effect.				
OM5	*Landscape Character / Visual*	**Integration of Development Boundaries** (to enhance landscape character and mitigate against visual inconformity)	Project Proponent	Facility Management Departments
The project boundaries shall be without fences or barriers, providing seamless physical and visual integration with the surrounding public spaces. Careful consistency of levels and materials shall create and indefinite development edge, integrating the development into the future Sung Wong Toi Park, the Station Square Open Space Corridor and the Metropark.				

ID No.*	Type	Landscape / Visual Mitigation Measure	Funding / Implementation	Management / Maintenance
OM6	*Landscape Character / Visual*	**Integration with Dining Cove and Waterfront Promenade** (to enhance landscape character and mitigate against visual inconformity)	Project Proponent	Facility Management Departments
Careful design consideration of the interface of the raised stadium deck at 13mPD with that of the Waterfront Promenade at 5mPD shall be undertaken. Visual articulation and physical penetration of the development at promenade level shall be created by avoiding a continuous boundary wall. Furthermore integrated design of the adjacent proposed retail development shall ensure visual cohesion and an improved character setting.				
OM7	*Landscape Resources/ Landscape Character/ Visual*	**Light Penetration Under Deck** (to enable resource mitigation, enhance landscape character and mitigate against visual sterility)	Project Proponent	Facility Management Departments
The landscape deck shall be cut back and light wells incorporated to maximise natural light penetration to at-grade covered areas under the deck, to allow for enhanced visual amenity, improved utilisation of ground space and significant incorporation of both horizontal and vertical greening at ground level.				
OM8	*Landscape Resources/ Landscape Character/ Visual*	**Urban Park** (to mitigate against lost landscape resources, provide visual amenity and enhance development landscape character)	Project Proponent	Facility Management Departments
Incorporation of a new park within the development area shall facilitate the visual corridors outlined by the urban design framework to create an urban light well, protecting longer views and providing visual amenity to nearby receivers. The park shall maximise tree and shrub planting with emphasis on incorporating native species and integrate facilities primarily for the regular use of adjacent residential communities.				
OM9	*Visual*	**Bespoke Amenity Area Lighting** (to mitigate against visual impact from glare and enhance visual amenity)	Project Proponent	Facility Management Departments
Development of a bespoke project amenity area lighting scheme shall be incorporated that minimises general area light pollution, provides thematic lighting, responds to user demand intensity and minimises pavement obstruction and visual clutter. The following shall be practically considered: • mounting height and direction of fixtures to avoid sensitive receivers; • reflectance so as to avoid glare effect; • incorporation of low level downlighting integrated onto building facades, walls and structures; • utilising area movement sensors; • programming of operation for minimised utilisation.				

12 CULTURAL HERITAGE IMPACT

12.1 Introduction

12.1.1 No EM&A programme is required during the construction and operation phases of the proposed works as there are no adverse impacts on known sites of archaeological interest, potential areas of archaeological interest or built heritage.

13 ENVIRONMENTAL AUDIT

13.1 Introduction

13.1.1 While a number of mitigation measures are proposed in the EIA report, regular site inspection is recommended for direct observation of the implementation progress to ensure they are properly implemented. Through a well-established action and reporting system, additional pollution control measures to identified environmental deficiency can be proposed and carried out at early stage. Site inspection is a useful way to enforce the environmental protection requirements onsite during construction.

13.2 Site Inspection

13.2.1 The ET Leader should be responsible for the site environmental audit. He should design the environmental site inspection, deficiency and action reporting system and conduct regular and ad-hoc site inspection. He should prepare a proposal on the site inspection and reporting methodology to the Contractor for agreement and AR for approval.

13.2.2 Weekly site inspection shall be performed by the ET within the site where environmental protection measures will be implemented and also offsite where the construction activities may directly or indirectly be impacted upon. Bi-weekly site inspection shall also be performed for landscape and visual impacts. The following shall be noted during the inspection:

a) environmental protection and pollution control mitigation measures proposed in the EIA, contract specification, EP and this Manual

b) works progress and programme

c) ongoing results of the EM&A programme

d) individual works methodology proposals (including associated pollution control measures)

e) relevant environmental protection and pollution control laws

f) previous site inspection results

13.2.3 The Contractor shall inform the ET on any update of all relevant information on the construction contract necessary for him to carry out the site inspection. After each site inspection, the ET shall submit an inspection report to the Contractor and the AR within 24 hours. It should include inspection result on any identification of environmental deficiency and corresponding mitigation recommendations for taking immediate rectification action. Follow up of identified problem from the previous inspection shall also be included. The Contractor shall report on any rectification actions after the site inspection in accordance to the procedures and timeframe proposed by the ET in the environmental site inspection, deficiency and action reporting system.

13.2.4 If significant environmental issue is identified, additional site inspection shall be performed. This may also be required upon receipt or during investigation of environmental complaint in accordance to the Action Plan for environmental monitoring and audit.

13.3 Compliance with Legal and Contractual Requirements

13.3.1 The environmental protection and pollution control laws in Hong Kong and project contract stipulate environmental protection and pollution control requirement for construction activities.

13.3.2 As such, the Contractor should submit all work method statements for AR's approval and ET Leader's review on environmental compliance with the contractual requirements. Sufficient environmental protection and pollution control measures shall be demonstrated in the method statement.

13.3.3 The ET Leader should also check that the work progress and programme can comply with legal requirement on environmental terms and to prevent violation in the future.

13.3.4 The Contractor shall regularly copy relevant documents to the ET for checking, including but not limited to updated Work Progress Reports, updated Works Programme, application letters for different licence/permits under the environmental protection laws, and all valid licences/permits. The site diary shall also be available for inspection upon ET Leader's request.

13.3.5 Should any non-compliance with the contractual and legislative requirements is identified after reviewing the documents, the ET should notify the AR and Contractor so that follow-up actions can be taken. He should also inform the AR and Contractor if the current status on licence/permit application and any environmental protection and pollution control preparation works may not meet the works programme or the construction work may lead to potential violation of environmental protection and pollution control requirements in due course.

13.3.6 The Contractor shall carry out remedial actions immediately upon receipt of ET's advice. The AR shall check with the Contractor to ensure that appropriate actions has been taken accordingly and can satisfy the environmental protection and pollution control requirement.

13.4 Environmental Complaints

13.4.1 Upon receipt of complaint, the ET shall be notified and investigation work shall be undertaken. He shall follow the procedures as listed below:

a) log complaint and date of receipt on to the complaint database

b) investigate the complaint to determine its validity, and to identify if the problem is caused by work activities

c) if the complaint is proved valid and due to works, formulate corresponding mitigation measures with the IEC

d) advise the Contractor on any rectification work required

e) evaluate the mitigation implementation progress and the updated situation

f) if the complaint is transferred from the EPD, submit an interim report on the complaint investigation and remediation progress to the EPD within the time frame assigned by the EPD

g) conduct additional monitoring and audit to verify the situation if necessary, and to determine any valid reason that the complaint will not recur

h) respond to the complainant by reporting the investigation result and follow-up actions taken (within the time frame set by the EPD if the complaint is made by the EPD)

i) record the complaint, investigation, the subsequent actions and results in the monthly EM&A reports

13.4.2 The Contractor and AR should provide necessary information and assistance to the ET for completing the investigation work. The Contractor shall implement any identified mitigation measures immediately and the AR shall ensure that the work has been carried out accordingly.

14 REPORTING

14.1 Introduction

14.1.1 The ET shall prepare baseline monitoring report, monthly EM&A reports, quarterly EM&A report and final EM&A report. They shall be submitted to the EPD in paper and electronic formats in a timely manner.

14.2 Baseline Monitoring Report

14.2.1 Baseline monitoring of air quality and noise surveys are proposed. The baseline monitoring report shall be submitted within 10 workings days after completion of the monitoring work. The recipients include the IEC, Contractor and AR. It should first be verified by the IEC before formal submission to the EPD. The ET shall liaise with the relevant parties on the number of copies required. The report format and monitoring data format shall be agreed with the EPD prior to submission. The baseline monitoring report generally includes but not limited to the following:

a) up to half a page executive summary;

b) brief project background information;

c) drawings showing locations of the baseline monitoring stations;

d) monitoring results (in both hard and soft copies) together with the following information:

   a. monitoring methodology;

   b. equipment used and calibration details;

   c. parameters monitored;

   d. monitoring locations (and depth);

   e. monitoring date, time, frequency and duration;

   f. quality assurance (QA) / quality control (QC) results and detection limits;

e) details of influencing factors, including:

   a. major activities, if any, being carried out on the site during the period;

   b. weather conditions during the period; and

   c. other factors which might affect results;

f) determination of the Action and Limit Levels for each monitoring parameter and statistical analysis of the baseline data;

g) revisions for inclusion in the EM&A Manual; and

h) comments, recommendations and conclusions.

14.3 EM&A Report

14.3.1 The ET Leader shall prepare monthly EM&A reports which summarize the result and findings in all EM&A work conducted in accordance to the Manual, such as monitoring and site inspection. It shall be submitted within 10 workings days of the

end of each reporting month, with the first report due in the month after construction commences. The recipients include the IEC, Contractor, AR and the EPD. It should first be verified by the IEC before formal submission. The ET shall liaise with the relevant parties on the exact number of copies required and the report format for both paper and electronic format prior to submission of the first EM&A report.

14.3.2 As there may be changes in surrounding environment and nature of work in progress, the ET Leader shall review and update the number and location of monitoring stations and parameters to be monitored every 6 months or on as needed basis.

14.4 First EM&A Report

14.4.1 The first EM&A report generally includes but not limited to the following:

a) Executive summary (1-2 pages):
   a. breaches of Action and Limit levels;
   b. complaint log;
   c. notifications of any summons and successful prosecutions;
   d. reporting changes; and
   e. future key issues.

b) Basic project information:
   a. project organisation including key personnel contact names and telephone numbers;
   b. construction programme;
   c. management structure, and
   d. works undertaken during the month

c) Environmental status:
   a. works undertaken during the month with illustrations (such as location of works); and
   b. drawings showing the project area, any environmental sensitive receivers and the locations of the monitoring and control stations (with co-ordinates of the monitoring locations)

d) A brief summary of EM&A requirements including:
   a. all monitoring parameters;
   b. environmental quality performance limits (Action and Limit levels);
   c. Event and Action Plans;
   d. environmental mitigation measures, as recommended in the project EIA Report; and
   e. environmental requirements in contract documents;

e) Implementation status:

   a. advice on the implementation status of environmental protection and pollution control / mitigation measures, as recommended in the project EIA Report;

f) Monitoring results (in both hard and CD copies) together with the following information:

   a. monitoring methodology;

   b. equipment used and calibration details;

   c. parameters monitored;

   d. monitoring locations;

   e. monitoring date, time, frequency, and duration;

   f. weather conditions during the period;

   g. major activities being carried out on site during the period;

   h. any other factors which might affect the monitoring results; and

   i. QA/QC results and detection limits;

g) Report on non-compliance, complaints, and notifications of summons and successful prosecutions:

   a. record of all non-compliance (exceedances) of the environmental quality performance limits (Action and Limit levels);

   b. record of all complaints received (written or verbal) for each media, including locations and nature of complaints investigation, liaison and consultation undertaken, actions and follow-up procedures taken, results and summary;

   c. record of all notification of summons and successful prosecutions for breaches of current environmental protection / pollution control legislation, including locations and nature of the breaches, investigation, follow-up actions taken, results and summary;

   d. review of the reasons for and the implications of non-compliance, complaints, summons and prosecutions including review of pollution sources and working procedures; and

   e. description of the actions taken in the event of non-compliance and deficiency reporting and any follow-up procedures related to earlier non-compliance;

h) Others

   a. an account of the future key issues as reviewed from the works programme and work method statements;

   b. advice on the solid and liquid waste management status; and

   c. comments (for examples, effectiveness and efficiency of the mitigation measures), recommendations (for example, any improvement in the EM&A programme) and conclusions.

14.5 Subsequent EM&A Reports

14.5.1 Subsequent EM&A report generally includes but not limited to the following:

a) Executive summary (1 - 2 pages):

a. breaches of Action and Limit levels;

b. complaints log;

c. notifications of any summons and successful prosecutions;

d. reporting changes; and

e. future key issues.

b) Basic project Information:

a. project organization including key personnel contact names and telephone numbers;

b. programme;

c. management structure; and

d. works undertaken during the month.

c) Environmental status:

a. works undertaken during the month with illustrations (such as location of works etc.); and

b. drawing showing the project area, any environmental sensitive receivers and the locations of the monitoring and control stations.

d) Implementation status:

a. advice on the implementation status of environmental protection and pollution control / mitigation measures, as recommended in the project EIA;

e) Monitoring results (in both hard and diskette copies) together with the following information:

a. monitoring methodology;

b. equipment used and calibration details;

c. parameters monitored;

d. monitoring locations;

e. monitoring date, time, frequency, and duration;

f. weather conditions during the period;

g. major activities being carried out on site during the period;

h. any other factors which might affect the monitoring results; and

i. QA / QC results and detection limits.

f) Report on non-compliance, complaints, and notifications of summons and successful prosecutions:

a. record of all non-compliance (exceedances) of the environmental quality performance limits (Action and Limit levels);

b. record of all complaints received (written or verbal) for each media, including locations and nature of complaints investigation, liaison and consultation undertaken, actions and follow-up procedures taken, results and summary;

c. record of all notification of summons and successful prosecutions for breaches of current environmental protection / pollution control legislation, including locations and nature of the breaches, investigation, follow-up actions taken, results and summary;

d. review of the reasons for and the implications of non-compliance, complaints, summons and prosecutions including review of pollution sources and working procedures; and

e. description of the actions taken in the event of non-compliance and deficiency reporting and any follow-up procedures related to earlier non-compliance.

g) Others

a. an account of the future key issues as reviewed from the works programme and work method statements;

b. advice on the solid and liquid waste management status; and

c. comments (for examples, effectiveness and efficiency of the mitigation measures), recommendations (for example, any improvement in the EM&A programme) and conclusions.

h) Appendix

a. Action and Limit levels;

b. graphical plots of trends of monitored parameters at key stations over the past four reporting periods for representative monitoring stations annotated against the following:

i. major activities being carried out on site during the period;

ii. weather conditions during the period; and

iii. any other factors that might affect the monitoring results.

c. monitoring schedule for the present and next reporting period;

d. cumulative statistics on complaints, notifications of summons and successful prosecutions; and

e. outstanding issues and deficiencies.

