Financial Advisor for the Development of the West Kowloon Cultural District and Related Matters

Final Report

Executive Summary

April 2007

GHK

GHK would like to thank the members of the Financial Matters Advisory Group (FMAG), the Home Affairs Bureau (HAB) and other relevant Government Bureaux/ Departments for their contributions to this consultancy assignment. In particular, the assumptions adopted by the Financial Advisor (FA) were drawn up in consultation with HAB and relevant Government Bureaux/ Departments. Through HAB, the FA was also invited to present progress and key findings of the consultancy assignment at FMAG meetings and received feedback and advice from members.

All numbers in this report have been rounded to 0 or 1 decimal place for presentational ease. The table totals presented in this report therefore may not add up due to rounding.

( ) denotes negative value

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The Government's objective is to develop a world class arts and cultural district at West Kowloon, comprising local, traditional, as well as international elements, to enrich the arts and cultural life of the people of Hong Kong and its visitors and make Hong Kong an international cultural metropolis.

In September 2003, the Government launched an Invitation for Proposals (IFP) to invite the private sector to develop the West Kowloon Cultural District (WKCD). Following a large-scale public consultation, the Government in October 2005 proposed additional development parameters and conditions under the IFP to address public concerns, (termed the "October 2005 Package"). In reply, none of the proponents wished to take forward their proposals.

Noting the gap between the public demands and the market response, the Government announced in February 2006 that it would not continue with the IFP process and would press ahead with a new development approach for the WKCD. A Consultative Committee (CC) was established to re-examine and re-confirm, if appropriate, the Core Arts and Cultural Facilities (CACF) for the WKCD.

The CC is supported by three Advisory Groups:

- Financial Matters Advisory Group (FMAG) responsible for considering the financial implications of developing and operating the CACF as recommended by the Performing Arts and Tourism Advisory Group (PATAG) and the Museums Advisory Group (MAG)
- MAG to examine the need for museums and exhibition facilities
- PATAG to examine the need for performance venues

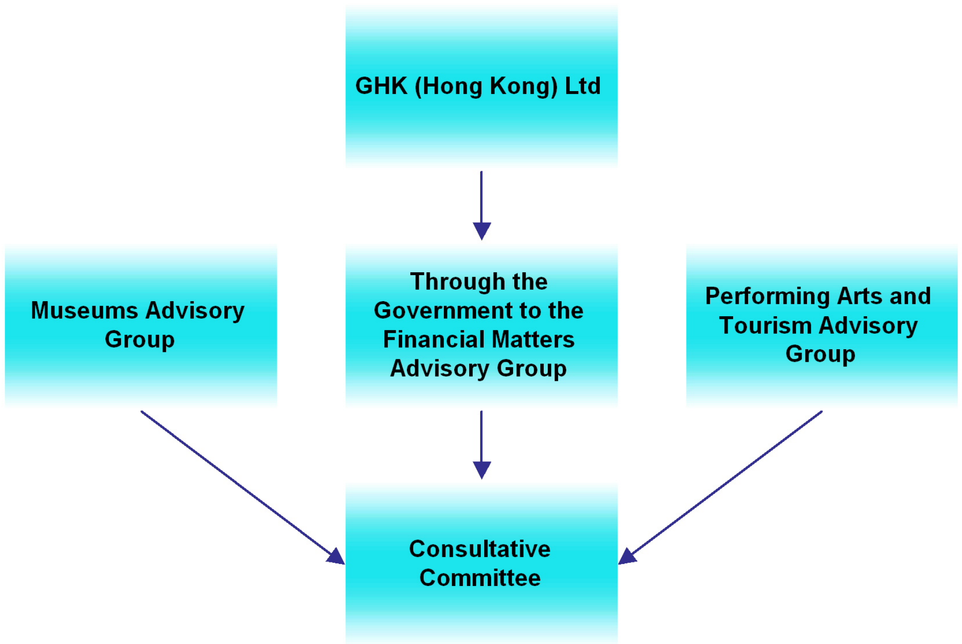
To assist FMAG in discharging its responsibilities, the Government appointed GHK (Hong Kong) Ltd as the Financial Advisor (FA). The FA was supported by a team of sub-consultants from Positive Solutions (performing arts specialists), LORD Cultural Resources (museum, art gallery and exhibition venue specialists), Knight Frank Petty (land and property market specialists), Ove Arup & Partners Ltd (engineering and Public Private Partnership (PPP) specialists) and KPK Quantity Surveyors (HK) Ltd (costing specialists). The role of the FA was to provide professional and independent expert advice to the Government with respect to the financial aspects of the development of the WKCD, and through the Government to FMAG.

The objective of the consultancy was to examine the financial implications of the Core Arts and Cultural Facilities (CACF) recommended by MAG and PATAG, and communal facilities for the WKCD by developing a series of dynamic financial models under different PPP options.

Specifically, the scope of the consultancy covered:

- Estimation of capital, and operation, maintenance and management (OMM) costs and operating revenue
- Financial viability and possible options to enhance it
- Possible different PPP approaches which may or may not be suitable for the WKCD
- Funding arrangements for the proposed statutory body and the financial implications of these to the Government / proposed statutory body

The consultancy addressed the possible financial implications of the objectives and recommendations of MAG and PATAG.



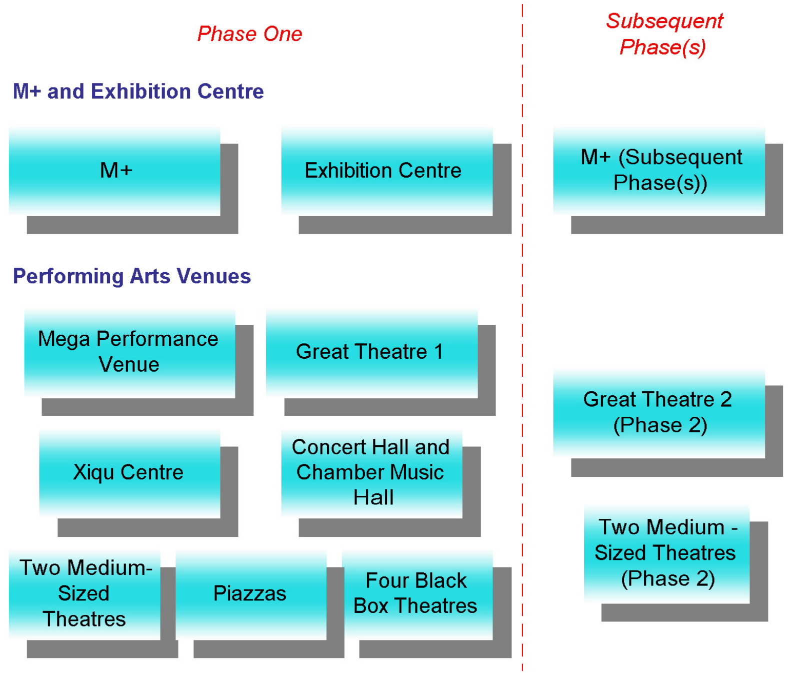
Recommendations for the WKCD performing arts venues (PA venues) and museum facilities were submitted by PATAG and MAG to the CC on 7 September and 23 November 2006 respectively. These recommendations included the number and scale of facilities but were otherwise broad in nature.

MAG recommended a vision of WKCD that would offer rich development potential based on the concept of "Visual Culture". MAG considered that the most desirable form of cultural institution to collect, preserve, research, educate and present visual culture would be a M+ (Museum Plus). M+ would be a single cultural institution with a mission to focus on 20th – 21st century visual culture under an open-ended format that encourages partnership, interaction and cross fertilisation of ideas from a 'Hong Kong perspective', a 'perspective of now' and with a 'global vision'. MAG recommended that the M+ should be developed in phases, two-thirds of which would take place in the first phase, and that storage facilities and a conservation laboratory, could be developed off-site. A separate Exhibition Centre (EC) was also proposed.

PATAG advised that 12 PA venues and 3 hectares of piazzas should be developed in Phase 1; with a further three venues developed in Phase 2 subject to the proving of future demand. PATAG also advocated that the PA venues and facilities should be suitably clustered together and integrated with the commercial facilities in the WKCD so as to attract people flow, thus creating synergy and vibrancy.

Following the IFP, other supporting facilities to be incorporated in the WKCD include: facilities for other arts and cultural uses, transport facilities, including an Automated People Mover (APM), other communal facilities and infrastructure and engineering works.

CACF Recommended by PATAG and MAG



The area of exhibition galleries in M+ (30,000 sq m) is equivalent to 4 times that of the Hong Kong Heritage Museum (7,500 sq m)

The seating capacity of the Mega Performance Venue (15,000 seats) is 1.2 times that of the Hong Kong Coliseum (12,500 seats)

The seating capacity of other PA venues, excluding the tea house type venue in Xiqu Centre, (12,900 seats) is equivalent to 3 times that of the Hong Kong Cultural Centre (4,249 seats)

Core Arts and Cultural Facilities and Communal Facilities at WKCD
Key Development Parameters, Operating and Financial Assumptions

A number of overall **site development parameters** have been used as the basis of the financial analysis. These include:

- Site Area of 40.09 hectares (as per IFP)
- Site zoned "Other Specified Uses" annotated "Arts, Cultural, Commercial and Entertainment Uses" (existing zoning)
- Plot Ratio of 1.81 (as per October 2005 Package) gives a total GFA of 726,285 sq.m.
- Residential development limited to 20% of total GFA (as per October 2005 Package) - 145,257 sq.m. GFA based on a plot ratio of 1.81
- 3 hectares of piazzas (as advised by PATAG)
- 20 hectares of public open space excl. piazzas (as per IFP) on or above ground
- Carparks and loading / unloading facilities are included as ancillary uses are exempt from the GFA calculation (FA assumption)
- APM stations and depots are exempt from the GFA calculation (FA assumption)
- International architectural design competition for M+ only (as advised by MAG)
- NOFA to GFA ratios:
  - 1:1.67 for M+ (as advised by MAG)
  - 1:1.5 for PA venues (FA assumption)
  - 1:1.25 for Exhibition Centre (as per IFP)
- Maximum building heights ranging from 50mPD to 100mPD (as proposed by the Planning Department)

