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WEB SITE : http://www.hyd.gov.hk

路政署
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香港立法會道 1 號
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立法會秘書處
專責委員會秘書
劉素儀女士

劉女士：

調查廣深港高速鐵路香港段建造工程延誤的背景及原委專責委員會(「專責委員會」)要求提供資料

感謝 貴處於2015年3 月27日致函路政署署長(本人)。就專責委員會要求提供的資料，我現回覆如下。

(a) 請提供直至 2014 年 4 月，路政署負責監察高鐵香港段工程項目的資源，包括人員及相關每年開支的資料。

路政署鐵路拓展處於2008年7月成立高鐵香港段工程項目的專責小組。由2008年7月至2014年4月，該小組的人員安排如下：

時段	總工程師人數	高級工程師人數	工程師/助理工程師人數	總人數
2008 年 7 月 - 2008年9月	1	4	4	9
2008 年 9 月 - 2008年12月	1	4	5	10
2008 年 12 月 - 2009年9月	1	5	7	13
2009 年 9 月 - 2012年9月	1	5	9	15
2012 年 9 月 - 2013年9月	1	4	9	14
2013 年 9 月 - 2014年4月	1	4	8	13

按2014/15年度水平的薪級中點計算，該專責小組涉及的年度開支約為1億3200萬元至1億3600萬元不等。此外，正如我在2015年2月18日向專責委員會提交的陳述書之第28段表示，路政署鐵路拓展處自2010年8月起亦有聘請外間顧問嘉科工程顧問有限公司作為監察和核證顧問(監核顧問)，協助進行監察工作和定期審核，核實港鐵公司履行與政府簽訂的委託協議下的責任的情況。

(b) 劉家強先生向專責委員會提交他的陳述書之第 21 段表示，”署長會向局長匯報有關高鐵在推展時所遇到的重大議題”，就此，請提供直至 2014 年 4 月的相關資料。

正如我向專責委員會提交的陳述書之第21段所闡述，運房局和路政署在高鐵香港段工程項目上一直保持緊密溝通。首先，由我主持與港鐵公司每月舉行的監委會會議，運房局有委派代表出席會議。另外，我在每月與局長舉行有關路政署工作的例會上，均向局長匯報高鐵香港段項目的進度和所遇到的問題，當中包括: 石崗菜園村收地的進度、從深圳皇崗至香港米埔之間的隧道建造工程的進度、與內地相關單位的會議進展、各主要隧道建進合約的進度, 等等。如有需要，我亦會向局方匯報有關高鐵在推展時所遇到的其他重大議題。當中包括因應在推展高鐵香港段工程時所遇到的重大議題而安排的直接匯報會議。具體例子如下:

（一） 路政署在 2012 年 11 月促請港鐵公司緊密聯系內地建設單位，每三個月向路政署提交報告。每個報告都有以副本呈交運房局參考。

（二） 鑑於高鐵跨境段隧道工程出現滯後的情況，路政署曾安排港鐵公司於 2013 年 7 月 23 日向運房局直接匯報高鐵香港段和跨境段的整體進度。會上，運房局和路政署提醒港鐵公司須盡最大的努力確保項目按預算如期竣工。

（三） 路政署亦曾安排港鐵公司於 2013 年 11 月 8 日向運房局直接匯報高鐵香港段和跨境段的整體進度和港鐵公司建議的高鐵局部使用西九龍總站方案。

(c) 就路政署以驗證高鐵項目之項目範圍和授權支出是否符合相關要求，所採取的風險為本的抽樣方法，請提供詳細資料。包括但不限於當中所採取的方法、抽樣範圍、直至2014年4月的抽樣檢驗數量和結果。

路政署委任監核顧問識別高鐵工程中的主要風險，並以之為監察和核證工作定下指引和優先次序。風險識別與評估程序是參考環境、運輸及工務局根據國際及本地慣例所編制的「工務工程風險管理手冊」進行。

監核顧問及路政署每半年舉行系統性風險評估工作坊，會上定出項目風險列表。顧問及署方先將各個項目風險分為「工程相關事宜」、「對實際、環境及第三方影響」、「供應鏈出現問題及資源短缺」、「工程變更及申索」或「協調問題」共五個策略性風險類別，之後評估各個策略性風險的發生機會，並綜合風險對安全、財政、進度及工程品質帶來的後果，繼而得出總分數。現附上2013年12月的樣本項目風險列表載於**附件一(只供英文版)**作為參考。

監察和核證工作以項目風險列表作指引，並優先針對總分較高(即風險較大)的風險，以聚焦監察較大機會影響工程推展的高風險項目。

監核顧問主要透過四大方法進行監察和核證：檢視文件，定期核證，視察工地及參與會議。

（一） 檢視文件：監核顧問要求港鐵公司提交與高風險項目有關的文件以作檢視。2014 年 4 月的文件檢視要求例子載於**附件二(只供英文版)**。截至 2014 年 4 月，合計檢視了 650 份文件；

（二） 定期核證：監核顧問每半年對主要工程合約進行核證，而對其餘工程合約則進行年度核證。核證的範疇包括安全和環保、財政、進度及工程品質，當中監核顧問於核證財政範疇時檢視合約中的工程變更及申索。截至 2014 年 4 月，合計舉行了 780 次核證。例子：2013 年 11 月對於合約編號 824 的核證報告載於**附件三(只供英文版)**；

（三） 視察工地：監核顧問每月聯同路政署人員視察各合約工地的進度。每輪的工地視察會到所有主要合約工地巡視，每輪視察為期三至四日，視察合約數為 12 至 19 項不等。截至 2014 年 4 月，合計進行了 51 輪工地視察；及

（四） 參與會議：監核顧問、署方代表及港鐵公司的工地督導人員每月就主要的土木及機電工程舉行合約檢討會議。截至 2014 年 4 月，合計舉行了 47 次合約檢討會議。

路政署署長

(劉家強 劉家強)

2015年4月10日

副本傳真
運輸及房屋局首席助理秘書長(運輸)3王明慧 女士
(傳真號碼: 2136 8016)

Enclosure 1

JACOBS®

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17 December 2013

By E-mail and By Hand

MV2

Our Ref: G3232/10/1462

Highways Department
Railway Development Office
1/F, Homantin Government Offices
88 Chung Hau Street
Homantin
Kowloon

For the attention of Mr. C T Chan

Dear Sirs,

Agreement No. CE 8/2010 (HY)
XRL - Monitoring and Verification for Construction, Testing and Commissioning Phase - Investigation
Reviewed Systematic Risk Assessment Register for XRL Contracts

We refer to the risk workshop held on 12 November 2013 and 16 December 2013, we are pleased to submit the updated risk assessment table for the civil and E&M contracts for your attention. Please note that we have reviewed and updated the chance of occurrence based on the current development of the Project. All the updates were highlighted in green in the risk register for your easy reference.

Should you have any queries regarding the submission, please do not hesitate to contact Ms Vicky Sy at 2738 3812 or the undersigned.