14.6 Quarterly EM&A Summary Reports

14.6.1 The quarterly EM&A summary report shall consist of around 5 pages (3 pages of text and tables and 2 pages of figures). It generally includes but not limited to the following:

(a) up to half a page executive summary;

(b) basic project information:

a. a synopsis of the project organisation, programme;

b. contacts of key management;

c. proponents' contacts and any hotline telephone number for the public to make enquiries; and

d. a synopsis of works undertaken during the quarter.

(c) a brief summary of EM&A requirements:

a. monitoring parameters;

b. environmental quality performance limits (Action and Limit Levels); and

c. environmental mitigation measures, as recommended in the EIA Report;

(d) environmental status:

a. a synopsis of work undertaken during the quarter;

b. drawings showing the project area, any environmental sensitive receivers and the locations of the monitoring and control stations;

(e) implementation status:

a. advice on the implementation status of environmental protection and pollution control/mitigation measures, as recommended in the EIA report, summarised in the updated implementation schedule;

(f) graphical plots of the trends of monitored parameters over the past 4 months (the last month of the previous quarter and the present quarter) for representative monitoring stations annotated against;

a. the major activities being carried out on site during the period;

b. weather conditions during the period; and

c. any other factors which might affect the monitoring results;

(g) advice on the solid and liquid waste management status;

(h) summary of non-compliance

d. a summary of non-compliance (exceedances) of the environmental quality performance limits (Action and Limit Levels);

e. a brief review of the reasons for and the implications of non-compliance including review of pollution sources and working procedures;

f. a summary description of the actions taken in the event of non-compliance and any follow-up procedures related to earlier non-compliance;

g. a summary record of all complaints received (written or verbal) for each media, liaison and consultation undertaken, actions and follow-up procedures taken;

(i) comments (e.g. effectiveness and efficiency of the mitigation measures), recommendations (e.g. any improvement in the EM&A programme) and conclusions for the quarter; and

(j) Project Proponent's contacts and any hotline telephone number for the public to make enquiries.

14.7 Final EM&A Report for Construction Phase

14.7.1 The "Guidelines for Development Projects in Hong Kong Environmental Monitoring and Audit" recommends that the termination of EM&A programme shall be determined on the following basis

i. Completion of construction activities and insignificant environmental impacts of the remaining outstanding construction works;

ii. Trends analysis to demonstrate the narrow down of monitoring exceedances due to construction activities and, return of ambient environmental conditions in comparison with baseline data; and

iii. No environmental complaint and prosecution involved.

14.7.2 Prior to the proposed termination, the proposed termination may be required to consult related local community and should be endorsed by the IEC, AR and the Project Proponent or the Permit Holder prior to final approval from the Director of Environmental Protection.

14.7.3 A Final EM&A report shall be prepared summarizing the results and findings of the EM&A works throughout the construction period. It should be submitted within 14 working days after project completion. It generally includes but not limited to the following:

(a) An executive summary;

(b) Drawings showing the project area, any environmental sensitive receivers and the locations of the monitoring and control stations;

(c) Basic project information:

a. a synopsis of the project organisation;

b. contacts of key management; and

c. a synopsis of work undertaken during the entire construction period.

(d) A brief summary of EM&A requirements:

a. monitoring parameters;

b. environmental quality performance limits (Action and Limit levels); and

c. environmental mitigation measures, as recommended in the project EIA Report;

d. Event and Action Plans.

(e) A summary of the implementation status of environmental protection and pollution control/mitigation measures, as recommended in the project EIA Report, summarised in the updated implementation schedule;

(f) Graphical plots of the trends of monitored parameters over the construction period for representative monitoring stations, including the post-project monitoring annotated against:

a. the major activities being carried out on site during the period;

b. weather conditions during the period; and

c. any other factors which might affect the monitoring results.

(g) Summary of non-compliance:

a. a summary of non-compliance (exceedances) of the environmental quality performance limits (Action and Limit levels);

b. a brief review of the reasons for and the implications of non-compliance including review of pollution sources and working procedures as appropriate;

c. a summary description of the actions taken in the event of non-compliance;

d. a summary record of notifications of summons and successful prosecutions for breaches of the current environmental protection/pollution control legislations, locations and nature of the breaches, investigation, follow-up actions taken and results;

(h) A review of the validity of EIA predictions through comparison with the monitoring data and identification of shortcomings in EIA recommendations;

(i) A review of the effectiveness and cost-effectiveness of the monitoring methodology

(j) A review of the effectiveness and efficiency of the mitigation measures and of the performance of the overall EM&A programme;

(k) Recommendations for improvement;

(l) Evaluation on the return of environmental condition the baseline or predicted conditions in the EIA Report; and

(m) Conclusion on the environmental acceptability of the project.

14.8 Data Keeping

14.8.1 The ET shall keep the site documents (such as monitoring field records, site inspection forms etc.) in order and make available for inspection upon request. These documents do not form part of the EM&A report. The monitoring data should also be input into electronic format for checking upon request. All documents and data shall be kept for at least one year after completion of the construction contract.

14.9 Interim Notification of Environmental Quality Limit Exceedances

14.9.1 Should any exceedance in environmental quality performance limit be recorded, the ET Leader should immediately inform the IEC, AR, Contractor and EPD as appropriate in accordance to the Event and Action Plan. He should advise to the IEC, AR, Contractor and EPD the investigation result, remediation actions performed, effectiveness of the measures and proposal of further actions required. A sample interim notification template can be found in **Appendix D**.

15 CONCLUSION

15.1.1 This Manual lists out the EM&A requirements for environmental parameters air quality, hazard to life, noise, water quality, sewerage and sewage treatment, waste management, land contamination, ecology, landscape and visual and cultural heritage. The EM&A programme covers the design, construction and operational phases of the Project to monitor the environmental impacts on the neighbouring sensitive receivers. Regular monitoring and/or site inspection are recommended under different phases. The following table summarizes the monitoring requirements for each environmental aspect:

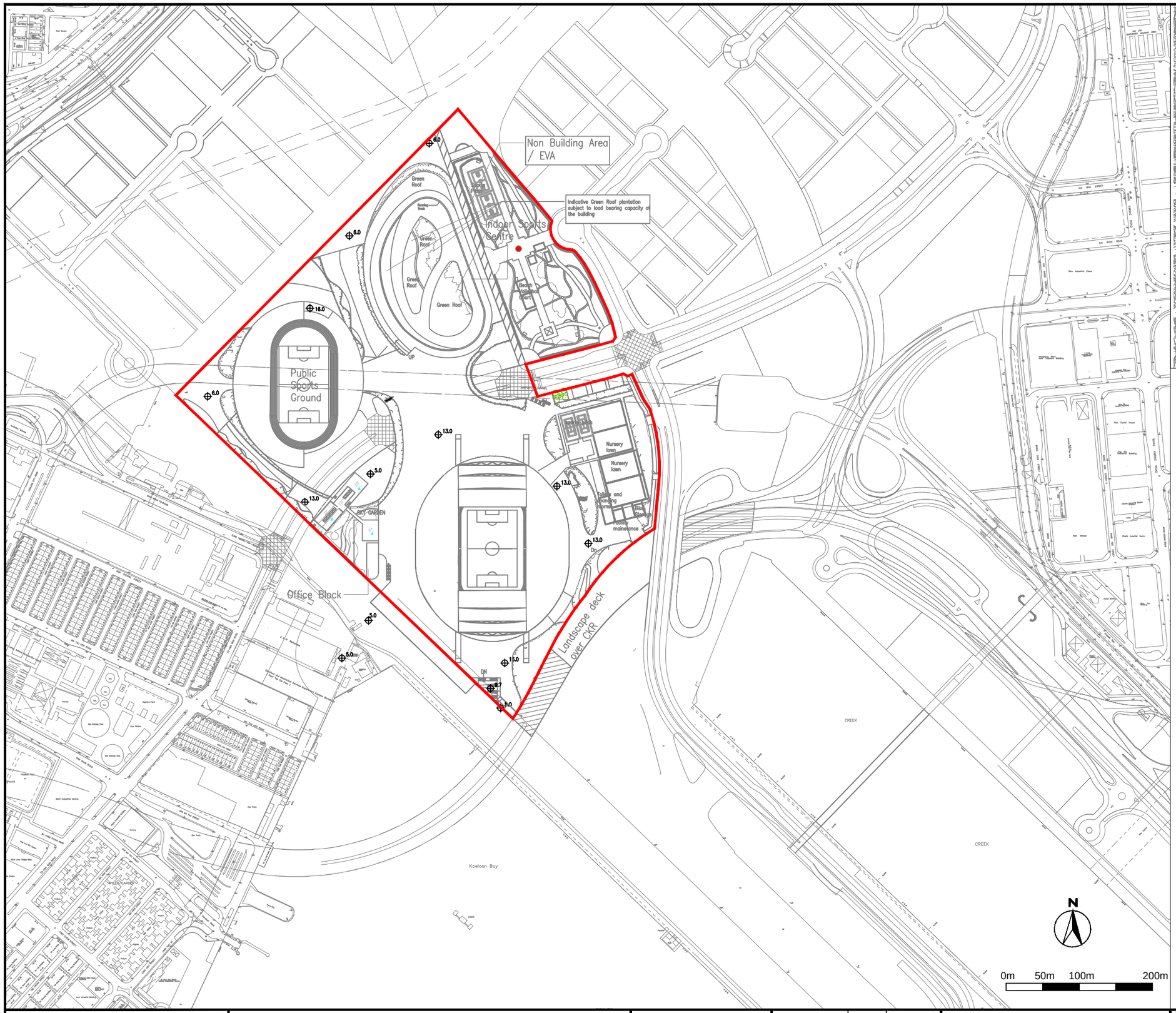
Table 15-1 Summary of EM&A Requirements

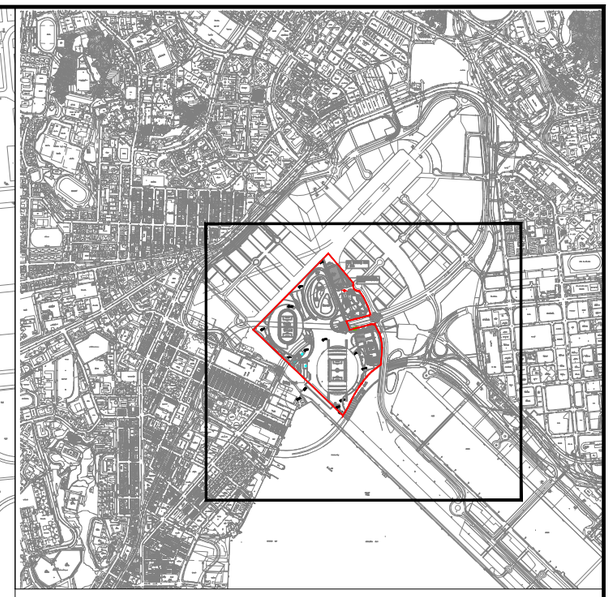
Aspects	Environmental Monitoring and Audit		
	Design Phase	Construction Phase	Operational Phase
Air Quality	×	✓	×
Hazard to Life	×	×	×
Noise	×	✓	✓
Water Quality	×	×	✓(1)
Sewerage and Sewage Treatment	×	×	×
Waste Management	×	✓	×
Land Contamination	×	×	×
Ecology	×	✓	×
Landscape and Visual	✓	✓	✓
Cultural Heritage	×	×	×

(1): Water quality of re-use surface run-off during operational phase will be monitored if natural turf is adopted at the Main Stadium or the Public Sports Ground.

15.1.2 Any non-compliance identified should be notified to all parties according to the Event and Action Plan and remediation measures should be undertaken. Complaints received should be investigated and problems related to construction works should be resolved till satisfaction. Baseline, monthly, quarterly and final EM&A reports shall be prepared to regularly report the monitoring results and evaluate the EM&A works.

Figures





Legend:

The Project Site

ARCHITECTURAL SERVICES DEPARTMENT

The joint venture of
Cinotech Consultants Ltd. and
Maurice Lee & Associates Ltd. .

Sub-Consultant
MVA
SYSTRA GROUP

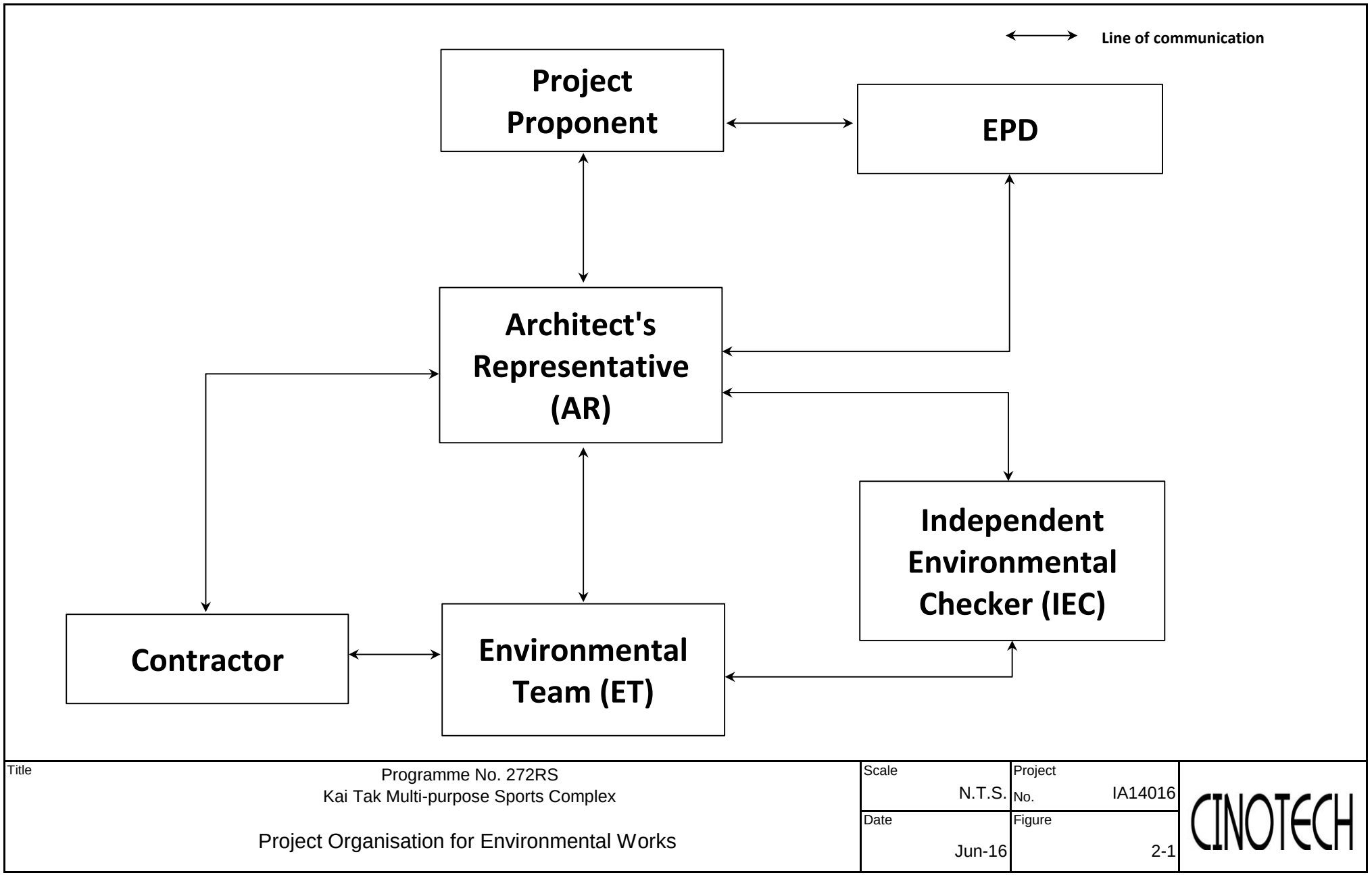
Drafting by	L.T.H.	01/16
Designed by	–	–/–
Checked by	K.S.	01/16
Approved by	K.S.	01/16