Key **operating assumptions** for the CACF include:

- The CACF facilities will be "world class" (Government objective)
- All PA venues "should strive to operate on a self-financing basis " (as advised by PATAG)
- There will be a high level of demand for the proposed CACF whilst all existing cultural and entertainment facilities continue to operate (as advised by PATAG and MAG):
  - PA venues - high utilisation / attendance levels
  - Target of 2.5 million attendance p.a. at M+
- Build up of costs and revenue during initial years of operation (FA assumption)
- Gradual increase in demand for PA venues and EC to year 30 (FA assumption)

Development Mix

	GFA (sq.m.)	% of Total GFA
M+* and Exhibition Centre	111,030	15%
PA Venues	202,389	28%
Sub-total	**313,419**	**43%**
Other Arts and Cultural Uses	15,000	2%
Communal Facilities	20,000	3%
Sub-total	**35,000**	**5%**
Residential: Villa Houses & Apartments	145,257	20%
Commercial: Hotels & Retail /Dining/Entertainment Facilities (RDE)	232,609	32%
Sub-total	**377,866**	**52%**
Total	**726,285**	**100%**

* Excluding 19,200 sq.m. GFA of off-site storage and conservation laboratory

Key **financial assumptions** include:

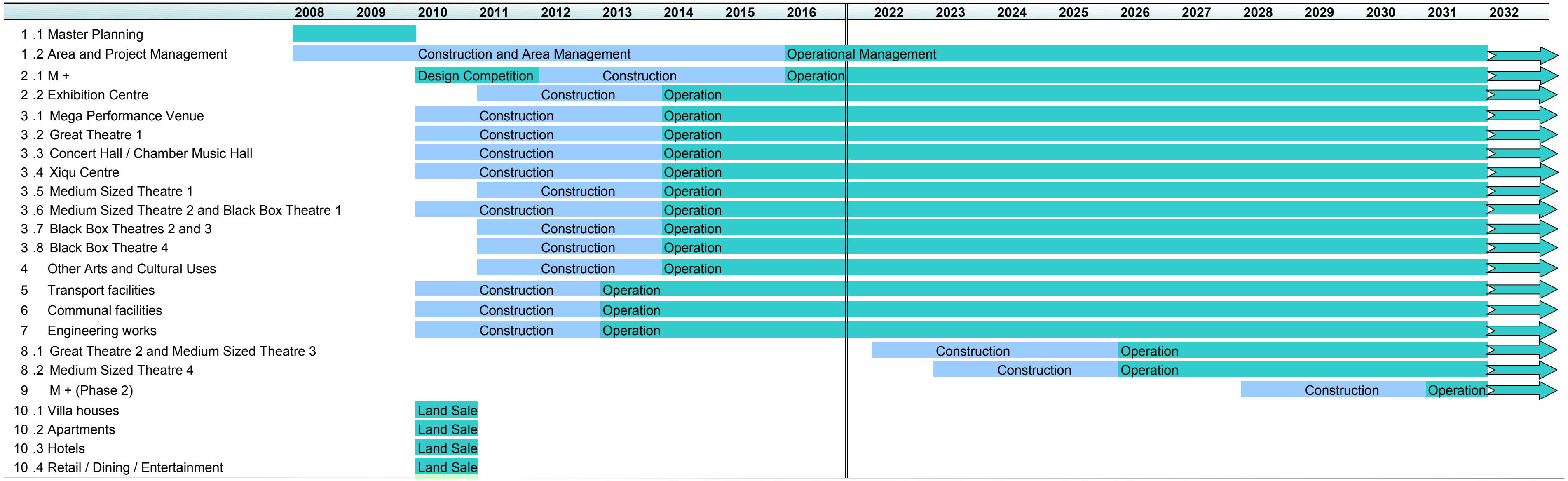
- Project period - 50 years from 2010 (assumed planning, including master planning costs, incurred in 2008 and 2009)
- Land premium - land valuation at 2006Q4
- Real discount rate - 4% per annum
- Inflation rate - 2% per annum
- Donations other than commercial sponsorships and fundraising activities are excluded

The master planning exercise is assumed to commence in 2008 when the legislative procedures for the establishment of the proposed statutory body are completed. The master planning exercise for both Phase 1 and Phase 2 (including the preparation of a master layout plan, detailed demand assessments and technical studies, securing planning approvals for residential developments, and public consultation) is assumed to be completed in about 2 years. It is assumed that land sales will take place as soon as possible after the completion of the master planning exercise, i.e. in 2010, and the land lease will expire in 2059.

Area and project management will commence in 2008 and cover the whole assessment period to year 2059. There are 2 phases: (i) 2008 to 2015, which is primarily construction and area management and (ii) 2016 onwards, which is primarily operational management.

As recommended by MAG and PATAG, the construction of CACF is assumed to take place in phases. The design and construction of PA venues and the EC will take 3 to 4 years; whilst the M+ will take 6 years, including 2 years for an international architectural design competition. The FA assumed 2 phases and that Phase 1 will start as soon as possible with PA venues operational by 2014 and the M+ by 2016. Phase 2 PA venues are assumed to be operational by 2026, 10 years after the completion of all Phase 1 facilities; and M+ (phase 2) will be operational in 2031.

Development Programme



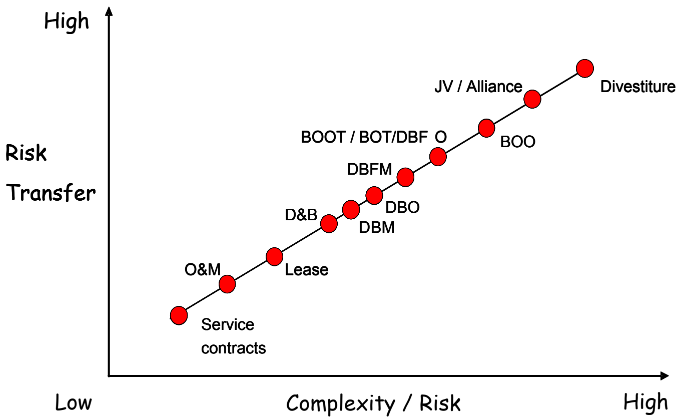
Involving the private sector in the delivery of what traditionally are seen as public services is a worldwide, ongoing trend and ranges from simple outsourcing of cleaning contracts to public floatation (divestiture) of former nationalised industries. What characterises and defines an approach is how risks are allocated between the public and private sectors. The resulting spectrum of possible approaches is illustrated in the diagram.

PPPs represent a subset of the range of private sector involvement (PSI) approaches to procurement. Despite slight variations in terminology between jurisdictions and between sectors, the key characteristics of PPP are the **sharing of risk and responsibility**, a **contract** between Government and the private sector, over a **medium to long term timescale**, involving arrangements which take advantage of private sector management skills **incentivised by having private finance at risk**. These four characteristics form the definition of PPP adopted for the Consultancy.

An analysis was undertaken of PSI and PPP experiences in Hong Kong and internationally in the cultural and arts sectors. Almost all existing cultural facilities are provided and operated by Leisure and Cultural Services Department (LCSD) or funded through tertiary education or other organisations. Experience demonstrates that nearly all of the types of cultural and associated communal facilities that are likely to be developed and operated at the WKCD are loss making. Most cultural facilities do not cover the cost of operations and maintenance and very few are able to make any contribution to recovering capital costs. Scope for the private sector to take the lead in the development or operation of facilities has therefore been limited; in virtually all cases facility development and operation has required significant levels of public subsidy. Where contributions from the private sector have been made, these have tended to be in the form of donations.

The composition and level of public sector subsidy was found to vary considerably. Common methods include capital expenditure, other grants and loans, land and property inducements, development packaging and planning gain (whereby lease or planning conditions require the private sector to provide facilities or services). Most of these are already employed in Hong Kong. The issue is thus the level, source and form of public subsidy which is most efficient and cost effective for the WKCD.

The Spectrum of Private Sector Involvement Approaches



OM Operate & Maintain
D&B Design & Build
DBM Design, Build & Maintain
DBO Design, Build & Operate
DBFM Design, Build, Finance & Maintain
DBFO Design, Build, Finance & Operate
BOOT Build, Own, Operate & Transfer
BOT Build, Operate & Transfer
BOO Build, Own & Operate
JV Joint Venture

Museums and PA Venues Do Not Cover Their Operating Costs

Facility	Self-Generated Revenue# as a % of Operating Costs*
Centre Pompidou, France	27%
Queensland Performing Arts Complex, Australia	62%
South Bank Centre, UK	43%
Sydney Opera House, Australia	74%
Tate Galleries (Tate Modern, Tate Britain, Tate Liverpool and Tate St Ives), UK	54%
The Museum of Modern Art, New York, USA	57%
The Esplanade, Singapore	38%

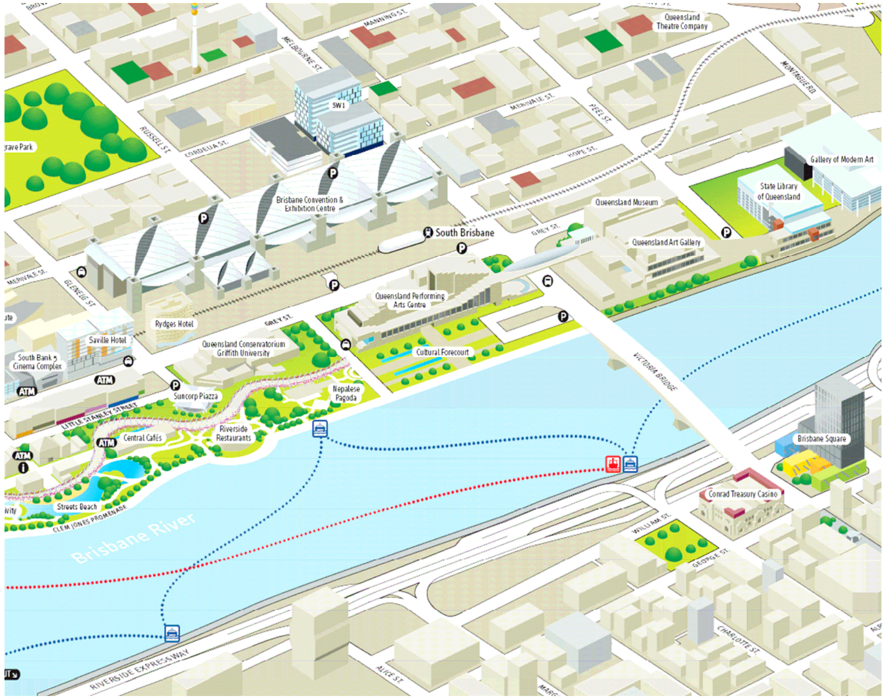
* Excludes depreciation, tax, interest and collection acquisition costs
# Includes hire income, admission charges, merchandise sales, rental income, commercial sponsorship, fundraising activity and other miscellaneous income

It is now common for cultural districts in the major international cities to be created through a planned, area-based development process. Typically, the Government provides the lead for a range of public and private partners to deliver a complex mix of cultural and commercial facilities and associated infrastructure for the wider public benefit.