Yours faithfully
For and on behalf of Jacobs China Limited

William Ng
Project Manager

WN/VS/vs

enc

Systematic Risk Assessment Register

Sht No	JCL Contract Grouping	Contract No	Contract Name
1	WKT Foundations	803A	WKT Diaphragm Wall (Site A)
		803B	WKT Piles (Site A - North)
		803C	WKT Piles (Site A - South)
		803D	WKT Diaphragm Wall & Piles (WKCD)
2	Obstruction Removal	802	Nam Cheong Property Foundation Removal & Reprovisioning
		805	Sham Mong Road Obstruction Removal
3	TBM Tunnels - Urban	820	Mei Lai Road to Hoi Ting Road Tunnels
		821 (part)	Shek Yam to Mei Lai Road Tunnels
4	TBM Tunnels - Rural	823A	Tai Kong Po to Tse Uk Tsuen Tunnels
		825	Mai Po to Ngau Tam Mei Tunnels
		826	Huanggang to Mai Po Tunnels
5	Drill & Blast Tunnels	821	Shek Yam to Mei Lai Road Tunnels
		822	Tse Uk Tsuen to Shek Yam Tunnels
		824	Ngau Tam Mei to Tai Kong Po Tunnels
6	Cut & Cover Tunnels	811A	WKT Approach Tunnels (North)
		811B	WKT Approach Tunnels (South)
		823B	SSS and ERS
7	WKT Civil	810A	WKT Station (South)
		810B	WKT Station (North)
8	Environmental	801	Tree Transplanting
		8204	Design, Supply, Installation & Maintenance of Automatic Noise Monitoring System
		8205	Construction Dust Monitoring
9	WKT Landscape, ABWF & E&M	812	WKT Landscaping
		815	WKT ABWF
		816A	WKT Environmental Control System
		816B	WKT Building Services Control System
		816C	WKT Electrical Installation
		816D	WKT Fire Services, Plumbing & Drainage
10	Systemwide Civil	807	Kwu Tung Core Store & Associated Works
		827	Cross Passage Doors Supply & Installation
		830	Trackwork & Overhead Line System
11	Systemwide E&M	840	Rolling Stock
		841A	Signalling System -Trackside Equipment
		841B	Signalling System -Trainborne Equipment
		842	Miscellaneous Mainland E&M System
		843	Tunnel Environmental Control System
		845	Traction Power Supply System
		846	Trackside Auxilliaries
		847	Lifts
		848	Escalators & Moving Walkways
		849	Radio Communications Systems
		850	Passenger Mobile Communications System
		851	Fixed Communications System
		852	Ticketing System
		853	Main Control System
		854	Security Access Management System
		855	Building Services for Tunnel Ventilation Buildings and ERS
		856	Building Services for SSS
		860A	SSS Depot Equipment - Train Wash Plant
		860B	SSS Depot Equipment - Overhead Crane
		860C	SSS Depot Equipment - Train Sewage Suction System
		860D	SSS Depot Equipment - Wheel Monitoring System
		860E	SSS Depot Equipment - Miscellaneous
		861	Engineering Vehicles
		862	Depot Equipment in Mainland
		871	Facilities for Train Service at WKT
12	Instrumentation	C8010	Independent Geotechnical Instrumentation Monitoring - WKT
		C8011	Independent Geotechnical Instrumentation Monitoring - Tunnels

Occurrence / Risk Scoring System	
Level	Score
Very Likely	9
Likely	7
Possible	5
Unlikely	3
Rare	1

Remarks

* No risk due to completion of construction elem

9 Increasing risk score from last revision

1 Decreasing risk score from last revision

1) WKT Foundation Contracts 803A, 803B, 803C & 803D - Completed

Strategic Risk	Working Risk		Consequences				Risk of Occurrence					Total Score
			Safety	Cost	Programme	Quality	Very Likely	Likely	Possible	Unlikely	Rare	
Engineering Issues	Damage to Existing Building	*	1	1	1	1					1	4
	Damage to Utilities / Roads / Highway Structures, etc	*	1	1	1	1					1	4
	Temporary Traffic Arrangements	*	1	1	1	1					1	4
	Temporary Works	*	1	1	1	1					1	4
	D-wall Issues		1	1	1	1					1	4
	Construction Issues	*	1	1	1	1					1	4
	Late Design Changes	*	1	1	1	1					1	4
	Site Logistics	*	1	1	1	1					1	4
Physical, Environmental and Third Party Impacts	Statutory Risk (other government departments approvals)	*	1	3	5	1					1	10
	Unforeseen Utilities	*	1	5	5	1					1	12
	Spoil Removal	*	1	3	3	1					1	8
	Contaminated Soil	*	3	5	7	1					1	16
	Unforeseen Ground Conditions	*	1	7	3	1					1	12
	Construction Fire	*	9	1	1	1					1	12
	Noise / Dust Generation	*	1	1	3	1					1	6
	Extreme Weather / Flooding	*	5	1	1	1					1	8
	Ground Water Drawdown / Ingress	*	1	3	5	5					1	14
Supply Chain Overstretched & Resources Not Available	Land Availability / Site Possession	*	1	1	1	1					1	4
	MTRCL Procedural Issues	*	3	3	3	3					1	12
	Sub-standard / Unapproved Materials	*	3	1	3	9					1	16
	Plant & Materials Supply	*	1	1	3	3					1	8
	Availability of Skilled LabourP	*	7	1	1	5					1	14
	Poor Quality Construction		1	1	3	7					1	12
	Contractors / Suppliers Bankrupt	*	1	7	9	1					1	18
Variations and Claims	Design Changes	*	1	5	5	1					1	12
	External Impacts	*	1	5	5	1					1	12
	Unforeseen Site Conditions	*	1	5	7	1					1	14
Interfaces	Contract Interfaces		1	1	3	1					1	6

2) Obstruction Removal Contracts - 802 & 805

Strategic Risk	Working Risk	Consequences				Risk of Occurrence					Total Score
		Safety	Cost	Programme	Quality	Very Likely	Likely	Possible	Unlikely	Rare	
Engineering Issues	Damage to Existing Buildings	3	5	3	1					1	12
	Damage to Utilities / Roads / Highway Structures etc	5	5	3	1				3		42
	Temporary Traffic Arrangements	5	3	1	1				3		30
	Temporary Works	7	1	3	1			5			60
	Construction Issues	3	7	7	1		7				126
	Site Logistics	3	3	3	1			5			50
	Late Design Changes	1	5	5	1				3		36
Physical, Environmental and Third Party Impacts	Statutory Risk (other government departments approvals)	1	5	3	1				3		30
	Unforeseen Utilities	1	5	3	1				3		30
	Spoil Removal	1	1	1	1				3		12
	Contaminated Soil	1	1	1	1					1	4
	Unforeseen Ground Conditions	1	7	5	1			5			70
	Construction Fire	7	1	1	1					1	10
	Dust / Noise Generation	3	1	3	1			5			40
	Extreme Weather / Flooding	3	1	1	1					1	6
	Ground Water Drawdown / Ingress	1	1	1	1				3		12
Supply Chain Overstretched & Resources Not Available	Land Availability / Site Possession	1	1	1	1					1	4
	MTRCL Procedural Issues	3	3	3	3				3		36
	Sub-standard / Unapproved Materials	3	1	5	3					1	12
	Plant & Materials Supply	1	3	5	3			5			60
	Availability of Skilled Labour	7	3	5	3				3		54
	Poor Quality Construction	1	1	5	3			5			50
	Contractors / Suppliers Bankrupt	1	3	5	1			5			50
Variation and Claims	Design Changes	1	3	3	1		7				56
	External Impacts	1	3	5	1				3		30
	Unforeseen Site Conditions	1	9	7	1			5			90
Interfaces	Contract Interfaces	1	9	7	1				3		54

3) TBM Tunnels Contracts - 820 & 821 (part)