SCALE: AS SHOWN

PROJECT: Kai Tak Multi–purpose Sports Complex
TITLE: Location and Layout Plan of Proposed Kai Tak MPSC

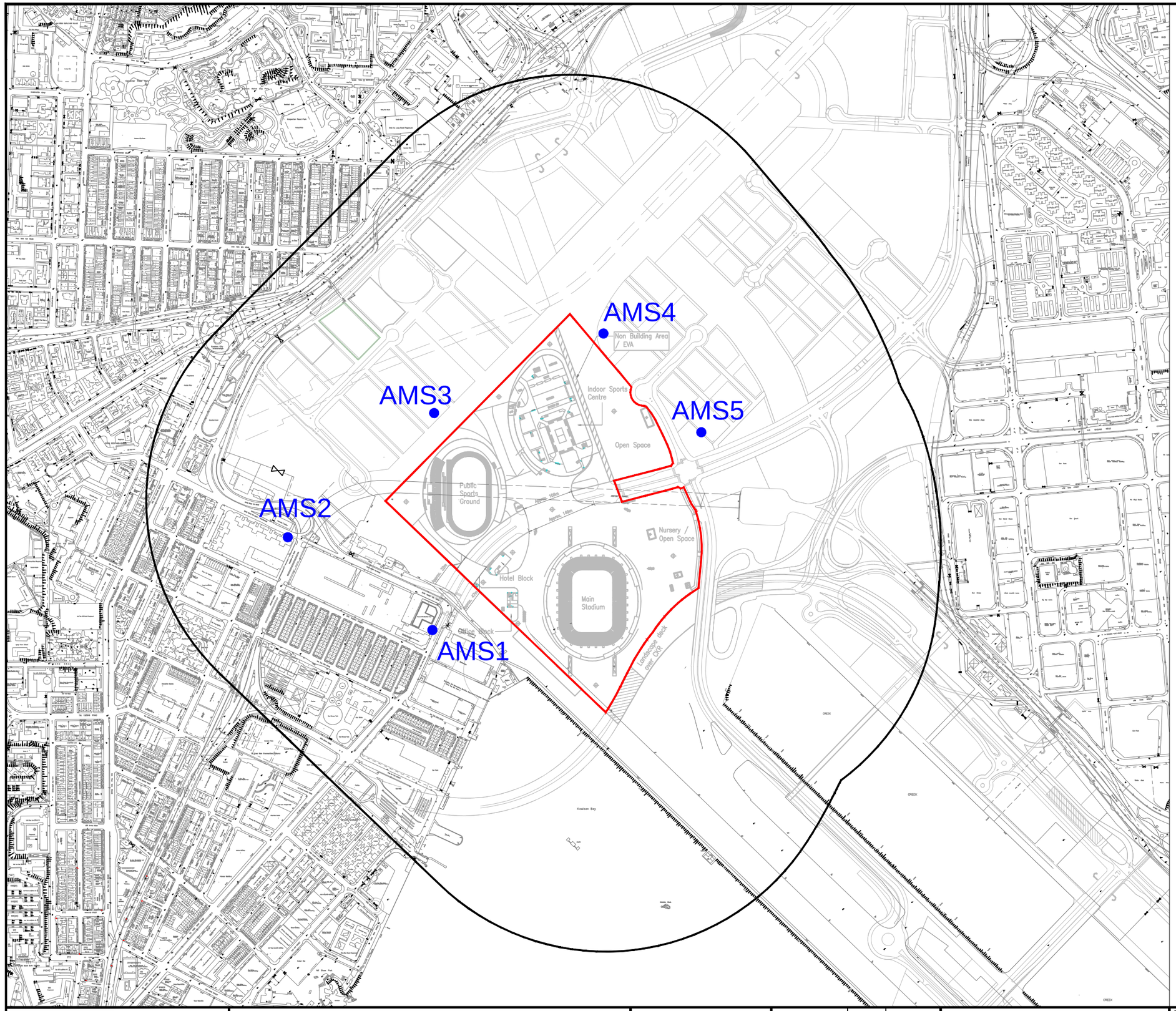
FIGURE NO: 1–1

REV: –



Title		Scale	Project
Programme No. 272RS Kai Tak Multi-purpose Sports Complex		N.T.S.	No. IA14016
Project Organisation for Environmental Works		Date: Jun-16	Figure: 2-1

CINOTECH



LEGEND:

- Project Site
- 500m from Site Boundary
- AMS1 — Air Monitoring Station 1

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SYSTRA GROUP

Drafting by	H.T.	06/16
Designed by	–	–/–
Checked by	B.C.	06/16
Approved by	K.S.	06/16

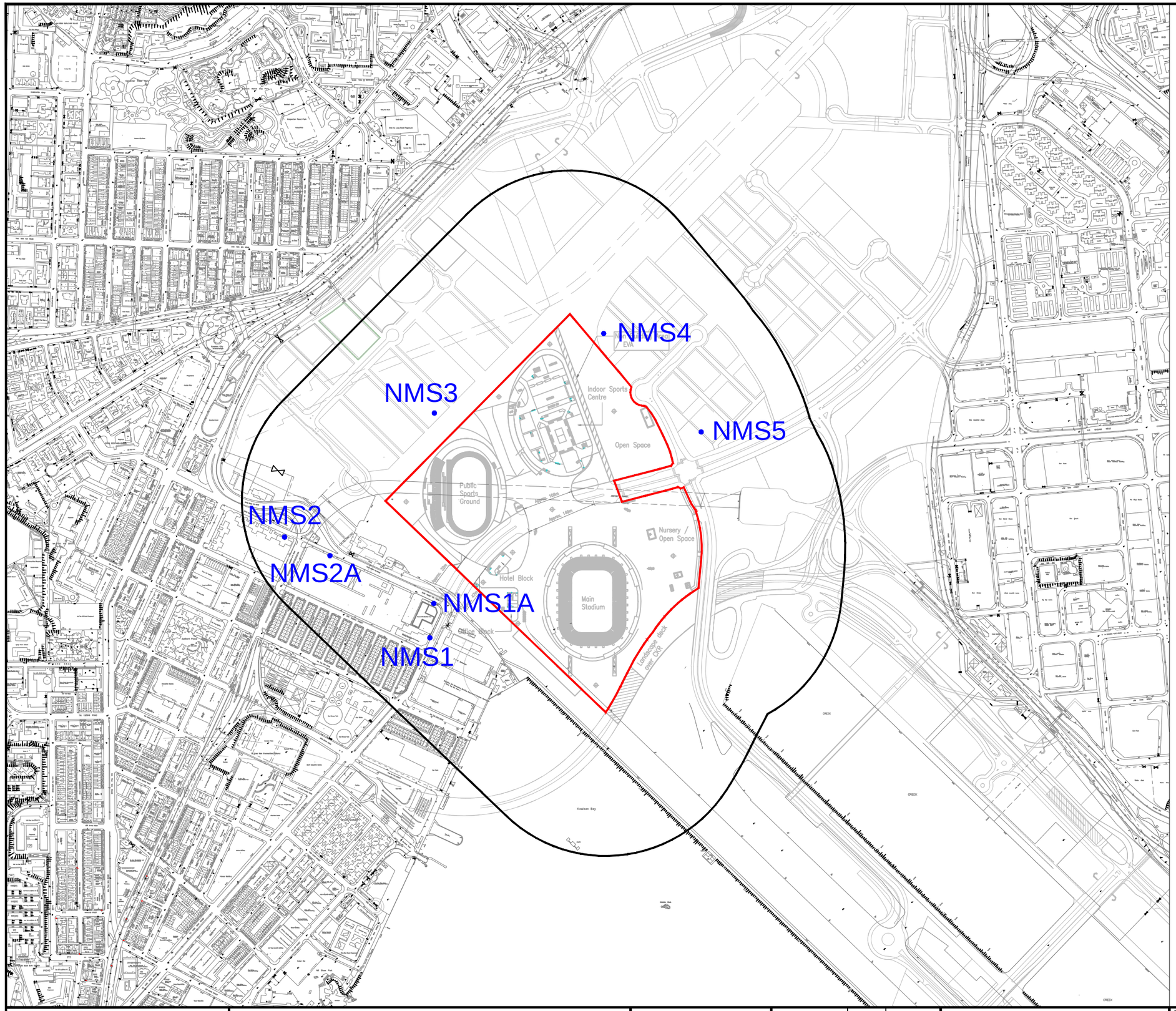
SCALE: 1:8000 @ A3 SIZE

80 0 80 160 240 320m

PROJECT: Kai Tak Multi–purpose Sports Complex
TITLE: Locations of Air Monitoring Stations

FIGURE NO: 3–1

REV: 1



LEGEND:

- Project Site
- 300m from Site Boundary
- NMS1 — Construction Noise Monitoring Station 1

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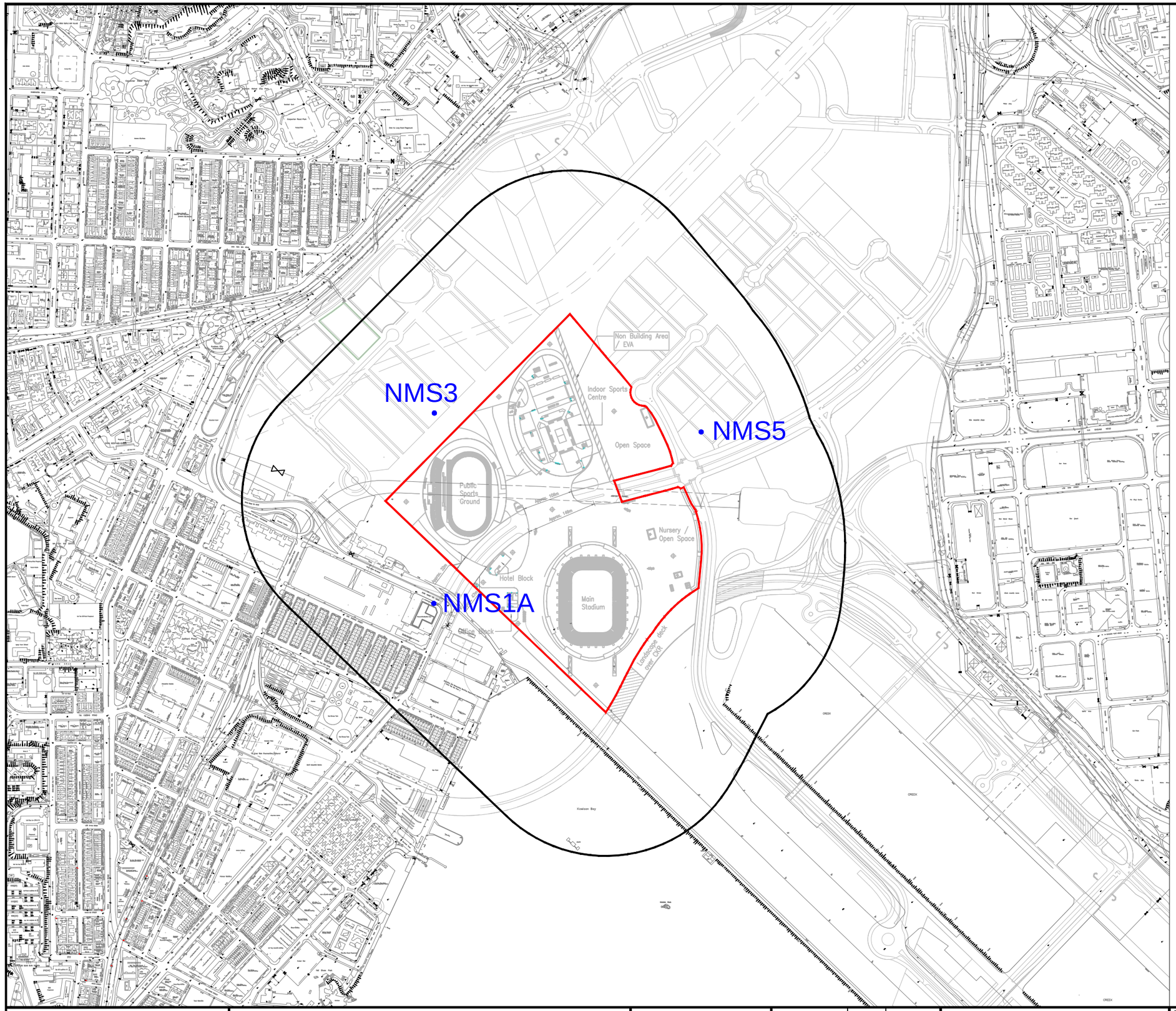
Designed by	–	–/–
Checked by	B.C.	06/16
Approved by	K.S.	06/16

SCALE: 1:8000 @ A3 SIZE
80 0 80 160 240 320m

PROJECT: Kai Tak Multi–purpose Sports Complex
TITLE: Locations of Construction Noise Monitoring Stations

FIGURE NO: 5–1

REV: 1



LEGEND:

- Project Site
- 300m from Site Boundary
- NMS3 — Music Event Noise Monitoring Station 3

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Drafting by	H.T.	06/16
Designed by	T.C.	06/16
Checked by	B.C.	06/16
Approved by	K.S.	06/16

