

# 工程產業全球化標案 實務人才培訓

## 海外標案財務規劃

安侯企業管理股份有限公司

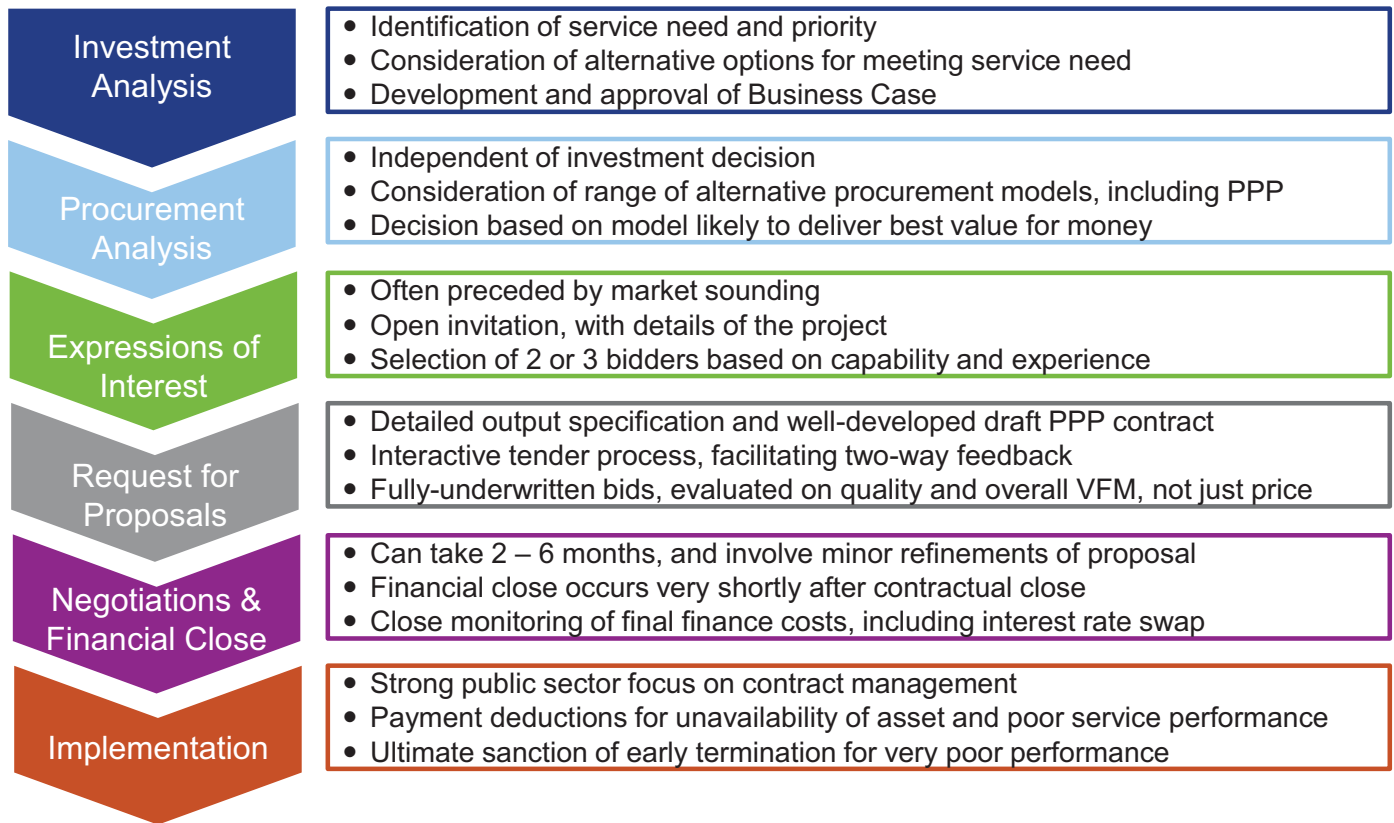
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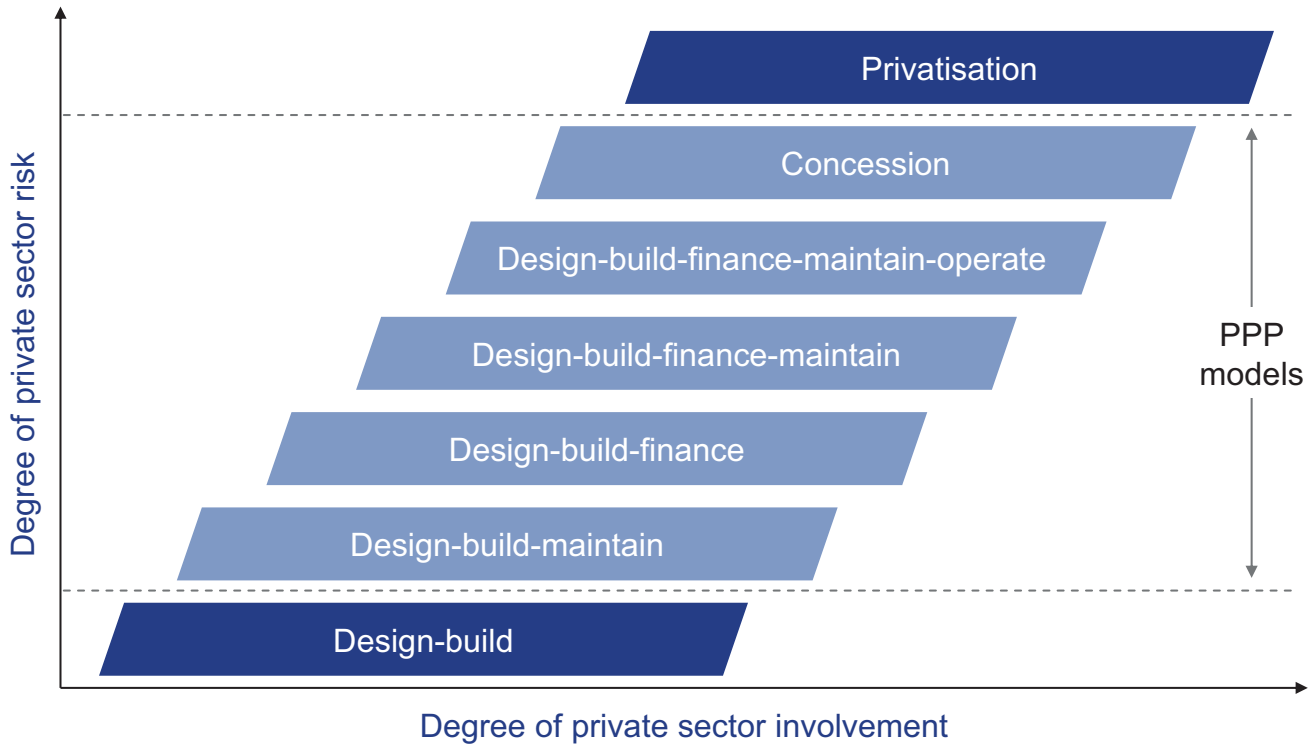
## 海外標案類型