There are a number of lessons from these “cultural development led” districts in other world cities:

- Cultural facilities are typically loss making in operating terms - and rarely make any contribution to capital costs. This severely restricts risk sharing PSI opportunities.
- Nearly all cultural facility construction has been funded directly by the public sector or heavily subsidised through a wide range of public sector arts, local, regional and national funding programmes.
- Where government initiated projects have sought private partners to help them deliver the projects, they are usually not-for-profit private organisations such as trusts and foundations. Where private capital is contributed it is usually in the form of donations and sponsorship.
- Private sector participation is usually limited to service contracts or leases but, in the case of some PA venues, contracting by specialist operating or production companies is common.
- In many cases a statutory body has been established as an autonomous entity to oversee the planning, development and operation of the mixed use area.
- In return for a very high level of public funding of cultural development, Governments have been able to secure relatively high levels of regulation through programming agreements and board member participation by local government representatives.
- Many projects are carried out to meet policy objectives such as cultural development, urban renewal, economic and tourism development and the economic and social benefits are used to justify the high levels of public spending.

South Bank Cultural Precinct, Brisbane, Australia



Courtesy of South Bank Corporation

The figure below presents the potential range of PSI options for the major types of cultural facilities and other communal facilities identified by the FA. The PSI options for cultural facilities are quite wide but the actual potential is determined by:

- The expected level of market financial viability of construction and operation
- The relationship between broad capital and operating cost – specifically, the need for a satisfactory level of capital **and** operating viability to be achieved for whole-life approaches
- Existence of private sector players in the market with the right kind of experience and resources

Of those that demonstrate more commercial viability, it is possible for them to also be procured in a traditional public procurement manner but preference will be for involvement of the private sector and the sharing of risk, in line with the Government's intention to explore PPP in taking forward the WKCD project.

In identifying the most appropriate PSI approaches it is clear that the more commercially viable a facility/service, the more appropriate it is for PSI development and operation and the more likely it is that a workable solution combining market returns and public subsidy will be found to incentivise the private sector to become involved. These criteria were used as a basis to examine and make recommendations on PSI options and scenarios for individual CACF and communal facilities.

In practice there is a limited range of appropriate PSI options since the financial analysis indicates that when taking into account both capital and operating costs, very few facilities are financially viable and there are few private sector players in the market.

	PSI Capital Options											
				PSI Operating Options								
CACF / Communal Facilities	Planning Gain	Development Packaging	Build / D&B	DBM	DBO	DBFM	BOOT/ BOT / DBFO	BOO	JV / Alliance	Service Contracts	OMM	Lease
Mega Performance Venue		x	x	x	x	x	x	x	x	x	x	x
Great Theatres		x	x			x				x	x	x
Concert Halls		x	x	x		x				x	x	
Xiqu Centre		x	x	x	x	x				x	x	
Medium-sized Theatres	x	x	x			x				x	x	x
Blackbox Theatres	x	x	x	x	x	x				x	x	x
Piazzas	x	x	x	x						x	x	
M+		x	x	x						x		
Exhibition Centre		x	x	x	x	x	x	x	x	x	x	x
Automated People Mover	x	x	x	x	x	x	x	x	x	x	x	
Roads	x		x							x		
Public Open Spaces	x		x							x		
Other G/IC Facilities	x		x	x	x	x				x		

The PSI financial analysis has been carried out based on alternative PSI procurement options for each individual CACF and communal facility – each combination of procurement options forming a PSI Scenario - and compared with the PSC. The feasible procurement options were tested in each scenario for each individual facility.

The Scenarios

The **PSC** is calculated as the risk adjusted cost of public sector procurement practices but these practices do not necessarily represent the public sector undertaking all activities. In Hong Kong it includes the private sector in contracting out some services including building design, building construction, and services such as cleaning and security.

Two broad approaches have been adopted for testing **PSI** procurement options – unpackaged and packaged – producing three PSI scenarios of alternative procurement options. Most of the CACF, except the more commercial venues are assumed to be operated by a Not for Profit Organisation, consistent with international practice.

Under all of the PSI Scenarios, area and project management is undertaken by proposed statutory body. Under the PSC, these activities are undertaken by Government Departments.

CACF and Communal Facilities		Scenario 1 - Unpackaged Development Approach PSI Options Scenario 1A	Scenario 1B	Scenario 2 - Packaged Development Approach PSI Options Scenario 2	PSC
PHASE 1					
1	**Management and Masterplanning**				
1.1	Masterplanning	Proposed Statutory Body's consultants	Proposed Statutory Body's consultants	Proposed Statutory Body's consultants	HAB + OGD + Consultants
1.2	Area and Project Management	Proposed Statutory Body	Proposed Statutory Body	Proposed Statutory Body	CEDD, LCSD supported by OGD
2	**Museum and Exhibition Space**				
2.1	M+	DC, DB + OMM by NPO	DC, DB + OMM by NPO	DC, DB + OMM by NPO	DC, DB + LCSD, ASD, EMSD
2.2	Exhibition Centre	DB + OMM	BOT	BOT	DB + LCSD, ASD, EMSD
3	**Performing Arts Facilities**				
3.1	Mega Performance Venue	DB + OMM	DBFM + OM	Development Package A	DB + LCSD, ASD, EMSD
3.2	Great Theatre 1	DB + OMM (possibly NPO)	DBFM + OM (possibly NPO)	DBFM + OM (possibly NPO)	DB + LCSD, ASD, EMSD
3.3	Concert Hall and Chamber Music Hall	DB + OMM (likely NPO)	DBFM + OM (likely NPO)	DBFM + OM (likely NPO)	DB + LCSD, ASD, EMSD
3.4	Xiqu Centre	DB + OMM (possibly NPO)	DBFM + OM (possibly NPO)	DBFM + OM (possibly NPO)	DB + LCSD, ASD, EMSD
3.5	Medium Theatre 1	DB + OMM (likely NPO)	DBFM + OM (likely NPO)	Development Package B	DB + LCSD, ASD, EMSD
3.6	Medium Theatre 2 and Black Box Theatre 1	DB + OMM (likely NPO)	DBFM + OM (likely NPO)	DBFM + OM (likely NPO)	DB + LCSD, ASD, EMSD
3.7	Black Box Theatres 2 and 3	DB + OMM (likely NPO)	DBFM + OM (likely NPO)	Development Package B	DB + LCSD, ASD, EMSD
3.8	Black Box Theatre 4	DB + OMM (likely NPO)	DBFM + OM (likely NPO)	DBFM + OM (likely NPO)	ASD, C + LCSD, ASD, EMSD
3.9	Piazzas*	DB + OMM (likely NPO)	DB + OMM (likely NPO)	DB + OMM (likely NPO)	ASD, C + LCSD, ASD, EMSD
4	**Other Arts and Cultural Uses**	DB + OMM (likely NPO)	BOT	Development Package C	ASD, C + LCSD, ASD, EMSD
5	**Transport Facilities**				
5.1	Automated People Mover	DBO	BOT	BOT	DBO
5.2	Road Works and Pedestrian Connections	DB + M	DB + M	Development Package C	DB + TD/HyD DB + LCSD, ASD, EMSD (Merged with open space)
5.3	Public Pier	DB + M (Merged with open space)	DB + M (Merged with open space)	Development Package C	
5.4	Car Parks	DB + L	DB + L	Development Package C	ASD, C + L
6	**Communal Facilities**				
6.1	Public Open Space	DB + M	DB + M	Development Package C	ASD, C + LCSD, ASD, EMSD
6.2	Fire Station, Police Post and RCP	DB + Govt D	DB + Govt D	Development Package C	ASD, C + Govt D
6.3	Public Toilets	DB + M	DB + M	Development Package C	ASD, C + Govt D
7	**Engineering Works**				
7.1	Bridge Over WHC Tunnel Portal	DB + WHC	DB + WHC	DB + WHC	DB + WHC
7.2	Build Over Ventilation Buildings	DB + MTRCL / WHC	DB + MTRCL / WHC	DB + MTRCL / WHC	DB + MTRCL / WHC
7.3	Other Site Engineering Works	DB + Govt D	DB + Govt D	DB + Govt D	DB + Govt D
PHASE 2					
8	**Performing Arts Facilities (Phase 2)**				
8.1	Great Theatre 2 and Medium Theatre 3	DB + OMM (likely NPO)	DBFM + OM	DBFM + OM	DB + LCSD, ASD, EMSD
8.2	Medium Theatre 4	DB + OMM (likely NPO)	DBFM + OM	DBFM + OM	DB + LCSD, ASD, EMSD
9	**M + (Phase 2)**	DB + OMM (likely NPO)	DB + OMM by NPO	DB + OMM by NPO	DB + LCSD, ASD, EMSD

* Including a small canopy

Commercial & Residential (Phase 1)		GFA (sq.m.)
C.1	Residential	145,257
C.2	Hotel 1	39,500
C.3	Hotel 2	22,250
C.4	Hotel 3	22,250
C.5	Retail / Dining / Entertainment	108,609
C.6	Retail / Dining / Entertainment	40,000

Development Package A		GFA (sq.m.)
3.1	Mega Performance Venue	
C.3	Hotel 2	22,250
C.4	Hotel 3	22,250
C.5	Retail / Dining / Entertainment	108,609