SCALE: 1:8000 @ A3 SIZE

80 0 80 160 240 320m

PROJECT: Kai Tak Multi-purpose Sports Complex
TITLE: Locations of Music Event Noise Monitoring Stations

FIGURE NO: 5-2

REV: 1

Appendix A

Environmental Mitigation Implementation Schedule (EMIS)

Appendix A - Environmental Mitigation Implementation Schedule (EMIS)

EIA* Ref.	EM&A Log	Environmental Protection Measures*	Location/Duration of measures/	Implementation Agent	Implementation				Relevant Legislation & Guidelines
					Des	C	O	Dec	
Air Quality									
3.7	A1	Good housekeeping to minimize dust generation, e.g. by properly handling and storing dusty materials	Whole construction site	Contractor		✓			EIAO-TM, APCO
3.7	A2	Store cement in shelter with 3 sides and the top covered by impervious materials if the stack exceeds 20 bags	Whole construction site	Contractor		✓			EIAO-TM, APCO
3.7	A3	Cement delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed	Whole construction site	Contractor		✓			EIAO-TM, APCO
3.7	A4	Loading, unloading, transfer, handling or storage of bulk cement should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system	Whole construction site	Contractor		✓			EIAO-TM, APCO
3.7	A5	Dusty materials (e.g. debris) should be wetted by misting / water-spraying before any loading, unloading, transfer or transport operation	Whole construction site	Contractor		✓			EIAO-TM, APCO
3.7	A6	Any skip hoist for material transport should be fully enclosed by impervious sheeting	Whole construction site	Contractor		✓			EIAO-TM, APCO
3.7	A7	Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously	Whole construction site	Contractor		✓			EIAO-TM, APCO
3.7	A8	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 to maintain the entire surface wet	Whole construction site	Contractor		✓			EIAO-TM, APCO
3.7	A9	Excavation area should be minimized as far as possible	Whole construction site	Contractor		✓			EIAO-TM, APCO
3.7	A10	Stockpile of dusty materials should not be extended beyond the pedestrian barriers, fencing or traffic cones	Whole construction site	Contractor		✓			EIAO-TM, APCO

EIA* Ref.	EM&A Log	Environmental Protection Measures*	Location/Duration of measures/	Implementation Agent	Implementation				Relevant Legislation & Guidelines
					Des	C	O	Dec	
3.7	A11	Excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet, and then removed, backfilled or reinstated where practicable within 24 hours of the excavation or unloading	Whole construction site	Contractor		✓			EIAO-TM, APCO
3.7	A12	Dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads	Whole construction site	Contractor		✓			EIAO-TM, APCO
3.7	A13	Properly fitted side and tail boards are necessary for any vehicle with open load area	Whole construction site	Contractor		✓			EIAO-TM, APCO
3.7	A14	While transporting materials that potentially create dust (e.g. debris), materials should not be loaded higher than side and tail boards, and should be fully covered by tarpaulin or similar materials which extent at least 300 mm over the edges of the side and tail boards to prevent leakage.	Whole construction site	Contractor		✓			EIAO-TM, APCO
3.7	A15	Limit the maximum vehicle speed within the site to 10km/hr	Whole construction site	Contractor		✓			EIAO-TM, APCO
3.7	A16	Haulage and delivery vehicles should be confined to designated roads	Whole construction site	Contractor		✓			EIAO-TM, APCO
3.7	A17	Every main haul road should either be: 1.) paved with concrete and kept clear of dusty materials, or 2.) sprayed or watered to maintain the entire road surface wet	Whole construction site	Contractor		✓			EIAO-TM, APCO
3.7	A18	All on-site unpaved roads should be compacted and kept free of lose materials as possible	Whole construction site	Contractor		✓			EIAO-TM, APCO
3.7	A19	Provide vehicle washing (e.g. wheel washing bay & high pressure water jet where practicable) at every vehicle exit point for cleaning vehicle body and wheels	Whole construction site	Contractor		✓			EIAO-TM, APCO
3.7	A20	The vehicle washing area and the road between washing area and site exit should be paved with concrete, bituminous or other hardcores	Whole construction site	Contractor		✓			EIAO-TM, APCO
3.7	A21	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	Whole construction site	Contractor		✓			EIAO-TM, APCO

EIA* Ref.	EM&A Log	Environmental Protection Measures*	Location/Duration of measures/	Implementation Agent	Implementation				Relevant Legislation & Guidelines
					Des	C	O	Dec	
3.7	A22	Dusty materials on every vehicle's body and wheels should be removed in washing area before leaving the site	Whole construction site	Contractor		✓			EIAO-TM, APCO
3.7	A23	Regular maintenance of all plant equipment	Whole construction site	Contractor		✓			EIAO-TM, APCO
3.7	A24	Throttle down or switch off unused machines or machine in intermittent use	Whole construction site	Contractor		✓			EIAO-TM, APCO
3.7	A25	If the site is adjacent to area where accessible to the public (e.g. road and service lane etc.), hoarding of not less than 2.4 m high from ground level should be erected along the adjoining the entire length of that portion of the site boundary, except for a site entrance or exit. The hoarding should be well maintained throughout the construction period.	Whole construction site	Contractor		✓			EIAO-TM, APCO
3.7	A26	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	Whole construction site	Contractor		✓			EIAO-TM, APCO
3.7	A27	Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shortcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies	Whole construction site	Contractor		✓			EIAO-TM, APCO
3.7	A28	Carry out air quality monitoring throughout the construction period	Selected representative monitoring stations	Contractor		✓			EIAO-TM
3.7	A29	Carry out weekly site inspection to audit the implementation of mitigation measures	Whole construction site	Contractor		✓			EIAO-TM, APCO
3.7	A30	Regular watering once per hour on exposed worksites and haul road with an equivalent intensity of not less than 1.3L/m^3 to achieve 91.7% dust removal efficiency.	Whole construction site	Contractor		✓			EIAO-TM, APCO

EIA* Ref.	EM&A Log	Environmental Protection Measures*	Location/Duration of measures/	Implementation Agent	Implementation				Relevant Legislation & Guidelines
					Des	C	O	Dec	
3.8	A31	Locate air intake point of hotel outside the exceedance zone of air pollutant NO_2 (at least 5m above ground).	Parking spaces of MPSC	Future operator			✓		EIAO-TM, APCO
3.8	A32	Adopt the lower limits of parking provisions for retail area, office and hotel in the HKPSG as far as practicable to discourage use of cars. The car parking for coaches, goods vehicles and working/services/emergency vehicles should be less than 300.	Parking spaces of MPSC	Project Proponent/ Contractor	✓				EIAO-TM, APCO, HKPSG
3.8	A33	Provision of electrical vehicle (EV) charging facilities in at least one-third of the car parking spaces for private cars. Provision of EV charging enabling facilities in all car parking spaces provided for private cars.	Parking spaces of MPSC	Project Proponent/ Contractor/Future operator	✓	✓	✓		EIAO-TM, APCO
3.8	A34	The entry of heavy goods vehicles should avoid peak hours, weekdays from 7 am to 10 am and from 4 pm to 7 pm, except for major events (i.e. more than 20,000 persons).	Parking spaces of MPSC	Future operator			✓		EIAO-TM, APCO
3.8	A35	Give priority to EV to use the car parking spaces as far as practicable.	Parking spaces of MPSC	Future operator			✓		EIAO-TM, APCO
3.8	A36	Electric vehicles (EV) should be used under normal operation for vehicles such as electric saloon cars/coaches, if the operator provides transport services for the staff and/or guests.	Vehicles managed by operator of MPSC	Future operator			✓		EIAO-TM, APCO
Hazard to Life									
No mitigation measure is required									
Noise									
5.9	N1	Adopt good site practice, such as throttle down or switch off equipment unused or intermittently used between works	Whole construction site	Contractor		✓			NCO, EIAO-TM
5.9	N2	Regular maintenance of equipment to prevent noise emission due to impair	Whole construction site	Contractor		✓			NCO, EIAO-TM
5.9	N3	Position mobile noisy equipment in locations away from NSRs and point the noise sources to directions away from NSRs	Whole construction site	Contractor		✓			NCO, EIAO-TM
5.9	N4	Use silencer or muffler for equipment	Whole construction site	Contractor		✓			NCO, EIAO-TM
5.9	N5	Make good use structures for noise screening	Whole construction site	Contractor		✓			NCO, EIAO-TM

EIA* Ref.	EM&A Log	Environmental Protection Measures*	Location/Duration of measures/	Implementation Agent	Implementation				Relevant Legislation & Guidelines
					Des	C	O	Dec	
5.9	N6	Use Quality Powered Mechanical Equipment (QPME) and quiet equipment which produces lower noise level	Whole construction site	Contractor		✓			NCO, EIAO-TM
5.9	N7	Erect movable noise barrier of 3m height to shed large plant equipment (e.g. breaker, backhoe & mobile crane) or hand-held items (e.g. poker, wood saw, power rammer & compactor) near low-rise NSR. Where necessary, special design (e.g. with noise absorbing material or bend top) should be adopted. The barrier's length should be at least five times greater than its height, and the minimum surface density is 10 kg/m^2. Alternatively, acoustic shed, enclosure or silencer (for generator, air compressor and concrete pump) or acoustic mat (for piling) can be adopted.	Whole construction site	Contractor		✓			NCO, EIAO-TM
5.9	N8	Carry out regular site inspection to audit the implementation of mitigation measures	Whole construction site	Contractor		✓			EIAO-TM
5.9	N9	Carry out noise monitoring throughout the construction period	Selected representative monitoring stations	Contractor		✓			EIAO-TM
5.7	N10	No organized events should be held concurrently in the Main Stadium and the Public Sports Ground.	Main Stadium/ Public Sports Ground	Future operator			✓		
5.6.1-5.6.4 and 5.9	N11	<u>Operational Fixed Noise from Main Stadium</u> - The structure of the stadium shall be soundproofing and complete. The entrances of the stadium shall have special acoustic design (e.g. double acoustic door) such that the soundproofing performance of the structure is not compromised. - There should be no air-gap between the base structure of the stadium and the fixed roof to avoid noise leakage. A retractable roof, which forms part of the design of the Main Stadium, will be closed when needed. Rubber bearing or other devices with similar function shall be used to avoid the noise leakage between the fixed roof and the retractable roof. - A distributed public address system shall be adopted with the loudspeakers directed towards spectator stand. - Acoustic panels shall be attached underneath the fixed roof of the main stadium.	Main Stadium	Project Proponent	✓				NCO, EIAO-TM, Noise Control Guideline for Music, Singing and Instrument Performing Activities

EIA* Ref.	EM&A Log	Environmental Protection Measures*	Location/Duration of measures/	Implementation Agent	Implementation				Relevant Legislation & Guidelines
					Des	C	O	Dec	
5.9	N12	Operational Fixed Noise from Public Sports Ground - A cover shall be built over the spectator stand. - Sound absorption panels shall be attached underneath the entire cover.	Public Sports Ground	Project Proponent	✓				NCO, EIAO-TM
5.9	N13	Operation Noise from Fixed Plants - Partial enclosures and silencers should be installed at the building services and ventilation systems.	Building services and ventilation systems	Project Proponent	✓				NCO, EIAO-TM
5.9	N14	Crowd Noise from Dispersion - Crowd management measures should be adopted for major events (i.e. more than 20,000 persons) which finish at or later than 2230 hours. - Crowd shall be managed and confined to pre-determined routes, which lead the crowd towards the future Kai Tak Station & To Kwa Wan Station. For the crowd moving toward the Kai Tak Station, people will be directed to leave through or along the ISCB. For the dispersal routes toward To Kwa Wan Station, the exit from the Project site is designed near the Sung Wong Toi Park. - The operator should arrange staff members to marshal the dispersion of crowds in an orderly manner from the Main Stadium all the way to the future Kai Tak Station & To Kwa Wan Station. Placards should be used to advise attendees of the events to keep the noise down. No loudspeakers should be used. If any attendees are found to raise the voice or make any noise beyond control even after verbal advice by the marshalling staff, the Police should be called in to restore the situation.	Main Stadium and pre-determined routes which lead the crowd towards the future Kai Tak Station & To Kwa Wan Station	Future operator			✓		NCO, EIAO-TM

EIA* Ref.	EM&A Log	Environmental Protection Measures*	Location/Duration of measures/	Implementation Agent	Implementation				Relevant Legislation & Guidelines
					Des	C	O	Dec	
5.11	N15	Operational Noise Monitoring - The operator should appoint an appropriate person to monitor the noise situation during the activities. - The organiser should provide a manned complaint hotline to respond to complaints from nearby NSRs immediately. - Real time noise monitoring at selected locations shall be conducted for any music event held in the Main Stadium during daytime or evening time periods for the first 3 years of operation. After the 3-year monitoring period, a review of the findings of the monitoring will be conducted to determine whether further monitoring will be required. The corresponding actions shall follow the Event and Action Plan in the EM&A Manual.	Main Stadium/ Public Sports Ground	Future operator/ Project Proponent			✓		EIAO-TM
5.9	N/A	Planned NSRs (TPN12, TPN13) Planning applications are required for developments on CDA sites and are subject to Town Planning Board approval. The future developers of the CDA sites would need to carry out an Environmental Assessment (EA) to support the planning application. The EA would include the required mitigation measures so that all noise sensitive receivers at the sites would not be exposed to road traffic noise levels above the respective criterion.	The CDA sites facing Sung Wong Toi Road	Applicants of the Planning Application	✓				HKPSG
5.9	N/A	Planned NSRs (TPN14) The Housing Department would carry out an environmental assessment study (EAS) for the proposed development at the detailed design stage. The EAS would include the required mitigation measures so that all residential flats at the site would not be exposed to road traffic noise levels above the 70 dB(A) criterion.	The planned Housing Site facing Sung Wong Toi Road	The Housing Department	✓				HKPSG
Water Quality									
6.7	WQ1	Practices outlined in ProPECC PN 1/94 Construction Site Drainage should be adopted.	Whole construction site	Contractor		✓			WPCO, EIAO-TM

