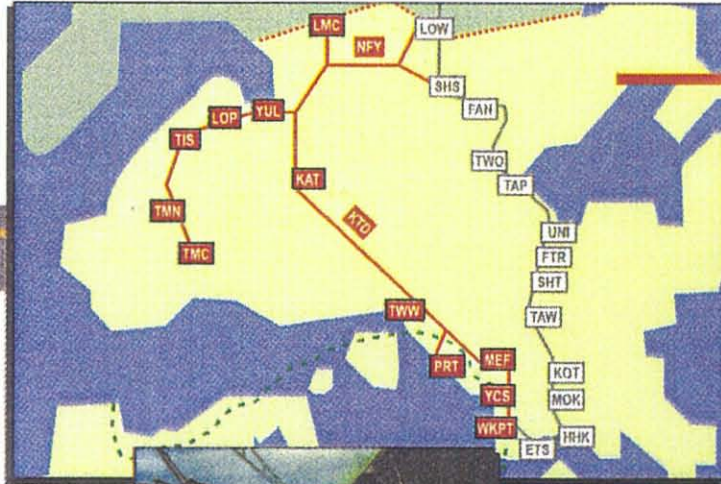


Kowloon-Canton Railway Corporation

West Rail

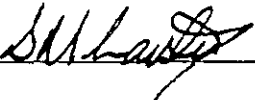


Executive Summary of the Final Assessment Report Contract No. TS-900 Environmental Impact Assessment



West Rail

West Kowloon to Tuen Mun Centre
Executive Summary of the Final Assessment Report

For and on behalf of ERM-Hong Kong, Ltd
Approved by: S.M. LAISTER
Signed: 
Position: EXECUTIVE DIRECTOR
Date: 11th February 1998

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1. INTRODUCTION

This executive summary presents the key issues identified during the final assessment of the impacts associated with the construction and operation of the proposed Western Corridor Railway (more commonly referred to as *West Rail*). The broad scope of the assessment is presented and the principal findings of the Environmental Impact Assessment (EIA) are identified.

1.1 Scope of West Rail

The Kowloon-Canton Railway Corporation (KCRC) commissioned Environmental Resources Management Hong Kong Limited (ERM-Hong Kong) to undertake an EIA of West Rail. ERM-Hong Kong's EIA Study Team has been assisted and supported by specialist input from British Rail (BR) Research (providing noise source term information and advice on rail and track technology issues); Ecosystems Limited (providing ecological input); Hydraulics and Water Research (Asia) Limited (providing hydrodynamic modelling expertise to supplement in house resources); The Museum of London Archaeological Service (providing archaeological evaluation and mitigation advice); Wilson Ihrig & Associates (providing technical input to the operational noise assessment); and Urbis Limited (providing input on the landscape strategy and on landscape, landuse and visual issues). In addition, Mr William Farrell has provided advice to the Study Team on EIA strategy and the interpretation and presentation of study findings, and Professor Siu Kwok-Kin has provided input to the assessment of impacts to historic buildings.

The Full Proposal submitted to Government by the KCRC in 1995 outlined a scheme for a new rail system which would include both domestic and through-train passenger services, a freight rail system terminating at the Kwai Chung container port facility (with a freight yard in the north of the New Territories), and connections and interchanges with existing and proposed rail systems in Hong Kong (such as KCRC's East Rail and the MTRC's Lantau and Airport Railway).

The Government has determined that only passenger train services and interchange facilities between West Kowloon and Tuen Mun shall be built at this time. The railway will include a number of new stations (Yen Chow Street, Mei Foo, Tsuen Wan West, Kam Tin, Yuen Long, Long Ping, Tin Shui Wai, Tuen Mun North and Tuen Mun Centre), and a major depot in the Kam Tin valley.

The West Rail EIA Final Assessment Report (FAR), of which this document represents the executive summary, deals only with those parts of the overall scheme that the Government has determined should be built at this time.

1.2 Overview of the West Rail EIA

1.2.1 Objectives and Assumptions

The objectives of the EIA were to describe the elements of West Rail that were to be assessed, define the standards and criteria which have been applied to the project, explain the assessment methodologies employed by the EIA Study team, identify potential impacts and potentially affected populations and environmental resources, provide a detailed assessment of environmental issues and impacts, make recommendations for their resolution and mitigation, describe residual impacts, and ensure that mitigation measures were integrated with the engineering design process. The assessment work, findings and recommendations described in this FAR meet these objectives.

