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3 May 2019

Clerk to Public Works Subcommittee
Legislative Council Secretariat
Legislative Council Complex
1 Legislative Council Road
Central, Hong Kong
(Attn: Ms Doris LO)
(Fax：2978 7569)

Dear Hon CHU,

Re: Studies related to Artificial Islands in Central Waters
Request for Report on
Preliminary Traffic and Transport Impact Assessments (Final) under
"Technical Study on Transport Infrastructure at Kennedy Town for Connecting to East Lantau Metropolis"

Referring to the Hon CHU Hoi-dick's letter dated 26 March 2019 and email dated 1 April 2019 to Legislative Council Secretariat regarding the above matter, we are authorized by the Development Bureau to make a reply on his request for the Report on Preliminary Traffic and Transport Impact Assessments (Final) under the "Technical Study on Transport Infrastructure at Kennedy Town for connecting to East Lantu Metropolis". A copy of the concerned preliminary traffic and transport impact assessment report (in English) is enclosed for his reference.

(Andy LOK)
for Director of Civil Engineering and Development

Encl.
c.c.
Secretary for Development (Attn: Mr. Vincent WONG) Fax：2801 5620

Agreement No. CE 11/2015 (HY)
Technical Study on Transport Infrastructure at Kennedy Town for Connecting to East Lantau Metropolis - Feasibility Study

Explanatory Note to be read in conjunction with the Report on Preliminary Traffic and Transport Impact Assessments (Final) and the Final Report

Report on Preliminary Traffic and Transport Impact Assessments (Final)

Explanatory Note to be read in conjunction with the Report on Preliminary Traffic and Transport Impact Assessments (Final) and the Final Report

Preamble

1. *The Report on Preliminary Traffic and Transport Impact Assessments (Final) (the "RPTTIA") and the Final Report (the "FR") were completed in December 2016 and November 2017 respectively under the Agreement No. CE 11/2015(HY) – Technical Study on Transport Infrastructure at Kennedy Town for Connecting to East Lantau Metropolis – Feasibility Study (the "Study").*

2. *The RPTTIA and the FR contain certain information relating to incomplete analysis, research or statistics, where the disclosure of such information could produce a misleading impression. Clause 2.13.2 of the "Code on Access to Information – Guidelines on Interpretation and Application" (the "Guidelines") provides –*

> *"The provision in paragraph 2.13(a) of the Code[1] recognizes that departments may withhold information relating to incomplete analysis, research or statistics where the incompleteness could produce a misleading impression. Departments may however decide to release this type of information if it is possible for the information to be accompanied by an explanatory note explaining the ways in which it is defective."*

3. *In view of the public concern on the content of the RPTTIA and the FR, having balanced the public interest in disclosure of the information against any harm or prejudice that could result, the Civil Engineering and Development Department (CEDD), having consulted concerned departments, has decided to release the information including, inter alia, the various planning data, parameters and assumptions adopted in forecasting the traffic and transport condition of year 2041 as well as the corresponding forecast results under the Study, although such information, depicted in the RPTTIA and the FR, are obsolete, outdated, relating to incomplete analysis/ research or no longer applicable as of today. Pursuant to Clause 2.13.2 of the Guidelines, this Explanatory Note is prepared to explain the ways in which this information is defective with a view to avoiding readers of the RPTTIA and the FR from having a misleading impression about the planning data, parameters and assumptions adopted and the corresponding forecast results depicted in the RPTTIA and the FR.*

[1] It refers to the "Code on Access to Information".

Explanatory Note to be read in conjunction with the Report on Preliminary Traffic and Transport Impact Assessments (Final) and the Final Report

Explanatory Note

Summary of key information in the Preliminary Traffic and Transport Impact Assessments ("Preliminary TTIA") which is now outdated, obsolete, relating to incomplete analysis / research or not applicable as of today :

- The Preliminary TTIA adopted the Enhanced 2011-based Territorial Population and Employment Data Matrix ("TPEDM"), which was compiled on the basis of total population projection of about 8.47 million by 2041 released in July 2012 by the Census and Statistics Department ("C&SD"), whereas the latest population projection released by C&SD in September 2017 is about 8.21 million by 2041.
- The Preliminary TTIA adopted a population total of close to 9.5 million for 2041.
- Population and employment assumptions were made without the support of land use proposal and detailed planning parameters.
- The highway and railway networks adopted are different from the new strategic transport networks proposed under the Lantau Tomorrow Vision (LTV).
- The Preliminary TTIA assumed that 60% of housing units at the East Lantau Metropolis (ELM) was public housing, vs 70% on Kau Yi Chau Artificial Islands as announced in the 2018 Policy Address.
- The employment opportunities assumed for ELM under the Preliminary TTIA are less than that on the Kau Yi Chau Artificial Islands under the LTV.

1. Readers of the RPTTIA and the FR should note that the primary objectives of the Study are to identify possible technically feasible schemes for the Transport Infrastructure ("TI") (which means new or upgrading of existing highway and railway infrastructure works) linking the western Hong Kong Island and the proposed ELM near Kau Yi Chau, and assess the preliminary impacts on the existing, planned and potential developments at Kennedy Town due to the TI.

2. The Preliminary TTIA, carried out at the initial phase of the Study, was conducted on the basis of various assumptions on the broad development parameters, population, employment level and development phasing of the ELM as well as the total population of

Hong Kong made at the time when the Preliminary TTIA was carried out in 2015 and 2016.

3. The information which is now outdated, obsolete, relating to incomplete analysis/ research or not applicable as of today includes but not limited to the following:

(a) Being the latest version at the time of the Study, the Enhanced 2011-based Territorial Population and Employment Data Matrix ("TPEDM") was adopted in the Preliminary TTIA. It was compiled on the basis of the total population projection (about 8.47 million by 2041) released in July 2012 by the C&SD. Further, its assumptions, including future territorial population, employment structure, economic growth as well as the land use patterns reflecting a set of preferred options of future land use development current at the time of compilation, are subject to changes in light of the results of latest planning studies from time to time. In particular, the latest population projection released by C&SD in September 2017 is about 8.21 million by 2041.

(b) When forecasting the traffic and transport condition of year 2041, the population total for the year 2041 adopted in the Preliminary TTIA was crudely taken as the summation of the territory-wide population of the Enhanced 2011-based TPEDM, and the planned population under the respective major development scenarios of the two proposed Strategic Growth Areas, namely the ELM and New Territories North (NTN)[2]. The territory-wide population (for the scenario with the NTN and full development of the ELM) adopted in the Preliminary TTIA was close to 9.5 million, which was used for the purpose of assessing the traffic impact only. When conducting further studies, due consideration has to be taken into account the potential reduction in population capacity due to replacement of inadequate housing (such as sub-divided units) by proper housing and substantial redevelopment of the aged building blocks into more liveable communities, as well as the general public's aspiration for larger living space and more public facilities.

(c) The population and employment figures for various projects adopted in the Preliminary TTIA were based on broad assumptions in 2016 which might be overtaken by events or outdated. References were also made to the new towns

[2] For ELM, a total population of 440,000 was assumed for the base case development scenario and a total population of 700,000 was assumed for the full development scenario. For NTN, a total population of 350,000 was assumed.

and rural townships, and core business districts at that time for the population and employment assumptions for ELM without the support of land use proposal and detailed planning parameters at that time.

(d) The data on land occupancy by port back-up and open storage uses adopted in the Preliminary TTIA was compiled from various sources of information including planning permission records and desktop estimation based on aerial photos. Owing to the method of compilation which was not supported by a field survey, the information serves to provide a broad picture of the distribution by such uses at a particular point in time for general reference rather than a meticulous record of such uses.

(e) The highway and railway networks adopted under the Study was based on the transport networks proposed under the "Hong Kong 2030+: Towards a Planning Vision and Strategy Transcending 2030" ("Hong Kong 2030+") promulgated in 2016. This is different from the new strategic transport networks proposed under the Lantau Tomorrow Vision ("LTV") as announced in the 2018 Policy Address.

(f) The Preliminary TTIA assumed that 60% of the housing units at the ELM was public housing. However, 70% of the housing units on the Kau Yi Chau Artificial Islands will be assumed as announced in the 2018 Policy Address, which also encourages more use of public transport for a liveable city.

(g) At the time of conducting the Preliminary TTIA, it was assumed that the ELM would have a total employment of about 206,400. Under the LTV, it is estimated that the Hong Kong's third Core Business District (CBD3) on the Kau Yi Chau Artificial Islands alone would have a minimum of about 200,000 jobs (excluding employment opportunities outside the CBD3). With more employment opportunities for the residents on the Kau Yi Chau Artificial Islands, there should be comparatively lesser traffic to the existing urban areas.

(h) As announced in the 2018 Policy Address, the Government will initiate a review on the toll policy based on the concept of congestion charging and the principle of efficiency first. The toll assumption scenario will be subject to more comprehensive analysis in future assessment, taking into account the prevailing

toll policy.

4. Given that some information including the various planning data, parameters and assumptions adopted in the Preliminary TTIA are obsolete, outdated, relating to incomplete analysis/ research or no longer applicable as of today, the findings of the RPTTIA and the FR could not fully reflect the forecasting on traffic and transport condition of year 2041. The traffic demand may have been over-estimated. The Study has mentioned that the proposed transport infrastructures connecting between the ELM and other developments are required to be examined in future studies.

Civil Engineering and Development Department
May 2019

參閱初步交通及運輸影響評估報告及最終報告時需注意的註釋

序言

1. *根據合約編號 CE 11/2015（HY） - 連接堅尼地城與東大嶼都會的運輸基建技術性研究 - 可行性研究("本研究")，分別於 2016 年 12 月和 2017 年 11 月完成初步交通和運輸影響評估報告及最終報告。*

2. *初步交通和運輸影響評估報告及最終報告包含部份與不完整或未完成的分析、研究或統計有關的資料，披露有關的資料可能會令人產生誤解。《公開資料守則 - 詮釋和應用指引》(《指引》）第 2.13.2 段條規定 –*

> *《守則》[1] 第 2.13(a)段的條文認同，如與不完整或未完成的分析、研究或統計有關的資料會造成誤解，部門可不予披露。不過，如附上註釋解釋資料的不足之處，部門或可決定發放這類資料。*

3. *鑑於公眾對初步交通和運輸影響評估報告及最終報告的內容表示關注，在平衡了披露資料的公眾利益，以及可能造成的任何傷害或損害後，土木工程拓展署經諮詢有關部門後，決定披露這些資料，其中包括：為預測 2041 年交通和運輸狀況所採用的各種規劃數據、參數和假設，以及研究中的相關的預測結果，儘管這些在初步交通和運輸影響評估報告及最終報告內的資料陳舊、過時、與不完整或未完成的分析/研究有關，或在現時已不再適用。根據《指引》第 2.13.2 段，本註釋旨在解釋該些資料的不足之處，以避免當讀者參閱初步交通和運輸影響評估報告及最終報告時，會對規劃數據，參數和假設，以及在初步交通和運輸影響評估報告及最終報告中相關的預測結果產生誤解。*

[1] 《守則》指《公開資料守則》

參閱初步交通及運輸影響評估報告及最終報告時需注意的註釋

註釋

在初步交通和運輸影響評估中屬陳舊、過時、與不完整或未完成的分析/研究有關，或在現時已不再適用的主要資料摘要如下:

- 初步交通和運輸影響評估採用《以 2011 年為基礎年期的全港人口及就業數據矩陣 (更新版)》 (下稱《2011 基年數據矩陣》)。該數據矩陣是根據政府統計處於 2012 年 7 月公布全港人口於 2041 年將達 847 萬的推算所編製，而政府統計處於 2017 年 9 月公布最新推算為全港人口於 2041 年將達 821 萬。
- 初步交通和運輸影響評估中採用全港人口於 2041 年接近 950 萬。
- 人口和就業假設是在沒有土地用途建議和詳細規劃參數的情況下提出。
- 研究採用的公路及鐵路網絡，與「明日大嶼願景」下提出的新策略運輸網絡不同。
- 初步交通和運輸影響評估假設東大嶼都會提供的房屋單位當中六成為公營房屋，而 2018 年施政報告公布的交椅洲人工島上的房屋單位當中則七成為公營房屋。
- 進行初步交通和運輸影響評估時假設東大嶼都會的就業機會，比「明日大嶼願景」下提出的交椅洲人工島的就業機會為少。

1. 當參閱初步交通和運輸影響評估報告及最終報告時需留意，本研究的主要目的，是提出可能在技術上可行的運輸基建方案(即新的或提升現有的公路和鐵路基礎設施工程)以連接香港島西部及擬議鄰近交椅洲的東大嶼都會，並評估運輸基建方案對堅尼地城現有、計劃及可能發展的初步影響。

2. 初步交通和運輸影響評估是在本研究的首階段時進行，並根據對東大嶼都會的概括發展參數、人口、就業水平和分階段發展，以及於 2015 至 2016 年進行初步交通和運輸影響評估時有關香港人口總數，所作出的各種假設。

3. 陳舊、過時、與不完整或未完成的分析/研究有關，或在現時已不再適用的資料包括但不限於以下資料：

   (a) 初步交通和運輸影響評估採用了在進行研究當時為最新的《以 2011 年

參閱初步交通及運輸影響評估報告及最終報告時需注意的註釋

為基礎年期的全港人口及就業數據矩陣 (更新版)》 (下稱《2011 基年數據矩陣》)。該數據矩陣是根據政府統計處於 2012 年 7 月公布的全港人口數據編製，當中推算全港人口於 2041 年將達 847 萬。此外，該數據矩陣的假設，包括未來的全港人口、就業結構、經濟增長，以及土地使用模式，以反映在編製當時認為可取的未來土地使用發展方案，可能需因應最新的規劃研究結果而需不時進行更改。需注意的是，政府統計處於 2017 年 9 月公布全港人口數據，推算全港人口於 2041 年將達 821 萬。

(b) 在預測 2041 年的交通和運輸狀況時，初步交通和運輸影響評估採用的 2041 年人口總數，粗略地以《2011 基年數據矩陣》中的全港人口，加上在主要發展情景中兩個擬議的策略增長區(即東大嶼都會和新界北[2])的規劃人口的總和計算。初步交通和運輸影響評估中採用的全港人口接近 950 萬（在新界北發展和東大嶼都會全面發展的情景中）。這人口數目只用於評估交通影響。在進行下階段研究時，會適當考慮若以合適房屋單位取代現時不足的住房（例如劏房）和為發展更宜居的社區而大量重建舊樓，以及公眾對更大生活空間和更多公共設施的渴望，而可能會導致人口容量減少。

(c) 初步交通和運輸影響評估中採用的各個發展項目有關的人口和就業數據是基於 2016 年的概括假設，這些假設可能已被其他事件所取代，或已過時。在當時沒有土地用途建議和詳細規劃參數支持的情況下，東大嶼都會的人口和就業假設主要參考了當時的新市鎮和鄉鎮，以及核心商業區。

(d) 初步交通和運輸影響評估採用的港口後勤和露天貯物用途的土地佔用數據是根據各種資料來源編製，包括規劃許可記錄，以及根據航空照片所作的桌面估算。由於該編製的方法並不包括實地調查，有關資料旨在提供在特定時間這些用途分佈的概括景象，以供一般參考而不是這些用途的詳細記錄。

(e) 本研究採用的公路及鐵路網絡是根據《香港 2030+：跨越 2030 年的規劃願景與策略》(《香港 2030+》)在 2016 年提出的運輸網絡。這與 2018

[2] 本研究假設東大嶼都會在初步發展情景中的總人口為 440,000，而在全面發展情景中的總人口為 700,000。另外，本研究假設新界北發展的總人口為 350,000。.

參閱初步交通及運輸影響評估報告及最終報告時需注意的註釋

年施政報告公布的「明日大嶼願景」下提出的新策略運輸網絡不同。

(f) 初步交通和運輸影響評估假設東大嶼都會提供的房屋單位當中六成為公營房屋。而 2018 年施政報告公布的「明日大嶼願景」預計交椅洲人工島提供的房屋單位當中七成為公營房屋，亦鼓勵更多地利用公共交通工具以作為一個宜居城市。

(g) 在進行初步交通和運輸影響評估時，假設東大嶼都會的總就業人數約為 206,400。「明日大嶼願景」預計單是位於交椅洲人工島上的香港第三個核心商業區將可提供最少約 20 萬個就業機會 (不包括在第三個核心商業區外的就業機會)。由於交椅洲人工島上的居民將會有更多的就業機會，前往市區的交通量會相對較少。

(h) 正如 2018 年施政報告所公布，政府正準備按「擠塞徵費」為理念、「效率優先」為原則開展研究，檢討收費政策。假設的收費情景在未來的評估中需進行更全面的分析，包括考慮最新的收費政策。

4. 鑑於初步交通和運輸影響評估中採用的一些資料，包括各種規劃數據、參數和假設，屬陳舊、過時、與不完整或未完成的分析/研究有關，或在現時已不再適用，初步交通和運輸影響評估報告及最終報告的結果或不能完全反映有關於 2041 年的交通和運輸狀況的預測。交通需求可能被高估。本研究已提及，在未來的研究中，需要就連接東大嶼都會及其他發展的運輸基礎設施進行研究。

土木工程拓展署
2019 年 5 月

AECOM

Report on Preliminary Traffic and Transport Impact Assessments (Final) (Ref. R08-03)

December 2016

土木工程拓展署
CEDD Civil Engineering and Development Department

Agreement No. CE 11/2015 (HY)

Technical Study on Transport Infrastructure at Kennedy Town for Connecting to East Lantau Metropolis – Feasibility Study

土木工程拓展署
Civil Engineering and Development Department
Civil Engineering Office

Agreement No. CE 11/2015 (HY)
Technical Study on Transport Infrastructure at Kennedy Town for Connecting to East Lantau Metropolis - Feasibility Study

Report on Preliminary Traffic and Transport Impact Assessments (Final)

(Ref. R08-03)

December 2016

Reviewed: Stanley Liu 28 December 2016

Approved for Issue: Simon Wong 28 December 2016

AECOM ASIA COMPANY LIMITED

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APPENDICES

1 INTRODUCTION

1.1 Background

1.1.1 Kennedy Town is located at the north-western end of Hong Kong Island and is served by West Island Line (WIL) starting from the end of 2014. There are currently three WIL stations, i.e. Hong Kong University Station, Kennedy Town Station, and Sai Ying Pun Station in the area. Sai Ying Pun Station was opened few months later than the WIL commissioning i.e. at the end of first quarter of 2015.In order to enhance the land uses in the Western District, to grasp the opportunity of the commissioning of the MTR WIL and to increase housing supply to address territorial housing needs, Planning Department has undertaken the Land Use Review on the Western Part of Kennedy Town. The review recommends various housing developments, open spaces, Government/community facilities, leisure, recreation and tourism-related uses at that area.

1.1.2 As set out in the 2014 Policy Address, the Government will explore ways to further develop the eastern waters off Lantau Island and neighbouring areas, with a view to developing an East Lantau Metropolis (ELM) for accommodating new population. It will become the third core business district in addition to Central and Kowloon East for promoting economic development and providing job opportunities. The initial concept of ELM is indicated in **Figure 1.1**.

1.1.3 A Transport Infrastructure will provide highway and railway infrastructure works for transport link between western Hong Kong Island and East Lantau Metropolis near Kau Yi Chau. It will have direct interface with land use proposals and their implementation programme at Kennedy Town and its nearby area of Hong Kong Island. The Transport Infrastructure should be properly planned to minimize the implications and restrictions on the land use proposals.

1.1.4 Prior to this report, the "Working Paper on Methodology of Preliminary Traffic and Transport Impact Assessments" was submitted to present the modeling approach and methodology, assumptions, parameters. Subsequent to the above working paper, the "Working Paper on Model Calibration and Validation"summarizing the findings of the model calibration and validation was submitted.

1.2 The Assignment

1.2.1 On 21 July 2015, CEDD commissioned AECOM Asia Company Limited (AECOM) as the Consulting Engineer to undertake a technical study on Transport Infrastructure at Kennedy Town Site taking into account the existing, planned and potential development at Kennedy Town and potential interface with ELM.

1.3 The Purpose and Objective of the Report

1.3.1 This Report on Preliminary Traffic and Transport Impact Assessment, is a deliverable in the Initial Phase of this Assignment, has been prepared in line with Clause 6.4 of the Brief.

1.3.2 This Report covers two main tasks. Firstly, the adequacy of the capacity of the existing and planned transport system should be assessed. Secondly, the recommendations on the requirements for the new transport infrastructure or upgrading/improvement works to cater the development of ELM should be given and identified.

1.4 Structure of the Report

1.4.1 The Report summarizes and presents the proposed traffic forecast methodology and modelling input assumptions for the Preliminary Traffic and Transport Impact Assessments (TTIA) of this Project.

1.4.2 This Report is organized into six sections including this introductory section:

- Section 2 outlines the existing traffic and transport arrangement;
- Section 3 discuss the traffic context of ELM;
- Section 4 recall the overall traffic modelling approach;
- Section 5 present the traffic forecast of ELM; and
- Section 6 concludes and summarizes the TTIA.

2 EXISTING TRAFFIC AND TRANSPORT OVERVIEW

2.1 Existing Key Road Links

2.1.1 The Area of Influence (AOI) for the Preliminary Traffic and Transport Impact Assessment (TTIA) is shown in **Figure 2.1**. Apart from the key road links and junctions within the AOI, Aberdeen Tunnel would also be considered in this Preliminary TTIA.

2.1.2 The Study Area covers the westernmost part of Hong Kong Island (including Sai Wan and Pok Fu Lam areas), Green Island and Kau Yi Chau. For the Hong Kong Island part within the Study Area, its external road connections include Connaught Road West to the north and Shek Pai Wan Road to the south. The main internal road network includes Pok Fu Lam Road, Victoria Road, Queen's Road West, and Shing Sai Road etc. Currently, Green Island and Kau Yi Chau have no road network.

2.1.3 Connaught Road West flyover forms the westernmost section of Route 4 with western landing at Kennedy Town. Traffic from the Study Area could reach entire northern part of Hong Kong Island via this strategic road, and could further access Kowloon through the three harbour crossings (i.e. Western Harbour Crossing, Cross Harbour Tunnel and Eastern Harbour Crossing). In view of the current population and employment distribution, the section of Connaught Road West flyover to the west of Western Harbour Crossing is operating with sufficient capacity. Whereas southern part of the Study Area is directly in connection with Aberdeen via Shek Pai Wan Road, which is mainly residential areas.

2.1.4 Pok Fu Lam Road, classified as primary distributor, is the major road running in north-south direction within the Study Area, it links to Bonham Road and Hill Road to the north and Shek Pai Wan Road to the south. The key developments such as HKU, Queen Mary Hospital and Chi Fu Fa Yuen are served by Pok Fu Lam Road for further connection to the strategic road network at northern Hong Kong Island. Apart from serving the locals, Pok Fu Lam Road is also one of the two major corridors for linking the northern and southern parts of Hong Kong Island, another more critical corridor is Aberdeen Tunnel. Population at Aberdeen, Ap Lei Chau and Wong Chuk Hang mainly rely on these two roads for assessing the northern Hong Kong, Kowloon and N.T.

2.1.5 Aberdeen Tunnel is a urban trunk road connecting the Wong Chuk Hang / Aberdeen to Causeway Bay, which is the key road linking the northern and southern part of Hong Kong Island. In view of its high traffic demand, traffic queuing / slow moving vehicles along the tunnel are observed during the peak periods, the said situation is also in close relation to congestion Cross Harbour Crossing interchange.

2.2 Existing Domestic Railway Lines

Island Line (ISL)

2.2.1 Before opening of West Island Line (WIL), the Island Line (ISL) runs from Sheung Wan in Central & Western District to Chai Wan in the Eastern District. This line operates conventional 8-car trains at high frequencies up to 34 trains per hour. The line has 14 stations and the 13.3 km journey takes around 25 minutes along. Train service frequencies range from about 2 minutes in the weekday morning peak to 4-6 minutes in the non-peak. Under the West Island Line (WIL) project, the ISL has been extended by 3 km to Kennedy Town, with three new stations, Sai Ying Pun, Hong Kong University and Kennedy Town. The extension was fully completed and operational in March 2015, it will make the ISL the lengthiest urban line (16.1 km) with the most stations (17 stations). Western District residents can enjoy railway services without requiring feeder services. For residents in Pok Fu Lam area, the feeder services to ISL can also be shortened. Residents taking feeder services on Pok Fu Lam Road can change to ISL at HKU station instead of Sheung Wan Station.

2.2.2 The other railway lines in the Central and Western District consists of the Tsuen Wan Line (TWL) running between Tsuen Wan and Central and Tung Chung Line (TCL) running between Tung Chung and Hong Kong Station. The two lines are connected to ISL and available for interchange at Central Station. The two railway lines provide linkage between Central and Western District to Kowloon, Kwai Tsing, Tsuen Wan and Lantau Island.

2.2.3 The West Rail Line (WRL) running between Tuen Mun and Hung Hom can be interchanged with TWL and TCL at Mei Foo Station and Nam Cheong Station respectively. It provides connection between Northwest New Territories and Kowloon.

2.2.4 The mentioned four railway lines including ISL, TWL, TCL and WRL are potentially connected to future railway network of the East Lantau Metropolis.

2.3 Existing Road-based Public Transport

2.3.1 The road-based public transport routes to be possible affected due to the introduction of the Transport Infrastructure, Associated Transport Links and ELM are those travelling between (i) Hong Kong Island and Airport/Lantau and (ii) Hong Kong Island and NWNT (covering Tuen Mun, Tin Shui Wai, Yuen Long Town, Fairview Park and Palm Springs only). The re-routing of those public transport routes would be affected by several factors including the journey time, travel distance and operating cost. In this preliminary stage of study, it is assumed all the possible affected public transport routes diverting to use the new path via ELM for conservative design purpose. Thus, the existing road-based PT routes to be covered in this Preliminary TTIA mainly included the aforementioned long haul routes. There are total 32 bus routes listed in **Table 2.3.1** to serve both routings where 6 routes travelling between Hong Kong Island and Airport/Lantau Island and 26 routes travelling between Hong Kong Island and NWNT. The summary of the existing long haul bus services during the peak period are summarised in **Table 2.3.2**.

Table 2.3.1 Existing Long Haul Bus Route travelling between (i) Hong Kong Island and Airport/Lantau; (ii) Hong Kong Island and NWNT

A10	960B	962B	968
A11	960P	962C	968X
A12	960S	962P	969
E11	960X	962S	969A
E11A	961	962X	969B
E11S	961P	X962	969C
960	962	967	969P
960A	962A	967X	969X

Table 2.3.2 The Summary of Existing Long Haul Bus Service travelling between (i) Hong Kong Island and Airport/Lantau; (ii) Hong Kong Island and NWNT

From	To	AM Peak (pcu/hr)	PM Peak (pcu/hr)
Hong Kong Island	Lantau	30	30
Lantau	Hong Kong Island	30	30
Hong Kong Island	NWNT (via Tuen Mun Road)	30	90
NWNT (via Tuen Mun Road	Hong Kong Island	140	40
Hong Kong Island	NWNT (via Route 3)	20	70
NWNT (via Route 3)	Hong Kong Island	110	30

2.3.2 In addition, there are total 27 residential services (RS) listed in **Table 2.3.3** travelling between Hong Kong Island and NWNT. But there is no any RS travelling between Hong Kong Island and Airport/Lantau. The summary of the existing RS during the peak period are summarized in **Table 2.3.4**.

Table 2.3.3 Existing Residential Service travelling between Hong Kong Island and NWNT

NR705	NR719	NR908
NR706	NR723	NR91
NR708	NR726	NR915
NR709	NR727	NR919
NR710	NR729	NR922
NR711	NR731	NR935
NR712	NR737	NR943
NR716	NR739	NR945
NR718	NR741	NR97

Table 2.3.4 The Summary of Existing Residential Service travelling between Hong Kong Island and NWNT

From	To	AM Peak (pcu/hr)	PM Peak (pcu/hr)
Hong Kong Island	Lantau	0	0
Lantau	Hong Kong Island	0	0
Hong Kong Island	NWNT (via Tuen Mun Road	0	110
NWNT (via Tuen Mun Road	Hong Kong Island	130	0
Hong Kong Island	NWNT (via Route 3)	0	50
NWNT (via Route 3)	Hong Kong Island	70	0

2.3.3 In general, public light bus (GMB and RMB) are planned to provide the public transport service in local area. Thus, there is no any public light bus routing travelling between (i) Hong Kong Island and Airport/Lantau; and (ii) Hong Kong Island and NWNT.

2.3.4 In all, the total road-based public transport including bus and residential service (RS) travelling between (i) Hong Kong Island and Airport/Lantau; and (ii) Hong Kong Island and NWNT, are summarized in **Table 2.3.5**.

Table 2.3.5 The Summary of Existing Total Public Transport Service travelling between (i) Hong Kong Island and Airport/Lantau and (ii) Hong Kong Island and NWNT

From	To	AM Peak (pcu/hr)	PM Peak (pcu/hr)
Hong Kong Island	Airport/Lantau	30	30
Airport/Lantau	Hong Kong Island	30	30
Hong Kong Island	NWNT (via Tuen Mun Road	30	200
NWNT (via Tuen Mun Road	Hong Kong Island	270	40
Hong Kong Island	NWNT (via Route 3)	20	120
NWNT (via Route 3)	Hong Kong Island	180	30

3 OVERALL TRAFFIC MODELLING APPROACH

3.1 Traffic Forecasting Approach

3.1.1 To produce robust traffic forecasts that would be responsive to dynamic changes in future land use and infrastructure development, a three-tier modelling approach is proposed for this Assignment. The three-tier model structure will comprise a **Strategic Transport Model (STM)** and a **Transport Model for Traffic Assessment (Railway Model)** in the upper tierand a **Local Area Traffic Model (LATM)** in the lower tier. The STM follows a 4-stage multi-modal modelling process to produce (i) the initial passenger matrices input to the Railway Model; and (ii) the vehicular cordoned matricesinput to the lower tier LATM. The overall modelling flow chart is illustrated in **Figure 3.1**.

3.1.2 AECOM's in-house STM that covers the entire Hong Kong Special Administrative Region (HKSAR) will be applied. This model has the architecture of a conventional 4-stage transport model that involves the four basic stages of Trip Generation, Trip Distribution, Modal Split and Assignment.

3.1.3 The STM has since been updated to reflect the strategic information of 2011 travel characteristics within Hong Kong based on the Travel Characteristics Survey 2011, Goods Vehicle Travel Characteristics Survey 2011, Cross Boundary Travel Survey data at the road-based control points which referring to the Monthly Traffic & Transport Digest and 2011 Population Census.

3.1.4 For this Assignment, STM will be reviewed and refined, as appropriate, to incorporate the latest version of Enhanced 2011-based Territorial Population and Employment Data Matrix (TPEDM)Controlled Version to be collected from Planning Department. The updated STM will be calibrated and validated to year 2011 and 2013 observed vehicular flows across the major Annual Traffic Census (ATC) screenlines for the morning and afternoon peak periods as well as daily total. The validation criteria for STM will be discussed in Section 3.4.Then, the STM will forecast to year 2015 in order to reflect the strategic public transport network change on Kennedy Town. For future demand forecasting, the forecasting planning data and highway & railway network assumptions will be incorporated in the STM in order to reflect the traffic and transport condition of the design year.

3.2 Major Model Input Assumption

3.2.1 The future year traffic models will be developed for the design year 2041. The design year of STM will be prepared based on agreed planning assumptions and parameters to produce design year matrices as major inputs for the Public Transport/Rail Model and LATM matrices development. The Railway Model and LATM networks will be prepared for the design years based on agreed local road network and PT service assumptions. The PT service in design year would adopt the existing PT routes plus the future committed PT routes by making reference with relevant government studies. Traffic assignments will then be undertaken to produce local traffic forecasts for the design year.

Strategic Planning Data

3.2.2 The latest version of Enhanced 2011-based TPEDM Controlled Version has been provided by Planning Department. It will be taken as the basis of the territorial planning data assumptions in the various design years for this Assignment.

3.2.3 With understanding from the Enhanced 2011-based TPEDM, most of the major developments in Lantau and North West New Territories (NWNT) should be included in the latest set of planning data such as

- The Three-Runway System of HKIA
- HZMB and HKBCF Topside Development
- Tung Chung New Town Extension
- Development at Tuen Mun Area 54
- Hung Shui Kiu New Development Area
- Yuen Long South Development
- Kam Tin South Development
- Lantau Concept Plan

Potential Developments

3.2.4 It is identified that there are some potential developments have not been incorporated in the Enhanced 2011-based TPEDM (Controlled Version). The planning parameters of the developments are shown in **Table 3.2.1**.

Table 3.2.1 Planning parameters of potential developments

	Population	Employment
Potential Development at Siu Ho Wan Depot Topside Development	35,100	1600
Potential Development at Siu Ho Wan Reclamation and Landside Development	-	4000
Potential Developments at Sunny Bay Reclamation	-	6000
Proposed Development of ELM	700,000	206,400

3.2.5 In general, the distribution of population and employment would affect the movement of vehicular and passengers. Thus, all of the above planned / potential developments shall be identified and added on top of TPEDM to formulate the background planning data input into the strategic transport model for sequence of scenario model run.

Key Parameters for ELM

3.2.6 In this initial stage of concept plan, the total population and employment of the proposed development of ELM have been provided by Planning Department input to the strategic transport model. The other model parameters such as number of worker, student, school place and employment type set would be formulated and discussed in section 5.

3.3 Proposed Model Scenario Runs

3.3.1 With understanding from the Study Brief, traffic and transport forecast should be based on the agreed planning data and infrastructure to estimate the forecasting traffic and transport condition of year 2041 for different agreed scenarios. The agreed strategic road links will be presented under different scenarios. Similarly, the railway patronage of year 2041 under 3 different railway networks will be reviewed. The performance of the key junctions and road links in year 2041 within the AOI will be only assessed under the scenario (i) baseline scenario without ELM; (ii) baseline scenario with incorporating the Full Implementation of other planned additional Transport Infrastructure; and (iii) with and without connection to Route 4 Extension..

3.3.2 The formulation of the scenarios would consider five major aspects including planning data, highway infrastructure, railway infrastructure, toll level and land use of ELM. The adopted assumptions would be presented and summarized below under difference scenario model runs.

General Adopted Planning Data Assumptions

3.3.3 In the entire scenario model run, it will adopt 1 set of agreed Planning Data (i.e. Enhanced 2011-based TPEDM Controlled Version). The major committed/planned developments in Lantau and North West New Territories have been included in the Enhanced 2011-based TPEDM Controlled Version such as

- The Three-Runway System of HKIA;
- HZMB & HKBCF;
- Tung Chung New Town Extension;
- Development at Tuen Mun Area 54;
- Hung Shui Kiu New Development Area;
- Yuen Long South Development;
- Kam Tin South Development;
- Lantau Concept Plan;
- North Commercial District (NCD) of Airport Island;
- Topside Development at HKBCF; and
- Potential Housing Sites/Land Sale Sites in North Lantau;

Other committed/planned developments for Hong Kong Island within the study area have been included such as

- Western part of Kennedy Town;
- Mount Davis area; and
- Pok Fu Lam area;

Besides, some major potential developments would also be added in the Enhanced 2011-based TPEDM (Controlled Version) such as

- Siu Ho Wan Depot Topside Development; and
- New Territories North Development (NTN)
- Potential Development at Siu Ho Wan Reclamation and Landside Development; and
- Sunny Bay Reclamation;

3.3.4 The assumptions of the East Lantau Metropolis (ELM) Development consist with three portions including Kau Yi Chau (KYC), Hei Ling Chau (HLC) and Mui Wo (MW). The development assumption of the ELM would be various in difference scenario model run.

General Adopted Highway Infrastructure Assumptions

3.3.5 The Highway Network assumptions in this assignment should adopt the latest information as agreed by relevant departments. The latest highway network assumptions could make reference to the LanDAC recommendation. The general adopted highway networks on each scenario model run have been presented in **Table 5.3.1** & **5.3.2** of Chapter 5.

3.3.6 With reference to the study brief, the Transport Infrastructure Links would also take into consider in difference scenario model run. These highway infrastructure are included

- Hong Kong - Lantau Link (Kennedy Town to KYC);
- Route 11 (North Lantau to Yuen Long incl. Tsing Lung Bridge);
- Hong Kong - Lantau Link (KYC to Sunny Bay);
- Hei Ling Chau Link – (KYC to Hei Ling Chau);
- Route 4 Extension (between Aberdeen and Kennedy Town);
- Mui Wo Link – (Mui Wo to Hei Ling Chau); and
- Siu Ho Wan Link – (Mui Wo to Siu Ho Wan / North Lantau).

General Adopted Railway Infrastructure Assumptions

3.3.7 Railway Network should adopt the Railway Development Strategy 2014 released at September 2014. It recommended seven railway infrastructures to be implemented on or before year 2026 including (i) Hung Shui Kiu Station, (ii) Northern Link with Kwu Tung Station, (iii) Tung Chung West Extension, (iv) South Island Line (West), (v) Tuen Mun South Extension, (vi) East Kowloon Line and (vii) North Island Line. In addition to above railway lines and stations, a Tung Chung East (TCE) Station should also be considered in which is being studies under CEDD's "Planning and Engineering Study on the Remaining Development in Tung Chung – Feasibility Study". The station should likely be implemented to meet the TCNTE population intake and in any case should be commissioned before year 2041, which is the design year of this Assignment.

3.3.8 In addition, several potential rail connection would also take into consider in difference scenario model run such as

- Rail connection between Tuen Mun and Kau Yi Chau via North Lantau, Mui Wo and Hei Ling Chau
- Rail connection between Kowloon West and KYC; and
- Rail connection between Kennedy Town and KYC

General Adopted Toll Level Assumptions

3.3.9 In view of the location of the proposed ELM, three external connecting roads are identified between KYC and Kennedy Town; between KYC and Sunny Bay; and between North Lantau and Mui Wo. The toll level of these external connecting roads would affect the amount of traffic volume. The toll level setting of these external connecting roads has been adopted the latest assumptions which provided by Transport Department dated on 28 July 2016. It has been applied on difference scenario model run as summarized below:

- between Kennedy Town and KYC: 100% of Lantau Link
- between KYC and Sunny Bay: 100% of Lantau Link
- between North Lantau and Mui Wo: 50% of Lantau Link
- between Hei Ling Chau and Mui Wo: 100% of Lantau Link
- Tsing Lung Bridge: No Toll

Scenario Model Run for STM

3.3.10 The purpose of this scenario is to establish the baseline traffic model of year 2041 which incorporating all the basic highway & railway assumptions with agreed planning data. In addition to base case scenario, the rail connection between Tuen Mun and KYC; between KYC and Kowloon West; and three external connecting roads between KYC and Kennedy Town; between KYC and Sunny Bay; and between North Lantau and Mui Wo are included in the Full Implementation Network. In addition to general adopted planning data assumptions, only planning data of Kau Yi Chau is included in base case scenario while planning data of all three clusters of ELM including KYC, HLC and MW are included in full implementation network. Development of NTN and Route4 Extension would also take into consider in difference scenario model run.

3.3.11 In addition, model run will carry out with three railway schemes to present the station boarding/alighting and link segment flows. Option A provide the direct extension of ISL/WIL. Both options B and C require the interchange at Kennedy Town Station providing by 160 meters long passenger adits. The walking time of the long passenger adits is about 133 seconds (160 meters / 1.2 meters per second) which equivalent to the time taken travelling one railway station. In all, the interchange time taken at Kennedy Town Station compare with the overall journey time is insignificant. At this point, it is necessary to maximize the patronage which minimize the impact on the interchange patronage flows and so leads to a more conservative planning during preliminary design stage. The design network coding should address this issue once the details planning parameters of ELM available. Thus, the walking distance at Kennedy Town Station between the new railway line and ISL is assumed using the nominal distance 20 meters with 17 seconds for modelling purpose. The three railway schemes for railway connection would be

- Option A – ISL / WIL Extension
- Option B – New Railway Line between Kennedy Town Station and Tuen Mun
- Option C – New Railway Line between Kennedy Town Station and KYC

3.3.12 At the initial stage of land use options design, several options of land use will be developed. It is proposed to adopt the assumption of Full Implementation Network in the Final Stage of each land use options. Two land use options would be selected to carry out the model run. The input assumptions of all scenario are summarized as shown in Table 3.3.1 and illustrated in Figure 3.2 to 3.11.

Table 3.3.1 Scenario Model Run

Scenario	Development					Road Network	Railway Scheme			Toll				Illustrated in Figure No.
	ELM Development Phasing		ELM Land use Options		NTN	R4 Extension	Options			KYC - Kennedy Town	KYC - Sunny Bay	Mui Wo – North Lantau	Hei Ling Chau - Mui Wo	
ELM	Base Case	Full Network	A	B			A	B	C	as Lantau Link	as Lantau Link	as Lantau Link	as Lantau Link	
1	y		y			y	y			100%	100%	50%	100%	3.4
3	y		y			y			y	100%	100%	50%	100%	3.5
4	y		y				y			100%	100%	50%	100%	3.2
6	y		y						y	100%	100%	50%	100%	3.3
7	y		y		y	y	y			100%	100%	50%	100%	3.4
9	y		y		y	y			y	100%	100%	50%	100%	3.5
10	y		y		y		y			100%	100%	50%	100%	3.2
12	y		y		y				y	100%	100%	50%	100%	3.3
13	y			y		y	y			100%	100%	50%	100%	3.4
15	y			y		y			y	100%	100%	50%	100%	3.5
16	y			y			y			100%	100%	50%	100%	3.2
18	y			y					y	100%	100%	50%	100%	3.3
19	y			y	y	y	y			100%	100%	50%	100%	3.4
21	y			y	y	y			y	100%	100%	50%	100%	3.5
22	y			y	y		y			100%	100%	50%	100%	3.2
24	y			y	y				y	100%	100%	50%	100%	3.3
25		y	y			y	y			100%	100%	50%	100%	3.9
26		y	y			y		y		100%	100%	50%	100%	3.10
27		y	y			y			y	100%	100%	50%	100%	3.11

28		y	y				y			100%	100%	50%	100%	3.6
29		y	y					y		100%	100%	50%	100%	3.7
30		y	y						y	100%	100%	50%	100%	3.8
31		y	y		y	y	y			100%	100%	50%	100%	3.9
32		y	y		y	y		y		100%	100%	50%	100%	3.10
33		y	y		y	y			y	100%	100%	50%	100%	3.11
34		y	y		y		y			100%	100%	50%	100%	3.6
35		y	y		y			y		100%	100%	50%	100%	3.7
36		y	y		y				y	100%	100%	50%	100%	3.8
37		y		y		y	y			100%	100%	50%	100%	3.9
38		y		y		y		y		100%	100%	50%	100%	3.10
39		y		y		y			y	100%	100%	50%	100%	3.11
40		y		y			y			100%	100%	50%	100%	3.6
41		y		y				y		100%	100%	50%	100%	3.7
42		y		y					y	100%	100%	50%	100%	3.8
43		y		y	y	y	y			100%	100%	50%	100%	3.9
44		y		y	y	y		y		100%	100%	50%	100%	3.10
45		y		y	y	y			y	100%	100%	50%	100%	3.11
46		y		y	y		y			100%	100%	50%	100%	3.6
47		y		y	y			y		100%	100%	50%	100%	3.7
48		y		y	y				y	100%	100%	50%	100%	3.8

Note: The numbers of scenarios are not in consecutive order and scenario 2,5,8,11,14,17,20 and 23 are omitted because there is no Railway option B (A new railway line connecting between Tuen Mun South and Kennedy Town) for Base case.

Scenario Model Run for Toll Sensitivity Test

3.3.13 The scenario of toll sensitivity test on ELM would carry out under the assumption of Full Implementation Network. Different toll level of ELM will be placed to identify how the toll level of ELM would affect the traffic flows of ELM. It is recommended to carry out 15 scenario model run with different combination of toll level of Lantau Link which are illustrated in **Figure 3.12** and **Table 3.3.2.**

Table 3.3.2 Model Run for Toll Sensitivity Test

Scenario	Toll			
	ELM - KT	ELM - Sunny Bay	Mui Wo – North Lantau	Hei Ling Chau - Mui Wo
	as LL	as LL	as LL	as LL
31 as base case	100%	100%	50%	100%
T1	0%	0%	0%	0%
T2	50%	100%	50%	100%
T3	150%	100%	50%	100%
T4	100%	50%	50%	100%
T5	100%	150%	50%	100%
T6	100%	100%	0%	100%
T7	100%	100%	100%	100%
T8	100%	100%	50%	50%
T9	100%	100%	50%	150%
T10	100%	0%	0%	0%
T11	0%	100%	0%	0%
T12	0%	0%	50%	0%
T13	0%	100%	50%	100%
T14	100%	0%	50%	100%
T15	100%	100%	0%	0%

4 BASE YEAR MODEL DEVELOPMENT AND VALIDATION

4.1 General

4.1.1 The STM will be calibrated to year 2011 and validated to year 2013 conditions based on the available input data, including land use and planning data, transport infrastructure, road network assumptions, socio-economic data, and other transport policy assumptions. The Railway Model will also validate to year 2013. Likewise, the highway network assumptions and generalized cost parameters of the LATM will be updated to reflect the 2015 traffic conditions.

4.2 Planning Data

4.2.1 The latest version of Enhanced 2011-based Territorial Population and Employment Data Matrix (TPEDM) Controlled Version promulgated by Planning Department (PlanD) will be collected. For this study, the planning dataset would comprise 2011 Base Year Estimates (BYE) and forecasts for the future horizon years of 2041 by PDZ 454 zone system. The other interim year like 2013 and 2015 will be estimated by interpolation approach between year 2011 and 2016 (The information of year 2016 is extracted from 2011-based TPEDM).

4.2.2 Generally, the latest version of Enhanced 2011-based TPEDM Controlled Version is considered more realistic and has been formulated on the basis of recommendations from various development proposals and studies, with modifications to their scale as well as phasing, particularly those relating to housing development, to tie in with the projected requirements of the future population.

4.3 Major Input Assumptions

4.3.1 The major input assumptions include highway & railway network assumption, highway tolls, cross-boundary traffic volume, port and airport-related data, vehicle fleet sizes, gross domestic product (GDP) growth, Value of Time (VOT) and Vehicle Operating Cost (VOC) parameters. They are all presented below under individual sub-headings.

Highway & Railway Network Assumptions

4.3.2 For the upper tier model, all major highway & railway infrastructure where completed on or before year 2011 will be included in the STM.The base year model 2011 would include the Island Line, Kwun Tong Line, Tseung Kwan O Line, Tsuen Wan Line, Tung Chung Line, Disney Line, West Rail Line, East Rail Line and Ma On Shan Line.