EIA* Ref.	EM&A Log	Environmental Protection Measures*	Location/Duration of measures/	Implementation Agent	Implementation				Relevant Legislation & Guidelines
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6.7	WQ2	Install perimeter channels in the works areas to intercept runoff from boundary prior to the commencement of any earthwork	Whole construction site	Contractor		✓			WPCO, EIAO-TM
6.7	WQ3	To prevent storm runoff from washing across exposed soil surfaces, intercepting channels should be provided.	Whole construction site	Contractor		✓			WPCO, EIAO-TM
6.7	WQ4	Drainage channels are required to convey site runoff to sand/silt traps and oil interceptors. Provision of regular cleaning and maintenance to ensure the normal operation of these facilities throughout the construction period.	Whole construction site	Contractor		✓			WPCO, EIAO-TM
6.7	WQ5	Any practical options for the diversion and realignment of drainage should comply with both engineering and environmental requirements	Whole construction site	Contractor		✓			WPCO, EIAO-TM
6.7	WQ6	Minimum distances of 100 m should be maintained between the discharge points of construction site runoff and the existing WSD saltwater intake and EMSD cooling water intake.	Whole construction site	Contractor		✓			WPCO, EIAO-TM
6.7	WQ7	The following good site measures should be adopted for the use of the existing barging facilities being operated by the MTR SCL Project: - All vessels should be sized so that adequate clearance is maintained between vessels and the seabed in all tide conditions, to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash. - All hopper barges should be fitted with tight fitting seals to their bottom openings to prevent leakage of material. - Construction activities should not cause foam, oil, grease, scum, litter or other objectionable matter to be present on the water within the site. - Loading of barges and hoppers should be controlled to prevent splashing of material into the surrounding water. - Barges or hoppers should not be filled to a level that will cause the overflow of materials or polluted water during loading or transportation.	Whole construction site	Contractor		✓			WPCO, EIAO-TM

EIA* Ref.	EM&A Log	Environmental Protection Measures*	Location/Duration of measures/	Implementation Agent	Implementation				Relevant Legislation & Guidelines
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6.7	WQ8	The runoff and wastewater generated from the works areas should be treated so that it satisfies all the standards listed in the TM-DSS.	Whole construction site	Contractor		✓			WPCO, EIAO-TM
6.7	WQ9	Reuse and recycling of the treated effluent from construction site runoff.	Whole construction site	Contractor		✓			WPCO, EIAO-TM
6.7	WQ10	Weekly site audit should be carried out to check the implementation status of the recommended water quality impact mitigation measures throughout construction period.	Whole construction site	Contractor		✓			WPCO, EIAO-TM
6.7	WQ11	The construction programme should be properly planned to minimise soil excavation, if any, in rainy seasons.	Whole construction site	Contractor		✓			WPCO, EIAO-TM
6.7	WQ12	Any exposed soil surfaces should be properly protected to minimise dust emission.	Whole construction site	Contractor		✓			WPCO, EIAO-TM
6.7	WQ13	In areas where a large amount of exposed soils exist, earth bunds or sand bags should be provided.	Whole construction site	Contractor		✓			WPCO, EIAO-TM
6.7	WQ14	Exposed stockpiles should be covered with tarpaulin or impervious sheets at all times.	Whole construction site	Contractor		✓			WPCO, EIAO-TM
6.7	WQ15	The stockpiles of materials should be placed at locations away from any stream courses so as to avoid releasing materials into the water bodies.	Whole construction site	Contractor		✓			WPCO, EIAO-TM
6.7	WQ16	Final surfaces of earthworks should be compacted and protected by permanent work.	Whole construction site	Contractor		✓			WPCO, EIAO-TM
6.7	WQ17	Haul roads should be paved with concrete and the temporary access roads protected using crushed stone or gravel, wherever practicable.	Whole construction site	Contractor		✓			WPCO, EIAO-TM
6.7	WQ18	Wheel washing facilities should be provided at all site exits to ensure that earth, mud and debris would not be carried out of the works areas by vehicles.	Whole construction site	Contractor		✓			WPCO, EIAO-TM
6.7	WQ19	Good site practices should be adopted to keep the site dry and tidy, such as clean the rubbish and litter on the construction sites.	Whole construction site	Contractor		✓			WPCO, EIAO-TM

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6.7	WQ20	Adequate temporary site drainage and pumping should be provided, if necessary.	Whole construction site	Contractor		✓			WPCO, EIAO-TM
6.7	WQ21	Provide sufficient temporary toilets in the works areas. The toilet facilities should be more than 30 m from any watercourse. A licensed waste collector should be deployed to clean the temporary toilets on a regular basis.	Whole construction site	Contractor		✓			WPCO, EIAO-TM
6.7	WQ22	Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the nearby environment during the construction phase of the Project.	Whole construction site	Contractor		✓			WPCO, EIAO-TM
6.7	WQ23	Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.	Whole construction site	Contractor		✓			WPCO, EIAO-TM
6.7	WQ24	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	Whole construction site	Contractor		✓			WPCO, EIAO-TM
6.7	WQ25	Clean the construction sites on a regular basis.	Whole construction site	Contractor		✓			WPCO, EIAO-TM
6.7	WQ26	Oil interceptor in car parking area shall be designed and constructed according to Practice Note for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers, APP-46 (PNAP 124)	Car parking Area	Project Proponent	✓	✓	✓		WPCO, EIAO-TM, PNAP 124
6.7	WQ27	The chemicals/fuels to be stored on site will be limited to small essential quantities at any one time. Any chemicals that may be carried away by water shall be contained in specific containers and cabinets under shelter and protected from weather. Any liquid chemical or fuel shall be contained in hard standing bunded area. The operator shall ensure that only staff trained in the use and handling the specific chemicals for specific tasks are allowed to handle the relevant chemicals.	Whole site	Future operator			✓		WPCO, EIAO-TM

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6.7	WQ28	Good practice should be adopted to clean the rubbish and litter on the sites so as to prevent rubbish and litter from spreading from the site area. It is recommended to clean the Project Site on a regular basis. Management guidelines shall be provided to the management team practically to separate and remove solids from discharging stormwater system.	Whole Project site	Future operator			✓		WPCO, EIAO-TM
6.7	WQ29	For use artificial turf, subject to design and operation considerations, practically no mitigation measures are required. The duration of the natural turf on the pitch should be minimized in case of using occasional natural turf during major events and no pesticides and fertilizers should be used during the period under normal circumstances. Intercept the surface water from the turf that may contain residual fertilizers and pesticides for reuse or treatment if usage of fertilizers and pesticides is needed.	Area with Turf	Future Operator			✓		WPCO, EIAO-TM
6.7	WQ30	The future management of the MPSC should follow Pesticide Ordinance (Cap 133), Pesticide Regulations (Cap 133A), A Guide to Labeling of Pesticides, and Safety Guidelines for Storage of Pesticides issued by AFCD and the LCSD horticultural guidelines on use of turf management and consult AFCD on pesticides used.	Area with Natural Turf	Future operator			✓		Pesticide Ordinance (Cap 133), Pesticide Regulations (Cap 133A), A Guide to Labeling of Pesticides, and Safety Guidelines for Storage of Pesticides issued by AFCD and the LCSD horticultural guidelines on use of turf management
6.7	WQ31	Application of chemicals, if necessary, will be confined to the approved list and the dosage as well as the frequency and intensity should be well justified according to genuine operational needs.	Area with Natural Turf	Future operator			✓		WPCO, EIAO-TM
6.7	WQ32	The dosage of pesticides and fertilizers shall be controlled to limit any residual dosage to less than 10%.	Area with Natural Turf	Future operator			✓		WPCO, EIAO-TM

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6.7	WQ33	Provide two sequential storage tanks to contain surface water with residual fertilizers and pesticides and third holding tank for incidental rainstorm	Area with Natural Turf	Project Proponent, Contractor, Future operator	✓	✓	✓		WPCO, EIAO-TM
6.7	WQ34	A Stormwater Re-use Management Plan is recommended for the operator including: 1) Healthy use of fertilizers and pesticides, and safe operation of the chemical disposal. 2) Operation and maintenance of water storage/holding tanks. 3) Frequency of testing and sampling, and appropriate testing parameters. 4) Alert levels and action limit levels. 5) Emergency measures.	Area with Natural Turf	Future operator			✓		WPCO, EIAO-TM
6.7	WQ35	The storage and holding tanks shall be emptied prior to application of fertilizers and pesticides. In general, the intercepted surface water may be recycled by irrigation into the football pitch.	Area with Natural Turf	Future operator			✓		WPCO, EIAO-TM
6.11	WQ36	Encourage recycling of stormwater for irrigation and flushing	Sewerage and Stormwater System	Future operator			✓		WPCO, EIAO-TM
6.11	WQ37	Cleansing detergents shall not be used for washing the spectator seats.	Spectator Seats	Future operator			✓		WPCO, EIAO-TM
Sewerage and Sewage Treatment Implications									
7.2	SS1	Implementation of Sewer No. 1 and Sewer No.2 as proposed in Sections 7.2.2 - 7.2.3 of the EIA Report	As per Figure 7-2-2 of EIA Report	Contractor		✓			EIAO-TM
Waste Management									
8.5	WM1	Inert C&D materials (or public fills) will be used to form the ramps and other filling area as far as civil engineering design permits.	Whole construction site	Contractor		✓			Waste Disposal Ordinance, EIAO-TM
8.5	WM2	Prepare a Construction and Demolition Material Management Plan (C&DMMP) to encourage C&D material recycling and waste minimization and submit the Plan to the Public Fill Committee for approval.	Whole construction site	Contractor	✓				Waste Disposal Ordinance, EIAO-TM
8.5	WM3	The contractor should formulate waste management measures on waste minimization, storage, handling and disposal in a Waste Management Plan as part of Environmental Management Plan.	Whole construction site	Contractor		✓			Environment, Transport and Works Bureau Technical Circular (Works) No. 19/2005

EIA* Ref.	EM&A Log	Environmental Protection Measures*	Location/Duration of measures/	Implementation Agent	Implementation				Relevant Legislation & Guidelines
					Des	C	O	Dec	
8.5	WM4	Adopt good site practice as follows: - Provide training to workers on site cleanliness, waste management (waste reduction, reuse and recycle) and chemical handling procedures - Provide sufficient waste collection points and regular removal - Cover waste materials with tarpaulin or in enclosure during transportation - Maintain drainage systems, sumps and oil interceptors - Sort out chemical waste for proper handling and treatment onsite or offsite	Whole construction site	Contractor		✓			Waste Disposal Ordinance, EIAO-TM, Practice Note for Registered Contractors No. 17
8.5	WM5	Adopt waste reduction measures as follows: - Allocate area/containers for sorting, recovering and storing waste for reuse, recycle or disposal (e.g. demolition debris and excavated materials, general refuse like aluminium cans.) Remove waste from the Site for sorting once generated if no suitable space can be identified. - Allocate area for proper storage of construction materials to prevent contamination - Minimize wastage through careful planning and avoiding over-purchase of construction materials	Whole construction site	Contractor		✓			Waste Disposal Ordinance, EIAO-TM, Practice Note for Registered Contractors No. 17
8.5	WM6	Store waste materials properly as follows: - Avoid contamination by proper handling and storing waste - Prevent erosion by covering waste - Apply water spray on excavated materials - Maintain and clean storage area regularly - Sort and stockpile different materials at designated location to enhance reuse	Whole construction site	Contractor		✓			ProPECC PN 1/94, EIAO-TM, Practice Note for Registered Contractors No. 17

EIA* Ref.	EM&A Log	Environmental Protection Measures*	Location/Duration of measures/	Implementation Agent	Implementation				Relevant Legislation & Guidelines
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8.5	WM7	Apply for relevant waste disposal permits in accordance with the Waste Disposal Ordinance (Cap. 354), Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 345) and the Land (Miscellaneous Provisions) Ordinance (Cap. 28), Dumping at Sea Ordinance (Cap. 466).	Whole construction site	Contractor		✓			Waste Disposal Ordinance (Cap. 354), Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 345) and the Land (Miscellaneous Provisions) Ordinance (Cap. 28), Dumping at Sea Ordinance (Cap. 466), EIAO-TM
8.5	WM8	Hire licensed waste disposal contractors for waste collection and removal. Dispose waste at licensed waste disposal facilities	Whole construction site	Contractor		✓			Waste Disposal Ordinance, EIAO-TM
8.5	WM9	Implement trip-ticket system for recording the amount of waste generated, recycled and disposed, including chemical wastes	Whole construction site	Contractor		✓			Waste Disposal (Chemical Waste) (General) Regulation, Waste Disposal Ordinance, EIAO-TM
8.5	WM10	Reduce water content in wet spoil generated from piling work by mixing with dry materials. Only dispose treated spoil with less than 25% dry density to Public Fill Reception Facilities	Whole construction site	Contractor		✓			Waste Disposal Ordinance, EIAO-TM
8.5	WM11	Dispose dry waste or waste with less than 70% water content by weight to landfill	Whole construction site	Contractor		✓			Waste Disposal Ordinance, EIAO-TM

EIA* Ref.	EM&A Log	Environmental Protection Measures*	Location/Duration of measures/	Implementation Agent	Implementation				Relevant Legislation & Guidelines
					Des	C	O	Dec	
8.5	WM12	Follow the *Code of Practice on the Packaging, Labelling and Storage of Chemical Waste* as follows: - Store chemical wastes with suitable containers. Seal and maintain the container to avoid leakage or spillage during storage, handling and transport - Label chemical waste containers in both English and Chinese with instructions in accordance to Schedule 2 of the Waste Disposal (Chemical Waste) (General) Regulation - The container capacity should be smaller than 450 litres unless agreed by the EPD	Whole construction site	Contractor		✓			Waste Disposal (Chemical Waste) (General) Regulation, EIAO-TM
8.5	WM13	Comply with the requirement of the chemical storage area: - Store only chemical waste and label clearly the chemical characters of the waste - Have at least 3 sides enclosed and protected from rainfall with cover - Provide sufficient ventilation - Have impermeable floor and has bunds to contain 110% of the capacity of the largest container or 20% of the total volume of the stored waste in the area, whichever is larger - Adequately spaced incompatible materials	Whole construction site	Contractor		✓			Waste Disposal (Chemical Waste) (General) Regulation, EIAO-TM
8.5	WM14	Transfer used lubricants, waste oils and other chemicals to oil recycling companies, if possible, and empty oil drums for reuse or refill. No direct or indirect discharge is permitted	Whole construction site	Contractor		✓			Waste Disposal (Chemical Waste) (General) Regulation, EIAO-TM
8.5	WM15	Hire licensed chemical waste disposal contractors for waste collection and removal. Dispose chemical waste at the approved Chemical Waste Treatment Centre at Tsing Yi or other licensed facility	Whole construction site	Contractor		✓			Waste Disposal (Chemical Waste) (General) Regulation, EIAO-TM
8.5	WM16	Hire reputable waste collector to separately collect and dispose general refuse from other wastes. Cover the waste to prevent being blown away	Whole construction site	Contractor		✓			Waste Disposal (Chemical Waste) (General) Regulation, EIAO-TM

