

ENVIRONMENTAL IMPACT ASSESSMENT ORDINANCE  
(CHAPTER 499)  
SECTION 10

環境影響評估條例  
(第 499 章)  
第 10 條

ENVIRONMENTAL PERMIT TO CONSTRUCT AND OPERATE  
A DESIGNATED PROJECT  
建造及營辦指定工程項目的環境許可證

PART A (MAIN PERMIT)  
A 部 (許可證主要部分)

Pursuant to section 10 of the Environmental Impact Assessment Ordinance, the Director of Environmental Protection (the Director) grants this Environmental Permit to KOWLOON-CANTON RAILWAY CORPORATION (the "Permit Holder") to construct and operate the designated project described in Part B subject to the conditions described in or attached to Part C. The issue of this Environmental Permit is based on the documents, approvals or permissions described below:

根據環境影響評估條例第 10 條的規定，環境保護署署長(署長)將本環境許可證批予九廣鐵路有限公司(許可證持有人)以建造及營辦 B 部所說明的指定工程項目，但須遵守 C 部所說明或附載的條件。本環境許可證的發出，乃以下表所列的文件、批准或許可作為根據：—

Application No. 申請書編號	AEP004/1998 AEP004/1998
Document in the Register : 登記冊上的文件：	West Rail – Final Assessment Report West Kowloon to Tuen Mun Centre – Environmental Impact Assessment, its Technical Annexes, and Final Landscape Design Strategy, Report Vol.1 (Register No. EIA-149/1998) [Hereafter referred to as the EIA report]  西部鐵路—最終評估報告 西九龍至屯門中心 — 環境影響評估、其技術附件及最終景觀美化設計策略報告第一冊 (登記冊檔號：EIA-149/1998) [下稱環評報告]

16 / 9 / 98

Date  
日期



(Robert J.S. LAW)  
Director of Environmental Protection  
環境保護署署長羅樂秉

**PART B (DESCRIPTION OF DESIGNATED PROJECT)**

Hereunder is the description of the designated project mentioned in Part A of this environmental permit :-

<b>Title of Designated Project</b>	West Rail, Phase I  [This designated project is hereafter referred to as "the Project"]
<b>Nature of Designated Project</b>	A railway and its associated stations
<b>Location of Designated Project</b>	Kowloon to Tuen Mun  (The location and alignment of the Project is shown in Figure 2.2a, 2.2 b, & 2.2c of the EIA report mentioned in Part A of this Environmental Permit.)
<b>Scale and Scope of Designated Project</b>	<p>The Project is an electrified double – tracked railway system including the railway alignment, all railway premises, depots, tracks, cuttings, embankments, tunnels, stations, goods and rail yards, car parks and other areas for ancillary uses but excludes non-railway developments above stations or above other railway property. The Project includes the following four sections:</p> <p><u>Southern Section</u></p> <p>This Section is located on the West Kowloon Reclamation (WKR)) and commences at of the proposed Yen Chow Street (YCS) Station near the proposed Prince Edward Road Roundabout. From Yen Chow Station, the alignment extends north - west to Lai Chi Kok and Mei Foo, passing under Hing Wah Street and the Lai Wan Interchange. The alignment then turns east through Lai Chi Kok Park around the Mei Foo Sun Chuen residential development and ends just before the proposed Mei Foo (MEF) Station.</p> <p>The entire rail alignment of the Southern Section will be constructed at grade. The alignment will be contained in a box structure constructed above ground and covered by a landscape earth mound.</p>

### Central Section

This Section commences at the western end of the proposed MEF Station, and extends north -west under Kwai Chung Hospital in Ha Kwai Chung Tunnels for approximately 1.5km. These tunnels give way to the Kwai Fuk Road Tunnels for approximately 600m before entering the Tsing Tsuen Tunnels in the vicinity of Kwai Chung Park and Tsing Tsuen Road. The alignment continues north - west in Tsing Tsuen Tunnels for approximately 1km before exiting at Tsuen Wan Waterfront in the vicinity of the site of the proposed Tsuen Wan West (TWW) Station. From TWW, the alignment continues north - west and enters the southern portal of the Tai Lam Tunnel (TLT) a point north of Tuen Mun Road at Tsuen Wan. The northern portal of the TLT is situated approximately 5km north-west in the Kam Tin valley, where the railway extends for another 250m above ground reaching the end of the Central Section.

### Northern Section

The Section commences approximately 250m north of the northern portal of the TLT. The alignment then heads generally north - west, passing through a new station to be constructed at Kam Tin (KAT). From Kam Tin, the alignment continues north - west until it reaches a junction at Au Tau between a north - bound section of the alignment and the west bound route to Tuen Mun. Two kilometres west of Au Tau along Tuen Mun branch., the North Section comes to an end at eastern end wall of the proposed Yuen Long Station (YUL).

The Northern Section also includes the West Rail Depot (WRD) which lies between the northern portal of TLT and Kam Tin Station. The WRD includes infrastructure such as rail and fleet maintenance facilities as well as buildings which in total occupy an area of approximately 22 hectares. The WRD facility also includes approximately 2.2km of main line alignment.

Western Section

This Section of the alignment extends generally westward from Yuen Long Station (YUL) before heading south to the proposed Tuen Mun Centre (TMC) Station. The Western Section includes intermediate stations at Long Ping (LOP), Tin Shui Wai and Tuen Mun North (TMN).

The Project will interface with Mass Transit Railway's services at Mei Foo (the Tsuen Wan Line) and Yen Chow Street (the Lantau Line). It will also interchange with the Light Rail service at Yuen Long, Tin Shui Wan, Tuen Mun North and Tuen Mun Centre.

The full description of the scale and scope of the Project is given in section 1 and 2 of the EIA report mentioned in Part A of this Environmental Permit.)