Highway Tolls Assumptions

4.3.3 **Table 4.3.1** to **4.3.3** show the adopted highway tolls level at year 2011, 2013 and 2015 for various modelling years.

Table 4.3.1 Highway Tolls Assumptions at year 2011 (in 2011 Dollar)

Toll Facility	Car	Taxi	Private Light Van	Light Van	Light Goods Vehicle	Medium Goods Vehicle (5)	Heavy Goods Vehicle (5)	Tractor Unit (5)
Shing Mun Tunnel	5	5	5	5	5	5	5	5
Lion Rock Tunnel (LRT)	8	8	8	8	8	8	8	8
Tate's Cairn Tunnel (TCT)(1)	15	15	22	22	22	30.2	64	83
Sha Tin Heights Tunnel and Eagle's Nest Tunnel (Route 8 between Cheung Sha Wan and Sha Tin)	8	8	8	8	8	8	8	8
Tseung Kwan O (TKO) Tunnel	3	3	3	3	3	3	3	3
Eastern Harbour Crossing (EHC)	25	25	38	38	38	55.5	125	150
Cross Harbour Tunnel (CHT)	20	10	10	15	15	22.2	50	60
Western Harbour Crossing(2)	50	45	60	60	60	91.6	175	205
Aberdeen Tunnel	5	5	5	5	5	5	5	5
Lantau Link(3)	15	15	20	20	20	25	40	40
Tai Lam Tunnel (R3-CPS)(4)	33	33	100	34	34	40	45	45

Notes:
(1) Based on new tolls for Tate's Cairn Tunnel effective from December 2010.
(2) Based on new tolls for Western Harbour Crossing effective from July 2011.But the actual toll levels of each type of vehicles were kept the same for all year 2011.
(3) The toll shown represents one-way toll collected in each direction.
(4) Based on new tolls for Tai Lam Tunnel effective from January 2011.
(5) The weighted average number of additional axles would be adopted for some tunnels including Tate's Cairn Tunnel, Cross Harbour Tunnel, Western Harbour Crossing and Eastern Harbour Crossing. The factor of weighted average number of additional axles with 0.22 for Medium Goods Vehicle, 2 for Heavy Goods Vehicle and 3 for Tractor Unit are adopted.

Table 4.3.2 Highway Tolls Assumptions at year 2013 (in 2013 Dollar)

Toll Facility	Car	Taxi	Private Light Van	Light Van	Light Goods Vehicle	Medium Goods Vehicle (5)	Heavy Goods Vehicle (5)	Tractor Unit (5)
Shing Mun Tunnel	5	5	5	5	5	5	5	5
Lion Rock Tunnel (LRT)	8	8	8	8	8	8	8	8
Tate's Cairn Tunnel (TCT)(1)	15	15	22	22	22	30.2	64	83
Sha Tin Heights Tunnel and Eagle's Nest Tunnel (Route 8 between Cheung Sha Wan and Sha Tin)	8	8	8	8	8	8	8	8
Tseung Kwan O (TKO) Tunnel	3	3	3	3	3	3	3	3
Eastern Harbour Crossing (EHC)	25	25	38	38	38	55.5	125	150
Cross Harbour Tunnel (CHT)	20	10	10	15	15	22.2	50	60
Western Harbour Crossing(2)	55	50	65	65	65	96.6	180	210
Aberdeen Tunnel	5	5	5	5	5	5	5	5
Lantau Link(3)	15	15	20	20	20	25	40	40
Tai Lam Tunnel (R3-CPS)(4)	36	36	100	38	38	43	48	48

Notes:
(1) Based on new tolls for Tate's Cairn Tunnel effective from December 2010.
(2) Based on new tolls for Western Harbour Crossing effective from January 2013.Further adjustment on the tolls level was madedated on 31 July 2013. But the actual toll levels of each type of vehicles were kept the same for all year 2013.
(3) The toll shown represents one-way toll collected in each direction.
(4) Based on new tolls for Tai Lam Tunnel effective from January 2013.
(5) The weighted average number of additional axles would be adopted for some tunnels including Tate's Cairn Tunnel, Cross Harbour Tunnel, Western Harbour Crossing and Eastern Harbour Crossing. The factor of weighted average number of additional axles with 0.22 for Medium Goods Vehicle, 2 for Heavy Goods Vehicle and 3 for Tractor Unit are adopted.

Table 4.3.3 Highway Tolls Assumptions at year 2015 (in 2015 Dollar)

Toll Facility	Car	Taxi	Private Light Van	Light Van	Light Goods Vehicle	Medium Goods Vehicle (5)	Heavy Goods Vehicle (5)	Tractor Unit (5)
Shing Mun Tunnel	5	5	5	5	5	5	5	5
Lion Rock Tunnel (LRT)	8	8	8	8	8	8	8	8
Tate's Cairn Tunnel (TCT)(1)	17	17	24	24	24	32.6	70	91
Sha Tin Heights Tunnel and Eagle's Nest Tunnel (Route 8 between Cheung Sha Wan and Sha Tin)	8	8	8	8	8	8	8	8
Tseung Kwan O (TKO) Tunnel	3	3	3	3	3	3	3	3
Eastern Harbour Crossing (EHC)	25	25	38	38	38	55.5	125	150
Cross Harbour Tunnel (CHT)	20	10	10	15	15	22.2	50	60
Western Harbour Crossing(2)	60	55	70	70	70	101.6	185	215
Aberdeen Tunnel	5	5	5	5	5	5	5	5
Lantau Link(3)	15	15	20	20	20	25	40	40
Tai Lam Tunnel (R3-CPS)(4)	40	40	100	41	41	47	52	52

Notes:
(1) Based on new tolls for Tate's Cairn Tunnel effective from August 2013.
(2) Based on new tolls for Western Harbour Crossing effective from July 2015.
(3) The toll shown represents one-way toll collected in each direction.
(4) Based on new tolls for Tai Lam Tunnel effective from February 2015.
(5) The weighted average number of additional axles would be adopted for some tunnels including Tate's Cairn Tunnel, Cross Harbour Tunnel, Western Harbour Crossing and Eastern Harbour Crossing. The factor of weighted average number of additional axles with 0.22 for Medium Goods Vehicle, 2 for Heavy Goods Vehicle and 3 for Tractor Unit are adopted.

Cross-Boundary Traffic

4.3.4 The average daily cross-boundary traffic flows for year mid-2011,mid-2013and mid-2015 at the road-based control points were obtained from the "Monthly Traffic & transport Digest". They are summarized in **Table 4.3.4** to **4.3.6** below.

Table 4.3.4 Average Daily Cross-boundary Traffic Flows at mid-year 2011

Crossing	Bus/Coach	Goods Vehicle	Container Vehicle	Car	TOTAL
Lok Ma Chau	2,141	8,322	6,279	10,472	27,214
Man Kam To	23	3,018	1,274	0	4,315
Sha Tau Kok	333	784	217	1,145	2,479
Shenzhen Bay	730	1,115	1,410	6,055	9,310
TOTAL	**3,227**	**13,239**	**9,180**	**17,672**	**43,318**

Table 4.3.5 Average Daily Cross-boundary Traffic Flows at mid-year 2013

Crossing	Bus/Coach	Goods Vehicle	Container Vehicle	Car	TOTAL
Lok Ma Chau	2,212	7,998	6,034	9,482	25,726
Man Kam To	24	2,970	1,254	0	4,248
Sha Tau Kok	328	660	182	1,464	2,634
Shenzhen Bay	1,041	811	1,026	7,008	9,886
TOTAL	**3,605**	**12,439**	**8,496**	**17,954**	**42,494**

Table 4.3.6 Average Daily Cross-boundary Traffic Flows at mid-year 2015

Crossing	Bus/Coach	Goods Vehicle	Container Vehicle	Car	TOTAL
Lok Ma Chau	2,221	7,511	5,667	9,450	24,849
Man Kam To	323	2,929	1,237	558	5,047
Sha Tau Kok	286	584	161	1,230	2,261
Shenzhen Bay	1,012	778	984	7,346	10,120
TOTAL	**3,842**	**11,802**	**8,049**	**18,584**	**42,277**

Port Related Data

4.3.5 According to the "Summary Statistics on Port Traffic of Hong Kong", the annual total container throughput (inward + outward) handled by Kwai Tsing Container Terminals, Mid-Stream and other berths for year of 2011, 2013 and 2014 as shown in **Table 4.3.7**.The annual total container throughput handled by Container Terminals for year 2015 is derived base on the growth between year 2011 and 2014. By the way, it is assumed the annual total container throughput handled by mid-stream and other berths for year 2015 is kept the same number as year 2014.

Table 4.3.7 Total Container Throughput of Hong Kong Port (in Million TEUs per year)

Year	2011	2013	2014	2015
Kwai Tsing Container Terminals 1-9	17.416	17,118	17,587	17,644
Mid-Stream and Other Berths	6.968	5,234	4.639	4.639

Airport Related Data

4.3.6 The daily number of air passengers (excluding transfer and transit passengers) for year 2011, 2013 and 2014 are summarized in **Table 4.3.8**. The number of air passengers in year 2015 is derived base on the growth between year 2011 and 2014.

Table 4.3.8 Air passengers for year 2011, 2013, 2014 and 2015

Year	2011	2013	2014	2015
Daily Air passengers	[redacted]	[redacted]	[redacted]	[redacted]

4.3.7 The daily throughput of air cargo for year 2011, 2013 and 2014 are shown in **Table 4.3.9**. The daily throughput of air cargo for year 2015 is derived base on the growth between year 2011 and 2014.

Table 4.3.9 Air cargo for year 2011, 2013, 2014 and 2015

Year	2011	2013	2014	2015
Annual Air Cargo (exclude transhipment and in 1,000 Tonnes)	[redacted]	[redacted]	[redacted]	[redacted]
Daily Air Cargo (exclude transhipment and in Tonnes)	[redacted]	[redacted]	[redacted]	[redacted]

Port Back-up and Open Storage Uses

4.3.8 With reference to the information provided by Planning Department, the data of land occupancy by port back-up and open storage uses representing January 2012 as shown on **Table 4.3.10** would be adopted for year 2011 model. The updated information representing January 2014 is also provided by Planning Department as shown on **Table 4.3.11**. It would be adopted for years 2013 and 2015 model.

Table 4.3.10 Land Occupancy by Port Back-up and Open Storage Uses in Area (ha) as at January 2012

District	Port Back-up	Open Storage Uses
Central & Western	0.00	0.00
Wan Chai	0.00	0.00
Hong Kong Island East	0.00	0.27
Hong Kong Island South	0.00	0.00
HK Island	**0.00**	**0.27**
Yau Ma Tei	0.00	0.00
Mong Kok	0.00	0.00
Sham Shui Po	7.88	0.85
Kowloon City	0.00	0.62
Kwun Tong	0.00	4.93
Wong Tai Sin	0.00	0.00
Kowloon	**7.88**	**6.40**
Tsuen Wan	0.00	0.60
Kwai Chung	50.81	0.59
Tsing Yi	53.56	3.34
Tuen Mun	21.57	6.91
Yuen Long	27.31	30.15
Tin Shui Wai	0.28	0.06
Tai Po	0.00	0.87
Fanling / Sheung Shui	17.65	8.90
Shatin	0.00	5.27
Ma On Shan	0.00	0.42
Tseung Kwan O	0.35	2.55
North Lantau	0.00	4.00
New Towns	**171.53**	**63.67**
Rural NWNT	212.18	437.22
Rural NENT	34.18	175.73
Rural SENT	1.65	5.67

District	Port Back-up	Open Storage Uses
Rural SWNT	0.00	0.70
Cross Boundary Zone	0.00	0.11
Rural Areas	**248.01**	**619.43**
Total Territory	**427.42**	**689.77**

Source: Provisional information provided by Planning Department representing January 2012

Table 4.3.11 Total Land Area Occupied by Port Back-up and Open Storage Uses in Area (ha) as at January 2014

District	Port Back-up	Open Storage Uses
Central & Western	0.00	0.00
Wan Chai	0.00	0.00
Hong Kong Island East	0.00	0.27
Hong Kong Island South	0.00	0.00
HK Island	**0.00**	**0.27**
Yau Ma Tei	0.00	0.00
Mong Kok	0.00	0.00
Sham Shui Po	7.88	0.02
Kowloon City	0.00	0.62
Kwun Tong	0.00	2.19
Wong Tai Sin	0.00	0.00
Kowloon	**7.88**	**2.84**
Tsuen Wan	0.26	1.54
Kwai Chung	50.38	0.59
Tsing Yi	57.95	7.74
Tuen Mun	22.35	21.32
Yuen Long	21.54	30.79
Tin Shui Wai	0.28	0.43
Tai Po	0.00	1.46
Fanling / Sheung Shui	18.75	10.40
Shatin	0.00	4.40
Ma On Shan	0.00	0.42
Tseung Kwan O	0.35	3.01
North Lantau	0.00	4.00
New Towns	**171.86**	**86.10**
Rural NWNT	213.47	530.54
Rural NENT	34.60	184.63
Rural SENT	0.18	5.67
Rural SWNT	0.00	0.63
Cross Boundary Zone	0.00	0.00
Rural Areas	**248.25**	**721.47**
Total Territory	**428.00**	**810.68**

Source: Provisional information provided by Planning Department representing January 2014

Vehicle Fleet Sizes

4.3.9 Reference is made to the statistics on numbers of licensed vehicles by vehicle class as published in the Monthly Traffic & Transport Digest. **Table 4.3.12** show a summary of vehicle licensing for year 2011, 2013 and 2015.

Table 4.3.12 Vehicle Licensing for year 2011, 2013 and 2015 (mid-year)

Year	2011(1)	2013(1)	2015(1)
Private Vehicles (include motorcycles and private cars)	463,000	505,200	555,300
Taxis	18,100	18,100	18,100
Goods Vehicles (include light, medium and heavy goods vehicles)	110,300	114,400	113,000

Note: (1) Representing the mid-year.

GDP Growth

4.3.10 The year-on-year growths in GDP between 2011 and 2014 are referenced to the information released by Census and Statistics Department (C&SD).It is assumed the GDP growth between 2014 and 2015 is 4.0%. The real GDP growths are summarized in **Table 4.3.13**.

Table 4.3.13 GDP Growth in Real Terms between 2011 and 2015

Year	Annual Growth (%)
	GDP
2011-2012	1.5%
2012-2013	2.9%
2013-2014	4.0%
2014-2015	4.0%

Source: C&SD's information

Value of Time (VOT) and Vehicle Operating Cost (VOC) Parameters

4.3.11 The value of time (VOT) in $/min/person and vehicle operating cost (VOC) in $/min/vehicle for people and goods vehicle trip should refer to the latest travel characteristic survey. The "Final Technical Report on TCS 2011" and "Final Technical Report on GVTCS 2011" have been released in 2014. An elasticity factor of 0.33 is assumed to reduce the sensitivity of VOT growth to projected GDP changes. The VOT and VOC are summarized in **Tables4.3.14** to **4.3.16**.

Table 4.3.14 Values of Time for Person Trips for year 2011, 2013 and 2015

Trip Purpose	VOT ($/min/person in 2011 prices)					
	Non-Car-Available			Car-Available		
	2011	2013	2015	2011	2013	2015
Home-based Work (HBW)	0.68	0.69	0.70	1.03	1.04	1.06
Home-based School (HBS)	0.57	0.57	0.59	0.72	0.73	0.74
Home-based Others (HBO) / Non-Home Based (NHB)	0.68	0.69	0.70	0.83	0.84	0.85
Employers' Business (EB)	2.85	2.87	2.93	4.32	4.35	4.44

Table 4.3.15 Values of Time for Goods Vehicle Trips for year 2011, 2013 and 2015

Goods Vehicle Type	VOT ($/min/vehicle in 2011 prices)		
	2011	2013	2015
Goods Van	1.83	1.84	1.88
Light Goods Vehicle	2.11	2.13	2.17
Medium Goods Vehicle	2.75	2.77	2.83
Heavy Goods Vehicle	3.21	3.24	3.30
Tractor Unit	3.04	3.06	3.13

Table 4.3.16 Vehicle Operating Costs for year 2011, 2013 and 2015

Vehicle Type	Distance-based VOC ($/km in 2011 prices)		
	2011	2013	2015
Private Car	1.51	1.51	1.51
Light Van (LV)	1.86	1.86	1.86
Light Goods Vehicle (LGV)	2.47	2.47	2.47
Medium Goods Vehicle (MGV)	3.07	3.07	3.07
Heavy Goods Vehicle (HGV)	4.75	4.75	4.75
Tractor Unit (TU)	3.02	3.02	3.02

4.4 Model Validation Criteria

Strategic Transport Model (STM)

4.4.1 The base year STM will be calibrated and validated to year 2011 and 2013 observed vehicular flows across the major Annual Traffic Census (ATC) screenlines for the AM and PM peak periods as well as daily basis. The validation of STM will cover the ATC screenlines as listed below:

- Screenline Hong Kong External Cordon (ATC screenline);
- Screenline Hong Kong Internal Cordon (ATC screenline);
- Screenline F-F (ATC screenline);
- Screenline G-G (ATC screenline);
- Screenline H-H (ATC screenline);
- Screenline I-I (ATC screenline);
- Screenline Cross Harbour (including Western Harbour Cross, Cross Harbour Tunnel and Eastern Harbour Tunnel);
- Screenline Kowloon External Cordon (ATC screenline);
- Screenline A-A (ATC screenline);
- Screenline C-C (ATC screenline);
- ScreenlineK-K (ATC screenline);
- ScreenlineR-R (ATC screenline);
- ScreenlineS-S (ATC screenline);
- ScreenlineY-Y (ATC screenline);
- ScreenlineT-T (ATC screenline); and
- Screenline Tsing Yi External Cordon (ATC screenline);

4.4.2 In addition to above ATC screenlines, the major road links within the AOI will be checked against the observed vehicular flows as listed below. It would aim to best fil two targets (i) 85% within ±10%; and (ii) 100% within ±20%.

- Western Harbour Crossing;
- Connaught Road West;
- Aberdeen Tunnel;
- Pok Fu Lam Road; and
- Victoria Road

4.4.3 The validation guidelines for the Strategic Transport Model are shown in **Table 4.4.1**.

Table 4.4.1 Validation Guidelines for the Strategic Transport Model

Validation Parameter at Screenline	Mean Error		80% Error(1)		Max Error	
	1-way	2-way	1-way	2-way	1-way	2-way
Daily Total Vehicles	N/A(2)	3%	N/A(2)	8%	N/A(2)	15%
AM Peak Total Vehicles	10%	5%	15%	10%	30%	20%
AM Peak Car	15%	10%	25%	15%	50%	30%
AM Peak Taxi	15%	10%	25%	15%	50%	30%
AM Peak GV(3)	15%	10%	25%	15%	50%	30%
PM Peak Total Vehicles	10%	5%	15%	10%	30%	20%
PM Peak Car	15%	10%	25%	15%	50%	30%
PM Peak Taxi	15%	10%	25%	15%	50%	30%
PM Peak GV(3)	15%	10%	25%	15%	50%	30%

Note: (1) -"80% error" means that across 80% of screenlines, the observed and synthesized volume should be withinthe specified value
(2) -N/A stands for "not applicable"
(3) - GV include Light Van, Light Goods Vehicle, Medium Goods Vehicle, Heavy Goods Vehicle and Tractor Unit.

4.5 Model Validation Results for STM

4.5.1 A total of 16 ATC screenlines are presented how well of the validation exercise, the screenline locations are the same as ATC. The 2013 daily and peak periods modelled and observed screenline vehicle flows are shown in **Table 4.5.1** to **4.5.3**. In addition to the screenline results, the total of 5 concerned major road links are selected and shown in **Table 4.5.4** for comparison purpose.

4.5.2 In general, the screenlines validation could well perform the traffic movement during the daily and peak period. For the concerned major road links, the Western Harbour Crossing, Connaught Road West and Aberdeen Tunnel have a better performance on total link flows. Two major roads on Western Side of Hong Kong Island (i.e. Pok Fu Lam Road and Victoria Road) are parallel road running Northbound and Southbound. The total traffic volume of both parallel roads could also compile the validation target.

Table 4.5.1 Daily Vehicle Traffic Flows (in vehicle/day)

Screenline	Bound	Car			Taxi			SPB + PT			GV			Total		
		Obs	Mod	Mod/ Obs	Obs	Mod	Mod/ Obs	Obs	Mod	Mod/ Obs	Obs	Mod	Mod/ Obs	Obs	Mod	Mod/ Obs
Hong Kong External	2-way Total	78300	67500	0.86	37900	37600	0.99	22800	21600	0.95	21500	21200	0.99	160400	148000	0.92
Hong Kong Internal	2-way Total	219400	203000	0.92	211300	195700	0.93	50900	43200	0.85	60100	60000	1.00	541800	501800	0.93
F-F	2-way Total	123100	95500	0.78	102800	106400	1.04	27600	21800	0.79	33900	29800	0.88	287300	253600	0.88
G-G	2-way Total	100000	87500	0.87	68800	70900	1.03	23600	19000	0.81	32800	30900	0.94	225200	208300	0.92
H-H	2-way Total	19400	15400	0.80	8000	7600	0.96	2400	2300	0.96	2300	1900	0.85	32100	27400	0.85
I-I	2-way Total	33200	31600	0.95	18800	19500	1.04	10400	7100	0.68	20500	18400	0.90	82900	76600	0.92
Cross Harbour	2-way Total	131000	148700	1.14	52300	61000	1.17	25100	26800	1.07	52400	50500	0.96	260700	287100	1.10
A-A	2-way Total	229300	260100	1.13	140300	135800	0.97	61000	55500	0.91	108400	102500	0.95	538900	554000	1.03
C-C	2-way Total	238900	217400	0.91	152500	165200	1.08	71400	55700	0.78	111700	109800	0.98	574400	548100	0.95
K-K	2-way Total	167600	174200	1.04	75000	82900	1.11	45000	30300	0.67	87000	87100	1.00	374500	374500	1.00
Kowloon External	2-way Total	313400	354000	1.13	117200	113100	0.97	63500	55500	0.87	211000	191700	0.91	705100	714200	1.01
R-R	2-way Total	149500	156800	1.05	22500	26300	1.17	27100	22500	0.83	108500	117500	1.08	307600	323100	1.05
S-S	2-way Total	127000	132700	1.04	20500	23500	1.15	29900	28300	0.95	107400	102200	0.95	284800	286700	1.01
T-T	2-way Total	109600	105800	0.97	19500	19400	1.00	19500	15100	0.77	83800	101300	1.21	232400	241600	1.04
Y-Y	2-way Total	42800	47700	1.11	12700	13500	1.06	9000	7400	0.82	45500	48100	1.06	110000	116700	1.06
Tsing Yi External	2-way Total	146300	164400	1.12	63200	49900	0.79	37900	30400	0.80	120200	135200	1.12	367600	379800	1.03

Table 4.5.2 2013 Morning Peak Traffic Flows (in vehicle/hour)

Screenline	Bound	Car			Taxi			SPB + PT			GV			Total		
		Obs	Mod	Mod/ Obs	Obs	Mod	Mod/ Obs	Obs	Mod	Mod/ Obs	Obs	Mod	Mod/ Obs	Obs	Mod	Mod/ Obs
Hong Kong External	NB	3600	3100	0.86	1100	1100	1.00	900	800	0.88	700	700	1.10	6300	5800	0.91
	SB	2400	2000	0.85	1100	1000	0.91	600	900	1.36	800	600	0.67	5000	4500	0.90
	2-way Total	6000	5100	0.86	2200	2100	0.96	1600	1700	1.07	1500	1300	0.85	11300	10300	0.91
Hong Kong Internal	IB	7100	6700	0.95	6700	5700	0.85	1800	1600	0.90	2500	1900	0.74	18100	16000	0.88
	OB	6700	5100	0.76	6300	6000	0.95	1700	1500	0.89	2400	1600	0.68	17100	14300	0.83
	2-way Total	13800	11800	0.86	13100	11800	0.90	3500	3200	0.90	4900	3400	0.71	35200	30200	0.86
F-F	EB	3900	2900	0.73	3300	3000	0.91	1000	800	0.81	1300	900	0.66	9500	7500	0.79
	WB	3700	2700	0.73	3100	2700	0.85	900	900	0.98	1200	1100	0.86	9000	7300	0.81
	2-way Total	7600	5500	0.73	6400	5700	0.88	1900	1700	0.89	2600	1900	0.76	18500	14800	0.80
G-G	EB	3500	2600	0.76	1600	1700	1.05	700	700	1.02	700	600	0.88	6500	5700	0.88
	WB	4100	3000	0.73	1900	2400	1.23	900	900	1.03	800	900	1.03	7700	7100	0.92
	2-way Total	7600	5700	0.75	3600	4100	1.14	1600	1600	1.03	1600	1500	0.96	14200	12800	0.90
H-H	DH	800	700	0.91	300	300	1.04	100	0	0.25	100	100	1.11	1200	1100	0.91
	UH	800	500	0.63	300	200	0.68	100	100	1.46	100	100	1.43	1200	900	0.74
	2-way Total	1500	1200	0.77	600	500	0.86	200	200	0.87	100	100	1.27	2400	2000	0.82
I-I	NB	1400	900	0.68	700	700	0.94	400	400	1.07	600	700	1.22	3100	2700	0.90
	SB	1000	1100	1.16	600	600	0.96	300	300	0.88	800	500	0.59	2700	2500	0.91
	2-way Total	2300	2000	0.88	1300	1300	0.95	700	700	0.98	1400	1200	0.86	5800	5200	0.90
Cross Harbour	NB	4200	3900	0.92	1200	1200	0.97	1000	900	0.91	1300	1100	0.90	7700	7100	0.92
	SB	5200	4200	0.81	1600	1800	1.15	1200	1300	1.04	1500	1900	1.22	9600	9200	0.96
	2-way Total	9500	8100	0.86	2800	3000	1.07	2200	2200	0.98	2800	3000	1.07	17300	16300	0.94
A-A	EB	8400	7000	0.83	4100	4500	1.11	2200	1800	0.83	3100	2700	0.89	17800	16100	0.91
	WB	7800	6900	0.88	3800	4300	1.13	2000	1900	0.94	2800	2800	0.99	16500	15900	0.96
	2-way Total	16200	13900	0.86	7900	8800	1.12	4200	3700	0.88	5900	5500	0.94	34300	32000	0.93
C-C	NB	6500	5400	0.83	3200	3600	1.13	2000	1900	0.92	2400	2500	1.03	14100	13400	0.95
	SB	8700	7500	0.87	4200	4700	1.10	2700	2200	0.80	3200	3300	1.04	18800	17700	0.94
	2-way Total	15200	12900	0.85	7400	8300	1.11	4700	4000	0.85	5600	5800	1.04	33000	31100	0.94
K-K	EB	6500	6200	0.94	2400	3000	1.23	1700	1500	0.90	2300	2400	1.04	13000	13100	1.01
	WB	6300	4800	0.77	2400	2900	1.24	1700	1300	0.78	2300	2600	1.17	12600	11700	0.93
	2-way Total	12900	11000	0.86	4800	5900	1.23	3400	2800	0.84	4600	5100	1.10	25600	24800	0.97
Kowloon External	NB	10600	9500	0.89	3400	3400	1.00	2000	1900	0.94	5400	5900	1.09	21500	20700	0.96
	SB	15200	15100	0.99	4800	4900	1.03	2900	2500	0.88	7800	8500	1.10	30600	31000	1.01

Screenline	Bound	Car			Taxi			SPB + PT			GV			Total		
		Obs	Mod	Mod/ Obs	Obs	Mod	Mod/ Obs	Obs	Mod	Mod/ Obs	Obs	Mod	Mod/ Obs	Obs	Mod	Mod/ Obs
	2-way Total	25800	24500	0.95	8200	8300	1.02	4900	4400	0.90	13200	14500	1.09	52100	51700	0.99
R-R	NB	4600	4900	1.06	600	800	1.47	800	900	1.15	2500	2700	1.06	8500	9200	1.09
	SB	7600	9200	1.20	900	900	1.02	1300	1100	0.85	4200	4000	0.97	14000	15300	1.09
	2-way Total	12200	14000	1.15	1500	1800	1.19	2100	2000	0.96	6700	6700	1.00	22500	24500	1.09
S-S	EB	6100	7200	1.17	800	800	0.92	1400	1100	0.80	4200	3800	0.91	12500	12800	1.03
	WB	4000	3800	0.95	500	700	1.38	900	900	0.98	2700	2600	0.96	8200	8000	0.98
	2-way Total	10200	11000	1.08	1400	1500	1.10	2300	2000	0.87	6900	6400	0.93	20700	20900	1.01
T-T	NB	4200	4700	1.11	600	800	1.27	700	400	0.63	2700	2600	0.97	8200	8500	1.04
	SB	4200	3900	0.94	600	600	1.01	700	400	0.65	2600	2700	1.01	8100	7700	0.94
	2-way Total	8400	8600	1.02	1300	1500	1.14	1300	900	0.64	5300	5200	0.99	16300	16200	0.99
Y-Y	NB	1700	1600	0.92	400	200	0.54	300	300	0.96	1400	1400	0.96	3800	3400	0.90
	SB	1600	1600	0.99	400	400	1.04	300	300	0.97	1400	1500	1.07	3700	3800	1.02
	2-way Total	3300	3200	0.96	800	600	0.78	600	600	0.97	2800	2800	1.01	7500	7200	0.96
Tsing Yi External	IB	5300	5500	1.04	2100	2400	1.14	1300	1300	1.02	3500	3800	1.09	12100	13000	1.07
	OB	5600	6000	1.08	2200	1800	0.83	1300	1400	1.08	3600	3800	1.04	12700	13000	1.02
	2-way Total	10900	11600	1.06	4200	4200	0.98	2600	2700	1.05	7100	7600	1.06	24800	26000	1.05

Table 4.5.3 2013 Evening Peak Traffic Flows (in vehicle/hour)

Screenline	Bound	Car			Taxi			SPB + PT			GV			Total		
		Obs	Mod	Mod/ Obs	Obs	Mod	Mod/ Obs	Obs	Mod	Mod/ Obs	Obs	Mod	Mod/ Obs	Obs	Mod	Mod/ Obs
Hong Kong External	NB	2800	2700	0.95	1000	1100	1.09	800	800	1.03	600	500	0.79	5200	5100	0.97
	SB	2600	2000	0.75	1200	800	0.72	700	500	0.72	300	300	0.99	4800	3600	0.75
	2-way Total	5500	4700	0.85	2200	1900	0.89	1500	1300	0.88	900	800	0.85	10000	8700	0.87
Hong Kong Internal	IB	8100	5900	0.73	5500	5800	1.06	1500	1100	0.72	800	800	1.05	15900	13600	0.85
	OB	8500	6100	0.72	5700	5700	1.01	1600	1500	0.91	800	1000	1.23	16600	14300	0.86
	2-way Total	16600	12000	0.72	11200	11500	1.03	3200	2600	0.82	1600	1800	1.14	32500	27900	0.86
F-F	EB	4000	3400	0.85	2700	2900	1.09	800	600	0.80	1300	1100	0.85	8800	8100	0.92
	WB	4200	3600	0.86	2600	3600	1.35	800	700	0.88	800	700	0.90	8500	8600	1.02
	2-way Total	8100	7000	0.86	5300	6500	1.22	1600	1300	0.84	2200	1900	0.87	17200	16700	0.97
G-G	EB	2800	3100	1.13	1700	1700	1.02	800	600	0.85	1400	800	0.57	6600	6300	0.95
	WB	3800	2600	0.68	1800	1600	0.92	700	500	0.74	600	600	1.04	6800	5300	0.78
	2-way Total	6500	5700	0.87	3400	3300	0.97	1400	1100	0.80	1900	1400	0.71	13300	11500	0.86
H-H	DH	800	600	0.80	300	300	0.91	100	100	1.50	0	100	1.48	1300	1100	0.90
	UH	800	700	0.91	300	400	1.19	100	100	1.02	0	0	0.51	1200	1200	0.98
	2-way Total	1600	1400	0.85	700	700	1.05	200	200	1.26	100	100	1.00	2500	2400	0.94
I-I	NB	1200	1000	0.79	600	600	0.97	400	200	0.52	600	600	1.06	2800	2400	0.85
	SB	900	1400	1.48	600	600	0.95	300	100	0.43	800	400	0.57	2600	2500	0.96
	2-way Total	2200	2400	1.09	1200	1200	0.96	700	300	0.48	1300	1000	0.78	5400	4900	0.91
Cross Harbour	NB	5300	4600	0.87	1500	1100	0.71	900	1000	1.11	1400	1700	1.16	9100	8300	0.91
	SB	4900	4200	0.86	1300	1800	1.43	800	800	1.01	1000	800	0.84	8000	7700	0.96
	2-way Total	10200	8800	0.86	2700	2800	1.04	1700	1800	1.06	2400	2500	1.03	17100	16000	0.93
A-A	EB	10000	7700	0.77	4100	3700	0.90	2000	1600	0.82	2600	2600	1.02	18700	15700	0.84
	WB	8800	8600	0.99	3600	3800	1.04	1700	1400	0.82	2200	2800	1.24	16300	16600	1.02
	2-way Total	18800	16400	0.87	7800	7500	0.97	3700	3000	0.82	4800	5400	1.12	35000	32300	0.92
C-C	NB	9300	9000	0.97	4100	4000	0.98	2000	2000	0.99	1900	2700	1.41	17300	17700	1.02
	SB	9400	8200	0.87	4200	4700	1.14	2000	1500	0.72	1900	2300	1.18	17500	16700	0.95
	2-way Total	18800	17200	0.92	8300	8700	1.06	4000	3400	0.86	3800	4900	1.30	34800	34300	0.99
K-K	EB	7100	6400	0.90	2100	2300	1.10	1300	1100	0.80	1800	2000	1.09	12300	11700	0.95
	WB	5700	7900	1.38	2100	2400	1.10	1500	1000	0.68	3000	2500	0.84	12300	13800	1.12
	2-way Total	12800	14300	1.12	4200	4600	1.10	2900	2100	0.74	4800	4500	0.93	24600	25500	1.03
Kowloon External	NB	14300	11600	0.81	3300	2900	0.89	2100	2300	1.08	5200	5500	1.07	24800	22300	0.90
	SB	13100	13500	1.03	3000	2400	0.81	2000	1500	0.75	4700	5100	1.07	22800	22500	0.99

Screenline	Bound	Car			Taxi			SPB + PT			GV			Total		
		Obs	Mod	Mod/ Obs	Obs	Mod	Mod/ Obs	Obs	Mod	Mod/ Obs	Obs	Mod	Mod/ Obs	Obs	Mod	Mod/ Obs
	2-way Total	27400	25100	0.92	6200	5300	0.85	4100	3800	0.92	9900	10600	1.07	47600	44800	0.94
R-R	NB	7100	6700	0.93	600	700	1.07	1000	1100	1.08	3400	3400	1.01	12200	11900	0.97
	SB	5700	5300	0.92	500	600	1.27	800	700	0.78	2700	2900	1.07	9800	9500	0.97
	2-way Total	12900	11900	0.93	1100	1300	1.16	1900	1800	0.95	6100	6300	1.04	22000	21300	0.97
S-S	EB	5100	5400	1.07	600	500	0.94	900	700	0.75	2800	2900	1.06	9400	9600	1.02
	WB	6100	6200	1.00	700	800	1.09	1100	1000	0.92	3300	3500	1.05	11300	11500	1.01
	2-way Total	11300	11600	1.03	1300	1300	1.02	2100	1800	0.84	6100	6400	1.05	20700	21100	1.02
T-T	NB	4600	4400	0.95	700	500	0.79	600	400	0.72	2200	2000	0.92	8100	7400	0.91
	SB	4300	4200	0.96	600	700	1.07	600	600	1.09	2000	2000	1.00	7600	7500	0.99
	2-way Total	9000	8600	0.95	1300	1200	0.93	1100	1000	0.90	4200	4000	0.96	15700	14800	0.95
Y-Y	NB	1800	1900	1.06	400	400	1.00	300	300	0.98	1200	1300	1.16	3700	4000	1.08
	SB	1800	2100	1.16	400	400	1.11	300	300	1.13	1100	1000	0.93	3600	3900	1.08
	2-way Total	3600	4000	1.11	800	800	1.05	600	600	1.05	2300	2400	1.05	7300	7800	1.08
Tsing Yi External	IB	5900	5700	0.96	1500	1400	1.00	1200	1200	1.06	2800	3100	1.12	11300	11400	1.01
	OB	6400	6600	1.04	1600	1600	1.02	1300	1200	0.94	3000	3000	0.99	12200	12400	1.01
	2-way Total	12300	12300	1.00	3000	3100	1.01	2400	2400	1.00	5800	6100	1.05	23500	23800	1.01

Table 4.5.4 2013 Major Road Links Traffic Flows (in vehicle/day)

Screenline	Bound	Daily Total			Morning Peak Total			Evening Peak Total		
		Obs	Mod	Mod/ Obs	Obs	Mod	Mod/ Obs	Obs	Mod	Mod/ Obs
Western Harbour Crossing	NB	33600	28800	0.86	2000	1900	1.00	3200	3000	0.95
	SB	33400	31700	0.95	3400	2900	0.86	2200	2100	0.94
	2-way Total	67000	60500	0.90	5400	4900	0.91	5300	5000	0.95
Connaught Road West	EB	26500	26100	0.99	2300	2400	1.03	1500	1400	0.96
	WB	23500	21900	0.93	1500	1600	1.06	1400	1500	1.08
	2-way Total	50000	48000	0.96	3800	4000	1.04	2800	2900	1.02
Aberdeen Tunnel	NB	30700	32400	1.06	2300	2600	1.13	1700	1800	1.10
	SB	35600	37800	1.06	2200	2600	1.16	1900	2100	1.08
	2-way Total	66200	70200	1.06	4500	5200	1.15	3600	3900	1.09
Pok Fu Lam Road	NB	22100	23700	1.07	1900	2400	1.29	1700	1800	1.07
	SB	10100	10000	0.99	700	700	1.00	700	900	1.35
	2-way Total	32200	33700	1.05	2600	3200	1.21	2300	2600	1.15
Victoria Road	EB	4500	3300	0.72	500	100	0.25	300	100	0.43
	WB	4700	3200	0.68	300	100	0.33	300	100	0.29
	2-way Total	9300	6500	0.70	900	200	0.28	700	200	0.36

4.6 Validation Summary

4.6.1 A summary of the highway STM validation performance in respect of vehicular flows across screenlines were given in **Table 4.6.1**.

Table 4.6.1 Summary of Validation Performance for the Transport Model for Traffic Assessment

Validation Parameter at Screenline	Mean Error(1)		80% Error(2)		Max Error(3)	
	1-way	2-way	1-way	2-way	1-way	2-way
Daily Total Vehicles		100% Links<3% =ok		81% Links<8% =ok		100% Links<15% =ok
AM Peak Total Vehicles	100% Links<10% =ok	100% Links<5% =ok	88% Links<15% =ok	81% Links<10% =ok	100% Links<30% =ok	100% Links<20% =ok
AM Peak Car	100% Links<15% =ok	100% Links<10% =ok	84% Links<25% =ok	81% Links<15% =ok	100% Links<50% =ok	100% Links<30% =ok
AM Peak Taxi	100% Links<15% =ok	100% Links<10% =ok	84% Links<25% =ok	81% Links<15% =ok	100% Links<50% =ok	100% Links<30% =ok
AM Peak GV(4)	100% Links<15% =ok	100% Links<10% =ok	81% Links<25% =ok	81% Links<15% =ok	100% Links<50% =ok	100% Links<30% =ok
PM Peak Total Vehicles	100% Links<10% =ok	100% Links<5% =ok	91% Links<15% =ok	81% Links<10% =ok	100% Links<30% =ok	100% Links<20% =ok
PM Peak Car	100% Links<15% =ok	100% Links<10% =ok	84% Links<25% =ok	94% Links<15% =ok	100% Links<50% =ok	100% Links<30% =ok
PM Peak Taxi	100% Links<15% =ok	100% Links<10% =ok	84% Links<25% =ok	88% Links<15% =ok	100% Links<50% =ok	100% Links<30% =ok
PM Peak GV(4)	100% Links<15% =ok	100% Links<10% =ok	84% Links<25% =ok	81% Links<15% =ok	100% Links<50% =ok	100% Links<30% =ok

Notes:
(1) "Mean Error" means that the average vehicles of screenlines, the observed and synthesised volume should be within the specified value as shown on Table 4.4.1.
(2) "80% error" means that across 80% of screenlines, the observed and synthesised volume should be within the specified value as shown on Table 4.4.1.
(3) "Max Error" means that the maximum error of screenlines, the observed and synthesised volume should be within the specified value as shown on Table 4.4.1.
(4) GV include Light Van, Light Goods Vehicle, Medium Goods Vehicle, Heavy Goods Vehicle and Tractor Unit.

4.6.2 As shown in the summary table above, the base year (2013) STM validation results in terms of differences between observed and modelled traffic flows on screenline basis meet all the validation criteria as shown on **Table 4.4.1**. For the majority of the criteria, the STM shows much better validation results than the targeted values. Therefore, it was concluded that the base year (2013) STM was well validated and established as the starting point for developing the local area traffic model and future year STM.

5 DESIGN YEAR MODEL DEVELOPMENT AND TRAFFIC FORECAST

5.1 General

5.1.1 In this initial stage of concept plan, the total population and employment of potential development of ELM by clusters have been provided by Planning Department. With the limited available information, the other assumptions of ELM are established basis on the latest TPEDM. The formulation of the input assumptions would be discussed below.

5.2 Input Assumptions

Strategic Planning Data

5.2.1 In general, the distribution of population and employment would affect the movement of vehicular and passengers. Thus, all the planned / potential developments shall be identified to formulate the background planning data input into the strategic transport model for sequence of scenario model run.

5.2.2 As discussed in Section 3, the latest version of Enhanced 2011-based TPEDM Controlled Version has been provided by Planning Department. It will be taken as the basis of the territorial planning data assumptions for this Assignment. With understanding from the Enhanced 2011-based TPEDM, most of the major developments in Lantau and North West New Territories (NWNT) should be included in the latest set of planning data. But, there are some other potential development should be added in the background planning data.

5.2.3 For those potential developments, it would make reference to the latest forecasting year 2041 of Enhanced 2011-based TPEDM (Controlled Version).

Proposed Land Use of ELM

5.2.4 According to the First-term Work report of Lantau Development Advisory Committee (LanDAC), the ELM should be planned as long-term strategic growth area to complement the demands of the increases in overall population and of the economy of Hong Kong, and promote a more balanced territorial development pattern. The ELM is suggested to be positioned as a Strategic Growth Area with a core business district as the third Core Business District (CBD3) of Hong Kong. ELM could provide large numbers of jobs and promote a more balanced development pattern for Hong Kong as a whole.

5.2.5 The information of total population and employment of ELM have been provided by Planning Department for use in this Study. The general planning context of ELM has been summarised in **Table 5.2.1**.

Table 5.2.1 Planning Context of ELM

East Lantau metropolis (ELM)	Population	Employment
Kau Yi Chau	440,000	170,000
Hei Ling Chau	200,000	28,000
Mui Wo	60,000	8,400
Total	**700,000**	**206,400**

5.2.6 With the given information of ELM, the other planning assumptions of ELM including the no. of worker, household, student, income level and employment type were derived based on the planning structure in year 2041 in the Enhanced 2011-based TPEDM (Controlled Version). The ratio of (i) population to household; (ii) worker to population; (iii) student to population; and (iv) worker to employment, by districts were derived as shown in **Table 5.2.2**.

Table 5.2.2. Planning Ratio by Districts

Districts	pop/hh	worker/pop	student/pop	worker/ employment
Central & Western	2.567	0.502	0.096	0.283
Wan Chai	2.464	0.509	0.078	0.264
Eastern	2.720	0.461	0.106	0.810
Southern	2.957	0.491	0.126	1.302
HONG KONG ISLAND	**2.710**	**0.482**	**0.106**	**0.527**
Yau Ma Tei	2.594	0.467	0.105	0.210
Mong Kok	2.411	0.466	0.093	0.363
Sham Shui Po	2.562	0.461	0.132	0.907
Kowloon City	2.757	0.492	0.126	0.885
Kwun Tong	2.611	0.453	0.135	0.751
Wong Tai Sin	2.705	0.426	0.119	1.760
KOWLOON	**2.632**	**0.458**	**0.126**	**0.717**
Tsuen Wan	2.708	0.470	0.117	0.900
Kwai Chung	2.788	0.429	0.132	0.787
Tsing Yi	2.756	0.447	0.119	1.873
Tuen Mun	2.576	0.479	0.144	2.038
Yuen Long	2.639	0.507	0.141	1.517
Tin Shui Wai	2.764	0.449	0.141	3.961
Tai Po	2.768	0.488	0.148	1.530
Fanling / Sheung Shui	2.711	0.489	0.161	2.448
Sha Tin	2.663	0.468	0.133	1.228
Ma On Shan	2.826	0.488	0.127	3.019

Districts	pop/hh	worker/pop	student/pop	worker/ employment
Tseung Kwan O	2.788	0.483	0.134	2.387
North Lantau	2.612	0.560	0.156	0.635
NEW TOWNS	**2.705**	**0.478**	**0.138**	**1.443**
Rural NWNT	2.745	0.570	0.162	1.686
Rural NENT	2.780	0.558	0.174	2.140
Rural SENT	2.978	0.569	0.107	1.315
Rural SWNT	2.544	0.475	0.098	1.177
RURAL AREAS	**2.757**	**0.561**	**0.157**	**1.699**
METRO TOTAL	**2.676**	**0.463**	**0.120**	**0.674**
NON-METRO TOTAL	**2.709**	**0.505**	**0.146**	**1.656**
TERRITORY LAND TOTAL	**2.692**	**0.483**	**0.132**	**0.963**

5.2.7 From above table, the ratios of (i) population to household; (ii) worker to population; and (iii) student to population are in the range between (for i) 2.411 and 2.978; (for ii) 0.426 and 0.570; and (for iii) 0.078 and 0.174 respectively. The ratios of worker to employment indicate where the residential-based districts and employment-based districts are. The residential-based districts meaning the number of workers are greater than number of employment places. The employment-based districts meaning the number of workers are less than number of employment places.

5.2.8 In view of the development scale of ELM, it is proposed to adopt the ratio by territory to estimate the household, worker, student and mean monthly household income of ELM. It is summarised in **Table 5.2.3**.