EIA* Ref.	EM&A Log	Environmental Protection Measures*	Location/Duration of measures/	Implementation Agent	Implementation				Relevant Legislation & Guidelines
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8.5	WM17	The hauling of C&D materials shall follow established environmental mitigation measures as stated in Practice Note for Registered Contractors No. 17 "Control of Environmental Nuisance from Construction Sites" issued by the Buildings Department	Whole construction site	Contractor		✓			Practice Note for Registered Contractors No. 17 "Control of Environmental Nuisance from Construction Sites", BD
8.5	WM18	Provide recycling bins for sorting out recyclables for collection by recycling companies. Non-recyclables should be removed to designated landfills every day by licensed collectors to prevent environmental and health nuisance.	Whole construction site	Contractor		✓			Waste Disposal Ordinance, EIAO-TM
8.5	WM19	Organize training and reminders to site staff on waste minimization through avoidance and reduction, reusing and recycling	Whole construction site	Contractor		✓			EIAO-TM
8.5	WM20	Bentonite slurry which will not be reused shall be disposed of from the Site as soon as possible. Residual used dewatered bentonite slurry should be disposed to a public filling area and liquid bentonite slurry if mixed with inert fill material should be disposed to a public filling area.	Whole construction site	Contractor		✓			EIAO-TM

EIA* Ref.	EM&A Log	Environmental Protection Measures*	Location/Duration of measures/	Implementation Agent	Implementation				Relevant Legislation & Guidelines
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8.5	WM21	If chemical wastes were to be produced at the construction site, the Contractor would be required to register with the EPD as a Chemical Waste Producer, and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the waste such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport the chemical wastes. The licensed collector shall deliver the waste to the Chemical Waste Treatment Centre at Tsing Yi, or other licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation	Whole construction site	Contractor		✓			Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes, Waste Disposal (Chemical Waste) (General) Regulation
8.5	WM22	Carry out weekly site inspection to check the implementation status of the recommended waste management measures.	Whole Construction site	Contractor		✓			Waste Disposal Ordinance, EIAO-TM
8.5	WM23	Minimize unnecessary waste generation by means of promotion materials, such as wider use of information technology and announcements	Whole Project Site	Future operator			✓		Waste Disposal Ordinance, EIAO-TM
8.5	WM24	Encourage spectators to bring along personal containers for food and drinks	Whole Project Site	Future operator			✓		Waste Disposal Ordinance, EIAO-TM
8.5	WM25	Sufficient recycling containers will be provided at suitable locations to encourage recycling of such waste aluminium cans, plastics and waste paper.	Whole Project Site	Future operator			✓		Waste Disposal Ordinance, EIAO-TM
8.5	WM26	Adequate solid waste storage facilities shall be provided	Whole Project Site	Future operator			✓		Waste Disposal Ordinance, EIAO-TM, PNAP No.98
Land Contamination									
No mitigation measure is required									

EIA* Ref.	EM&A Log	Environmental Protection Measures*	Location/Duration of measures/	Implementation Agent	Implementation				Relevant Legislation & Guidelines
					Des	C	O	Dec	
Ecology									
10.11	E1	Erection of hoarding, fencing or provision of clear demarcation of work zone	Whole construction site	Contractor		✓			EIAO-TM
10.11	E2	Designate areas for placement of equipment, building materials and wastes away from drainage channels	Whole construction site	Contractor		✓			EIAO-TM
10.11	E3	Carry out weekly site inspection to check the implementation status and the effectiveness of the proposed mitigation measures	Whole construction site	Contractor		✓			EIAO-TM
Landscape and Visual									
Table 11-22	LV1	Construction Lighting Control - All security floodlights for construction sites should be equipped with adjustable shields, frosted diffusers and reflective covers, and be controlled to minimize light pollution and night-time glare to the visual sensitive receivers (VSRs).	Whole construction site	Contractor		✓			BS EN 12464-2:2007
Table 11-22	LV2	Temporary Landscape Treatments - Including vertical greening, pot planting and application of green roofing to site offices, Hydroseeding of site formation areas and short term greening of site boundaries and land not immediately developed.	Whole construction site	Contractor		✓			EIAO-TM
Table 11-22	LV3	Decoration of Hoarding - Erection of screen hoardings should be designed appropriately to be compatible with the existing urban context, either brightly and imaginatively or with visually unobtrusive design and colours where more appropriate.	Whole construction site	Contractor		✓			EIAO-TM
11.9.47	LV4	All security floodlights for construction sites shall be equipped with adjustable shield, frosted diffusers and reflective covers, and be carefully controlled to minimize light pollution and night-time glare to nearby receivers	Whole construction site	Contractor		✓			EIAO-TM
11.4.3	LV5	Site inspection should be undertaken once every two weeks.	Whole construction site	Contractor		✓			EIAO-TM
Table 11-23	LV6	Greening of Walkways, Ramps and Decks - Greening shall be incorporated into at-grade areas and as raised planting areas on pedestrian walkways, ramps and decks.	Landscape deck and connections to surrounding footpath network	Project Proponent/ Future operator	✓		✓		Greening Guidelines, GLTMS of DEVB

EIA* Ref.	EM&A Log	Environmental Protection Measures*	Location/Duration of measures/	Implementation Agent	Implementation				Relevant Legislation & Guidelines
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Table 11-23	LV7	Green Roofs and Vertical Greening - Green roofs and vertical greening should be provided to all built structures where feasible and opportunities should be maximised for incorporation on covered walkways and shade structures.	External walls and roofs of built structures	Project Proponent/ Future operator	✓		✓		DEVB TC No.3/2012 – Site Coverage of Greenery for Government Building Projects
Table 11-23	LV8	Compensatory Tree Planting - A new parkland area is created in the project development to be used for the implementation of compensatory tree planting to offset the net loss of key landscape resources. It is recommended that 340 trees be planted in this regard and a compensatory tree planting proposal outlining the locations of tree compensation will be submitted separately in seeking relevant government department's approval in accordance with DEVB TC No.7/2015.	Designated planting areas	Project Proponent/ Contractor	✓	✓			DEVB TC No.7/2015
Table 11-23	LV9	Responsive Building Design - All above ground structures, including, stadia, hotel and ancillary buildings, shall be sensitively designed in a manner that responds to the existing and planned urban context in terms of scale, height and bulk (visual weight) as well as use of appropriate building materials and colour to create a cohesive visual mass. Subdued tones should be considered for the colour palette with non-reflective finishes to reduce glare effect.	All structures	Project Proponent	✓				EIAO-TM
Table 11-23	LV10	Integration of Development Boundaries - The project boundaries shall be without fences or barriers, providing seamless physical and visual integration with the surrounding public spaces. Careful consistency of levels and materials shall create and indefinite development edge, integrating the development into the future Song Wong Toi Park, the Station Square Open Space Corridor and the Metro Park.	Project boundaries	Project Proponent/ Future operator	✓		✓		EIAO-TM
Table 11-23	LV11	Integration with Dining Cove and Waterfront Promenade - Careful design consideration of the interface of the raised stadium deck at 13mPD with that of the Waterfront Promenade at 5mPD shall be undertaken. Visual articulation and physical penetration of the development at promenade level shall be created by avoiding a continuous boundary wall. Furthermore integrated design of the adjacent proposed retail development shall ensure visual cohesion and an improved character setting.	Promenade interface and Hotel	Project Proponent/ Future operator	✓		✓		EIAO-TM

EIA* Ref.	EM&A Log	Environmental Protection Measures*	Location/Duration of measures/	Implementation Agent	Implementation				Relevant Legislation & Guidelines
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Table 11-23	LV12	Light Penetration Under Deck - The landscape deck shall be cut back and light wells incorporated to maximise natural light penetration to at-grade covered areas under the deck, to allow for enhanced visual amenity, improved utilisation of ground space and significant incorporation of both horizontal and vertical greening at ground level.	Landscape deck	Project Proponent	✓				EIAO-TM
Table 11-23	LV13	Urban Park - Incorporation of a new park within the development area shall facilitate the visual corridors outlined by the urban design framework to create an urban light well, protecting longer views and providing visual amenity to nearby receivers. The park shall maximise tree and shrub planting with emphasis on incorporating native species and integrate facilities primarily for the regular use of adjacent residential communities.	Designated area	Project Proponent/ Future operator	✓		✓		Greening Guidelines, GLTMS of DEVB
Table 11-23	LV14	Bespoke Amenity Area Lighting - Development of a bespoke project amenity area lighting scheme shall be incorporated that minimises general area light pollution, provides thematic lighting, responds to user demand intensity and minimises pavement obstruction and visual clutter. The following shall be practically considered: • mounting height and direction of fixtures to avoid sensitive receivers; • reflectance so as to avoid glare effect; • incorporation of low level down lighting integrated onto building facades, walls and structures; • utilising area movement sensors; • programming of operation for minimised utilisation.	Site wide	Project Proponent/ Future operator	✓		✓		EIAO-TM

EIA* Ref.	EM&A Log	Environmental Protection Measures*	Location/Duration of measures/	Implementation Agent	Implementation				Relevant Legislation & Guidelines
					Des	C	O	Dec	
11.9.42	LV15	Responsive Lighting Design and Disposition - Carry out the external landscape lighting design with reference to (1) Lighting Guide 4: Sports Lighting, Chartered Institution of Building Services Engineers; (2) BS EN 12193:2007 Light and Lighting-Sports Lighting, British Standards Institution and (3) Guidance Notes for the Reduction of Obtrusive Light, The Institution of Lighting Professionals as recommended in the Building Services Branch Circular No. 10 of 2011 by Architectural Services Department - Design Considerations for Outdoor Sports Venues Lighting and other applicable relevant international standards. - Select luminaries and fittings type to minimise direct view of the light source (from the sides) and restrict side dispersion. - Adopt a strategy to use lamp posts of lower height and with less interval spacing to reduce the lighting output from each lamp while maintaining the minimum luminance requirement for the open space. - Lowering of the lighting output (i.e. luminous flux) - All proposed hard structures should be sensitively designed in a manner that responds to the existing and planned landscape context, and minimizes potential adverse glare impacts. - The structural design should seek to reduce the apparent visual mass through the use of natural materials such as wooden frame and semi-transparent panels. - subdued tones should be considered for the colour palette with non-reflective finishes - Reduce the direct sight of the luminaries from the observers, e.g. through planting of trees within the MPSC.	Site wide	Project Proponent/ Future operator	✓		✓		EIAO-TM
Table 11-23	LV16	Submit detailed landscape proposals and details of architectural design, chromatic treatment and lighting, for all above ground structures, including pedestrian links, stadium connections and ancillary buildings to Planning Department for review to demonstrate that they would be sensibly designed in a manner that responds to the existing urban context and minimize any residual landscape and visual impact.	Site wide	Project Proponent/ Future operator	✓		✓		EIAO-TM

EIA* Ref.	EM&A Log	Environmental Protection Measures*	Location/Duration of measures/	Implementation Agent	Implementation				Relevant Legislation & Guidelines
					Des	C	O	Dec	
11.11.5	LV17	Site inspection should be undertaken once every two months during the 12 month establishment period.	Site wide	Project Proponent/ Future operator			✓		EIAO-TM
Cultural Heritage									
No mitigation measure is required									

* All recommendations and requirements resulted during the course of EIA Process, including ACE and/or accepted public comment to the proposed project.

** Des=Design; C=Construction; O=Operation; Dec=Decommissioning

Appendix B

Sample Data Sheet

1-hr TSP Air Quality Monitoring

Field Operation Data Log Sheet

Equipment	Model	Equipment No.	Last Calibration/Due Date
			/

Monitoring Location				
Description of Location				
Sampling Date and Time				
Weather Condition		Sunny / Fine / Cloudy / Windy / Rainy		
Measuring Parameters		TSP		
		1st hour	2nd hour	3rd hour
Count Value				
Count Value ÷ 60 mins x (K Factor:) Mass Concentration ($\mu g/m^3$)				
Site Condition	Main Construction Site			
	Other Construction Site			
Remarks				

	Name	Signature	Date
Recorded By			
Checked By			

1-hr TSP Air Quality Monitoring
Field Operation Data Log Sheet

Station: _____

Sampling Date & Time: From:_____(: am/pm) Collection Date: _____

Operators: _____ Weather: Sunny Cloudy Windy Rainy

Wind: Strong Mild Calm

High Volume Sampler	Model no.	
	Blower Motor Serial no.	

TSP - Total Suspended Particulates Sampler			
Equipment No.		Set Point	
Slope, m		Intercept. b	
	Initial, I	Final, f	
Ambient Pressure (mmHg), Pa			
Ambient Temperature (K), Ta			
Delta (in. of Water), W			
Y = [W x (Pa/760) x (298/Ta)]1/2			
Standard flow, Qstd (m^3/min) = (Y - b)*0.0283/m			
Elapsed Timer Indicator (Hours), T			
Filter Identification no.			
Weight of Filter (g)			
Weight of Particulate (g)			
Mean Standard Flow, $Qstd_{avg} = (Qstd_i + Qstd_f)/2$			
Total Time, Total Time = (Tf - Ti) x 60			
Standard Volume, Vstd (m^3) = $Qstd_{avg}$ x Total Time			
Particulate Concentration ($\mu g/m^3$)			
Observed Construction Activities	Main Construction Site		
	Other Construction Site		

Remarks: _____

_____

Conducted by: _____ Signature: _____ Date: _____

Checked by: _____ Signature: _____ Date: _____

Noise Monitoring

Field Record Sheet

Equipment	Model	Equipment No.	Last Calibration/Due Date
			/
			/

Noise Monitoring Period	Before Measurement			After Measurement		
	Noise Level (dB)	Freq. of Signal (KHz)	Display (dB)	Noise Level (dB)	Freq. of Signal (KHz)	Display (dB)
07:00 – 19:00						

Monitoring Location							
Description of Location							
Date of Monitoring							
Weather Condition		Sunny / Cloudy / Rainy					
Measurement Start Time (hh:mm)							
Measurement Time Length (min/hr)							
Measurement Results	Parameter	Measured	Baseline	Actual Construction Noise Level			
	L_{eq} dB(A)						
	L_{10} dB(A)						
	L_{90} dB(A)						
Major Construction Noise Source(s) During Measurement	Excavator / backhoe		Bulldozer				
	Dump truck / lorry		Roller				
	Other, pls specify:						
Other Noise Source(s) During Measurement	Road traffic noise		Air traffic noise				
	Construction noise from other sites (e.g. piling) pls specify:						
Remarks	Façade Measurement / Free Field Measurement						

Note:
During daytime (0700-1900): 1 no. of $L_{eq(30\text{-}min)}$

	Name	Signature	Date
Recorded By			
Checked By			

Remarks: Monitoring should be cancelled if steady wind speed exceeds 5m/s or with gusts exceeding 10m/s

Noise Monitoring Form

Details of the activity

Name of Organizer	
Date	
Time	
Venue	
Programme	
Noise Control Measures Adopted	

Noise Monitoring equipment and personnel

Sound Level Meter	Brand	Model
Noise Monitoring Staff	Name	Qualification

Noise Monitoring results

Location of Noise Monitoring Point			
Time Period (e.g. 8pm-8:15pm)	Background noise level (measured before the activities)	Noise level of the activity	
		in Leq(5min)	in Leq(15min)

Appendix C

Event and Action Plan

Appendix C Event and Action Plan

Event and Action Plan for Construction Air Quality

EVENT	ACTION			
	ET	IEC	AR	CONTRACTOR
ACTION LEVEL				
Exceedance for one sample	1. Inform IEC, AR and Contractor; 2. Identify source, investigate the causes of exceedance and propose remedial measures; 3. Repeat measurement to confirm finding.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
Exceedance for two or more consecutive samples	1. Inform IEC, AR and Contractor; 2. Identify source; 3. Advise the AR on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC, AR and Contractor on remedial actions required; 7. If exceedance continues, arrange meeting with IEC and AR; 8. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ET/AR on the effectiveness of the proposed remedial measures; 5. Supervise Implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Submit proposals for remedial to AR and IEC within 3 working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.

