For discussion **FCR(2000-01)15**
on 26 May 2000

ITEM FOR FINANCE COMMITTEE

CAPITAL INVESTMENT FUND
HEAD 957 - KOWLOON-CANTON RAILWAY CORPORATION
New Subhead "Ma On Shan to Tai Wai Rail Link and Kowloon-Canton Railway Extension from Hung Hom to Tsim Sha Tsui"

Members are invited to approve a commitment of $8,500 million under the Capital Investment Fund for equity injection into the Kowloon-Canton Railway Corporation to allow major works on the Ma On Shan to Tai Wai Rail Link and the Kowloon-Canton Railway Extension from Hung Hom to Tsim Sha Tsui to proceed.

PROBLEM

We need to inject equity into the Kowloon-Canton Railway Corporation (KCRC) to enable it to begin construction of the Ma On Shan to Tai Wai Rail Link (MOS Rail) and the Kowloon-Canton Railway Extension from Hung Hom to Tsim Sha Tsui (TST Extension) in 2000.

PROPOSAL

2. We propose that Members approve a commitment of $8,500 million under the Capital Investment Fund for equity injection into the KCRC for undertaking the MOS Rail and TST Extension.

JUSTIFICATION

Project Cost Estimates

3. KCRC's latest cost estimate for the MOS Rail and TST Extension is $16.3 billion (in money-of-the-day (MOD) prices), broken down as follows -

/Capital …..

	$ billion (MOD)
Capital cost	15.1
Financing cost	1.2
Total	**16.3**

Government's assessment

4. We consider KCRC's capital cost estimate generally in order and financing cost within an acceptable range. The capital cost estimate has included provision for compensation and related payment arising from the projects. It, however, does not take into account additional costs that may arise due to development of the air space above any MOS Rail stations and depots (please refer to paragraphs 11 and 12 below).

5. Taking into account the capital cost estimate, inflation forecast and property development profits, the KCRC has estimated that the project internal rate of return (IRR) of the MOS Rail and TST Extension lies between 7.3% and 8.4%. Encl. 1 A copy of KCRC's financial report on these two projects is at Enclosure 1. Government is of the view that the high-side scenario of 8.4% IRR is in line with the current population build-up planning intention for Ma On Shan.

Financing arrangements

6. We have studied the KCRC's capital structure, borrowing power, property development proposals and other commitments such as the West Rail and the Sheung Shui to Lok Ma Chau Spur Line to evaluate the Corporation's borrowing capacity and an appropriate mix of debt and equity financing for the MOS Rail and TST Extension. We have agreed with KCRC on an optimal financing arrangement that would minimise the use of public funds and at the same time allow the Corporation to service its capital in the most cost-effective manner. The total project cost is intended to be financed as follows -

	$ billion (MOD)
KCRC borrowing	7.8
Government equity	8.5
Total	**16.3**

/*KCRC's …..*

KCRC's borrowing

7. KCRC is well-placed to raise finance at a corporate level through commercial loans, given the Corporation's high international credit ratings, its robust financial record, and the support of Government as its sole shareholder. For instance, the Corporation has demonstrated its ability to tap the international financial markets by issuing a US$1 billion Eurodollar bond in July 1999 and a US$1 billion global bond in March 2000. That said, an appropriate amount of equity contribution from Government is also required in order to demonstrate Government's continued support for KCRC to credit rating agencies, creditors and potential investors.

8. Having regard to KCRC's overall financial position, we believe that a Government commitment to inject equity of up to $8.5 billion, together with the property development rights described in paragraphs 11 and 12 below, would be an appropriate level of financial support for the MOS Rail and TST Extension, and would allow the KCRC to raise the balance required for their funding of these two projects through commercial borrowings.

9. The current proposal to inject equity of up to $8.5 billion into KCRC will enable the Corporation to continue to tap both the local and international financial markets. The financing arrangements will allow KCRC to maintain a minimum Debt Service Coverage ratio of 1.25 and a maximum debt to equity ratio of 43%. These financial indicators demonstrate clearly that KCRC will be able to raise the proposed debt cost-effectively and support it comfortably.