Development Package B		GFA (sq.m.)
3.5	Medium Theatre 1	
3.7	Black Box Theatres 2 and 3	
C.2	Hotel 1	39,500
C.6	Retail / Dining / Entertainment	40,000

Development Package C		GFA (sq.m.)
4	Other Arts and Cultural Uses	
C.1	Residential	145,257
5.2	Road Works and Pedestrian Connections	[Planning Gain]
5.3	Public Pier	[Planning Gain]
5.4	Car Parks	[Planning Gain]
6.1	Public Open Space	[Planning Gain]
6.2	Fire Station, Police Post and RCP	[Planning Gain]
6.3	Public Toilets	[Planning Gain]

Key	
ASD	Architectural Services Department
BOT	Build Operate Transfer
C	Construction
CEDD	Civil Engineering and Development Department
DB	Design Build Contract
DBFM	Design Build Finance Maintain
DBO	Design Build Operate
DC	International Architectural Design Competition
EMSD	Eectrical and Mechanical Services Department
HyD	Highways Department
L	Lease for operations
LCSD	Leisure and Cultural Services Department
M	Maintenance
MTRCL	Mass Transit Railway Corporation Ltd.
NPO	Not for Profit Organisation
OGD	Other Government Departments (ie all relevant Depts)
OM	Operate and Manage
OMM	Operate, Manage and Maintain
TD	Transport Department
WHC	Western Harbour Tunnel Co Ltd

For the “unpackaged” procurement options, **Scenario 1A** represents a lower level of risk transfer from the public to the private sector and **Scenario 1B** represents a higher level of risk transfer. In particular, wherever possible, a lifecycle approach has been adopted under scenario 1B.

Scenario 2 assesses the financial implications of “packaging” some of the cultural facilities into mixed cultural / commercial and communal / residential developments, enhancing the potential for PSI approaches with a higher level of private sector risk transfer and/or allow cross-subsidy of costs and revenues within individual packages.

The results are presented in three ways: Money of the Day (MOD), Net Present Value (NPV) and 2006 Prices. MOD incorporates inflation and NPV discounts future cash flows to a present day value (2006) equivalent; both are able to incorporate all of the costs and revenues over the analysis period to present alternative measures of the total WKCD deficit. 2006 Prices provides a capital cost and the cost of a single year of operations. It does not include all the years in the analysis period and thus cannot be compared with MOD or NPV.

Construction (Years 1–2) **Operation** (Years 3–6) **Overhaul** (Year 7) **Operation** (Years 8–10)

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Total
Cost in year 1 prices ($) (a)	(1,000)	(1,000)	(600)	(400)	(200)	(200)	(1,000)	(200)	(200)	(200)	(5,000)
Inflation index (b)	1.000	1.020	1.040	1.061	1.082	1.104	1.126	1.149	1.172	1.195	
MOD ($) (c)	(1,000)	(1,020)	(624)	(424)	(216)	(221)	(1,126)	(230)	(234)	(239)	(5,335)
Discount factor (d)	1	0.943	0.889	0.838	0.790	0.744	0.702	0.662	0.624	0.588	
Present value (PV) ($) at year 1 (e)	(1,000)	(962)	(555)	(356)	(171)	(164)	(790)	(152)	(146)	(141)	(4,436)

( ) denotes negative value / cash flow / NPV
MOD (c) = (a) x (b); PV (e) = (c) x (d)

Total **MOD** means the total cost over the project period including development cost, major repair and replacement and operating deficits, including inflation at 2% pa.
Total MOD = Sum of each year's MOD (c) from years 1 to10

Total **NPV** means the total cost over the project period including development cost, major repair and replacement and operating deficits, using discounted cash flow techniques and a nominal discount rate of 6.1%.
Total NPV = Sum of each year's PV (e) from years 1 to 10

Discount Factor takes into account inflation at 2% pa and a real discount rate, assumed to be 4% pa: (1+2%)*(1+4%)-1 = 6.1%

How the Results Differ:

	2006 Prices		MOD	NPV
	All Capital	Annual Operational Deficit		
All Capital Costs ($)	(3,000)		(3,146)	(2,752)
Operating Costs ($)		(200)	(2,189)	(1,684)
Total Deficit ($)			**(5,335)**	**(4,436)**

2006 Prices does not include inflation, discounting or financing. It provides a capital cost and a single representative year of operations as if all costs were incurred in 2006.

All Capital Costs includes development costs and major overhaul.

M+
M+ (Phase 2)
Exhibition Centre

Mega Performance Venue
Great Theatre 1
Great Theatre 2 (Phase 2)
Concert Hall and Chamber Music Hall
Xiqu Centre
Medium Theatre 1
Medium Theatre 2
Medium Theatre 3 (Phase 2)
Medium Theatre 4 (Phase 2)
Black Box Theatre 1
Black Box Theatre 2
Black Box Theatre 3
Black Box Theatre 4
Piazzas

Management and Master planning
Other Arts and Cultural Uses
Transport Facilities
Communal Facilities
Engineering Works

All capital means all CACF and communal facility costs incurred during the construction phase (termed initial capital) including master planning, area and project management, construction and associated fees and contract management and adjusted for risk, plus the costs of exhibition development (including the costs of collections and library set up) and the costs of major repair and overhaul which occur after the facility becomes operational but nonetheless are still capital costs.

Annual operational deficit includes all CACF and communal facilities' costs and revenues and area and project management during the operational phase. The deficit refers to a single representative year once all the facilities are fully up and running.

Scenario PSI/PSC ($ million)

	2006 Prices			NPV	MOD
		Annual Operational Deficit		Total Surplus/ Deficit	Total Surplus/ Deficit
	All Capital	Phase 1 at 2023	Phase 2 at 2035		
M+ & Exhibition Centre	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)
PA Venues	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)
Other	(XXX)	(XXX)	(XXX)	(XXX)	(XXX)
Total Deficit	**(XXX)**	**(XXX)**	**(XXX)**	**(XXX)**	**(XXX)**
Land Sales				(XXX)	(XXX)
Funding Gap				**(XXX)**	**(XXX)**

The funding gap is defined as the deficit after land sales are taken into consideration.

Net Present Value (NPV) is the best indicator of financing requirements.

The total deficit in NPV means that an equivalent amount of upfront investment in 2006 will cover both the capital costs and operating deficits of the arts and cultural facilities and related facilities over the 2 year planning and assumed 50-year project period, subject to the assumption that the investment return is equal to the nominal discount rate of 6.1% used in the NPV calculation and that the timing and magnitude of the annual cash flows are realised as assumed.

Scenario 1A is unpackaged and of the two unpackaged scenarios is the least aggressive. Summary procurement options and features of the scenario are:

- The procurement option is Design and Build (DB) and operation by private sector Operate, Manage and Maintain (OMM) contract for all CACF and communal facilities, except:
  - M+ includes an international architectural design competition
  - The Automated People Mover (APM) which is assumed to be a Design Build Operate (DBO)
  - DB and Lease for public car parks
  - OMM for engineering works are assumed to be taken up by the relevant Government department / organisations

In 2006 prices, the capital cost is some $37 billion and the annual operational deficit about $0.5 billion for Phase 1 facilities and $0.1 billion for Phase 2 facilities.

Of the annual operating deficit, the M+ and EC account for about 80% of the amount. This is due to the running cost of M+, since in fact, the revenues from the exhibition centre are expected to cover the operational costs. As a group, the PA venues show an annual deficit of about $15 million for Phase 1 facilities and $44 million for Phase 2 facilities. The Mega Performance Venue (MPV) which is part of Phase 1 is expected to operate at a surplus. All of the other PA venues are expected to have annual operating deficits which, in Phase 1, are largely offset by the surplus generated by the MPV explaining why the deficit appears to be lower for Phase 1 facilities than for Phase 2.

In NPV terms, taking both capital and operating costs and revenues into account, all categories show considerable deficits: the M+ and EC, $13 billion; the PA venues, about $10 billion and others, $7 billion. The total deficit in NPV terms is $30 billion. The equivalent in MOD is some $103 billion.

Taking land sales into account, the negative NPV representing the funding gap is $9 billion. The equivalent funding gap in MOD is $77 billion.

Scenario 1A: Un-Packaged
Mainly DB contracts for Construction &
OMM contracts for Operations

($ million)

	2006 Prices			NPV	MOD
		Annual Operational Deficit			
	All Capital	Phase 1 at 2023	Phase 2 at 2035	Total Surplus/ Deficit	Total Surplus/ Deficit
M+ & Exhibition Centre	(12,135)	(393)	(74)	(12,687)	(56,935)
PA Venues	(17,087)	(15)	(44)	(10,149)	(29,405)
Other	(8,103)	(81)		(7,114)	(17,048)
Total Deficit	**(37,325)**	**(488)**	**(118)**	**(29,950)**	**(103,388)**
Land Sales				20,901	26,466
Funding Gap				**(9,050)**	**(76,921)**

Total Deficit: $30 billion NPV
Funding Gap: $9 billion NPV

Scenario 1B is also unpackaged and is slightly more aggressive in terms of risk transfer compared to Scenario 1A. Summary procurement options and features of the scenario are:

- The procurement option is Design, Build, Finance and Maintain (DBFM) and operation by private sector Operate and Manage (OM) contract for all CACF except:
  - The M+ includes an international architectural design competition
  - The EC is assumed to be a Build Operate Transfer (BOT)
- The procurement option is DB and Maintain for all communal facilities except:
  - The APM and OACF are also assumed to be a BOT
  - DB and Lease for public car parks; and DB and OMM for the piazzas
  - OMM for engineering works are assumed to be taken up by the relevant Government department / organisations
- For PA venues, the DBFM approach may prove difficult in implementation since the operation and management of the venue is very much linked to the maintenance of facility equipment for example. The DBFM contract is thus assumed to only include maintenance of the structure of the building.

In 2006 prices, the capital cost is some $38 billion and the annual operational deficit about $0.5 billion for Phase 1 facilities and $0.1 billion for Phase 2 facilities. This breakdown is shown for comparison purposes.