Appendix C Event and Action Plan

Event and Action Plan for Construction Air Quality (Continued)

EVENT	ACTION			
	ET	IEC	AR	CONTRACTOR
LIMIT LEVEL				
Exceedance for one sample	1. Inform IEC, AR, Contractor and EPD; 2. Identify source, investigate the causes of exceedance and propose remedial measures; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and AR informed of the results.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the AR on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Take immediate action to avoid further exceedance; 2. Discuss with ET and IEC on remedial actions 3. Submit proposals for remedial actions to IEC within 3 working days of notification; 4. Implement the agreed proposals; 5. Amend proposal if appropriate.
Exceedance for two or more consecutive samples	1. Notify IEC, AR, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and AR and Contractor to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and AR informed of the results; 8. exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss amongst AR, ET, and Contractor on the potential remedial actions; 4. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the AR accordingly; 5. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to terminate that portion of work until the exceedance ceases.	1. Take immediate action to avoid further exceedance; 2. Discuss with ET and IEC on remedial actions 3. Submit proposals for remedial actions to AR and IEC within 3 working days of notification; 4. Implement the agreed proposals; 5. Resubmit proposals if problem still not under control; 6. Stop the relevant portion of works as determined by the AR until the exceedance ceases.

Appendix C Event and Action Plan

Event and Action Plan for Construction Noise

EVENT	ACTION			
	ET	IEC	AR	CONTRACTOR
Action Level	1. Notify IEC, AR and Contractor of exceedance; 2. Identify source 3. Investigate the causes of exceedance and propose remedial measures; 4. Report the results of investigation to the IEC, AR and Contractor; 5. Discuss with the IEC, AR and Contractor and formulate remedial measures; 6. Increase monitoring frequency to check mitigation effectiveness.	1. Review the analysed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the AR accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented	1. Submit noise mitigation proposals to AR with copy to ET and IEC; 2. Implement noise mitigation proposals.
Limit Level	1. Inform IEC, AR, EPD and Contractor; 2. Identify source; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Inform IEC, AR and EPD the causes and actions taken for the exceedances; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and AR informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst AR, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the AR accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented; 5. If exceedance continues, investigate what portion of the work is responsible and instruct the Contractor to terminate that portion of work until the exceedance ceases.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to AR with copy to ET and IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Terminate the relevant portion of works as determined by the AR until the exceedance ceases.

Appendix C Event and Action Plan

Event and Action Plan for Noise from Music, Singing and Instrument Performing Activities

EVENT	ACTION	
	Appropriate Person	**Event Organizer**
Trigger Level Exceeded for the First Time	Notify the Event Organizer of exceedance immediately.	1. Review the loudspeaker output level; 2. Adjust the loudspeaker output level or equalizer when necessary, to avoid exceedance of the action level.
3 Consecutive Measurements Exceed Trigger Level and Keep Raising	Notify the Event Organizer of the situation immediately.	Start closing the retractable roof of the Main Stadium immediately.
Action Level Exceeded	Notify the Event Organizer of exceedance immediately.	Start closing the retractable roof of the Main Stadium immediately.

Appendix C Event and Action Plan

Event and Action Plan for Design Phase Landscape and Visual

Action Level	Registered Landscape Architect	Project Engineer (PE)	Project Landscape Architect (PLA)
Non Conformity (with Design Standards and Specification)	1. Identify Source 2. Inform PE and PLA 3. Discuss remedial actions with PE, PLA 4. Verify remedial actions when complete.	1. Notify PLA 2. Discuss remedial actions with PLA 3. Ensure remedial designs are fully incorporated	1. Amend designs 2. Discuss remedial actions with PE

Event and Action Plan for Construction/Operational Phase Landscape and Visual

Action Level	Registered Landscape Architect (RLA) as a member of Environmental Team	Independent Environmental Checker (IEC)	Architect's Representative (AR) or the Operator *	Contractor
Non-conformity on one occasion	1. Identify Source 2. Inform the IEC and the Architect's Representative (AR) or the Operator 3. Discuss remedial actions with the IEC, the Architect's Representative (AR) or the Operator and the Contractor 4. Monitor remedial actions until rectification has been completed	1. Check report 2. Check the Contractor's working method 3. Discuss with the RLA and the Contractor on possible remedial measures 4. Advise the Architect's Representative (AR) or the Operator on effectiveness of proposed remedial measures. 5. Check implementation of remedial measures.	1. Notify Contractor 2. Ensure remedial measures are properly implemented	1. Amend working methods 2. Rectify damage and undertake any necessary replacement
Repeated Non-conformity	1. Identify Source 2. Inform the IEC and the Architect's Representative (AR) or the Operator 3. Increase monitoring frequency 4. Discuss remedial actions with the IEC, the Architect's Representative (AR) or the Operator and the Contractor 5. Monitor remedial actions until rectification has been completed 6. If exceedance stops, cease additional monitoring	1. Check monitoring report 2. Check the Contractor's working method 3. Discuss with the RLA and the Contractor on possible remedial measures 4. Advise the Architect's Representative (AR) or the Operator on effectiveness of proposed remedial measures 5. Supervise implementation of remedial measures.	1. Notify the Contractor 2. Ensure remedial measures are properly implemented	1. Amend working methods 2. Rectify damage and undertake any necessary replacement

*: Architect's Representative for Construction Phase; the Operator for Operational Phase

Appendix D

Interim Notifications of Exceedances

Sample Template for Interim Notifications of Environmental Quality Limits Exceedances

Report No.: _____

Monitoring Date	
Monitoring Parameter	
Action Level	
Limit Level	
Monitoring Station	
Measured Level	
Level Exceeded	
Cause of Exceedances	
Action required under the Event and Action Plan	
Action taken under the Event and Action Plan	
ET's conclusions and recommendations for mitigation	
Contractor's actions to implement the mitigation	
Contractor's comment	

Prepared by: _____ Signature: _____ Date: _____

Reviewed by: _____ Signature: _____ Date: _____

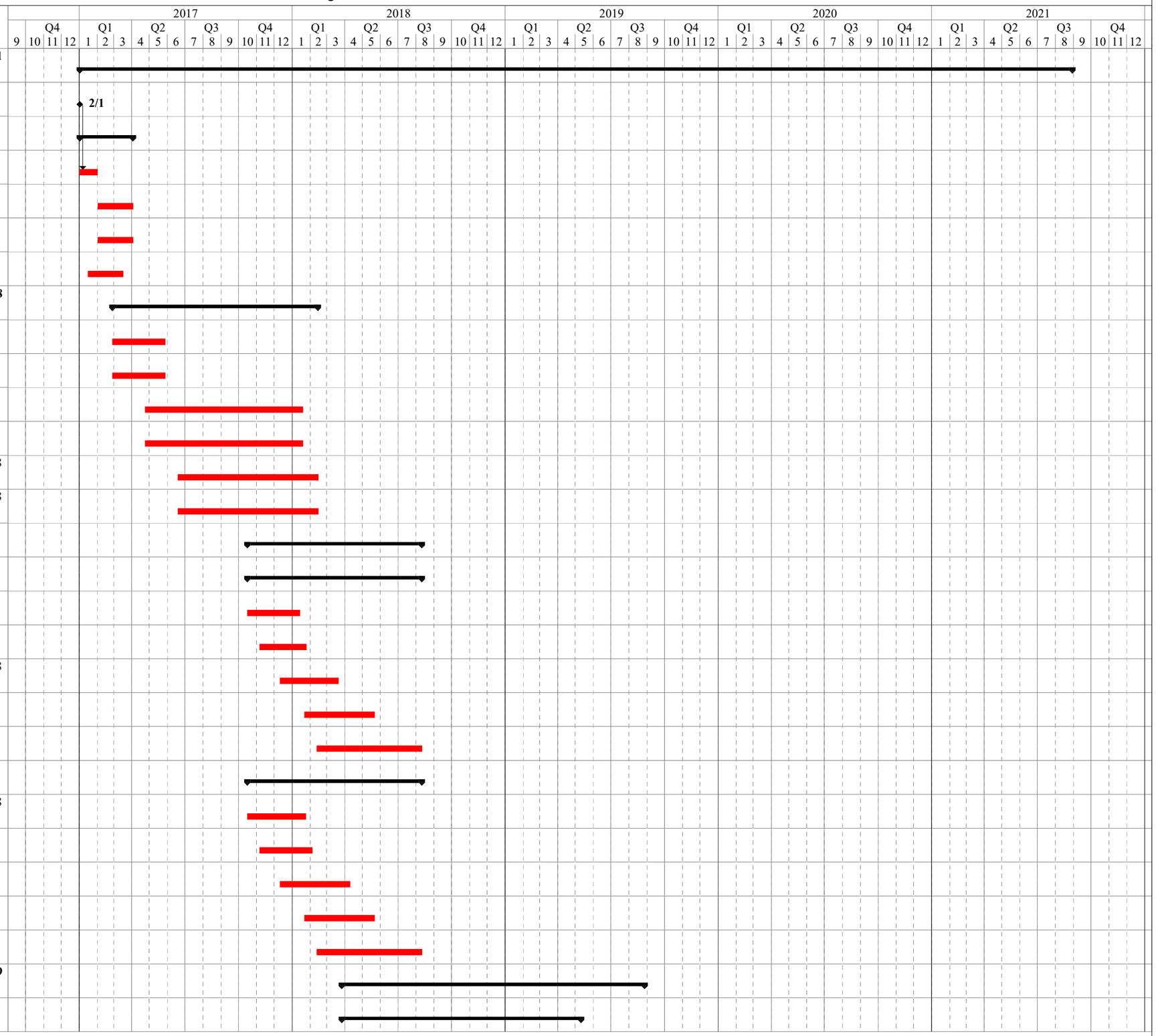
Appendix E

Tentative Construction Programme for EIA Submission

Kai Tak Multi-purpose Sports Complex

Tentative Construction Programme for EIA submission

ID	Task Name	Duration	Start	Finish
1	**Construction**	**1701 days**	**Mon 2/1/17**	**Mon 30/8/21**
2	Contract Commencement	0 days	Mon 2/1/17	Mon 2/1/17
3	**Establishment Works**	**91 days**	**Mon 2/1/17**	**Mon 3/4/17**
4	Site Condition Survey / Detail Utility Survey	30 days	Mon 2/1/17	Wed 1/2/17
5	Site Clearance (North Sector)	60 days	Thu 2/2/17	Mon 3/4/17
6	Site Clearance (South Sector)	60 days	Thu 2/2/17	Mon 3/4/17
7	Hoarding / Gantry Erection	60 days	Mon 16/1/17	Fri 17/3/17
8	**Foundation Works**	**352 days**	**Mon 27/2/17**	**Wed 14/2/18**
9	Pre-drilling Works (North Sector)	90 days	Mon 27/2/17	Sun 28/5/17
10	Pre-drilling Works (South Sector)	90 days	Mon 27/2/17	Sun 28/5/17
11	Piling (North Sector)	270 days	Mon 24/4/17	Fri 19/1/18
12	Piling (South Sector)	270 days	Mon 24/4/17	Fri 19/1/18
13	Pile Test (North Sector)	240 days	Mon 19/6/17	Wed 14/2/18
14	Pile Test (South Sector)	240 days	Mon 19/6/17	Wed 14/2/18
15	**Substructure**	**299 days**	**Mon 16/10/17**	**Sat 11/8/18**
16	**North Sector**	**299 days**	**Mon 16/10/17**	**Sat 11/8/18**
17	ELS Installation	90 days	Mon 16/10/17	Sun 14/1/18
18	Pile Head Breaking	80 days	Mon 6/11/17	Thu 25/1/18
19	Pile Cap / Tie Beam Construction	100 days	Mon 11/12/17	Wed 21/3/18
20	Back-filling / UG Drainage Works	120 days	Mon 22/1/18	Tue 22/5/18
21	Basement Structures upto Level +5.0mPD	180 days	Mon 12/2/18	Sat 11/8/18
22	**South Sector**	**299 days**	**Mon 16/10/17**	**Sat 11/8/18**
23	ELS Installation	100 days	Mon 16/10/17	Wed 24/1/18
24	Pile Head Breaking	90 days	Mon 6/11/17	Sun 4/2/18
25	Pile Cap / Tie Beam Construction	120 days	Mon 11/12/17	Tue 10/4/18
26	Back-filling / UG Drainage Works	120 days	Mon 22/1/18	Tue 22/5/18
27	Basement L0 Structures upto Level +5.0mPD	180 days	Mon 12/2/18	Sat 11/8/18
28	**Superstructure**	**519 days**	**Tue 27/3/18**	**Wed 28/8/19**
29	**Main Stadium incl. roof truss**	**410 days**	**Tue 27/3/18**	**Sat 11/5/19**