The scope of the initial assessment reported in the Initial Assessment Report (IAR) finalised in August 1997 was defined and limited to some extent by the programme for delivery of engineering design information from the engineering Design Consultants. Areas of uncertainty which existed at that stage of the EIA have largely been resolved during the more detailed assessment reported in this FAR, as the results of modelling exercises and surveys have become available, and as more detailed information on construction plans, design features and operational arrangements for West Rail have been provided by or negotiated with the engineering Design Consultants.

1.2.2 Cumulative Impacts & "Cross-Media" Issues

A number of situations that may give rise to cumulative impacts have been considered in the assessment. However, it should be recognised that the potential for cumulative impacts is influenced not only by the coincidence in time and space of particular types of activities, but also by such factors as their relative intensity, nature of impact, diurnal variation, specific location and relative distance from sensitive receivers. In many cases this means that one particular activity or source is dominant in the assessment of cumulative impacts, especially in relation to noise.

For West Rail the following cumulative impact situations have been carefully assessed and, where necessary, appropriate mitigation measures have been formulated:

- Cumulative impacts on water quality associated with both West Rail construction and Kam Tin River works in the Northern Section;
- Cumulative impacts on ecologically important resources in the Central and Northern Sections due to loss of habitat for West Rail, Route 3, Kam Tin River works and other projects; and
- Cumulative noise and dust impacts from the various construction work sites in each Section of West Rail.

The EIA has also examined a number of situations in which there are potential interactions or connections between different segments of the environment or different parts of assessment for this project, including:

- Potential air and water pollution impacts from the storage, handling and reuse of excavated materials;
- The disposal of dredged sediments from marine, freshwater and wetland sites to marine or land-based disposal sites;
- The provision and development of land for off-site mitigation of ecologically important habitat loss;
- The visual impacts of noise mitigation measures; and
- Interactions between the ecological, landscape and historic evaluation of particular sites or features.

These “cross-media” issues have been carefully evaluated in the EIA.

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2. KEY ENVIRONMENTAL ISSUES

2.1 Introduction

A number of key impacts and issues were identified during the course of the EIA Study, either because their nature or scale was significant in itself, their mitigation was proving to be difficult, or a major element of their assessment remained to be completed. The findings of the EIA in relation to these issues are summarised below.

2.2 Construction Noise

The initial assessment concluded that a number of unacceptable residual impacts, mainly in the Northern and Western Sections, remained after the usual forms of mitigation had been applied, and that further assessment based on more detailed construction information was required.

The detailed assessment has confirmed the IAR findings, however residual exceedances have been further examined and have been mitigated by outlining, in some cases, extensive reductions in plant on-time and numbers of concurrent plant active on site in order to achieve compliance.

In the Northern and particularly the Western Section, some exceedances at particularly sensitive receivers such as schools, homes for the aged and hospitals remain after the consideration of these further proposals. In these cases, indirect mitigation measures have been recommended to reduce potential impacts to within the established criteria. For schools that have been identified as NSRs in these Sections, it may still be desirable to schedule noisy construction activities outside of examination periods to rigorously ensure that noise impacts are avoided.

As the project planning and engineering design of the new railway progresses, substantive changes to the construction activities and plant teams assumed in this assessment may occur. Under such circumstances, it is recommended that the relevant section of the assessment be updated.

2.3 Operational Noise

The initial assessment of operational train noise identified unmitigated noise exceedances at all Noise Sensitive Receivers studied along the route for the design year period of 2006 to 2011. As part of the initial assessment, KCRC committed to adopting a package of mitigation measures which included trackside absorptive barriers supplemented at specific locations by cantilevered noise barriers or full enclosure, where appropriate; an integrated design of structure, resilient track and noise barriers to achieve a maximum level of noise attenuation; specific limits on rolling stock specifications; and a reduction in maximum operating speed. KCRC also committed to providing mitigation measures to

the individual affected properties, should it not be possible to meet noise criteria with “at source” mitigation alone.

Following the initial assessment, the package of mitigation measures has been successfully developed and has resulted in the concept design for the Multi-plenum noise attenuation system. This system comprises three components:

- a plenum beneath the train involving the use of vehicle skirts and under car absorption;
- a plenum located beneath a walkway on both sides of the track; and
- edge walls with sound absorption.