Strategic Risk	Working Risk	Consequences				Risk of Occurrence					Total Score
		Safety	Cost	Programme	Quality	Very Likely	Likely	Possible	Unlikely	Rare	
Engineering Issues	Damage to Existing Buildings	5	7	5	1			5			90
	Damage to Utilities / Roads / Highway Structures etc	5	5	5	1			5			80
	Temporary Traffic Arrangements	5	3	5	1			5			70
	Temporary Works	7	3	5	1			5			80
	Construction Issues	3	3	5	5		7				112
	D-wall Issues	1	1	1	1					1	4
	Design Robustness	3	3	5	3				3		42
	Contamination of Tunnel, eg Dust, Impacting Commissioning	3	3	5	3			5			70
	Site Logistics	3	3	5	1			5			60
	Late Design Changes	1	7	7	3				3		54
	TBM Jammed	5	7	9	1			5			110
Physical, Environmental and Third Party Impacts	Statutory Risk (other government departments approvals)	1	5	5	1			5			60
	Damage to Existing Tsuen Wan Line / Lai Chi Kok Flyover / DSD Tunnel	9	7	9	1					1	26
	Unforeseen Utilities	1	5	5	1			5			60
	Fire Safety Strategy not Finalised	1	5	5	1				3		36
	Spoil Removal	1	3	5	1				3		30
	Contaminated Soil	5	5	5	1			5			80
	Unforeseen Ground Conditions and obstructions	7	7	7	1		7				154
	Construction Fire	7	5	7	5			5			120
	Noise / Dust Generation	1	1	1	1		7				28
	Extreme Weather / Flooding	7	5	5	1			5			90
	Ground Water Ingress	3	3	5	1			5			60
	Adverse Vibration	1	3	5	1		7				70
Supply Chain Overstretched & Resources Not Available	Land Availability / Site Possession / Strata Resumption	1	1	1	1					1	4
	MTRCL Procedural Failure	3	3	3	3				3		36
	Sub-standard / Unapproved Materials	5	3	5	5				3		54
	Plant & Materials Supply	1	5	7	1				3		42
	Availability of Skilled Labour	7	5	7	5				3		72
	Late Delivery of TBM	1	1	1	1					1	4
	Poor Quality Construction	5	3	5	5				3		54
	Contractors / Suppliers Bankrupt	1	5	9	1					1	16
Variation and Claims	Construction Started without Design Completion	1	1	3	1				3		18
	Design Changes	1	3	5	1				3		30
	External Impacts	3	3	3	3			5			60
	Unforeseen Site Conditions	3	5	5	1		7				98
Interfaces	Contract Interfaces	1	7	5	1		7				98
	Systems Integration	1	5	5	1			5			60
	Operations Testing	3	3	5	1			5			60
	Setting-out Errors	1	5	7	1				3		42

4) TBM Tunnels Contracts - 823A, 825 & 826

Strategic Risk	Working Risk	Consequences				Risk of Occurrence					Total Score
		Safety	Cost	Programme	Quality	Very Likely	Likely	Possible	Unlikely	Rare	
Engineering Issues	Damage to Existing Buildings	3	5	5	1			5			70
	Damage to Utilities / Roads / Highway Structures etc	5	5	5	1				3		48
	Temporary Traffic Arrangements	3	3	3	1				3		30
	Temporary Works	7	3	5	1		7				112
	Construction Issues	3	3	5	5		7				112
	D-wall Issues	3	3	5	5				3		48
	Design Robustness	3	3	5	3				3		42
	Contamination of Tunnel, eg Dust, Impacting Comissioning	3	3	5	3			5			70
	Site Logistics	3	3	5	1			5			60
	Late Design Changes	1	7	7	3				3		54
	TBM Jammed	5	7	9	1			5			110
Physical, Environmental and Third Party Impacts	Statutory Risk (other government departments approvals)	1	5	5	1		7				84
	Marble Cavities	3	7	7	1		7				126
	Unforeseen Utilities	1	5	5	1				3		36
	Fire Safety Strategy not Finalised	1	5	5	1				3		36
	Spoil Removal	1	3	3	1		7				56
	Contaminated Soil	3	5	3	1			5			60
	Unforeseen Ground Conditions and obstructions	7	7	7	1		7				154
	Construction Fire	7	5	7	5			5			120
	Noise / Dust Generation	1	1	1	1		7				28
	Extreme Weather / Flooding	7	5	5	1			5			90
	Ground Water Drawdown / Ingress	3	7	5	1			5			80
	Adverse Vibration	1	3	5	1			5			50
Supply Chain Overstretched & Resources Not Available	Land Availability / Site Possession	1	1	1	1					1	4
	MTRCL Procedural Failure	3	3	3	3				3		36
	Sub-standard / Unapproved Materials	5	3	5	5				3		54
	Plant & Materials Supply	1	5	7	1				3		42
	Availability of Skilled Labour	7	5	7	5			5			120
	Late Delivery of TBM	1	5	7	1				3		42
	Poor Quality Construction	5	3	5	5				3		54
	Contractors / Suppliers Bankrupt	1	7	9	1					1	18
Variation and Claims	Construction Started without Design Completion	1	1	3	1				3		18
	Design Changes	1	3	5	1				3		30
	External Impacts	3	3	3	3			5			60
	Unforeseen Site Conditions	3	5	5	1		7				98
Interfaces	Contract Interfaces	1	5	7	1		7				98
	Systems Integration	1	5	5	1					1	12
	Operations Testing	3	3	5	1			5			60
	Setting-out Errors	1	5	7	1				3		42
	Mainland China	1	7	7	1	9					144

5) Drill & Blast Tunnels Contracts - 821, 822 & 824

Strategic Risk	Working Risk	Consequences				Risk of Occurrence					Total Score
		Safety	Cost	Programme	Quality	Very Likely	Likely	Possible	Unlikely	Rare	
Engineering Issues	Damage to Existing Buildings	3	5	5	1			5			70
	Damage to Utilities / Roads / Highway Structures etc	5	5	5	1				3		48
	Temporary Traffic Arrangements	3	3	3	1				3		30
	Temporary Works	7	3	5	1			5			80
	Construction Issues	3	3	5	5		7				112
	Design Robustness	3	3	5	3				3		42
	Contamination of Tunnel, eg Dust, Impacting Commissioning	3	3	5	3			5			70
	Site Logistics	3	3	5	1			5			60
	Late Design Changes	1	5	5	3				3		42
	Blasting Permits	1	5	7	1				3		42
Physical, Environmental and Third Party Impacts	Statutory Risk (other government departments approvals)	1	5	5	1				3		36
	Damage to WSD Water Distribution Tunnel	3	7	3	1					1	14
	Unforeseen Utilities	1	5	5	1				3		36
	Fire Safety Strategy not Finalised	1	3	3	1				3		24
	Spoil Removal	1	3	5	1			5			50
	Contaminated Soil	5	5	5	1				3		48
	Unforeseen Ground Conditions	7	7	7	1			5			110
	Construction Fire	7	5	7	5			5			120
	Noise / Dust Generation	3	1	1	1		7				42
	Extreme Weather / Flooding	7	5	7	1				3		60
	Ground Water Drawdown / Ingress	3	3	5	1		7				84
	Adverse Vibration	1	3	5	1			5			50
Supply Chain Overstretched & Resources Not Available	Land Availability / Site Possession	1	1	1	1					1	4
	MTRCL Procedural Failure	3	3	3	3				3		36
	Sub-standard / Unapproved Materials	5	3	5	5				3		54
	Plant & Materials Supply	1	5	7	1				3		42
	Availability of Skilled Labour	7	5	7	5			5			120
	Poor Quality Construction	5	3	5	5			5			90
	Contractors / Suppliers Bankrupt	1	5	9	1					1	16
Variation and Claims	Construction Started without Design Completion	1	1	3	1				3		18
	Design Changes	1	3	5	1				3		30
	External Impacts	3	3	3	3			5			60
	Unforeseen Site Conditions	3	5	5	1		7				98
Interfaces	Contract Interfaces	1	7	5	1		7				98
	Systems Integration	1	5	5	1					1	12
	Operations Testing	3	3	5	1				3		36
	Setting-out Errors	1	5	7	1				3		42