## PART C (PERMIT CONDITIONS)

### 1. General Conditions

- 1.1 The Permit Holder shall ensure full compliance with all conditions of this Environmental Permit (the Permit). Any non-compliance with this Permit may constitute a contravention of the Environmental Impact Assessment Ordinance (Cap. 499) and shall be definite ground for enforcement action or permit cancellation where applicable.
- 1.2 This Permit shall not remove the responsibility of the Permit Holder to comply with any legislation currently in force such as Noise Control Ordinance (Cap.400), Air Pollution Control Ordinance (Cap.311), Water Pollution Control Ordinance (Cap.358), Dumping at Sea Ordinance (Cap.466), the Waste Disposal Ordinance (Cap.354) and others.
- 1.3 The Permit Holder shall make copies of this Permit available at all times for inspection by the Director at all sites covered by this Permit.
- 1.4 The Permit Holder shall give a copy of this Permit to the person(s) in charge of the site(s).
- 1.5 The Permit Holder shall display a copy of this Permit on the construction site(s) at all vehicular site entrances/exits for public information at all times. The Permit Holder shall ensure that the most updated information about the environmental permit, including any amended permit, is displayed at such locations. If the Permit Holder surrenders a part or the whole of the Permit, the notice he sends to the Director of Environmental Protection shall also be displayed at the same locations as the original Permit.
- 1.6 The Permit Holder shall construct and operate the Project in accordance with the project descriptions in Part B of this Permit.
- 1.7 The Permit Holder shall ensure that the Project is designed, constructed and operated in accordance with the information and recommendations contained in the EIA report.

### 2. Submissions or Measures before Commencement of Construction of Certain Sections of the Project

- 2.1 The Permit Holder shall employ an Environmental Manager with at least 7 years of experience in environmental monitoring and auditing or environmental management. The Environmental Manager shall be responsible for supervising the environmental monitoring and audit programme and executing the duties as recommended in the Environmental Monitoring and Audit Manual to be prepared in accordance with section 2.18 of this Permit.
- 2.2 The Permit Holder shall employ an Independent Environmental Checker with at least 7 years of experience in environmental monitoring and auditing or environmental management. The Independent Environmental Checker shall verify the overall environmental performance of the Project, including the implementation of all the environmental mitigation measures, submissions relating to environmental monitoring and auditing, and any other submissions required under this Permit.

- 2.3 Environmental Team(s) shall be established prior to the commencement of construction of relevant sections of the Project, described in Part B of this Permit. The Environmental Team(s) shall be headed by a team leader who has at least 7 years experience in environmental monitoring auditing or environmental management.
- 2.4 Before the commencement of construction of relevant sections of the Project described in Part B of this Permit, the Permit Holder shall deposit with the Director 3 sets of 1 to 1000 scale layout drawings with an explanatory statement showing the works boundary, railway and tunnel alignment, environmental mitigation measures recommended in the EIA report, and any other facilities assessed in the EIA report. The drawings shall be certified by the Environmental Manager and verified by the Independent Environmental Checker as conforming to the findings and recommendations of the EIA report. The Project shall be constructed in accordance with the information and recommendations contained in the EIA report and the drawings deposited with the Director. All measures set out in the drawings shall be fully implemented.
- 2.5 Before the commencement of construction of track sections not in tunnel, the Permit Holder shall deposit with the Director 3 sets of drawings with an explanatory statement showing all the noise mitigation measures. The drawings shall be certified by the Environmental Manager and verified by the Independent Environmental Checker as conforming to the findings and recommendations of the EIA report. The Project shall be constructed in accordance with the information and recommendations contained in the EIA report and the drawings deposited with the Director. All measures set out in the drawings shall be fully implemented. In particular, the following requirements shall be included :
- (a) the use of resilient rail baseplates for track on viaduct, to reduce vibration transmission to the viaduct structure and thereby reduce re-radiated noise from the structures;
  - (b) for the track on viaduct, mounting the track on a floating slab system to further reduce vibration transmission to the viaduct structure;
  - (c) the use of extended wheel skirts and adsorptive lining beneath the car, to create an acoustic plenum in the under-car area;
  - (d) the creation of a second acoustic plenum on either side of the car, using either a walkway at the side of the track or a purpose-built construction. This would also incorporate absorptive lining in the area beneath the plenum;
  - (e) edge walls with sound adsorption; and
  - (f) barriers and enclosures.
- 2.6 Before the commencement of construction of West Rail Depot, the Permit Holder shall deposit with the Director three sets of drawings with an explanatory statement showing the mitigation measures for fixed plant noise. The drawings shall be certified by the Environmental Manager and verified by the Independent Environmental Checker as conforming to the findings and recommendations of the EIA report. The Project shall be constructed in accordance with the information and recommendations contained in the EIA report and the drawings deposited with the Director. All measures set out in the drawings shall be fully implemented. In particular, the following noise sources shall be addressed :

- (a) train rolling noise at West Rail Depot;
  - (b) ventilation fans, vents and buildings;
  - (c) chiller plant;
  - (d) cooling water pumping station; and
  - (e) traction sub-stations.
- 2.7 The Permit Holder shall submit to the Director for approval three sets of landscape master plan(s) 1 to 1000 scale together with a master implementation schedule before the commencement of construction of relevant sections of the Project described in Part B of this Permit. The drawings shall be expanded based on the Landscape Strategy Report of the EIA report and shall show the conceptual landscape proposals within the works boundary to be in accordance with the recommendations of the EIA report during the construction and operation of the Project. It shall also include a management and maintenance schedule indicating clearly how the landscape areas will be managed and maintained. The landscape drawings shall be certified by the Environmental Manager, and verified by the Independent Environmental Checker. All measures recommended in the approved drawings shall be fully implemented in accordance with the details and time schedule set out in the approved landscape master plan(s).
- 2.8 Three sets of detailed landscape drawings shall be submitted to the Director for approval before the commencement of landscape and visual mitigation works of the relevant section(s) of the Project or part(s) thereof. Such drawings shall expand on the approved landscape master plan(s) and shall show the detailed landscape proposals during the construction and operation of the Project. The landscape drawings shall be certified by the Environmental Manager, and verified by the Independent Environmental Checker. All measures recommended in the approved drawings shall be fully implemented in accordance with the details and time schedule set out in the approved landscape drawings.
- 2.9 The Permit Holder shall submit a field evaluation programme and an archaeological action plan for each of the Central, Northern and Western Sections in accordance with the requirements of the EIA Report before commencement of construction of the relevant sections, and obtain the approval of the Director on the programmes and action plans. The field evaluation programme and the archaeological action plans shall be certified by the Environmental Manager, and verified by the Independent Environmental Checker. All measures recommended in the approved programme and action plans shall be fully implemented in accordance with the details and time schedules set out in the approved programme and action plans. In particular, the proposals for mitigation measures to the archaeological resources revealed during the field evaluation shall be included.
- 2.10 The design of the West Rail Depot shall avoid direct impacts to the Kwan Tai Shing Kung temple and associated grove situated to the north-east of Cheung Po and provide for buffer zone around the temple during construction;
- 2.11 The external design of the Tin Shui Wai Station shall avoid adverse impacts to the Tsui Shing Lau Pagoda and be compatible with the local cultural environment.