Table 5.2.3 Estimated Planning Parameter of ELM

ELM	Population	Employment	Worker	Student	Worker / employment	Household	Mean Monthly Household Income
Kau Yi Chau	440,000	170,000	212,685	58,223	1.251	163,461	57,800
Hei Ling Chau	200,000	28,000	96,675	26,465	3.453	74,300	57,800
Mui Wo	60,000	8,400	29,002	7,940	3.453	22,290	57,800
Total	**700,000**	**206,400**	**338,362**	**92,628**	**1.639**	**260,051**	**57,800**

5.2.9 According to the Study Brief, two set of land use options should be formulated. As mentioned before, the nature of ELM would be similar to other CBDs. As discussed with Planning Department in the early of this study, it is recommended that the employment types of ELM are proposed based on the employment structure of the PDZ454 Zones for Central CBD and Kowloon East CBD in year 2041. Option A includes PDZ zones 4-11, 292-296 and 344 in Central and Western district. Option B includes PDZ zones 111,112,118, 253, 307-309 in Kwun Tong district. Both options are summarized in **Table 5.2.4**.

Table 5.2.4 Two Land Use Options in term of Employment Types

Employment Types	Option A	Option B
S1 Agriculture, forestry and fishing, mining and quarrying	0.121%	0.084%
S2 Manufacturing	0.908%	2.808%
S3 Electricity and gas supply, water supply, sewerage and waste management	0.061%	0.338%
S4 Construction	4.160%	7.876%
S5 Import and export trade	9.212%	26.710%
S6 Wholesale	1.059%	1.584%
S7 Retail trade	6.777%	4.519%
S8 Transportation, storage, postal and courier services	3.540%	8.889%
S9 Short term accommodation activities	1.240%	1.014%
S10 Food and beverage service activities	5.113%	2.977%
S11 Information and communications	2.526%	3.843%
S12 Financial and insurance activities	27.394%	11.191%
S13 Real estate activities	4.977%	2.829%
S14 Professional, scientific/technical, administrative and support service activities	19.180%	13.133%
S15 Public administration	3.630%	0.845%
S16 Education	1.845%	3.125%
S17 Human health activities	2.450%	3.231%
S18 Other social and personal services	3.615%	4.540%
S19 Work activities within domestic households	2.193%	0.465%
Total	**100.000%**	**100.000%**

Implementation Program of ELM

5.2.10 As mentioned before, the development of ELM should be planned as long-term strategic growth area to complement the demands of the increases in overall population and of the economy of Hong Kong. Thus, the design year of this Study should be set as year 2041.

5.2.11 Since, the potential developments of ELM have been split by three clusters including Kau Yi Chau, Hei Ling Chau and Mui Wo. Thus, the model scenarios would be designed to cover the (i) the initial stage of population intake set as base case with Kau Yi Chau only; and (ii) the full population intake set as the full network with all three clusters of 700,000 population.

5.3 Future Highway and Railway Network Assumption

Strategic Road Network

5.3.1 The strategic highway networks to be adopted in the respective design year are shown in **Table 5.3.1** below.

Table 5.3.1 Strategic Highway Network Assumptions for Year 2041

2041 Road network assumptions (in addition to 2011 network)	Configuration
Hong Kong	
Road P2 and realigned Hung Hing Road on Wan Chai Development Phase II	D2
Road P1, P2 and Distributor Roads on Central Reclamation Phase III	D2(1)
Central – Wan Chai Bypass and Island Eastern Corridor Link	D3/D4(1)
Island Eastern Corridor Improvement between Causeway Bay and North Point	D4/D5(1)
Kowloon	
Route 6 (formerly Route 11) – Central Kowloon Route	D3
Route 6 (formerly Route 11) – Trunk Road T2 (Kai Tak – Cha Kwo Ling Link)	D2
Proposed Road Improvement Works in West Kowloon Reclamation Development	Add 1 lane slip road
Widening of Gascoigne Road Flyover	D2
New Territories	
Widening of Tolo Highway/Fanling Highway between Island House Interchange and Fanling (Stage 1 – Section between Island House Interchange and Tai Hang)	D4
Hong Kong – Zhuhai – Macao Bridge Hong Kong Link Road	D3
Reconstruction and Improvement to Tuen Mun Road	D3
Tuen Mun – Chek Lap Kok Link Southern Connection (Southern Connection to Urban)	D2
Traffic Improvement to Tuen Mun Road (Town Centre Section)	D3
Dualling of Hiram's Highway between Clear Water Bay Road and Marina Cove	D2
Widening of Tolo Highway/Fanling Highway between Island House Interchange and Fanling (Stage 2 – Section between Tai Hang and Wo Hop Shek Interchange)	D4
Route 6 (formerly Route 11) Tseung Kwan O – Lam Tin Tunnel	D2
Cross Bay Link at Tseung Kwan O	D2
Tuen Mun – Chek Lap Kok Link Southern Connection (Southern Connection to Tung Chung)	D2
Tuen Mun – Chek Lap Kok Link Northern Connection	D2
Widening of Castle Peak Road (Castle Peak Bay Section)	D2
Link Road to Liantang/Heung Yuen Wai Cross-Boundary Control Point	D2
Widening of section of Lin Ma Hang Road between Ping Che Road and Tsung Yuen Ha	S2
Widening of Fuk Hang Tsuen Road	S2
Improvement of Fan Kam Road	S2
Dualling of Hiram's Highway between Marina Cove and Sai Kung Town	D2
Tsuen Wan Bypass, Widening of Tsuen Wan Road between Tsuen Tsing Interchange and Kwai Tsing Interchange and Associated Junction Improvement Works Widening	Add 2 lanes per direction
Tuen Mun Western Bypass connecting between (i) Tsing Tin Road and Lung Mun Road; and (ii) Tsing Tin Road and San Sang San Tsuen	D2
Widening of Fanling Highway between Pak Shek Au Interchange and Po Shek Wu Interchange	D4
Widening of Tai Po Road (existing remaining D2 Shatin section)	D3
Cross Boundary	
Hong Kong – Zhuhai – Macao Bridge	D3

Note: (1) The configuration of these proposed highways vary at different sections of the roads.
(2) For the highway infrastructure after year 2031, please refer to Government's Strategic Direction as shown in the paragraph 4.3.3.

Railway Network

5.3.2 Committed/planned railway projects will also be incorporated into the STM network coding for the design year. A list of the planned railway projects is given in **Table 5.3.2**.

Table 5.3.2 Railway Network Assumptions for Year 2041

By 2041 Railway network assumptions (in addition to 2011 network)
Kwun Tong Line Extension
West Island Line (from Sheung Wan to Kennedy Town)
South Island Line (East)
Shatin to Central Link (East-West Line)
Shatin to Central Link (North-South Line)
Guangzhou – Shenzhen – Hong Kong Express Rail Link (Hong Kong Section)
Hung Shui Kiu Station
Tung Chung West Extension and Tung Chung East Station
South Island Line (West)
Tuen Mun South Extension
Northern Link (Between Kam Sheung Road Station and Kwu Tung Station)
East Kowloon Line
North Island Line

Other Planned Additional Transport Infrastructure

5.3.3 Other planned additional Transport Infrastructure on highway & railway are comprised with two set of networks assumptions including:

(i) Basic Infrastructures Scheme (**Figure 3.2 to 3.5**) should cover

Highway Infrastructure:
- Route 11 (North Lantau to Yuen Long, incl. Tsing Lung Bridge);
- Hong Kong – Lantau Link (KYC to Sunny Bay);
- Hong Kong - Lantau Link (Kennedy Town to KYC); and
- Route 4 Extension (between Aberdeen and Kennedy Town);

Railway Infrastructure:
- Rail connection between Kennedy Town and KYC.

(ii) Full Implementation Scheme (**Figure 3.6 to 3.11**) should cover

Highway Infrastructure:
- Route 11 (North Lantau to Yuen Long, incl. Tsing Lung Bridge) ;
- Hong Kong – Lantau Link (KYC to Sunny Bay);
- Hong Kong - Lantau Link (Kennedy Town to KYC);
- Hei Ling Chau Link (Hei Ling Chau to KYC);
- Route 4 Extension (between Aberdeen and Kennedy Town);
- Mui Wo Link (Hei Ling Chau to Mui Wo); and
- Siu Ho Wan Link (Mui Wo to Siu Ho Wan / North Lantau).

Railway Infrastructure:
- Rail connection between KYC and Kowloon West;
- Rail connection between Kennedy Town and KYC; and
- Rail connection between KYC and Tuen Mun (via HLC, MW and North Lantau).

Conceptual Schemes for Highway Connection

5.3.4 The Report on Preliminary Feasibility Study on Transport Infrastructure for Highway Connection (Draft) (Ref. R10-01) was submitted in May 2016, in which several conceptual schemes were developed by taking into consideration the constraints and the required design standards. The details of various constraints, considerations and design for the conceptual schemes should refer to the aforesaid WP. The preferred conceptual schemes for the case without and with linkage to Route 4 Extension as recommended in the WP are reiterated below for easy reference.

Transport Infrastructure without Linkage to Route 4 Extension (**Figure 5.1**):

- Conceptual Scheme 1-1 – Offshore Tunnel

Transport Infrastructure with Linkage to Route 4 Extension (**Figure 5.2**):

- Conceptual Scheme 2-1 – Bridge with Interchange at Kennedy Town
- Conceptual Scheme 2-2 – Tunnel with Interchange at Kennedy Town

5.3.5 For the scenario without Route 4 extension, the preferred Conceptual Scheme 1-1 was adopted for the model run in this TTIA.

5.3.6 For the scenario with Route 4 Extension, it is assumed that an interchange allowing all traffic movements among Route 4 Extension, existing Route 4, TI and local roads at Kennedy Town could be provided in this TTIA. The preferred Conceptual Schemes 2-1 and 2-2 mentioned above would have no significant differences in terms of connectivity of the TI, and travelling distance and journey time between HKI and ELM, therefore the traffic forecast should be similar for these two schemes.

5.3.7 The interchange layouts for the cases without and with linkage to Route 4 Extension were reviewed under various aspects in the aforementioned WP. The details of the interchange layout should make reference to the WP.

5.3.8 At this early stage, although the scheme of the direct connection to existing railway system will be technically challenging to build, it is considered more desirable than the provision of a new line from a passenger convenience point of view as convenient interchange is recognised to be extremely important. With the limitations of extending the ISL, a new railway line forming the connection could be later considered as part of the wider strategic network connecting North Lantau – ELM – Hong Kong Island. This line could be specially designed to be faster providing quicker journey times for passengers. At this early stage, the tunnel options presented will not limit the flexibility of developing future possible extension or connections to other lines.

5.4 Other Major Input Assumptions/Parameters

Highway Tolls

5.4.1 Adjustments to the toll rates of existing facilities and assumed tariff on new toll facilities are given in **Table 5.4.1**. The tolls are assumed to remain constant in real terms (or changed in nominal terms according to the rate of inflation) in all future design years.

Table 5.4.1 Design Year Highway Toll Assumptions (in 2015 Dollar)

Toll Facility	Car	Taxi	Private Light Van	Light Van	Light Goods Vehicle	Medium Goods Vehicle (5)	Heavy Goods Vehicle (5)	Tractor Unit (5)
Shing Mun Tunnel	5	5	5	5	5	5	5	5
Lion Rock Tunnel (LRT)	8	8	8	8	8	8	8	8
Tate's Cairn Tunnel (TCT)(1)	20	20	24	24	24	33.3	76	100
Sha Tin Heights Tunnel and Eagle's Nest Tunnel (Route 8 between Cheung Sha Wan and Sha Tin)	8	8	8	8	8	8	8	8
Tseung Kwan O (TKO) Tunnel	3	3	3	3	3	3	3	3
Eastern Harbour Crossing (EHC)	25	25	38	38	38	55.5	125	150
Cross Harbour Tunnel (CHT)	20	10	10	15	15	22.2	50	60
Western Harbour Crossing(2)	60	55	70	70	70	101.6	185	215
Aberdeen Tunnel	5	5	5	5	5	5	5	5
Lantau Link(3)	15	15	20	20	20	25	40	40
Tai Lam Tunnel (R3-CPS)(4)	40	40	100	41	41	47	52	52
TKO – Lam Tin Tunnel(6)	3	3	3	3	3	3	3	3
Tuen Mun – Chek Lap Kok Link(7) (TMCLKL)	15	15	20	20	20	25	40	40
Tuen Mun Western Bypass(8) (TMWB)	20	20	50	20.5	20.5	23.5	26	26
Route 11	40	40	100	41	41	47	52	52
So Kwun Wat Link Road	20	20	50	20.5	20.5	23.5	26	26

Notes:
(1) Based on new tolls for Tate's Cairn Tunnel effective from January 2016.
(2) Based on new tolls for Western Harbour Crossing effective from July 2015.
(3) The toll shown represents one-way toll collected in each direction.
(4) Based on new tolls for Tai Lam Tunnel effective from February 2015.
(5) The weighted average number of additional axles would be adopted for some tunnels including Tate's Cairn Tunnel, Cross Harbour Tunnel, Western Harbour Crossing and Eastern Harbour Crossing. The factor of weighted average number of additional axles with 0.22 for Medium Goods Vehicle, 2 for Heavy Goods Vehicle and 3 for Tractor Unit are adopted.
(6) The tolls for TKO-Lam Tin Tunnel assumed to be the same as current tolls at Tseung Kwan O Tunnel.
(7) The tolls for TMCLKL assumed to be the same as current tolls at Lantau Link.
(8) The tolls level of TMWB assumed to be half of Tai Lam tunnel (Route 3)

Cross-Boundary Assumptions

5.4.2 According to the Study Brief, a population target of several hundred thousand and a core business district with many employment opportunities for the ELM are assumed. Thus, the cross boundary vehicular and passengers heading to/from the ELM should be significant large amount. The new cross boundary matrices of vehicular and passengers should be able to reflect the demand of ELM.

5.4.3 The formulation of cross boundary vehicular and passengers demand to/from the ELM and has been discussed with Planning Department. The board brush approach is illustrated in **Table 5.4.2**.

Table 5.4.2 The Board Brush Approach to estimate the Daily Cross-boundary Trips for ELM

Cross-boundary Trips	Modes	Approach to estimate the daily cross-boundary trips
Cross-boundary Vehicles	Car	1. Find the ratio between each cross-boundary control points to total Car Availability Household (CAHH) in urban area (including Hong Kong Island North and Kowloon); 2. Estimate the CAHH of ELM and NTN; 3. Derive the cross-boundary car base on the information of (1) and (2)
	Bus	1. Find the ratio between each cross-boundary control points to total population including usual resident, mobile and Transient (pop) in urban area (including Hong Kong Island North and Kowloon); 2. Estimate the total pop of ELM and NTN; 3. Derive the cross-boundary bus base on the information of (1) and (2)
	GV and CT	1. Find the ratio between each cross-boundary control points to total employment (emp) in urban area (including Hong Kong Island North and Kowloon); 2. Estimate the total emp of ELM and NTN; 3. Derive the cross-boundary GV base on the information of (1) and (2)
Cross-boundary Passengers	BTR, Bus, Ferry and TTR	1. Find the ratio between each cross-boundary control points to total population including usual resident, mobile and Transient (pop) in urban area (including Hong Kong Island North and Kowloon); 2. Estimate the total pop of ELM and NTN; 3. Derive the cross-boundary bus base on the information of (1) and (2)

Port Related Data

5.4.4 According to recommendation of the Study of the Strategic Development Plan for Hong Kong Port 2030 (October 2014), proposed CT10 (planning to be located in Southwest Tsing Yi Island) will not be required before year 2030 as long as the enhanced capacity of the existing facilities can accommodate forecast throughput. Thus, it is assumed the proposed CT10 will not be in-placed before year 2031. With considering the lack of information after year 2030, thus it is assumed the CT10 would not be in-placed in this study.

5.4.5 With reference to the above Study, the total port Container throughput forecast would be about 31.5 Million TEU in year 2030. The average growth rate from year 2015 to 2030 is 1.5% per year. There are no further information showing the forecast of year 2031 and 2041. Thus, it is assumed to adopt the same growth rate 1.5% per annum to project the forecast of year 2031 and 2041. A summary of the assumptions on future container throughputs of Hong Kong Port is presented in **Table 5.4.3**.

Table 5.4.3 Container Throughput Assumptions for Hong Kong Port (in Million TEUs per year)

Year	2041
Total Container Throughput	37.105

Airport Related Data

5.4.6 By referring to the information provided by Airport Authority dated on 24 September 2015, the forecasted number of air passengers and throughput of air cargo between the year 2021 and 2036 are projected accordingly. **Table 5.4.4** provides a summary of daily airport passengers (excluding transfer and transit passengers) and daily cargo (excluding transhipment) movements for the design years.

Table 5.4.4 Design Year Airport Usage Forecasts (Excluding Transfer/Transit Passengers and Transhipment Cargo)

Parameter	2041
Daily Air Passengers ('000)	229
Daily Air Cargo Throughput ('000 Tonnes)	24.3

Port Back-up and Open Storage Uses

5.4.7 There is a lack of information for projecting the port back-up and open storage uses over the Territory. This is mainly due to the fact that some of the land occupancy by port back-up or open storage uses is based on temporary tenancy arrangements.

5.4.8 As discussed in paragraph 5.4.4, the CT10 would not be in-placed in this study. Thus, the port back-up and open storage will be assumed the same as the information of January 2014. It is shown in **Table 5.4.5**.

Table 5.4.5 Design Year Land Occupancy by Port Back-up and Open Storage

Design Year	Total Area Supply for Port Back-up (hectares)	Total Area Supply for Open Storage (hectares)
2041	428.00	810.68

Vehicle Fleet Sizes

5.4.9 The growth of number of private vehicles including private cars and motor cycles in the past few years was having a rapid increase by around 5% per year (i.e. growth from 463,000 to 555,300 for year 2011 and 2015 respectively). Thus, a higher average growth rate of 3% per year will be adopted to estimate the vehicle fleet size in year 2021. For the longer designed year after 2021, it is recommended to use 2% per year growth to estimate the future number of private vehicles of year 2026 and 2031. The lower growth rate with 1% will be adopted to estimate the vehicle fleet size after year 2031

5.4.10 The number of licensed taxis has remained relatively unchanged at around 18,100 vehicles over the last decade. Assuming that this trend will be maintained, the taxi fleet is assumed to remain stagnant at 18,100 vehicles for all future design years.

5.4.11 For the growth of goods vehicles in the past few year, there are around 0.6% per year increase (i.e. growth from 110,300 to 113,000 for year 2011 and 2015 respectively) in the total number of goods vehicles. With this information, the lower growth rate with 0.5% per year is adopted to estimate the number of goods vehicles in all design years. The summary of vehicle fleet size assumption is shown in **Table 5.4.6**.

Table 5.4.6 Design Year Vehicle Fleet Size Assumptions

Year	Mid-year Fleet Size		
	Private Vehicle (Private Cars and Motor Cycles)	Taxi	Goods Vehicle
2041	893,500	18,100	128,600

GDP Growth

5.4.12 GDP growth assumed is 4% which is an conservative estimate to ensure the transportation demand is not underestimated and limit economic growth. In the light of the current economic outlook we will adopt 3.5% for this project. The growth rate is based on reviewing historical GDP growth rates 1990 – 2015 from the C&S department Hong Kong. The assumed year-on-year real terms GDP growths up to year 2041 are presented in **Table 5.4.7**.

Table 5.4.7 Gross Domestic Product Growth Assumptions

Year	Percentage Growth per Annum
2016 – 2021	3.5% p.a.
2022 – 2025	3.0% p.a.
Beyond 2026	2.5% p.a.

Value of Time (VOT) and Vehicle Operating Cost (VOC)

5.4.13 As stated in earlier section, the VOT and VOC for person trip and goods vehicle trip in future years should also adopt the corresponding values in the latest travel characteristic surveys. It is assumed that the VOTs would vary in real terms at one-third of the real GDP per capita growth rate. The VOT for Person Trips and Goods Vehicle Trip by future years are summarized in **Tables 5.4.8** and **5.4.9**. The distance-based VOC parameters would remain constant in real terms in all future design years as shown on **Table 5.4.10**.

Table 5.4.8 Values of Time for Person Trips by Future Years

Trip Purpose	VOT ($/min/person in 2011 prices)
	2041
Non-Car-Available	
Home-based Work (HBW)	0.86
Home-based School (HBS)	0.72
Home-based Others (HBO) / Non-Home Based (NHB)	0.86
Employers' Business (EB)	3.60
Car-Available	
Home-based Work (HBW)	1.30
Home-based School (HBS)	0.91
Home-based Others (HBO) / Non-Home Based (NHB)	1.05
Employers' Business (EB)	5.46

Table 5.4.9 Values of Time for Goods Vehicle Trips by Future Years

Goods Vehicle Type	VOT ($/min/vehicle in 2011 prices)
	2041
Goods Van	2.31
Light Goods Vehicle	2.67
Medium Goods Vehicle	3.48
Heavy Goods Vehicle	4.06
Tractor Unit	3.84

Table 5.4.10 Vehicle Operating Costs by Future Years

Vehicle Type	Distance-based VOC ($/km in 2011 prices)
	2041
Private Car	1.51
Light Van (LV)	1.86
Light Goods Vehicle (LGV)	2.47
Medium Goods Vehicle (MGV)	3.07
Heavy Goods Vehicle (HGV)	4.75
Tractor Unit (TU)	3.02

Proposed Public Transport Provision of ELM

5.4.14 In the Study, one of the important tasks is to identify the requirements for the new transport infrastructure which could cater the development of ELM. In this stage, there are no any planned road-based public transport routes travelling between ELM and other areas. Thus, it is assumed all of the existing franchised bus routes and residential services routes travelling between Hong Kong Island and Lantau/NWNT would be re-routed to use the new road via ELM in order to avoid under estimating the traffic volume of each new external road links.

5.4.15 All the franchised bus routes and residential services routes travelling between Hong Kong Island and Lantau/NWNT with no bus stop in Urban Kowloon have been selected and re-routed to use new road links. Those routings would stop at ELM (Mui Wo, Hei Ling Chau and Kau Yi Chan). The potentially re-route for franchised bus and residential services have been illustrated in **Figure 5.3** to **5.8**.

5.4.16 In addition, it is assumed new bus routes (total 700 pcu/hr) running through the ELM and other districts.

5.5 Traffic Forecast

Overview

5.5.1 As mentioned in the previous section, the model input assumptions have been clearly presented to cover the adopted planning data, infrastructures and model parameters. In view of the size of the proposed development of ELM and adopted infrastructures, it is necessary to identify and investigate the traffic generation of the proposed development and its distribution. In addition, the strategic traffic patterns might be affected due to the new infrastructures and toll level arrangement at those new infrastructures.

5.5.2 This section summarized the traffic forecast and traffic pattern of ELM in the design year 2041. The external road-based traffic flows and rail patronage flows would be discussed to identify the infrastructure requirement to cater the proposed development of ELM in design year 2041.

ELM Traffic Forecast

5.5.3 The strategic transport models of design year 2041 have been run with the input assumption as stated in previous section. The strategic transport models run would cover six aspects including (i) The Development Phasing (Base Case with 0.4 million population and Fully Development with 0.7 million population); (ii) Two Land Use Options (Using Central and East Kowloon geographical characteristic); (iii) with and without New Territories North (NTN); (iv) with and without Route 4 Extension; (v) Three Railway scheme options; and (vi) Toll Level arrangement at new infrastructures.

5.5.4 The traffic forecast with total 16 scenario model run (scenario number 1 to 24) to cover difference combination of (i) development phasing using base case; (ii) two land use options; (iii) with and without NTN; (iv) with and without Route 4 Extension and (v) railway scheme options A and C; have been summarized in **Appendix A**.

5.5.5 Similarly, the traffic forecast with total 24 scenario model run (scenario number 25 to 48) to cover difference combination of (i) adopting the full development of ELM; (ii) two land use options; (iii) with and without NTN; (iv) with and without Route 4 Extension and (v) railway scheme options A, B and C; have been summarized in **Appendix B**.

5.5.6 The traffic forecast with total 15 scenario model run (scenario number T1 to T15) of various toll level arrangements at new infrastructures has been summarized in **Appendix C**.

5.5.7 The patronage forecast of three railway scheme options with (i) adopting the full development of ELM; (ii) using land use option A; (iii) with and without NTN; and (iv) with Route 4 Extension

have been illustrated in **Figure 5.9 to 5.28**. The summary of percentage of rail trips of public demand are shown in **Table 5.5.1**.

Table 5.5.1 The Summary of percentage of Rail Trips of Public Demand

Scenario	Railway Option	Development Option	% Rail Trip of Public Demand	
			AM	PM
Base Case	A	without NTN	50%	53%
		with NTN	49%	53%
	C	without NTN	48%	52%
		with NTN	48%	52%
Full Network	A	without NTN	46%	49%
		with NTN	45%	49%
	B	without NTN	45%	48%
		with NTN	45%	48%
	C	without NTN	45%	48%
		with NTN	44%	48%

Major Finding of the Traffic Forecast of Basic Development (scenario number 1 to 24)

5.5.8 The external road link (L1) between Kau Yi Chau and Kennedy Town are served within the v/c ratio 1.2 in all model run scenario number 1 to 24. Thus, the proposed road links with dual-3 carriageway would be able to cater the traffic demand travelling between Kau Yi Chau and Hong Kong Island.

5.5.9 Another external road link (L3) between Kau Yi Chau and Sunny Bay are served over the design capacity with the v/c ratio ranging between 1.3 and 1.4. It is identified that most of the vehicles using this external road link are through traffic heading to/from Hong Kong Island via Kau Yi Chau.

5.5.10 In some model run scenario without Route 4 Extension, Pok Fu Lam Road would be slightly over the design capacity with the v/c ratio around 1.24.

5.5.11 Compare the model run with similar input assumptions (i) scenario 1 and 13; (ii) scenario 3 and 15; (iii) scenario 4 and 16; (iv) scenario 6 and 18; (v) scenario 7 and 19; (vi) scenario 9 and 21; (vii) scenario 10 and 22; and (viii) scenario 12 and 24, the adopting difference land use options A and B would cause difference vehicular trip generation and public transport demand.

5.5.12 For the model run with and without NTN where comparing (i) scenario 1 and 7; (ii) scenario 3 and 9; (iii) scenario 4 and 10; (iv) scenario 6 and 12; (v) scenario 13 and 19; (vi) scenario 15 and 21; (vii) scenario 16 and 22; and (viii) scenario 18 and 24, the vehicular trip of ELM under the model run without NTN developments would be generally greater than the model run with NTN developments.

5.5.13 Compare the model run scenarios (i) scenario 1 and 3; (ii) scenario 4 and 6; (iii) scenario 7 and 9; (iv) scenario 10 and 12; (v) scenario 13 and 15; (vi) scenario 16 and 18; (vii) scenario 19 and 21; and (viii) scenario 22 and 24, the adopting difference railway options A and C would not cause any significant change on vehicular trip of ELM. Similarly, the public transport demand of ELM would not cause any significant change on patronage forecast of ELM.

5.5.14 The existence of Route 4 Extension would not cause any significant change on vehicular trip of ELM and public transport demand comparing the model run scenarios (i) scenario 1 and 4; (ii) scenario 4 and 6; (iii) scenario 7 and 10; (iv) scenario 9 and 12; (v) scenario 13 and 16; (vi) scenario 15 and 18; (vii) scenario 19 and 22; and (viii) scenario 21 and 24.

5.5.15 In general, difference land use options and with & without NTN development would slightly cause the change of development distribution of ELM. It could be found from the model run comparison where difference land use options (i) scenario 1 and 13; (ii) scenario 3 and 15; (iii) scenario 4 and 16; (iv) scenario 6 and 18; (v) scenario 7 and 19; (vi) scenario 9 and 21; (vii) scenario 10 and 22; and (viii) scenario 12 and 24. Similar observation could be found from the model run with and without NTN (i) scenario 1 and 7; (ii) scenario 3 and 9; (iii) scenario 4 and 10; (iv) scenario 6 and 12; (v) scenario 13 and 19; (vi) scenario 15 and 21; (vii) scenario 16 and 22; and (viii) scenario 18 and 24. The vehicles generated to/from the ELM are heading to Kennedy Town direction and Sunny Bay direction with ranges of 19%-37% and 63%-81% respectively.

5.5.16 As a whole, the existence of Route 4 Extension and difference railway options would not cause any significant change on development distribution of ELM.

5.5.17 In addition, the source of road traffic running between Kau Yi Chau and Kennedy Town is an important factor for design purpose. Generally, most of the road user using the external road link between Kau Yi Chau and Kennedy Town are identified as through traffic with over 62% up to 80% running between Sunny Bay and Hong Kong Island.

5.5.18 The distribution of road user using Route 4 Extension are mainly heading to/from Sunny Bay direction and Central direction. It would not cause any significant change under difference model scenarios.

Major Finding of the Traffic Forecast of Fully Development (scenario number 25 to 48)

5.5.19 In the model scenario 25 to 48, the external road link (L1) between Kau Yi Chau and Kennedy Town could be served within the v/c ratio 1.2. Thus, the proposed road links with dual-3 carriageway would be able to cater the traffic demand travelling between Kau Yi Chau and Hong Kong Island.

5.5.20 Two road links (L4 and L5) connecting (i) Kau Yi Chau and Hei Ling Chau and (ii) Hei Ling Chau and Mui Wo; would be in-placed in all model run with fully development of ELM. Also, the new external road link (L2) connecting Mui Wo and North Lantau would be incorporated in the model as well. It could act as a function to divert vehicle using the new external road link. Then, the traffic flows between Kau Yi Chau and Sunny Bay would be reduced accordingly. All three new road links could be able to serve manageable traffic condition with dual-2 carriageway.

5.5.21 Another external road link (L3) between Kau Yi Chau and Sunny Bay are still served over the design capacity with the v/c ratio around 1.24 in the model scenario 25 to 30. The model run scenario 31 to 48 having include the NTN development and using the land use option B, the external road link (L3) could be served within the v/c ratio 1.2. Some of the vehicle has diverted to use the new external road link (L2). Thus, the traffic flows of L3 is reduced accordingly. The through traffic is the major source of road user on road link L3.

5.5.22 In some model run scenario without Route 4 Extension, Pok Fu Lam Road would be slightly over the design capacity with the v/c ratio around 1.22.

5.5.23 Compare the model run with similar input assumptions (i) scenario 25 and 37; (ii) scenario 26 and 38; (iii) scenario 27 and 39; (iv) scenario 28 and 40; (v) scenario 29 and 41; (vi) scenario 30 and 42; (vii) scenario 31 and 43; (viii) scenario 32 and 44; (ix) scenario 33 and 45; (x) scenario 34 and 46; (xi) scenario 35 and 47; and (xii) scenario 36 and 48, the adopting difference land use options A and B would cause difference vehicular trip generation and public transport demand.

5.5.24 For the model run with and without NTN where comparing (i) scenario 25 and 31; (ii) scenario 26 and 32; (iii) scenario 27 and 33; (iv) scenario 28 and 34; (v) scenario 29 and 35; (vi) scenario 30 and 36; (vii) scenario 37 and 43; (viii) scenario 38 and 44; (ix) scenario 39 and 45; (x) scenario 40 and 46; (xi) scenario 41 and 47; and (xii) scenario 42 and 48, the vehicular

trip of ELM under the model run without NTN developments would be generally greater than the model run with NTN developments.

5.5.25 Compare the model run scenarios (i) scenario 25 to 27; (ii) scenario 28 to 30; (iii) scenario 31 to 33; (iv) scenario 34 to 36; (v) scenario 37 to 39; (vi) scenario 40 to 42; (vii) scenario 43 to 45; and (viii) scenario 46 to 48, the adopting difference railway options A, B and C would not cause any significant change on vehicular trip of ELM. Similarly, the public transport demand of ELM would not cause any significant change on patronage forecast of ELM.

5.5.26 The existence of Route 4 Extension would not cause any significant change on vehicular trip of ELM and public transport demand comparing the model run scenarios (i) scenario 25 and 28; (ii) scenario 26 and 29; (iii) scenario 27 and 30; (iv) scenario 31 and 34; (v) scenario 32 and 35; (vi) scenario 33 and 36; (vii) scenario 37 and 40; (viii) scenario 38 and 41; (ix) scenario 39 and 42; (x) scenario 43 and 46; (xi) scenario 44 and 47; and (xii) scenario 45 and 48.

5.5.27 In general, difference land use options and with & without NTN development would slightly cause the change of development distribution of ELM. It could be found from the model run comparison where difference land use options (i) scenario 25 and 37; (ii) scenario 26 and 38; (iii) scenario 27 and 39; (iv) scenario 28 and 40; (v) scenario 29 and 41; (vi) scenario 30 and 42; (vii) scenario 31 and 43; (viii) scenario 32 and 44; (ix) scenario 33 and 45; (x) scenario 34 and 46; (xi) scenario 35 and 47; and (xii) scenario 36 and 48. Similar observation could be found from the model run with and without NTN (i) scenario 25 and 31; (ii) scenario 26 and 32; (iii) scenario 27 and 33; (iv) scenario 28 and 34; (v) scenario 29 and 35; (vi) scenario 30 and 36; (vii) scenario 37 and 43; (viii) scenario 38 and 44; (ix) scenario 39 and 45; (x) scenario 40 and 46; (xi) scenario 41 and 47; and (xii) scenario 42 and 48.

5.5.28 As a whole, the existence of Route 4 Extension and difference railway options would not cause any significant change on development distribution of ELM.

5.5.29 In addition, the source of road traffic running between Kau Yi Chau and Kennedy Town is an important factor for design purpose. Generally, most of the road user using the external road link between Kau Yi Chau and Kennedy Town are identified as through traffic with over 60% running between (i) Sunny Bay and Hong Kong Island; and (ii) North Lantau and Hong Kong Island.

5.5.30 The distribution of road user using Route 4 Extension are mainly heading to/from Sunny Bay direction and Central direction. It would not cause any significant change under difference model scenarios.

Major Finding of the Traffic Forecast of Toll Sensitivity Test (scenario number T1 to T15)

5.5.31 As mentioned before, the position of the ELM set is quite important decision made during the whole process of transport planning. It would involve the toll level setting at the new infrastructures. Thus, it is designed 15 Model Runs to test the implication of difference toll level set where the result of scenario number 31 is considered as a base case of toll sensitivity test.

5.5.32 With reference to the preliminary traffic forecast of the toll level arrangement (scenario number T1 to T15), it is identified that the toll level would affect the total development generation where lower toll level setting leading to higher traffic generation of ELM. It could be found from the scenario number T1, T2, T4, T6, T8, and T10 to T15. On the contrary, the model scenario number T3, T5, T7 and T9 adopting higher toll level setting would cause lower traffic generation of ELM. Thus, the change of amount of traffic generation of ELM are subject to the toll level setting.

5.5.33 Comparing the scenario number T1 to T15, the model scenario T1 would produce the largest amount of traffic generation of ELM which setting toll free on L1, L2, L3 and L5. It would increase the traffic flows on new road links L1, L2, L3, L4 and L5. The road links L1 and L3 would be served over the design capacity with v/c ratio up to 1.32.

5.5.34 Adjusting the toll level setting at the road link between Kau Yi Chau and Kennedy Town (refer to scenario 31, T2 and T3), the lower toll level setting would cause higher traffic generation of ELM and overload the road link L3 with the v/c ratio 1.23. In contrast with higher toll level setting, all the road links (L1, L2, L3, L4 and L5) would be served within the manageable traffic condition.

5.5.35 Similar comparison adopted with adjusting the toll level setting at the road link between Kau Yi Chau and Sunny Bay (refer to scenario 31, T4 and T5), the lower toll level setting would cause higher traffic generation of ELM and overload the road link L3 with the v/c ratio 1.27. In contrast with higher toll level setting, all the road links (L1, L2, L3, L4 and L5) would be served within the manageable traffic condition.

5.5.36 If increasing the toll level setting (i) at the road link between North Lantau and Mui Wo (refer to scenario 31, T6 and T7); and (ii) at the road link between Hei Ling Chau and Mui Wo (refer to scenario 31, T8 and T9), it would divert the vehicles using the road link between Kau Yi Chau and Sunny Bay. The road link L3 would be slightly overloaded with v/c ratio around 1.23.

5.5.37 The toll level setting on model scenario number T10 to T15 are designed for testing difference toll combination. In the model scenario number T10 to T14, the road links L1 and L3 would be operated over the design capacity with the v/c ratio up to 1.35. Setting the toll free on the external road links would overload the road links L1 and L3. Similar concept applied on model scenario number T15, no toll setting on the road link connecting North Lantau and Mui Wo could divert more traffic using road link L2 and release the traffic loading at road link L3.

Patronage Forecast of Railway Lines Connecting between ELM and Other Areas

5.5.38 In all, there are ten scenarios showing the railway patronage flows on the concerned railway line. Four scenarios presented the patronage flows of base case with about 440K population at ELM. Another six scenarios presented the patronage flows of full in-take population at ELM. The peak segment flows and V/C ratio for new railway line and Island Line are summarized in **Table 5.5.2**.

Table 5.5.2 Peak Segment Flows and V/C ratio for New Railway Line and Island Line

					Peak Flow		V/C	
Scenario	Railway Line	Segment Between	Train Frequency	Capacity	AM	PM	AM	PM
Base A woNTN	Island Line	SHW-CEN	32	57000	61000	51000	1.07	0.89
Base C woNTN	Island Line	SHW-CEN	32	57000	61000	51000	1.07	0.89
	KYC-KET	KYC-KET	28	50000	40000	31000	0.80	0.62
Base A wNTN	Island Line	SHW-CEN	32	57000	61000	51000	1.07	0.89
Base C wNTN	Island Line	SHW-CEN	32	57000	61000	51000	1.07	0.89
	KYC-KET	KYC-KET	28	50000	40000	31000	0.80	0.62
Full A woNTN	Island Line	SHW-CEN	32	57000	54000	40000	0.95	0.70
	KYC-MEF	KYC-MEF	28	50000	14000	14000	0.28	0.28
	KYC-TMS	KYC-HLC	28	50000	44000	29000	0.88	0.58
Full B woNTN	Island Line	SYP-SHW	32	57000	53000	38000	0.93	0.67
	KYC-MEF	KYC-MEF	28	50000	15000	16000	0.30	0.32
	KET-TMS	KYC-HLC	28	50000	44000	29000	0.88	0.58
Full C woNTN	Island Line	SYP-SHW	32	57000	50000	37000	0.88	0.65
	KYC-KET	KYC-KET	28	50000	36000	22000	0.72	0.44
	KYC-MEF	KYC-MEF	28	50000	16000	16000	0.32	0.32
	KYC-TMS	KYC-HLC	28	50000	42000	28000	0.84	0.56
Full A wNTN	Island Line	SYP-SHW	32	57000	49000	35000	0.86	0.61
	KYC-MEF	KYC-MEF	28	50000	22000	20000	0.44	0.40
	KYC-TMS	KYC-HLC	28	50000	44000	30000	0.88	0.60
Full B wNTN	Island Line	SHW-CEN	32	57000	47000	34000	0.82	0.60
	KYC-MEF	KYC-MEF	28	50000	22000	21000	0.44	0.42
	KET-TMS	KYC-HLC	28	50000	44000	30000	0.88	0.60
Full C wNTN	Island Line	SHW-CEN	32	57000	45000	33000	0.79	0.58
	KYC-KET	KYC-KET	28	50000	32000	19000	0.64	0.38
	KYC-MEF	KYC-MEF	28	50000	23000	21000	0.46	0.42
	KYC-TMS	KYC-HLC	28	50000	42000	28000	0.84	0.56

Notes:
(1) The carrying capacity of train is calculated based on accommodating up to four persons (standing) per square metre ("ppsm").
(2) Capacity refer to Paper on capacity and loading of MTR trains prepared by the Legislative Council Secretariat in April 2016. For details information, please visit http://www.legco.gov.hk/yr15-16/english/panels/tp/tp_rdp/papers/tp_rdp20160419cb4-854-8-e.pdf.

5.5.39 In the base case scenario, the new railway option A has a higher patronage flows (KYC-KET) than railway option C. It is because those people heading to/from ELM could take the Hong Kong Island Line arriving ELM directly. There is no any interchange required.

5.5.40 With including the ELM patronage, the highest line segment of Hong Kong Island Line is between Central and Sheung Wan with around 61,000 patronage flows. It would be overload the Hong Kong Island Line with 4 ppsm.

5.5.41 In the full network scenario, two new railway line connecting between (i) Kau Yi Chau and Mei Foo; and (ii) Kau Yi Chau and North Lantau could release the patronage generated from ELM. The highest line segment of Hong Kong Island Line is between Sheung Wan and Central during the morning peak with around 54,000 patronage flows.

5.5.42 Comparing three railway network arrangement, Option A obtain the highest patronage flows taking the Hong Kong Island Line directly. In option B, the people need to take interchange at Kennedy Town to/from ELM. Thus, it is affect the mode choose heading to ELM. The new railway Option C need to take interchange at Kennedy Town and ELM heading to/from Western side of ELM. Thus, it would affect the mode choose heading to those area.

5.5.43 In all, it is necessary to consider the population in-take and provide sufficient public transport arrangement in the base case scenario in order to avoid overloading the Island Line.

6 SUMMARY AND RECOMMENDATION

6.1.1 With considering the major finding as discussed in Chapter 5, some key points could be concluded as below:

a. Difference land use options would cause difference vehicular trip generation and public transport demand;

b. The vehicular trip of ELM under the model run without NTN developments would be generally greater than the model run with NTN developments;

c. Difference railway options would not cause any significant change on public transport demand;

d. The existence of Route 4 Extension would not cause any significant change on vehicular trip of ELM and public transport demand;

e. Adopting difference land use options and with & without NTN Development would slightly cause the change of development distribution of ELM;

f. The existence of Route 4 Extension and adopting difference railway options would not cause any significant change on development distribution of ELM;

g. The source of road traffic running between Kau Yi Chau and Kennedy Town are identified as through traffic with over 60% running between Sunny Bay and Hong Kong Island;

h. The distribution of road user using Route 4 Extension are mainly heading to/from Sunny Bay direction and Central direction;

i. The toll level arrangement would affect the total development generation of ELM where lower toll level setting leading to higher traffic generation of ELM. On the contrary, adopting higher toll level setting would cause lower traffic generation of ELM;

j. The toll level arrangement would also affect the route choose of through traffic travelling between NWNT and Hong Kong Island;

k. Adopting difference railway options would not cause any significant change on railway patronage forecast;

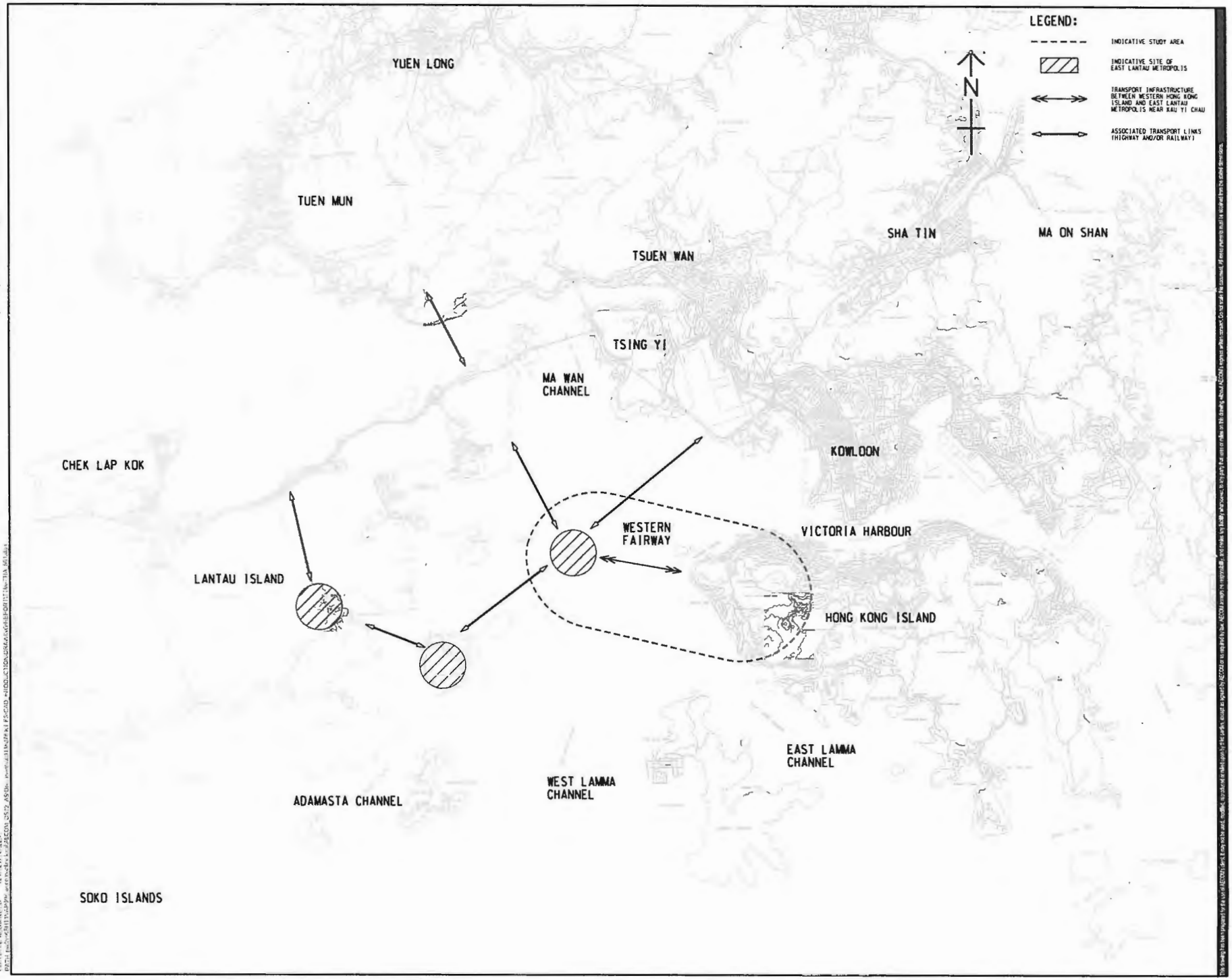
6.1.2 In the basic development phasing, the road link (L1) between Kau Yi Chau and Kennedy Town could be operated within the design capacity with the v/c ratio under 1.2. Thus, the dual-3 carriageway would be sufficient to handle the traffic demand of ELM and all other through traffic. By the way, the road link between Kau Yi Chau and Sunny Bay could be operated over the design capacity with the v/c ratio up to 1.39. It is necessary to review all the relevant assumptions including the basic development sizing and land use options. The detail planning data of ELM are required including the most refinement of zoning system for ELM.

6.1.3 In the fully development phasing, the through traffic travelling between NWNT and Hong Kong Island via ELM are an important factor causing the demand exceeds the capacity of the road links L1 and L3. Thus, the toll level arrangement is required to review in the next stage of study when detail planning data of ELM produced.

