



鐵路項目的施工安全

Construction Safety in Railway Projects

2014年1月3日
3 January 2014

安全理念 Safety Philosophy

- 以安全為首，確保公眾、承建商及員工的安全
Safety is the top priority to ensure the safety of the public, contractors and staff
- 與合資格及富經驗承建商促進「安全第一」的文化
Working with competent and experienced contractors to implement MTR's Safety-First Culture



持續改善工地安全

Improving Safety Performance

1998: 西鐵綫、東涌綫及機場快綫

West Rail Line, Tung Chung Line and Airport Express

- 合約安全要求
Stringent safety requirements included in contract documents
- 獨立安全審核
Independent audits on contractors' safety management system

2000~2002: 馬鞍山鐵、尖沙咀站、落馬洲支綫及將軍澳綫

Ma On Shan Line, Tsim Sha Tsui, Lok Ma Chau Spur Line, and Tseung Kwan O Line

- 管理人員接受安全管理訓練
Safety management training to all management staff of MTR
- 督導人員(工程師、工務督察)接受施工安全訓練
Training modules to all site staff (Construction Engineers and Inspectors)

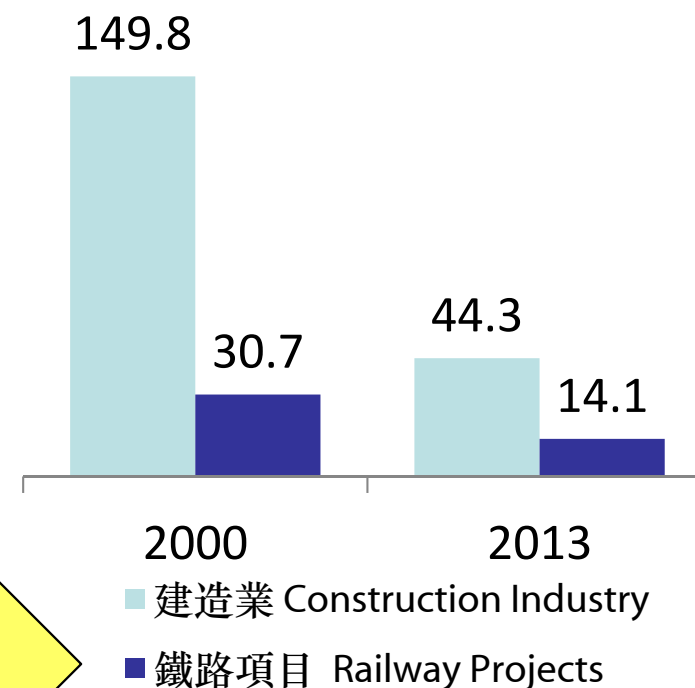
2005: 九龍南綫及迪士尼綫 Kowloon Southern Link and Disney Resort Line

- 每月工地狀況評分
Physical condition inspection every month
- 工作安全分析
Promotion of Job Hazard Analysis to review workplace hazards everyday

2009~now 現在: 五個新鐵路項目 Five new railway projects

- 獨立施工方案評核
Independent checking of method statements
- 安全表現鼓勵計劃
Safety incentive scheme for contractors
- 強制安全訓練
Mandatory safety management training for contractors management
- 險失事故報告
Near miss reporting scheme