- 2.12 For the Western Section, a condition survey on the Tsui Shing Lau Pagoda shall be carried out as recommended in the EIA report and deposited to the Director. The condition survey shall be undertaken prior to and following the completion of works and sample vibration monitoring shall be undertaken during construction. A vibration limit of 2mm/s peak particle velocity should be applied to all construction related activities. The condition survey shall be certified by the Environmental Manager, and verified by the Independent Environmental Checker as conforming to the information and recommendation contained in the EIA report before being deposited with the Director.
- 2.13 Before the commencement of construction of the Northern Section and the 270m alignment from North Portal of Tai Lam Tunnel to West Rail Depot of the Project, the Permit Holder shall submit a Habitat Creation and Management Plan as recommended in the EIA report and obtain the approval of the Director on the Habitat Creation and Management Plan. Before submission to the Director, the Habitat Creation and Management Plan shall be certified by the Environmental Manager and verified by the Independent Environmental Checker.
- 2.14 Before the commencement of the construction of Central Section and Western Section, the Permit Holder shall submit and obtain approval of the Director for the Contamination Assessment Plans (CAP) of the potentially contaminated sites in accordance with the information and recommendations contained in the EIA report and Annex 19, Section 3 of the TM. Before submission to the Director, the Contamination Assessment Plans shall be certified by the Environmental Manager and verified by the Independent Environmental Checker.
- 2.15 Before the commencement of the construction of Central Section and Western Section, the Permit Holder shall submit and obtain the approval of the Director Contamination Assessment Reports (CAR) based on the endorsed Contamination Assessment Plans in accordance with Annex 19, Section 3 of the TM. During the preparation of the Contamination Assessment Report, if land contamination is confirmed, Remediation Action Plans (RAP) are required in accordance with Annex 19, Section 3 of the TM and shall be submitted as a combined report with the CAR to the Director for approval. Before submission to the Director, the results of the Contamination Assessment Reports and any Remediation Action Plans shall be certified by the Environmental Manager and verified by the Independent Environmental Checker. All measures recommended in the approved Remediation Action Plans shall be fully implemented in accordance with the requirements and time schedule set out in the approved Remediation Action Plans.
- 2.16 Before the commencement of the construction, the Permit Holder shall deposit with the Director waste management plan(s) as recommended in the EIA report. Before submission to the Director, the waste management plan shall be certified by the Environmental Manager and verified by the Independent Environmental Checker. Measures covered by the Waste Disposal Ordinance shall not be included in the waste management plan(s). All measures recommended in the approved waste management plan(s) shall be fully implemented in accordance with the requirements and time schedule(s) set out in the waste management plan(s).
- 2.17 Before the commencement of the construction of the Central Section, the Permit Holder shall deposit with the Director a detailed construction risk assessment of the work site



located south west of Kwai Hei Street, Kwai Fong as recommended in the EIA report. The report shall, with reference to Annex A, address the risks of landfill gas accumulation in temporary structures, storage facilities and the processes and activities to be undertaken at the site and shall be certified by the Environmental Manager, and verified by the Independent Environmental Checker. All measures recommended in the report shall be fully implemented in accordance with the requirements and time schedule set out in the report deposited with the Director.

- 2.18 In accordance with the information and recommendations contained in the EIA report, the Permit Holder shall deposit an Environmental Monitoring and Audit (EM&A) Manual with the Director within one month of the issuance of this Permit. The EM&A Manual shall satisfy the requirements as prescribed in section 10, SCHEDULE 4 of the Environmental Impact Assessment Ordinance and Annex 21 of the Technical Memorandum on Environmental Impact Assessment Process. The EM&A Manual shall be certified by the Environmental Manager and verified by the Independent Environmental Checker before submission to the Director.
- 2.19 In accordance with the information and recommendation contained in the EIA report, the Permit Holder shall deposit an Implementation Schedule with the Director within one month of the issuance of this Permit. The Implementation Schedule shall contain a schedule of all mitigation measures recommended in the EIA report, listing out what the mitigation measures are, by whom, when, where and to what requirements, and including the key environmental monitoring and audit requirements. The implementation Schedule shall be certified by the Environmental Manager and verified by the Independent Environmental Checker before submission to the Director. All measures included in the Implementation Schedule shall be fully implemented.
- 2.20 All finalised submissions, as required under this part of the permit, shall be released to the public if requested by the Director, by depositing copies in the Environmental Impact Assessment Ordinance Register Office or any other places or by any other means as specified by the Director for public inspection. For this purpose, the Permit Holder shall provide sufficient copies of submissions.

3. **Submissions or Measures during the Construction Period.**
- 3.1 Within two months of commencement of construction of each of the Southern, Central, Northern and Western sections of the Project, the Permit Holder shall deposit with the Director environmental management plan(s) as recommended in the EIA report. Before their submission to the Director, the environmental management plan(s) shall be certified by the Environmental Manager and verified by the Independent Environmental Checker.
- 3.2 Within 6 months of the commencement of construction of the Northern Section and the 270m alignment from North Portal of Tai Lam Tunnel to West Rail Depot of the Project, the Permit Holder shall submit an implementation programme for the Habitat Creation and Management Plan submitted under condition 2.13 and obtain the approval of the Director. Before its submission to the Director, the implementation programme shall be certified by the Environmental Manager and verified by the Independent Environmental Checker. All measures recommended in the approved Habitat Creation and Management Plan and its implementation programme shall be fully implemented.
- 3.3 All design or construction measures described in the submissions approved or deposited under section 2, and conditions 3.1 and 3.2 above shall be fully implemented. Any changes to the measures shall be justified by Environmental Manager and verified by the Independent Checker as conforming to the requirements of the EIA report.
- 3.4 In accordance with the information and recommendations contained in the EIA report and with reference to Annex B, measures to mitigate environmental impacts from site run-off and drainage shall be implemented.
- 3.5 In accordance with the information and recommendations contained in the EIA report and with reference to Annex C, measures to mitigate water quality impacts during tunneling and station construction shall be implemented.
- 3.6 In accordance with the information and recommendations contained in the EIA report and with reference to Annex D, measures to mitigate water quality impacts during reclamation work and other construction activities shall be implemented.
- 3.7 For the construction of the Central Section at Tsuen Wan Bay Reclamation, the combined rate of filling and dredging shall not be exceeding 15,000cu.m. per day for filling and 1,000cu.m. per day for the duration of the 16-hour working days for dredging. The status of compliance with these rates shall be reported in the monthly EM&A reports in condition 4.5 of this Permit.
- 3.8 The existing Tsuen Wan Central Salt Water Pumping Station shall be relocated temporarily, during Stage 1 of Tsuen Wan Bay Reclamation (shown in Figure 1), to location B (shown in Figure 2) assuming the adopting of silt curtain mitigation around dredging, or to location C (shown in Figure 2), assuming no further at-source mitigation measures, to maintain the flushing water intakes at acceptable levels.
- 3.9 Storm water culverts, including Tai Ho and Ma Tau Pa Culverts, shall be relocated along the existing coastline before dredging and reclamation filling being undertaken in order to avoid water quality impacts.