The performance of this innovative package effectively reduces the overall height of noise barriers and therefore potential visual intrusion. The Multi-plenum System will always provide greater attenuation than a mitigation solution based solely on noise barriers and, as such, the application of the System will effectively reduce overall barrier heights and consequent visual intrusion. In line with the commitment given to Government by the Corporation, the Multi-plenum System provides the flexibility for future enhancement as edge wall barrier heights can be incrementally extended for increased noise attenuation from 1.2 m up to full enclosure. This will provide Government with greater flexibility in the long term land use planning of the areas through which West Rail passes and will facilitate, as yet uncommitted, development to be considered in much closer proximity to the railway than would otherwise be the case.

Floating slab track and resilient baseplates have been proposed to minimise vibration transmission in the viaduct structure and the structural design of the viaduct has been improved specifically from a noise standpoint. These mitigation measures, in conjunction with the Multi-plenum system, will ensure only three Noise Sensitive Receivers require at-receiver mitigation during the post-2011, full operation of West Rail with 12-car trains and these may be brought into compliance with further structural design optimisation of the viaduct. At the commencement of operations with a six-car train, and with an eight-car train two years later, there will be no residual exceedances.

Short sections of full enclosure are only required where Noise Sensitive Receivers are close to cross-over locations and will not therefore pose safety and ventilation constraints.

The predictions of operational noise impacts for fixed plant and for the West Rail Depot have been made on the basis of information available to date. However, the engineering design and project planning of West Rail will continue; where substantive changes to the currently assumed plant locations or capacity are made, it is recommended that the assessment be updated.

2.4 Water Quality

2.4.1 Diversions and Realignment

The initial assessment identified the importance of ensuring that the temporary relocation, diversion or realignment of culverts, drains and pipes would be undertaken with minimal additional impact on water sensitive receivers.

The FAR indicates that, provided the recommended mitigation measures are implemented, no unacceptable residual water quality impacts are expected as a result of construction of West Rail. These measures include provision of adequate capacity and maintenance of hydraulic performance in the temporary relocation and diversion of culverts and drains, full reinstatement of these facilities, interception of sediments, and completion of planned sewerage improvement works in advance of West Rail construction.

2.4.2 Intersections with Rivers, Nullahs and Ponds

Concerns about the impacts of West Rail construction activities, at those locations at which they will intersect with existing water courses or water bodies, were raised in the IAR. Further investigation and assessment of engineering design and construction proposals has been undertaken to ensure that disturbance to flow, ingress of pollutants, siltation and flooding will be minimised as far as possible.

The detailed assessment has indicated that, for the rail design and construction methods proposed, the scale of dredging and excavation in the vicinity of these water courses and bodies will be minimal, and, provided recommended mitigation measures to control pollution from dredging, excavation, runoff and drainage are implemented, water quality impacts will be temporary and localised.

2.4.3 Tsuen Wan Bay Reclamation

Mathematical modelling for the purpose of investigating impacts on flow regimes in the Rambler Channel, and the transport and dispersion of fine sediments away from the site of the reclamation, was in progress at the time of the IAR. A second issue unknown at the time of the IAR, was the extent of proposed dredging of marine sediments, much of which was expected to be contaminated.

The sediment transport and dispersion modelling has shown that, provided recommended dredging and handling techniques are employed, including silt curtains at dredging sites, no unacceptable impacts will occur at water intakes, beaches or other water sensitive receivers. Similarly, the modelling of tidal flows in the Rambler Channel showed that the Tsuen Wan West reclamation will cause no adverse impact on flow or water quality off-site.

A minimum dredging option will be used for the construction of the reclamation and, although much of the dredged material is expected to be contaminated, no problems are

anticipated with dredging, handling or disposal, provided recommended procedures are followed.

2.5 Landscape and Visual Issues

The assessment has indicated that significant, temporary visual and landscape impacts will occur during the construction phase, primarily in the Southern and Central sections. Mitigation measures, such as advanced planting, screen planting and decorative hoarding, have been recommended to minimise the temporary impacts during the construction phase.

During the operational phase, the impact of the West Rail development is predicted to bring about positive visual impacts in the Southern and Central Sections, in the longer term, by virtue of the screening and landscaping to be placed over the tunnels. In the Northern and Western Sections, some negative visual impacts will be sustained by nearby rural villages, largely as a result of the elevated design, however these will be considerably reduced as the Corporation is committed to the design principles set out in the Landscape Design Strategy Report.