6) Cut & Cover Tunnels Contracts - 811A, 811B, 823A & 823B

Strategic Risk	Working Risk	Consequences				Risk of Occurrence					Total Score
		Safety	Cost	Programme	Quality	Very Likely	Likely	Possible	Unlikely	Rare	
Engineering Issues	Damage to Existing Buildings	7	7	5	1				3		60
	Damage to Utilities / Roads / Highway Structures etc	5	5	5	1				3		48
	Temporary Traffic Arrangements	5	3	5	1				3		42
	Temporary Works	7	3	5	1			5			80
	Construction Issues	5	7	9	1			5			110
	D-wall Issues	5	7	5	5				3		66
	Design Robustness	3	3	5	3			5			70
	Contamination of Tunnel, eg Dust, Impacting Commissioning	3	3	5	3			5			70
	Site Logistics	3	3	5	1			5			60
	Late Design Changes	1	7	7	3			5			90
Physical, Environmental and Third Party Impacts	Statutory Risk (other government departments approvals)	1	5	5	1				3		36
	Damage to Existing West Rail Line Tunnels	7	7	7	1		7				154
	Unforeseen Utilities	1	5	5	1				3		36
	Fire Safety Strategy not Finalised	1	3	3	1				3		24
	Spoil Removal	1	3	5	1			5			50
	Contaminated Soil	5	5	5	1			5			80
	Unforeseen Ground Conditions	5	7	7	1			5			100
	Construction Fire	5	5	7	3			5			100
	Noise / Dust Generation	1	1	3	1			5			30
	Extreme Weather / Flooding	5	3	5	1			5			70
	Ground Water Drawdown / Ingress	3	3	5	1			5			60
Supply Chain Overstretched & Resources Not Available	Land Availability / Site Possession	1	1	1	1					1	4
	MTRCL Procedural Failure	3	3	3	3				3		36
	Sub-standard / Unapproved Materials	5	3	5	5				3		54
	Plant & Materials Supply	1	3	5	1				3		30
	Availability of Skilled Labour	3	1	3	3			5			50
	Poor Quality Construction	1	3	5	3			5			60
	Contractors / Suppliers Bankrupt	1	5	7	1					1	14
Variation and Claims	Construction Started without Design Completion	1	1	3	1				3		18
	Design Changes	1	3	5	1				3		30
	External Impacts	3	3	3	3			5			60
	Unforeseen Site Conditions	3	5	5	1				3		42
Interfaces	Contract Interfaces	1	3	5	1			5			50
	Systems Integration	1	3	5	1					1	10
	Operations Testing	3	3	5	1			5			60
	Setting out Errors	1	3	5	1				3		30

7) WKT Contracts - 810A & 810B

Strategic Risk	Working Risk	Consequences				Risk of Occurrence					Total Score
		Safety	Cost	Programme	Quality	Very Likely	Likely	Possible	Unlikely	Rare	
Engineering / Architectural Issues	Damage to Existing Buildings	3	3	3	1		7				70
	Damage to Utilities / Roads / Highway Structures etc	3	3	3	1		7				70
	Damage to Seawall	5	3	3	1		7				84
	Temporary Traffic Arrangements	3	5	7	1		7				112
	Temporary Works	7	5	7	1		7				140
	Construction Issues	5	7	7	5	9					216
	D-wall Issues	3	7	7	5		7				154
	Design Robustness	3	5	5	5		7				126
	Site Logistics	5	5	7	1	9					162
	Late Design Changes	1	5	7	3	9					144
	Roof Construction	5	7	7	3	9					198
Physical, Environmental and Third Party Impacts	Statutory Risk (other government departments approvals)	1	5	7	1		7				98
	Unforeseen Utilities	1	5	7	1		7				98
	Fire Safety Strategy not Finalised	1	5	7	1			5			70
	Spoil Removal	1	5	5	1	9					108
	Contaminated Soil	3	7	5	1		7				112
	Unforeseen Ground Conditions	3	7	5	1		7				112
	Construction Fire	9	5	7	3			5			120
	Noise / Dust Generation	1	3	5	1		7				70
	Extreme Weather / Flooding	5	3	5	1		7				98
	Ground Water Drawdown / Ingress	3	3	5	1		7				84
Supply Chain Overstretched & Resources Not Available	Land Availability / Site Possession	1	5	5	1					1	12
	MTRCL Procedural Failure	1	5	5	5			5			80
	Sub-standard / Unapproved Materials	1	5	5	5			5			80
	Plant & Materials Supply	1	5	7	1		7				98
	Availability of Skilled Labour	7	5	7	3	9					198
	Poor Quality Construction	1	1	3	5			5			50
	Contractors / Suppliers Bankrupt	1	7	7	1				3		48
Variation and Claims	Construction Started without Design Completion	1	5	5	1	9					108
	Design Changes	1	5	5	1	9					108
	External Impacts, eg WKCD etc	1	5	5	3	9					126
	Unforeseen Site Conditions	5	5	5	1		7				112
Interfaces	Contract Interfaces	5	7	7	1	9					180
	Systems Integration	1	5	7	1	9					126
	Operations Testing	1	3	7	1		7				84
	Setting-out Errors	1	3	5	1			5			50

8) Environmental Contracts - 801, 8204 & 8205

Strategic Risk	Working Risk	Consequences				Risk of Occurrence					Total Score
		Safety	Cost	Programme	Quality	Very Likely	Likely	Possible	Unlikely	Rare	
Engineering Issues	Damage to Existing Buildings	1	1	1	1					1	4
	Damage to Utilities / Roads / Highway Structures etc	1	1	1	1					1	4
	Temporary Traffic Arrangements	3	1	1	1				3		18
	Design Robustness	1	1	1	1					1	4
	Site Logistics	3	1	1	1				3		18
	Late Design Changes	1	1	1	1				3		12
	Maximum Allowable Levels Exceeded	1	1	3	1		7				42
Physical, Environmental and Third Party Impacts	Statutory Risk (other government departments approvals)	1	3	5	1		7				70
	Extreme Weather / Flooding	1	1	3	1				3		18
Supply Chain Overstretched & Resources Not Available	Land Availability / Site Possession	1	1	3	1			5			30
	MTRCL Procedural Failure	1	1	1	1				3		12
	Availability of Skilled Labour	3	1	3	3				3		30
	Contractors / Suppliers Bankrupt	1	3	3	1					1	8
	Technical Issues	1	1	3	3					1	8
Variation and Claims	Design Changes	1	1	3	1				3		18
	External Impacts	1	1	3	1				3		18
	Unforeseen Site Conditions	1	1	3	1				3		18
Interfaces	Contract Interfaces	1	1	1	1				3		12