- 3.10 To mitigate the cultural heritage and archaeological impacts during construction:
- (a) The Director shall be informed immediately if any antiquities are discovered during the course of the construction works to further assess the cultural value of the items;
  - (b) Direct impact to any historical buildings or structures identified shall be avoided. Devices shall be attached to the walls of those historical buildings next to the working site so as to monitor the impact of vibration on the structural stability of the historic buildings; and
  - (c) a buffer zone of at least 5m shall be adopted between the Lau's residence at Tung Shing Lei (east of Yuen Long) and the site boundary for the construction work to avoid direct impacts to the buildings.
- 3.11 During the construction of the Northern Section, native species shall be included in the plant list for revegetation of finished cut slope and lineside planting.
- 3.12 The following measures shall be undertaken to protect the marsh habitat adjacent to Kam Tin Road as shown in Figure 3 :
- (a) Bunding, sheet piling shall be installed at the works boundary within and adjacent to the marsh to prevent dewatering of the marsh outside the work areas. Such devices shall be removed on the completion of construction works;
  - (b) Solid fencing shall be installed at the boundary of works area within and adjacent to the marsh. The works boundary shall be regularly inspected and any necessary maintenance of the fencing shall be undertaken within 24 hours; and
  - (c) Works areas at the marsh that are not permanently occupied by the Project shall be reinstated back to original conditions immediately after the completion of the construction.
- 3.13 Fish ponds that are temporarily disturbed during construction shall be reinstated back to fish ponds after completion of construction.
- 3.14 All finalised submissions, as required under this part of the permit, shall be released to the public if requested by the Director, by depositing copies in the Environmental Impact Assessment Ordinance Register Office or any other places or by any other means as specified by the Director for public inspection. For this purpose, the Permit Holder shall provide sufficient copies of submissions.

**4. Environmental Monitoring and Audit During Construction**

- 4.1 Any changes to the EM&A arrangements as required under the EM&A Manual or under the Implementation Schedule shall be justified by the Environmental Manager, and verified by the Independent Environmental Checker in the monthly EM&A Reports and submitted to the Director under condition 4.5.
- 4.2 EM&A requirements shall be implemented as set out in the EM&A Manuals and monthly EM&A Reports unless the changes are justified in the monthly EM&A Reports submission, verified by the Independent Environmental Checker and approved by the Director.
- 4.3 Samples and measurements shall be taken in accordance with the requirements of noise, air quality, water quality monitoring, ecological in the EM&A Manual by:
- (a) conducting baseline air, noise and water quality monitoring at the specified locations and frequencies;
  - (b) conducting impact monitoring on air quality, water quality, noise quality, and ecological resources at the specified locations and frequencies;
  - (c) in cases where specified criteria in the EM&A Manual are exceeded, carrying out remedial actions in accordance with Event Contingency Plans, to be set out in the EM&A Manual; and
  - (d) logging and keeping records of the details of (a) to (c) above, within 3 working days of the collection of data or completion of remedial action, for the purposes of preparing and submitting EM&A Reports, and to make available for information for inspection on site,
- 4.4 Ten copies of the Baseline Monitoring Report certified by the Environmental Manager, and verified by the Independent Environmental Checker shall be submitted to the Director one month before the commencement of any major construction works that would affect the monitoring results.
- 4.5 Ten copies of monthly EM&A Reports certified by the Environmental Manager, and verified by the Independent Environmental Checker shall be submitted to the Director within 10 working days from the end of the reporting month.
- 4.6 The submitted reports as required in condition 4.4 and 4.5 shall be rectified in accordance with the comments made by the Director within one month or otherwise specified by the Director.
- 4.7 Actions described in the action plan(s) of the EM&A Manual shall be carried out, in accordance with the time frame set out in the action plan(s), or as agreed by the Director.
- 4.8 All finalised submissions, as required under this part of the Permit, shall be released to the public by depositing copies in the Environmental Impact Assessment Ordinance Register Office or any other places or by any other means as specified by the Director for public inspection. For this purpose, the Permit Holder shall provide sufficient copies of submissions.

**5. Submissions or Measures before Operation of the Project**

- 5.1 All design or operational measures described in the submissions approved, or deposited under section 2 and section 3 above, shall be fully implemented.
- 5.2 In accordance with the information and recommendations contained in the EIA report, the Permit Holder shall submit an Operational Environmental Monitoring and Audit (EM&A) Manual for the approval by the Director prior to the commissioning of the project. The Operational EM&A Manual shall satisfy the requirements as prescribed in section 10, SCHEDULE 4 of the Environmental Impact Assessment Ordinance and Annex 21 of the Technical Memorandum on Environmental Impact Assessment Process. The Operational EM&A Manual shall be certified by the Environmental Manager and verified by the Independent Environmental Checker before submission to the Director. In particular, the requirements on landfill gas hazard monitoring, maintenance, precautionary and emergency measures, with reference to Annex E, shall be included.
- 5.3 Prior to the operation of the Project, the Permit Holder shall submit to the satisfaction of the Director a proposal for performance test(s) to illustrate that the 12-car disc braked Electric Multiple Unit train would meet the specification of maximum level (L<sub>max</sub>) not exceeding 82.5dB(A) at 130kph measured at 25m from the at-grade ballasted tracks. The performance test proposal shall be certified by the Environmental Manager and verified by the Independent Environmental Checker.
- 5.4 Prior to the operation of the Project, the Permit Holder shall submit to the satisfaction of the Director a report on performance test of the disc braked Electric Multiple Unit train on the basis of condition 5.3. The performance test report shall be certified by the Environmental Manager and verified by the Independent Environmental Checker.
- 5.5 For the Southern Section, the railway shall be fully contained in a box structure and covered by a landscaped earth mound in accordance with the information and recommendations contained in the EIA Report.
- 5.6 For the Central Section, except the 270m at the northern end, the railway shall be built in a tunnel in accordance with the information and recommendations contained in the EIA Report.
- 5.7 For the Northern Section and Western Section, the noise mitigation measures shall be constructed in accordance with the information and recommendations contained in the EIA report.
- 5.8 The Permit Holder shall liaise with the Fire Service Department to work out an off - site Emergency Plan for Au Tau Water Treatment Work including the arrangements for the external services to stop trains from entering the affected area from either direction in the event of a chlorine release, in accordance with the information and recommendations in the EIA Report.
- 5.9 Ventilation intakes for Kam Tin Station and the shops and offices there should be located at as high a level as reasonably practicable and should be substantially enclosed.