2.6 Archaeological and Cultural Resources

The ongoing interaction between the EIA Study Team and the engineering Design Consultants has ensured that the West Rail alignment can avoid directly impacting upon any known historic buildings or features.

The potential direct impacts to the temple at Cheung Po have been mitigated through the redesign of the Depot layout. Further mitigation to the setting of the temple will be provided through appropriate planting and screening.

It is recommended that direct impacts to the heritage value of the buildings of the Lau's Residence at Tung Shing Lei be avoided through the adoption of a buffer zone of at least five metres between the building and the site boundary for the construction worksite.

Concerns have been raised regarding the potential impacts to the Tsui Shing Lau Pagoda, which is located some 40 metres to the south of the proposed Tin Shui Wai Station. It is recommended that the visual impact of the Station structure be mitigated through the adoption of sympathetic external design, which includes due consideration of the local preference for a traditional Chinese architectural style to be adopted for the design of the station.

The potential implications associated with the vibration impacts to the Pagoda, arising during construction and operation, have also been identified as an issue of concern. Whilst the predicted vibration levels will not cause any structural damage to the Pagoda, given the sensitivity of the structure and its associated heritage value, it is recommended that the structure is the subject of survey in advance, and following completion, of construction and that limits on vibration levels be imposed upon the Contractor.

The predictive modelling of potential impacts to buried archaeological resources is to be field tested during early 1998 and the findings and recommendations will be presented to the Antiquities & Monuments Office (AMO). The proposed approach to the evaluation of impacts to heritage resources has been presented to the Antiquities Advisory Board and, if appropriate, further presentations of progress will be provided during the course of the ongoing archaeological work.

2.7 Ecological Resources

The potential ecological impacts associated with West Rail have been assessed, and the available options of impact avoidance and mitigation investigated. The key impact associated with the *c.* 12 ha of wetland habitat loss would be mitigated by the provision of *c.* 8.5 ha of high quality created wetlands with the benefits of long-term management to defined conservation objectives. The detailed specification for the provisioning of this compensatory habitat will be contained within a Habitat Creation and Management Plan to be submitted for the Agriculture and Fisheries Department's (AFD) approval prior to the onset of construction. Strict control practices are also recommended to minimise the potential disturbance during the construction phase to the Painted Snipe roosting site near Kam Tin Road.

Fragmentation of remaining, undisturbed habitats will result from development of the transport corridor through a predominantly agricultural area. Anticipated subsequent development of the area for residential and other purposes, arising from enhanced transport access and improved flood control, is expected to cause significant longer term impacts and will need to be addressed by the EIA or planning studies for those development proposals.

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3. RECOMMENDATIONS FOR FURTHER WORK

3.1 Key Environmental Issues

A number of residual and follow-on assessment tasks have been identified that will require resolution following the completion of the EIA Study. These are itemised below.

- The detailed design contract for the Tsuen Wan Bay Reclamation will include collection of marine sediment samples in compliance with WBTC 22/92 requirements to determine the degree of heavy metal contamination of the sediment and the need to identify a suitable disposal site for the dredged material. The product of this task will be a Sediment Quality Report to be submitted to the FMC.
- A number of potentially contaminated sites along the West Rail alignment in the Central and Western Sections have been recommended for further investigation prior to commencement of construction. It is considered that, overall, the best method of approaching this issue is to incorporate these requirements into either the Design and Build or construction contracts as appropriate. The investigations can, in this way, be undertaken when access concerns are no longer valid and when the areas to be used for the construction and operation of the railway have been more rigidly defined by the detailed design process.
- A programme of archaeological investigation is to commence with the field testing of the predictive model of archaeological potential, scheduled for early 1998. The findings of the field testing will inform a more extensive field evaluation programme which will be undertaken prior to the onset of construction; further excavation may be scheduled to be undertaken during ground clearance by the Contractor. These field investigations will be undertaken following detailed liaison with the Antiquities and Monuments Office.
- A programme and plan for the creation of wetland habitat for the sites under the West Rail easement and a site adjacent to the Tai Lam Tunnel portal at the head of the Kam Tin Valley, in advance of project commencement. These tasks will be presented in a formal Habitat Creation and Management Plan and will be undertaken following close liaison with the Agriculture & Fisheries Department (AFD).
- The Government review of the Gin Drinkers Bay Landfill Gas Hazard Assessment has indicated concern over the proposed location and use of the Temporary Construction Worksite located southwest of Kwai Hei Street at Kwai Chung. The worksite lies within 50 m of the northeast perimeter of the former landfill site near to gas monitoring wells which have shown up to 20% v/v methane concentrations. While the Hazard Assessment report has presented a comprehensive plan to address potential hazards during construction, it is recommended that a detailed construction risk assessment of the worksite is carried out at a later stage in the design process, but prior to construction, to further address the risks of landfill gas accumulation in

Recommendations For Further Work

temporary structures, storage facilities and the processes and activities to be undertaken at the site.