千人意外率
Accidents per 1,000 workers



安全架構 Safety Organisation

Corporate Safety Management Committee 公司安全管理委員會

Projects Safety Management Committee 項目安全管理委員會

General Manager 總經理

Project Manager 項目經理

Construction Manager 建造經理

Project Director/Project Manager 項目總監/項目經理

分判商
subcontractor

分判商
subcontractor

分判商
subcontractor

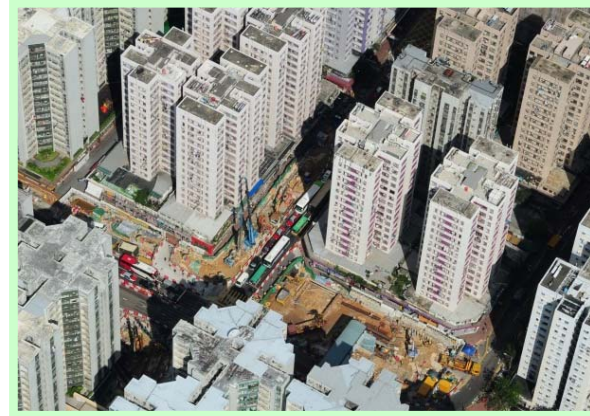
MTR 港鐵

Contractor 承建商

挑戰 Challenges

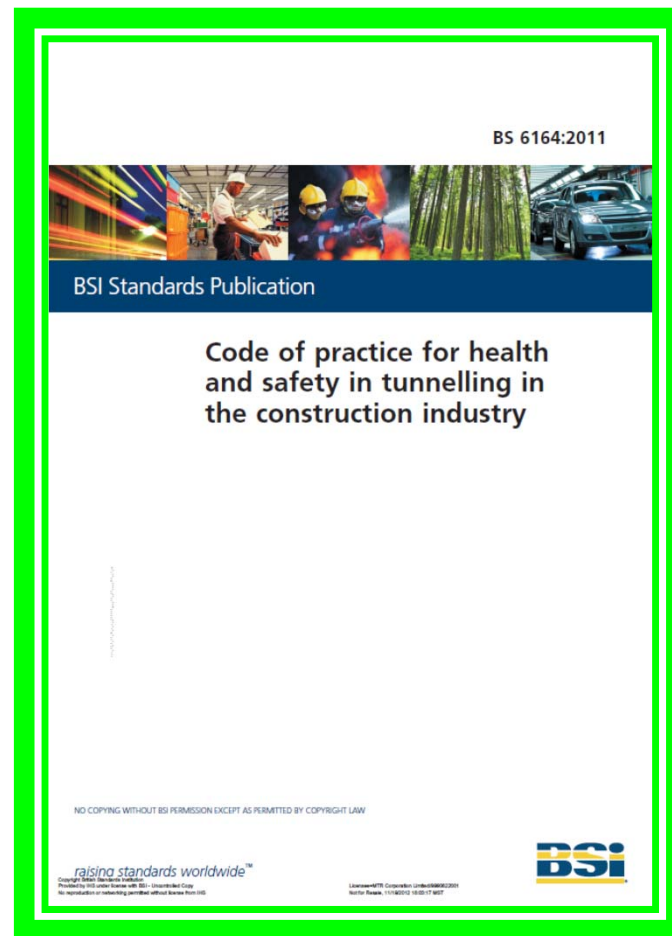
- 五個新鐵路項目同步建造
5 new railway projects being constructed simultaneously in Hong Kong
- 施工地點空間局限
Challenging site environment in congested areas
- 新入行的建造工友
New comers in the construction industry
- 缺乏具備相關經驗的管理監督及工友
Supervisors and workers lack of relevant experience
- 工友安全意識不足及缺乏安全文化
Low risk awareness and poor safety culture among workers

難度高的施工位置 Challenging Site Locations



隧道建造國際安全標準

International Tunnel Safety Standards



港鐵隧道內的工作環境

Working Environment inside MTR Tunnels



為工友提供各種方便設施 Welfare Facilities

洗手間 Toilets



淋浴室 Showers



洗衣機 Washing Machines



更衣室 Changing Areas

食堂 Canteens



醫療室 Site Clinics



挑戰 Challenges

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「新手照顧計劃」 New Worker Caring Program



指導人員 Mentor



新員工 New Staff



指導人員向新員工提供指導
Mentors providing guidance to new workers

建造工人人壽保障計劃

Workers' Life Insurance Scheme

- 港鐵公司是本港首創為建造工人提供免費人壽保障計劃
MTR is the first major employer in Hong Kong to sponsor a free life insurance scheme to construction workers
- 工人在職期間或因病或其他原因不幸身故，其家人將得到一筆現金解困
Provide financial benefit to the family of workers in the unfortunate event of their death from natural causes or accidents
- 是僱員補償以外的額外保障
Additional protection to workers in addition to employee compensation



挑戰 Challenges

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強制安全訓練 - 港鐵及承建商員工

Mandatory Safety Training for Staff and Contractors

首間項目管理公司要求旗下工程處及承建商所有員工須接受相關的安全訓練
First client to require staff of all levels of the Division and contractors teams to receive safety training appropriate to their roles and responsibilities