## 招標方式

### EU Legislation allows four procurement procedures

	Open Procedure	Restricted Procedure	Negotiated Procedure	Competitive Dialogue
<b>Possibility to limit number of bidders</b>	No prequalification or pre-selection is permitted. Any interested company may submit a bid.	The number of bidders may be limited to no less than five in accordance with criteria specified in contract notice (prequalification and shortlisting permitted).	The number of bidders may be limited to no less than three in accordance with criteria specified in contract notice (prequalification and shortlisting permitted).	The number of bidders may be limited to no less than three in accordance with criteria specified in contract notice (prequalification and shortlisting permitted).
<b>Discussions during process</b>	The specifications may not be changed during the bidding process, and no negotiations or dialogue may take place with bidders. Clarification is permitted.	The specifications may not be changed during the bidding process, and no negotiations or dialogue may take place with bidders. Clarification is permitted.	Negotiations permitted throughout process. Successive stages can be used to reduce the number of bidders (further short-listing).	Dialogue with bidders permitted on all aspects (similar to negotiated procedure, including further short-listing). When dialogue is concluded, final complete bids must be requested based on the solution(s) presented during the dialogue phase.
<b>Discussions after final bid is submitted</b>	No scope for negotiations with a bidder after bids are submitted.	No scope for negotiations with a bidder after bids are submitted.	Not relevant because the negotiations can continue until the contract is agreed. There need be no "final bid" per se.	Only permitted to clarify, fine tune or specify a bid. No changes permitted to basic features.
<b>Basis for award</b>	Lowest price or most economically advantageous tender	Lowest price or most economically advantageous tender	Lowest price or most economically advantageous tender	Most economically advantageous tender



## PPP契約類型與權責劃分

PPP agreements can be structured following different contractual models

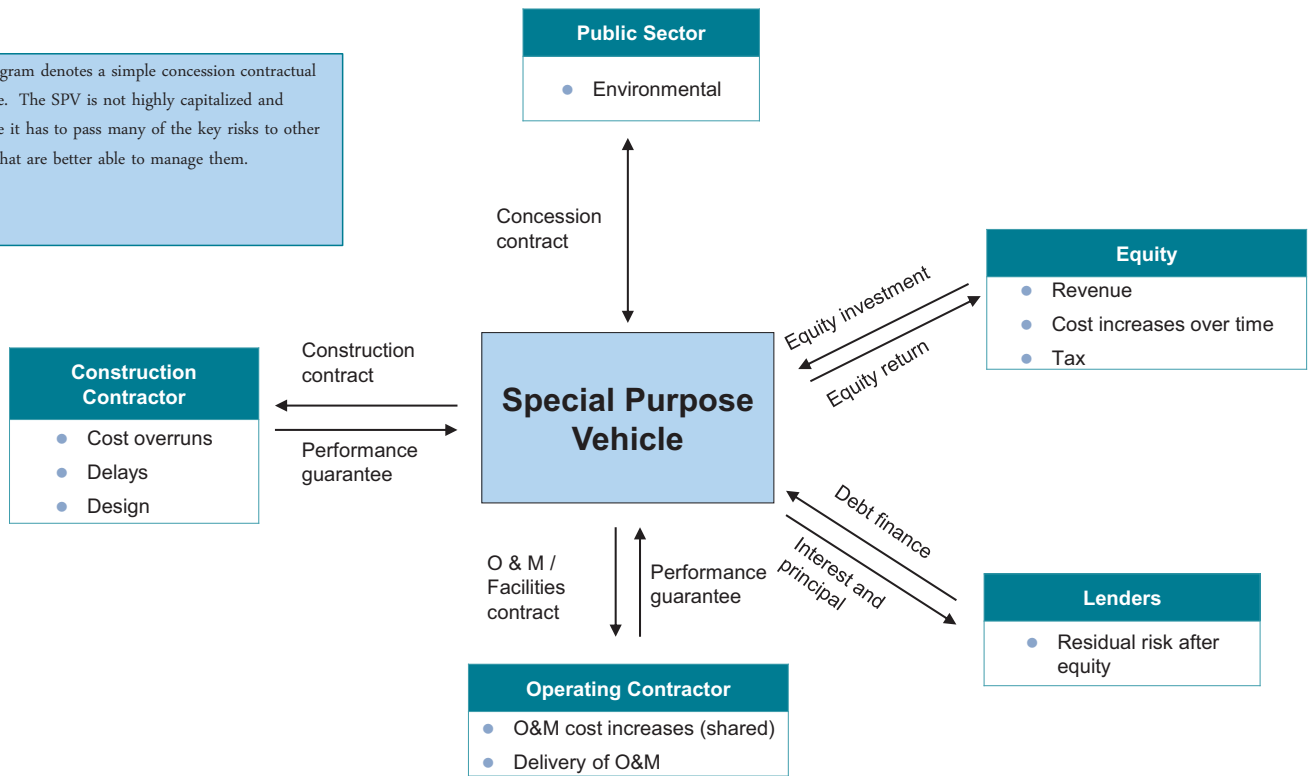
The contractual model defines the roles of public and private sectors as well as how project risks are shared

○ - Retained by Public Sector ● - Transferred to Private Sector	Design	Construction	O&M	Financing	Market / Utilization	Collection
<b>Design Bid Build</b>	○	●	○	○	○	○
<b>Design Build</b>	●	●	○	○	○	○
<b>Design Build Finance</b>	●	●	○	●	○	○
<b>Design Build/Maintain</b>	●	●	●	○	○	○
<b>Design Build Finance Operate (Availability Payment)</b>	●	●	●	●	○	○
<b>Design Build Finance Operate (Shadow User Fee)</b>	●	●	●	●	●	○
<b>Design Build Finance Operate (Real User Fee)</b>	●	●	●	●	●	●