In NPV terms , taking both capital and operating costs and revenues into account, all categories show considerable deficits: the M+ and EC, $13 billion; the PA venues, about $12 billion and others, $7 billion. The total deficit in NPV terms is $32 billion. The equivalent in MOD is some $137 billion.

Taking land sales into account, the negative NPV representing the funding gap is $11 billion. The equivalent funding gap in MOD is $110 billion. The MOD is much higher under PSI 1B because the contractual payments under DBFM are constant over the contract term (in real terms) whereas under Scenario 1A, payments are more upfront.

Scenario 1B: Un-Packaged
Mainly DBFM contracts combining Construction & Maintenance
OM contracts for Operations

($ million)

	2006 Prices			NPV	MOD
		Annual Operational Deficit		Total Surplus/ Deficit	Total Surplus/ Deficit
	All Capital	Phase 1 at 2023	Phase 2 at 2035		
M+ & Exhibition Centre	(12,126)	(393)	(74)	(12,707)	(58,516)
PA Venues	(17,633)	(15)	(44)	(11,757)	(58,380)
Other	(8,103)	(81)		(7,226)	(20,047)
Total Deficit	**(37,862)**	**(488)**	**(118)**	**(31,690)**	**(136,944)**
Land Sales				20,901	26,466
Funding Gap				**(10,789)**	**(110,477)**

Total Deficit: $32 billion NPV
Funding Gap: $11 billion NPV

Results of the Financial Analysis
Scenario 2

Scenario 2 is the packaged scenario. It includes three packages A, B and C, which combine some CACF and communal facilities with commercial and residential development.

Summary procurement options and features of the scenario are:

- The EC is assumed to be a BOT, as in scenario 1B
- Three packages, A, B and C are adopted; these include the MPV, one medium theatre and two black-box theatres in commercial packages. Other arts and cultural uses and some of the communal facilities are packaged with the residential. Where facilities are not packaged then the procurement option for PA Venues is DBFM and operation by private sector OM contract
- The M+ is assumed to be a DB and includes an international architectural design competition
- The APM is assumed to be a BOT
- DB and OMM for the piazzas

The presentation of 2006 prices, the capital cost of some $38 billion and the annual operational deficit of about $0.5 billion for Phase 1 facilities and $0.1 billion for Phase 2 facilities, represents the cost of all the facilities, as in the un-packaged scenarios. This is because 2006 prices as a performance measure only shows a representative year of operations and does not reflect the whole analysis period as do NPV and MOD. As such it is not possible to use 2006 prices to present the impact of packaging facilities with commercial and residential development in a meaningful way.

Where a facility is included in a package, the overall cost in NPV or MOD is subsumed in a reduced land premium. This apparent lack of transparency is one of the drawbacks of the scenario since each facility and its contribution to the deficit is less clear than in the un-packaged scenarios.

In NPV terms, taking both capital and operating costs and revenues into account, all categories show considerable deficits: the M+ and EC, $13 billion; the PA venues, $8 billion and others, $5 billion. The total deficit in NPV terms is $26 billion. The equivalent in MOD is some $115 billion. The total deficit in NPV is less than the un-packaged scenarios because some of the facilities are subsumed into a reduced land premium.

Land sales revenue is some $14 billion NPV, less than Scenarios 1A and 1B because of the packaging. Taking land sales into account, the negative NPV representing the funding gap is $11 billion. The equivalent funding gap in MOD is $97 billion.

Scenario 2: Packaged

Three Development Packages combining Commercial, Residential and Selected CACF and Communal Facilities

Mainly DBFM and OM contracts for CACF not Packaged

($ million)

	2006 Prices			NPV	MOD
		Annual Operational Deficit		Total Surplus/ Deficit	Total Surplus/ Deficit
	All Capital	Phase 1 at 2023	Phase 2 at 2035		
M+ & Exhibition Centre	(12,126)	(393)	(74)	(12,707)	(58,516)
PA Venues	(17,443)	(15)	(44)	(8,339)	(43,359)
Other	(8,103)	(81)		(4,674)	(12,976)
Total Deficit	**(37,672)**	**(488)**	**(118)**	**(25,719)**	**(114,851)**
Land Sales				14,243	18,035
Funding Gap				**(11,477)**	**(96,816)**

Total Deficit: $26 billion NPV

Funding Gap: $11 billion NPV

Results of the Financial Analysis
Scenario PSC

The PSC is calculated as a broad order estimate of the risk adjusted cost, if the WKCD project were to be undertaken by the public sector. A PSC is prepared for comparative purposes and is one of a number of assessment tools which may be used in preparing for a PPP approach to the delivery of services. It is not a pass/fail test.

The PSC does not mean that the Government builds and operates all the facilities because this is not the usual Government procurement practice. The scenario instead assumes that all construction contracts are undertaken by the private sector, as is the current practice; and that 15% of the value of the building projects are designed by ArchSD with the rest, (85%) are DB contracts which incorporated design into the construction contracts, again in line with Government practice. Government departments are assumed to run the facilities including OMM with some outsourcing of services such as cleaning and security.

Summary procurement options and features of the scenario are DB and operation by Government departments for CACF and communal facilities, except:

- Black Box Theatre 4, the piazzas and the communal and other facilities which are ASD (or other Government department) with construction (ASD + C) and operation by Government departments.
- The M+ includes an international architectural design competition
- The APM which is assumed to be a DBO
- ASD + C + Lease for public carparks

In 2006 prices, the capital cost is some $37 billion and the annual operational deficit about $0.6 billion for Phase 1 facilities and about $0.2 billion for Phase 2 facilities. Construction costs are similar to PSI scenarios because construction is undertaken by the private sector anyway. Operational deficits are higher due to a greater number of staff, different salary structures, and more limited opportunities for revenue generation.

As with private sector scenarios, in NPV terms, all categories show considerable deficits: the M+ and EC, $13 billion; the PA venues, about $12 billion and others, $7 billion. The total deficit in NPV terms is about $33 billion ($13.3 billion + $12.3 billion + 7.2 billion = $32.8 billion). The equivalent in MOD is some $120 billion.

Land sales revenue is the same as Scenarios 1A and 1B. Although revenues would form part of general land sales revenue under the PSC, presenting a comparable to the funding gap incorporated under the PSI scenarios (total deficit less land sales), gives a negative NPV of $12 billion. The equivalent funding gap in MOD is $93 billion.

Scenario PSC:
Mainly DB and Operation by Government Departments
ASD and Construct for a few smaller Facilities
No Statutory Body

($ million)

	2006 Prices			NPV	MOD
		Annual Operational Deficit		Total Surplus/ Deficit	Total Surplus/ Deficit
	All Capital	Phase 1 at 2023	Phase 2 at 2035		
M+ & Exhibition Centre	(12,135)	(433)	(80)	(13,319)	(60,708)
PA Venues	(17,109)	(127)	(75)	(12,249)	(41,705)
Other	(8,161)	(85)		(7,238)	(17,521)
Total Deficit	**(37,405)**	**(645)**	**(155)**	**(32,806)**	**(119,933)**
Land Sales				20,901	26,466
Funding Gap				**(11,905)**	**(93,467)**

Total Deficit: $33 billion NPV
Funding Gap: $12 billion NPV

Taking both capital and recurrent costs and revenues into account, **none of the CACF and communal facilities are independently financially viable under any of the PSI or PSC scenarios.** None of the facilities have a positive NPV. This finding is very important since it means that there can be no cross subsidy from one venue to another since all of them require some form of external subsidy, whether that be in cash or kind. None of them would pass an individual investment appraisal and if left entirely to market forces, they would not be built. Even facilities such as the MPV and the EC which are more commercial and might initially have been potential candidates for financial sustainability show negative NPV's under all scenarios.

The M+ is by far the most expensive facility. The presentation of results so far has shown that in addition to capital costs, the annual operating deficit considerably contributes to the overall negative NPV. Phase 1 has a deficit of $12 billion NPV and Phase 2, a further $1 billion.

Putting aside capital costs, only two of the CACF are operationally independently viable i.e show a positive NPV in operations: the EC and the MPV. This means that for the other facilities, even if they were built and any major overhaul were provided by the proposed statutory body, they would still require a subsidy in order to operate them.

The difference in the results for facilities is in the selected **mode of procurement or packaging**. The differences are the result of:

- Net operating costs (which even before risk adjustment are higher under the PSC than the PSI scenarios) due to a greater number of staff, different salary structure, and more limited opportunities for revenue generation
- Operational risk adjustment (higher risk for Government run facilities)
- Capital risk adjustment (which varies for each procurement mode: is lowest under BOT and BOO and highest under a contract incorporating a Design Competition
- Financing (which is only included under DBFM, BOT and BOO contracts)
- Timing of contract payments (which are assumed to be equal real annual payments i.e. adjusted with inflation for DBFM and BOT procurement options). This does not affect NPV, only MOD.