6.1.4 One of the functions of Route 4 Extension is to provide the bypass road connecting Aberdeen and Kennedy Town which is parallel to the existing Pok Fu Lam Road. In the fully development phasing, the traffic flow of Route 4 Extension is in the range between 550 and 1200. It could share the traffic flows running on Pok Fu Lam Road. The most critical section of Pok Fu Lam Road is located near "The Belcher's" with the capacity 2400pcu/hr. The v/c ratio of this section of Pok Fu Lam Road would be 1.0 in year 2041 under the scenario with Route 4 Extension. It would be raise up to v/c ratio 1.22 under the scenario without Route 4 Extension.

6.1.5 It is noted that the detailed arrangement of the interchange among Route 4 Extension, existing Route 4, Transport Infrastructure and local roads would be further studied under separate project. In case it is found infeasible to provide direction connections between (i) Route 4 Extension and TI, and (ii) Route 4 Extension and the local road network at Kennedy Town, the connectivity of the Route 4 Extension would be significantly reduced as it could only directly link to the existing Route 4. For this case, the traffic from Pok Fu Lam area heading to ELM and Kennedy Town would still need to travel via Pok Fu Lam Road, it is anticipated that traffic flow at Pok Fu Lam Road would be around 2500 pcu/hr (v/c ratio of 1.04), while that for Route 4 Extension would be around 1200 pcu/hr (v/c ratio of 0.3). The traffic forecast is preliminary estimate only, and should be further reviewed under separate project, subject to the connectivity at both ends as well as the intermediate connections.

Figures



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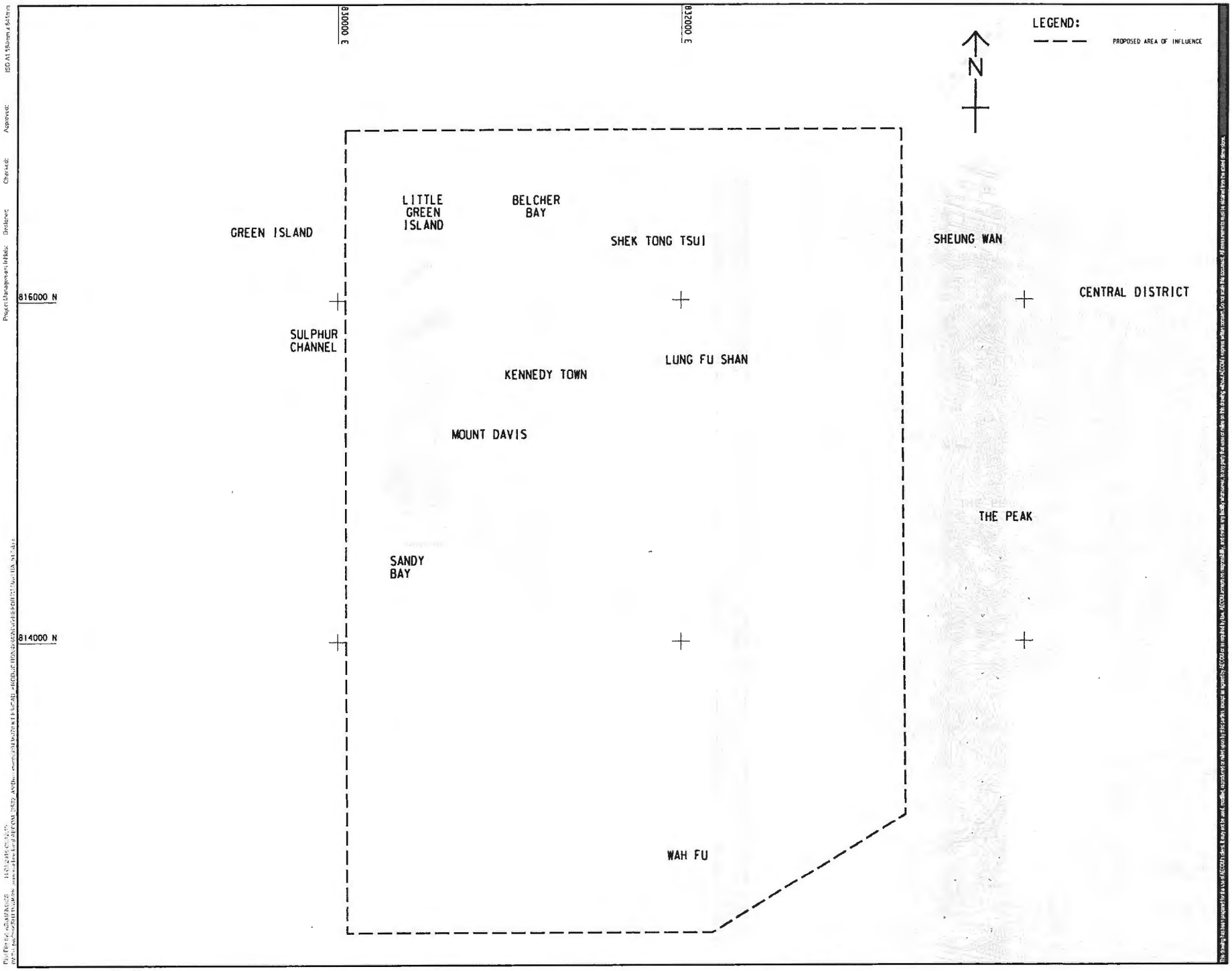

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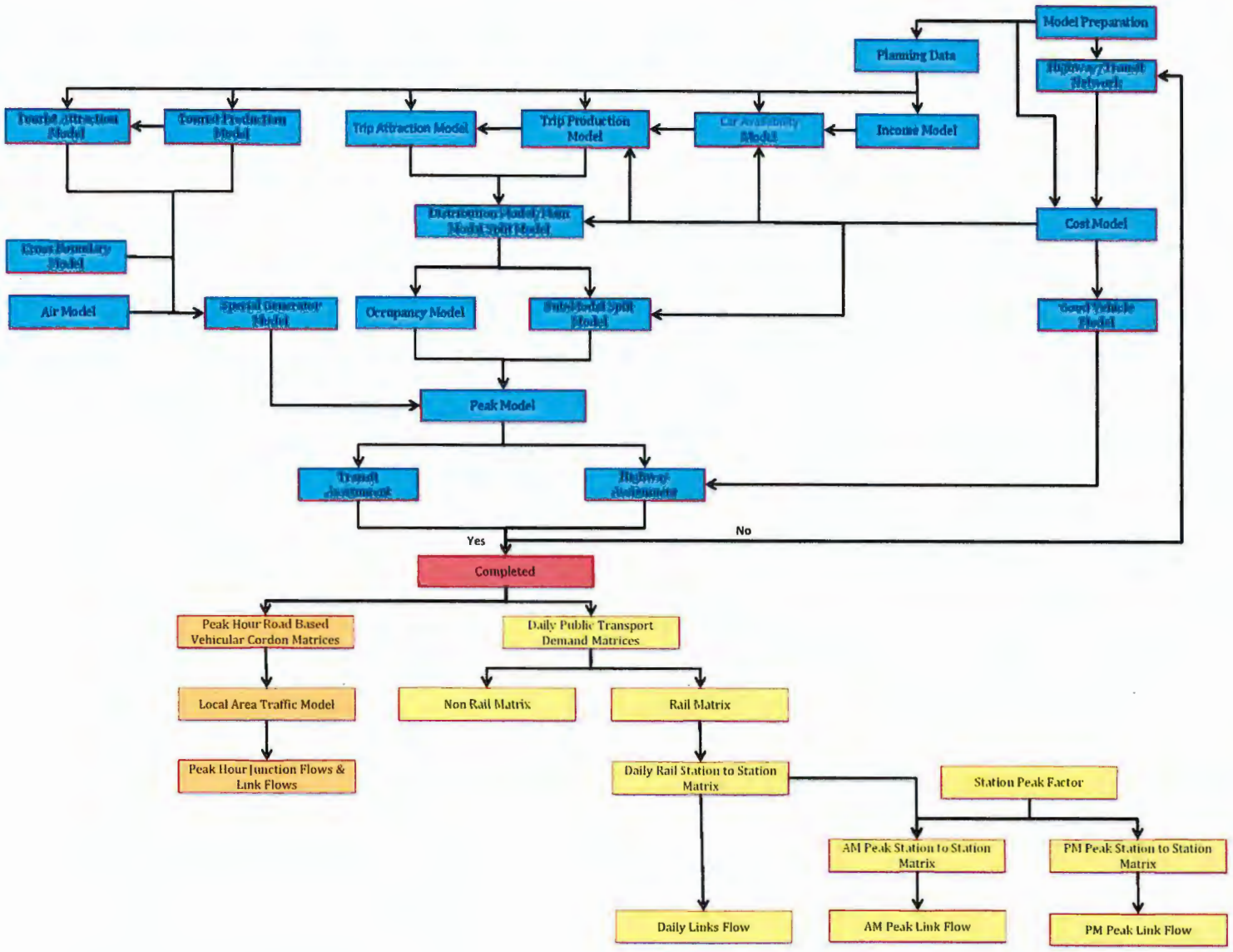

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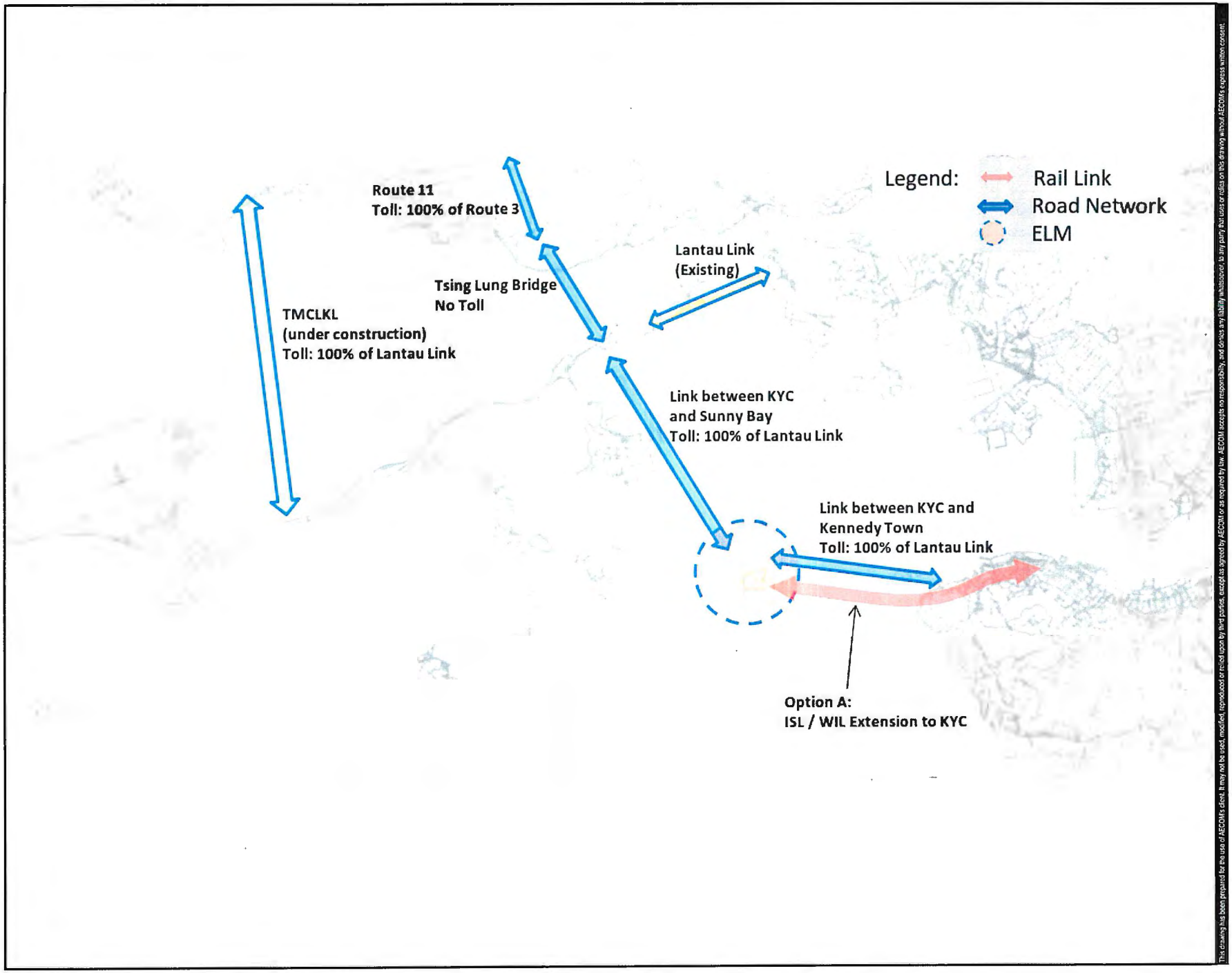

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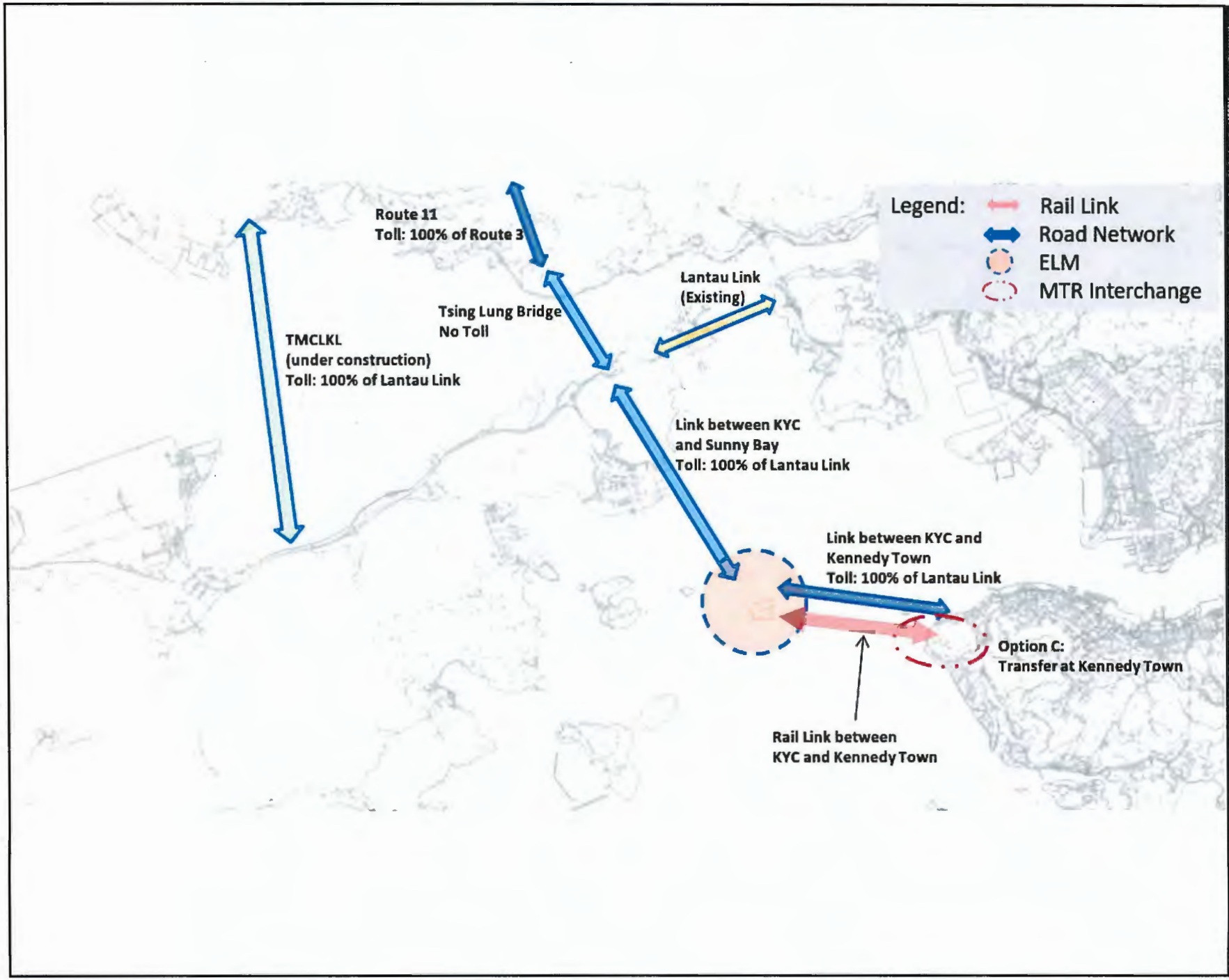

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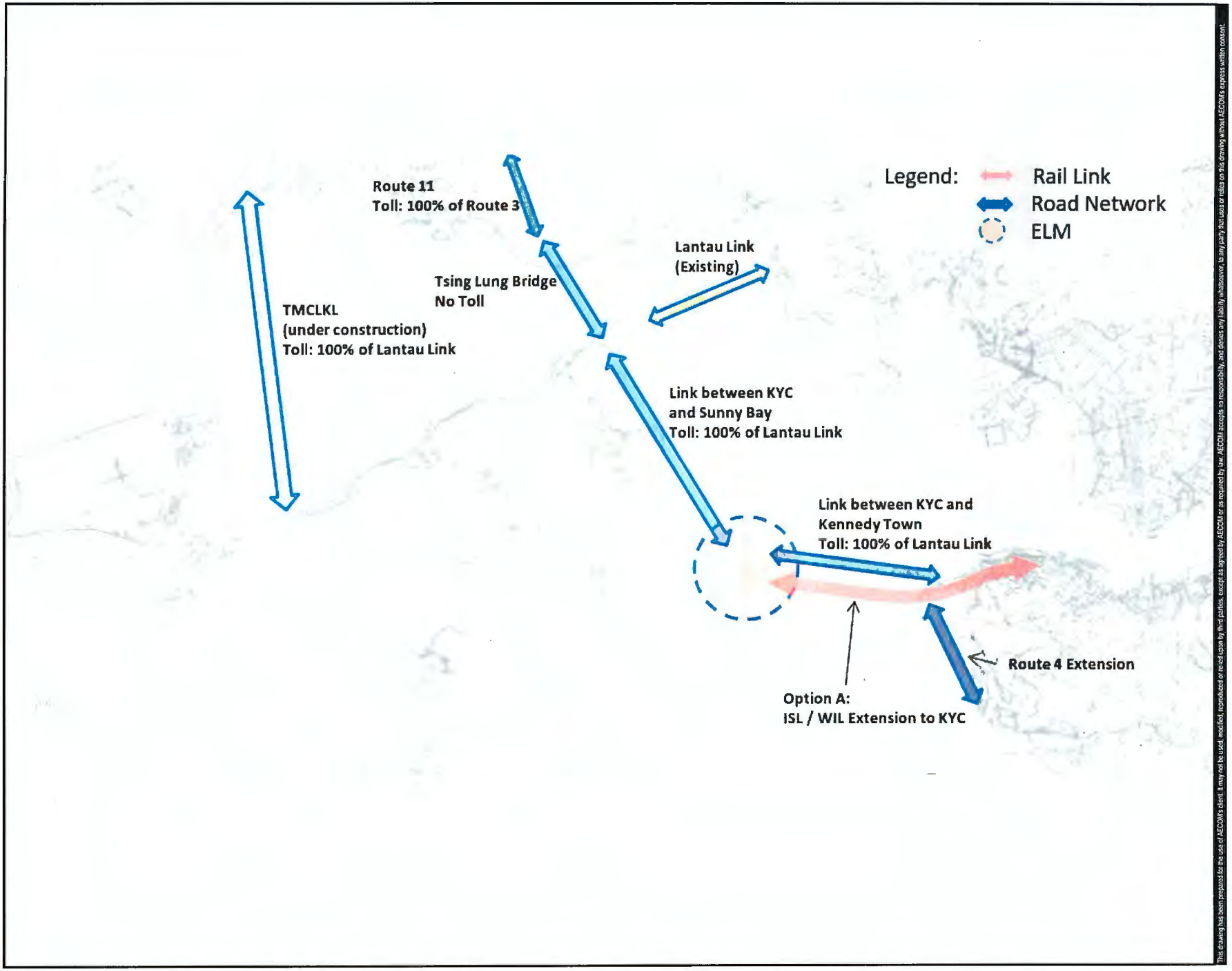
60438078/FIGURE 3.3



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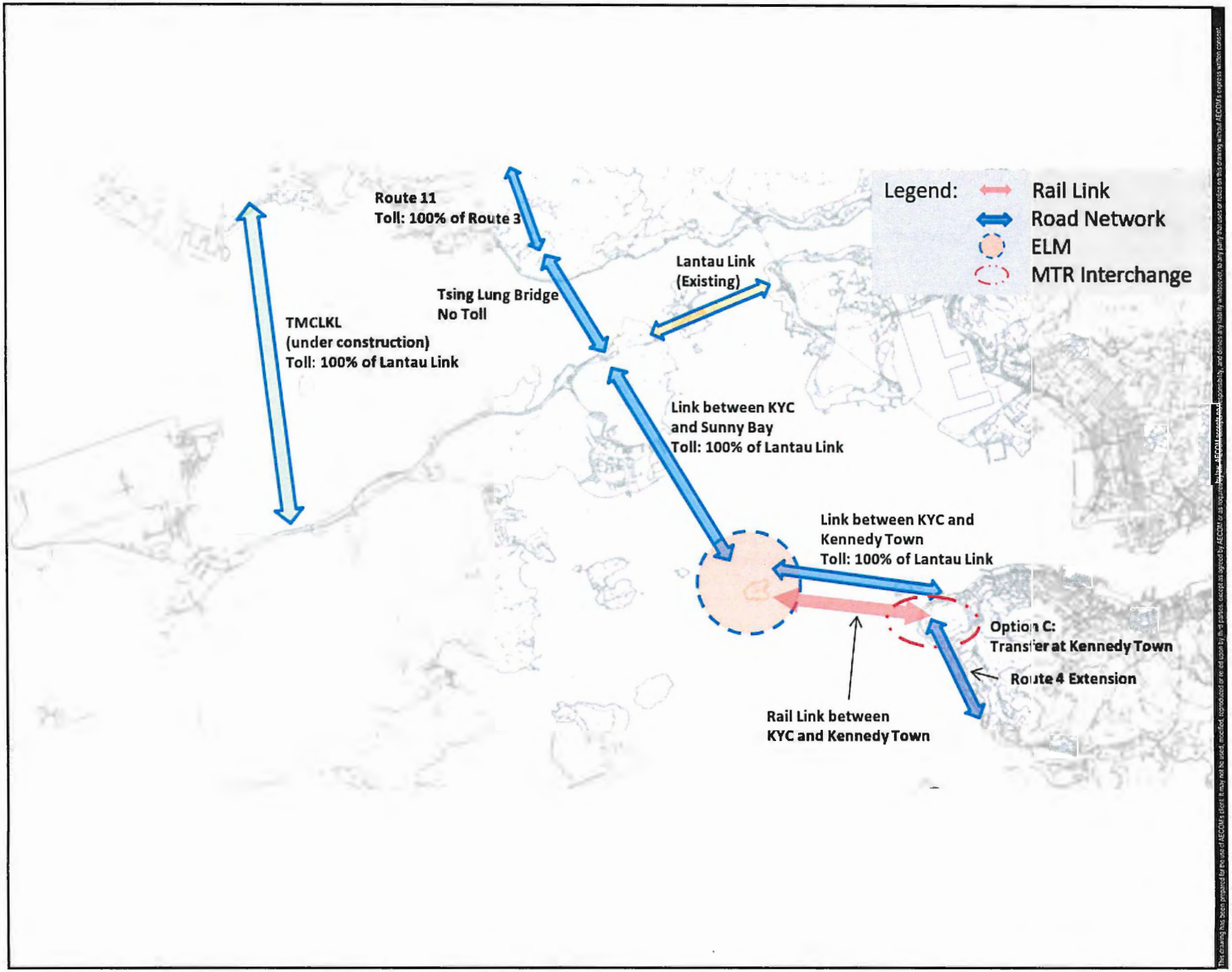

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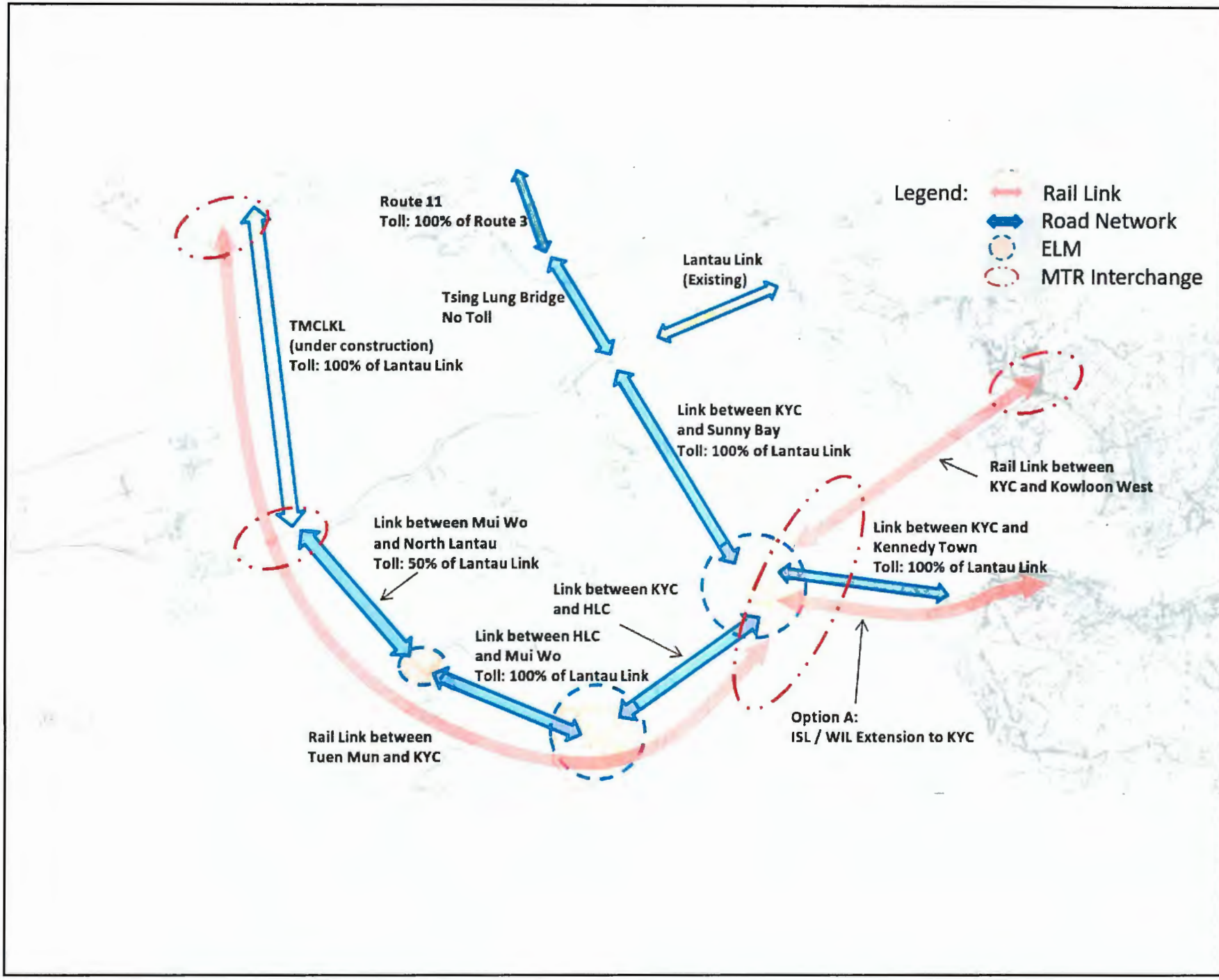

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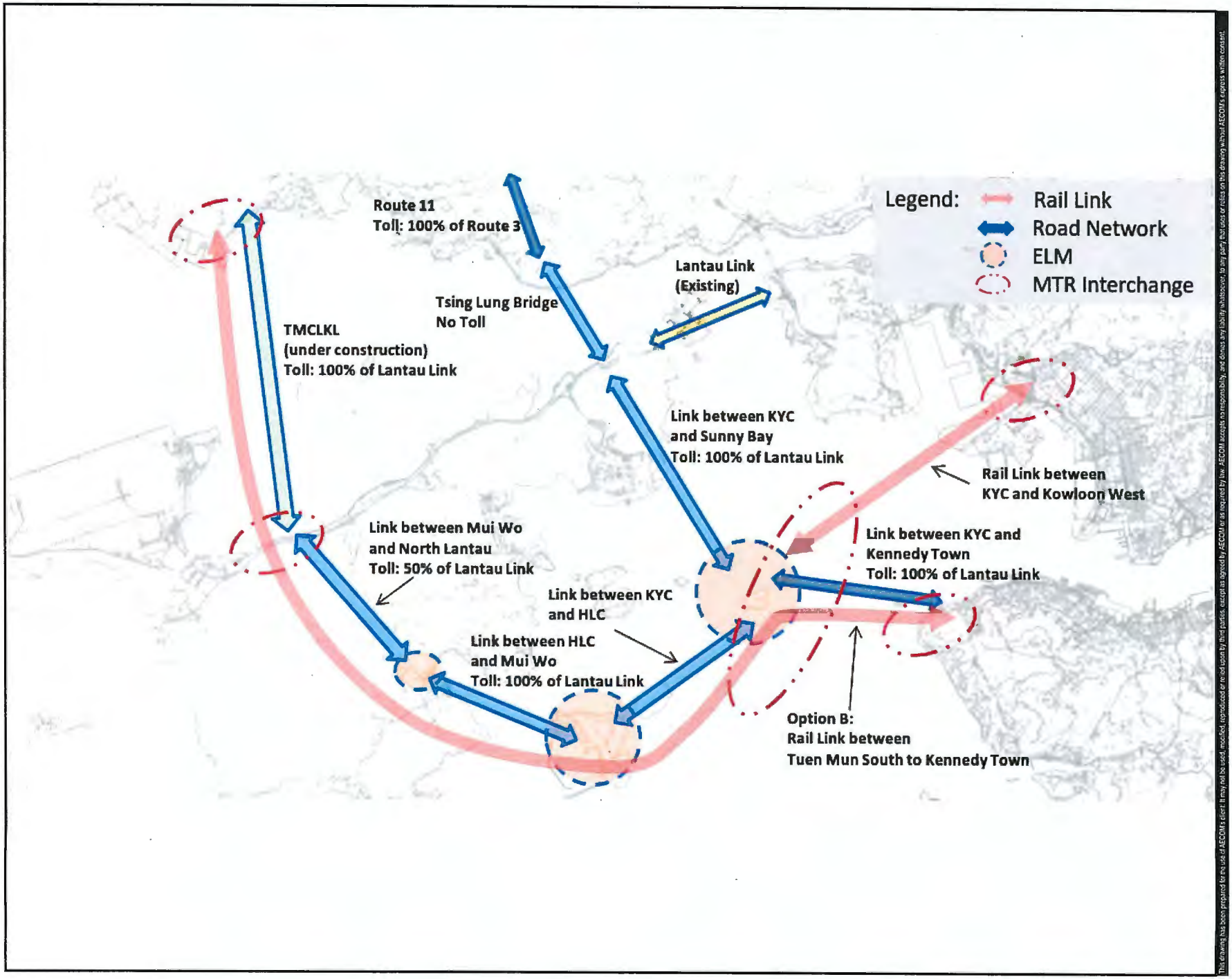

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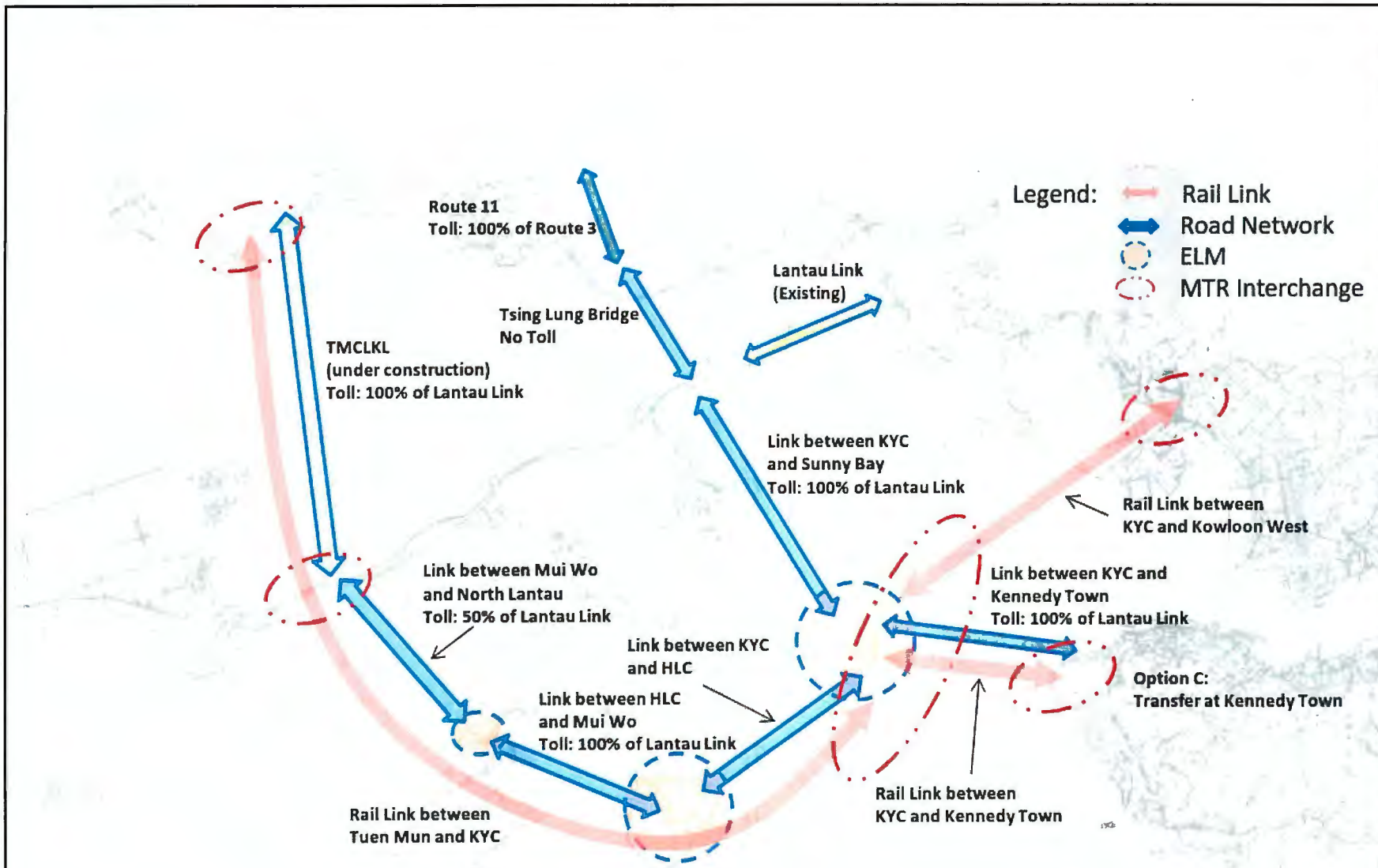

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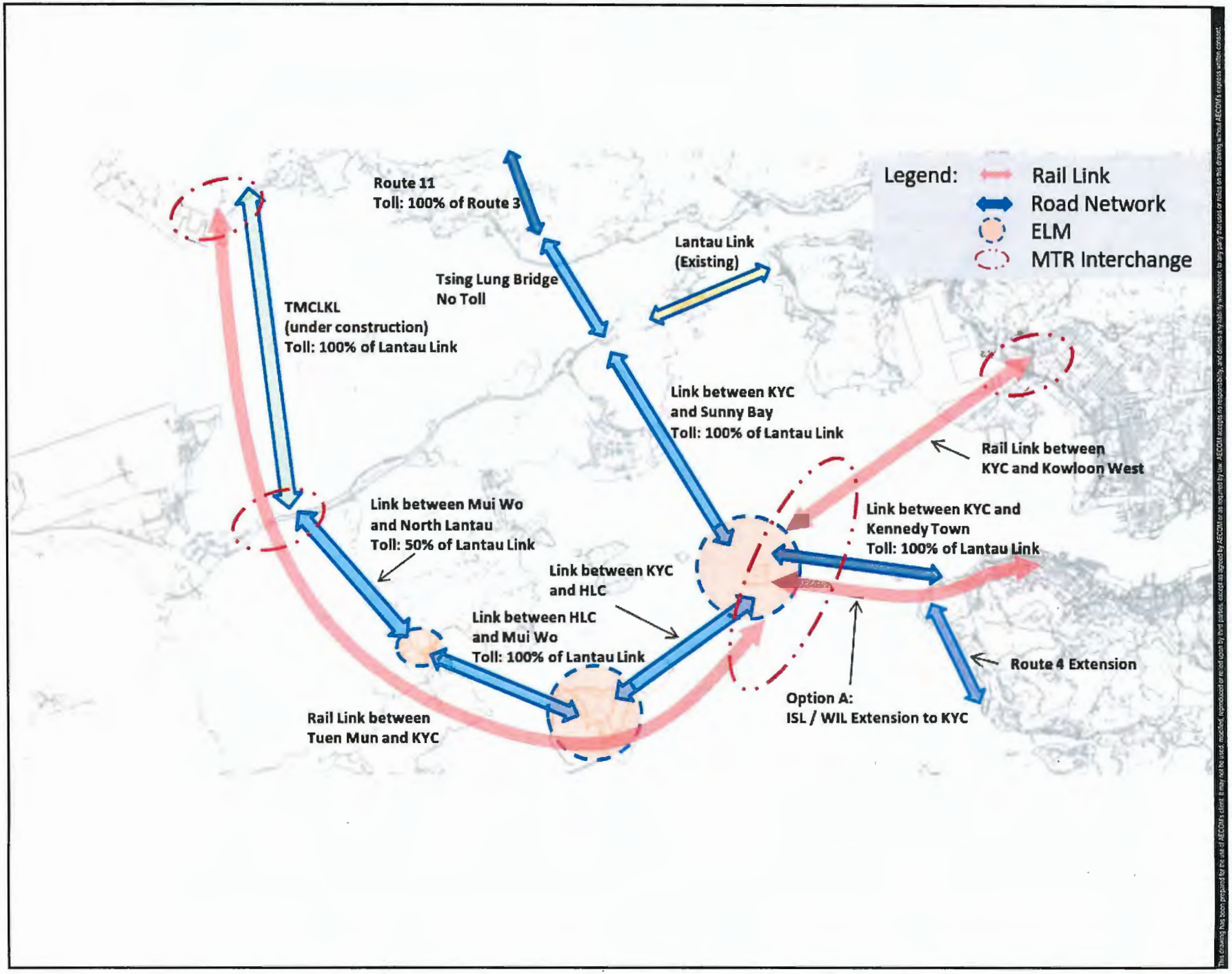
SHEET TITLE

Full Network adopting Railway Scheme Option C
(without Route 4 Extension)

SHEET NUMBER

60438078/FIGURE 3.8



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(with Route 4 Extension)

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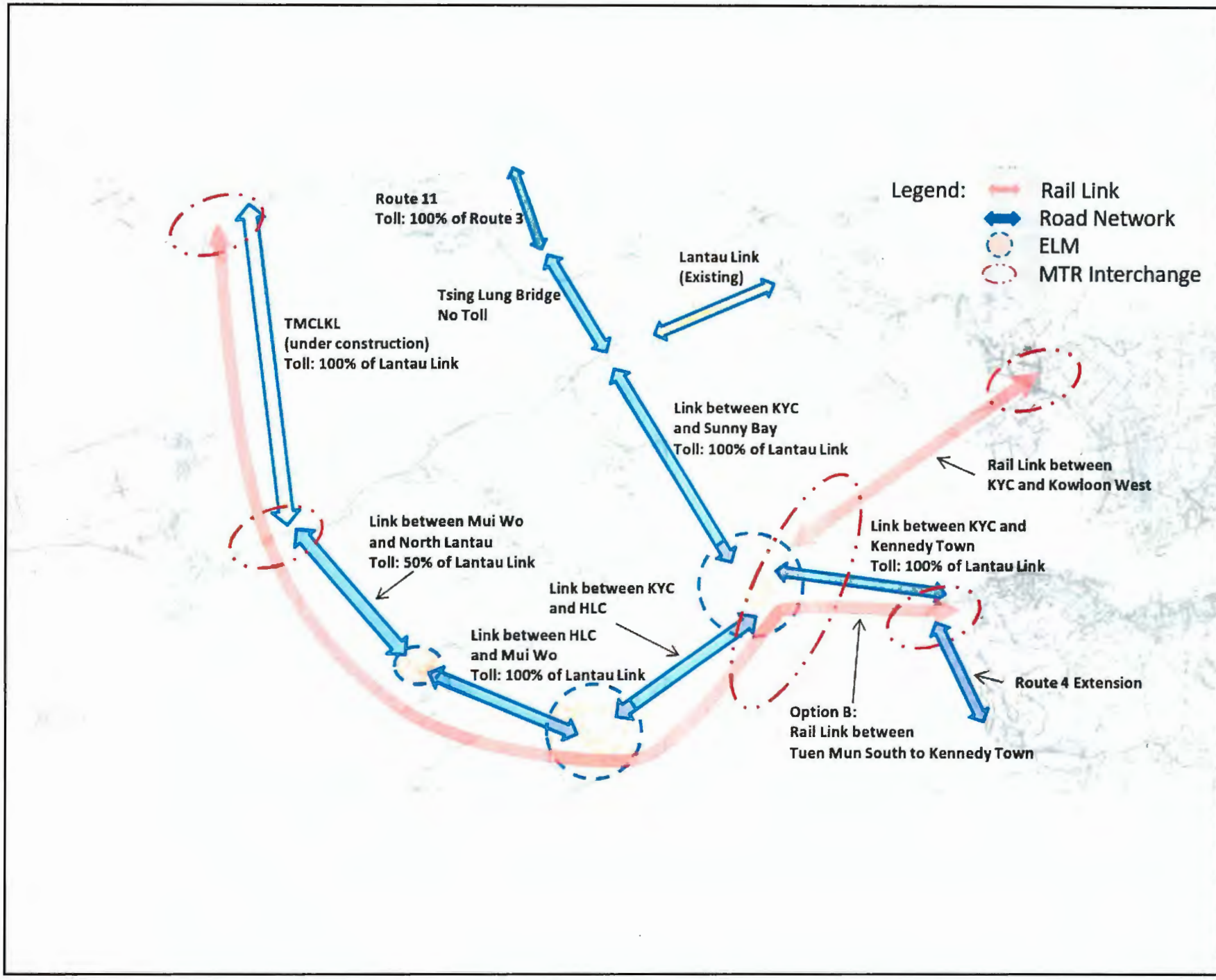

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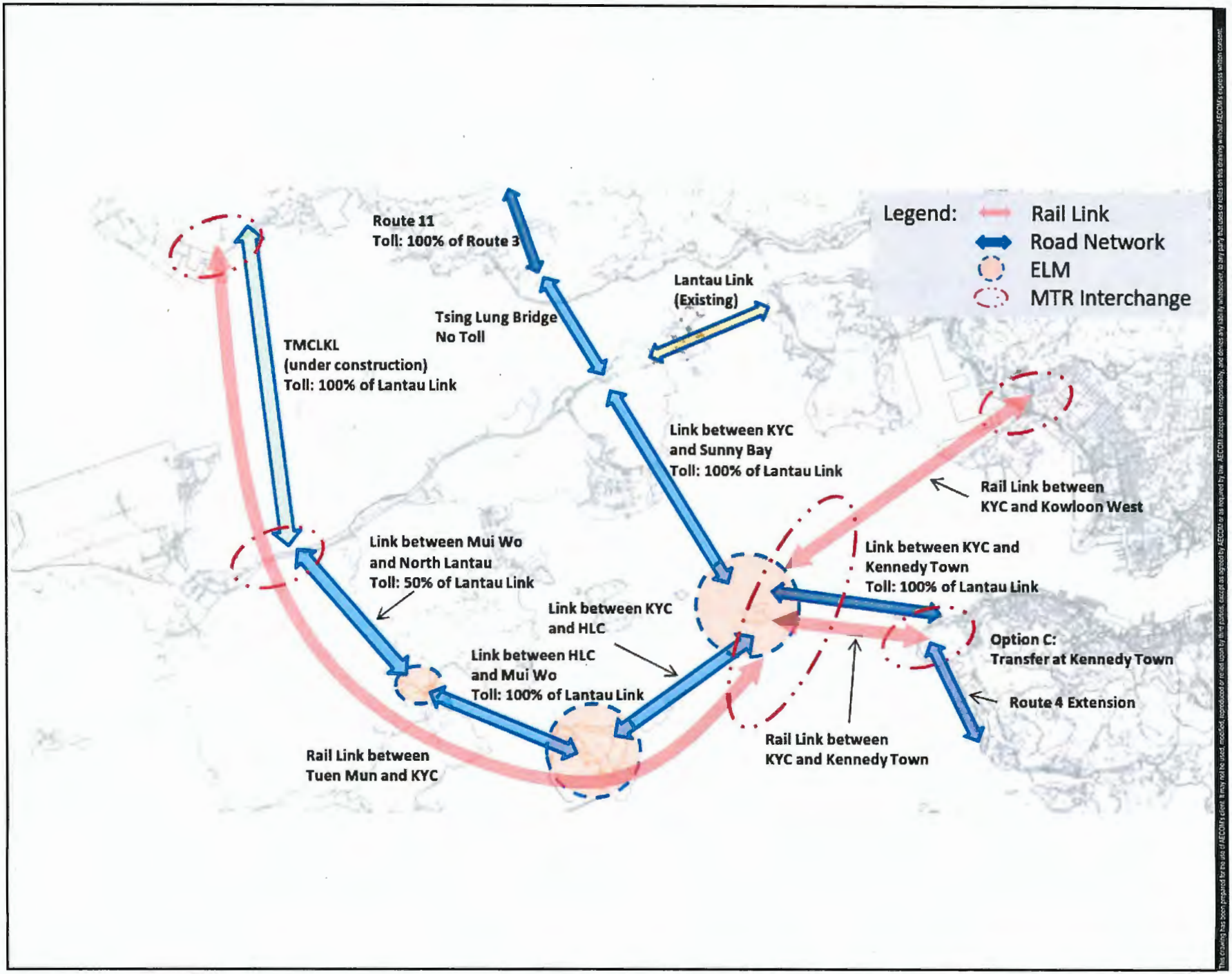
Full Network adopting Railway Scheme Option B
(with Route 4 Extension)