- 5.10 Before operation of the Project, the Permit Holder shall carry out an audit to confirm that all the agreed environmental measures for the Project's operation have been fully implemented. The audit shall cover all measures recommended in the EIA reports, described in submissions approved, or deposited with the Director under section 2, section 3, and section 5 of this Permit. The result of the audit shall be documented in an Audit Report and submitted to the Director prior to operation of the Project. The audit Report shall be certified by the Environmental Manager and verified by the Independent Environmental Checker as conforming to the findings and recommendations of the EIA report.
- 5.11 All finalised submissions, as required under this part of the Permit, shall be released to the public by depositing copies in the Environmental Impact Assessment Ordinance Register Office or any other places or by any other means as specified by the Director for public inspection. For this purpose, the Permit Holder shall provide sufficient copies of submissions.
- 5.12 Five sets of as-built drawings of scale 1 to 1000 with an explanatory statement showing the alignment and mitigation measures covered by this Permit, shall be deposited to the Director within three months after the completion of construction of each of the Southern, Central, Northern and Western sections.

6. **Environmental Mitigation Measures during Operation Period**

- 6.1 The maximum train speed shall be 130km/hr. Prior to any increase in train frequency, train length and speed with respect to the initial start-up, a noise assessment report shall be submitted and obtain approval from the Director. The noise assessment is to evaluate the adequacy of noise mitigation measures and develop enhancement programmes. Before its submission to the Director, the noise assessment report shall be certified by the Environmental Manager and verified by the Independent Environmental Checker. All measures recommended in the approved noise assessment report Plan shall be fully implemented in accordance with the requirements and time schedules set out in the report.
- 6.2 In line with the commitment made by the Permit Holder, the multi-plenum system should be designed to provide the flexibility for future enhancement so that edge wall barrier heights can be incrementally extended for increased noise attenuation from 1.2 m upto full enclosure. This is to provide greater flexibility in the long term land use planning of areas through which the Project passes and will facilitate, as yet uncommitted, developments, to be considered in much closer proximity to the railway than would otherwise be the case.
- 6.3 In accordance with the information and recommendations contained in the EIA report and Annex F, measures to mitigate the water quality impact during operation shall be implemented.
- 6.4 Before public sewerage becomes available in Kam Tin, waste water and sewage arising from the proposed Kam Tin Station, KCRC Head Quarter and West Rail Depot (WRD) shall be collected at holding tanks and transported to Yuen Long Sewage Treatment Works by road tanker for off-site treatment. Once public sewerage is available in Kam Tin, waste water and sewage arising from the proposed Kam Tin Station, KCRC Head Quarter Building and WRD shall be redirected to discharge directly to the public sewer. Waste water and sewage arising from uses other than the three above, including stations, railway premises, depots and ancillary uses, shall be conveyed to public sewer after any pre-treatment.
- 6.5 The Permit Holder shall fully implement the EM&A requirements as set out in the Operational Manual approved under condition 5.2. Any changes to the EM&A arrangement shall be justified by the Environmental Manager, verified by the Independent Environmental Checker and approved by the Director.
- 6.6 The Permit Holder shall fully implemented the EM&A requirements as set out in the Operational EM&A Manual approved under condition 5.2. Any changes to the E M &A arrangements and requirements as set out shall be justified by the Environmental Manager, verified by the Independent Environmental Checker and approved by the Director.
- 6.7 Actions described in the action plan(s) of the Operational EM&A Manual shall be carried out, in accordance with the time frame set out in the action plan(s), or as agreed by the Director.
- 6.8 All finalised submissions, as required under this part of the Permit, shall be released to the public by depositing copies in the Environmental Impact Assessment Ordinance Register Office or any other places or by any other means as specified by the Director for public inspection. For this purpose, the Permit Holder shall provide sufficient copies of

**Notes:**

1. This Environmental Permit consists of three parts, namely, PART A (Main Permit), PART B (Description of Designated Project) and part C (Permit Conditions).
2. The Permit Holder may apply under section 13 of the Environmental Impact Assessment Ordinance to the Director for a variation of the conditions of this Environmental Permit. The Permit Holder shall replace the original Permit displayed on the construction site, by the amended Permit.
3. A person who assumes the responsibility for the whole or a part of the Project may, before he assumes responsibility of the Project, apply under section 12 of the Ordinance to the Director for a further Environmental Permit.
4. Under section 14 of the Ordinance, the Director with the consent of the Secretary for Planning, Environment and Lands, may suspend, vary or cancel this Permit. The Permit shall be removed from the display on the construction site.
5. If this Permit is cancelled or surrendered during the construction or operation, an Environmental Permit must be obtained under the Ordinance before the construction or operation of the Project could be continued. It is an offence under section 26(1) of the Ordinance to construct or operate a designated project without an Environmental Permit.