高級經理重溫安全管理知識 Senior Managers get safety refresher

「工程處及承建商之高級管理人員於4月27日至5月26日參加了一系列的安全管理重溫課程。重點包括安全知識及如何有效推行工程安全管理。」

副工程總監 - 策運鐵路項目李鏡權先生說：「課程的時間正好配合正在展開的多個新設的鐵路工程項目。課程讓參與者在一些安全知識上溫故知新。」

是次課程，共有128位同事及98位承建商人員分三批上課。課程包括一日副行政人員安全管理課程；兩日副高級經理安全管理課程及一日制風險評估及施工方案課程。此課程主要教授員工利用風險評估工具為地鐵施工作出更周詳的計劃，避免重大意外的發生。

項目經理 - 沙中線及觀塘線延綫(土木工程)蘇俊輝先生表示：「與承建商管理人員一起上課是非常好的安排，而當中所學到的寶貴經驗，相信會為新項目的建設締造更安全的環境。」

來年會有更多同類的課程開辦，歡迎新加入公司的及未能參與今次課程的同事報讀。

Senior Managers received a refresher lesson on safety during a special Safety Training Course for the Projects Division and its contractors from 27 April to 26 May. The course focused on safety knowledge and the effective promotion of safety management.

"The course is timely, as it comes just prior to the commencement of civil construction works for several new railway projects in Hong Kong," said Deputy Projects Director - Operations Projects Mr Lee Kang-kuen. "It is also a good way to remind all of us of the importance of safety."

In total, 128 colleagues and 98 contractor staff were divided into three classes. There was a one day Executive Management Course, a two day Senior Managers Course and a one day Risk Assessment and Method Statement

Course which helped colleagues learn about planning procedures to avoid a serious risk or accident.

"It was a great idea to have our contractors take part in the course with us," said Project Manager - Shatin to Central Link/Kwun Tong Line Extension Civil Mr David Sorton. "This experience is important for all of us, and will no doubt contribute to future projects which are very safe."

Additional courses will be held over the year for those who were not able to attend and for those new recruits who have joined the division.

副工程總監 - 策運鐵路項目李鏡權先生(第二排，右二)與副高級經理管理人員(第一排)與行政人員安全管理課程。

Deputy Projects Director - Operations Projects Mr Lee Kang-kuen (2nd row, 2nd right) saves the Executive Manager Safety Training course with colleagues.

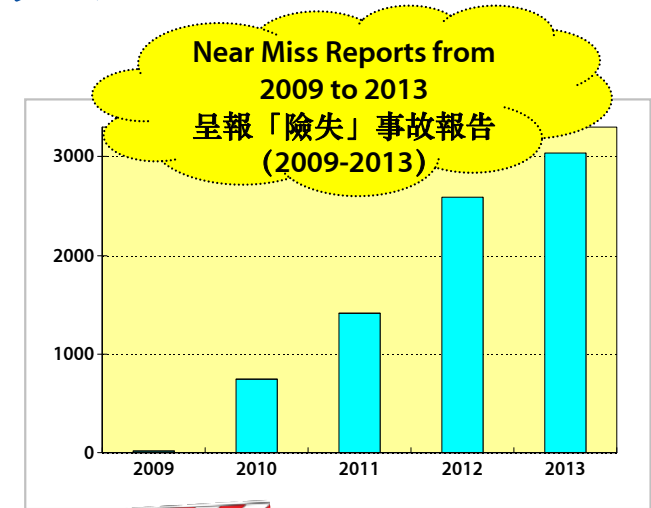


推廣計劃 Initiatives



「險失」事故分享/呈報 「險失」事故計劃

Near Miss Reporting Campaign



於港鐵工程團隊及承建商推廣和鼓勵呈報「險失」事故的文化，藉以減少地盤的意外發生。
By promoting a near miss reporting culture within the Division and our contractors, we aim to eliminate or reduce accidents and incidents in our workplace and sites.