Equity

10. The proposed equity injection by Government, at about half of the total project cost estimate, is in line with the proportion of Government funding for the West Rail. This amount should provide the KCRC with a reasonably strong equity base in comparison with the loans to be raised and also let KCRC have sufficient flexibility in arranging its finances. The amount will also give a clear signal to the financial market and credit agencies about the extent of Government commitment to the projects, and should further strengthen the confidence of lenders in providing loans at competitive rates to the KCRC.

Property Development

11. KCRC has proposed to help support their borrowing programme by seeking property development rights on the MOS Rail alignment above Tai Wai Station and depot, and Lee On and Sha Tin Tau Stations, and on two East Rail sites at Fo Tan and Ho Tung Lau.

/12. …..

12. In line with the existing policy, we consider it appropriate to grant the requested property development rights to the KCRC so as to ensure the timely delivery of housing supply and better integration between the housing developments and the railway stations. Furthermore, KCRC considers that such rights will be a strong indication to the markets of on-going Government financial support. KCRC estimates that this will generate profits of up to $4.3 billion which will contribute to its debt repayment and thus strengthen its financial position in the early years of its new projects' operations. Government and the KCRC have agreed in principle that any property development profits in excess of the estimated figure should be distributed to Government in full by means of extraordinary dividends, unless they are required to finance other railway projects. This arrangement will ensure that those profits in excess of KCRC's financing requirements will be channelled to Government's General Revenue.

Project Evaluation

13. Government considers that the KCRC's higher estimate of project IRR at 8.4% is comparable to the 8.5% IRR originally projected for the Mass Transit Railway (MTR) Corporation's Tseung Kwan O Extension and achievable. We consider the proposed equity injection of up to $8.5 billion into KCRC a prudent investment.

14. In order for construction to commence in 2000 and achieve opening in 2004, the KCRC needs a commitment from Government now that it will fund its share of project costs. Detailed design of the civil works is now substantially completed, and tendering has commenced. Award of civil construction contracts is scheduled to begin later this year, subject to the Corporation having received the proposed equity injection.

FINANCIAL IMPLICATIONS

15. We intend to inject up to $6 billion of equity into KCRC in 2000-01 and the balance required in 2001-02.

16. We will also need to carry out some essential public infrastructure works in the order of $1.8 billion (in 1999 prices) to enable the MOS Rail and TST Extension to be open for use by the public. Such works include the provision of access roads, construction of public transport interchanges, pedestrian subways (including the installation of travellators as appropriate), etc. They will be entrusted to the KCRC and funded from the Capital Works Reserve Fund. Funding approval for these works will be sought separately from the Finance Committee in due course.

/ENVIRONMENTAL …..

ENVIRONMENTAL IMPLICATIONS

17. The MOS Rail and TST Extension projects constitute designated projects under Schedule 2 to the Environmental Impact Assessment (EIA) Ordinance (Cap. 499) and environmental permits are required for the construction and operation of the railways. In accordance with the EIA Ordinance, the KCRC has completed detailed EIA study on these projects and the EIA reports were endorsed by the Advisory Committee on Environment in December 1999 and April 2000. The Director of Environmental Protection has issued the environmental permit on the MOS Rail project to the KCRC, and the environmental permit for the TST Extension is being processed now. The KCRC will implement all recommended mitigation measures identified in the approved EIA report and comply with the conditions in the environmental permits and the relevant legislative regulations and criteria. During construction, the KCRC will implement the necessary measures to control noise, dust and site run-off and other short-term environmental impacts within the established standards and requirements. For MOS Rail, the key measures include various types of noise barriers and enclosures at critical sections of the rail alignment.

CONSULTATION

18. We briefed the Legislative Council Transport Panel on this subject on 25 June 1999, 29 March 2000 and 28 April 2000. Panel Members requested a commitment by the Administration on the timing of building the proposed second rail connection from Tai Wai to Kowloon. The Sha Tin District Council also expressed similar wishes. Under the Railway Development Strategy 2000, this rail connection together with the Fourth Harbour Crossing and the East Kowloon Line have been grouped into a north-south corridor – the Sha Tin to Central Link – as part of the next phase of railway network expansion. Depending on the operator which will be selected through bidding by the two railway corporations, this new corridor could run either from Tai Wai or Ma On Shan to Hong Kong Island via South East Kowloon. Taking into account the overall transport requirement of the railway network expansion, the programme for the Wan Chai reclamation and the South East Kowloon Development, and the pace of development in Northeast New Territories and Ma On Shan, this corridor is expected to be completed between 2008 and 2011 and in phases, if necessary, to meet specific transport needs such as relieving congestion at the East Rail Beacon Hill Tunnel.