Environmental Permit No. EP-004/1998



**Annex A**

**Measures to Mitigate Landfill Gas Risk During Construction**

Temporary Construction worksite located southwest of Kwai Hei Street at Kwai Chung. The worksite lies within 50m of the northeast perimeter of the former landfill site near to gas monitoring wells which have shown up to 20% v/v methane concentrations. Procedures and measures which can be made during the construction phase to reduce the risk of gas related problems :

- (a) A detailed risk assessment should be conducted to assess and propose precautionary measures pertinent to the risks from the proposed construction methods and machinery to be used in the excavations;
- (b) Work method(s) which outlines the measures to be implemented to reduce the risk of fires and uncontrolled explosions and asphyxiation of workers shall be proposed;
- (c) Workers should undergo training about the risks and indications of landfill gas and be thoroughly versed in first aid and emergency and evacuation techniques in the event of an incident;
- (d) Works must be carried out in strict adherence to the work methods proposed above;
- (e) Strict adherence to the no smoking policy;
- (f) A mechanical ventilation system must be in use at all times during which construction work force are engaged in works inside tunnel(s) or excavation(s) and these work force shall be evacuated in the event of power outages. Work must not be carried out in the absence of mechanical ventilation and supervision of adequately trained safety officer;
- (g) All electrical equipment (including extension leads) used in the works must be fitted with spark arrestors or be intrinsically safe;
- (h) Work must not be carried out in the absence of fire extinguishers, emergency breathing apparatus and other safety equipment as deemed necessary by safety consultant or plan submitted by the construction contractor;
- (i) Monitoring of methane, carbon dioxide and oxygen must be carried out at all times during works using suitable equipment as recommended above. The actions detailed in Table 1 below must be carried out in the event of gas trigger levels being breached;

**Table 1 Actions to be carried out in the event of Landfill Gas Detection**

Parameter	Measurement	Action
O <sub>2</sub>	<19%	Increase ventilation to restore O <sub>2</sub> to >19%
	<18%	Stop works
		Evacuate personnel
		Increase ventilation to restore O <sub>2</sub> to >19%
CH <sub>4</sub>	>10% LEL	Prohibit hot works
		Increase ventilation to restore CH <sub>4</sub> to <10% LEL
	>20% LEL	Stop works
		Evacuate personnel
		Increase ventilation to restore CH <sub>4</sub> level to <10% LEL
CO <sub>2</sub>	>0.5%	Increase ventilation to restore CO <sub>2</sub> to <0.5%
	>1.5%	Stop works
		Evacuate personnel
		Increase ventilation to restore CO <sub>2</sub> to <0.5%

- (j) The exact frequency of monitoring should be determined prior to the commencement of works, but should be no less frequent than hourly, and be carried out by a suitably qualified person. Measurements shall be recorded and kept as a record of safe working conditions with copies of the site diary. Continuous monitoring via an automated monitoring system may also be adopted. In this event, the gas levels specified in Table 1 shall be so programmed to automate the actions in the table and in the event of the trigger levels being breached, to activate suitable audible and visual warning devices; and
- (k) All measurements taken are to include at a minimum the areas where personnel are operating as well as the highest and lowest elevations within tunnel(s). Measurements are to be carried out with the sensor located not greater than 10 mm from the exposed rock surface and at locations where landfill gas has the highest potential to enter tunnel(s) such as highly fissured areas, dykes, identified faults, etc.

Annex B

**Measures to Mitigate Environmental Impacts from Site Run-off and Drainage**

To mitigate the environmental impacts from site run-off and drainage, the following shall be implemented:

- (a) adequate maintenance of drainage systems shall be provided to prevent flooding and overflow during the construction period;
- (b) the boundaries of areas of earthworks shall be marked and surrounded by dykes for flood protection during the construction period. Temporary ditches should be provided to facilitate runoff discharge into the appropriate watercourses, via a silt retention pond. Permanent drainage channels should incorporate sediment basins or traps and baffles to enhance deposition rates. The design of efficient silt removal facilities should be based on the guidelines in ProPEC Practice Note 1/94 issued by the Director of Environmental Protection;
- (c) construction works shall be programmed to minimize surface excavation works during the rainy season (April to September). All exposed earth shall be stabilized as soon as possible after earthworks have been completed, or alternatively, within 14 days of the cessation of earthworks where practicable. If excavation of soil cannot be avoided during the rainy season, or at any time of year when rainstorms are likely, exposed slope surfaces should be covered by tarpaulin or other means;
- (d) sediment tanks of sufficient capacity constructed from pre-formed individual cells of approximately 6 to 8 cu.m. capacity shall be used for settling surface runoff prior to disposal during the construction period. The system capacity shall be flexible and able to handle multiple inputs from a variety of sources and particularly suited to applications where the influent is pumped;
- (e) open stockpiles of construction materials (e.g. aggregates, sand and fill material) of more than 50 cu.m. shall be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system;
- (f) manholes, including newly constructed ones, shall always be covered and sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers during the construction period. At any time of year when rainstorms are imminent or forecast, actions shall be taken in accordance with the ProPECC Practice Note 1/94 issued by the Director of Environmental Protection. Particular attention should be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes;
- (g) oil interceptors shall be provided in drainage systems and oils and grease shall be regularly removed to prevent the release of oils and grease into storm water drainage systems after accidental spillage during the construction period. The interceptors should have a bypass to prevent flushing during periods of heavy rain;
- (h) all vehicles and plant shall be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads during the construction period. An adequately designed and located wheel washing bay should be provided at every site exit

and wash-water should have sand and silt settled out and removed at least on a weekly basis to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheel-wash bay to the public road should be paved with sufficient backfill toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains;

- (i) sediment shall be intercepted before it enters into modified sections of culverts. Sediment traps should be installed both upstream and downstream of any modified culvert sections in order to minimise the sediment loading in these culverts. Vortex tube site traps shall also be installed to provide continuous extraction of sediment within the modified sections of the culverts;
- (j) temporary and permanent drainage pipes and culverts shall be provided to facilitate runoff discharge during the construction period. The temporary and permanent drainage pipes and culverts should be adequately designed for the controlled release of storm flows. All sediment control measures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rain storms. Temporarily diverted drainage should be reinstated to its original condition when construction work has finished or the temporary diversion is no longer required; and
- (k) discharge and surface runoff contaminated by materials from any concrete batching plant shall be diverted to neutralisation tank to reduce acidity and the treated discharge should be connected to silt trap to remove suspended solids before disposing to sewage system.

Annex C

**Measures to Mitigate the Water Quality Impacts During Tunneling and Station Construction**

To mitigate the water quality impacts during tunneling and station construction:

- (a) cut-and-cover tunnel work shall be conducted segment by segment to limit the amount of construction runoff generated in the areas during the wet season (April to September). Temporary open storage of excavated materials used for backfill on site should be covered with tarpaulin or similar fabric during rainstorms. Any washout of construction or excavated materials should be diverted through appropriate sediment traps before discharge to stormwater drainage system. Ground water pumped out of tunnels should be discharged into the drainage channels which incorporate sediment traps to enhance deposition rates and to remove silt; and
- (b) spent bentonite slurries or other grouts used in diaphragm wall construction and in a separate slurry collection system shall be collected, and reconditioned and reused wherever practicable.