9) WKT BS Contracts - 816A, 816B, 816C & 816D

Strategic Risk	Working Risk	Consequences				Risk of Occurrence					Total Score
		Safety	Cost	Programme	Quality	Very Likely	Likely	Possible	Unlikely	Rare	
Engineering Issues	Temporary Works	7	1	3	1				3		36
	Construction Issues	1	1	3	1			5			30
	Design Robustness	1	3	3	3			5			50
	Systems Coordination, Installation and Commissioning	5	5	7	1		7				126
	Contamination of WKT, eg by Dust, Impact Commissioning	1	1	3	1			5			30
	Site Logistics	5	3	5	1	9					126
	Late Design Changes	1	5	5	3		7				98
Physical, Environmental and Third Party Impacts	Statutory Risk (other government departments approvals)	1	5	5	1	9					108
	Fire Safety Strategy not Finalised	1	5	7	1	9					126
	Construction Fire	7	5	7	3			5			110
	Extreme Weather / Flooding	3	3	5	1			5			60
	Ground Water Drawdown / Ingress	1	1	3	1				3		18
Supply Chain Overstretched & Resources Not Available	Site Possession	1	3	5	1	9					90
	MTRCL Procedural Failure	1	5	5	5			5			80
	Sub-standard / Unapproved Materials	3	1	3	1			5			40
	Plant & Materials Supply	1	1	3	1			5			30
	Availability of Skilled Labour	5	3	5	5	9					162
	Poor Quality Construction	1	3	5	5			5			70
	Contractors / Suppliers Bankrupt	1	3	5	1				3		30
	Technical Issues	1	3	5	5		7				98
Variation and Claims	Construction Started without Design Completion	1	5	5	5			5			80
	Design Changes	1	5	5	1			5			60
	External Impacts, eg WKCD etc	1	5	5	3	9					126
Interfaces	Contract Interfaces	3	5	7	3	9					162
	Systems Integration	3	5	7	3	9					162
	Operations Testing	3	3	7	1	9					126

10) Systemwide Civil Contracts - Trackwork and OHL- 827 & 830

Strategic Risk	Working Risk	Consequences				Risk of Occurrence					Total Score
		Safety	Cost	Programme	Quality	Very Likely	Likely	Possible	Unlikely	Rare	
Engineering Issues	Temporary Works	3	3	3	1		7				70
	Construction Issues	5	5	5	3		7				126
	Design Robustness	1	1	3	3			5			40
	Contamination of Tunnel, eg by Dust, Impact Commissioning	1	1	5	1			5			40
	Site Logistics	5	5	5	1	9					144
	Late Design Changes	1	5	5	1			5			60
	Systems Coordination, Installation and Commissioning	5	5	7	1	9					162
Physical, Environmental and Third Party Impacts	Statutory Risk (other government departments approvals)	1	3	3	1			5			40
	Construction Fire	3	3	5	1			5			60
	Extreme Weather / Flooding	3	1	3	1			5			40
	Ground Water Ingress	1	1	1	1				3		12
Supply Chain Overstretched & Resources Not Available	Site Access	1	5	7	1	9					126
	MTRCL Procedural Failure	1	3	3	1				3		24
	Sub-standard / Unapproved Materials	1	1	5	5				3		36
	Plant & Materials Supply	1	1	5	1			5			40
	Availability of Skilled Labour	5	5	5	5	9					180
	Contractors / Suppliers Bankrupt	1	7	7	1					1	16
	Technical Issues	3	3	5	3		7				98
Variation and Claims	Construction Started without Design Completion	1	3	3	3				3		30
	Design Changes	1	5	5	1				3		36
	External Impacts	1	5	5	1	9					108
	Unforeseen Site Conditions	1	3	3	1				3		24
Interfaces	Contract Interfaces	3	7	7	1	9					162
	Systems Integration	5	7	7	1	9					180
	Mainland Interface	5	7	7	1	9					180
	Operations Testing	5	7	7	5		7				168
	Setting-out Errors	1	3	3	1			5			40

Systematic Risk Assessment Register

11) Systemwide E&M Contracts (WKT) - 847, 848, 853, 854

Strategic Risk	Working Risk	Consequences				Risk of Occurrence					Total Score
		Safety	Cost	Programme	Quality	Very Likely	Likely	Possible	Unlikely	Rare	
Engineering Issues	Temporary Works	5	1	5	1		7				84
	Manufacturing / Installation Issues	7	1	5	5		7				126
	Design Robustness	1	1	5	5				3		36
	Contamination of structures, eg by Dust, Impact Comissioning	1	1	5	1			5			40
	Site Logistics	5	1	5	3	9					126
	Late Design Changes	1	5	7	1				3		42
	Systems Coordination, Installation and Commissioning	5	5	7	1	9					162
Physical, Environmental and Third Party Impacts	Statutory Risk (other government departments approvals)	1	5	7	1			5			70
	Fire Safety Strategy and acceptance test	1	5	7	1	9					126
	Factory / Construction Fire	5	1	5	1				3		36
	Extreme Weather / Flooding	3	1	5	1				3		30
	Ground Water Ingress	3	1	5	1				3		30
Supply Chain Overstretched & Resources Not Available	Site Possession	1	5	7	1	9					126
	MTRCL Procedural Failure	1	5	5	1			5			60
	Sub-standard / Unapproved Materials	1	1	5	7			5			70
	Plant & Materials Supply	3	1	3	5			5			60
	Availability of Skilled Labour	5	1	5	5	9					144
	Contractors / Suppliers Bankrupt	1	5	5	1				3		36
	Technical Issues	3	5	5	3			5			80
Variation and Claims	Design Changes	1	5	7	1				3		42
	External Impacts	1	5	5	1			5			60
Interfaces	Contract Interfaces and coordination	1	5	5	1	9					108
	Joint testing with Mainland	1	1	1	1					1	4
	T&C and Trial operation	1	3	5	1		7				70
	Mainland side modifications and interface	1	1	1	1					1	4

12) Systemwide E&M Contracts (Signalling etc) - 849, 851, 841A, 841B, 841C, 852

Strategic Risk	Working Risk	Consequences				Risk of Occurrence					Total Score
		Safety	Cost	Programme	Quality	Very Likely	Likely	Possible	Unlikely	Rare	
Engineering Issues	Temporary Works	5	1	5	1			5			60
	Manufacturing / Installation Issues	5	1	5	5		7				112
	Design Robustness	1	1	5	5			5			60
	Contamination of structures, eg by Dust, Impact Comissioning	1	1	3	1				3		18
	Site Logistics	5	1	5	3	9					126
	Late Design Changes	1	5	7	1			5			70
	Systems Coordination, Installation and Commissioning	5	5	7	1	9					162
Physical, Environmental and Third Party Impacts	Statutory Risk (other government departments approvals)	1	1	5	1		7				56
	Fire Safety Strategy and acceptance test	1	5	3	1				3		30
	Factory / Construction Fire	5	1	5	1				3		36
	Extreme Weather / Flooding	3	1	5	1				3		30
	Ground Water Ingress	3	1	5	1				3		30
Supply Chain Overstretched & Resources Not Available	Site Possession	1	7	7	1	9					144
	MTRCL Procedural Failure	1	5	5	1			5			60
	Sub-standard / Unapproved Materials	1	1	5	7			5			70
	Plant & Materials Supply	3	1	3	5			5			60
	Availability of Skilled Labour	5	1	5	5	9					144
	Contractors / Suppliers Bankrupt	1	5	5	1				3		36
	Technical Issues	3	5	5	3		7				112
Variation and Claims	Design Changes	1	5	7	1			5			70
	External Impacts	1	5	5	1	9					108
Interfaces	Contract Interfaces and coordination	1	7	7	7	9					198
	Joint testing with Mainland	1	7	7	7	9					198
	T&C and Trial operation	1	7	7	7	9					198
	Mainland side modifications and interface	1	7	7	7			5			110