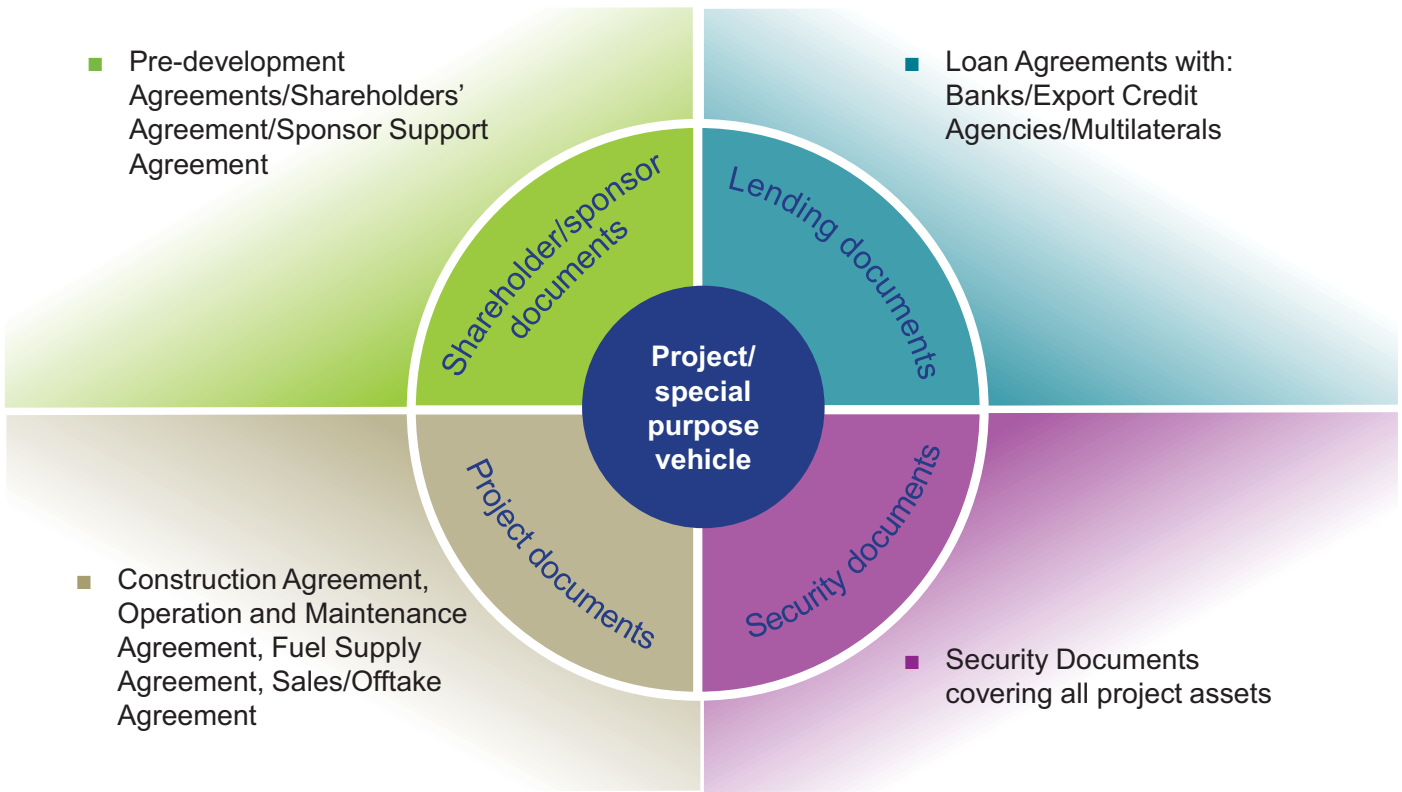
# 標案風險評估

## PPP契約架構與風險分攤

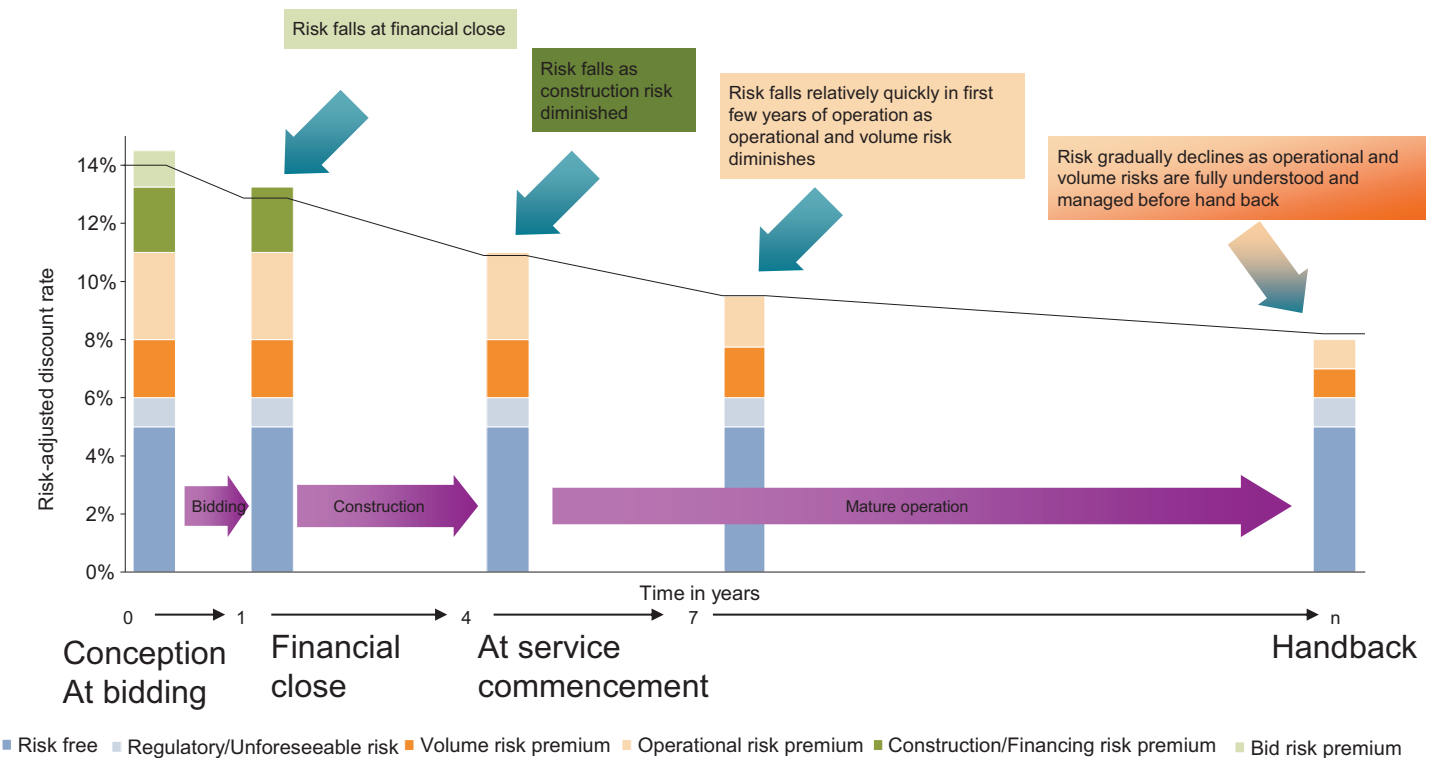
This diagram denotes a simple concession contractual structure. The SPV is not highly capitalized and therefore it has to pass many of the key risks to other parties that are better able to manage them.