BACKGROUND INFORMATION

19. The MOS Rail together with the TST Extension form one of the priority railway projects recommended in the 1994 Railway Development Strategy. The MOS Rail is essential for improving the access to Ma On Shan

/and …..

and to facilitate further development of the area, while the TST Extension is essential for the smooth operation of the MOS Rail by providing another point of interchange with the MTR network. In September 1998, the Executive Council decided to ask the KCRC to proceed with detailed planning and design of both projects.

20. In accordance with the Railways Ordinance, we gazetted the railway schemes for the MOS Rail and TST Extension in March and April 1999 respectively, and amendments were made to the schemes between October 1999 and March 2000. Under the Railways Ordinance, objections will be handled within a period of nine months (or three months in the case of amendments to the gazetted schemes) upon the expiry of the objection period.

21. For the MOS Rail, 67 objection cases, including eight group objection cases which involve 1 035 standard objection letters, were received within the two-month statutory objection period. The major areas of concern in these objections are the interchange arrangements at Tai Wai Station, the proposed second rail connection from Tai Wai to Kowloon, and environmental impact. We have also received 47 letters of support from shop operators in Ma On Shan town centre for early implementation of the rail link. Up to now, three objections and more than 250 standard objection letters have been withdrawn. The amendments made to the railway scheme did not attract any objections.

22. Under the gazetted railway scheme, the MOS Rail will connect to the East Rail at Tai Wai Station which will be expanded to cope with the additional passenger loading and provide cross-platform transfer for Kowloon-bound passengers from Ma On Shan area (similar to the arrangements at the MTR Mong Kok and Prince Edward stations). In addition, the KCRC will run extra Kowloon-bound trains from Fo Tan or Sha Tin during the morning peak hours to relieve the congestion at the Tai Wai-Kowloon Tong section of the East Rail. The existing passenger loading of the East Rail and future projections up to 2011 are at Enclosure 2.

Encl. 2

23. For the TST Extension, 29 objections to the railway scheme and the amendments have been received within the statutory period, and so far three objections have been withdrawn. These objections concern mainly local pedestrian facilities, the potential impact on Signal Hill and local traffic, and diversion work required by the railway project. The amendments to the railway scheme were made to improve the pedestrian facilities and to avoid cutting the Signal Hill in response to the views of the local community and of some objectors.

/24. .....

24. As an administrative arrangement, a panel of independent persons conducted hearings on the unwithdrawn objections to the MOS Rail scheme on 11, 13 and 17 April 2000. This is in line with the arrangements for the West Rail (Phase I) and MTR Tseung Kwan O Extension. The Independent Panel will hear the unwithdrawn objections to the TST Extension scheme in June 2000. The Panel's report and the views expressed by the objectors during the hearings will be submitted together with the railway scheme and all unwithdrawn objections to the Chief Executive in Council for consideration.

25. At its meeting on 2 July 1999, the Finance Committee considered the proposed equity injection and deferred a decision on the funding proposal pending -