13) Systemwide E&M Contracts (SSS, VB & Tunnel) - 855, 856, 846, 845, 843, 850

Strategic Risk	Working Risk	Consequences				Risk of Occurrence					Total Score
		Safety	Cost	Programme	Quality	Very Likely	Likely	Possible	Unlikely	Rare	
Engineering Issues	Temporary Works	5	1	5	1		7				84
	Manufacturing / Installation Issues	7	1	5	5			5			90
	Design Robustness	1	1	5	5			**5**			60
	Contamination of structures, eg by Dust, Impact Comissioning	1	1	5	1			5			40
	Site Logistics	5	1	5	3	9					126
	Late Design Changes	1	5	7	1				**3**		42
	Systems Coordination, Installation and Commissioning	5	5	7	1	9					162
Physical, Environmental and Third Party Impacts	Statutory Risk (other government departments approvals)	1	5	7	1		7				98
	Fire Safety Strategy and acceptance test	1	5	7	1		7				98
	Factory / Construction Fire	5	1	5	1				3		36
	Extreme Weather / Flooding	5	1	5	1				**3**		36
	Ground Water Ingress	3	1	5	1				3		30
Supply Chain Overstretched & Resources Not Available	Site Possession	1	5	7	1	9					126
	MTRCL Procedural Failure	1	5	5	1			5			60
	Sub-standard / Unapproved Materials	1	1	5	7			5			70
	Plant & Materials Supply	3	1	3	5				3		36
	Availability of Skilled Labour	5	1	5	5	9					144
	Contractors / Suppliers Bankrupt	1	5	5	1				3		36
	Technical Issues	3	5	5	3			5			80
Variation and Claims	Design Changes	1	5	7	1				3		42
	External Impacts	1	5	5	1	9					108
Interfaces	Contract Interfaces and coordination	1	7	7	1	9					144
	Joint testing with Mainland	1	5	7	1			**5**			70
	T&C and Trial operation	1	5	7	1	9					126
	Mainland side modifications and interface	1	5	7	1				**3**		42

14) Systemwide E&M Contracts (Rolling Stock) - 840

Strategic Risk	Working Risk	Consequences				Risk of Occurrence					Total Score
		Safety	Cost	Programme	Quality	Very Likely	Likely	Possible	Unlikely	Rare	
Engineering Issues	Temporary Works	1	1	1	1					1	4
	Manufacturing / Installation Issues	1	1	7	7				3		48
	Design Robustness	1	1	3	3				3		24
	Contamination of structures, eg by Dust, Impact Comissioning	1	1	1	1					1	4
	Site Logistics	1	1	1	1			5			20
	Late Design Changes	1	3	7	1				3		36
	Systems Coordination, Installation and Commissioning	3	3	7	1	9					126
Physical, Environmental and Third Party Impacts	Statutory Risk (other government departments approvals)	1	5	7	1		7				98
	Fire Safety Strategy and acceptance test	1	3	5	1		7				70
	Factory / Construction Fire	1	1	5	1				3		24
	Extreme Weather / Flooding	1	1	5	1					1	8
	Ground Water Ingress	1	1	5	1					1	8
Supply Chain Overstretched & Resources Not Available	Site Possession	1	7	7	1	9					144
	MTRCL Procedural Failure	1	5	5	1			5			60
	Sub-standard / Unapproved Materials	1	1	5	7				3		42
	Plant & Materials Supply	1	1	3	5				3		30
	Availability of Skilled Labour	1	1	5	5				3		36
	Contractors / Suppliers Bankrupt	1	5	5	1				3		36
	Technical Issues	1	3	7	3			5			70
Variation and Claims	Design Changes	1	5	7	1				3		42
	External Impacts	1	5	5	1				3		36
Interfaces	Contract Interfaces and coordination	3	5	7	7		7				154
	Joint testing with Mainland	3	5	7	7	9					198
	T&C and Trial operation	3	5	7	7	9					198
	Mainland side modifications and interface	3	5	7	7	9					198

Systematic Risk Assessment Register

Summary

Strategic Risk	Working Risk	JCL Grouping													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
		WKT Foundations	Obstruction Removal	TBM Tunnels - Urban	TBM Tunnels - Rural	Drill & Blast Tunnels	Cut & Cover Tunnels	WKT Civil	Environmental	WKT Landscape, ABWF & E&M	Systemwide Civil Contracts - Trackwork and OHL	Systemwide E&M - WKT	Systemwide E&M - Signalling etc	Systemwide E&M - Tunnel	Systemwide E&M - Rolling Stock
Engineering Issues	Damage to Existing Buildings	4	12	**90**	70	70	60	70	4						
	Damage to Utilities / Roads / Highway Structures etc	4	42	**80**	48	48	48	70	4						
	Damage to Seawall							84							
	Temporary Traffic Arrangements	4	30	**70**	30	30	42	112	18						
	Temporary Works	4	60	80	112	80	**80**	140		36	70	84	60	84	4
	Manufacturing / Installation Issues											126	**112**	90	48
	Construction Issues	4	**126**	112	112	112	**110**	216		30	126				
	D-wall Issues	4		4	48		66	154							
	Design Robustness			42	42	42	70	126	4	50	40	36	60	60	24
	Systems Coordination, Installation and Commissioning									126	162	162	162	162	126
	Contamination of Tunnel, eg Dust, Impacting Comissioning			70	70	70	70			30	40	40	40	40	4
	Site Logistics	4	50	60	60	60	60	162	18	126	144	126	126	126	20
	Late Design Changes	4	36	54	54	42	90	144	12	98	60	42	**70**	42	36
	Roof Construction							198							
	TBM Jammed			110	110										
	Blasting Permits					42									
	Maximum Allowable Levels Exceeded								42						
Physical, Environmental and Third Party Impacts	Statutory Risk (other government departments approvals)	10	30	60	84	36	36	98	70	108	40	**70**	56	98	98
	Damage to Existing Tsuen Wan Line / Lai Chi Kok Flyover / DSD Tunnel			26											
	Damage to WSD Water Distribution Tunnel					14									
	Damage to Existing West Rail Line Tunnels						154								
	Marble Cavities				126										
	Unforeseen Utilities	12	30	60	36	36	36	98							
	Fire Safety Strategy not Finalised			36	36	24	24	70		126					
	Fire Safety Strategy and acceptance test											126	30	98	70
	Spoil Removal	8	12	30	56	50	50	108							
	Contaminated Soil	16	4	80	60	48	80	112							
	Unforeseen Ground Conditions	12	70	154	154	**110**	**100**	112							
	Construction Fire	12	10	120	120	120	100	120		**110**	60	36	36	36	24
	Noise / Dust Generation	6	40	28	28	42	30	70							
	Extreme Weather / Flooding	8	6	90	90	60	**70**	98	18	60	40	30	30	36	8
	Ground Water Drawdown / Ingress	14	12	60	80	84	60	84		18	12	30	30	30	8
	Adverse Vibration			70	50	50									
Supply Chain Overstretched & Resources Not Available	Land Availability / Site Possession	4	4	4	4	4	4	12	30	90	126	126	144	126	144
	MTRCL Procedural Failure	12	36	36	36	36	36	80	12	80	24	60	60	60	60
	Sub-standard / Unapproved Materials	16	12	54	54	54	54	80		40	36	70	70	70	42
	Plant & Materials Supply	8										60	60	36	30
	Materials Supply	8	60	42	42	42	30	98		30	40				
	Availability of Skilled Labour	14	54	**72**	**120**	**120**	50	198	30	162	180	144	144	144	36
	Late Delivery of TBM			4	42										
	Poor Quality Construction	12	50	54	54	90	60	50		70					
	Contractors / Suppliers Bankrupt	18	50	16	18	16	14	48	8	30	16	36	36	36	36
	Technical Issues								8	98	**98**	80	112	80	70
Variation and Claims	Construction Started without Design Completion			18	18	18	18	108		**80**	30				
	Design Changes	12	56	30	30	30	30	108	18	60	36	42	**70**	42	42
	External Impacts	12	30	60	60	60	60	126	18	**126**	108	60	108	108	36
	Unforeseen Site Conditions	14	90	98	98	98	42	**112**	18		24				
Interfaces	Contract Interfaces	6	54	**98**	98	98	50	180	12	162	162	108	198	154	154
	Joint testing with Mainland											4	198	**70**	198
	System Integration			60	12	12	10	126		162	180				
	Operations Testing			60	60	36	60	**84**		126	**168**				
	T&C and Trial operation											70	198	126	198
	Setting-out Errors			42	42	42	30	50			40				
	Mainland side modifications and interface											4	**110**	42	198
	Mainland China				144						180				