4. CONCLUSION

The FAR provides sufficient evidence that the environmental impacts associated with the construction and operation of West Rail are amenable to mitigation.

The EIA Study has been undertaken at an early stage in the development of the new railway to ensure that environmental considerations have been integrated into the overall railway design. As such, the FAR represents the cornerstone of the environmental management approach to be adopted by the Corporation during the construction and operation of West Rail. The findings and recommendations of the Study will require an ongoing environmental input to the planning of West Rail to ensure required tasks are undertaken and that issues are satisfactorily resolved. The resolution of specific issues will continue to be pursued in discussion with relevant departments and bureaux of Government.



最終評估報告行政摘要

合約編號 TS-900



環境影響評估

西鐵

西九龍至屯門市
最終評估報告行政摘要

香港環境資源管理顧問有限公司

批核：



(張振明)

職位：副董事總經理

日期：一九九八年二月十六日

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1. 引言

本行政摘要闡述西部走廊鐵路(一般稱為西鐵)最終環境評估認定的主要施工和運作影響。本文件介紹最終評估的範圍，並說明環境影響評估的主要結果。

1.1 西鐵項目的範圍

九廣鐵路公司(九廣鐵路)委任香港環境資源管理顧問有限公司(ERM)就西鐵進行環境影響評估。在研究過程中，ERM的環境影響評估研究小組獲得英國鐵路研究部(英鐵)(提供噪音源數據及鐵路與路軌技術方面的意見)、生態系統顧問有限公司(提供生態方面的意見)、水力水研(亞洲)有限公司(提供水力模型方面的專門知識，以補內部資源的不足)、倫敦博物館考古服務部(提供考古評估和減輕對文物的影響的意見)、Wilson Ihrig & Associates(為運作噪音評估提供技術上的意見)和雅邦規劃設計有限公司(就景觀策略、景觀、土地用途及視覺影響事宜提供意見)等專業人士的協助和支援。此外，William Farrell先生曾為研究小組提供環境影響評估策略和對研究結果的理解和說明等方面的意見，蕭國健教授則就歷史性建築物的影響評估提供意見。

九廣鐵路於一九九五年向政府提交的計劃書，提出建造一個新鐵路系統的計劃，包括本地客運服務、直通車客運服務、以葵涌貨櫃碼頭為終點的貨運鐵路系統(貨場設於新界北部)、以及與香港現有及擬建的鐵路系統(如九廣東鐵及地鐵的大嶼山及機場鐵路)接駁的設施和轉車處。

政府決定目前只建造西九龍至屯門之間的客運系統和轉車設施。鐵路沿線有多個新車站(欽州街、美孚、荃灣西、錦田、元朗、朗屏、天水圍、屯門北和屯門市)，並於錦田河谷設置大型車廠。

西鐵環境影響評估最終評估報告只涉及目前政府決定建造的部分。本文是該報告的行政摘要。

1.2 西鐵環境影響評估概覽

1.2.1 目的及假設

環境影響評估的目的，是說明西鐵須予評估的因素、界定西鐵項目所使用的標準、解釋環境影響評估研究小組採用的評估方法、認定可能產生的影響和可能受影響的居民和環境資源、就環境問題及影響作詳細評估、提出解決問題及緩解方法、描述會造成的殘餘影響、並確保緩解措施與工程設計過程互相配合。最終評估報告所述的評估工作、研究結果和建議均符合這些目標。

工程設計顧問提供的工程設計資料，在一定程度上收窄了和清楚界定了一九九七年八月敲定的初步評估報告中說明的初步評估範圍。由於電腦模擬和實地考察已有結果，而工程設計顧問又已提供西鐵的施工計劃、設計特點和運作安排等詳盡資料，