Results by CACF Facility, NPV at 2006 ($ million)

	PSI 1A	PSI 1B	PSI 2	PSC
PHASE 1				
1 Management and Masterplanning	**(2,117)**	**(2,117)**	**(2,117)**	**(2,196)**
2 Museum and Exhibition Space	**(11,777)**	**(11,797)**	**(11,797)**	**(12,370)**
2.1 M+	(11,551)	(11,551)	(11,551)	(12,046)
2.2 Exhibition Centre	(226)	(246)	(246)	(324)
3 Performing Arts Facilities	**(8,488)**	**(9,875)**	**(6,457)**	**(10,304)**
3.1 Mega Performance Venue	(1,733)	(2,188)	-	(2,092)
3.2 Great Theatre 1	(1,198)	(1,403)	(1,403)	(1,420)
3.3 Concert Hall and Chamber Music Hall	(1,678)	(1,917)	(1,917)	(2,042)
3.4 Xiqu Centre	(1,352)	(1,549)	(1,549)	(1,583)
3.5 Medium Theatre 1	(649)	(736)	-	(860)
3.6 Medium Theatre 2 and Black Box Theatre 1	(877)	(995)	(995)	(1,126)
3.7 Black Box Theatres 2 and 3	(440)	(494)	-	(550)
3.8 Black Box Theatre 4	(284)	(317)	(317)	(344)
3.9 Piazzas*	(276)	(276)	(276)	(286)
4 Other Arts and Cultural Uses	(294)	(331)	-	(294)
5 Transport Facilities	**(972)**	**(1,047)**	**(679)**	**(971)**
6 Communal Facilities	**(1,854)**	**(1,854)**	**-**	**(1,898)**
7 Engineering Works	**(1,878)**	**(1,878)**	**(1,878)**	**(1,878)**
SubTotal	**(27,379)**	**(28,898)**	**(22,928)**	**(29,912)**
PHASE 2				
8 Performing Arts Facilities (Phase 2)	**(1,662)**	**(1,882)**	**(1,882)**	**(1,945)**
8.1 Great Theatre 2 and Medium Theatre 3	(1,250)	(1,418)	(1,418)	(1,419)
8.2 Medium Theatre 4	(412)	(464)	(464)	(526)
9 M+ (Phase 2)	**(910)**	**(910)**	**(910)**	**(949)**
Subtotal	**(2,572)**	**(2,792)**	**(2,792)**	**(2,894)**
TOTAL CACF AND COMMUNAL FACILITIES	**(29,950)**	**(31,690)**	**(25,719)**	**(32,806)**
LAND SALES	**20,901**	**20,901**	**14,243**	**20,901**
TOTAL (INCLUDING LAND SALES)	**(9,050)**	**(10,789)**	**(11,477)**	**(11,905)**

* including a small canopy
Note: Land sales under scenario PSI 2 includes packages A, B and C

The findings of the analysis show a considerable funding gap, even after allowing for land sales revenues for PSI scenarios and for the PSC. The deficit is in the range of $9 billion to $12 billion NPV over the analysis period. The MOD equivalent is $77 billion to $110 billion.

Scenario 1A has the lowest funding gap both in NPV terms, some $9.1 billion, and in MOD terms, $77 billion. Looking at the total deficit, Scenario 1A requires a lower subsidy than Scenario 1B, by some 5% in NPV terms, or if land sales are included as revenue, by 16%.

Scenario 1A mainly includes DB and separate operational contracts with private entities or not-for-profit organisations, whereas for CACF under Scenario 1B a lifecycle approach is taken wherever possible, mainly using a DBFM procurement option. Two factors therefore affect the capital cost in comparing Scenarios 1A and 1B: the risk adjustment is less (more favourable) for Scenario 1A and also Scenario 1A does not require financing costs so both factors tend to reduce the subsidy requirement of Scenario 1A relative to Scenario 1B. For individual facilities, Scenario 1A and Scenario 1B differ only where the procurement option differs, so, for example M+ and the Piazzas are the same, as are all of the transport and other facilities except the APM which is a DBO under Scenario 1A and a BOT under Scenario 1B.

Comparison of the total deficit for Scenario 2 is not appropriate since the Scenario by definition includes some of the revenues from land sales. Including land sales the deficit is some $11.5 billion, greater than both the un-packaged Scenarios 1A and 1B. In Scenario 2, if a facility is packaged with commercial development then the risk premium is taken as that of a BOO since it will continually be owned and operated outside the public sector and as such is lower than that for a DBFM contract under say Scenario 1B. However, the financing cost and the required return for undertaking the construction and operation of the facility outweighs the reduction in risk such that the costs are higher than under the other Scenarios. The higher costs are reflected in the lower land premium estimated under Scenario 2.

($ million)

PSI 1A	NPV	MOD
All Capital	(21,618)	
Operations	(8,333)	
Finance	-	
Total Deficit	**(29,950)**	**(103,388)**
Land Sales	20,901	26,466
Funding Gap	**(9,050)**	**(76,921)**

PSI 1B	NPV	MOD
All Capital	(22,008)	
Operations	(8,333)	
Finance	(1,349)	
Total Deficit	**(31,690)**	**(136,944)**
Land Sales	20,901	26,466
Funding Gap	**(10,789)**	**(110,477)**

PSI 2	NPV	MOD
All Capital	(16,287)	
Operations	(8,569)	
Finance	(864)	
Total Deficit	**(25,719)**	**(114,851)**
Land Sales	14,243	18,035
Funding Gap	**(11,477)**	**(96,816)**

PSC	NPV	MOD
All Capital	(21,682)	
Operations	(11,124)	
Finance	-	
Total Deficit	**(32,806)**	**(119,933)**
Land Sales	20,901	26,466
Funding Gap	**(11,905)**	**(93,467)**

The PSC estimate is higher than all the PSI scenarios. However, the PSC is constructed for comparative purposes and is not a pass/fail test.

The financial analysis of procurement options therefore suggests that most CACF procurement should take the form of traditional Design and Build contracts let by the proposed statutory body whilst maximising opportunities for private and not-for-profit sector involvement in operations. Scenario 1A is the best measure of the cost of this approach and the FA recommends that this scenario is used, where appropriate, as the basis for sensitivity testing and assessment of financing options.

However, it is important that the proposed statutory body is able to assess the potential for PSI through "lifecycle", packaging and other approaches on a case by case basis based on the master plan and development briefs they prepare.

The focus of the FA assignment is on alternative PSI/PPP arrangements. However, as the results of the analysis so far show, the choice of scenario does not affect the broad order of magnitude of the deficit. Irrespective of PSI/PPP arrangements, the funding gap for WKCD remains considerable. However, given the importance of the scale and mix of development, the analysis thus far suggests that there exists greater potential for reducing the funding gap through changes to the physical development parameters than through changes to the PSI/PPP procurement arrangements.

The sensitivity tests investigate the scale of the funding gap that might be expected to arise and how sensitive it is to changes to certain key parameters. Tests include the potential range of the base cost estimates as well as physical parameters and financial assumptions. Some of the parameters may potentially lie partially under the control of the proposed statutory body; whilst others, such as the land sales market do not.

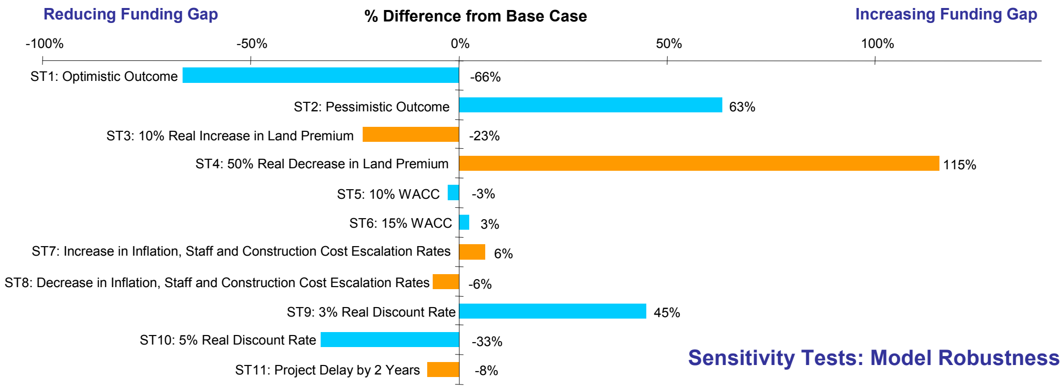
As mentioned above, Scenario 1A has been selected as the most appropriate scenario on which to conduct the tests (although financing costs are tested on Scenario 1B since, under Scenario 1A, the procurement options do not include private finance at risk and there is therefore no financing cost).

All of the tests are undertaken on the basis of “ceteris paribus” or “all other things being equal” – i.e. only the factor being tested and directly related variables change, everything else is held constant. In all sensitivity tests, the maximum GFA of 726,285m² is developed. In cases where the GFA for CACF is reduced, the GFA for retail, dining and entertainment floor space is adjusted such that the maximum GFA of 726,285m² is still achieved. However, the development parameters of plot ratio and residential cap are assumed to be fixed since they form part of the October 2005 Package and have not been included.

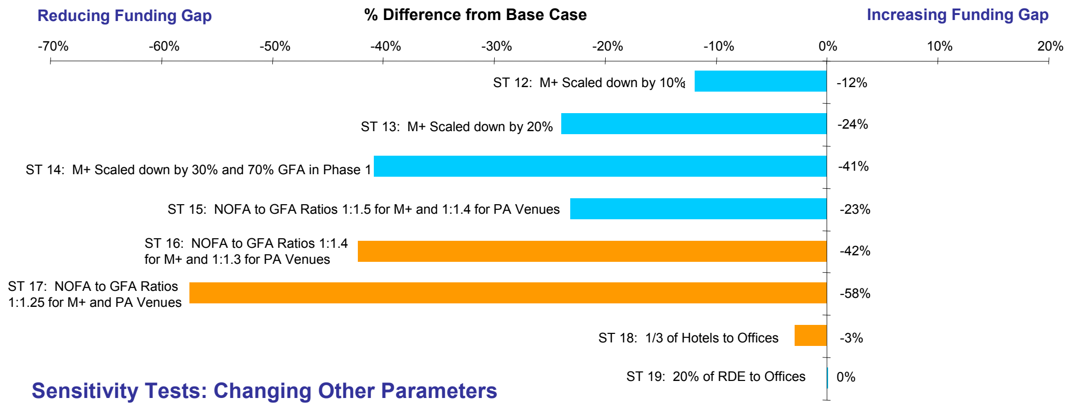
Optimistic and Pessimistic Outcomes (Key Assumptions Affecting Costs and Revenues Up and Down)   **Purpose:** to demonstrate the potential variation in the base case estimates
Changes in the Revenue from Land Sales (+10% and -50%)   **Purpose**: to consider the overall impact if the land market were either stronger or weaker than the base case i.e. the present situation
Changes in the Weighted Average Cost of Capital (12.5% +/-2.5%)   **Purpose**: to consider the impact of changes in cost of finance, a variable that, whilst a range is relatively certain, a specific value is difficult to estimate
Changes in Inflation and Escalation Rates (Inflation 2% +/-0.5%, Escalation Rates 0% Real +/- 0.25%)   **Purpose:** to consider the impact of changes in costs that may rise faster or slower than inflation, as well as inflation: staff costs and construction costs
Changes in Discount Rates (4% Real +/- 1%)   **Purpose:** to consider the impact of changing the return on invested sum on the “up-front” funding invested to cover future deficits
Project Delay for 2 Years   **Purpose:** to consider the impact of project delay
Reducing the Scale of M+ (Reduce NOFA by 10% to 30%, Plus Providing 70% of NOFA in Phase 1)   **Purpose:** to consider the impact of reducing the size of the M+ and off-site storage and conservation laboratory
Changes in the NOFA to GFA Ratios (M+ from 1:1.67 to 1:1.5, 1:1.4, or 1:1.25; PA Venues from 1:1.5 to 1:1.4, 1:1.3 or 1:1.25)   **Purpose:** to consider the impact of the ratio between the NOFA and the GFA which varies for different types of buildings
Changes in the Mix of Commercial Uses (One-third of Hotels to Offices; 20% of RDE Facilities to Offices)   **Purpose:** to consider the impact of changing the mix of commercial uses

Sensitivity Tests
Results and Discussion

The sensitivity tests results are considered in NPV terms so that the impacts can be compared between tests and within tests (capital, operations, finance or land sales impacts). An illustration of the impact on the funding gap is shown below with tests divided into two categories, those that test model robustness and those that test other parameters. Factors that reduce the funding gap (shown to the left) are favourable; those that increase it (shown to the right) are not favourable.