SHEET NUMBER

60438078/FIGURE 3.10



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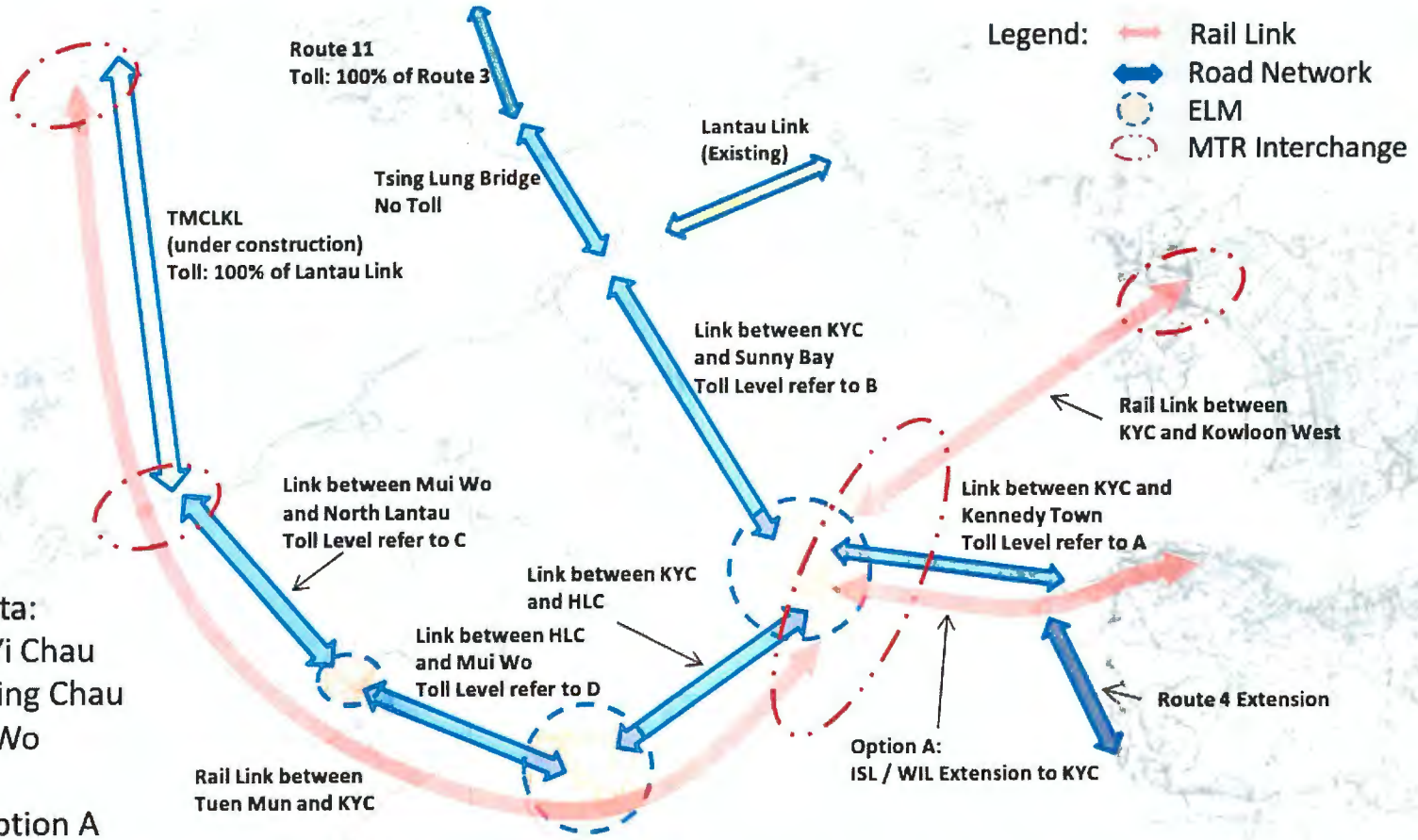
60438078 | CE11/2015 (HY)

SHEET TITLE

Full Network adopting Railway Scheme Option C
(with Route 4 Extension)

SHEET NUMBER

60438078/FIGURE 3.11



Planning Data:
ELM – Kau Yi Chau
ELM – Hei Ling Chau
ELM – Mui Wo
NTN
Land Use Option A

	Road Connection	Toll Level refer to	Base Case	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15
A	KYC to/from Kennedy Town	Lantau Link	100%	0%	50%	150%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	100%	100%
B	KYC to/from Sunny Bay	Lantau Link	100%	0%	100%	100%	50%	150%	100%	100%	100%	100%	0%	100%	0%	100%	0%	100%
C	Mui Wo to/from North Lantau	Lantau Link	50%	0%	50%	50%	50%	50%	0%	100%	50%	50%	0%	0%	50%	50%	50%	0%
D	HLC to/from Mui Wo	Lantau Link	100%	0%	100%	100%	100%	100%	100%	100%	50%	150%	0%	0%	0%	100%	100%	0%

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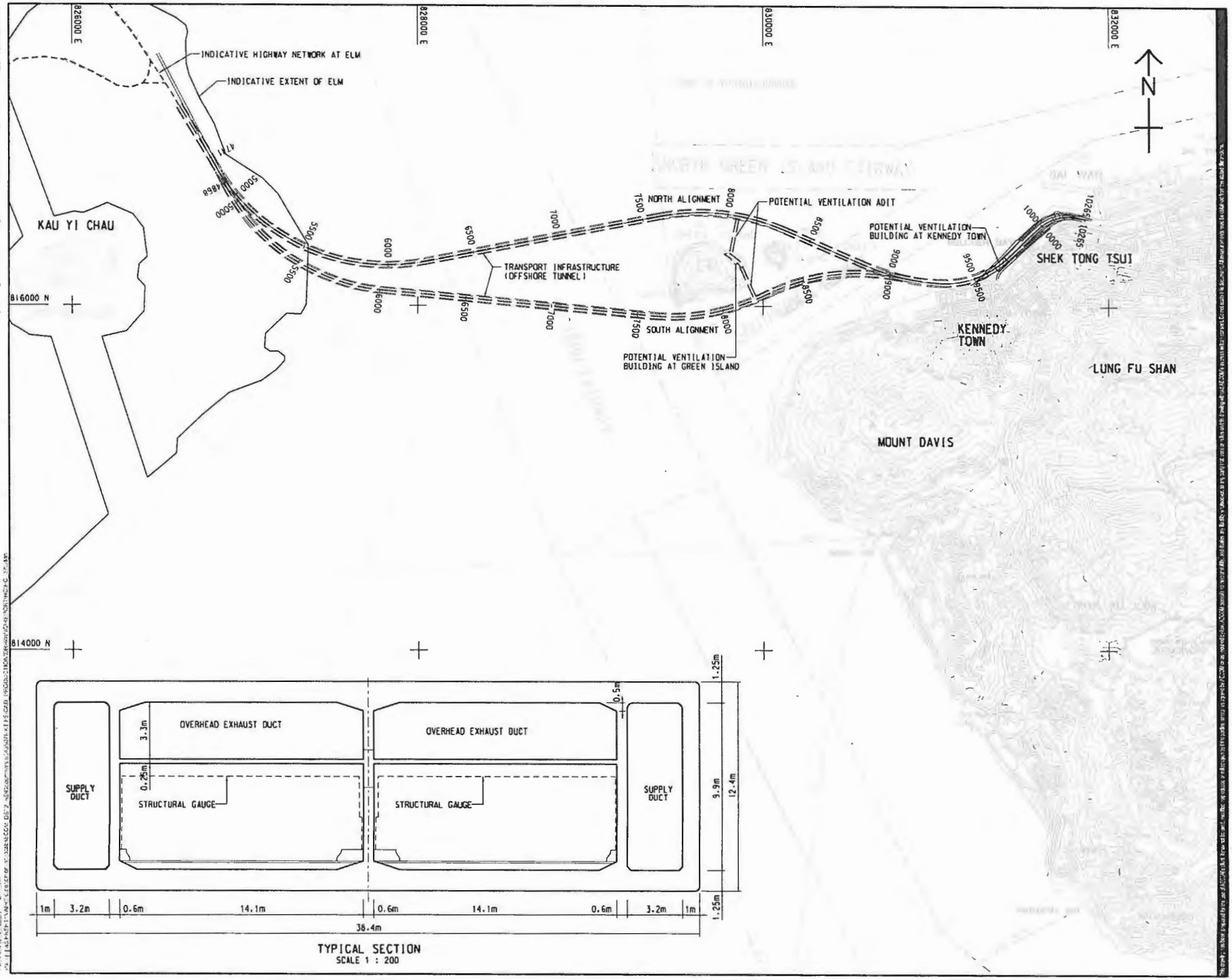
DIMENSION UNIT

KEY PLAN

PROJECT NO.: 60438078
CONTRACT NO.: CE11/2015 (HY)

SHEET TITLE
Toll Sensitivity Test

SHEET NUMBER
60438078/FIGURE 3.12



TYPICAL SECTION
SCALE 1 : 200

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SCALE: A3 1:2000
DIMENSION UNIT: METRE

KEY PLAN

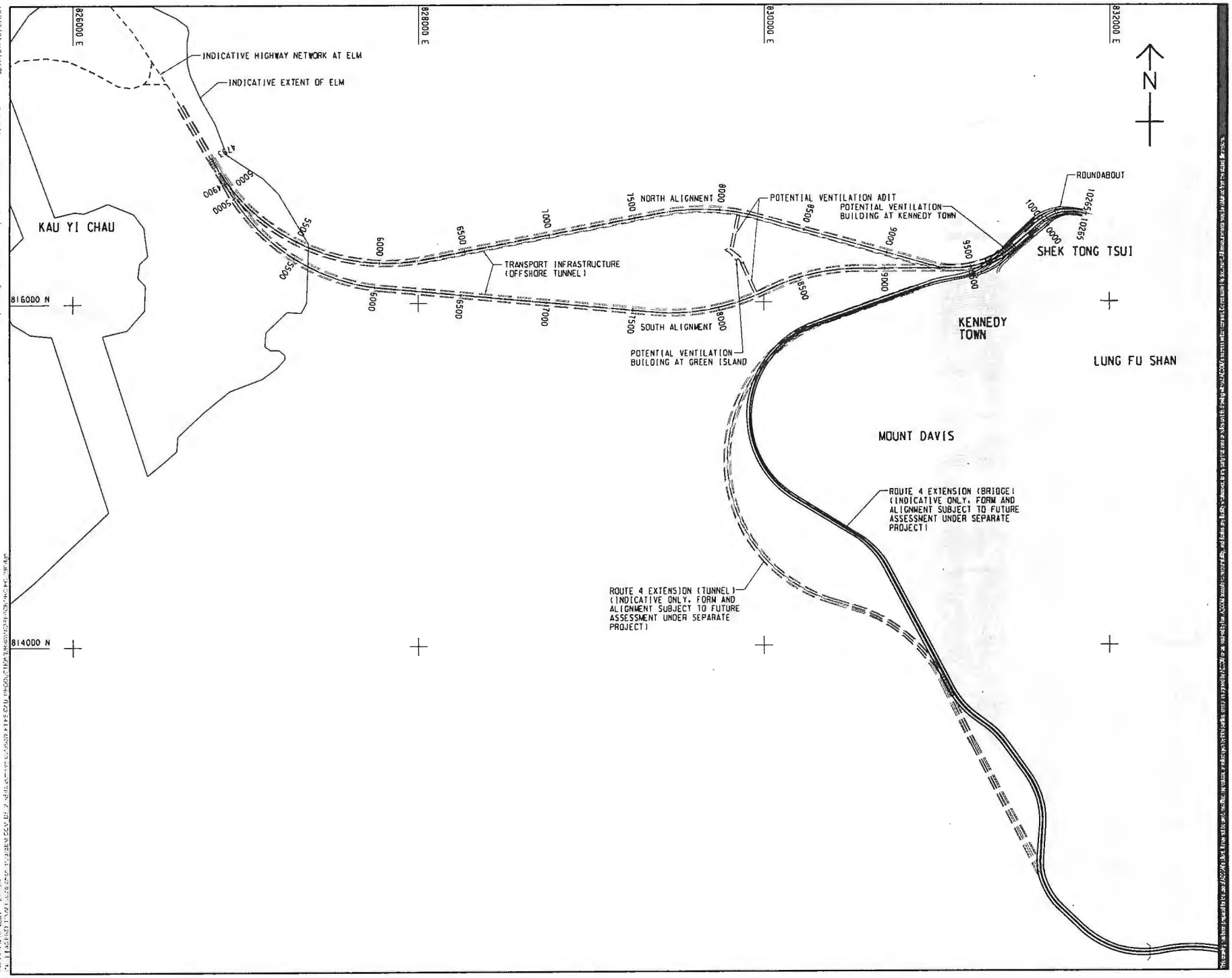
PROJECT NO.: 60438078
AGREEMENT NO.: CE 11/2015 (HY)

SHEET TITLE

PREFERRED HIGHWAY SCHEME W/O ROUTE 4 EXTENSION

SHEET NUMBER

60438078/HC/FIGURE 5.1



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KEY PLAN

PROJECT NO. — AGREEMENT NO.

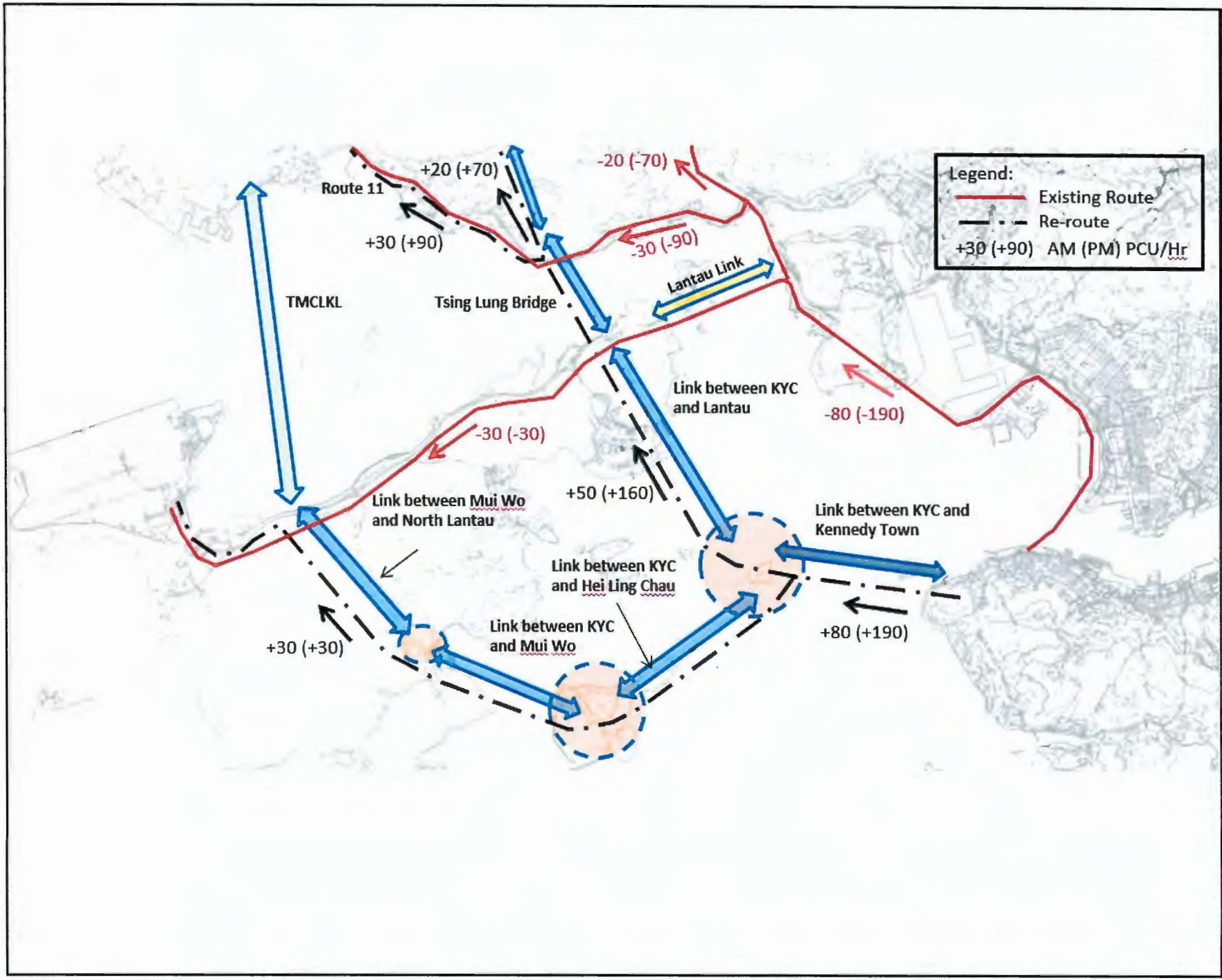
60438078 — CE 11/2015 (HY)

SHEET TITLE

PREFERRED HIGHWAY SCHEME WITH ROUTE 4 EXTENSION OVERALL LAYOUT PLAN

SHEET NUMBER

60438078/HC/FIGURE 5.2



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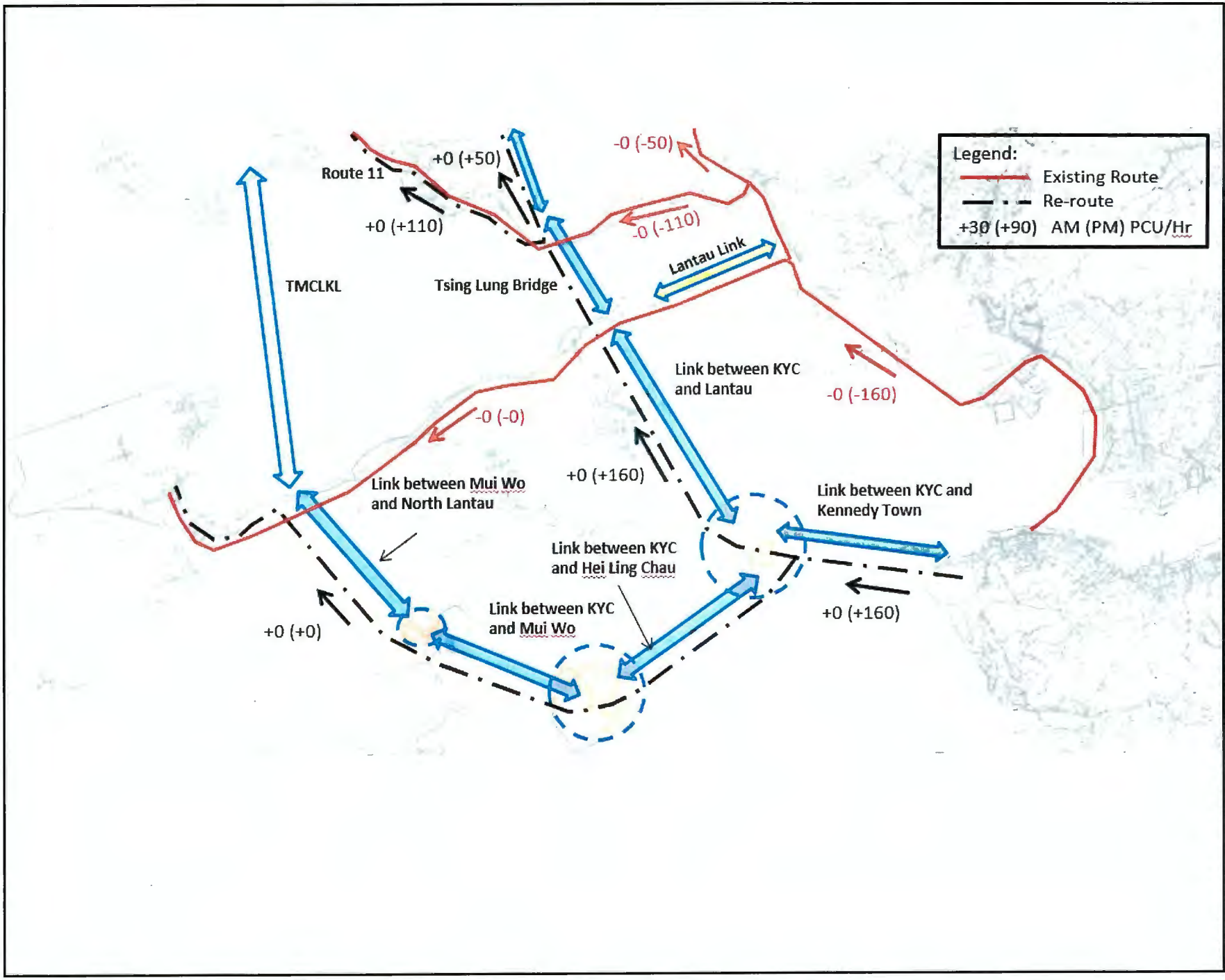
KEY PLAN

PROJECT NO. 60438078 **CONTRACT NO.** CE11/2015 (HY)

SHEET TITLE
Potentially Re-route for Bus Travelling from HKI to Lantau/NWNT

SHEET NUMBER
60438078/FIGURE 5.3



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PROJECT NO. **CONTRACT NO.**

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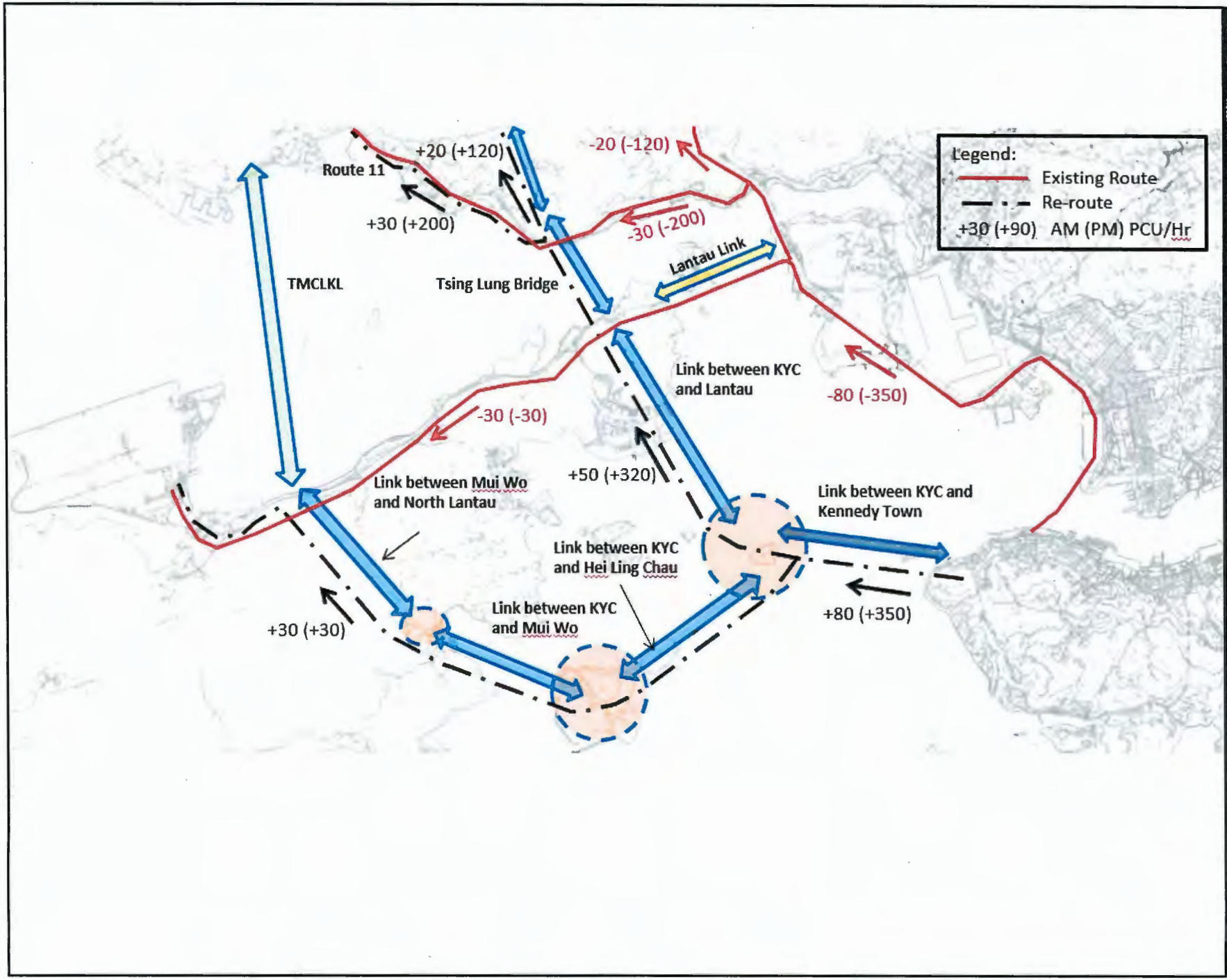
SHEET TITLE

Potentially Re-route for Residential Bus Travelling from HKI to Lantau/NWNT

SHEET NUMBER

60438078/FIGURE 5.4



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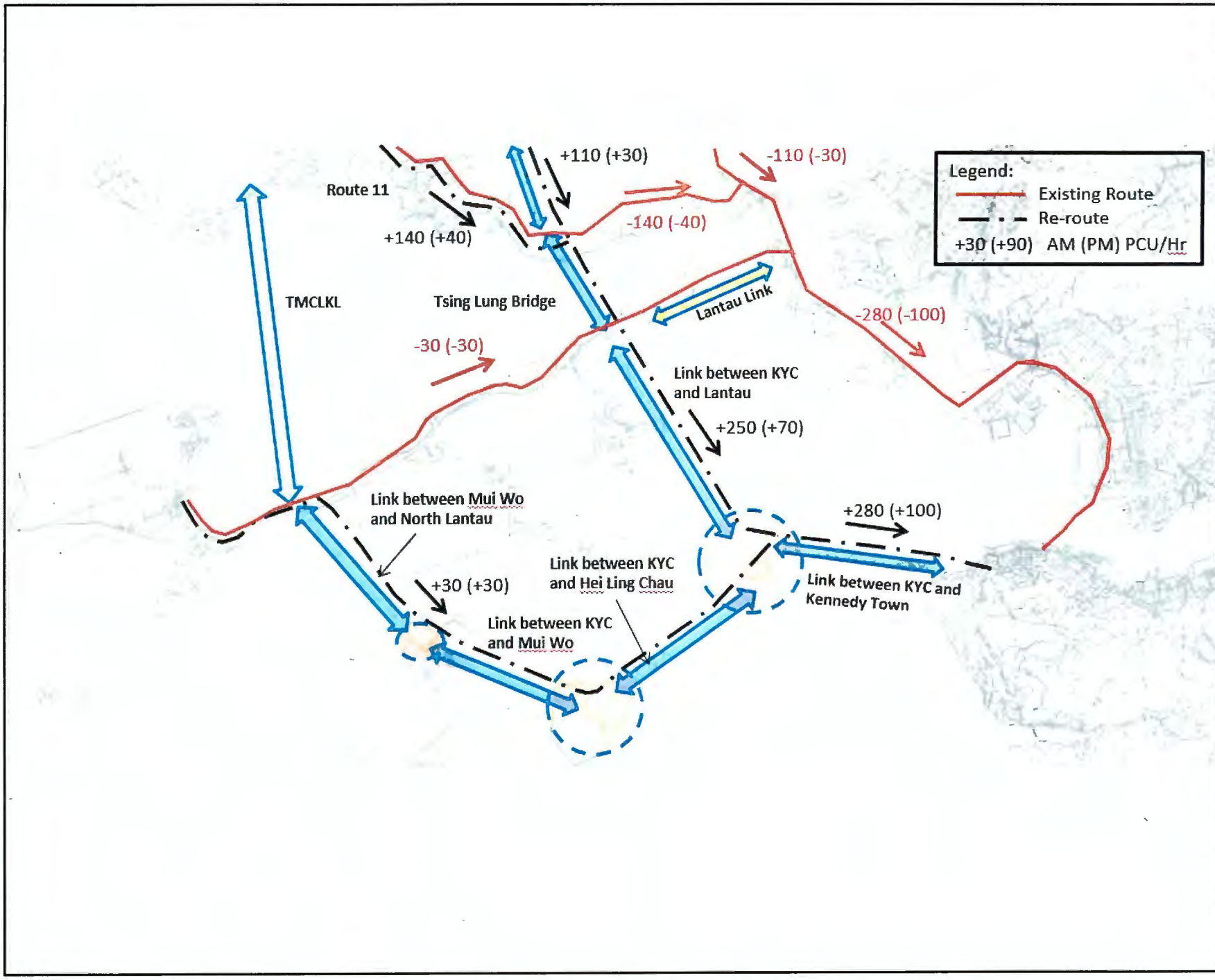
SHEET TITLE

Potentially Re-route for Bus and Residential Bus Travelling from HKI to Lantau/NWNT

SHEET NUMBER

60438078/FIGURE 5.5



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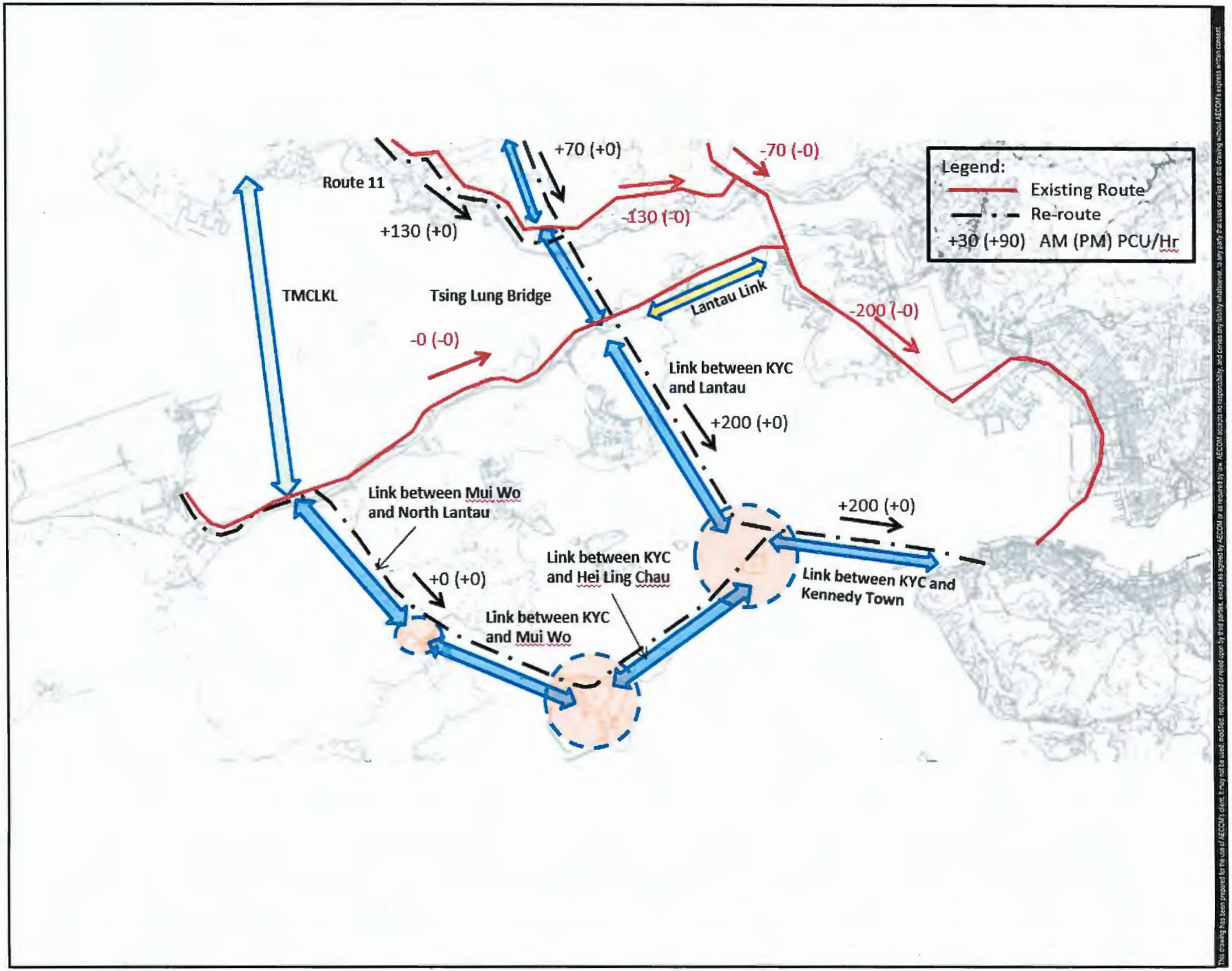
SHEET TITLE

Potentially Re-route for Bus Travelling from Lantau/NWNT to HKI

SHEET NUMBER

60438078/FIGURE 5.6



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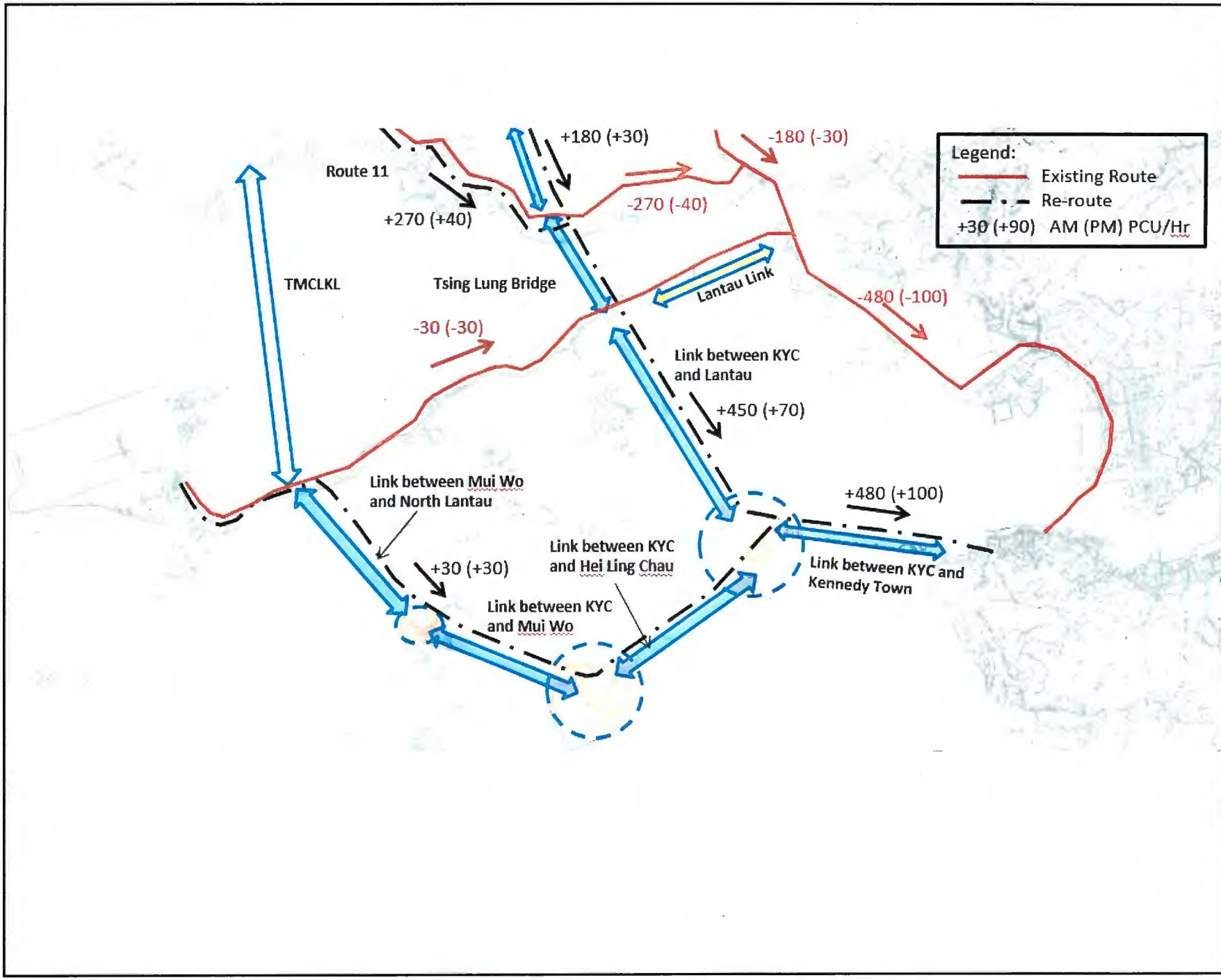
60438078 CE11/2015 (HY)

SHEET TITLE

Potentially Re-route for Residential Bus Travelling from Lantau/NWNT to HKI

SHEET NUMBER

60438078/FIGURE 5.7



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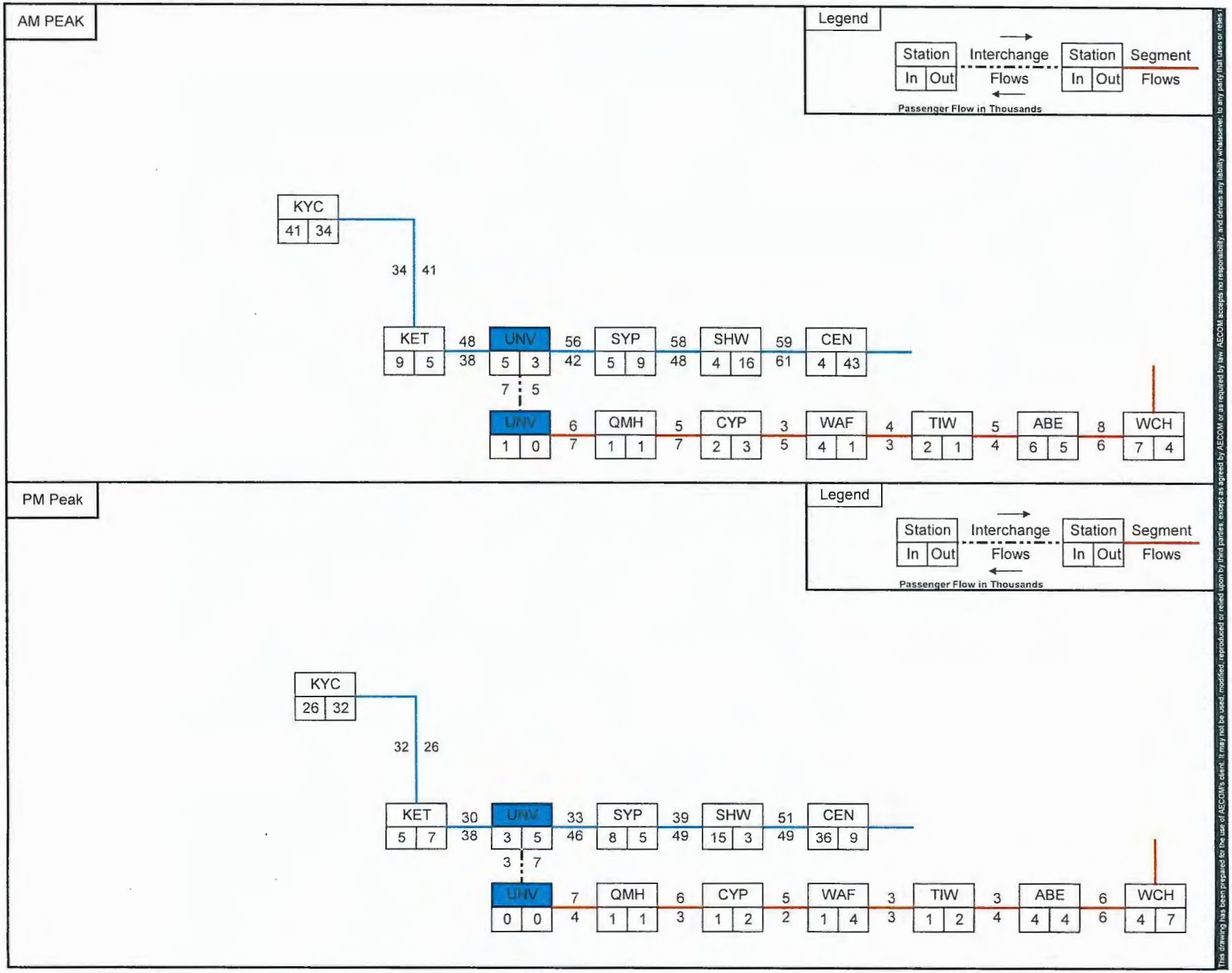
60438078 | CE11/2015 (HY)

SHEET TITLE
Potentially Re-route for Bus and Residential BusTravelling from Lantau/NWNT to HKI

SHEET NUMBER
60438078/FIGURE 5.8



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PROJECT NO. 60438078

CONTRACT NO. CE11/2015 (HY)

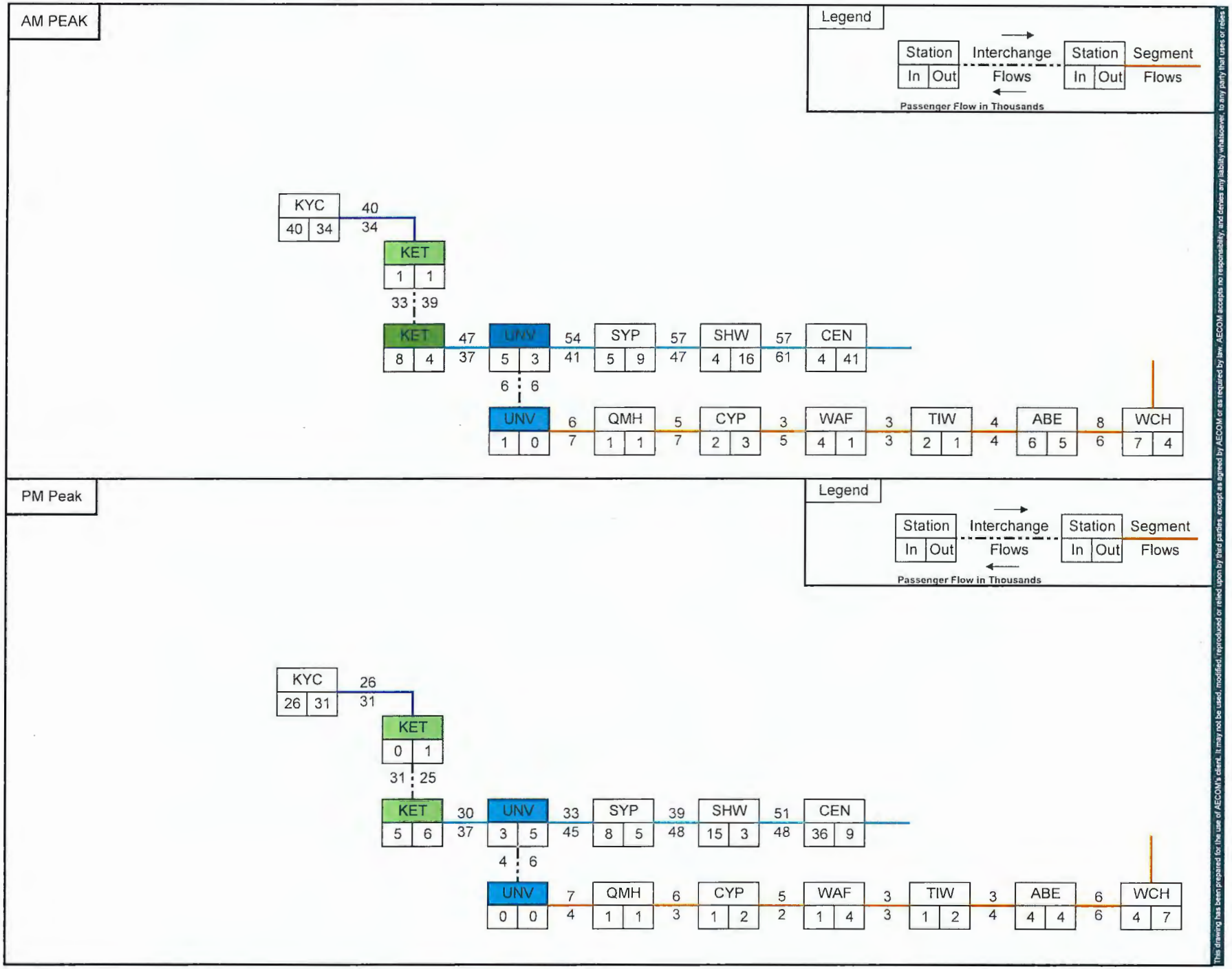
SHEET TITLE

2041 Patronage Forecast of Railway Scheme Option A for Base Case (without NTN)

Peak Flows

SHEET NUMBER

60438078/Figure 5.9



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PROJECT NO. 60438078

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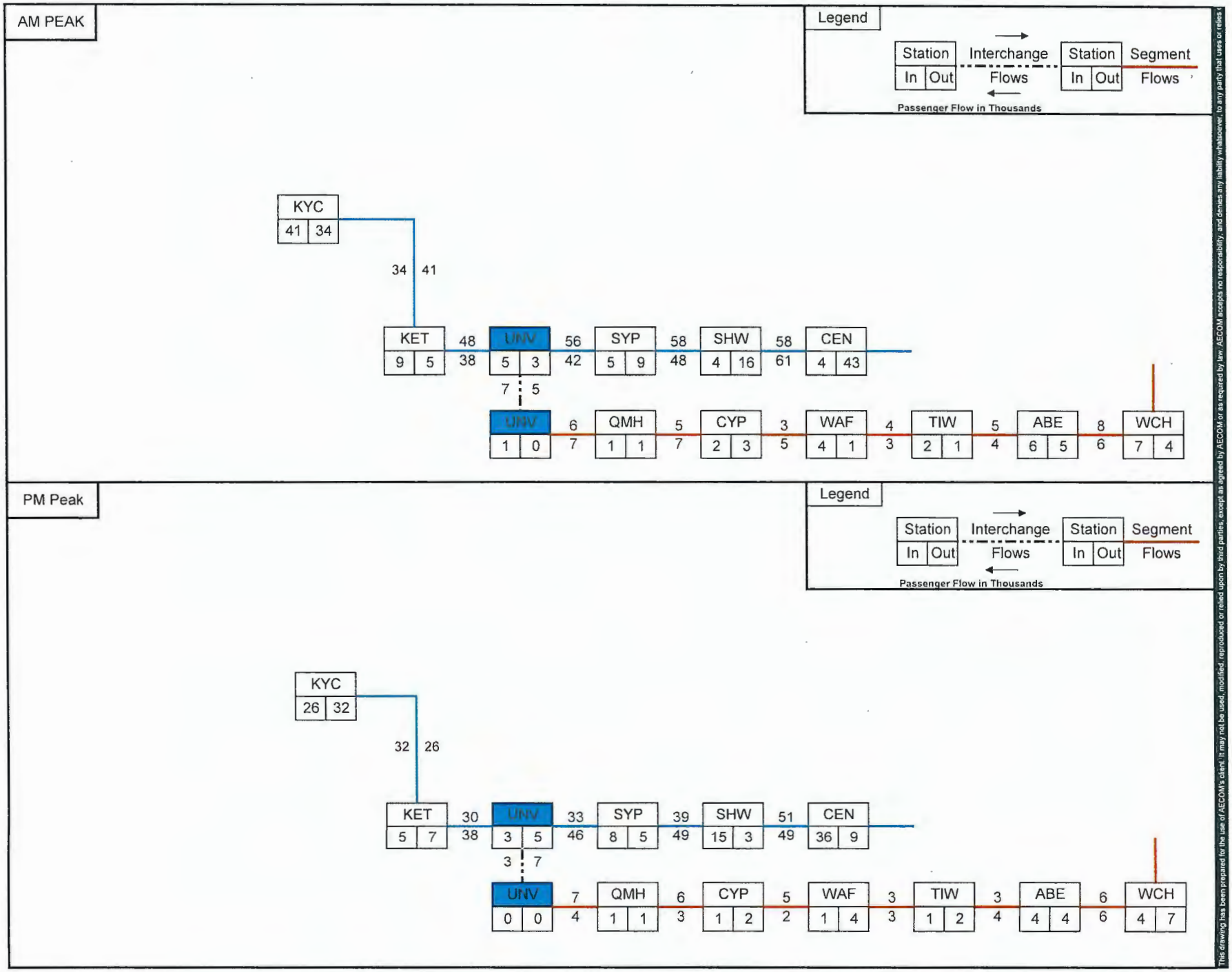
SHEET TITLE