Enclosure 2

JACOBS

15th Floor, Cornwall House, Taikoo Place
979 King's Road, Quarry Bay
Hong Kong, China
852.2880.9788 Fax 852.2565.5561

29 April 2014

By e-mail and By Post

MV2

Our Ref: G3232/10/1532

Highways Department
Railway Development Office
1/F, Homantin Government Offices
88 Chung Hau Street
Homantin
Kowloon

L-3-1-1-9-1-4

For the attention of Mr. C T Chan

Dear Sir,

Agreement No. CE 8/2010 (HY)
XRL - Monitoring and Verification for Construction, Testing and Commissioning Phase - Investigation
Request for Documents (RFD No. 109)

After reviewing the sharepoint documents up to 16 April 2014, please find attached a copy of the selected documents as listed in the RFD No. 109 for your onward transmission to MTRCL.

Should you have any queries, please feel free to contact our Ms. Vicky Sy at 2738 3812.

Yours faithfully
For and on behalf of Jacobs China Limited

William NG
Project Manager

WN/VS/cyy

enc (RFD No. 109)

TANG

JACOBS

Information Requested Register

* - Write "N/A" if no reply required

Job No. : 3232

Distribution: Original in file G/3232/02

JOB TITLE: XRL Monitoring and Verification for Construction

List of Information Requested by Jacobs (selected from the Sharepoint list)

Item	Subject	MTRCL Transmittal No.	Date Sent	IN/OUT	Receipt of Deliverables		Form of Request / Remarks
					Received on	Incoming file no (refer to incoming register)	
RFD No.109 - Documents at Construction Stage (visited Sharepoint upto 16 April 2014)							
109 - 1	Method Statement for Relief Jacking between XRL and WRL Structures	811A-CSF-BLJ-CS-002242	9-4-14	OUT			
109 - 2	Method Statement for West Rail Line (WRL) Barrette Cutting and Removal	811A-CSF-BLJ-CS-002243	9-4-14	OUT			
109 - 3	Method Statement for Stage 1 & 2 Grouting Between WRL Base Slab & XRL Top Slab	811A-CSF-BLJ-CS-002246	12-4-14	OUT			
109 - 4	Method Statement for NTM Cavern Tunnel Concrete Lining	824-CSF-KKO-CS-001408	4-4-14	OUT			
109 - 5	Construction Interface Report for Works that Interface with Designated Contractors 816A, 816B, 816C and 816D	810A-CSF-LGJ-ABWF-000472	7-4-14	OUT			
109 - 6	Revised Master Programme Rev. 7 & Narrative Statement	802-CSF-HCC-CS-001561A	15-4-14	OUT			
109 - 7	Supplemental Agreement Programme (SA01 Rev 0)	822-COR-LCA-CS-001951	28-3-14	OUT			
109 - 8	Contract Programme Update to Support Delay to the Substantial Completion Date	830-COR-CCQ-PLP-000024	11-4-14	OUT			
109 - 9	DRM Revision 3 Programme – second revision 10 April 2014	830-COR-CCQ-PLP-000025	14-4-14	OUT			

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Audit Report

(Form XRL001/F1 Issue 1)

Agreement No CE 8/2010 (HY)
Hong Kong Section of Guangzhou – Shenzhen – Hong Kong Express Rail Link (XRL)
Monitoring and Verification for Construction, Testing & Commissioning Phase – Investigation

MV2

Dates/Time of Audit	**12 November 2013 / AM**	**Report No**	R/3232/222/687
Place of Audit	Rm G01 & G02, 824 Tai Kong Po Site Office	**Ref No**	---
Auditor(s)	Tony King, Tony Lomas		
Auditee(s)	Tresca Lai (SConE-Tunnel), Edmund So (SConE-Civil), Thomas Hung (ConE I-Civil), Keith Leung (ConE I-Civil), Lawrence Lam (CSA), Daniel Mow (SPrgE), C P Wong (PrgE I), Natalie Ng (EE II), Wilson Wat (CE I)		
Audit Scope	Technical Compliance Audit – General, Safety and Quality Contract 824 – Nagu Tam Mei to Tai Kong Po Tunnels		

Non-Conformity Report Ref No(s). Nil

Part 1: Introduction

This is the seventh Technical Compliance audit for General, Safety and Quality on Contract 824, Ngau Tam Mei to Tai Kong Po Tunnels. An audit questionnaire was sent to the MTRCL in advance in order that they could prepare for the audit.

No formal opening and closing meetings were arranged but a short discussion on logistics was held before the audit. Furthermore, a daily debriefing was conducted in which the auditees were briefed on our summary findings from the audit.

Part 2: Scope of Audit

This verification audit was a Technical Compliance audit for General, Safety and Quality on Contract 824, Ngau Tam Mei to Tai Kong Po Tunnels.

Part 3: Audit Details

A short meeting on the objectives / purposes of this Technical Compliance audit was held at the beginning of the audit. In the course of the verification audit, it was observed that the auditees were cooperative and well prepared for the audit.

Verification of Contract 824

General

Q1. Please confirm that all contract requirements related to Safety & Quality, Programme & Progress, Financial Matters and Design & Construction have been processed in accordance with MTRCL's Administrative Procedures.

Discussion
MTRCL confirmed that the contract was being administered in accordance with its procedures. All information in the 824 audit reports is based on MTRCL advice in audit and documents tabled.

Safety and Quality

Q1 *Please confirm that the contractors Safety and Quality Plans have been updated in accordance with MTRCL procedures and describe the changes made.*
Please confirm that the contractor and MTRCL's safety and quality teams are at full strength by tabling the site safety the respective org charts.

Discussion
Contractor's Safety Plan rev. 8 dated 13 August 2013 tabled and discussed. This was approved with comments on the 18 September 2013. Major change is to the organization, including the Project Director who was replaced in May 2013 and whose successor has also left the project; he has not yet been replaced.

Quality Plan rev. 7 dated 10 October 2013 tabled and discussed. This was approved on 28 October 2013. Major change is to personnel. The MTRCL team is up to strength and there is one safety advisor vacancy in the contractor's organization.

Q2. *Please table*
- *the latest weekly safety walk report;*
- *the latest monthly safety meeting minutes,*

and evidence that all items are closed out in a timely manner

Discussion
Site safety inspection report for 08 November 2013 tabled and discussed. There is one good observation and nine low action observations, all closed within three days.

Minutes of SSEMC meeting of 04 October tabled and discussed. Construction Manager (MTRCL) and Deputy Project Director (Contractor) in attendance. Safety issues presented and discussed in detail.

Q3. *Please advise the up-to-date cumulative safety statistics for the contract, if applicable, using the SIMS data base, including;*
+ Cumulative manhours worked and RAFR
+ Fatal, Reportable, Lost Time, First Aid and Medical Treatment Accidents.
+ Incidents.
+ Near Miss and High Potential Near Miss

Discussion
Cumulative manhours worked to end October 2013 – 2,546,019; RAFR – 0.63

Fatal accidents – 1
Reportable accident – 16 (including 1 above)
Early resume accident – 1
First aid – 2
High potential near miss – 2

Incident – 5
Lost Time accident – 8
Medical treatment accident – 12
Near miss – 96

Observation. The near miss total has not changed since the previous audit. The Contractor should be encouraged to record all near misses.