# PPP相關契約



# PPP案件生命周期風險變化



## Design and build

- Planning/consents
- Design
- Technology
- Ground conditions
- Protestor action
- Construction price
- Construction programme
- Interface
- Performance/availability
- Utilities

## Operations

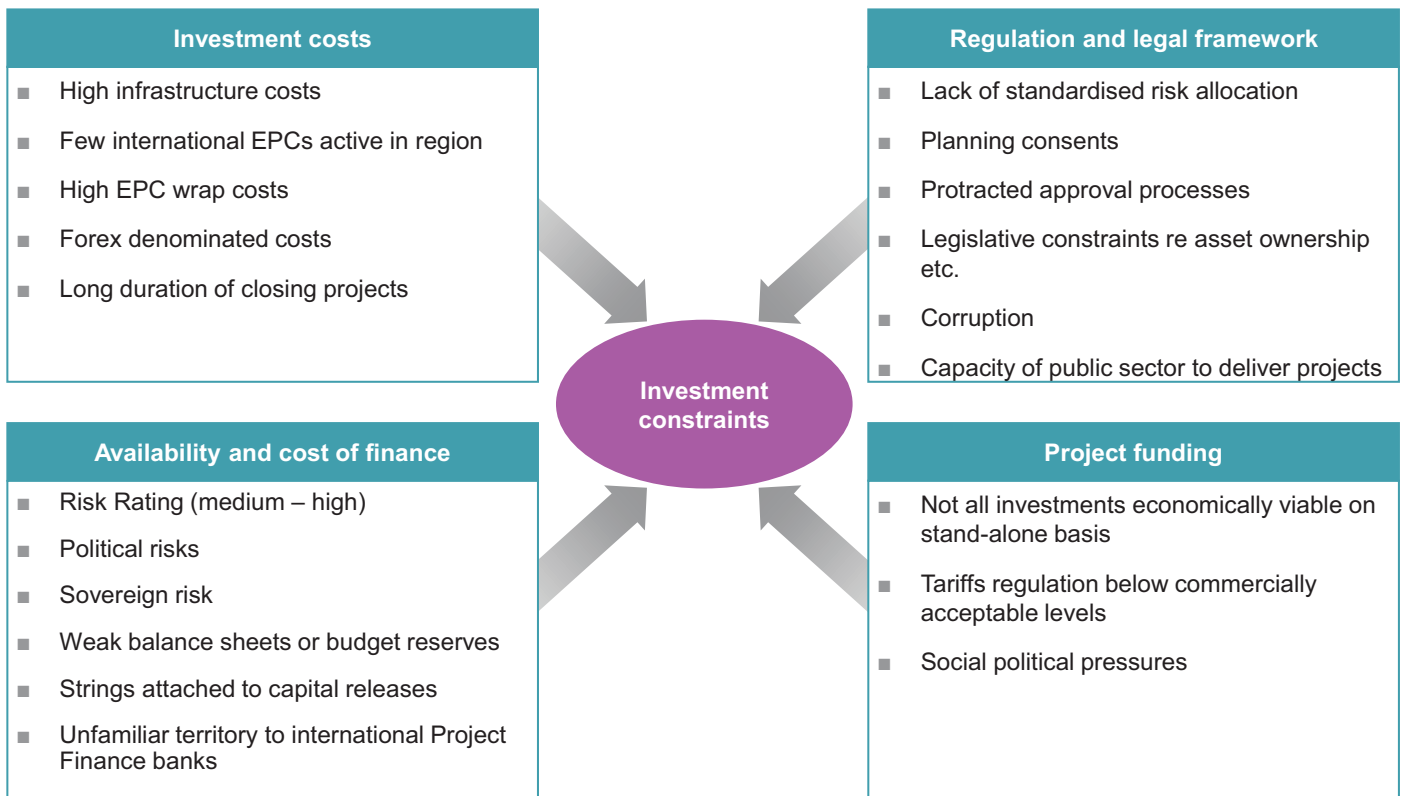
- Operating cost
- Operating performance
- Maintenance cost/timing
- Raw material cost
- Insurance premiums/availability
- Vandalism

## Macroeconomic

- Interest rates
- Inflation
- FX exposure
- Tax exposure

## Revenue

- Output volume
- Usage
- Output price
- Toll levels
- Accidents
- Competition
- Force majeure



## 風險評估

### Ratios

- ✓ Annual Debt Service Cover Ratio (ADSCR) – Cashflow available for debt service divided by annual debt service
- ✓ Loan Life Cover Ratio (LLCR) – NPV of future cashflow available for debt service over tenor of the loan divided by debt outstanding
- ✓ Project Life Cover Ratio (PLCR) – as LLCR over whole life of contract/concession
- ✓ Key covenants – minimum for base case/lock-up/default
- ✓ Breakeven and sensitivities