或已就有關情況與研究小組商討，因此本報告報導的詳盡評估過程中，解決了許多初步評估階段的疑問。

1.2.2 累積影響及「跨媒介」問題

評估期間，研究小組曾考慮多種造成累積影響的情況，但須注意的是，累積影響不僅繫於若干活動在時間和空間上的巧合，也視乎其他因素而定，如活動的相對強度、影響的性質、在一日之內的變化、所在的位置、與敏感受體的相對距離等。上述種種，在很多情況下亦表示某種活動或污染源在累積影響的評估中佔主導地位，尤以噪音為甚。

就西鐵而言，研究小組小心評估了以下累積影響的情況，有需要時並制訂適當的緩解措施：

- 北段因西鐵工程和錦田河工程而對水質產生的累積影響；
- 中段及北段因西鐵、三號幹線、錦田河工程及其他工程導致棲息地減少而對重要生態資源產生的累積影響；及
- 西鐵各段地盤產生的噪音及塵埃累積影響。

此項工程可能造成環境的不同層面或工程評估的不同類目之間的相互作用或關係；環境影響評估研究了多種此類情況，包括：

- 掘出物料的貯藏、處理及再使用時可能引致的空氣污染及水質污染；
- 從海洋、河流及沼澤挖出的淤泥棄置於海上或陸上傾卸場的問題；
- 在原地之外另行提供及開發土地，以補具重要生態價值棲息地的流失；
- 噪音消減措施對視覺景觀的影響；及
- 某些地點或地理特徵的生態、景觀和歷史價值之間的相互關係。

環境影響評估已小心研究這些「跨媒介」問題。

2. 主要環境問題

2.1 引言

環境影響評估中研究的主要影響和問題，就是重要或影響範圍廣泛以致難於緩解的環境問題，或是有大部分評估工作尚待完成的事項。環境影響評估對這些問題的研究結果概述如下。

2.2 建築噪音

初步評估結果顯示，在實施一般緩解措施後，仍會有一些不能接受的殘餘影響，主要集中在北段和西段，須根據更詳盡的施工資料再作評估。

詳細評估確定了初步評估報告的研究結果，經過深入分析超出標準的殘餘影響後，為某些情況建議緩解的方法，包括大幅縮短開動機械的時間，並減少同時開動機械的數量，以符合噪音標準。

上述建議實施後，北段和西段某些敏感受體，如學校、老人院、醫院等，仍有超出標準的情況，尤以西段為甚。在這些情況下，研究小組提出間接的緩解措施，以便將潛在的影響減低至符合標準的水平。這些路段內若有學校界定為噪音敏感受體，則宜將噪音較強的工程編排至考試期以外，確保不會在該等時段內構成噪音影響。

在項目策劃和工程設計的過程中，新鐵路的施工活動和機械組合可能會有所更改，以致有別於本評估的假設。如有這種情況，應修訂有關評估的內容。

2.3 運作噪音

初步評估以二零零六年至二零一一年為基礎，認定了鐵路沿線各噪音敏感受體的列車運行噪音在未經緩解時超出標準的情況。初步評估時，九廣鐵路已承諾採用多種緩解措施，包括在路軌旁設置吸音屏障、在特定地點視乎情況安裝懸臂式隔音屏障；進行軌道結構、彈性路軌和隔音屏障的綜合設計，以便在最大程度上減輕噪音；在列車設計的規格方面訂立限制；並減低最高車速。若單靠噪音源緩解措施仍未能符合噪音標準，九廣鐵路將為個別受影響的物業裝設緩解設施。

在初步評估後，研究人員成功制訂了整套緩解措施，並完成了多重氣室噪音消滅系統的概念設計。這系統有三部分：第一部分為列車底部氣室，由列車底部兩側的吸音、裙板和鋪上吸音物料的車廂底部構成；第二部分是路軌兩旁走道下形成的氣室；第三部分是吸音圍牆。這套創新的措施，可降低隔音屏障的整體高度，從而減少對景觀的影響。用多重氣室系統消滅噪音，效果往往比單獨使用隔音屏障來得顯著，這樣就可有效地降低隔音屏障的整體高度，減輕隨之而來對景觀造成的障礙。多重氣室噪音消滅系統十分靈活：吸音牆可逐步加高，由1.2米擴展至全封蔽式，增強消滅噪音的效能，符合九廣鐵路對政府的承諾。這樣一來，政府就西鐵所經地區的土