(a) the completion of the statutory EIA process; and

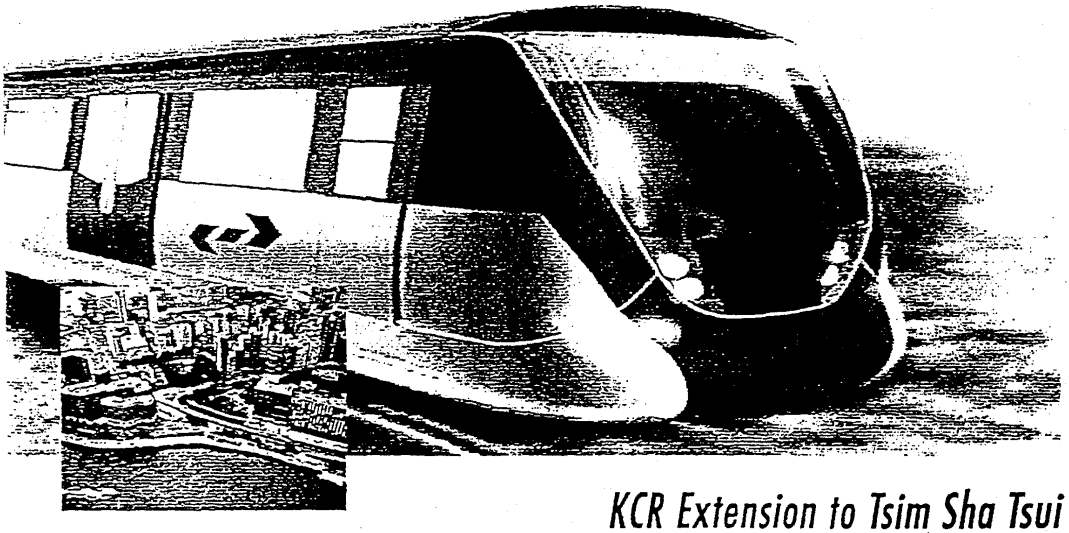
(b) a commitment on the timing of building a second rail connection from Tai Wai to Kowloon as an extension of the MOS Rail.

26. Subject to authorisation of the railway schemes by the Chief Executive in Council, the KCRC will raise the necessary additional finance and will start construction of the MOS Rail and TST Extension in late 2000 in order to bring the extensions into operation by 2004.

Finance Bureau
May 2000

Enclosure 1 to FCR(2000-01)15

Financial Study



KCR Extension to Tsim Sha Tsui
Ma On Shan to Tai Wai

Kowloon-Canton Railway Corporation

July 1999

KCR
九廣鐵路

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1. INTRODUCTION

The Ma On Shan to Tai Wai rail link (MOS Rail) and the extension of the Kowloon-Canton Railway from Hung Hom to Tsim Sha Tsui (TST Extension) together form one of the three high-priority projects recommended in the 1994 Railway Development Study.

On 9 December 1997, following an Executive Council decision, the Government invited the Corporation to submit detailed proposals to undertake the MOS Rail and TST Extension as a package.

In June 1998, the Corporation completed a financial feasibility study, and the major findings, updated after agreement with the Government regarding funding of the project, are set out as follows.

2. DATA AND ASSUMPTIONS USED IN THE FINANCIAL PROJECTIONS FOR THE MOS RAIL AND TST EXTENSION

2.1 Capital Cost

2.1.1 Background

The preliminary engineering design work was undertaken by external consultants led by KCRC staff, with engineering sections providing input for railway systems and operational requirements. The preliminary design work was completed, and in parallel the design consultant and a cost consultant each derived separate cost estimates. These separate estimates were then reconciled to provide the agreed cost estimate for the Financial Study. It follows that the basis of the design from which these costs have been derived is preliminary, and the contingency included in the estimate provides for further development of the design.

The capital cost, excluding financing cost, as it currently stands, is estimated to be $13,490 million at January 1998 prices, or $15,118 million in MOD, broken down as follows-

Table 2.1 : MOS Rail and TST Extension Capital Cost Estimate (Consolidated) ($ million)

Description	Jan-98 prices	MOD
Line Segments	3,011	3,266
Stations	2,868	3,187
Depot	462	517
Systemwide E&M	2,000	2,319
Rolling Stock	1,170	1,372
Miscellaneous	503	562
Sub-total	**10,014**	**11,223**
Design Development/Detailed Design	1,002	1,122
Project Management	803	898
Contingency	1,034	1,142
Land Costs	481	534
Pre-operating Costs	156	199
Total	**13,490**	**15,118**

Note

All financial projections for MOS Rail and TST Extension, assume construction commencing during year 2000 and commencement of revenue operations during year 2004.

2.1.2 Capital Cost Estimate : Background and Assumptions

(a) Line Segments

This relates to the civil engineering cost for the rail alignment. This is essentially viaduct for MOS Rail and tunnel for TST Extension.