Q4. *Please table a copy of the most recent reports for the DNV external audit for MTRCL including the list of actions arising and evidence of the Contractor addressing / closing out the issues raised in a timely manner.*

Please confirm that the Contractor has undergone SMRA audits in accordance with statutory requirements.

Discussion
DNV audit report, for audit carried out on 05 to 10 August 2013, tabled and discussed.

Loss control – 55.6
Physical score – 84.3
Level 7.4 achieved

'Site conditions very good and still improving'
Action plan tabled and discussed, this shows target dates for closing actions with monthly updates shown in boxed overlays. The status of the Action plan is discussed monthly at the SSEMC Meeting

Last SMRA audit carried out on 08/09 May 2013.

Q5. *Please Table the project life, monthly physical audit scores showing the trends since the project commenced.*

Discussion
Monthly physical audit scores tabled and discussed. Trend generally improving to above 80 except September which was at 76, due to fatal accident.

Q6. *Please demonstrate that the MTRCL's quality audits of the Contractor are in accordance with the MTRCL's procedures and table copies of the most recent audit report.*

Discussion
Quality audit carried out on 31 May 2013. Audit report inspected. The audit was described as 'satisfactory'.

Q7. *Please advise of the actions to close out non-conformances and other issues from the audits and table the close out documentation.*

Discussion
Observation raised on 04 June, accepted on 04 June. Action plan was prepared on 13 June and closed out on 26 June 2013.

Q8. *Please advise the major quality control (QC) issues on this contract and describe how these are being/will be managed.*

Discussion
Quarterly quality planning schedule for Q4/2013 tabled and inspected. This sets out the major potential quality risks, control required and control assurance. The major quality issues at risk are water ingress control, water proofing and tunnel lining.

Q9. *Please list any major QC incidents in the past 6 months and the remedial action necessary.*

Discussion
There have been no major QC issues in the past six months.

Part 4: Issues to be followed

No non-conformity was raised.

One observation was raised.

- The near miss total has not changed since the previous audit. The Contractor should be encouraged to record all near misses.

No suggestion was made.

Sign and Date

Prepared by:	Agreed by:	Endorsed by:
Tony Lomas	Tony King	Raymond Chan
Auditor	Lead Auditor	Deputy Project Manager
Date: 29 Nov 2013	Date: 29 Nov 2013	Date: 29 Nov 2013

Dates/Time of Audit	**12 November 2013 / AM**	**Report No**	R/3232/222/690
Place of Audit	Rm G01 & G02, 824 Tai Kong Po Site Office	**Ref No**	---
Auditor(s)	Tony King, Tony Lomas		
Auditee(s)	Tresca Lai (SConE-Tunnel), Edmund So (SConE-Civil), Thomas Hung (ConE I-Civil), Keith Leung (ConE I-Civil), Lawrence Lam (CSA), Daniel Mow (SPrgE), C P Wong (PrgE I), Natalie Ng (EE II), Wilson Wat (CE I)		
Audit Scope	Technical Compliance Audit – Design and Construction Contract 824 – Nagu Tam Mei to Tai Kong Po Tunnels		

Non-Conformity Report Ref No(s). Nil

Part 1: Introduction

This is the seventh Technical Compliance audit for Design and Construction on Contract 824, Ngau Tam Mei to Tai Kong Po Tunnels. An audit questionnaire was sent to the MTRCL in advance in order that they could prepare for the audit.

No formal opening and closing meetings were arranged but a short discussion on logistics was held before the audit. Furthermore, a daily debriefing was conducted in which the auditees were briefed on our summary findings from the audit.

Part 2: Scope of Audit

This verification audit was a Technical Compliance audit for Design and Construction on Contract 824, Ngau Tam Mei to Tai Kong Po Tunnels.

Part 3: Audit Details

A short meeting on the objectives / purposes of this Technical Compliance audit was held at the beginning of the audit. In the course of the verification audit, it was observed that the auditees were cooperative and well prepared for the audit.

Verification of Contract 824

Design and Construction

Q1. Please update on any alternative designs or VE proposals for this contract.

Discussion
No alternative designs or VE proposals received.

Q2. Please table a schedule of all major temporary and permanent works designs and show how the progress of these is tracked on site.

Discussion
Design submission schedule dated 06 November 2013 tabled and inspected. This is fully tracked. It shows all submissions to government departments. The tunnel lining is in the last round of comments. There is no major technical

issue, just procedural and drawing notes etc. This does not delay progress.

Q3. *Please table the most recent DSC risk register, identify the top 5 risks and details of actions to mitigate them.*

Discussion
DSC risk register dated 15 October 2013 tabled and discussed.

There are:
1xP1, 5xP2, 27xP3 and 5xP4 initial risks
0xP1, 0xP2, 15xP3 and 23xP4 residual risks

The top 10 risks are noted in the risk review workshop, ranked in order. Top 5 list tabled and inspected.

Q4. *Please advise whether there is any major variation in predicted geotechnical conditions based on the GBR.*

Discussion
The GBR and the rock conditions found are similar but water ingress in the NTM shaft and tunnels exceeds that predicted.

Q5. *Please advise any changes or planned changes to construction methodology.*

Discussion
There is no change to contract methodology.

Q6. *Please confirm that the designs and works constructed to date are in compliance with the Buildings Ordinance and the Instrument of Compliance (where applicable).*

Discussion
MTRCL confirmed that all designs have been in compliance with BO & IOC.

Q7. *Please advise any non-compliance with Building Ordnance and IOC requirements arising during the last six months together with actions taken to close the issue and to avoid any recurrence. (The auditors may require to see evidence of correspondence.)*

Discussion
There have been no cases of non-compliance within the past six months.

Q8. *Please describe how spoil is currently or planned to be disposed of, how this differs, if at all, from the tendered intent and progress against forecast disposal.*

Discussion
Spoil disposal is to registered sites in Hong Kong e.g. WENT. There have been no issues on the local road network.

Q9. *Please table the latest schedule of monitoring results and advise of actions taken where AAA levels were exceeded. Please identify the Top 5 exceedences.*

Discussion
Schedule of monitoring results dated week 45, tabled and discussed.

There are exceedences noted but no settlement problems reported.

Q10. *Please advise of any new Environmental issues which have arisen in the last six months.*

Discussion
The major environmental issue is the effluent quality at NTM. This is reported to EPD every month based on the renewed license requirements. For TKP, this is reported every 2 months.

Copy of letter for October from Contractor to EPD, reporting water quality, tabled.

Q11. *Please table details of surveys and site inspections carried out by the Independent Environmental Checker (IEC) to verify the Contractor's compliance with his EMP. Please show evidence of the contractor closing out the issues raised in a timely manner.*

Discussion
Environmental site inspection, for week 4/10/2013, tabled and inspected. This contained two reminders to maintain water discharge quality and one observation related to oil leakage from a skip which was dealt with promptly and closed.

Part 4: Issues to be followed

No non-conformity was raised.

No observation was raised.

No suggestion was made.

Sign and Date		
Prepared by:	Agreed by:	Endorsed by:
Tony Lomas	Tony King	Raymond Chan
Auditor	Lead Auditor	Deputy Project Manager
Date: 29 Nov 2013	Date: 29 Nov 2013	Date: 29 Nov 2013