2041 Patronage Forecast of Railway Scheme Option C for Base Case (without NTN) Peak Flows

SHEET NUMBER

60438078/Figure 5.10



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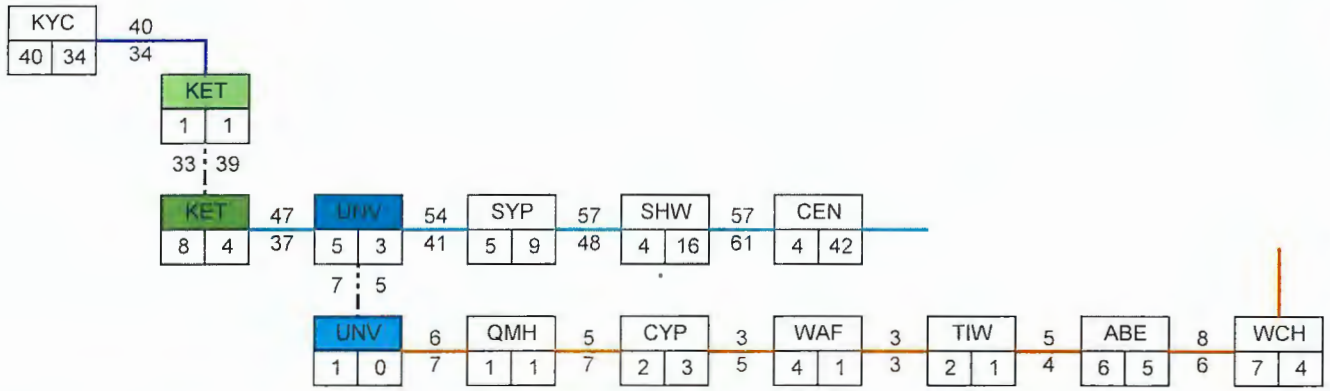
SHEET TITLE
2041 Patronage Forecast of Railway Scheme Option A for Base Case (with NTN)
Peak Flows

SHEET NUMBER
60438078/Figure 5.11

AM PEAK



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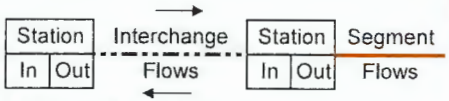
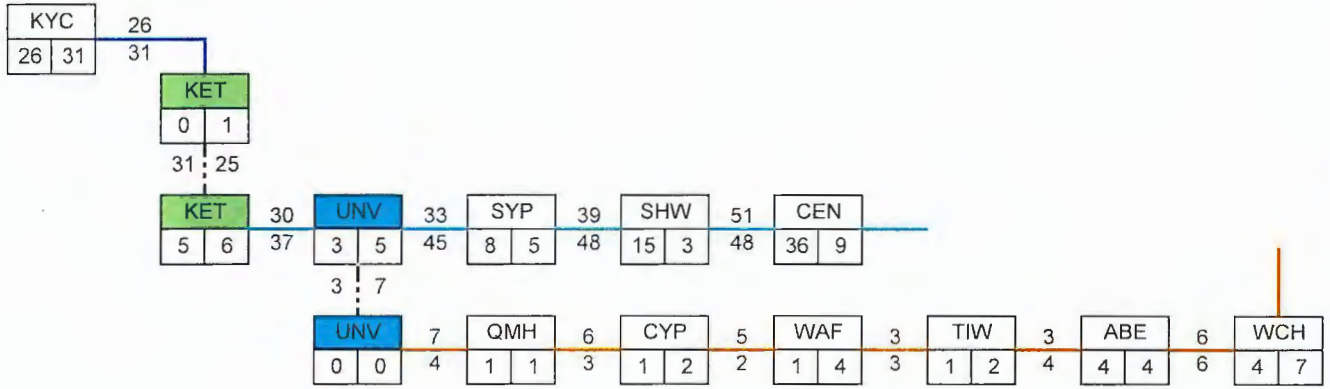


Passenger Flow in Thousands

PM Peak



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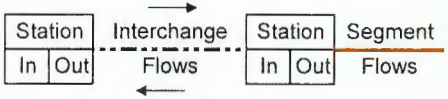

Passenger Flow in Thousands

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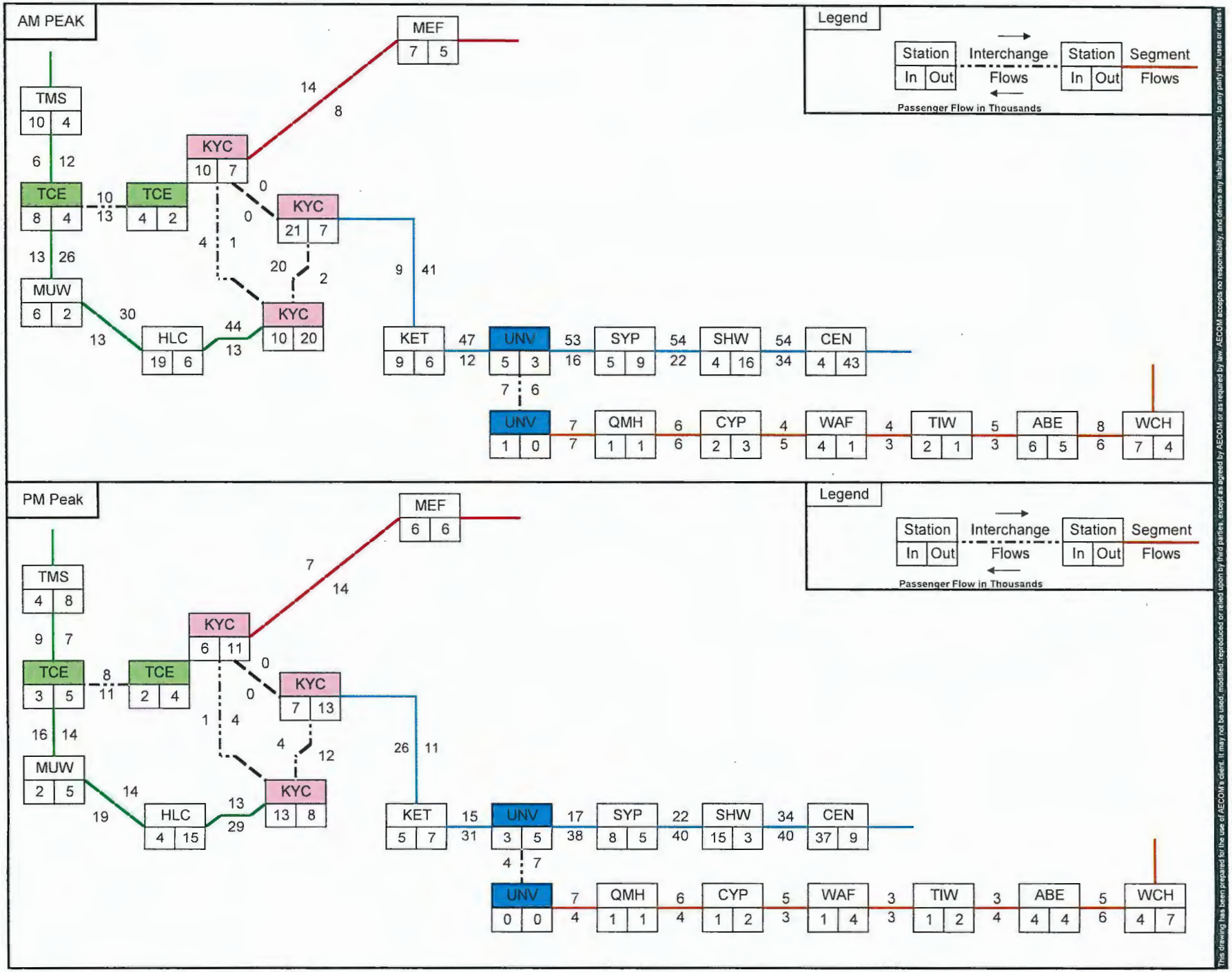
SHEET TITLE

2041 Patronage Forecast of Railway Scheme Option C for Base Case (with NTN) Peak Flows

SHEET NUMBER

60438078/Figure 5.12



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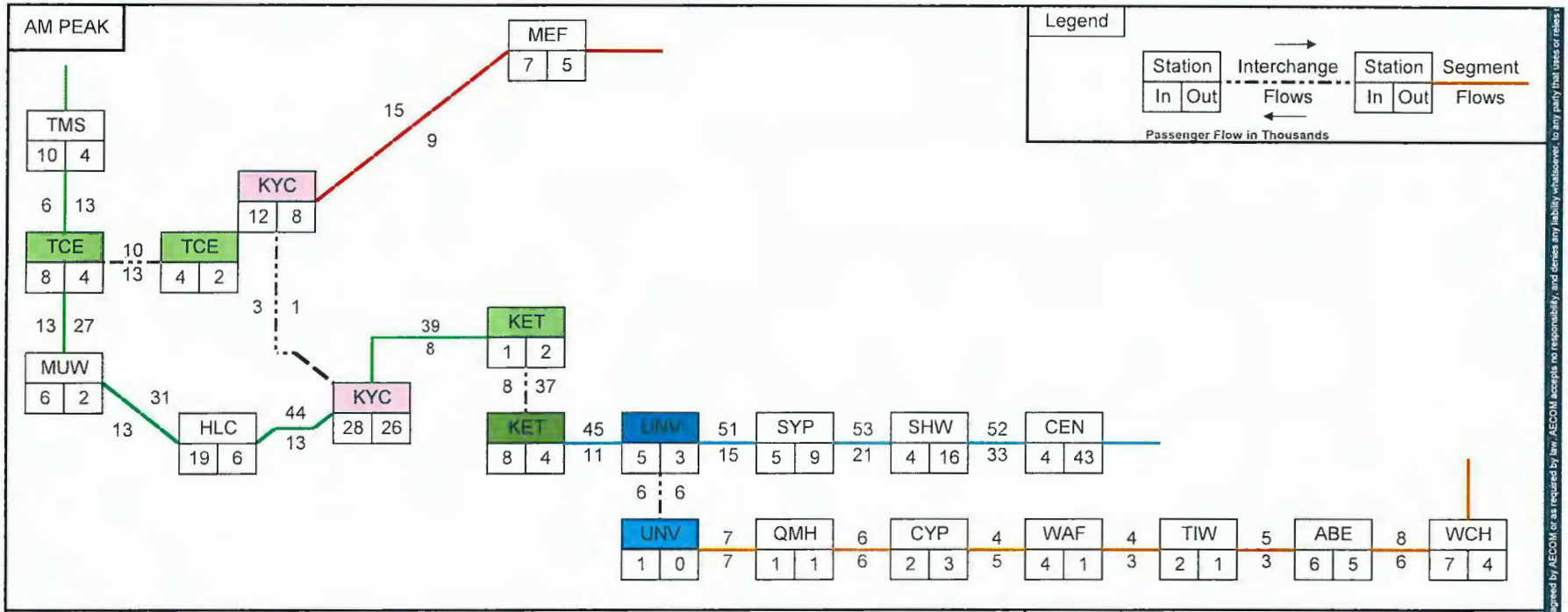
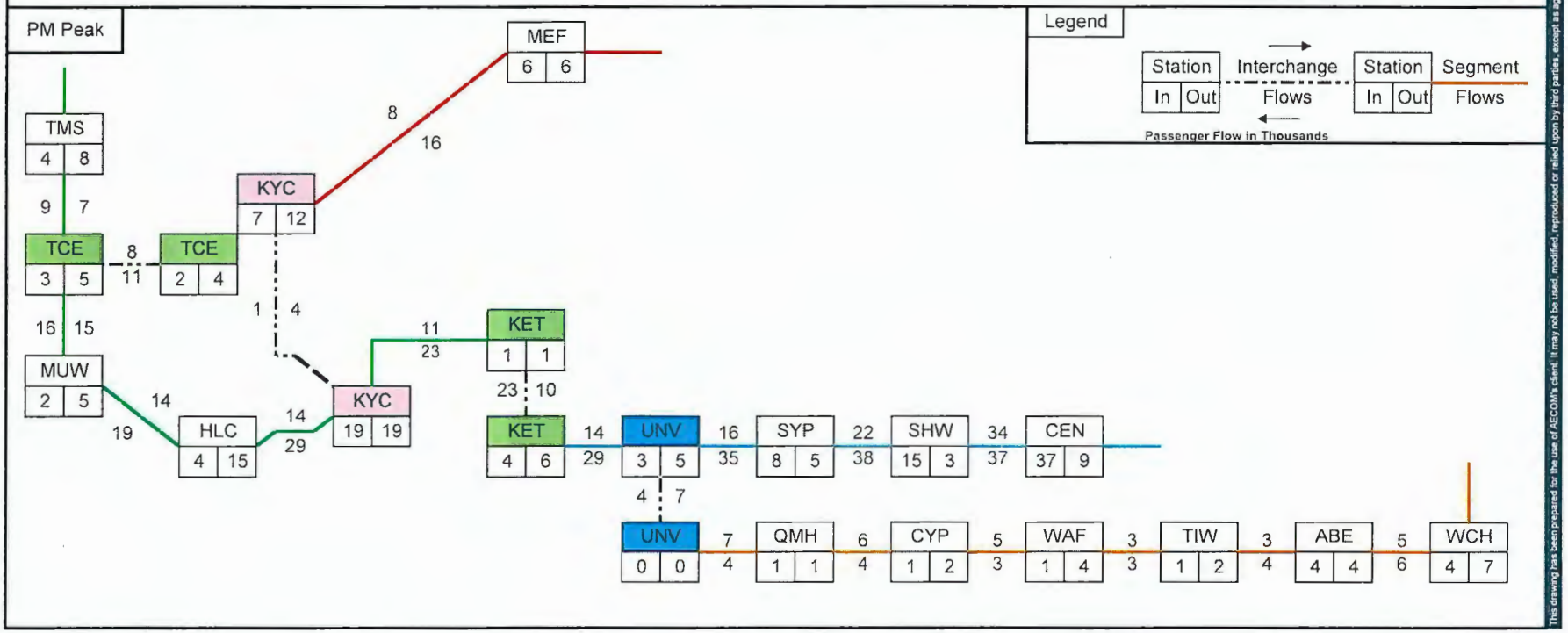
SHEET TITLE
2041 Patronage Forecast of Railway Scheme Option A for Full Network (without NTN)
Peak Flows

SHEET NUMBER
60438078/Figure 5.13





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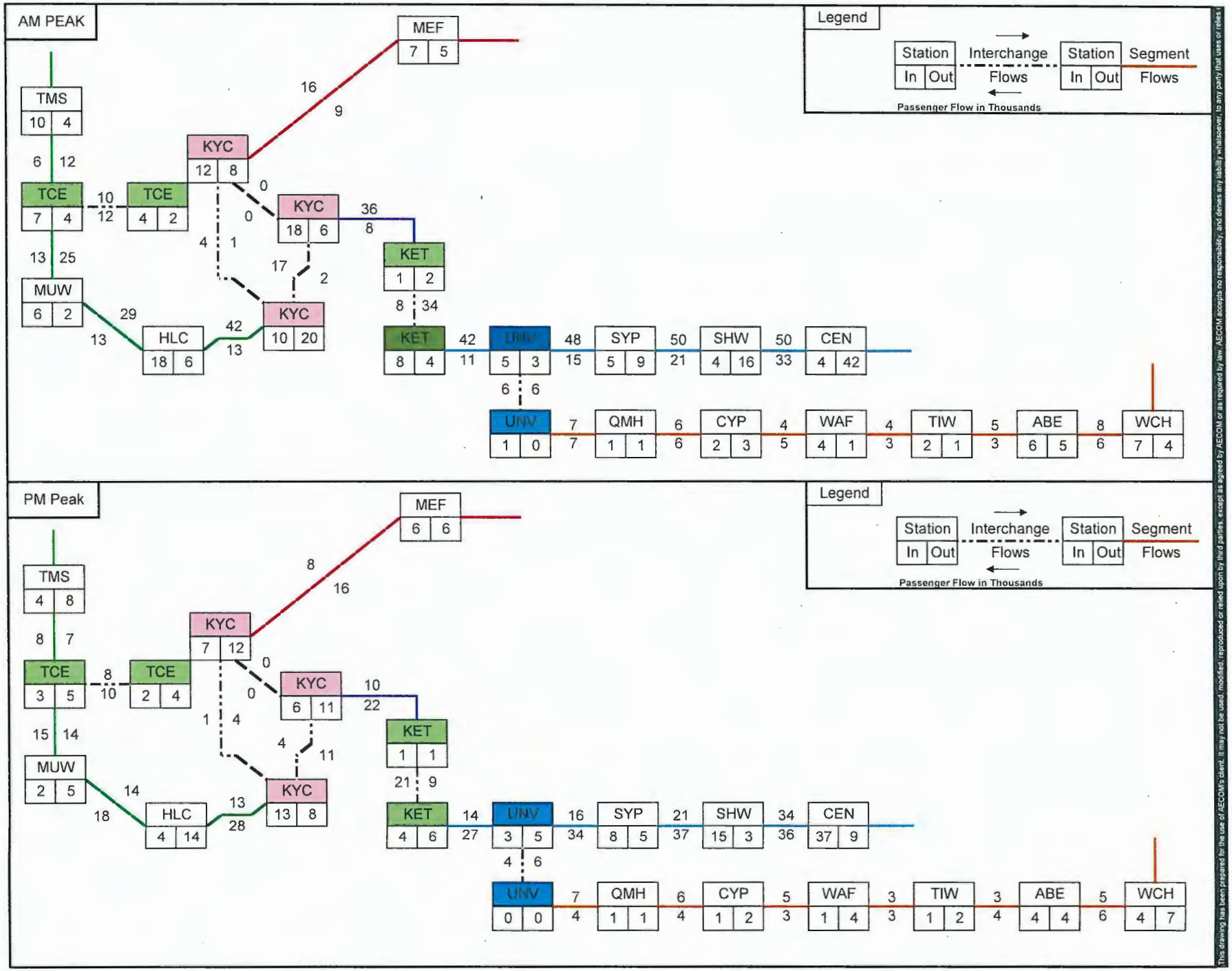
SHEET TITLE
2041 Patronage Forecast of Railway Scheme Option B for Full Network (without NTN) Peak Flows

SHEET NUMBER
60438078/Figure 5.14



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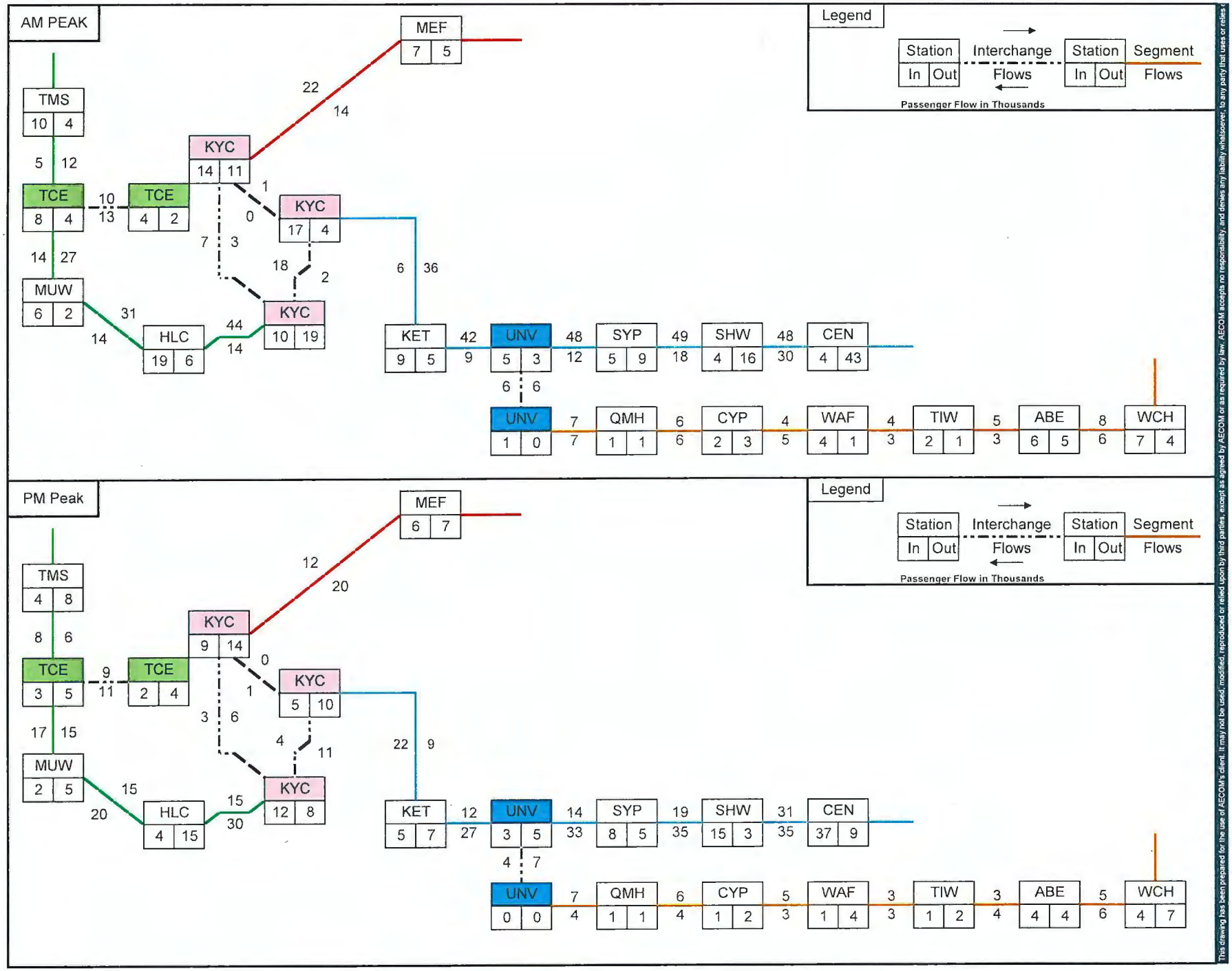
SHEET TITLE
2041 Patronage Forecast of Railway Scheme Option C for Full Network (without NTN)
Peak Flows

SHEET NUMBER
60438078/Figure 5.15



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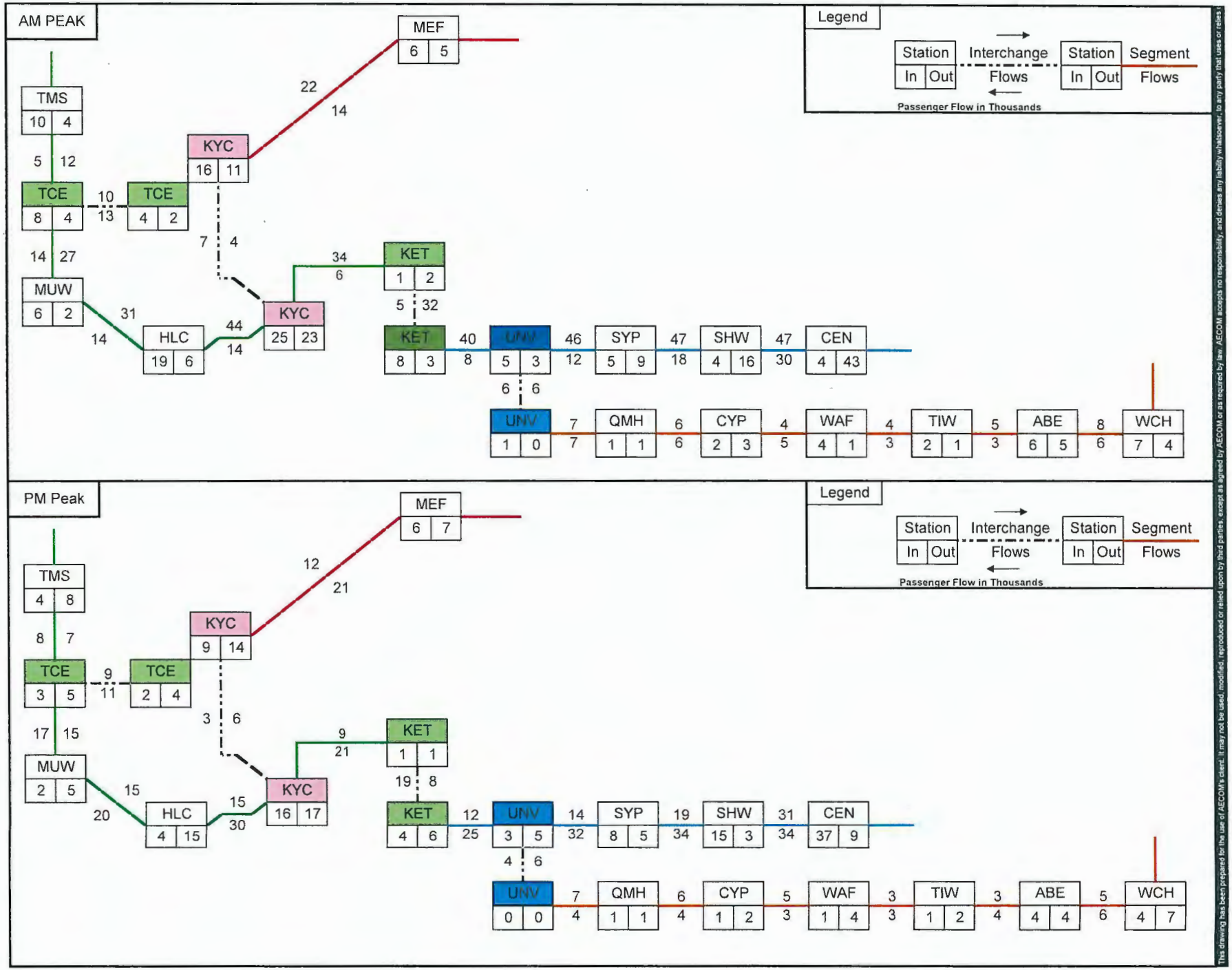
SHEET TITLE

2041 Patronage Forecast of Railway Scheme Option A for Full Network (with NTN)

Peak Flows

SHEET NUMBER

60438078/Figure 5.16



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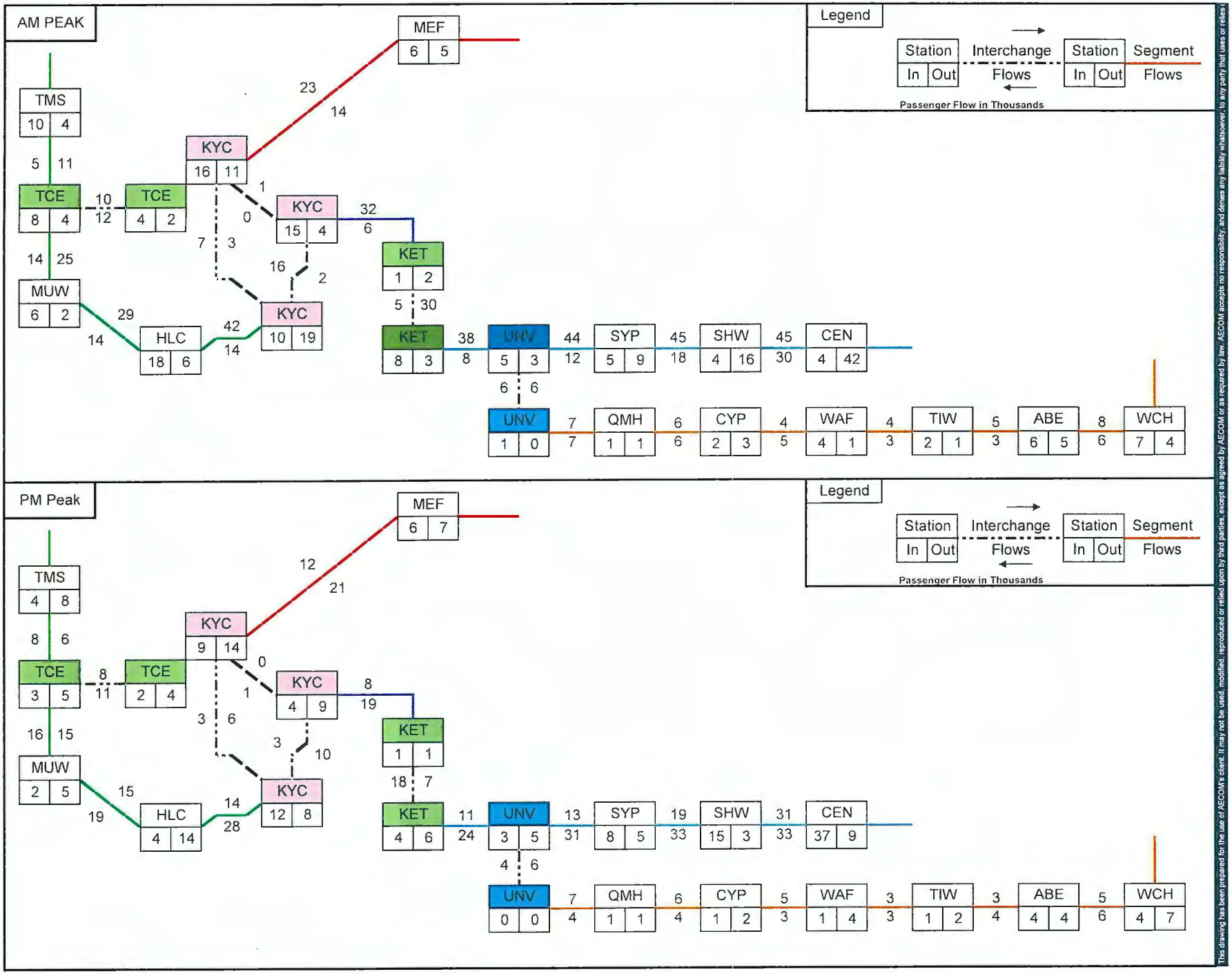
SHEET TITLE
2041 Patronage Forecast of Railway Scheme Option B for Full Network (with NTN)
Peak Flows

SHEET NUMBER
60438078/Figure 5.17



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SHEET TITLE
2041 Patronage Forecast of Railway Scheme Option C for Full Network (with NTN)
Peak Flows

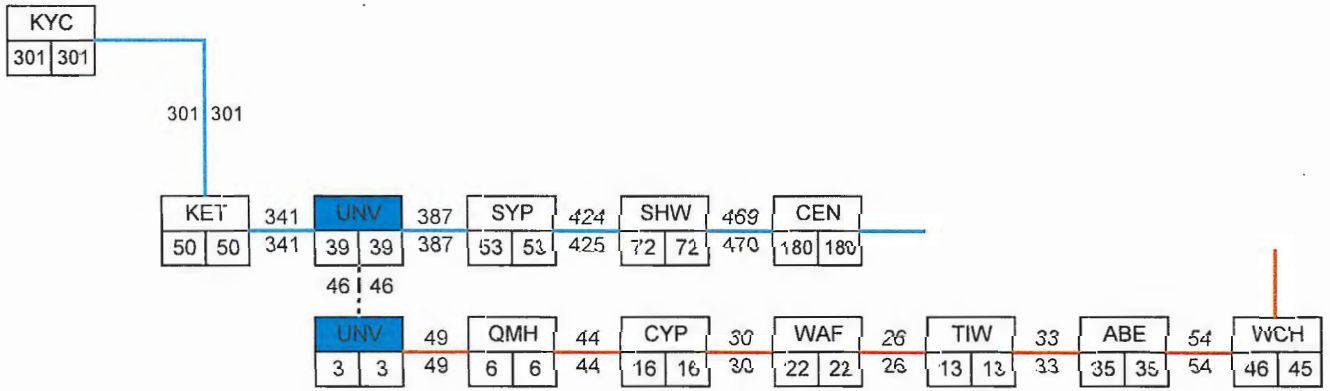
SHEET NUMBER
60438078/Figure 5.18

Daily

Legend

Station		Interchange Flows	Station		Segment Flows
In	Out		In	Out	

Passenger Flow in Thousands



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CLIENT

CEDD 土木工程拓展署 Civil Engineering and Development Department

CONSULTANT

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KEY PLAN

PROJECT NO. 60438078

CONTRACT NO. CE11/2015 (HY)

SHEET TITLE

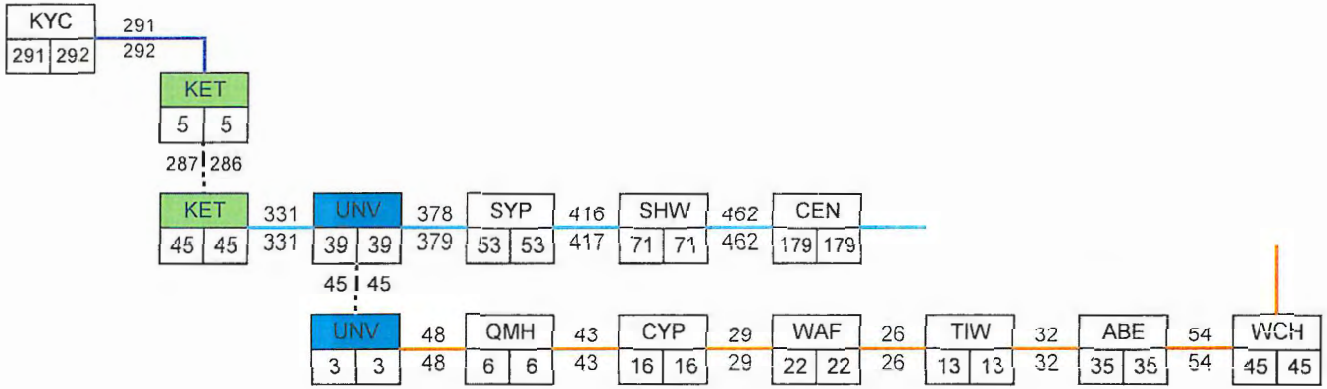
2041 Patronage Forecast of Railway Scheme Option A for Base Case (without NTN)

Dailly Flows

SHEET NUMBER

60438078/Figure 5.19

Daily



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PROJECT NO. 60438078

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SHEET TITLE

2041 Patronage Forecast of Railway Scheme Option C for Base Case (without NTN)

Dailly Flows

SHEET NUMBER

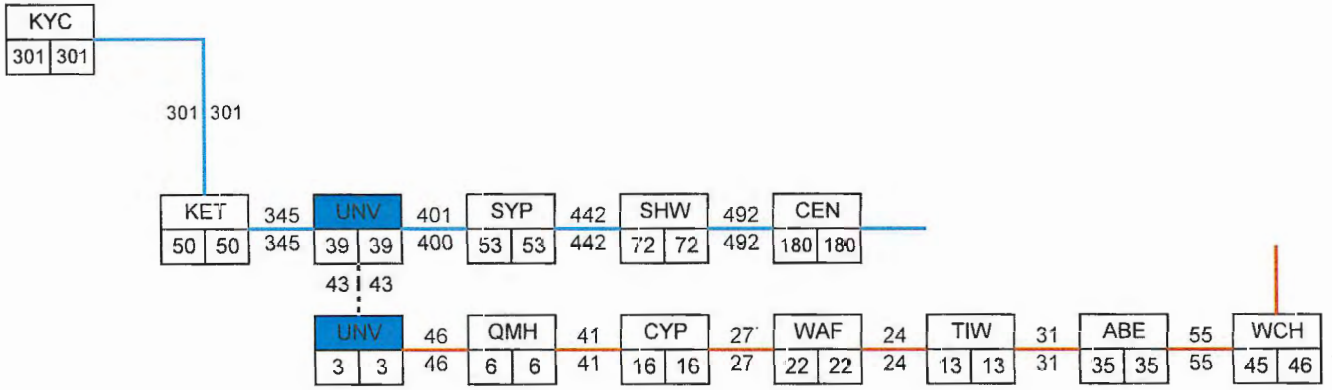
60438078/Figure 5.20

Daily

Legend

Station		Interchange	Station		Segment
In	Out	Flows	In	Out	Flows

Passenger Flow in Thousands



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SHEET TITLE

2041 Patronage Forecast of Railway Scheme Option A for Base Case (with NTN)

Dailly Flows

SHEET NUMBER

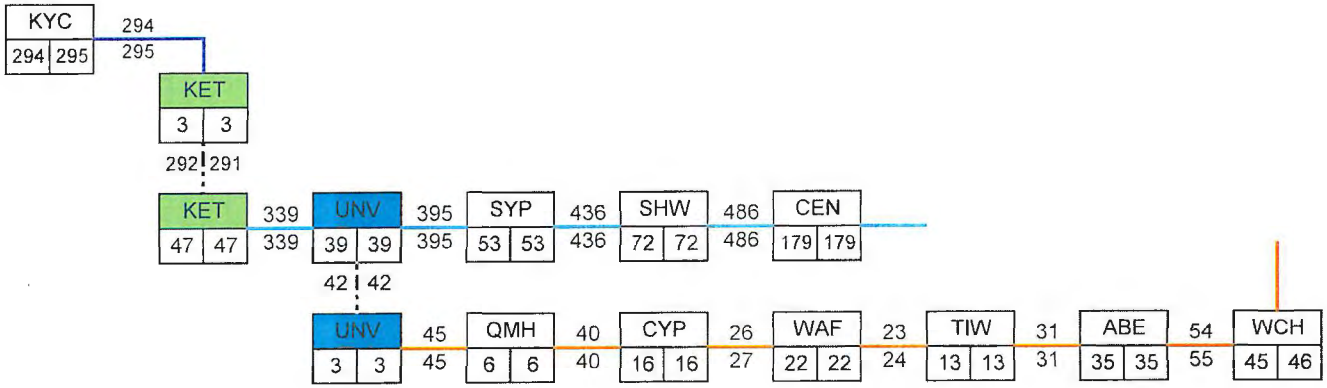
60438078/Figure 5.21

Daily

Legend

Station In Out | Interchange Flows | Station In Out | Segment Flows

Passenger Flow in Thousands



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PROJECT NO. 60438078

CONTRACT NO. CE11/2015 (HY)

SHEET TITLE

2041 Patronage Forecast of Railway Scheme Option C for Base Case (with NTN)

Dailly Flows

SHEET NUMBER

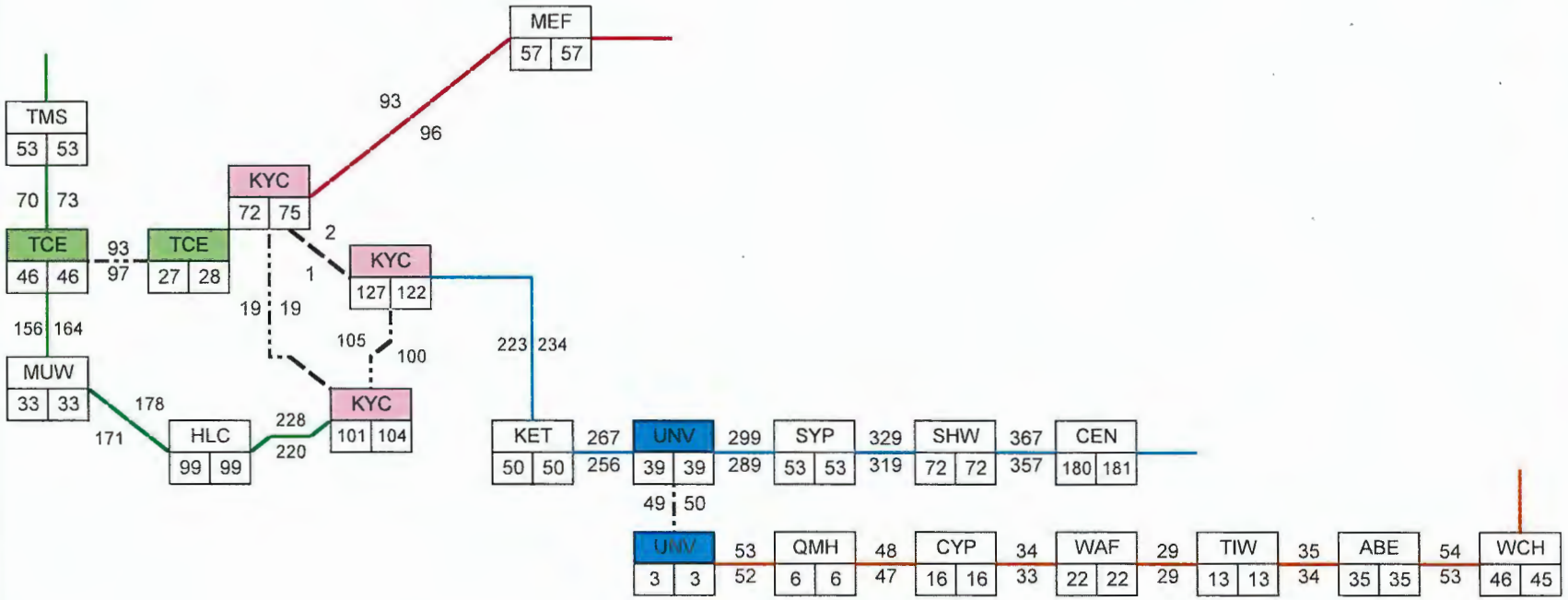
60438078/Figure 5.22

Daily

Legend

Station In | Out — Interchange Flows → ← — Station In | Out — Segment Flows

Passenger Flow in Thousands



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SHEET TITLE

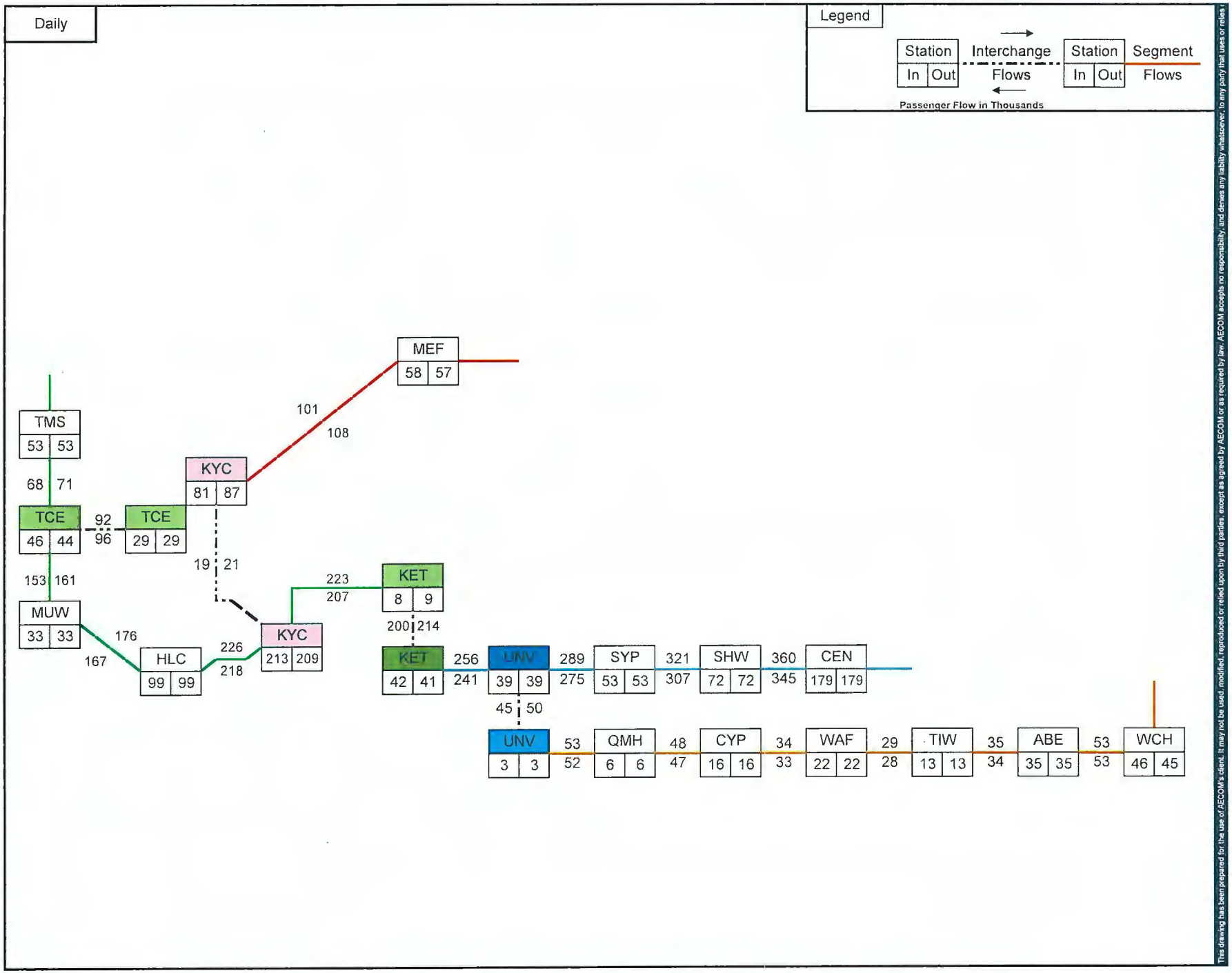
2041 Patronage Forecast of Railway Scheme Option A for Full Network (without NTN)