(b) Tai Wai Depot

The Tai Wai Depot will provide train stabling and maintenance facilities for the MOS Rail.

(c) Systemwide E&M

This relates to the permanent way, the power supply, signaling, communication and ticketing systems.

(d) Rolling Stock

The number of electric multiple units (EMUs) required was determined by a comprehensive study undertaken by KCRC's Railways Systems group. The estimate for MOS Rail includes the cost of twenty units of 4 car EMUs. Two locomotives have been included for shunting and maintenance.

No additional passenger rolling stock is required for TST Extension. However, one locomotive for maintenance / engineering train has been provided. Modifications to East Rail's existing twenty-nine units of 12 car EMUs are required, to ensure that a two and a half minute service can be achieved after the extension of the line to Tsim Sha Tsui.

(e) Miscellaneous

This includes ancillary buildings such as plantrooms, traction feeder stations, systemwide modifications and geotechnical investigation. This also includes provision for 8-car train, bridge connections, utility diversion, secondary glazing and air-conditioning, roadworks, playground reinstatement,

landscaping, site modification, regrading, footbridge and slope protection works.

(f) Design Development and Detailed Design

Design development and detailed design has been allowed at 10% of the sub-total capital costs, taking into consideration the current stage of design.

(g) Project Management

Project management is provided at 8% of the sub-total capital costs.

(h) Contingency

Contingency is provided at about 10% of the sub-total capital costs.

(i) Pre-operating Costs

The estimated pre-operating costs are shown in Table 2.2. It is assumed that the operations staff team will be gradually built-up from 2003, with a full team in place for commissioning and railway opening during 2004.

Table 2.2 : Pre-operating Costs
($ million, MOD)

	1999	2000	2001	2002	2003	2004	Total
Staff Costs	-	-	1	8	9	76	94
Energy Costs	-	-	-	-	1	15	16
Others *	8	9	9	11	21	31	89
Total	**8**	**9**	**10**	**19**	**31**	**122**	**199**

* include fitting-out, supplies, repair and maintenance costs

2.2 Financing Cost

At an assumed interest rate of 10% p.a., the financing cost is estimated to be $1.2 billion (MOD), making a total project cost of $16.3 billion (MOD).

2.3 Costs Excluded from the Capital Cost Estimate

The estimate excludes the cost of the subway link between MTRC and KCRC Tsim Sha Tsui Stations, and the cost of such works as may be entrusted to the Corporation by the Government as transport interchange facilities. Telecommunications capital costs are assumed to be met up front by companies which will be licenced to provide mobile telephone facilities.

2.4 Revenue Assumptions

2.4.1 Patronage Forecast

The patronage forecasts are generated using a territory-wide computerised transport model. This model recognises all forms of transport, such as rail, light bus, franchised bus, taxi, private cars, etc. The transport model was calibrated against the 1992 Travel Characteristics Survey, and was further validated against passenger and traffic flows in the public transport and road networks, observed during 1995. The model has been enhanced by sub-dividing the original study zones in the NENT and Ma On Shan areas into smaller zones, thereby improving the representation of the ER/MOS rail passenger catchment areas.

Input data to the model includes future planning assumptions, for example, socio-economic data, the different types of transport and corresponding networks, as well as the convenience of usage to the travellers. For MOS patronage forecasts, service characteristic such as fares, frequency, access to the MOS rail stations, connectivity with other systems, and competing forms of transport, were entered into the transport model.

A key variable in forecasting rail patronage, is the population and the related employment assumptions for those living within the rail catchment areas. For MOS Rail three cases are taken into account, the Base Case which assumes a total population in the Shatin and Ma On Shan Sectors of 697,000 in 2011, a Base $^{+}1$ total population of 784,000, and the Base $^{+}2$ case which assumes a higher total population of 802,000.

The total population assumptions drive the population in each of the MOS rail station catchment areas. Within most of the areas residents can easily walk to a MOS rail station. The catchment population assumptions are summarised in Table 2.3 below, and are shown diagramatically in Annex 1. The 1996 Population By-census numbers are given in the table for reference purpose.