工程處 安全警告 第 270 期 13/12/13

喉管鬆脫意外

高鐵線一個隧道工地最近發生一宗嚴重意外事故。一名工人在拆除隧道壁喉管時被一節下墮的喉管壓傷。

意外發生時，一組工人連同一輛「隧道多用車」正在隧道進行管壁泥漿喉管移除工序。該組喉管為上下兩條平衡固定在管壁的「U型托架」上。當時一名工人正坐在一節已經折掉接駁喉管的下行喉管上，正為該節喉管繫上吊運繩索之際，其中一個托架突然斷裂導致該名工人連同喉管下墮 2.5 米。結果該名工人被喉管壓過身體，造成盆骨骨折、肺部和腹部內出血。

事故調查發現該 U 型托架理應使用一件完整鐵料製造。但意外中所涉及的托架為兩件鐵料用焊接方法連接而斷口就在焊接點上。






建議

1. 不應使用焊接方法製造該類的 U 型托架。
2. 在隧道多用車上架設合適的工作平台，令工人無須坐在喉管上埋磚。
3. 加強對托架在質量上的檢查和確保沒有不合規格的托架安裝於將來的隧道。
4. 應定期及於拆除喉管前檢查托架的狀況。
5. 在可行的情況，增加每節喉管托架的數量。

工程處 安全警告 第 262 期 13/11/2013

石斗吊運時傾側

在南港島線地盤最近發生一宗嚴重險失事故。當一部履帶吊機將一個載有泥石的石斗由挖掘位置吊至地面時，石斗突然傾側，石塊從石斗墮下，並撞倒一部挖泥機，幸運地未有造成任何傷亡。

履帶吊機的主吊鉤用作吊起石斗吊架，而副吊鉤則負責控制石斗傾側及傾石動作。事發時，因副吊鉤上升比主吊鉤為快，引致石斗於半空傾側。




建議

在應考慮施工期間使用的機械及設備，以確保機械適合工地必須提供相關機械的使用手冊以供參考。

主吊鉤和副吊鉤同步功能的吊機用作吊運石斗及傾設有主副吊鉤同步功能的吊機，控制石斗傾側及只在倒石位置繫上。

不可超載，並有清晰標示。

Safety Starts With **ME!!**

安全
我做起

SAFETY
STARTS
WITH **ME**



安全我做起計劃 iSafe Campaign

工作人員在工作前要先問自己，集中四條簡單問題。

Personal risk assessment before workers start work, focuses on 4 simple questions

Ask yourself before starting work
開工前 問自己




- 1  What is the **hazard**?
工作有咩**危險**?
- 2  Is your **equipment** suitable?
工具咁唔咁用?
- 3  Have you been **trained**?
有無受過**訓練**?
- 4  Is your **workplace** safe?
做嘢嘅**工地**安唔安全?

Safety starts with me 安全我做起 

開工前 問自己  **MTR**



- ? 工作有咩**危險**?
- ? **工具**咁唔咁用?
- ? 有無接受**訓練**?
- ? 做嘢嘅**工地**安唔安全?

काम शुरू करने से पहले
अपने आप से पूछें।  **MTR**

- ? आपके क्या है**हैजार्ड** है ?
- ? क्या आपको **औजार** उपयुक्त है ?
- ? क्या आप **प्रशिक्षित** है ?
- ? क्या आपका **कार्य स्थल** सुरक्षित है ?

Ask Yourself This  **MTR**


What is your **hazard** ? 


- ? Is your **equipment** suitable?
- ? Have you been **trained** ?
- ? Is your **workplace** safe?

काम शुरू गर्नु अगाडि
आफैलाई यो कुरा सोच्नुहोस  **MTR**



- ? तपाईकोलागि के **खतरा** छ ?
- ? तपाईको **औजार** उपयुक्त छ ?
- ? तपाई **तालीम** प्राप्त हुनुहुन्छ ?
- ? के तपाईको **कार्यक्षेत्र** सुरक्षित छ ?

Tanungin muna ang iyong sarili
bago magsimula ng iyong Gawain  **MTR**



- ? May **panganib** ba ako?
- ? Angkop ba ang aking mga **kagamitan**?
- ? **Nasanay** ba ako sa gawaing ito?
- ? Ligtas ba ang aking **lugar ng pinagtrabuhuhan**?

安全隱患即時匯報計劃 “Don't Walk by” Campaign

鼓勵工友馬上報告任何不安全的行為或不安全的工作環境
Aimed at getting everyone involved in safety and immediately reporting all unsafe acts or conditions they see.