Dailly Flows

SHEET NUMBER

60438078/Figure 5.23

Daily



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SHEET TITLE

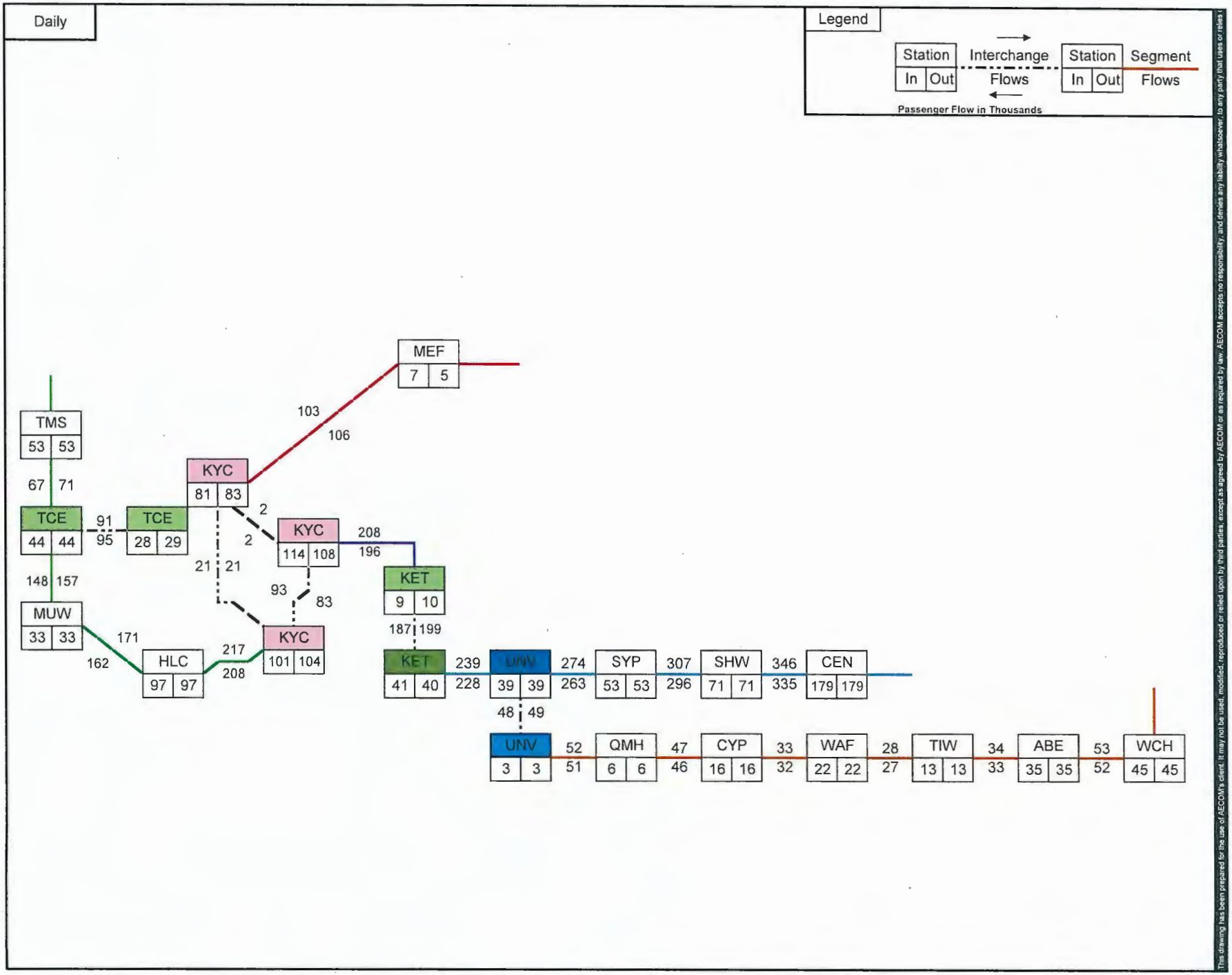
2041 Patronage Forecast of Railway Scheme Option B for Full Network (without NTN)

Dailly Flows

SHEET NUMBER

60438078/Figure 5.24

Daily



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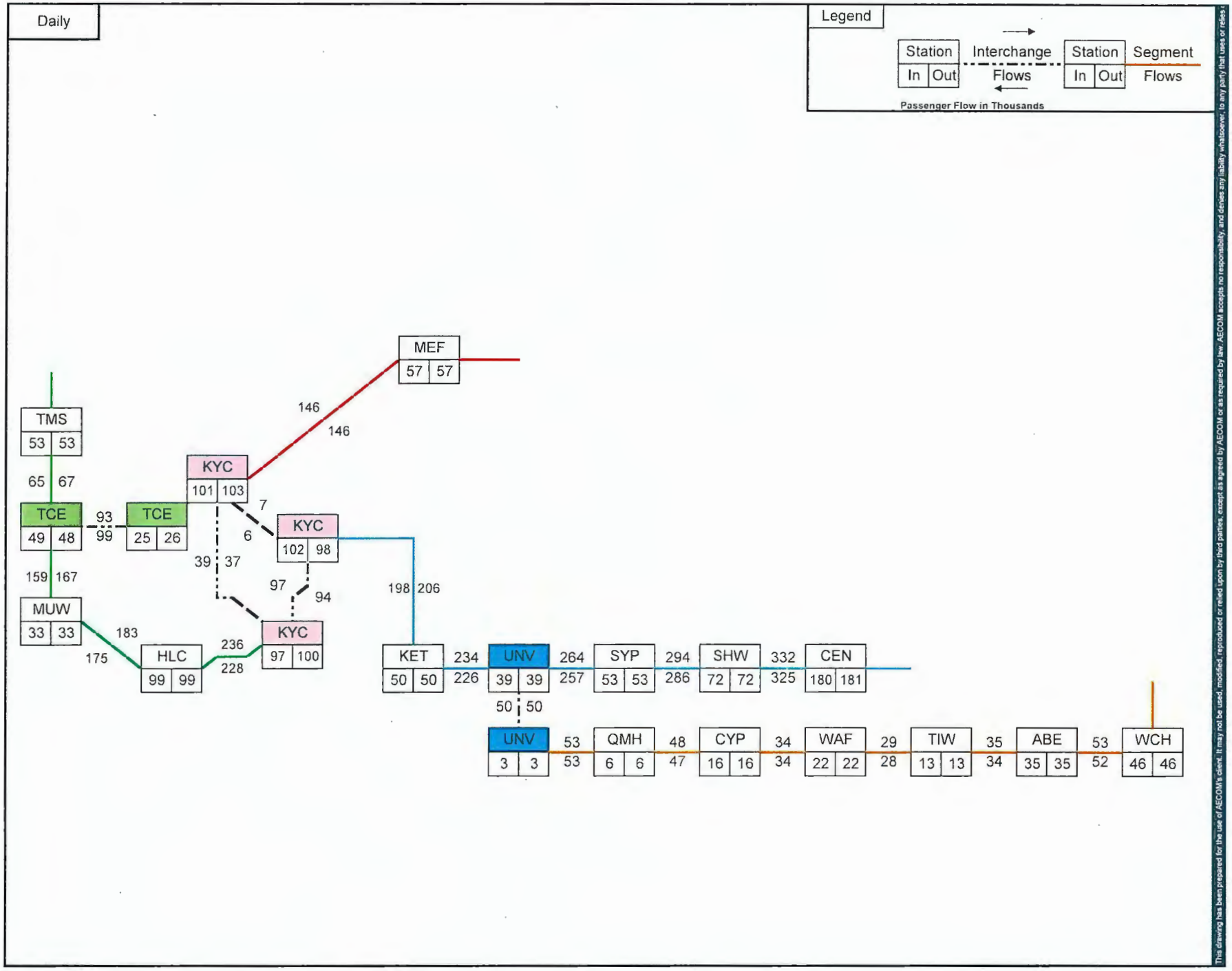
CONTRACT NO. CE11/2015 (HY)

SHEET TITLE
2041 Patronage Forecast of Railway Scheme Option C for Full Network (without NTN)
Dailly Flows

SHEET NUMBER
60438078/Figure 5.25

Daily



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SHEET TITLE

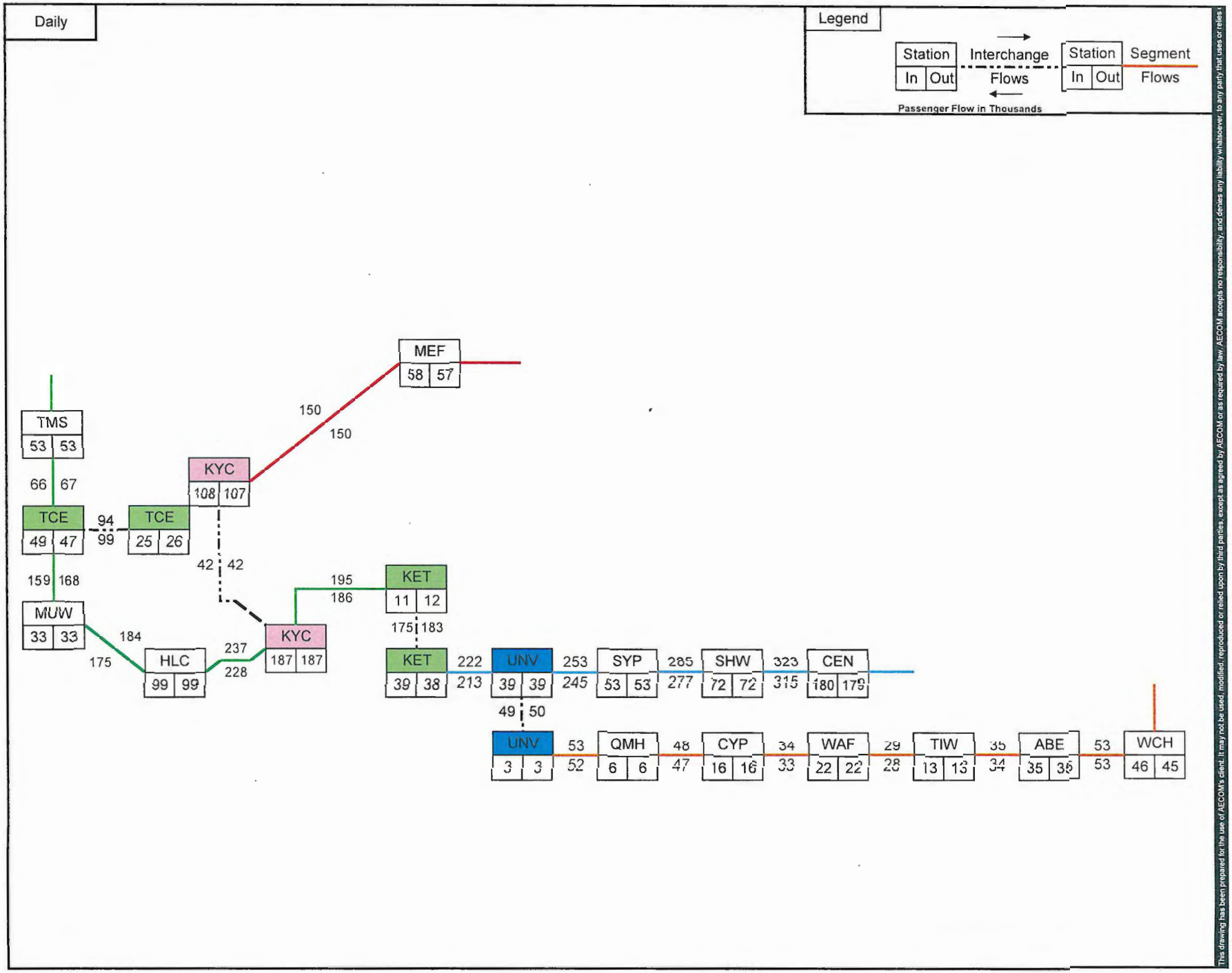
2041 Patronage Forecast of Railway Scheme Option A for Full Network (with NTN)

Dailly Flows

SHEET NUMBER

60438078/Figure 5.26

Daily



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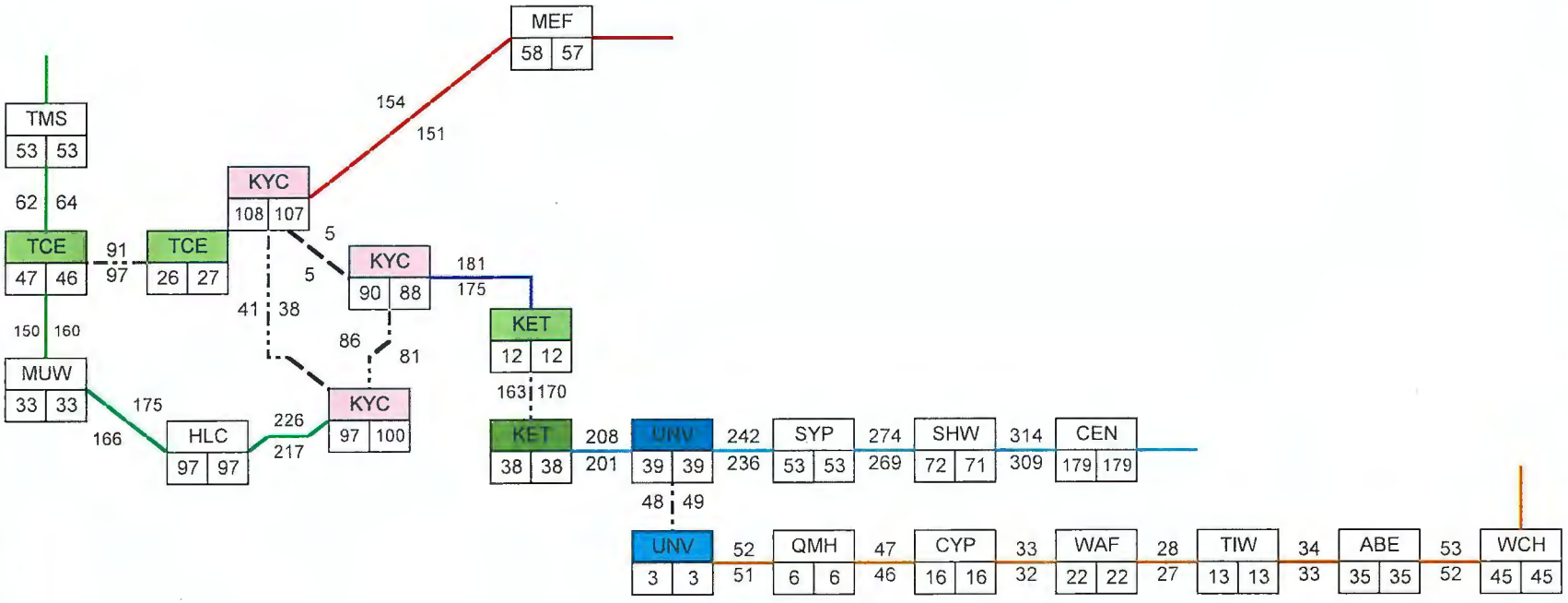
SHEET TITLE
2041 Patronage Forecast of Railway Scheme Option B for Full Network (with NTN)
Dailly Flows

SHEET NUMBER
60438078/Figure 5.27

Daily



Legend

Station		Interchange Flows	Station		Segment Flows
In	Out		In	Out	

Passenger Flow in Thousands

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SHEET TITLE

2041 Patronage Forecast of Railway Scheme Option C for Full Network (with NTN)

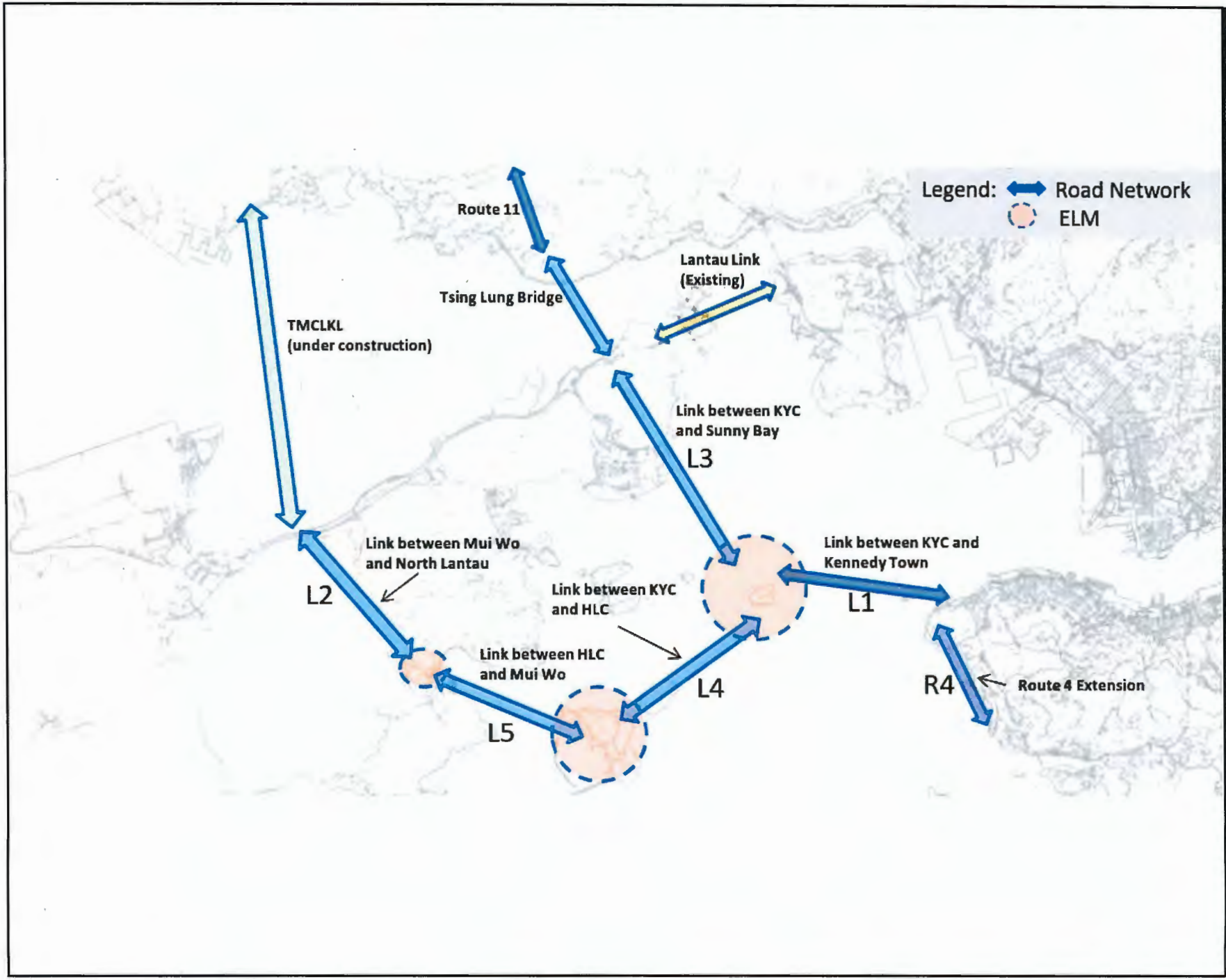
Dailly Flows

SHEET NUMBER

60438078/Figure 5.28

Appendix A

2041 Traffic Forecast of Various Model Run
(Scenario Number 1 to 24)



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Index Plan

SHEET NUMBER
60438078/Appendix A

Scenario			1		3		4		6		7		9		10		12		13		15		16		18		19		21		22		24	
Development Phasing			basic		basic		basic		basic		basic		basic		basic		basic		basic		basic		basic		basic		basic		basic		basic		basic	
ELM Landuse Options			optA		optA		optA		optA		optA		optA		optA		optA		optB		optB		optB		optB		optB		optB		optB		optB	
NTN			woNTN		woNTN		woNTN		woNTN		wNTN		wNTN		wNTN		wNTN		woNTN		woNTN		woNTN		woNTN		wNTN		wNTN		wNTN		wNTN	
R4E			wR4E		wR4E		woR4E		weR4E		wR4E		wR4E		woR4E		woR4E		wR4E		wR4E		woR4E		woR4E		wR4E		wR4E		woR4E		woR4E	
Railway Scheme Options			A		C		A		C		A		C		A		C		A		C		A		C		A		C		A		C	
Toll Level	between Kau Yi Chan and Kennedy Town		100%		100%		100%		100%		100%		100%		100%		100%		100%		100%		100%		100%		100%		100%		100%		100%	
	between Kau Yi Chan and Sunny Bay		100%		100%		100%		100%		100%		100%		100%		100%		100%		100%		100%		100%		100%		100%		100%		100%	
	between Mui Wo and North Lantau		50%		50%		50%		50%		50%		50%		50%		50%		50%		50%		50%		50%		50%		50%		50%		50%	
	between Hei Ling Chau and Mui Wo		100%		100%		100%		100%		100%		100%		100%		100%		100%		100%		100%		100%		100%		100%		100%		100%	
Link Flows																																		
			2041		2041		2041		2041		2041		2041		2041		2041		2041		2041		2041		2041		2041		2041		2041		2041	
road name	Bound	capacity	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm
L1	ELM to KT	5400	5450	3150	5450	3100	5350	3050	5350	3050	5150	3050	5150	3000	5050	2950	5050	2950	5900	2900	5900	2900	5800	2800	5750	2800	5650	2800	5600	2800	5500	2700	5500	2700
	KT to ELM	5400	4450	4500	4450	4500	4300	4450	4250	4400	4000	4400	4000	4400	3850	4300	3850	4300	4000	4650	4000	4600	3850	4550	3850	4550	3650	4500	3650	4500	3500	4450	3500	4450
L2	Mui Wo to North Lantau	5400																																
	North Lantau to Mui Wo	5400																																
L3	Kau Yi Chau to Sunny Bay	5400	5700	7400	5700	7400	5600	7350	5600	7350	5450	7350	5450	7350	5350	7300	5350	7300	5850	7100	5800	7100	5750	7050	5750	7050	5500	7000	5500	7000	5450	6950	5400	6950
	Sunny Bay to Kau Yi Chau	5400	7550	5050	7550	5000	7450	5000	7500	4950	7350	4900	7300	4850	7250	4850	7250	4800	7300	5100	7300	5050	7250	5050	7250	5000	7100	5000	7100	4950	7000	4900	7050	4900
L4	Hei Ling Chau to Kau Yi Chau	5400																																
	Kau Yi Chau to Hei Ling Chau	5400																																
L5	Mui Wo to Hei Ling Chau	5400																																
	Hei Ling Chau to Mui Wo	5400																																
R4	NB	3600	900	800	900	800					800	750	800	750					700	800	750	800					700	750	750	750				
	SB	3600	1150	600	1150	600					1050	550	1050	550					1200	600	1200	600					1100	550	1100	550				
Road Link connecting ELM and Route 4	to ELM	1800	650	300	650	300					650	300	650	300					700	300	700	300					700	300	700	300				
	to Souther	1800	650	500	650	500					600	450	600	450					600	500	600	500					550	450	550	500				
Pok Fu Lam Road	NB	3400	2350	1250	2350	1250	3000	1900	3000	1900	2150	1250	2200	1250	2750	1850	2750	1850	2450	1250	2450	1250	3000	1900	2950	1900	2250	1200	2200	1200	2750	1850	2750	1850
	SB	2400	700	650	700	650	1150	1000	1150	1000	650	600	650	600	1050	950	1050	950	700	650	700	650	1150	1000	1150	1000	650	600	650	600	1050	900	1050	950
Aberdeen Tunnel	NB	3600	3250	2400	3250	2400	3400	2500	3350	2500	3100	2300	3100	2300	3250	2400	3250	2400	3300	2400	3300	2400	3400	2500	3400	2500	3150	2300	3150	2300	3250	2400	3250	2400
	SB	3600	2600	2350	2600	2350	2900	2500	2900	2500	2500	2300	2500	2300	2800	2450	2800	2450	2600	2350	2600	2350	2900	2500	2900	2500	2500	2300	2500	2300	2800	2450	2800	2450
Tsing Ma Bridge	EB	6100	5600	6850	5600	6850	5600	6900	5600	6950	5500	7000	5500	7000	5450	7000	5450	7000	5600	6800	5600	6900	5550	6750	5550	6900	5550	6900	5550	6900	5500	7000	5500	7000
	WB	6100	5550	6250	5500	6250	5600	6200	5650	6200	5800	6600	5750	6550	5750	6550	5800	6550	5550	6300	5600	6300	5550	6250	5600	6300	5900	6600	5850	6600	5800	6600	5900	6550
Ting Kau Bridge	NB	6100	3750	5350	3750	5350	3750	5400	3750	5400	3700	5800	3750	5800	3700	5750	3700	5800	3800	5300	3750	5350	3800	5300	3750	5400	3750	5750	3750	5700	3700	5750	3700	5850
	SB	6100	6800	4800	6700	4800	6800	4800	6750	4850	6900	5150	6900	5100	6900	5100	6950	5100	6800	4800	6850	4850	6600	4850	6650	4900	6900	5100	6900	5150	6900	5150	6900	5100
V/C Ratio																																		
L1	ELM to KT	5400	1.01	0.58	1.01	0.58	0.99	0.57	0.99	0.56	0.96	0.56	0.95	0.56	0.94	0.55	0.93	0.54	1.09	0.53	1.09	0.53	1.08	0.52	1.07	0.52	1.04	0.52	1.04	0.51	1.02	0.50	1.02	0.50
	KT to ELM	5400	0.83	0.83	0.83	0.83	0.80	0.82	0.79	0.82	0.74	0.81	0.74	0.81	0.71	0.80	0.71	0.80	0.74	0.86	0.74	0.86	0.72	0.84	0.71	0.84	0.67	0.84	0.67	0.83	0.65	0.82	0.65	0.82
L2	Mui Wo to North Lantau	5400																																
	North Lantau to Mui Wo	5400																																
L3	Kau Yi Chau to Sunny Bay	5400	1.06	1.37	1.06	1.37	1.04	1.36	1.04	1.36	1.01	1.36	1.01	1.36	0.99	1.35	0.99	1.35	1.08	1.31	1.08	1.31	1.06	1.31	1.06	1.30	1.02	1.30	1.02	1.30	1.01	1.29	1.00	1.29
	Sunny Bay to Kau Yi Chau	5400	1.39	0.93	1.39	0.93	1.38	0.92	1.39	0.92	1.36	0.91	1.36	0.90	1.35	0.90	1.34	0.89	1.35	0.95	1.35	0.94	1.35	0.94	1.34	0.93	1.31	0.92	1.31	0.91	1.30	0.91	1.30	0.90
L4	Hei Ling Chau to Kau Yi Chau	5400																																
	Kau Yi Chau to Hei Ling Chau	5400																																
L5	Mui Wo to Hei Ling Chau	5400																																
	Hei Ling Chau to Mui Wo	5400																																
R4	NB	3600	0.25	0.22	0.25	0.22					0.23	0.20	0.22	0.20					0.20	0.22	0.20	0.22					0.20	0.21	0.20	0.21				
	SB	3600	0.32	0.16	0.32	0.16					0.30	0.16	0.30	0.16					0.33	0.16	0.33	0.16					0.31	0.16	0.31	0.16				
Road Link connecting ELM and Route 4	to ELM	1800	0.37	0.17	0.37	0.17					0.35	0.16	0.35	0.16					0.40	0.16	0.40	0.16					0.39	0.16	0.39	0.16				
	to Souther	1800	0.36	0.27	0.36	0.27					0.33	0.26	0.33	0.26					0.33	0.27	0.33	0.27					0.31	0.26	0.31	0.26				
Pok Fu Lam Road	NB	2400	0.97	0.52	0.97	0.52	1.25	0.80	1.25	0.80	0.90	0.51	0.91	0.51	1.15	0.77	1.15	0.77	1.03	0.52	1.02	0.52	1.24	0.80	1.24	0.80	0.93	0.51	0.92	0.51	1.15	0.77	1.15	0.77
	SB	2400	0.30	0.27	0.30	0.27	0.47	0.41	0.47	0.41	0.27	0.26	0.27	0.26	0.43	0.39	0.43	0.39	0.29	0.27	0.29	0.27	0.47	0.41	0.47	0.41	0.27	0.26	0.27	0.26	0.43	0.39	0.44	0.39
Aberdeen Tunnel	NB	3600	0.91	0.66	0.91	0.66	0.94	0.69	0.94	0.69	0.86	0.64	0.86	0.64	0.90	0.66	0.90	0.66	0.92	0.66	0.92	0.66	0.94	0.69	0.94	0.69	0.87	0.64	0.87	0.64	0.90	0.66	0.90	0.66
	SB	3600	0.73	0.66	0.73	0.66	0.81	0.69	0.81	0.69	0.69	0.64	0.70	0.64	0.77	0.68	0.77	0.68	0.73	0.66	0.73	0.66	0.81	0.69	0.81	0.69	0.69	0.64	0.69	0.64	0.78	0.68	0.77	0.68
Tsing Ma Bridge	EB	6100	0.92	1.12	0.92	1.12	0.92	1.13	0.92	1.14	0.90	1.15	0.90	1.15	0.89	1.15	0.89	1.15	0.92	1.11	0.92	1.13	0.91	1.11	0.91	1.14	0.91	1.13	0.91	1.13	0.90	1.13	0.90	1.15
	WB	6100	0.91	1.03	0.90	1.03	0.92	1.02	0.93	1.02	0.95	1.08	0.94	1.08	0.94	1.07	0.95	1.07	0.91	1.03	0.92	1.03	0.91	1.03	0.92	1.03	0.96	1.08	0.96	1.08	0.95	1.08	0.97	1.08
Ting Kau Bridge	NB	6100	0.62	0.88	0.62	0.88	0.61	0.88	0.62	0.89	0.61	0.95	0.61	0.95	0.61	0.94	0.61	0.95	0.62	0.87	0.62	0.88	0.63	0.87	0.62	0.89	0.62	0.94	0.61	0.94	0.61	0.94	0.61	0.96
	SB	6100	1.11	0.79	1.10	0.79	1.12	0.79	1.11	0.79	1.13	0.84	1.13	0.84	1.13	0.83	1.14	0.84	1.12	0.79	1.13	0.80	1.08	0.79	1.09	0.80	1.13	0.84	1.13	0.84	1.13	0.84	1.13	0.84
ELM Generation & Attraction																																		
Vehicle	ELM Generation	pcu/hr	6300	6250	6250	6250	6250	6250	6200	6200	5850	6150	5800	6100	5800	6100	5800	6100	6700	5300	6150	5300	6150	5300	6150	5250	5750	5200	5750	5150	5750	5150	5700	5150
	ELM Attraction	pcu/hr	7100	5250	7050	5200	7050	5250	7050	5200	6550	5050	6550	5000	6550	5050	6500	5000	5750	5050	5750	5000	5750	5050	5750	5000	5350	4900	5350	4800	5350	4850	5300	4800
	self-containment	%	18%	15%	18%	15%	18%	15%	18%	15%	17%	14%	17%	15%	17%	14%	17%	14%	17%	14%	17%	14%	17%	14%	17%	14%	16%	13%	16%	13%	16%	13%	16%	13%
Public Transport Demand	ELM Generation	ppl/hr	97000	49000	97000	49000	97000	49000	97000	49000	97500	49000	97500	49000	97500	49000	97500	49000	94000	39500	94000	39500	94000	39500	94000	39500	94500	40000	94500	39500	94500	40000	94500	40000
	ELM Attraction	ppl/hr	54500	60000	54500	60000	54500	60000	54500	60000	55000	60500	54500	60500	55000	60500	54500	60500	43500	55500	43500	55500	44000	55500	43500	55500	44000	56000	44000	56000	44000	56000	44000	56000
	self-containment	%	21%	21%	21%	20%	21%	21%	21%	20%	21%	20%	21%	20%	21%	20%	21%	20%	19%	18%	18%	18%	19%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%
ELM Distribution % (excluding self-containment)																																		
	from ELM to KT	%	36%	23%	36%	22%	36%	22%	36%	22%	35%	22%	35%	21%	34%	21%	34%	21%	37%	20%	37%	20%	36%	19%	36%	20%	36%	19%	36%	19%	35%	19%	35%	19%
	from ELM to North Lantau	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	from ELM to Sunny Bay	%	64%	77%	64%	78%	64%	78%	64%	78%	65%	78%	65%	79%	66%	79%	66%	79%	63%	80%	63%	80%	64%	81%	64%	80%	64%	81%	64%	81%	65%	81%	65%	81%
	from KT to ELM	%	32%	24%	32%	24%	31%	24%	30%	24%	27%	24%	28%	24%	27%	24%	27%	24%	28%	24%	28%	24%	27%	24%	27%	24%	25%	24%	25%	24%	24%	23%	25%	23%
	from North Lantau to ELM	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	from Sunny Bay to ELM	%	68%	76%	68%	76%	69%	76%	70%	76%	73%	76%	72%	76%	73%	76%	73%	76%	72%	76%	72%	76%	73%	76%	73%	76%	75%	76%	75%	76%	76%	77%	75%	77%
Source of Road Traffic running between ELM and Kennedy Town (excluding the Public Transport)																																		
	from ELM to KT	%	29%	36%	29%	36%	29%	36%	29%	36%	28%	35%	27%	36%	28%	36%	28%	35%	29%	30%	28%	29%	29%	30%	28%	30%	27%	29%	27%	29%	27%	30%	27%	30%
	from Sunny Bay to KT	%	71%	64%	71%	64%	71%	64%	71%	64%	72%	65%	73%	64%	72%	64%	72%	65%	71%	70%	72%	71%	71%	70%	72%	70%	73%	71%	73%	71%	73%	70%	73%	70%
	from North Lantau to KT	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	from KT to ELM	%	38%	21%	38%	21%	38%	21%	37%	21%	34%	21%	34%	20%	34%	21%	34%	21%	30%	20%	30%	20%	30%	20%	29%	20%	27%	20%	27%	20%	27%	20%	27%	20%
	from KT to Sunny Bay	%	62%	79%	62%	79%	63%	79%	63%	79%	66%	79%	66%	80%	66%	79%	66%	79%	70%	80%	70%	80%	70%	80%	71%	80%	73%	80%	73%	80%	73%	80%	73%	80%
	from KT to North Lantau	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Source of Road Traffic running between ELM and Sunny Bay (excluding the Public Transport)																																		
	from Sunny Bay to ELM	%	48%	60%	48%	60%	49%	61%	49%	60%	49%	60%	49%	60%	50%	61%	50%	61%	42%	61%	41%	60%	42%	61%	42%	61%	41%	61%	41%	60%	42%	62%	42%	61%
	from Sunny Bay to KT	%	52%	40%	52%	40%	51%	39%	51%	40%	51%	40%	51%	40%	50%	39%	50%	39%	58%	39%	59%	40%	58%	39%	58%	39%	59%	39%	59%	40%	58%	38%	58%	39%
	from Sunny Bay to North Lantau	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	from ELM to Sunny Bay	%	51%	52%	51%	52%	52%	53%	52%	52%	51%	53%	51%	52%	52%	53%	52%	53%	51%	48%	51%	48%	52%	48%	52%	48%	52%	48%	52%	48%	52%	49%	53%	49%
	from KT to Sunny Bay	%	49%	48%	49%	48%	48%	47%	48%	48%	49%	47%	49%	48%	48%	47%	48%	47%	49%	52%	49%	52%	48%	52%	48%	52%	48%	52%	48%	52%	48%	51%	47%	51%
	from North Lantau to Sunny Bay	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Route 4																																		
	ELM to Southern	%	10%	9%	10%	9%					10%	9%	10%	9%					11%	8%	11%	8%					11%	8%	11%	8%				
	Sunny Bay to Southern	%	48%	42%	48%	42%					49%	42%	49%	42%					49%	43%	50%	42%					52%	42%	52%	43%				
	North Lantau to Southern	%	0%	0%	0%	0%					0%	0%	0%	0%					0%	0%	0%	0%					0%	0%	0%	0%				
	Central to Southern	%	42%	49%	42%	49%					40%	49%	41%	50%					39%	49%	39%	50%					37%	50%	37%	50%				
	Southern to ELM	%	19%	9%	19%	9%					20%	9%	21%	9%					18%	8%	18%	8%					17%	8%	17%	8%				
	Southern to Sunny Bay	%	52%	52%	52%	52%					54%	54%	56%	54%					65%	53%	65%	53%					63%	55%	62%	55%				
	Southern to North Lantau	%	0%	0%	0%	0%					0%	0%	0%	0%					0%	0%	0%	0%					0%	0%	0%	0%				
	Southern to Central	%	28%	39%	29%	39%					26%	37%	23%	37%					17%	39%	18%	39%					21%	36%	21%	36%				

Appendix B

2041 Traffic Forecast of Various Model Run
(Scenario Number 25 to 48)

Scenario			25		26		27		28		29		30		31		32		33		34		35		36	
Development Phasing			full		full		full		full		full		full		full		full		full		full		full		full	
ELM Landuse Options			optA		optA		optA		optA		optA		optA		optA		optA		optA		optA		optA		optA	
NTN			woNTN		woNTN		woNTN		woNTN		woNTN		woNTN		wNTN		wNTN		wNTN		wNTN		wNTN		wNTN	
R4E			wR4E		wR4E		wR4E		woR4E		woR4E		woR4E		wR4E		wR4E		wR4E		woR4E		woR4E		woR4E	
Railway Scheme Options			A		B		C		A		B		C		A		B		C		A		B		C	
Toll Level	between Kau Yi Chan and Kennedy Town		100%		100%		100%		100%		100%		100%		100%		100%		100%		100%		100%		100%	
	between Kau Yi Chan and Sunny Bay		100%		100%		100%		100%		100%		100%		100%		100%		100%		100%		100%		100%	
	between Mui Wo and North Lantau		50%		50%		50%		50%		50%		50%		50%		50%		50%		50%		50%		50%	
	between Hei Ling Chau and Mui Wo		100%		100%		100%		100%		100%		100%		100%		100%		100%		100%		100%		100%	
Link Flows																										
			2041		2041		2041		2041		2041		2041		2041		2041		2041		2041		2041		2041	
road name	Bound	capacity	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm
L1	ELM to KT	5400	6250	3150	6200	3150	6200	3150	6050	3100	6000	3050	6000	3050	5800	3050	5850	3050	5800	3050	5650	2950	5650	2950	5700	2950
	KT to ELM	5400	4100	4800	4100	4800	4100	4800	3950	4700	3950	4700	3950	4700	3800	4650	3800	4650	3800	4650	3650	4600	3650	4550	3650	4550
L2	Mui Wo to North Lantau	5400	3150	2000	3100	2000	3150	2000	3150	2000	3100	1950	3100	2000	2900	1850	2900	1850	2900	1850	2850	1850	2900	1850	2900	1850
	North Lantau to Mui Wo	5400	2400	2850	2400	2850	2400	2850	2300	2850	2250	2850	2250	2850	2000	2750	2000	2750	2050	2750	2000	2750	2000	2750	2000	2750
L3	Kau Yi Chau to Sunny Bay	5400	4150	6350	4150	6350	4150	6350	4050	6300	4100	6300	4100	6300	3950	6300	3950	6300	3950	6300	3900	6250	3850	6250	3850	6250
	Sunny Bay to Kau Yi Chau	5400	6700	3500	6700	3500	6700	3500	6650	3450	6650	3450	6700	3450	6450	3450	6500	3450	6450	3450	6400	3400	6350	3400	6400	3400
L4	Hei Ling Chau to Kau Yi Chau	5400	3600	2900	3600	2900	3600	2950	3500	2900	3450	2900	3500	2900	3150	2800	3150	2800	3150	2800	3100	2800	3100	2800	3100	2800
	Kau Yi Chau to Hei Ling Chau	5400	3250	3000	3250	3000	3250	3000	3250	3000	3250	3000	3250	3000	3000	2850	3000	2850	3000	2850	2950	2850	3000	2850	2950	2850
L5	Mui Wo to Hei Ling Chau	5400	2400	2650	2400	2650	2400	2650	2300	2650	2250	2650	2250	2650	2000	2500	2000	2500	2050	2500	2000	2500	2000	2500	2000	2550
	Hei Ling Chau to Mui Wo	5400	2900	2000	2900	2000	2900	2000	2900	2000	2850	2000	2900	2000	2700	1850	2650	1850	2650	1850	2650	1850	2650	1850	2650	1850
R4	NB	3600	650	800	650	800	650	800							700	750	700	750	700	750						
	SB	3600	1200	600	1200	600	1200	600							1100	550	1100	550	1100	550						
Road Link connecting	to ELM	1800	750	300	750	300	750	300							700	300	700	300	700	300						
ELM and Route 4	to Souther	1800	650	500	650	500	650	500							600	500	600	500	600	500						
Pok Fu Lam Road	NB	2400	2500	1250	2500	1250	2500	1250	2950	1900	2950	1900	2950	1900	2250	1200	2250	1200	2200	1200	2750	1800	2750	1800	2750	1800
	SB	2400	700	650	700	650	700	650	1150	1000	1150	1000	1150	1000	650	600	650	600	650	600	1050	950	1050	900	1050	950
Aberdeen Tunnel	NB	3600	3250	2350	3250	2350	3300	2350	3350	2450	3350	2450	3400	2450	3100	2300	3100	2300	3100	2300	3250	2400	3250	2350	3250	2400
	SB	3600	2600	2350	2600	2350	2600	2350	2900	2500	2900	2500	2900	2500	2450	2300	2450	2300	2450	2300	2750	2450	2800	2450	2750	2450
Tsing Ma Bridge	EB	6100	5750	7000	5750	7000	5750	7050	5700	7000	5700	7000	5700	7050	5700	7050	5650	7050	5700	7050	5600	7150	5650	7050	5600	7050
	WB	6100	6100	6450	6150	6450	6050	6450	6000	6450	6050	6450	6050	6450	6200	6700	6250	6700	6200	6700	6200	6650	6200	6650	6150	6650
Ting Kau Bridge	NB	6100	3850	5600	3850	5600	3850	5600	3850	5550	3800	5600	3800	5600	3750	5900	3750	5850	3750	5850	3700	5900	3750	5900	3750	5900
	SB	6100	6850	4950	6900	4950	6750	4950	6550	4900	6750	4950	6750	4950	6900	5150	6950	5150	6900	5150	6900	5150	6850	5150	6750	5150
V/C Ratio																										
L1	ELM to KT	5400	1.16	0.58	1.15	0.58	1.15	0.58	1.12	0.57	1.11	0.57	1.11	0.57	1.08	0.56	1.08	0.56	1.08	0.56	1.05	0.55	1.05	0.55	1.05	0.55
	KT to ELM	5400	0.76	0.89	0.76	0.89	0.76	0.89	0.73	0.87	0.73	0.87	0.73	0.87	0.70	0.86	0.70	0.86	0.70	0.86	0.68	0.85	0.68	0.85	0.68	0.85
L2	Mui Wo to North Lantau	5400	0.58	0.37	0.58	0.37	0.58	0.37	0.58	0.37	0.58	0.37	0.58	0.37	0.54	0.35	0.54	0.35	0.54	0.35	0.53	0.35	0.54	0.34	0.53	0.35
	North Lantau to Mui Wo	5400	0.44	0.53	0.44	0.53	0.44	0.53	0.42	0.53	0.42	0.53	0.42	0.53	0.37	0.50	0.37	0.51	0.38	0.50	0.37	0.51	0.37	0.51	0.37	0.51
L3	Kau Yi Chau to Sunny Bay	5400	0.77	1.18	0.77	1.18	0.77	1.18	0.75	1.17	0.76	1.17	0.76	1.17	0.73	1.17	0.73	1.17	0.73	1.17	0.72	1.16	0.71	1.16	0.72	1.15
	Sunny Bay to Kau Yi Chau	5400	1.24	0.65	1.24	0.65	1.24	0.65	1.24	0.64	1.23	0.64	1.24	0.64	1.20	0.64	1.20	0.64	1.20	0.64	1.18	0.63	1.18	0.63	1.18	0.63
L4	Hei Ling Chau to Kau Yi Chau	5400	0.67	0.54	0.67	0.54	0.67	0.54	0.65	0.54	0.64	0.54	0.64	0.54	0.58	0.52	0.58	0.52	0.58	0.52	0.57	0.52	0.58	0.52	0.57	0.52
	Kau Yi Chau to Hei Ling Chau	5400	0.60	0.56	0.60	0.56	0.60	0.56	0.60	0.56	0.60	0.56	0.60	0.56	0.56	0.53	0.56	0.53	0.56	0.53	0.55	0.53	0.55	0.53	0.55	0.53
L5	Mui Wo to Hei Ling Chau	5400	0.44	0.49	0.44	0.49	0.44	0.49	0.42	0.49	0.42	0.49	0.42	0.49	0.37	0.47	0.37	0.47	0.38	0.47	0.37	0.47	0.37	0.47	0.37	0.47
	Hei Ling Chau to Mui Wo	5400	0.54	0.37	0.53	0.37	0.54	0.37	0.53	0.37	0.53	0.37	0.53	0.37	0.50	0.35	0.49	0.35	0.50	0.35	0.49	0.35	0.49	0.35	0.49	0.35
R4	NB	3600	0.18	0.22	0.18	0.22	0.18	0.22							0.20	0.21	0.20	0.21	0.20	0.21						
	SB	3600	0.33	0.16	0.33	0.16	0.33	0.16							0.31	0.16	0.30	0.16	0.31	0.16						
Road Link connecting	to ELM	1800	0.43	0.17	0.43	0.17	0.43	0.17							0.40	0.16	0.40	0.16	0.40	0.16						
ELM and Route 4	to Souther	1800	0.36	0.28	0.36	0.28	0.36	0.28							0.33	0.27	0.33	0.27	0.33	0.27						
Pok Fu Lam Road	NB	2400	1.04	0.52	1.04	0.52	1.04	0.52	1.22	0.79	1.22	0.79	1.22	0.79	0.93	0.50	0.93	0.50	0.93	0.50	1.14	0.76	1.14	0.76	1.14	0.76
	SB	2400	0.29	0.27	0.29	0.27	0.29	0.27	0.48	0.41	0.48	0.41	0.48	0.41	0.27	0.26	0.27	0.26	0.27	0.26	0.45	0.39	0.44	0.38	0.45	0.39
Aberdeen Tunnel	NB	3600	0.91	0.66	0.91	0.66	0.91	0.66	0.94	0.69	0.94	0.69	0.94	0.69	0.86	0.63	0.86	0.63	0.86	0.63	0.90	0.66	0.90	0.66	0.90	0.66
	SB	3600	0.72	0.66	0.72	0.66	0.72	0.66	0.80	0.69	0.80	0.69	0.80	0.69	0.69	0.64	0.69	0.64	0.69	0.64	0.77	0.68	0.77	0.68	0.77	0.68
Tsing Ma Bridge	EB	6100	0.94	1.15	0.94	1.15	0.94	1.15	0.94	1.15	0.93	1.15	0.93	1.16	0.93	1.16	0.93	1.16	0.93	1.16	0.92	1.17	0.92	1.16	0.92	1.16
	WB	6100	1.00	1.06	1.01	1.06	0.99	1.06	0.98	1.06	0.99	1.06	0.99	1.06	1.02	1.10	1.03	1.09	1.01	1.10	1.01	1.09	1.02	1.09	1.01	1.09
Ting Kau Bridge	NB	6100	0.63	0.92	0.63	0.92	0.63	0.92	0.63	0.91	0.62	0.91	0.62	0.92	0.62	0.96	0.62	0.96	0.62	0.96	0.61	0.97	0.62	0.96	0.62	0.97
	SB	6100	1.12	0.81	1.14	0.81	1.10	0.81	1.07	0.81	1.11	0.81	1.11	0.81	1.13	0.84	1.14	0.85	1.13	0.84	1.13	0.85	1.12	0.85	1.11	0.84
ELM Generation & Attraction																										
Vehicle	ELM Generation	pcu/hr	8650	7300	8650	7300	8650	7300	8600	7250	8600	7250	8600	7250	8000	7000	7950	7000	7950	7000	7950	7000	7950	6950	7950	7000
	ELM Attraction	pcu/hr	8250	7000	8250	7000	8250	6950	8200	6950	8200	6950	8200	6950	7500	6650	7500	6650	7500	6650	7500	6650	7500	6650	7500	6650
	self-containment	%	18%	16%	18%	16%	18%	16%	19%	16%	19%	16%	19%	16%	18%	16%	18%	16%	18%	16%	18%	16%	18%	16%	18%	16%
Public Transport Demand	ELM Generation	ppl/hr	157500	73000	157500	73000	157500	73000	157500	73000	157500	73000	157500	73000	161000	72500	161000	72000	161000	72000	161000	72500	161000	72500	161000	72500
	ELM Attraction	ppl/hr	79000	99000	79000	98500	79000	98500	79000	99000	79000	98500	79000	98500	79000	99500	78500	99000	79000	99500	78500	99500	79000	99500	79000	99000
	self-containment	%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%
ELM Distribution % (excluding self-containment)																										
	from ELM to KT	%	30%	18%	30%	18%	30%	18%	29%	18%	29%	17%	29%	18%	30%	17%	30%	17%	30%	17%	29%	17%	29%	17%	29%	17%
	from ELM to North Lantau	%	32%	18%	32%	18%	32%	18%	32%	18%	32%	18%	32%	18%	31%	17%	31%	17%	31%	17%	31%	17%	32%	17%	32%	17%
	from ELM to Sunny Bay	%	38%	64%	38%	64%	38%	64%	39%	65%	39%	65%	39%	65%	39%	66%	39%	66%	39%	66%	39%	66%	39%	66%	39%	66%
	from KT to ELM	%	23%	22%	23%	22%	23%	22%	22%	21%	22%	21%	22%	21%	22%	22%	22%	21%	22%	21%	21%	21%	21%	21%	21%	21%
	from North Lantau to ELM	%	22%	34%	22%	35%	22%	35%	21%	34%	21%	35%	21%	35%	20%	34%	20%	34%	20%	34%	20%	34%	20%	34%	20%	34%
	from Sunny Bay to ELM	%	55%	44%	55%	44%	55%	44%	57%	44%	57%	44%	57%	44%	58%	45%	58%	45%	58%	45%	59%	45%	59%	45%	59%	45%
Source of Road Traffic running between ELM and Kennedy Town (excluding the Public Transport)																										
	from ELM to KT	%	29%	32%	29%	32%	29%	32%	29%	32%	30%	32%	30%	32%	29%	31%	29%	31%	29%	31%	29%	32%	29%	32%	29%	32%
	from Sunny Bay to KT	%	54%	33%	54%	33%	54%	33%	54%	33%	54%	32%	54%	32%	55%	34%	56%	34%	55%	34%	55%	32%	55%	33%	55%	32%
	from North Lantau to KT	%	17%	35%	17%	35%	17%	35%	17%	35%	17%	36%	17%	36%	16%	35%	16%	35%	16%	35%	16%	36%	16%	36%	16%	36%
	from KT to ELM	%	32%	23%	32%	23%	32%	23%	33%	23%	33%	23%	33%	23%	31%	23%	31%	23%	31%	23%	32%	23%	32%	23%	32%	23%
	from KT to Sunny Bay	%	39%	57%	39%	57%	39%	57%	38%	56%	38%	56%	38%	56%	40%	57%	40%	57%	40%	57%	39%	57%	39%	57%	39%	57%
	from KT to North Lantau	%	29%	20%	28%	20%	28%	20%	29%	20%	29%	20%	29%	20%	29%	20%	29%	20%	29%	20%	29%	20%	30%	20%	30%	20%
Source of Road Traffic running between ELM and Sunny Bay (excluding the Public Transport)																										
	from Sunny Bay to ELM	%	49%	70%	49%	70%	49%	69%	51%	71%	51%	71%	50%	71%	49%	70%	49%	70%	49%	70%	50%	71%	50%	71%	50%	71%
	from Sunny Bay to KT	%	51%	30%	51%	30%	51%	31%	49%	29%	49%	29%	50%	29%	51%	30%	51%	30%	51%	30%	50%	29%	50%	29%	50%	29%
	from Sunny Bay to North Lantau	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	from ELM to Sunny Bay	%	60%	57%	60%	57%	60%	57%	62%	58%	61%	58%	61%	58%	61%	57%	61%	57%	61%	57%	62%	58%	62%	58%	62%	58%
	from KT to Sunny Bay	%	40%	43%	40%	43%	40%	43%	38%	42%	39%	42%	39%	42%	39%	43%	39%	43%	39%	43%	38%	42%	38%	42%	38%	42%
	from North Lantau to Sunny Bay	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Route 4																										
	ELM to Southern	%	13%	10%	13%	10%	13%	10%							13%	10%	12%	9%	12%	10%						
	Sunny Bay to Southern	%	43%	23%	43%	23%	43%	23%							45%	23%	45%	23%	45%	23%						
	North Lantau to Southern	%	9%	19%	9%	19%	9%	19%							8%	18%	8%	18%	8%	18%						
	Central to Southern	%	35%	49%	35%	48%	35%	49%							34%	49%	34%	49%	34%	49%						
	Southern to ELM	%	28%	11%	28%	11%	28%	11%							23%	11%	24%	11%	23%	11%						
	Southern to Sunny Bay	%	48%	41%	48%	41%	48%	41%							42%	41%	42%	41%	42%	41%						
	Southern to North Lantau	%	21%	14%	21%	14%	21%	14%							18%	13%	18%	14%	18%	14%						
	Southern to Central	%	3%	35%	3%	35%	3%	35%							17%	35%	16%	34%	17%	34%						