Table 2.3 : 2011 Population Assumption
(in '000)

MOS Rail Catchment Area	1996	2011		
	By-census	Base Case	Base +1	Base +2
South East Shatin (4 Stations; STT, SKS, CIO and SHM)	190	201	235	235
Ma On Shan (4 stations; CHG, HEO, MOS and LEO)	140	216	247	265
Total	**330**	**417**	**482**	**500**

For the Base Case, Base +1 and Base +2 catchment area population assumptions in Table 2.3 above, the model has generated MOS rail patronage forecasts shown in Table 2.4 below. The equivalent Government Railway Development Study forecast, is shown for comparison.

Table 2.4 : MOS Rail Daily Patronage Forecast
(in '000)

Year	RDS High	RDS Low	KCRC Base Case	KCRC Base +1	KCRC Base +2
2004	-	-	279	287	290
2006	344	298	282	308	317
2011	349	308	290	329	338

For TST Extension a patronage was derived from the transport model, using East Rail catchment area populations and fare levels, cross-boundary train services combined with MOS Rail patronage via East Rail. Passengers will be able to access Tsim Sha Tsui and MTRC cross-harbour services directly.

2.4.2 Fare Policy

The fundamental policy of KCRC is that the ERE will be an integral part of the East Rail system. Accordingly, the level of fares is distance based, and is determined having due regard to the competitive position of the railway in terms of speed of travel, convenience of connection to other modes of transport, as well as market affordability.

For the purpose of calculating revenue for financial projections, KCRC has assumed a base fare of $8.2 (1997 prices) from Lee On to Tai

Wai. This fare level for a new railway is comparable to the fare over a similar distance on the MTRC.

2.4.3 Property Development Profits

The financial viability study includes profits of $3,057 million in MOD to be generated from four property development sites along the MOS Rail as shown in Table 2.5 below.

Table 2.5 : MOS Rail Property Development
($ million, MOD)

Site	Anticipated year of completion	Profit to KCRC
Lee On	2005	903
Tai Wai Depot	2005-2007	928
Tai Wai Station	2006	927
Sha Tin Tau	2006	299
Total		**3,057**

Together with profits from two East Rail sites at Fo Tan and Ho Tung Lau, these will contribute to the KCRC's debt repayment and thus strengthen its financial position in the early years of East Rail Extensions operation.

2.5 Costs Assumptions

2.5.1 Operating Costs

The projected operating costs are based on current cost structures of East Rail where appropriate. Cash operating costs represent the costs for train operation, EMUs and station maintenance, cleaning, rates and Government rents, etc., for MOS Rail and TST Extension. The costs are projected based on the required train frequency, station design and system features, etc. Additional fixed overheads are avoided assuming MOS Rail and TST Extension is operated and maintained as part of the existing East Rail system.

2.5.2 Ongoing Capital Expenditure

This includes refurbishment and replacement of rolling stock and signaling equipment and steady-state capital expenditure. EMU refurbishment is assumed to take place after 15 years and replacement is based on a 30-year cycle. Replacement of other minor capital equipment is included as annual steady-state capital expenditure.

2.6 Financial Assumptions

2.6.1 Inflation

The revenue and operating costs financial projections assume low inflation rates in the early years, rising to 5% per annum in 2002 and beyond.

2.6.2 Interest Rates

Interest rate for borrowings is assumed at 10.0% p.a.

2.6.3 Exchange Gain or Loss

No exchange gain or loss is assumed in the projections for the following reasons -

(a) All major contracts are awarded in Hong Kong or US Dollars
(b) Forward contracts and swaps are used to hedge exchange exposure arising from contract payments and borrowings as far as practicable.

2.6.4 Depreciation and Tax

Book depreciation of assets is calculated with reference to the rates in Table 2.6, which are consistent with KCRC accounting policy.