為工友提供免費健康檢查

Welfare Facilities – Health Screen

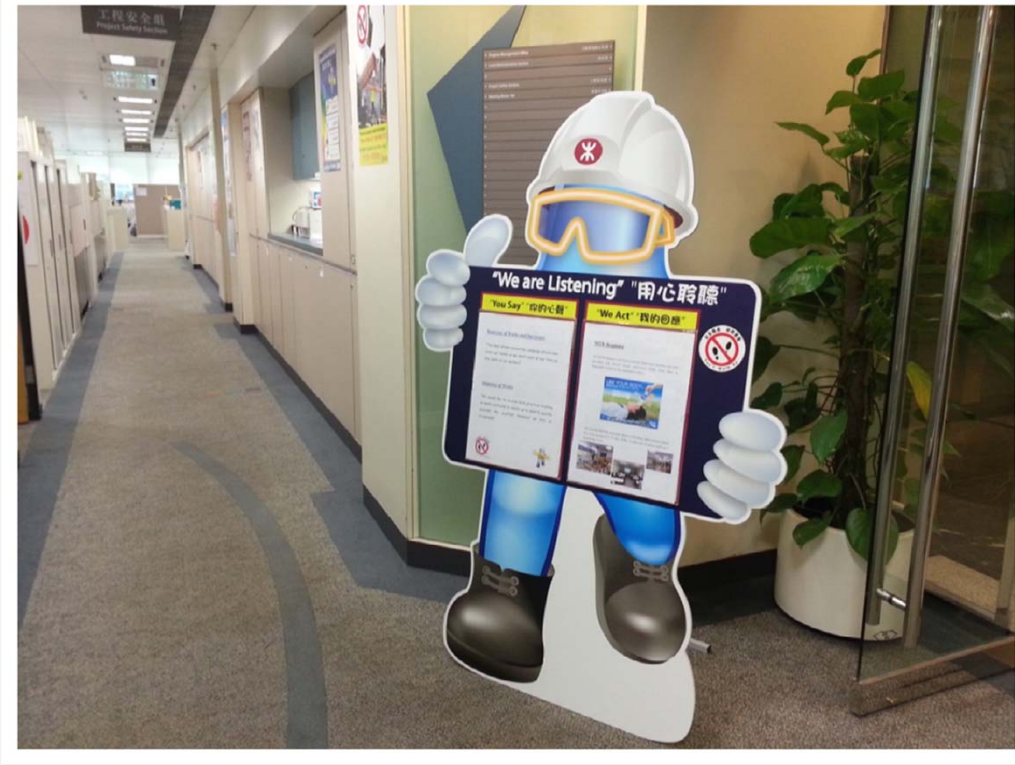


「工友健康推廣月」 -
為工友提供免費健康檢查
Free Health Screening for Workers in
“Worker Health and Well-being Month”

- 30分鐘健康講座
30-minute health talk
- 為工友提供的免費健康檢查
Health check for each worker
 - ✓ 量血壓 Blood pressure check
 - ✓ 糖尿病檢查 Diabetes check
 - ✓ 膽固醇檢查 Cholesterol check
 - ✓ BMI 檢查 BMI check
 - ✓ 聽力測試 Hearing test
 - ✓ 視力測試 Eye test



「你提出、我們跟進」及「開工前、想一想」 “You Say, We Act” & “Think before you act”



防中暑運動

Heat Stress Prevention Campaign

發出指引 First to introduce guidelines

AM I DEHYDRATED?
我是否缺水?

Urine Colour Chart 尿液顏色表

1	If your urine matches the colour 1, 2 or 3, you are properly hydrated.
2	若你的尿液顏色與左方顏色 1 - 2 或 3 相同，你身體水份足夠。
3	
4	If your urine matches the colour 4 or above, you are dehydrated .
5	You need to drink more water NOW!
6	若你的尿液顏色與左方顏色 4 或以上相同，你的身體缺水了。
7	
8	請立刻喝水!

SAFETY 安全 我從起
iSafe
MTR Working for your health and safety



提供免費電解質飲料
Provide electrolyte drinks



飲水設施
Drinking Facilities



工人休息站
Rest Area for Workers

危險「離手」運動 “Hands Off” Campaign



符合所有法例要求及施工方案 Full compliance with all statutory requirements and work methods

- 確保施工前承建商有詳細的施工方案及風險評估，並在工地落實執行
Ensuring the detailed method statements and risk assessments produced by contractors be implemented on site
- 汲取事故教訓與員工及承建商分享
Sharing amongst all staff and contractors on lessons learnt from accidents