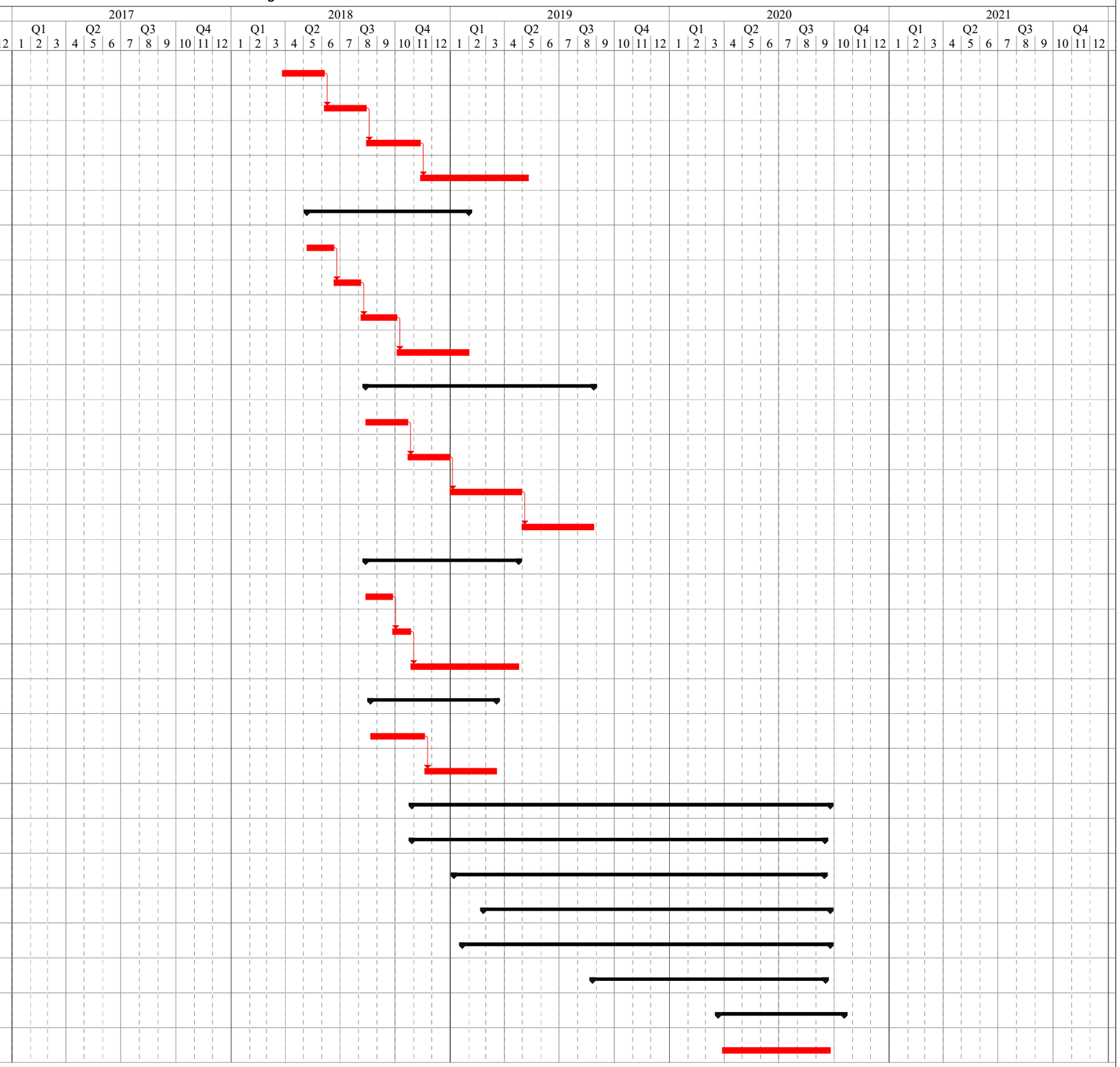
PWP No: **272RS**
Project: **Kai Tak MPSC**

Task | Milestone | Summary | Project Summary | EOT

Kai Tak Multi-purpose Sports Complex

Tentative Construction Programme for EIA submission

ID	Task Name	Duration	Start	Finish
30	Construction upto Level +9.0mPD	70 days	Tue 27/3/18	Tue 5/6/18
31	Construction upto Level +13.0mPD	70 days	Tue 5/6/18	Tue 14/8/18
32	Construction above Level +13.0mPD	90 days	Tue 14/8/18	Mon 12/11/18
33	Construction of Steel Frame and Retractable Roof	180 days	Mon 12/11/18	Sat 11/5/19
34	**Public Sports Ground**	**270 days**	**Mon 7/5/18**	**Fri 1/2/19**
35	Construction upto Level +8.0mPD	45 days	Mon 7/5/18	Thu 21/6/18
36	Construction upto Level +13.0mPD	45 days	Thu 21/6/18	Sun 5/8/18
37	Construction above Level +13.0mPD	60 days	Sun 5/8/18	Thu 4/10/18
38	Construction of Steel Frame	120 days	Thu 4/10/18	Fri 1/2/19
39	**Indoor Sports Centre**	**380 days**	**Mon 13/8/18**	**Wed 28/8/19**
40	Construction upto Level +9.0 mPD	70 days	Mon 13/8/18	Mon 22/10/18
41	Construction upto Level +13.0mPD	70 days	Mon 22/10/18	Mon 31/12/18
42	Construction above Level +13.0mPD	120 days	Mon 31/12/18	Tue 30/4/19
43	Construction of Steel Roof Frame	120 days	Tue 30/4/19	Wed 28/8/19
44	**Hotel Block & Office Block**	**255 days**	**Mon 13/8/18**	**Thu 25/4/19**
45	Construction upto Level +9.0 mPD	45 days	Mon 13/8/18	Thu 27/9/18
46	Construction upto Level +13.0 mPD	30 days	Thu 27/9/18	Sat 27/10/18
47	Construction above Level +13.0 mPD	180 days	Sat 27/10/18	Thu 25/4/19
48	**Podium incl. decks over D2**	**210 days**	**Tue 21/8/18**	**Tue 19/3/19**
49	Construction upto Level +9.0 mPD	90 days	Tue 21/8/18	Mon 19/11/18
50	Construction upto Level +13.0 mPD	120 days	Mon 19/11/18	Tue 19/3/19
51	**Builder's Work**	**697 days**	**Mon 29/10/18**	**Fri 25/9/20**
52	**Main Stadium**	**688 days**	**Mon 29/10/18**	**Wed 16/9/20**
63	**Public Sports Ground**	**617 days**	**Mon 7/1/19**	**Tue 15/9/20**
74	**Indoor Sports Centre**	**578 days**	**Mon 25/2/19**	**Fri 25/9/20**
85	**Commercial / Hotel / Office**	**613 days**	**Mon 21/1/19**	**Fri 25/9/20**
96	**Podium / Basement**	**388 days**	**Mon 26/8/19**	**Thu 17/9/20**
107	**External Works**	**210 days**	**Sun 22/3/20**	**Sun 18/10/20**
108	North Sector incl. tensile structure	180 days	Sun 29/3/20	Fri 25/9/20



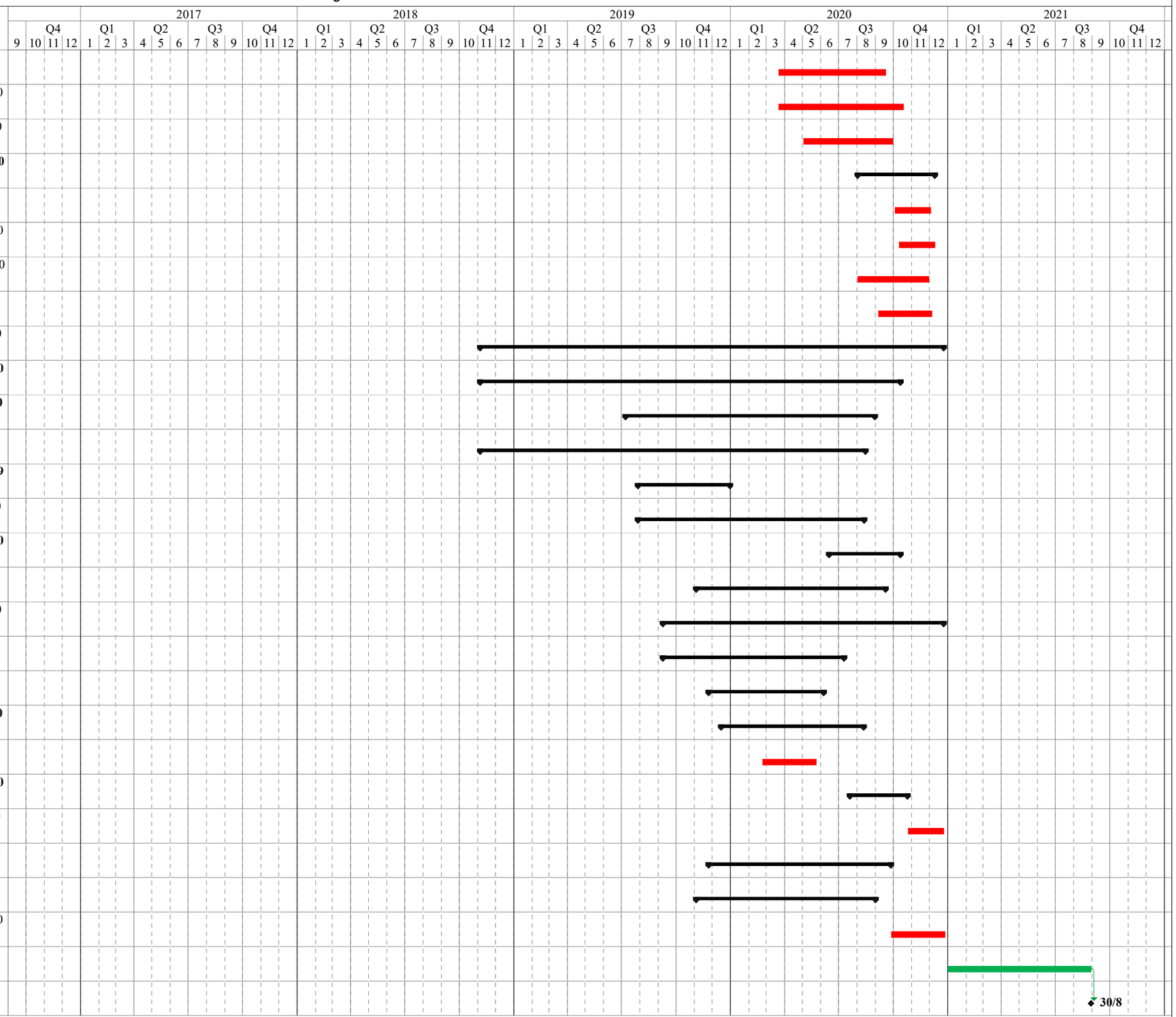
PWP No: **272RS**
Project: **Kai Tak MPSC**

Task | Milestone | Summary | Project Summary | EOT

Kai Tak Multi-purpose Sports Complex

Tentative Construction Programme for EIA submission

ID	Task Name	Duration	Start	Finish
109	South Sector incl. tensile structure	180 days	Sun 22/3/20	Fri 18/9/20
110	Open Space near Station Square	210 days	Sun 22/3/20	Sun 18/10/20
111	Open Space near Metro Park	150 days	Sun 3/5/20	Wed 30/9/20
112	**Landscaping Works**	**130 days**	**Sun 2/8/20**	**Thu 10/12/20**
113	North Sector	60 days	Sun 4/10/20	Thu 3/12/20
114	South Sector	60 days	Sun 11/10/20	Thu 10/12/20
115	Open Space near Station Square	120 days	Sun 2/8/20	Mon 30/11/20
116	Open Space near Metro Park	90 days	Sun 6/9/20	Sat 5/12/20
117	**BS Installations**	**781 days**	**Mon 5/11/18**	**Fri 25/12/20**
118	**Elec, Diesel Gen Set, LV Switch**	**708 days**	**Mon 5/11/18**	**Tue 13/10/20**
119	**CLP Installation (incl. Incoming Cable)**	**420 days**	**Mon 8/7/19**	**Mon 31/8/20**
129	**Emergency / Essential Gen Set Room**	**649 days**	**Mon 5/11/18**	**Sat 15/8/20**
142	**Main LV Switch Rooms**	**155 days**	**Mon 29/7/19**	**Tue 31/12/19**
148	**Elec Mains / Sub-mains**	**381 days**	**Mon 29/7/19**	**Thu 13/8/20**
154	**Electrical System T&C**	**120 days**	**Mon 15/6/20**	**Tue 13/10/20**
160	**Lift & Escalator Installation**	**319 days**	**Mon 4/11/19**	**Fri 18/9/20**
166	**FS Installation**	**473 days**	**Mon 9/9/19**	**Fri 25/12/20**
167	**AFA & Visual Fire Alarm System**	**305 days**	**Mon 9/9/19**	**Fri 10/7/20**
173	**FH/HR System**	**194 days**	**Mon 25/11/19**	**Sat 6/6/20**
179	**Sprinkler System**	**240 days**	**Mon 16/12/19**	**Wed 12/8/20**
185	Street Hydrant	90 days	Mon 24/2/20	Sun 24/5/20
186	**FS T&C**	**97 days**	**Mon 20/7/20**	**Sun 25/10/20**
192	FSD Inspection	60 days	Mon 26/10/20	Fri 25/12/20
193	**ACMV Installation**	**307 days**	**Mon 25/11/19**	**Sun 27/9/20**
199	**P&D Installation**	**302 days**	**Mon 4/11/19**	**Tue 1/9/20**
205	Pre-handover Inspections	90 days	Mon 28/9/20	Sun 27/12/20
206	Time allowed for EOT	241 days	Fri 1/1/21	Mon 30/8/21
207	Substantial Completion of Works	0 days	Mon 30/8/21	Mon 30/8/21



PWP No: **272RS**
Project: **Kai Tak MPSC**

Task · Milestone · Summary · Project Summary · EOT

Appendix F

Content of Stormwater Re-use Management Plan

Appendix F

Content of Stormwater Re-use Management Plan

1. Introduction
1.1 Background
1.2 Objectives
1.3 Scope
2. Application of Fertilizer
2.1 Selection of fertilizer
2.2 Storage and control
2.3 Application, including dosages, frequency, residual quantities
2.4 Control and monitoring of application
3. Application of Pesticides
3.1 Selection of pesticides
3.2 Storage and control
3.3 Application, including dosages, frequency, residual quantities
3.4 Control and monitoring of application
4. The Stormwater Re-use System
4.1 System flow diagram including points of control
4.2 Physical system, including storage tanks, intercepting facilities, etc.
5. Operation and Maintenance
6. Monitoring and Control
6.1 Criteria of monitoring and control, including parameters, sampling and testing
6.2 Frequency and locations of sampling and testing
6.3 Action and Limit levels
7. Mitigation and emergency actions
8. Reporting