Table 2.6 : Depreciation Rates for Fixed Assets

Asset Class	% per annum
Land Formation	2%
Infrastructure (tunnel, bridges, roads)	1%
Buildings	2%
Rolling Stock (electrical)	3%
Rolling Stock (diesel)	3%
Lifts and Escalators	5%
Telecom and Signalling System	10%
Fare Collection System	20%
Other Plant and Equipment	10%

Tax depreciation on the assets of the extensions is calculated based on statutory tax allowances as follows :

- For civil works and buildings, an initial allowance of 20% and an annual allowance of 4% on a straight-line basis
- For plant and equipment, an initial allowance of 60% and an annual allowance of 10% to 30% on a reducing balance basis

Profits tax has been calculated at the rate of 16% on assessable income, the current rate applicable in Hong Kong.

2.6.5 Terminal Value

For the purpose of calculating the project internal rate of return (IRR), detailed cashflow projections are prepared up to 2037. From 2038 to 2123 (120 years after commencement of operation in 2004), a projected steady-state pre-tax cashflows is assumed, by extrapolating the operating cashflows at a rate of inflation minus 1% beyond 2037. A terminal value at year 2037 will be obtained by discounting all cashflows beyond 2037 with the project IRR.

3. FINANCIAL ANALYSIS

Three scenarios are developed in the financial analysis of the project. These scenarios, namely, the Base Case, the Base $^{+}$1 and Base $^{+}$2, are based on different patronage forecast as described in 2.4.1. All other assumptions remain the same in all scenarios. The project IRR and payback are calculated for each of the scenarios.

3.1 Project IRR

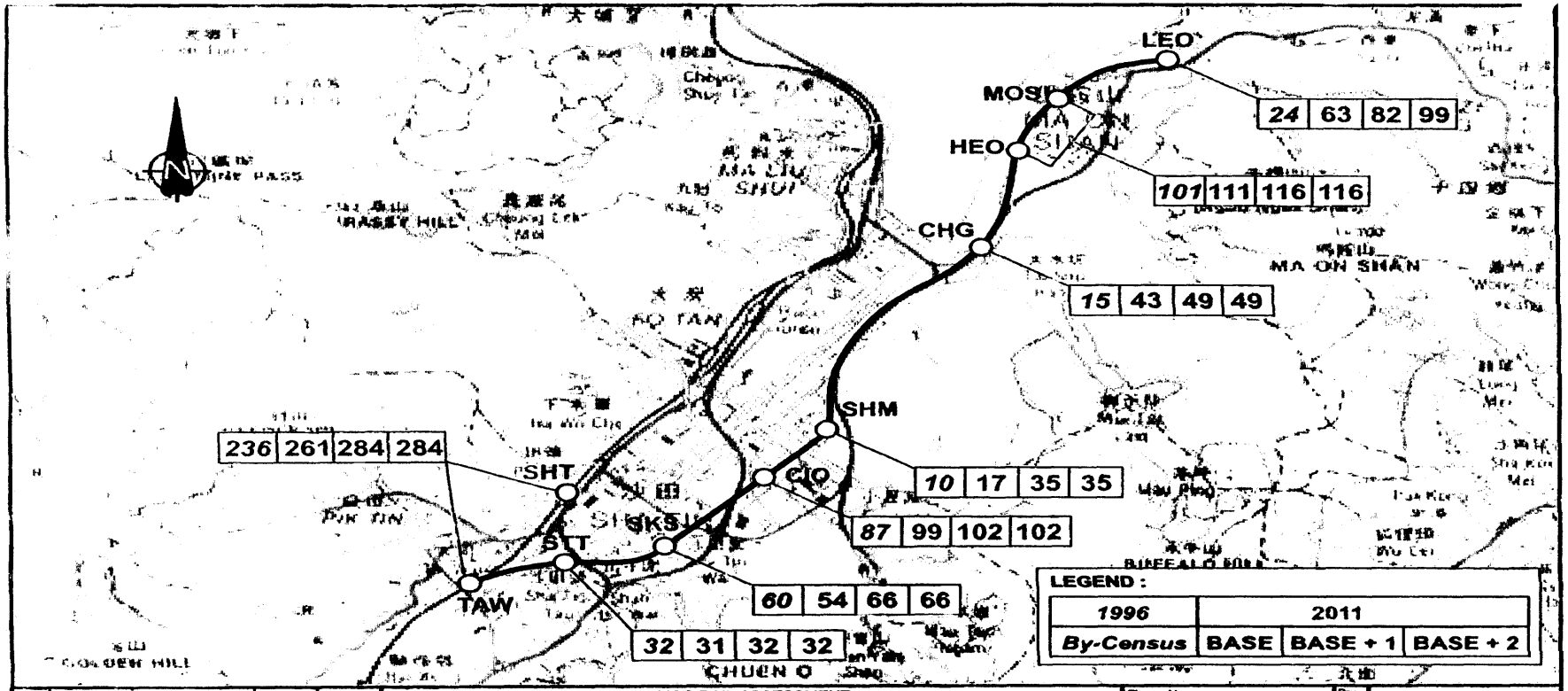
The resulting project IRR and payback year of the three scenarios are-