港鐵前綫人員嚴格執行安全標準

Safety Standards Rigorously Enforced

- 口頭及書面改善要求
Verbal and formal notice issued on non-compliance
- 承建商須短時間內改善
Timely close-out of irregularities required



沒有工作台
No Safety Platform

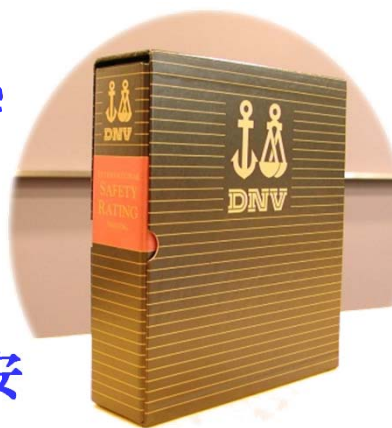


沒有圍欄
No Edge Protection

獨立安全稽核

Independent Safety Audits

- 每半年一次由國際認可稽核顧問DNV向承建商進行稽核
Contractors are audited every 6 months by independent internationally recognised safety consultant, Det Norske Veritas, against international standards.
- 如不達標會調整工程費支付安排
Minimum standards are included in contract documents and Milestone Payments are set against results.



Element
1. Leadership & Administration
2. Leadership Training
3. Planned Inspections and Maintenance
4. Critical Task Analysis and Procedures
5. Accident/Incident Investigation
6. Task Observation
7. Emergency Preparedness
8. Rules and Work Permits
9. Accident/Incident Analysis
10. Knowledge and Skills Training
11. Personal Protective Equipment
12. Health and Hygiene Control
13. System Evaluation
14. Engineering and Change Management
15. Personal Communications
16. Group Communications
17. General Promotions
18. Hiring and Placement
19. Materials and Services Management
20. Off-the-job Safety

Chevron
Texaco
BP
ICI
Bayer
GE Plastics
Rhone Poulenc
Schlumberger
Raychem
Total
Balfour Beatty
BOC
Unilever
Dyno Nobel
Pepsi Cola
General Motors
British Rail
British Telecom
Unocal
Ford
Gammon

安全獎項及獎勵計劃

Safety Awards for Contractors



每半年舉行「工程項目品質、安全、環保與關顧社區頒獎禮」
Bi-annually “Projects Quality, Safety, Environmental and Stakeholder Engagement Awards Presentation Ceremony”

安全大獎
安全稽核獎
最佳工地獎
意外率最低獎
最佳管工獎
最佳險失事故報告獎
最佳團隊獎

Best Contractor Award
Highest DNV Audit Score Award
Best Site Condition Award
Contractor with the lowest RAFR
Contractors' Supervisors Award
Best Near Miss Report Award
Best Site Team Award



與國際標準接軌

Comply with International Standards

- 於2009年獲英國職安建管理標準 18001 認證
Accredited to the BS OSHAS 18001-Occupational Safety and Health Management System in 2009
- 於2009年獲英國安全局授予國際安全獎
Received an International Safety Award from the British Safety Council in 2009
- 於2013年由國際顧問完成的獨立安全稽核中獲得高度評分 (8級)
Achieved Level 8 in independent safety audit conducted by international safety consultant in 2013



安全表現 Safety Performance

- 259宗須呈報的意外 (2013年1月至11月)
259 reportable accidents (from January to November 2013)
- 大部分為輕微個案，傷及手指(28%)、背部(16%)、腳部(12%)、手部(10%)
Majority being minor cases involving injury to finger (28%), back (16%), foot and leg (12%), hand and arm (10%)
- 2013年度截至11月，五個新鐵路項目須呈報的千人意外率為14.06，而2012年建造業界的數字為44.3
The year-to-date accident rate per thousand workers for the five new railway projects stands at 14.06 as at November 2013, as compared to the figure of 44.3 for the construction industry for 2012.
- 但不幸地2013年發生兩宗因工死亡個案、令自2009年以來總死亡意外增至四宗
Sadly, two fatal accidents occurred in 2013, making a total of four since the start of the five new railway projects in 2009.



在推行新鐵路項目時，作為管理人員、我們的目標及責任是確保所有員工及承建商工人每天下班均能絲毫無損地回家

During the construction of our new railway projects, it is our aim and our duty, to ensure that all our staff and all our contractors' workers go home to their families in the same condition as they arrive... **SAFE!**