Sensitivity Tests: Model Robustness



Sensitivity Tests: Changing Other Parameters

The optimistic and pessimistic outcomes show the potential range of the results for the upside and downside of estimates of the CACF and communal facilities costs and revenues. The range is -66% i.e a favourable reduction in the funding gap to +63% i.e. an unfavourable increase in the funding gap.

Of the sensitivity tests undertaken, the reduced land premium has the greatest influence on the funding gap, increasing it by some 115%. This is primarily because the chosen potential range of revenues is high: +10% and -50% which reflects the volatility of the land market in Hong Kong.

As expected those factors that change both the total deficit and release GFA for commercial development have some considerable impact on the deficit less land sales:

- Assuming much lower ratios of NOFA to GFA ratios of 1:1.25 for CACF including M+ and PA venues reduces the funding gap by about 58%. However, reducing the ratio of the NOFA to GFA significantly may not be practical and the implication of reducing the ratio (if it is possible) would be to limit the functionality and design flexibility of the building
- Scaling down of the NOFA of M+ by 30% and providing 70% of NOFA in Phase 1 also has a significant impact. A reduction in the funding gap of $3.7 billion or about 41% less than the base case
- Factors such as the WACC, mix of commercial uses and alternative escalation rates have some, but not a large, impact on the results

None of the tests reduce the total deficit below NPV $23 billion and even assuming land sales accrue to the proposed statutory body, none of the sensitivity tests reduces the funding gap to zero.

The clear conclusion of the financial analysis is the presence of **a significant funding gap.** The best indicator of the cost of the funding gap is the **(negative) NPV** which are:

- Scenario 1A: ($9.1 billion)
- Scenario 1B: ($10.8 billion)
- Scenario 2: ($11.5 billion)

The sensitivity tests show that there are several factors which may increase or reduce the funding gap. This means there is some uncertainty about the eventual size of the gap - but the tests also provide some guidance on funding policies and decisions which might help to reduce it.

Whilst the best indicator of the cost; the NPV measure is always sensitive to the real discount rate used in its estimation. The analysis adopts a 4% real discount rate, making reference to the rate used by the Government for public projects. Though a different rate could be adopted, it is set for wider economic management purposes and influenced by economic factors over which there is little policy control. As an example, under Scenario 1A, adopting a lower real discount rate of 3% the funding gap rises to $13.1 billion; and falls to $6.0 billion, adopting a 5% real discount rate.

There are three categories of parameters that will affect the funding gap:

- Parameters ***Not amenable** to development and funding policies* *such as:*
  - Optimistic and pessimistic outcomes in terms of cost and revenue estimates
  - Changes in weighted average cost of capital, inflation and escalation rates
  - Changes in land premium on residential and commercial land sales
- Parameters ***Amenable** to development and funding policies* *such as:*
  - Scaling down M+
  - Reducing the NOFA to GFA ratio but reducing the NOFA to GFA ratio has design and implementation consequences that may not be desirable
- Parameters ***which require changes in present development and planning policies*** *such as:*
  - GFA cap on residential development
  - Plot ratio

The sensitivity tests suggest that "favourable" movements in parameters ***Not amenable to development and funding policies*** may reduce the funding gap, but since the Government cannot control these factors they do not influence the development or funding policies for the WKCD project.

The sensitivity tests also suggest that "favourable" movements in parameters ***Amenable to development and funding policies*** may also reduce the funding gap and subject to concerns of undesirable consequences of NOFA to GFA ratio reductions, there is merit in considering changes in these parameters to reduce the funding gap.

Parameters ***which require changes in present development and planning policies*** also offer scope to reduce the funding gap through increasing the value of land sales although since these parameters were fixed in the October 2005 Package and subsequent guidance and as such taken as fixed in the financial analysis.

The magnitude of the funding gap suggests that, if development and planning policies are held constant, measures to reduce the funding gap and choice of procurement will not reduce the funding gap to zero. The FA therefore looked at possible ways to finance the funding gap.

The estimate of the funding gap includes commercial sponsorship and fundraising but does not include other contributions such as significant philanthropic donations which, for planning purposes, should not be relied upon. The assessment of financing options therefore assumes that the financial implication to Government is equal to the calculated funding gap, i.e. before taking into account any such donations. If such donations are received, the Government funding requirement could be reduced. The FA identified and included four options in the assessment.

Option	Pros	Cons
Option 1: Funding of both the total capital and operating deficits through land and seed capital endowments: The Government endows the proposed statutory body with WKCD land and seed capital. The proposed statutory body then sells all the land allocated for residential and commercial use and uses the proceeds to start CACF construction. The seed capital is invested and used to pay for the short-fall in construction capital and to subsidise CACF operating deficits through annual returns.	Simple mechanism creating investment fund under direct control of the proposed statutory body No need for annual subvention budgeting and claims to Government Greater independence provides incentive for tighter budget control	Needs substantial up-front "seed capital" funding Land sale revenues redistributed to cross subsidise deficits - land values uncertain due to market fluctuations
Option 2: Funding of capital costs by land and seed capital endowments. Operating deficits paid for through subventions: The Government endows the proposed statutory body with WKCD land and a smaller amount of seed capital. The proposed statutory body then funds CACF construction proceeds as for Option 1, with the shortfall paid for by the seed capital. CACF operating deficits are then paid for through on-going Government subventions to the proposed statutory body.	Reduces need for up-front "seed capital" funding by Government	Need for annual subvention budgeting and claims to Government Less independence creates less incentive to control operational costs Potentially fluctuating revenue stream depending on prevailing public opinion of WKCD merits Land sale revenues redistributed to cross subsidise deficits - land values uncertain due to market fluctuations
Option 3: Funding of capital costs, including RDE facility, by land and seed capital endowments. Operating deficits paid for through RDE rental income: This option adopts the same approach for capital construction funding as Option 2, but for this option only the residential and hotel land is sold; the RDE land is retained and these commercial facilities developed by the proposed statutory body to provide a reliable and sustainable future income stream to subsidise CACF operating deficits.	No need for annual subvention budgeting and claims to Government Greater independence provides incentive for tighter budget control Potential for greater synergy between the RDE facility and the wider WKCD for themeing and special events Option least dependent on land sale revenues	Need for up-front "seed capital" funding by Government with loss of some land sales revenues The proposed statutory body becomes a public developer - needs a wider range of skills Takes time for the proposed statutory body to build up experience in running RDE facility Land sale revenues redistributed to cross subsidise deficits - land values uncertain due to market fluctuations
Option 4: Public funding of capital costs and land endowed to the proposed statutory body. Operating deficits paid for through land premium and invested by the proposed statutory body to provide future income stream: Under this option, the Government pays upfront for all capital costs. The Government also endows the proposed statutory body with WKCD land. The proposed statutory body sells the land allocated for commercial and residential use, and invests the proceeds as per the seed capital fund in order to pay for CACF operating deficits.	No need for annual subvention budgeting and claims to Government Significant NPV of land sale revenues has potential to fund operational deficits Greater independence provides incentive for tighter budget control	Need for greatest up front investment by Government Land sale revenues redistributed to cross subsidise deficits - land values uncertain due to market fluctuations

Summary of Financing Costs by Option
NPV at 2006 ($ billion)

The funding requirement varies in total, type and timing under each of the 4 options.

Preference depends on policy as there are pros and cons of each option.

Scenario 1A

Capital Costs	Option 1	Option 2	Option 3	Option 4
Capital Costs (Construction and Overhaul)	$21.6	$21.6	$24.7#	$21.6
Government Funding Through Land Sales	$20.9	$20.9	$17.0	-
Government Funds Required for Capital	$0.7	$0.7	$7.7	$21.6
Operating Costs				
Operating Deficit	$8.4	$8.4	$8.4	$8.4
Method of Financing Operating Deficit	Seed Capital	Subventions	Rental Income	Land Sales
Government Funds Required for Operations	$8.4	$8.4	-*	-**
Financial Implications to Govt				
Government Funding Through Land	$20.9	$20.9	$17.0	$20.9**
Land Premium Foregone (RDE Facility)	-	-	$3.9	-
Government Funding Through the Budget (Capital)	$9.1	$0.7	$7.7	$21.6
Government Funding Through the Budget (Recurrent)	-	$8.4	-	-
Total	$30.0	$30.0	$28.6	$42.5**

Notes:
The calculated funding gap refers to the financial implication to Government before taking into account donations, other than commercial sponsorship and fundraising. If such donations are received, the Government funding requirement could be reduced.
including NPV of capital cost of RDE facilities = HK$3.1 billion (covering construction and major overhaul costs)
* NPV of RDE rental income = HK$9.4 billion (~$591 million a year). This gives a margin over operating deficit in the order of 10%; ($9.4-$8.4)/($8.4) = 12%
** Government funding of operational deficits through land endowment under Option 4, gives a margin in the order of 150%; ($20.9-$8.4)/($8.4) = 148%

<u>Options 1</u> requires the same total funding in NPV terms as Option 2 but the budgetary funding is through seed capital rather than through subventions.

<u>Options 2</u> requires the least up front capital funding through the budget, since the operating costs are financed through on-going subventions.