	Base Case	Base $^{+}$1	Base $^{+}$2
Project IRR	7.34%	8.16%	8.38%
Payback year	2022	2018	2017

4. FINANCING

4.1 Financing

Allowances have been built in the Corporation's financing model to allow it to adequately fund the construction of West Rail, Phase 1 and in situ improvement projects in East Rail and Light Rail to keep the systems modern, efficient and competitive. Based on these, and after discussions with the Government in June 1999, the Corporation agreed that the most cost-effective structure for the financing of this project is for the Government to inject an equity of $8.5 billion into the Corporation. The Corporation will then borrow $7.8 billion for this project which property development profits can help to repay.



Rev.	Description	Approved	Date

MOS RAIL ASSESSMENT

1996 BY-CENSUS, AND YEAR 2011 "BASE" "BASE + 1" AND "BASE + 2" POPULATION SCENARIOS ('000s)

Figure No.	Rev.
1	

Designed By		Scale
PIR		NTS
Checked By		Date
MJR		JUNE 1996

MVA ASIA LIMITED

ANNEX 1

Enclosure 2 to FCR(2000-01)15

Passenger Loading on East Rail

Population in NENT

The population in the Northeast New Territories (NENT) falling within the catchment areas of the KCRC East Rail is projected to grow to 1,195,000, 1,236,000 and 1,394,000 by the years 2004, 2006 and 2011 respectively. Comparing them with the 1996 By-census figure (1,094,000), this represents an increase of 101,000, 142,000 and 300,000 in the respective years.

Forecast East Rail Patronage

2. The population growth in the NENT will generate additional passenger loading on the East Rail. The projected opening of the Sheung Shui to Lok Ma Chau Spur Line (Spur Line) in 2004 will also bring additional passengers on to the East Rail.

(a) Average Daily Patronage

3. Using the latest population data, the KCRC has estimated that the average weekday patronage for the East Rail, the MOS Rail and the Spur Line for the years 2004, 2006 and 2011 is shown in Table 1 below.

Table 1 - Average Weekday Patronage Forecast

Year	East Rail	MOS Rail	Spur Line
2004	1,032,000	264,000	81,000
2006	1,082,000	284,000	111,000
2011	1,232,000	295,000	195,000

4. Comparing with the 1996 average weekday patronage of 730,000, the East Rail is forecast to have an additional patronage of 332,000, 382,000 and 532,000 in the years 2004, 2006 and 2011 respectively.

(b) Peak Hour Loading

5. The most critical section on the East Rail in terms of passenger loading is the section between Tai Wai and Kowloon Tong during the morning peak hours in the southbound direction. The forecast peak hourly flows of this section for the years 2004, 2006 and 2011 are shown in Table 2 below.

Table 2 - Morning Peak Hourly Flow (Southbound direction)

Year	Additional no. of passengers from MOS Rail	Additional no. of passengers from Spur Line	Total no. of passengers for Tai Wai-Kowloon Tong section
2004	10,000	2,000	60,000
2006	19,000	2,000	69,000
2011	18,000	4,000	78,000

Capacity of the East Rail

6. With signal upgrading and train car refurbishment, the capacity of the East Rail has been increased by more than 35%. The above forecast peak hourly flows are within the capacity of the East Rail of 90,000 passengers per hour per direction. The KCRC is considering further increase in the capacity of the East Rail in future vis-à-vis advancement of signalling technology. The patronage growth of the East Rail would be closely monitored as part of the on-going planning process for railway development.

Highways Department
May 2000