**Annex D**

**Measures to Mitigate Water Quality Impact During Reclamation Work and Other Construction Activities**

To mitigate the water quality impact during reclamation work and other construction activities :

- (a) any mechanical grabs shall be designed and maintained to avoid spillage and sealed tightly while being lifted during the construction period. For dredging of contaminated mud, closed watertight gabs shall be used;
- (b) silt curtains shall be deployed around dredging areas without jeopardizing the navigation of ships and ferries along the navigation channels during the dredging and filling operation;
- (c) all vessels shall be sized so that undue turbidity is not generated by turbulence from vessel movement or propeller wash during the construction period;
- (d) no foam, oil, grease, sum, litter or other objectionable matter shall be caused to be present on the water within the site or dumping grounds during the construction period;
- (e) loading of barges and hoppers shall be controlled to prevent splashing of dredged material into the surrounding water. Barges or hoppers shall not be filled to a level which will cause the overflow of materials or polluted water during loading or transportation;
- (f) debris and rubbish on site shall be collected, handled and disposed of properly to avoid entering the water column to cause water quality impacts;
- (g) to prevent spilled fuel oils from reaching coastal water, all fuel tanks and storage areas shall be provided with locks and located on sealed areas, and within bunds of a capacity equal to 110% of the storage capacity of the largest tank; and
- (h) construction work force sewage discharges on site shall be connected to existing sewer or sewage treatment facilities. Portable chemical toilets shall be provided to construction workers.

## Annex E

**Measures to Mitigate the Landfill Gas Hazard During the Operation of the Project**

During non-operational hours and particularly at the time when the first train travels through the tunnel each day, there is potential for accumulated gas to be ignited by an electrical spark caused by the train. To reduce the likelihood of this occurrence, the measures outlined below shall be adopted:

- (a) Ventilation of the tunnels should be switched on half an hour before the first train is expected to ensure any accumulated gas is expelled or dispersed within the tunnels;
- (b) Installation of a permanent gas detection system (with power backup) in the tunnels which is linked both to the emergency ventilation to be provided in the event of normal train service disruptions and visual alarms in the nearby station controller rooms;
- (c) It is understood that a safety check of each line is undertaken every morning before the trains are permitted to enter any section of track. It is recommended that the staff who undertake this check are trained in the use of portable gas detection equipment and that measurement of methane and carbon dioxide concentrations within the tunnels is added to the daily checking procedure for this section of the line;
- (d) All maintenance personnel and station staff working within the tunnels should be educated in the dangers of landfill gas and the signs and symptoms of asphyxia;
- (e) Smoking within the tunnels should be prohibited at all times;
- (f) An assumed presence of landfill gas should be adopted at all times by maintenance workers and a strictly regulated "work permit procedure" involving training, ventilation, gas monitoring (as detailed in the Construction recommendations section), safety tracking and communication with maintenance staff, enforcement of the no smoking order and use of only intrinsically safe equipment and electrical leads;
- (g) A gas detection system (with power backup) should be installed within the telecommunications and equipment rooms and ventilation requirements designed to achieve a high rate of air changes per hour during all operational hours. The failure of the ventilation equipment should be supported by audible alarms and a power backup system;
- (h) Adequate power and utility supplies for the equipment within the telecommunications equipment rooms should be provided from either end of the tunnel in preference to direct connection or routing underground from anywhere between the landfill and the development;
- (i) Monitoring for methane, carbon dioxide and oxygen as recommended above should be conducted using equipment with the following indication ranges and the actions prescribed below taken in instances of exceedances of the criteria given in Table 1 of Annex A.