## Support packages

- Construction
- Operation
- Equity bridge
- Standby equity

## Contractual structure

- Flow down
- Direct Agreement/step-in

## Reserving mechanisms

- Debt service/maintenance/change in law/insurance/tax

## Hedging

- Interest rates/foreign exchange/inflation

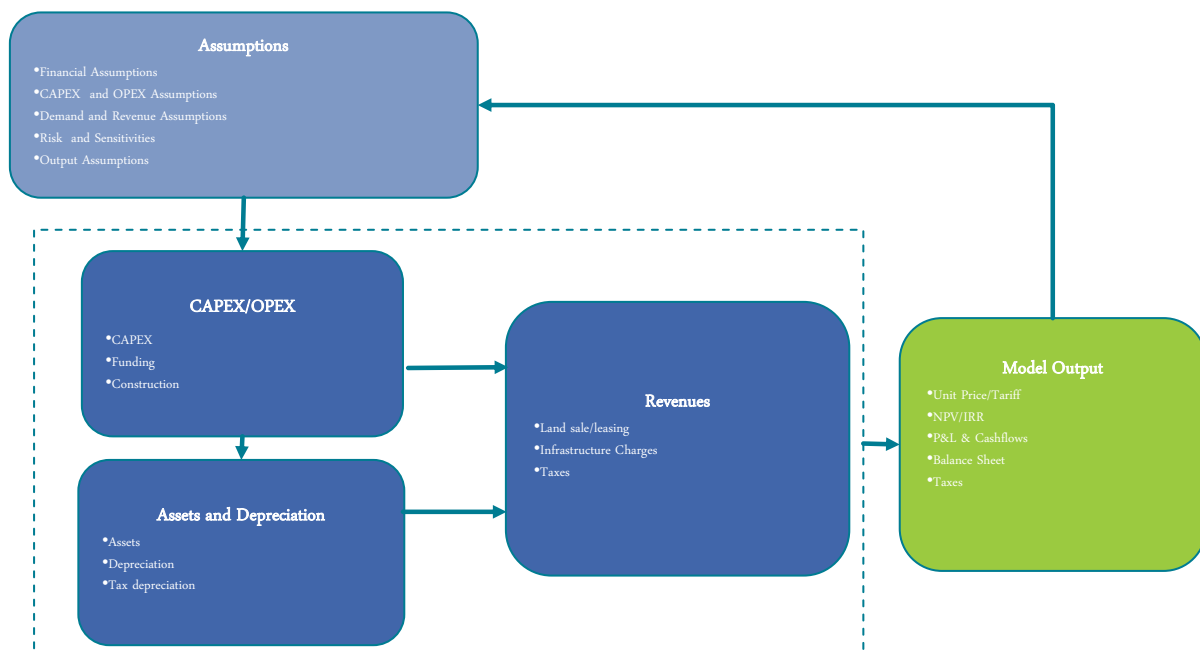
## Fundamental part of infrastructure development

- Sponsors – detailed cost modelling
- Investors – equity returns
- Debt Financiers – project robustness

## Form of financial model

- Exel model showing project cashflows
- Project finance standard – monthly during construction, semi-annual during operation
- Needs to follow industry standard and best practice
- P&L/balance sheet necessary
  - P&L drives tax based on accounting treatment along with distributable reserves
  - Balance sheet useful to check model works ie balance sheet should balance!
- Cashflow waterfall

# 財務模組架構



## Main elements

- ✓ Revenue
- ✓ Operating and maintenance costs (routine and lifecycle)
- ✓ Tax
- ✓ Debt Financing
- ✓ Distributions to equity shareholders

## Key Metrics

- Project IRR
- Debt Cover Ratios
- Equity IRR

# 收入與支出

## Revenue

- Calculation will depend on nature of project
- Availability payments subject to deductions
- Usage risk – forecast usage and pricing
- Inflation assumptions
- Either an input or output

## Cost

- Sponsor cost model
- Representation of contract or assumptions
- Inflation relative to revenue inflation (differential indexation)
- Correlation to usage of asset
- Long term lifecycle forecast
- Management costs/fees

### Debt

- Term sheet contains pricing
- Interest rate – LIBOR + credit margin
- Hedging costs – Fixed rate LIBOR
- Fees – Upfront fee, commitment fee and agency fee
- Base Case cover ratios need to be met – debt sizing
- Repayment profile – sculpting to tenor?

### Equity

#### Investment

- Shares or shareholder loans
- Timing and pricing of any support required ie Letter of Credit
- Fees to be included?

#### Returns

- Annual cashflow available post debt financing
- Target IRR

### Key areas of financial modelling that need professional input

- Tax treatment is important in relation to capital investment ie capital allowances
- Interest deductibility
- Use of tax losses
- VAT needs to be considered in terms of timing differences

### Accounting treatment

- Key to tax calculations
- Distributable reserves
- Balance sheet treatment

## Equity IRR

The internal rate of return of equity is the "rate of return" that makes the NPV of all cash flows (both positive and negative) from a particular investment equal to zero.

In more specific terms, the IRR of an investment is the discount rate at which the NPV of investment (negative cash flows) equals the NPV of the cashflow received (positive cash flows) of the investment.

Typical equity IRRs in developed markets:

- PPP projects – 12-15%
- Secondary PPP projects – 7-8%
- Operational regulated airports/water industry – 12-15% leveraged

## Project IRR

The internal rate of return of a project is the "rate of return" that makes the NPV of all cash flows (both positive and negative) from a particular investment equal to zero.

In more specific terms, the IRR of an investment is the discount rate at which the NPV of costs (negative cash flows) of the investment equals the NPV of the benefits (positive cash flows) of the investment.

A company should, in theory, undertake all projects or investments available with IRRs that exceed their cost of capital.

Weighted Average Cost of Capital – WACC

$$WACC = (E / V) \times R_e + (D / V) \times R_d \times (1 - T_c)$$

In practice – Project IRR is the IRR (Revenues – Costs), hence is the pre-tax WACC

**Why is the Project IRR of interest to infrastructure projects?**

## Debt Cover Ratios

### Annual Debt Service Cover Ratio (ADSCR):

means, in relation to any Calculation Date falling on or after the date which is 12 months after the Full Operations Commencement Date, the ratio of:

(a) the Net Cash Flow

to

(b) the Senior Debt Service Requirement

in each case during the 12 months period ending on that Calculation Date.

## Debt Cover Ratios

### Loan Life Coverage Ratio LLCR

is a ratio commonly used in project finance.

The ratio is defined as: Net Present Value of Cashflow Available for Debt Service ("CFADS") / Outstanding Debt in the period.

Financial modelling of LLCR is now a standard metric calculated in a project finance model and has been standardized to a large extent but always needs to be aligned with local practice of the financiers as described in the transaction term sheet.

NPV(CFADS) is measured only up until the maturity of the debt tranche.

The ratio gives an estimate of the credit quality of the project from a lender's perspective.

Related ratios are: Project Life Coverage Ratio (PLCR) and Reserve Life Coverage Ratio (RLCR)

The ratio can range from 1.25 in a highly geared infrastructure investment to 2.5 or higher in an oil and gas transaction.