Scenario			37		38		39		40		41		42		43		44		45		46		47		48	
Development Phasing			full		full		full		full		full		full		full		full		full		full		full		full	
ELM Landuse Options			optB		optB		optB		optB		optB		optB		optB		optB		optB		optB		optB		optB	
NTN			woNTN		woNTN		woNTN		woNTN		woNTN		woNTN		wNTN		wNTN		wNTN		wNTN		wNTN		wNTN	
R4E			wR4E		wR4E		wR4E		woR4E		woR4E		woR4E		wR4E		wR4E		wR4E		woR4E		woR4E		woR4E	
Railway Scheme Options			A		B		C		A		B		C		A		B		C		A		B		C	
Toll Level	between Kau Yi Chan and Kennedy Town		100%		100%		100%		100%		100%		100%		100%		100%		100%		100%		100%		100%	
	between Kau Yi Chan and Sunny Bay		100%		100%		100%		100%		100%		100%		100%		100%		100%		100%		100%		100%	
	between Mui Wo and North Lantau		50%		50%		50%		50%		50%		50%		50%		50%		50%		50%		50%		50%	
	between Hei Ling Chau and Mui Wo		100%		100%		100%		100%		100%		100%		100%		100%		100%		100%		100%		100%	
Link Flows																										
			2041		2041		2041		2041		2041		2041		2041		2041		2041		2041		2041		2041	
road name	Bound	capacity	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm
L1	ELM to KT	5400	6450	3000	6450	3000	6450	3000	6250	2900	6250	2900	6300	2950	6100	2900	6050	2900	6100	2900	5900	2850	5900	2850	5900	2850
	KT to ELM	5400	3850	4850	3850	4850	3850	4850	3700	4750	3700	4750	3700	4750	3600	4700	3600	4700	3600	4700	3450	4600	3450	4600	3450	4600
L2	Mui Wo to North Lantau	5400	3200	1800	3150	1800	3150	1800	3150	1800	3150	1800	3150	1800	2950	1750	2950	1750	2950	1750	2950	1750	2950	1750	2950	1750
	North Lantau to Mui Wo	5400	2100	2900	2050	2900	2050	2900	2050	2850	2050	2900	2050	2900	1850	2800	1850	2750	1850	2750	1850	2800	1850	2750	1850	2750
L3	Kau Yi Chau to Sunny Bay	5400	4250	6050	4250	6050	4250	6050	4200	5950	4200	5950	4150	5950	4000	5900	4000	5900	4000	5950	3950	5850	3950	5850	3950	5850
	Sunny Bay to Kau Yi Chau	5400	6400	3550	6400	3550	6400	3550	6300	3500	6300	3450	6300	3450	6150	3450	6100	3500	6100	3500	6000	3400	6000	3450	6000	3450
L4	Hei Ling Chau to Kau Yi Chau	5400	3250	2800	3250	2800	3250	2800	3200	2800	3200	2800	3200	2800	2950	2700	2950	2650	2950	2650	2900	2700	2900	2650	2900	2650
	Kau Yi Chau to Hei Ling Chau	5400	3050	2750	3050	2750	3050	2750	3050	2750	3050	2750	3050	2750	2850	2650	2850	2600	2850	2600	2800	2600	2850	2600	2800	2600
L5	Mui Wo to Hei Ling Chau	5400	2050	2650	2050	2650	2050	2650	2050	2650	2050	2650	2050	2650	1850	2550	1850	2500	1850	2500	1800	2550	1800	2500	1800	2500
	Hei Ling Chau to Mui Wo	5400	2900	1800	2850	1800	2900	1800	2850	1800	2850	1800	2850	1800	2650	1750	2650	1700	2650	1700	2650	1700	2650	1700	2650	1700
R4	NB	3600	600	800	600	800	600	800							600	750	600	750	600	750						
	SB	3600	1200	550	1200	550	1200	550							1100	550	1100	550	1100	550						
Road Link connecting	to ELM	1800	800	300	800	300	800	300							750	300	750	300	750	300						
ELM and Route 4	to Souther	1800	600	500	600	500	600	500							550	500	550	500	550	500						
Pok Fu Lam Road	NB	2400	2500	1250	2500	1250	2500	1250	2950	1900	2900	1900	2950	1900	2300	1200	2300	1200	2300	1200	2750	1800	2750	1800	2750	1800
	SB	2400	700	650	700	650	700	650	1150	950	1150	950	1150	950	650	600	650	600	650	600	1050	900	1050	900	1050	900
Aberdeen Tunnel	NB	3600	3300	2350	3300	2350	3300	2350	3400	2450	3400	2450	3400	2450	3150	2300	3150	2300	3150	2300	3250	2400	3250	2400	3250	2400
	SB	3600	2600	2350	2600	2350	2600	2350	2900	2500	2900	2500	2900	2500	2450	2300	2450	2300	2450	2300	2800	2450	2800	2450	2750	2450
Tsing Ma Bridge	EB	6100	5900	7000	5850	7000	5850	7000	5800	6950	5800	7000	5800	7000	5750	6950	5750	7000	5750	7000	5700	7050	5700	7000	5700	6950
	WB	6100	6100	6500	5950	6500	5900	6500	5950	6450	5900	6450	6000	6450	6100	6700	6100	6700	6100	6700	6050	6700	6150	6700	6100	6650
Ting Kau Bridge	NB	6100	3850	5600	3850	5600	3850	5550	3800	5550	3800	5600	3850	5550	3750	5900	3800	5850	3800	5850	3750	5900	3800	5900	3750	5850
	SB	6100	6800	5000	6600	5000	6500	4950	6750	4950	6750	5000	6750	5000	6900	5150	6900	5150	6900	5150	6850	5150	6850	5100	6850	5150
V/C Ratio																										
L1	ELM to KT	5400	1.20	0.56	1.19	0.55	1.20	0.55	1.16	0.54	1.16	0.54	1.16	0.54	1.13	0.54	1.12	0.54	1.13	0.54	1.09	0.53	1.09	0.53	1.09	0.53
	KT to ELM	5400	0.71	0.90	0.71	0.89	0.71	0.90	0.69	0.88	0.69	0.88	0.69	0.88	0.66	0.87	0.66	0.87	0.66	0.87	0.64	0.85	0.64	0.85	0.64	0.85
L2	Mui Wo to North Lantau	5400	0.59	0.34	0.58	0.34	0.59	0.34	0.58	0.34	0.58	0.34	0.58	0.34	0.55	0.32	0.55	0.32	0.55	0.32	0.54	0.32	0.54	0.32	0.54	0.32
	North Lantau to Mui Wo	5400	0.39	0.53	0.38	0.53	0.38	0.53	0.38	0.53	0.38	0.53	0.38	0.53	0.34	0.52	0.34	0.51	0.35	0.51	0.34	0.52	0.34	0.51	0.34	0.51
L3	Kau Yi Chau to Sunny Bay	5400	0.78	1.12	0.79	1.12	0.78	1.12	0.78	1.10	0.77	1.10	0.77	1.10	0.74	1.09	0.74	1.10	0.74	1.10	0.73	1.09	0.73	1.08	0.73	1.09
	Sunny Bay to Kau Yi Chau	5400	1.19	0.65	1.19	0.65	1.19	0.65	1.17	0.65	1.17	0.64	1.17	0.64	1.14	0.64	1.13	0.65	1.13	0.65	1.11	0.63	1.11	0.64	1.11	0.63
L4	Hei Ling Chau to Kau Yi Chau	5400	0.60	0.52	0.60	0.52	0.60	0.52	0.60	0.52	0.59	0.52	0.60	0.52	0.54	0.50	0.54	0.49	0.54	0.49	0.54	0.50	0.54	0.49	0.54	0.49
	Kau Yi Chau to Hei Ling Chau	5400	0.57	0.51	0.57	0.51	0.57	0.51	0.56	0.51	0.56	0.51	0.56	0.51	0.52	0.49	0.53	0.49	0.53	0.49	0.52	0.48	0.52	0.48	0.52	0.48
L5	Mui Wo to Hei Ling Chau	5400	0.38	0.49	0.38	0.49	0.38	0.49	0.38	0.49	0.38	0.49	0.38	0.49	0.34	0.47	0.34	0.46	0.34	0.46	0.34	0.47	0.34	0.46	0.34	0.47
	Hei Ling Chau to Mui Wo	5400	0.54	0.33	0.53	0.33	0.53	0.33	0.53	0.33	0.53	0.33	0.53	0.33	0.49	0.32	0.49	0.32	0.50	0.32	0.49	0.32	0.49	0.32	0.49	0.32
R4	NB	3600	0.17	0.22	0.17	0.22	0.17	0.22							0.17	0.21	0.17	0.21	0.16	0.21						
	SB	3600	0.34	0.16	0.34	0.16	0.34	0.16							0.31	0.15	0.31	0.15	0.31	0.15						
Road Link connecting	to ELM	1800	0.44	0.16	0.44	0.16	0.44	0.16							0.42	0.16	0.42	0.16	0.42	0.16						
ELM and Route 4	to Souther	1800	0.33	0.29	0.33	0.29	0.33	0.29							0.31	0.28	0.31	0.28	0.31	0.28						
Pok Fu Lam Road	NB	2400	1.05	0.52	1.05	0.52	1.05	0.52	1.22	0.79	1.22	0.79	1.22	0.79	0.97	0.50	0.96	0.50	0.97	0.50	1.14	0.76	1.14	0.76	1.14	0.76
	SB	2400	0.28	0.27	0.28	0.27	0.28	0.27	0.49	0.40	0.49	0.40	0.49	0.40	0.27	0.26	0.26	0.26	0.26	0.26	0.44	0.38	0.44	0.38	0.44	0.38
Aberdeen Tunnel	NB	3600	0.92	0.66	0.92	0.66	0.92	0.66	0.94	0.69	0.94	0.69	0.94	0.69	0.87	0.63	0.87	0.63	0.87	0.63	0.90	0.66	0.90	0.66	0.90	0.66
	SB	3600	0.72	0.66	0.72	0.66	0.72	0.66	0.80	0.69	0.80	0.69	0.80	0.69	0.69	0.64	0.69	0.64	0.69	0.64	0.77	0.68	0.77	0.68	0.77	0.68
Tsing Ma Bridge	EB	6100	0.96	1.15	0.96	1.15	0.96	1.15	0.95	1.14	0.95	1.14	0.95	1.15	0.94	1.14	0.94	1.15	0.94	1.15	0.94	1.15	0.94	1.15	0.94	1.14
	WB	6100	1.00	1.07	0.98	1.06	0.97	1.06	0.97	1.06	0.97	1.06	0.98	1.06	1.00	1.10	1.00	1.10	1.00	1.10	0.99	1.10	1.00	1.10	1.00	1.09
Ting Kau Bridge	NB	6100	0.63	0.92	0.63	0.91	0.63	0.91	0.63	0.91	0.63	0.91	0.63	0.91	0.62	0.97	0.62	0.96	0.62	0.96	0.61	0.97	0.62	0.97	0.62	0.96
	SB	6100	1.11	0.82	1.09	0.82	1.06	0.81	1.11	0.81	1.11	0.82	1.10	0.82	1.13	0.84	1.13	0.84	1.13	0.84	1.13	0.85	1.13	0.84	1.12	0.84
ELM Generation & Attraction																										
Vehicle	ELM Generation	pcu/hr	8500	6250	8450	6200	8450	6250	8450	6200	8450	6200	8450	6200	7850	5950	7800	5950	7800	5950	7800	5950	7750	5950	7800	5950
	ELM Attraction	pcu/hr	6850	6650	6850	6650	6850	6650	6850	6650	6850	6650	6850	6650	6750	6350	6750	6350	6750	6350	6750	6350	6750	6350	6750	6350
	self-containment	%	17%	15%	17%	15%	17%	15%	17%	15%	17%	15%	17%	15%	17%	14%	17%	14%	17%	14%	17%	14%	17%	14%	17%	14%
Public Transport Demand	ELM Generation	ppl/hr	153500	60500	153500	60500	153500	60500	153500	61000	153500	60500	153500	60500	157500	60000	157500	60000	157500	60000	157500	60000	157500	60000	157500	60000
	ELM Attraction	ppl/hr	63500	92500	63500	92500	63500	92500	63500	92500	63500	92500	63500	92500	63500	93500	63500	93500	63500	93500	63500	93500	63500	93500	63500	93500
	self-containment	%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%
ELM Distribution % (excluding self-containment)																										
	from ELM to KT	%	30%	18%	30%	17%	30%	17%	29%	17%	30%	17%	30%	17%	30%	17%	30%	17%	30%	17%	29%	17%	29%	17%	29%	17%
	from ELM to North Lantau	%	32%	17%	32%	17%	32%	17%	32%	17%	32%	17%	32%	17%	31%	17%	31%	17%	31%	17%	32%	16%	31%	17%	32%	17%
	from ELM to Sunny Bay	%	38%	65%	38%	65%	38%	65%	39%	66%	39%	66%	38%	66%	39%	66%	39%	66%	39%	66%	39%	67%	39%	67%	39%	67%
	from KT to ELM	%	22%	21%	22%	21%	22%	21%	21%	21%	22%	21%	22%	21%	22%	21%	22%	21%	22%	21%	21%	21%	21%	21%	21%	21%
	from North Lantau to ELM	%	22%	35%	22%	35%	22%	35%	21%	35%	21%	35%	21%	35%	20%	34%	20%	34%	21%	34%	20%	35%	20%	34%	20%	34%
	from Sunny Bay to ELM	%	56%	44%	56%	44%	56%	44%	57%	44%	57%	44%	57%	44%	58%	45%	58%	45%	58%	45%	59%	44%	59%	45%	59%	45%
Source of Road Traffic running between ELM and Kennedy Town (excluding the Public																										
	from ELM to KT	%	30%	29%	29%	28%	30%	28%	30%	29%	30%	29%	30%	28%	29%	28%	29%	28%	29%	28%	29%	28%	29%	28%	29%	28%
	from Sunny Bay to KT	%	55%	35%	55%	35%	55%	36%	55%	34%	55%	33%	55%	35%	56%	35%	56%	36%	56%	36%	56%	34%	56%	35%	56%	35%
	from North Lantau to KT	%	15%	37%	15%	36%	15%	36%	16%	37%	16%	38%	15%	37%	15%	37%	15%	36%	15%	36%	15%	37%	15%	37%	15%	37%
	from KT to ELM	%	28%	23%	28%	23%	28%	23%	28%	23%	28%	23%	28%	23%	27%	23%	27%	22%	27%	23%	27%	23%	27%	23%	27%	23%
	from KT to Sunny Bay	%	42%	58%	42%	58%	42%	58%	41%	57%	41%	57%	41%	57%	43%	58%	43%	58%	43%	58%	41%	58%	41%	58%	41%	58%
	from KT to North Lantau	%	30%	20%	30%	19%	30%	20%	31%	20%	31%	20%	31%	20%	30%	19%	30%	19%	31%	19%	31%	20%	31%	20%	31%	20%
Source of Road Traffic running between ELM and Sunny Bay (excluding the Public Tran																										
	from Sunny Bay to ELM*	%	43%	69%	43%	69%	43%	69%	44%	70%	44%	71%	44%	71%	43%	70%	43%	69%	43%	69%	44%	71%	44%	70%	44%	70%
	from Sunny Bay to KT	%	57%	31%	57%	31%	57%	31%	56%	30%	56%	29%	56%	29%	57%	30%	57%	31%	57%	31%	56%	29%	56%	30%	56%	30%
	from Sunny Bay to North Lantau	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	from ELM to Sunny Bay	%	61%	53%	61%	53%	60%	53%	62%	54%	62%	54%	62%	54%	61%	53%	61%	53%	61%	53%	63%	54%	62%	54%	62%	54%
	from KT to Sunny Bay	%	39%	47%	39%	47%	40%	47%	38%	46%	38%	46%	38%	46%	39%	47%	39%	47%	39%	47%	37%	46%	38%	46%	38%	46%
	from North Lantau to Sunny Bay	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Route 4																										
	ELM to Southern	%	14%	9%	14%	9%	14%	9%							13%	9%	13%	9%	13%	9%						
	Sunny Bay to Southern	%	44%	23%	44%	23%	44%	23%							46%	24%	46%	24%	46%	24%						
	North Lantau to Southern	%	8%	19%	8%	19%	8%	19%							8%	19%	8%	19%	8%	18%						
	Central to Southern	%	34%	48%	34%	48%	34%	48%							33%	49%	33%	49%	33%	49%						
	Southern to ELM	%	23%	10%	23%	10%	23%	10%							21%	10%	21%	10%	22%	10%						
	Southern to Sunny Bay	%	51%	41%	51%	42%	51%	42%							51%	43%	51%	43%	51%	42%						
	Southern to North Lantau	%	22%	13%	22%	13%	22%	13%							22%	13%	21%	13%	22%	13%						
	Southern to Central	%	3%	35%	3%	35%	3%	35%							6%	34%	7%	34%	5%	34%						

Appendix C

2041 Traffic Forecast of Toll sensitivity Test (v/c ratio)

Scenario			T1		T2		T3		T4		T5		T6		T7		T8		T9		T10		T11		T12		T13		T14		T15	
Development Phasing			full		full		full		full		full		full		full		full		full		full		full		full		full		full		full	
ELM Landuse Options			optA		optA		optA		optA		optA		optA		optA		optA		optA		optA		optA		optA		optA		optA		optA	
NTN			wNTN		wNTN		wNTN		wNTN		wNTN		wNTN		wNTN		wNTN		wNTN		wNTN		wNTN		wNTN		wNTN		wNTN		wNTN	
R4E			wR4E		wR4E		wR4E		wR4E		wR4E		wR4E		wR4E		wR4E		wR4E		wR4E		wR4E		wR4E		wR4E		wR4E		wR4E	
Railway Scheme Options			A		A		A		A		A		A		A		A		A		A		A		A		A		A		A	
Toll Level	between Kau Yi Chan and Kennedy Town		0%		50%		150%		100%		100%		100%		100%		100%		100%		100%		0%		0%		0%		100%		100%	
	between Kau Yi Chan and Sunny Bay		0%		100%		100%		50%		150%		100%		100%		100%		100%		0%		100%		0%		100%		0%		100%	
	between Mui Wo and North Lantau		0%		50%		50%		50%		50%		0%		100%		50%		50%		0%		0%		50%		50%		50%		0%	
	between Hei Ling Chau and Mui Wo		0%		100%		100%		100%		100%		100%		100%		50%		150%		0%		0%		0%		100%		100%		0%	
Link Flows																																
			2041		2041		2041		2041		2041		2041		2041		2041		2041		2041		2041		2041		2041		2041		2041	
road name	Bound	capacity	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm
L1	ELM to KT	5400	7100	4000	6350	3300	5350	2750	6000	3150	5700	2950	5900	3050	5800	3050	5950	3050	5800	3000	6400	3200	6900	3650	7050	3950	6800	3700	6150	3300	6050	3050
	KT to ELM	5400	4900	6150	4150	5050	3500	4250	4050	4800	3650	4450	3800	4650	3850	4650	3800	4700	3850	4600	4200	5100	4550	5700	4900	6050	4450	5500	4300	5000	3850	4750
L2	Mui Wo to North Lantau	5400	3650	2650	2950	1900	2900	1850	2600	1850	3000	1950	3250	2100	2350	1550	3200	2000	2350	1600	3550	2450	4050	2900	3300	2450	3000	1950	2400	1750	3950	2750
	North Lantau to Mui Wo	5400	3150	3300	2100	2750	1950	2750	2100	2700	2100	2850	2400	3000	1800	2600	2400	3000	1800	2550	2950	3200	3150	3650	2850	2950	2250	2750	2250	2350	3000	3550
L3	Kau Yi Chau to Sunny Bay	5400	5050	7150	4100	6450	3850	6150	4850	6750	3500	5800	3850	6150	4500	6550	3850	6200	4550	6550	4700	6850	3850	6050	5200	7200	4250	6550	5550	7250	3500	5700
	Sunny Bay to Kau Yi Chau	5400	6950	4150	6650	3500	6300	3350	6850	3800	6000	3050	6200	3300	6650	3550	6250	3300	6650	3550	6850	3950	6150	3200	7050	4350	6750	3600	7150	4550	5950	3050
L4	Hei Ling Chau to Kau Yi Chau	5400	4400	3450	3250	2850	3050	2800	3200	2800	3200	2900	3500	3000	2950	2750	3550	3050	2950	2650	4150	3350	4300	3500	4200	3200	3450	2850	3400	2550	4050	3450
	Kau Yi Chau to Hei Ling Chau	5400	3700	3850	3050	2900	2950	2600	2700	2850	3050	2900	3200	3050	2550	2600	3200	3050	2450	2600	3550	3650	3900	3850	3450	3700	3100	3000	2500	2900	3750	3700
L5	Mui Wo to Hei Ling Chau	5400	3300	3300	2100	2550	1950	2550	2100	2500	2100	2650	2400	2750	1800	2450	2450	2850	1800	2350	3100	3200	3250	3450	3050	3000	2250	2600	2250	2250	3050	3400
	Hei Ling Chau to Mui Wo	5400	3550	2900	2700	1900	2650	1850	2350	1850	2750	1950	2950	2050	2150	1600	2950	2100	2100	1550	3450	2700	3800	2950	3250	2700	2800	1950	2150	1850	3700	2850
R4	NB	3600	800	900	650	800	750	700	700	750	750	750	650	750	700	750	650	750	750	750	700	800	750	850	800	900	700	850	700	800	650	750
	SB	3600	1300	500	1150	550	1050	550	1150	600	1100	550	1100	550	1100	550	1100	550	1100	550	1150	600	1200	500	1300	500	1200	500	1150	600	1100	550
Road Link connecting	to ELM	1800	950	400	750	300	700	250	750	300	700	250	750	300	700	300	750	300	700	300	800	350	850	350	900	400	850	350	750	350	750	300
ELM and Route 4	to Souther	1800	800	650	650	550	550	450	650	500	550	450	600	500	600	500	600	500	600	500	650	550	700	600	800	650	700	600	650	550	600	500
Pok Fu Lam Road	NB	2400	2250	1200	2300	1200	2150	1200	2300	1200	2200	1200	2300	1200	2200	1200	2250	1200	2200	1200	2300	1200	2300	1200	2250	1200	2300	1200	2300	1200	2300	1200
	SB	2400	700	750	650	600	600	600	650	600	650	600	650	600	650	600	650	600	650	600	650	600	700	700	700	750	650	700	650	600	650	600
Aberdeen Tunnel	NB	3600	3100	2250	3100	2300	3100	2300	3100	2300	3100	2300	3100	2300	3100	2300	3100	2300	3100	2300	3100	2300	3100	2250	3100	2250	3100	2250	3100	2300	3100	2300
	SB	3600	2450	2300	2450	2300	2450	2300	2450	2300	2450	2300	2450	2300	2450	2300	2450	2300	2450	2300	2450	2300	2450	2300	2450	2300	2450	2300	2500	2300	2450	2300
Tsing Ma Bridge	EB	6100	6450	7150	5750	7000	5650	7250	5900	7100	5500	7050	5700	7050	5700	7050	5700	7150	5700	7050	6200	7200	5900	7050	6450	7150	5900	7050	6150	7100	5700	7200
	WB	6100	6200	7000	6100	6700	6200	6650	6100	6800	6150	6550	6250	6700	6150	6650	6250	6700	6200	6700	6300	6950	6100	6700	6200	7000	6150	6700	6150	6950	6250	6700
Ting Kau Bridge	NB	6100	3950	6050	3800	5900	3750	5950	3800	5900	3800	5900	3750	5900	3750	5900	3750	5950	3800	5900	3850	5950	3850	5950	3950	6050	3900	6000	3850	5850	3750	5900
	SB	6100	6950	5250	6850	5150	6900	5200	6800	5150	6850	5200	6900	5150	6900	5150	6900	5150	6900	5150	6800	5200	6850	5150	6950	5200	6800	5150	6750	5150	6850	5150
V/C Ratio																																
L1	ELM to KT	5400	1.32	0.74	1.17	0.61	0.99	0.51	1.11	0.58	1.05	0.55	1.10	0.56	1.08	0.56	1.10	0.56	1.07	0.56	1.19	0.60	1.28	0.68	1.31	0.73	1.26	0.68	1.14	0.61	1.12	0.57
	KT to ELM	5400	0.91	1.13	0.77	0.93	0.65	0.79	0.75	0.89	0.68	0.83	0.71	0.87	0.71	0.86	0.71	0.87	0.71	0.86	0.78	0.95	0.84	1.05	0.91	1.12	0.82	1.02	0.80	0.92	0.72	0.88
L2	Mui Wo to North Lantau	5400	0.68	0.49	0.54	0.35	0.53	0.35	0.48	0.34	0.56	0.36	0.60	0.39	0.44	0.29	0.59	0.37	0.43	0.30	0.66	0.45	0.75	0.53	0.61	0.45	0.56	0.36	0.44	0.32	0.73	0.51
	North Lantau to Mui Wo	5400	0.58	0.62	0.39	0.51	0.36	0.51	0.39	0.50	0.39	0.53	0.45	0.56	0.33	0.48	0.45	0.55	0.33	0.48	0.54	0.60	0.58	0.68	0.53	0.55	0.41	0.51	0.42	0.43	0.55	0.66
L3	Kau Yi Chau to Sunny Bay	5400	0.93	1.32	0.76	1.19	0.72	1.14	0.90	1.25	0.65	1.07	0.71	1.14	0.83	1.21	0.71	1.15	0.84	1.21	0.87	1.27	0.71	1.12	0.96	1.33	0.79	1.21	1.03	1.35	0.65	1.05
	Sunny Bay to Kau Yi Chau	5400	1.29	0.76	1.23	0.65	1.17	0.62	1.27	0.71	1.11	0.57	1.15	0.61	1.23	0.65	1.15	0.61	1.23	0.66	1.27	0.73	1.14	0.59	1.30	0.80	1.25	0.67	1.32	0.85	1.10	0.56
L4	Hei Ling Chau to Kau Yi Chau	5400	0.82	0.64	0.60	0.53	0.56	0.52	0.60	0.52	0.59	0.53	0.65	0.55	0.55	0.51	0.65	0.56	0.54	0.49	0.77	0.62	0.80	0.65	0.78	0.59	0.64	0.53	0.63	0.48	0.75	0.64
	Kau Yi Chau to Hei Ling Chau	5400	0.68	0.71	0.56	0.54	0.55	0.52	0.50	0.53	0.57	0.54	0.59	0.56	0.47	0.48	0.60	0.56	0.46	0.48	0.66	0.67	0.72	0.72	0.64	0.69	0.56	0.56	0.47	0.54	0.70	0.69
L5	Mui Wo to Hei Ling Chau	5400	0.61	0.61	0.39	0.48	0.36	0.47	0.38	0.46	0.39	0.49	0.45	0.51	0.33	0.45	0.45	0.52	0.33	0.43	0.57	0.59	0.60	0.64	0.57	0.55	0.42	0.48	0.42	0.42	0.57	0.63
	Hei Ling Chau to Mui Wo	5400	0.65	0.53	0.50	0.36	0.49	0.34	0.43	0.34	0.51	0.36	0.55	0.38	0.40	0.30	0.55	0.39	0.39	0.29	0.64	0.50	0.71	0.55	0.60	0.50	0.52	0.37	0.40	0.35	0.69	0.53
R4	NB	3600	0.23	0.25	0.19	0.22	0.21	0.20	0.19	0.21	0.21	0.20	0.18	0.21	0.20	0.21	0.19	0.21	0.20	0.21	0.20	0.22	0.21	0.24	0.22	0.25	0.20	0.23	0.19	0.22	0.18	0.21
	SB	3600	0.37	0.14	0.32	0.16	0.30	0.15	0.31	0.16	0.30	0.15	0.31	0.16	0.31	0.16	0.31	0.16	0.31	0.16	0.32	0.16	0.34	0.14	0.36	0.14	0.33	0.15	0.32	0.16	0.31	0.16
Road Link connecting	to ELM	1800	0.52	0.23	0.43	0.17	0.38	0.15	0.42	0.17	0.39	0.15	0.41	0.16	0.40	0.16	0.41	0.16	0.40	0.16	0.44	0.18	0.48	0.19	0.50	0.23	0.46	0.19	0.43	0.18	0.41	0.16
ELM and Route 4	to Souther	1800	0.43	0.36	0.36	0.30	0.30	0.25	0.35	0.29	0.31	0.26	0.33	0.28	0.33	0.27	0.33	0.28	0.33	0.27	0.37	0.31	0.40	0.33	0.43	0.36	0.39	0.32	0.37	0.30	0.34	0.28
Pok Fu Lam Road	NB	2400	0.94	0.49	0.96	0.50	0.89	0.50	0.95	0.50	0.91	0.50	0.95	0.50	0.93	0.50	0.95	0.50	0.92	0.50	0.95	0.50	0.95	0.49	0.94	0.49	0.95	0.50	0.96	0.50	0.96	0.50
	SB	2400	0.29	0.31	0.27	0.26	0.26	0.26	0.27	0.26	0.27	0.26	0.27	0.26	0.27	0.26	0.27	0.26	0.27	0.26	0.28	0.29	0.29	0.30	0.28	0.28	0.27	0.26	0.27	0.26	0.27	0.26
Aberdeen Tunnel	NB	3600	0.87	0.63	0.87	0.63	0.86	0.63	0.87	0.63	0.87	0.63	0.86	0.63	0.87	0.63	0.86	0.63	0.86	0.63	0.87	0.63	0.87	0.63	0.87	0.63	0.87	0.63	0.87	0.63	0.87	0.63
	SB	3600	0.68	0.63	0.69	0.64	0.69	0.64	0.69	0.64	0.69	0.64	0.69	0.64	0.69	0.64	0.69	0.64	0.69	0.64	0.68	0.64	0.69	0.63	0.69	0.63	0.69	0.64	0.69	0.64	0.69	0.64
Tsing Ma Bridge	EB	6100	1.06	1.17	0.94	1.15	0.93	1.19	0.97	1.16	0.90	1.15	0.93	1.15	0.93	1.15	0.93	1.17	0.93	1.16	1.02	1.18	0.97	1.16	1.06	1.17	0.96	1.15	1.01	1.17	0.93	1.18
	WB	6100	1.02	1.15	1.00	1.10	1.02	1.09	1.00	1.11	1.01	1.08	1.02	1.10	1.01	1.09	1.02	1.10	1.01	1.09	1.03	1.14	1.00	1.10	1.02	1.15	1.01	1.10	1.01	1.14	1.03	1.09
Ting Kau Bridge	NB	6100	0.64	0.99	0.62	0.96	0.62	0.97	0.63	0.97	0.62	0.97	0.61	0.97	0.62	0.97	0.61	0.97	0.62	0.97	0.63	0.98	0.63	0.98	0.65	0.99	0.64	0.98	0.63	0.96	0.62	0.96
	SB	6100	1.14	0.86	1.12	0.85	1.13	0.85	1.12	0.84	1.12	0.85	1.13	0.85	1.13	0.84	1.13	0.84	1.13	0.85	1.11	0.85	1.12	0.85	1.14	0.85	1.11	0.85	1.11	0.85	1.13	0.85
ELM Generation & Attraction																																
Vehicle	ELM Generation	pcu/hr	8900	7500	8100	7050	7850	6950	8150	7150	7900	6850	8100	7000	7900	7000	8100	7050	7900	6950	8600	7400	8750	7250	8750	7450	8300	7100	8300	7300	8450	7200
	ELM Attraction	pcu/hr	8000	7300	7550	6750	7450	6600	7650	6800	7350	6550	7550	6750	7500	6600	7550	6750	7500	6600	7900	7150	7800	7200	8000	7200	7600	6800	7850	6900	7700	7050
	self-containment	%	16%	14%	18%	16%	18%	16%	17%	15%	19%	16%	18%	15%	18%	16%	18%	16%	18%	16%	16%	14%	17%	15%	16%	14%	17%	15%	17%	14%	17%	15%
Public Transport Demand	ELM Generation	ppl/hr	159000	71000	160500	72000	161000	72500	160500	72000	161000	72500	160500	72000	161000	72500	160500	72000	159500	71500	159500	71500	159000	71000	160000	72000	160000	71500	160000	71500	160000	72000
	ELM Attraction	ppl/hr	77500	98000	78500	99000	79000	99500	78500	99000	79000	99500	78500	99000	79000	99500	78500	99000	79000	99500	78000	98500	78500	98500	78000	98000	78500	99000	78000	98500	78500	99000
	self-containment	%	14%	13%	14%	13%	13%	13%	13%	13%	14%	13%	13%	13%	13%	13%	13%	13%	13%	13%	14%	13%	14%	13%	14%	13%	14%	13%	13%	13%	13%	13%
ELM Distribution % (excluding self-containment)																																
	from ELM to KT	%	27%	20%	32%	20%	27%	14%	27%	16%	32%	19%	29%	17%	30%	18%	29%	17%	30%	17%	23%	14%	31%	21%	27%	21%	34%	24%	25%	16%	27%	16%
	from ELM to North Lantau	%	33%	22%	30%	17%	32%	17%	28%	15%	33%	18%	35%	19%	26%	14%	34%	18%	26%	15%	34%	21%	40%	28%	30%	20%	30%	17%	25%	14%	42%	28%
	from ELM to Sunny Bay	%	40%	58%	38%	63%	41%	69%	45%	68%	35%	64%	37%	64%	44%	68%	37%	65%	44%	68%	42%	65%	29%	51%	43%	59%	37%	59%	51%	70%	31%	55%
	from KT to ELM	%	23%	22%	25%	24%	19%	19%	21%	20%	23%	23%	21%	21%	22%	22%	22%	21%	22%	22%	19%	17%	25%	24%	24%	22%	26%	26%	21%	18%	21%	20%
	from North Lantau to ELM	%	29%	36%	20%	33%	20%	35%	20%	33%	21%	36%	25%	38%	18%	32%	25%	37%	18%	32%	29%	37%	31%	43%	27%	32%	21%	32%	21%	28%	31%	44%
	from Sunny Bay to ELM	%	48%	42%	55%	43%	61%	45%	59%	47%	56%	41%	54%	41%	60%	46%	54%	41%	60%	46%	52%	46%	44%	33%	49%	46%	52%	41%	58%	54%	48%	36%
Source of Road Traffic running between ELM and Kennedy Town (excluding the Public Transport)																																
	from ELM to KT	%	25%	30%	30%	33%	28%	29%	27%	30%	31%	34%	29%	31%	29%	32%	29%	31%	29%	31%	24%	27%	29%	34%	26%	32%	30%	36%	25%	28%	28%	31%
	from Sunny Bay to KT	%	56%	38%	56%	34%	56%	33%	58%	38%	52%	29%	54%	32%	57%	35%	54%	32%	57%	35%	57%	37%	51%	30%	56%	39%	55%	34%	59%	46%	51%	29%
	from North Lantau to KT	%	19%	32%	15%	33%	16%	39%	15%	32%	17%	37%	18%	37%	13%	34%	17%	37%	13%	34%	19%	37%	20%	36%	18%	29%	15%	29%	16%	26%	20%	40%
	from KT to ELM	%	28%	20%	32%	24%	30%	23%	29%	21%	33%	25%	31%	23%	31%	23%	31%	23%	30%	23%	27%	19%	31%	24%	29%	21%	33%	25%	28%	19%	30%	23%
	from KT to Sunny Bay	%	43%	59%	41%	58%	39%	56%	48%	59%	36%	53%	38%	55%	47%	61%	37%	55%	48%	61%	41%	58%	37%	54%	44%	59%	41%	58%	53%	63%	35%	52%
	from KT to North Lantau	%	29%	21%	27%	19%	31%	21%	22%	19%	31%	22%	32%	22%	22%	16%	32%	21%	21%	16%	32%	23%	32%	23%	27%	20%	27%	18%	19%	17%	35%	25%
Source of Road Traffic running between ELM and Sunny Bay (excluding the Public Transport)																																
	from Sunny Bay to ELM	%	42%	63%	46%	67%	52%	72%	49%	69%	49%	71%	48%	69%	49%	69%	47%	69%	49%	69%	46%	69%	42%	63%	42%	63%	43%	64%	48%	67%	46%	69%
	from Sunny Bay to KT	%	58%	37%	54%	33%	48%	28%	51%	31%	51%	29%	52%	31%	51%	31%	53%	31%	51%	31%	54%	31%	58%	37%	58%	37%	57%	36%	52%	33%	54%	31%
	from Sunny Bay to North Lantau	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	from ELM to Sunny Bay	%	57%	49%	58%	54%	64%	61%	58%	57%	62%	58%	61%	57%	58%	57%	61%	58%	58%	57%	61%	56%	54%	48%	57%	49%	56%	50%	58%	57%	60%	56%
	from KT to Sunny Bay	%	43%	51%	42%	46%	36%	39%	42%	43%	38%	42%	39%	43%	42%	43%	39%	42%	42%	43%	39%	44%	46%	52%	43%	51%	44%	50%	42%	43%	40%	44%
	from North Lantau to Sunny Bay	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Route 4																																
	ELM to Southern	%	13%	12%	13%	10%	12%	9%	12%	9%	13%	10%	12%	10%	13%	10%	13%	10%	13%	10%	12%	9%	14%	12%	13%	12%	14%	11%	12%	9%	12%	10%
	Sunny Bay to Southern	%	46%	48%	46%	26%	43%	20%	46%	27%	43%	19%	44%	22%	46%	23%	44%	22%	46%	24%	46%	28%	45%	33%	46%	48%	47%	34%	46%	35%	43%	21%
	North Lantau to Southern	%	12%	23%	9%	18%	8%	19%	8%	17%	9%	20%	10%	19%	7%	18%	10%	20%	7%	18%	11%	19%	12%	24%	11%	21%	9%	20%	9%	12%	11%	21%
	Central to Southern	%	29%	17%	33%	46%	36%	52%	34%	47%	35%	51%	34%	49%	34%	49%	34%	49%	35%	49%	32%	44%	30%	31%	30%	19%	31%	35%	34%	44%	33%	48%
	Southern to ELM	%	22%	10%	26%	11%	21%	10%	24%	10%	23%	11%	25%	10%	23%	11%	25%	11%	23%	11%	23%	10%	25%	11%	23%	11%	26%	11%	23%	10%	26%	11%
	Southern to Sunny Bay	%	54%	47%	50%	44%	34%	39%	55%	43%	34%	38%	44%	41%	47%	44%	43%	41%	47%	44%	51%	43%	46%	44%	56%	48%	51%	46%	62%	46%	43%	39%
	Southern to North Lantau	%	20%	14%	20%	13%	16%	14%	14%	13%	18%	15%	21%	14%	12%	11%	21%	14%	12%	11%	21%	15%	24%	15%	18%	14%	19%	13%	11%	12%	26%	16%
	Southern to Central	%	4%	28%	4%	32%	29%	37%	8%	33%	25%	36%	10%	34%	18%	35%	11%	34%	18%	35%	5%	32%	4%	29%	3%	28%	4%	30%	4%	33%	5%	34%

Appendix D

Traffic impact on Connaught Road West, Shing Sai Road and Victoria Road

Regional Links	Dir	Config	Capacity (pcu/hr)	2015				S34-2041woR4-Full				S31-2041wR4-Full			
				AM		PM		AM		PM		AM		PM	
				Flows (pcu)	V/C	Flows (pcu)	V/C	Flows (pcu)	V/C	Flows (pcu)	V/C	Flows (pcu)	V/C	Flows (pcu)	V/C
Connaught Road West	EB	D3	5,400	5,350	0.99	3,000	0.56	6,350	1.18	4,700	0.87	6,350	1.18	4,700	0.87
	WB	D3	5,400	3,300	0.61	3,750	0.69	5,150	0.95	6,100	1.13	5,150	0.95	6,100	1.13
Shing Sai Road (Sai Cheung St North - Connaught Road West)	SB	D2	3,400	1,400	0.41	1,150	0.34	2,000	0.59	1,500	0.44	1,700	0.50	1,300	0.38
	NB	D2	3,400	1,250	0.37	850	0.25	1,400	0.41	1,500	0.44	1,400	0.41	1,350	0.40
Victoria Road (Sassoon Rd - Cyberport Rd)	SB	S1	1,000	350	0.35	400	0.40	600	0.60	500	0.50	400	0.40	450	0.15
	NB	S1	1,000	650	0.65	400	0.40	750	0.75	500	0.50	750	0.75	450	0.45