地用途作長遠策劃時，就有更大的靈活性，可考慮在更貼近鐵路而目前尚未劃定用途的地點發展。

研究人員建議使用浮板軌道及彈性底板，以減低高架鐵路的傳震程度，從消滅噪音的角度改善了高架鐵路的結構設計。這些緩解措施與多重氣室噪音消滅系統配合之下，在二零一一年西鐵全面投入運作、以十二節車廂的列車行走時，只有三個噪音敏感受體需要在受影響物業裝設噪音消滅措施。高架鐵路的結構設計改良後，這些地點的噪音也可以達到可以接受水平。運作初期以六節車廂的列車行走時，以致兩年後以八節車廂的列車行走時的殘餘影響，均不會超出標準。

研究發現只有在噪音敏感受體附近的路軌交叉點，才須設置小段的密封式隔音罩，因此不會對安全及通風構成威脅。

有關固定機械及西鐵車廠運作噪音影響的預測，均以現有資料為計算基礎。然而，西鐵的工程設計和項目策劃仍會繼續進行；若目前假設的固定機械位置或規模有重大改變，就需要修訂評估內容。

2.4 水質

2.4.1 水道改道及重新編排

初步評估結果認為，下水道、溝渠及管道臨時改道或重新編排時，盡量減少對水質污染敏感受體的額外影響至為重要。

最終評估報告指出，若實施建議中的緩解措施，西鐵的施工應不會造成不可接受的水質污染殘餘影響。這些措施包括：確保下水道和溝渠臨時改道時有充足的容量，保持水流暢順；在工程完成後把有關設施完全修復；隔除淤泥；並在西鐵動工前完成已策劃的污水渠改善工程。

2.4.2 與河流、渠道及池塘的交匯處

西鐵有部分路段與現有的水道或水體交匯，初步評估報告關注到西鐵建築工程對這些地點的影響。研究人員再作調查，研究了工程設計和施工計劃，確保盡量減低對水流的干擾、污染物的入侵、淤泥堵塞和水浸的情況。

詳細評估結果顯示，若採用建議中的軌道設計和施工方法，在這些水道和水體附近挖泥和掘路的規模不會很大；只要使用建議中的緩解措施，控制挖泥、掘路、地面徑流和排水造成的污染，水質污染就只屬暫時性質和影響局部地區而矣。

2.4.3 荃灣海灣填海

初步評估報告發表時，研究人員正進行電腦數學模擬，探討填海對藍巴勒海峽水流的影響，以及微細沉積物由填海地點傳輸及擴散的情況。初步評估報告發表時仍未

掌握資料的另一個問題，是挖掘海底沉積物的規模；而預料這些沉積物大都已受污染。沉積物傳輸及擴散模擬結果顯示，若採用建議中的挖泥及處理技巧(包括在挖泥地點設置隔泥網)，則入水口、海灘或其他水質污染敏感受體將不會受到不能接受的影響。同樣，藍巴勒海峽潮汐水流模擬的結果顯示，荃灣西站一帶填海對填海範圍以外地區的水流或水質並無不良影響。

填海工程將採用挖泥程度最少的方法進行。雖然挖出淤泥預料大都已受污染，但若採用建議的步驟，挖泥、處理及棄置污泥的工作應不會引起水質問題。

2.5 景觀及視覺問題

評估報告指出，在施工期間，工程將引起短暫但嚴重的視覺及景觀影響，尤以南段及中段為甚。研究人員建議採取緩解措施，包括施工前事先栽種植物、栽種濃密的植物作屏障及設置裝飾性圍板，以盡量減少施工期間的暫時影響。

西鐵通車後，在南段和中段，隧道之上將設置屏障和園景設計，因此長遠而言對景觀有良好影響。北段及西段方面，由於鐵路屬架空設計，附近鄉村的景觀將受到不良影響；但九廣鐵路會致力奉行景觀設計策略報告書提出的設計原則，景觀方面的影響當可減至最低。

2.6 考古及文化資源

環境影響評估研究小組及工程設計顧問經常保持聯繫，確保西鐵不會影響任何已知的歷史建築物或古蹟。

車廠的設計更改後，對長莆寺廟的直接影響已減至最低。在適當處植樹及採用屏障，可再減輕對寺廟環境的影響。

為避免東成里劉氏大宅的建築物的歷史價值受到直接影響，研究人員建議該建築物與建築地盤邊界之間最少要有五米的緩衝區。

聚星樓寶塔位於擬建的天水圍站以南約40米，因此該站對聚星樓的影響亦惹人關注。研究小組建議採用和諧的外型設計，包括考慮採納當地人認為較佳的中國傳統建築風格，作為車站的設計，以減輕車站對景觀的影響。