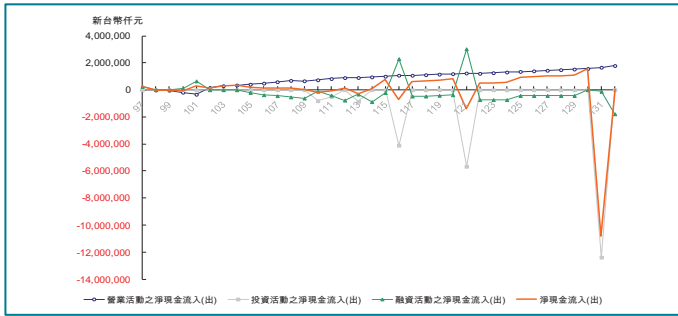
## 一般常見財務模組分析錯誤

- Most errors are not mathematical but incorrect assumptions
- Real and Nominal cashflows
- Discount rates
- Annual/Semi-annual calculations
- Tax errors
- Timing of cashflows – working capital
- Missing costs and fees

## 敏感性分析

- Revenue
  - % increase/reduction
  - performance deductions
- Costs
  - % increase /reduction
  - lifecycle and/or O&M
- Macroeconomic
  - RPI rate
  - FX rate
  - Tax rates
- Project delay
- Combined

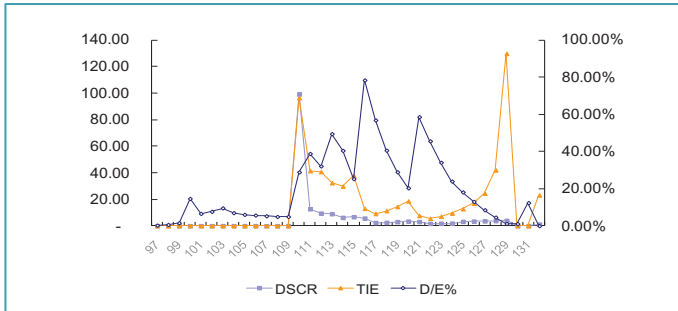
## Cashflow



## Financial Statements

會計年報	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
<b>資產負債表</b>															
單位:新台幣千元															
資產															
現金及存款	241,889	227,279	194,426	125,736	447,280	897,387	1,221,436	1,426,239	1,842,440	1,899,220	1,829,247	1,975,236	1,897,362	1,897,244	1,897,244
應收帳款	0	0	0	0	0	94,739	34,788	25,847	49,254	74,512	25,768	97,267	94,284	123,216	129,266
存貨	0	0	0	0	0	23,136	23,893	24,372	24,944	25,348	25,546	25,867	27,908	28,440	28,440
不動產設備	247,899	227,279	194,426	125,736	447,280	823,716	868,917	1,307,847	1,842,208	1,794,227	1,591,880	1,994,851	1,977,892	1,977,892	1,977,892
其他資產	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
負債	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
應付帳款	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
其他負債	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
業主權益	241,889	227,279	194,426	125,736	447,280	823,716	868,917	1,307,847	1,842,208	1,794,227	1,591,880	1,994,851	1,977,892	1,977,892	1,977,892
總計	241,889	227,279	194,426	125,736	447,280	823,716	868,917	1,307,847	1,842,208	1,794,227	1,591,880	1,994,851	1,977,892	1,977,892	1,977,892
<b>損益表</b>															
單位:新台幣千元															
營業收入	717	1,471	3,216	18,481	27,828	44,847	48,488	48,874	47,876	48,823	49,886	81,161	82,261	84,913	88,893
營業成本	0	0	0	0	0	383	78,271	28,801	28,844	45,822	45,876	47,183	47,783	49,844	49,874
營業毛利	717	1,471	3,216	18,481	27,828	44,464	47,717	20,073	19,032	3,061	4,010	33,978	34,478	35,069	39,019
營業費用	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
營業淨利	717	1,471	3,216	18,481	27,828	44,464	47,717	20,073	19,032	3,061	4,010	33,978	34,478	35,069	39,019
其他收入	280,000	280,000	280,000	280,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
其他費用	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
稅前淨利	280,717	281,471	283,216	288,481	297,828	44,464	47,717	20,073	19,032	3,061	4,010	33,978	34,478	35,069	39,019
稅後淨利	241,889	227,279	194,426	125,736	447,280	823,716	868,917	1,307,847	1,842,208	1,794,227	1,591,880	1,994,851	1,977,892	1,977,892	1,977,892

## Financial Index



## Sensitivity Analysis

經營比率	票箱收入														
	60%	65%	70%	75%	80%	85%	90%	95%	100%	105%	110%	115%	120%	125%	130%
70%	0.75	0.82	0.88	0.94	1.01	1.07	1.13	1.20	1.26	1.32	1.38	1.45	1.51	1.57	1.64
75%	0.74	0.80	0.87	0.93	0.99	1.05	1.11	1.17	1.24	1.30	1.36	1.42	1.48	1.55	1.61
80%	0.73	0.79	0.85	0.91	0.97	1.03	1.09	1.16	1.22	1.28	1.34	1.40	1.46	1.52	1.58
85%	0.72	0.78	0.84	0.90	0.96	1.02	1.08	1.14	1.20	1.26	1.32	1.38	1.44	1.50	1.56
90%	0.71	0.77	0.82	0.88	0.94	1.00	1.06	1.12	1.18	1.24	1.29	1.35	1.41	1.47	1.53
95%	0.70	0.75	0.81	0.87	0.93	0.98	1.04	1.10	1.16	1.22	1.27	1.33	1.39	1.45	1.51
100%	0.68	0.74	0.80	0.86	0.91	0.97	1.03	1.08	1.14	1.20	1.25	1.31	1.37	1.43	1.48
105%	0.67	0.73	0.79	0.84	0.90	0.95	1.01	1.07	1.12	1.18	1.24	1.29	1.35	1.40	1.46
110%	0.66	0.72	0.77	0.83	0.88	0.94	1.00	1.05	1.11	1.16	1.22	1.27	1.33	1.38	1.44
115%	0.65	0.71	0.76	0.82	0.87	0.93	0.98	1.03	1.09	1.14	1.20	1.25	1.31	1.36	1.42
120%	0.64	0.70	0.75	0.81	0.86	0.91	0.97	1.02	1.07	1.13	1.18	1.23	1.29	1.34	1.40
125%	0.63	0.69	0.74	0.79	0.85	0.90	0.95	1.01	1.06	1.11	1.16	1.22	1.27	1.32	1.38
130%	0.63	0.68	0.73	0.78	0.83	0.89	0.94	0.99	1.04	1.09	1.15	1.20	1.25	1.30	1.36
135%	0.62	0.67	0.72	0.77	0.82	0.87	0.93	0.98	1.03	1.08	1.13	1.18	1.23	1.29	1.34
140%	0.61	0.66	0.71	0.76	0.81	0.86	0.91	0.96	1.01	1.06	1.12	1.17	1.22	1.27	1.32