(i) Methane	0-100%LEL and 0-100%v/v
(ii) Carbon dioxide	0-20%
(iii) Oxygen	0-21%

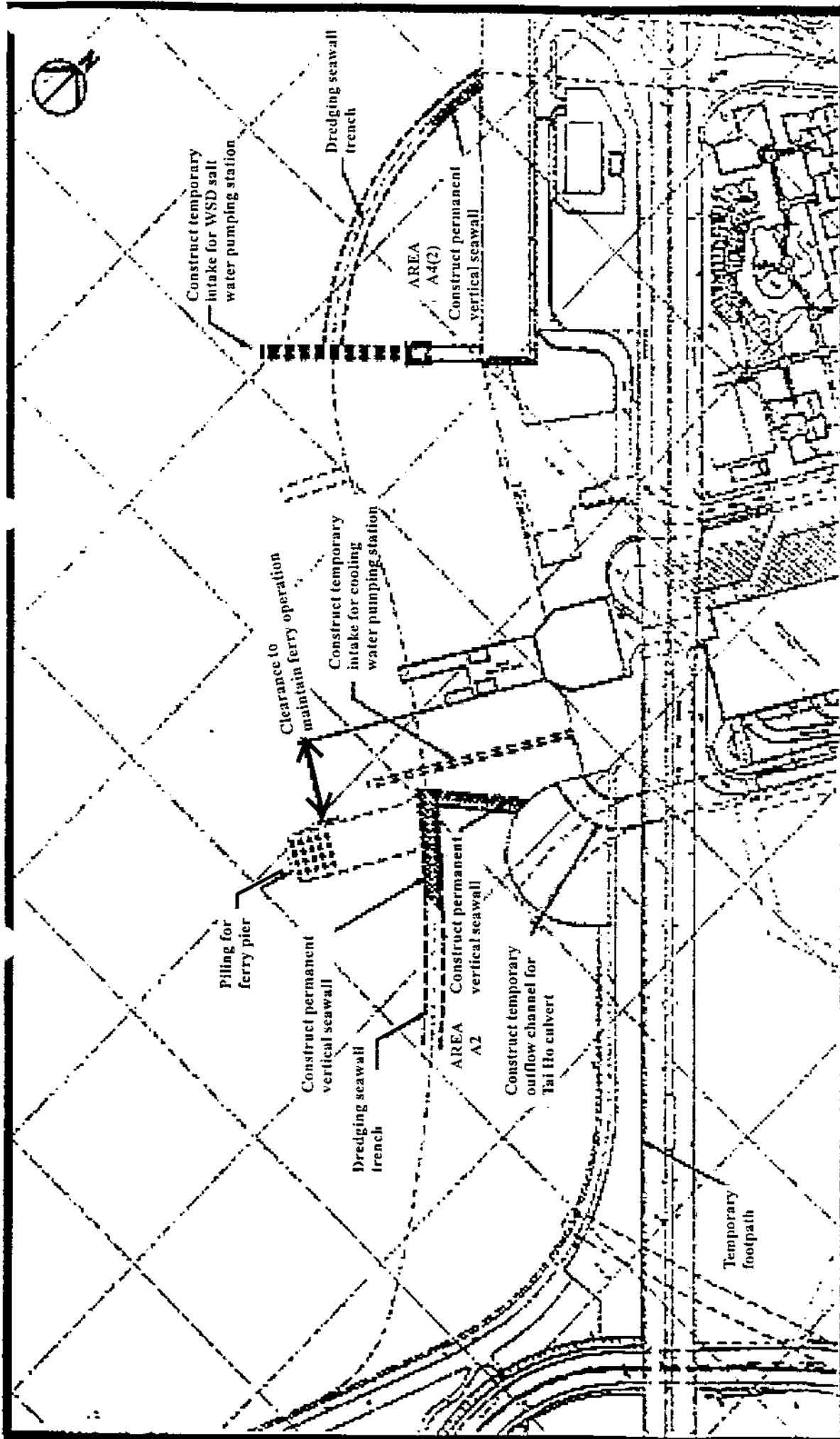
Annex F

**Measures to Mitigate the Water Quality Impact During the Operation of the Project**

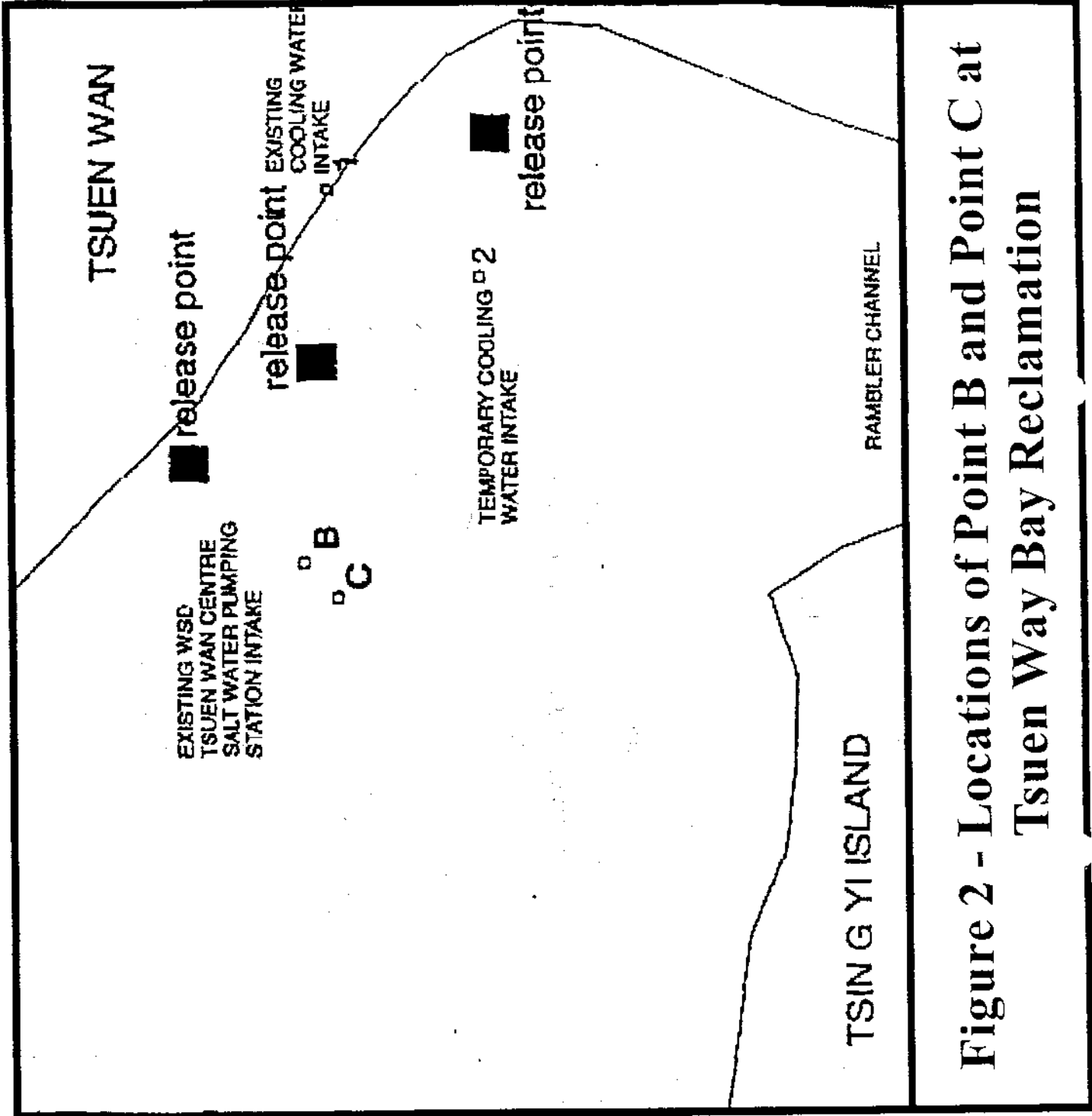
To mitigate the water quality impact during the operation of the Project :

- (a) A surface water drainage system shall be provided to collect operational tunnel seepage during the operation of the Project. Where oils and lubricating fluids could be spilt, the operational tunnel discharge and track runoff should pass through oil and grit/silt interceptors/chambers to remove oil, grease and sediment before being pumped to the public storm water drainage system via a rising main. However, washing water from regular tunnel washing shall be directed to foul sewers after pre-treatment;
- (b) All silt traps and oil interceptors shall be regularly cleaned and maintained during the operation of the Project;
- (c) Contents of the oil interceptors shall be collected for reuse, or transferred to an appropriate disposal facility; and
- (d) Sanitary fitments and drainage works shall be provided taking into account the Practice Note for Professional Persons, No. 5/93 (ProPECC PN 5/93) – Drainage Plans subject to Comment by the Environmental Protection Department.





**Figure 1 - Stage 1 of Tsuen Wan Bay Reclamation**



**Figure 2 - Locations of Point B and Point C at Tsuen Wan Bay Reclamation**



**Figure 3 - Location of the Marsh in Kam Tin**