在施工期間和通車後，震盪對聚星樓的影響也值得關注。預計的震動不會損壞聚星樓的結構，但由於聚星樓的結構較為脆弱，歷史價值亦高，建議應在工程前後進行檢查，並規定承建商不可超出震動程度限制。

一九九八年初，研究人員將就未出土文物價值的模擬結果進行實地測試，並將向古物及古蹟辦事處提交測試結果及建議。研究小組已向古物諮詢委員會申明評估古物所受影響的方法，在考古工作進行期間亦將視乎情況提交進度報告。

2.7 生態資源

研究小組評估了西鐵可能引起的生態影響，並研究避免產生影響和緩解影響的可行方法。工程的主要影響，是導致約12公頃的濕地流失，而緩解的方法，是另闢約8.5公頃的優質濕地，按生態保育的目標長期管理。新棲息地的詳細規格，將列於「棲息地闢設及管理計劃」內，在工程展開前，提交漁農處批准。研究小組亦建議採納嚴格的監管措施，盡量減低施工期間對錦田公路附近沙錐鳥棲息地的滋擾。

在以農地為主的地區建造運輸通道，將會分割其餘未受影響的棲息地。在交通及水浸情況改善後，鐵路沿線地區預料會發展作住宅及其他用途，屆時將造成重大的長遠影響，必須在有關項目的環境影響評估或規劃研究中再作探討。

3. 進一步工作建議

3.1 主要環境問題

研究小組指出尚有多項未完成的評估工作和跟進評估工作，須在環境影響評估研究完成後繼續進行。各項工作分列於後。

- 荃灣海灣填海工程的詳盡設計合約內，包括按工務科技術通告 WBTC22/92的規定收集海底沉積物樣本的工作，以確定沉積物受重金屬污染的程度，為挖出的淤泥物色恰當的棄置地點。研究結果將列於沉積物質素報告內，提交填料管理委員會。
- 研究小組建議在動工前，應對西鐵中段和西段一些有可能受污染的地點再作研究。整體來說，小組認為最好的處理辦法，是把這些工作列入設計建造合約或建築合約內。這時候，詳盡的設計應已完成，鐵路的施工和營運範圍已清楚界定，研究人員亦不必憂慮不能進入研究地點。
- 一九九八年初進行考古價值模擬結果的實地測試時，會同時進行考古調查工作。實地測試的結果，將作為大型實地評估工作的基礎，在建築工程動工前進行；在承建商清理地盤期間，可能安排再作發掘。這些實地調查工作，將於與古物及古蹟辦事處詳細商討後，始行展開。
- 建築工程動工前，須進行另闢濕地的工作，取代西鐵施工範圍內及錦田河谷鄰近大欖隧道口一端的棲息地。這些工作將在正式的「棲息地闢設及管理計劃」內提出，並在與漁農處密切聯繫後展開。

政府審閱醉酒灣堆填區沼氣風險評估報告後，對於在葵涌葵喜街西南設立臨時建築地盤一事表示關注。該地盤位於前堆填區東北界線的50米範圍內，附近的沼氣監測井，曾錄得甲烷濃度容積比高達百分之二十。風險評估報告已提出周詳的計劃，處理在建築工程期間可能發生的風險；但研究小組建議宜在動工前的設計工作後期就該地盤進行詳盡的施工風險評估，以處理堆填區沼氣對臨時搭建物、貯物設施和地盤工作可能構成的危險。

此頁留空

4. 結論

最後評核報告提出了充份證據，證明西鐵的施工和運作對環境構成的影響，是可以緩解的。

環境影響評估研究，在新鐵路策劃初期就已進行，以確保環境方面的考慮能與鐵路的整體設計互相配合。這次發表的最終評估報告，為九廣鐵路在西鐵施工及營運期間採取的環境管理策略提供了基礎。研究的結果與建議，要求在西鐵策劃期間繼續考慮環境因素，確保有關方面進行各項所需的工作，妥善解決環境問題。研究人員將繼續與有關政府部門及政策局磋商，為特定的問題尋求解決方案。