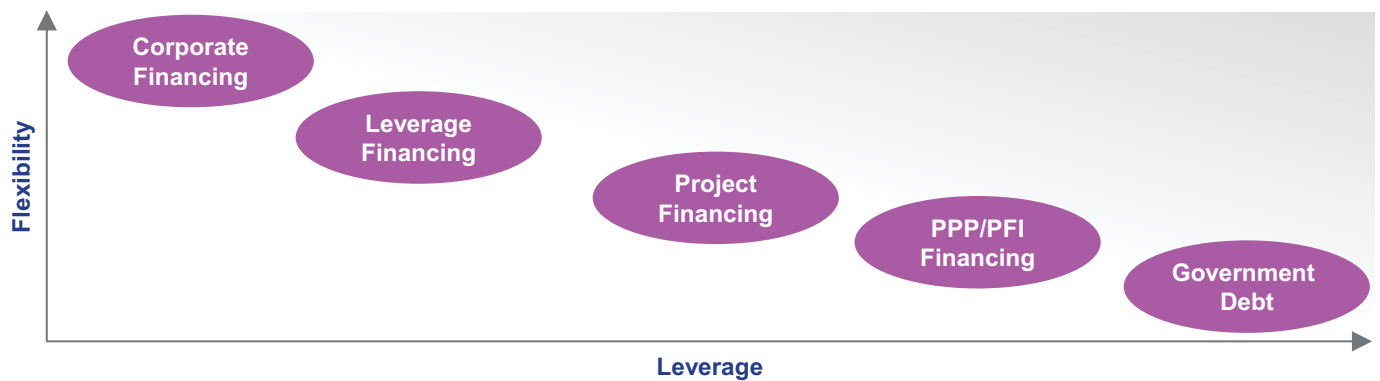




“Project finance is generally used to refer to a non-recourse or limited recourse financing structure in which debt, equity and credit enhancement are combined for the construction and operation or the refinancing of a particular facility in a capital intensive industry.”

## Introduction to Project Finance – By Andrew Fight

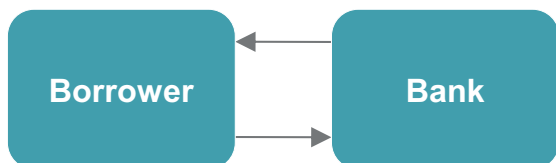
# 各種融資方式之特性



	Characteristics
<b>Corporate</b>	<ul style="list-style-type: none"> <li>■ Loan facilities and/or bonds issued to capital markets; on balance sheet with full recourse; simple structuring</li> </ul>
<b>Leveraged</b>	<ul style="list-style-type: none"> <li>■ Debt on balance sheet with recourse; structuring can include senior, subordinated, and mezzanine tranches</li> <li>■ Key ratio is debt to EBITDA; traditional bullet repayment has been replaced with cash sweep/amortisation</li> </ul>
<b>Project</b>	<ul style="list-style-type: none"> <li>■ Project finance which can be on or off balance sheet with limited recourse</li> <li>■ Key ratio is loan to project life coverage; ring-fenced security with cash sweep/amortisation</li> </ul>
<b>PPP/PFI</b>	<ul style="list-style-type: none"> <li>■ Project finance whereby the underlying asset is underpinned by contracts between public and private entities</li> </ul>

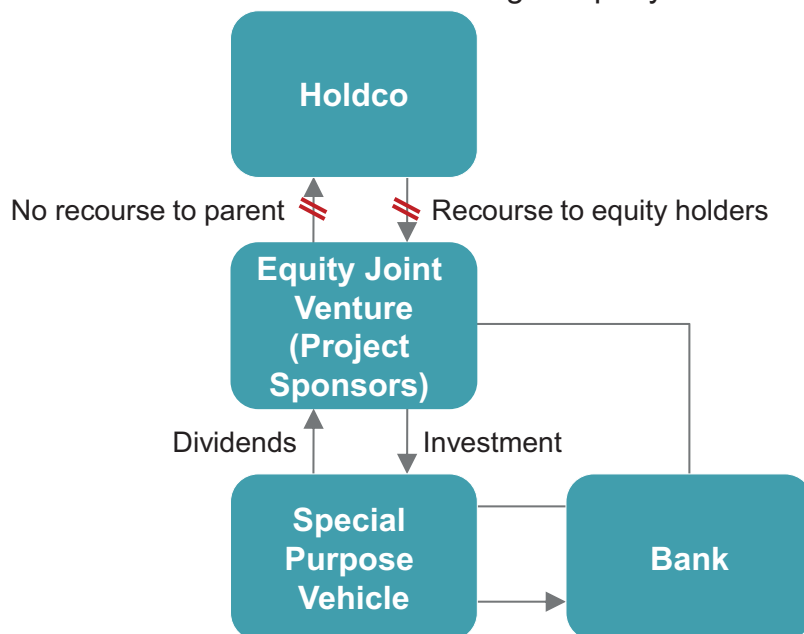
## Corporate lending example

- On balance sheet
- Direct recourse to holding company



## Project financing example

- Off balance sheet
- Non-recourse to holding company



Features		
	Project Finance	Corporate Finance
Financing	<ul style="list-style-type: none"> <li>■ Financiers look at <i>cash flows</i> of a single asset (the project) for repayment</li> </ul>	<ul style="list-style-type: none"> <li>■ Financiers look to the overall <i>strength of a company's balance sheet and projections</i>, which is usually derived not from a single asset but a range of assets and businesses</li> </ul>
Security	<ul style="list-style-type: none"> <li>■ <i>No/limited guarantees</i> for project finance debt</li> <li>■ Project contracts are usually the main security for lenders; project companies' physical assets are likely to be worth much &lt; the debt</li> </ul>	<ul style="list-style-type: none"> <li>■ <i>All assets of the company</i> can be used for security</li> <li>■ Has <i>access to whole cash flow from spread of business as security</i>, thus even if project fails, corporate lenders can be repaid</li> </ul>
Duration	<ul style="list-style-type: none"> <li>■ Project has a <i>finite life</i> as such the debt must be repaid by the end of this life</li> </ul>	<ul style="list-style-type: none"> <li>■ Company assumed to remain in business for an <i>indefinite period</i> and losses can be rolled over.</li> </ul>
Control	<ul style="list-style-type: none"> <li>■ Lenders <i>exercise close control</i> over activities of Project Company to ensure value of project is not jeopardise</li> </ul>	<ul style="list-style-type: none"> <li>■ <i>Leaves management</i> of company to run business <i>as they see fit</i></li> </ul>