<u>Under Option 3,</u> where rental income from RDE facilities is used to finance the operating cost, the total Government funding in NPV terms is the lowest, at about $29 billion.

<u>Under Option 4,</u> where land sales are used to finance the operational deficit, the total Government funding in NPV terms is the greatest but the operating deficits could be covered for the foreseeable future.

The Roles and Responsibilities of the Proposed Statutory Body

The principal financial roles, which the proposed statutory body would need to undertake, include:

- Grouping of cultural, commercial, and communal facilities and package development sites, as appropriate, in order to achieve the objectives of the masterplan and to create the most financially viable packages of development
- Cross-subsidising development and, where necessary, subsidise and cross-subsidise cultural facility operation through risk sharing PSI agreements
- Developing business propositions and procurement packages to be offered to private sector and other Not-for-Profit organisations
- Entering into risk sharing PSI contracts on behalf of the public sector ensuring that the public interest is maintained but at 'arm’s length' from Government
- Holding a land bank comprising the developable area of WKCD
- Holding and distributing income arising from: any fund established for the WKCD; the leasing and development of sites on WKCD land; the operation of commercial or other facilities

The FA recommends that the proposed statutory body is established under statute. It is the Government’s stated intention to create an independent statutory body, i.e. the WKCD Authority (the proposed statutory body), to take over the present Government role in taking forward the WKCD project at a suitable juncture. It is expected that the role and functions of the proposed statutory body will incorporate the financial requirements specified above. However, it is stressed that these will be the subject of public consultation, and will be embodied in specific enabling legislation which establishes the proposed statutory body.

Annex: Detailed Results by Facility, NPV at 2006 ($ million)

	PSI 1A			PSI 1B				PSI 2				PSC		
	All Capital	Operations	Capital & Operations	All Capital	Operations	Finance	Capital, Operations & Finance	All Capital	Operations	Finance	Capital, Operations & Finance	All Capital	Operations	Capital & Operations
PHASE 1														
1 Management and Master planning	**(1,256)**	**(860)**	**(2,117)**	**(1,256)**	**(860)**	**-**	**(2,117)**	**(1,256)**	**(860)**	**-**	**(2,117)**	**(1,304)**	**(893)**	**(2,196)**
1.1 Master planning	(30)	-	(30)	(30)	-	-	(30)	(30)	-	-	(30)	(30)	-	(30)
1.2 Area and Project Management	(1,226)	(860)	(2,086)	(1,226)	(860)	-	(2,086)	(1,226)	(860)	-	(2,086)	(1,273)	(893)	(2,166)
2 Museum and Exhibition Space	**(5,967)**	**(5,809)**	**(11,777)**	**(5,960)**	**(5,809)**	**(27)**	**(11,797)**	**(5,960)**	**(5,809)**	**(27)**	**(11,797)**	**(5,967)**	**(6,403)**	**(12,370)**
2.1 M+	(5,492)	(6,059)	(11,551)	(5,492)	(6,059)	-	(11,551)	(5,492)	(6,059)	-	(11,551)	(5,492)	(6,554)	(12,046)
2.2 Exhibition Centre	(476)	250	(226)	(468)	250	(27)	(246)	(468)	250	(27)	(246)	(476)	151	(324)
3 Performing Arts Facilities	**(8,128)**	**(360)**	**(8,488)**	**(8,469)**	**(360)**	**(1,046)**	**(9,875)**	**(4,951)**	**(909)**	**(597)**	**(6,457)**	**(8,145)**	**(2,159)**	**(10,304)**
3.1 Mega Performance Venue	(2,576)	843	(1,733)	(2,688)	843	(342)	(2,188)	-	-	-	-	(2,576)	484	(2,092)
3.2 Great Theatre 1	(1,162)	(36)	(1,198)	(1,212)	(36)	(155)	(1,403)	(1,212)	(36)	(155)	(1,403)	(1,162)	(258)	(1,420)
3.3 Concert Hall and Chamber Music Hall	(1,351)	(327)	(1,678)	(1,410)	(327)	(180)	(1,917)	(1,410)	(327)	(180)	(1,917)	(1,351)	(691)	(2,042)
3.4 Xiqu Centre	(1,117)	(235)	(1,352)	(1,165)	(235)	(149)	(1,549)	(1,165)	(235)	(149)	(1,549)	(1,117)	(466)	(1,583)
3.5 Medium Theatre 1	(491)	(158)	(649)	(512)	(158)	(65)	(736)	-	-	-	-	(491)	(370)	(860)
3.6 Medium Theatre 2 and Black Box Theatre 1	(665)	(212)	(877)	(694)	(212)	(89)	(995)	(694)	(212)	(89)	(995)	(665)	(461)	(1,126)
3.7 Black Box Theatres 2 and 3	(305)	(135)	(440)	(318)	(135)	(41)	(494)	-	-	-	-	(305)	(245)	(550)
3.8 Black Box Theatre 4	(185)	(98)	(284)	(194)	(98)	(25)	(317)	(194)	(98)	(25)	(317)	(192)	(152)	(344)
3.9 Piazzas*	(276)	-	(276)	(276)	-	-	(276)	(276)	-	-	(276)	(286)	-	(286)
4 Other Arts and Cultural Uses	**(294)**	**-**	**(294)**	**(294)**	**-**	**(37)**	**(331)**	**-**	**-**	**-**	**-**	**(294)**	**-**	**(294)**
5 Transport Facilities	**(1,144)**	**172**	**(972)**	**(1,144)**	**172**	**(75)**	**(1,047)**	**(603)**	**-**	**(75)**	**(679)**	**(1,144)**	**172**	**(971)**
5.1 Automated People Mover	(603)	-	(603)	(603)	-	(75)	(679)	(603)	-	(75)	(679)	(603)	-	(603)
5.2 Road Works and Pedestrian Connections	(120)	(22)	(142)	(120)	(22)	-	(142)	-	-	-	-	(120)	(21)	(142)
5.3 Public Pier	(25)	(4)	(29)	(25)	(4)	-	(29)	-	-	-	-	(25)	(4)	(29)
5.4 Car parks	(395)	198	(197)	(395)	198	-	(197)	-	-	-	-	(395)	198	(197)
6 Communal Facilities	**(1,369)**	**(485)**	**(1,854)**	**(1,369)**	**(485)**	**-**	**(1,854)**	**-**	**-**	**-**	**-**	**(1,369)**	**(529)**	**(1,898)**
6.1 Public Open Space	(923)	(478)	(1,401)	(923)	(478)	-	(1,401)	-	-	-	-	(923)	(521)	(1,445)
6.2 Fire Station, Police Post and RCP	(421)	-	(421)	(421)	-	-	(421)	-	-	-	-	(421)	-	(421)
6.3 Public Toilets	(24)	(8)	(32)	(24)	(8)	-	(32)	-	-	-	-	(24)	(8)	(32)
7 Engineering Works	**(1,838)**	**(40)**	**(1,878)**	**(1,838)**	**(40)**	**-**	**(1,878)**	**(1,838)**	**(40)**	**-**	**(1,878)**	**(1,838)**	**(40)**	**(1,878)**
7.1 Deck Over WHC Tunnel Portal	(266)	(40)	(306)	(266)	(40)	-	(306)	(266)	(40)	-	(306)	(266)	(40)	(306)
7.2 Build Over Ventilation Buildings	(407)	-	(407)	(407)	-	-	(407)	(407)	-	-	(407)	(407)	-	(407)
7.3 Other Site Engineering Works	(1,166)	-	(1,166)	(1,166)	-	-	(1,166)	(1,166)	-	-	(1,166)	(1,166)	-	(1,166)
SubTotal	**(19,996)**	**(7,382)**	**(27,379)**	**(20,330)**	**(7,382)**	**(1,185)**	**(28,898)**	**(14,609)**	**(7,619)**	**(700)**	**(22,928)**	**(20,061)**	**(9,851)**	**(29,912)**
PHASE 2														
8 Performing Arts Facilities (Phase 2)	**(1,228)**	**(434)**	**(1,662)**	**(1,284)**	**(434)**	**(164)**	**(1,882)**	**(1,284)**	**(434)**	**(164)**	**(1,882)**	**(1,228)**	**(717)**	**(1,945)**
8.1 Great Theatre 2 and Medium Theatre 3	(939)	(311)	(1,250)	(982)	(311)	(125)	(1,418)	(982)	(311)	(125)	(1,418)	(939)	(480)	(1,419)
8.2 Medium Theatre 4	(289)	(123)	(412)	(302)	(123)	(39)	(464)	(302)	(123)	(39)	(464)	(289)	(238)	(526)
9 M+ (Phase 2)	**(394)**	**(517)**	**(910)**	**(394)**	**(517)**	**-**	**(910)**	**(394)**	**(517)**	**-**	**(910)**	**(394)**	**(555)**	**(949)**
Subtotal	**(1,621)**	**(950)**	**(2,572)**	**(1,678)**	**(950)**	**(164)**	**(2,792)**	**(1,678)**	**(950)**	**(164)**	**(2,792)**	**(1,621)**	**(1,272)**	**(2,894)**
TOTAL CACF AND COMMUNAL FACILITIES	**(21,618)**	**(8,333)**	**(29,950)**	**(22,008)**	**(8,333)**	**(1,349)**	**(31,690)**	**(16,287)**	**(8,569)**	**(864)**	**(25,719)**	**(21,682)**	**(11,124)**	**(32,806)**
LAND SALES	**-**	**-**	**20,901**	**-**	**-**	**-**	**20,901**	**-**	**-**	**-**	**14,243**	**-**	**-**	**20,901**
10.1 Villa Houses			1,624				1,624			Package A	1,610			1,624
10.2 Apartments			13,874				13,874			Package B	836			13,874
10.3 Hotels			1,453				1,453			Package C	11,796			1,453
10.4 Retail/Dining/Entertainment			3,949				3,949				-			3,949
TOTAL (INCLUDING LAND SALES)	**-**	**-**	**(9,050)**	**-**	**-**	**-**	**(10,789)**	**-**	**-**	**-**	**(11,477)**	**-**	**-**	**(11,905)**

* Including a small canopy ( ) denotes negative NPV

End

GHK