Bank Debt

Capital Markets

Investment Funds

Government

Multilateral Agencies

Islamic Financing

Subordinated Debt

Mezzanine Debt

Reserve Facilities

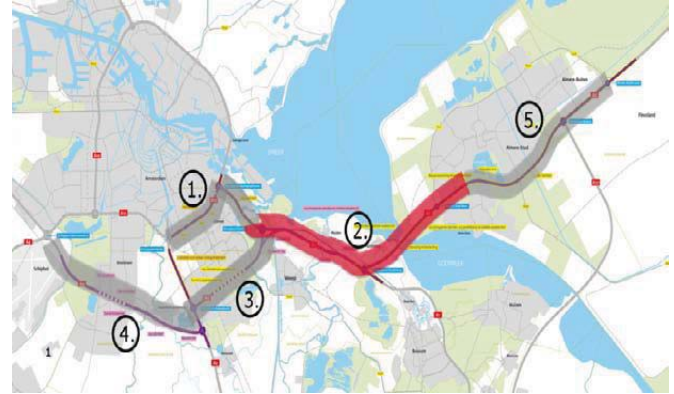
Equity Bridge



## 專案融資案例分析 荷蘭A1/A6 Diemen Interchange - Almere Havendreef專案融資

## The project

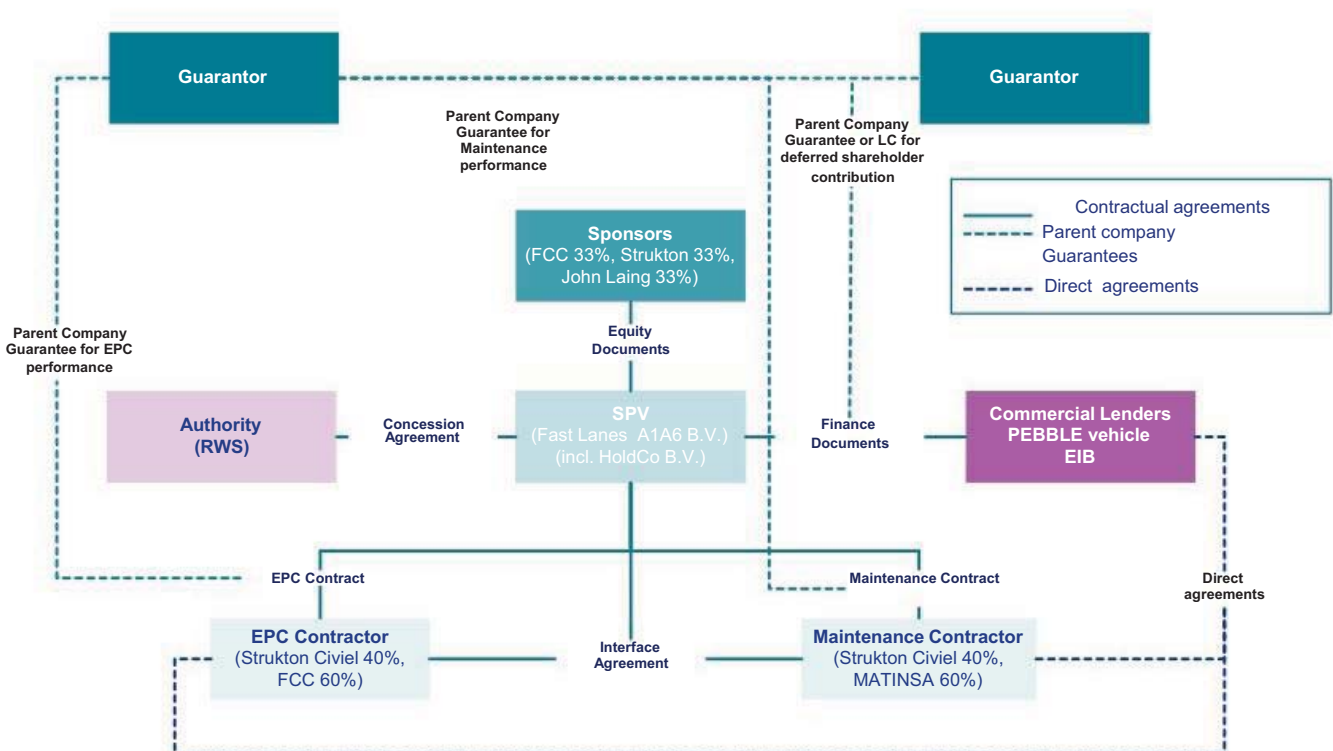
- The A1/A6 Project comprises the design, construction, financing and maintenance of the A1/A6 road Diemen- Almere Havendreef through a Public Private Partnership (“PPP”)
- The objective of the Project expanding road capacity to ensure the region remains accessible while taking into account livability, nature and the environment,
- Beside the capacity expansion, the project involves inter alia two bridges, one aqueduct and fauna passes.
- The Contracting authority is the “Rijkswaterstaat”, the Dutch agency for roads, traffic and water.



## Key investment features

- A funding requirement of approximately 800 million.
- Availability payment based Dutch government infrastructure PPP project, therefore the project does not bear any traffic/demand risk. The main project risks will be transferred back-to-back to subcontractors, subject to relevant liability caps.
- The concession term is 25 years, consisting of 5 years construction plus a fixed 25 years operational phase following the availability date.
- The asset will remain legal and economic property of the authority with no residual value risk to the SPV.
- Consortia had to provide one preferred funding solution and could provide a variant bid with an alternative funding solution
- Fastlanes “choose” to use the PEBBLE structure as developed by ING.
- The PEBBLE vehicle will provide a long term facility to the a1a6 project pari passu with the short term bank facilities and the EIB Facility.

# 契約架構



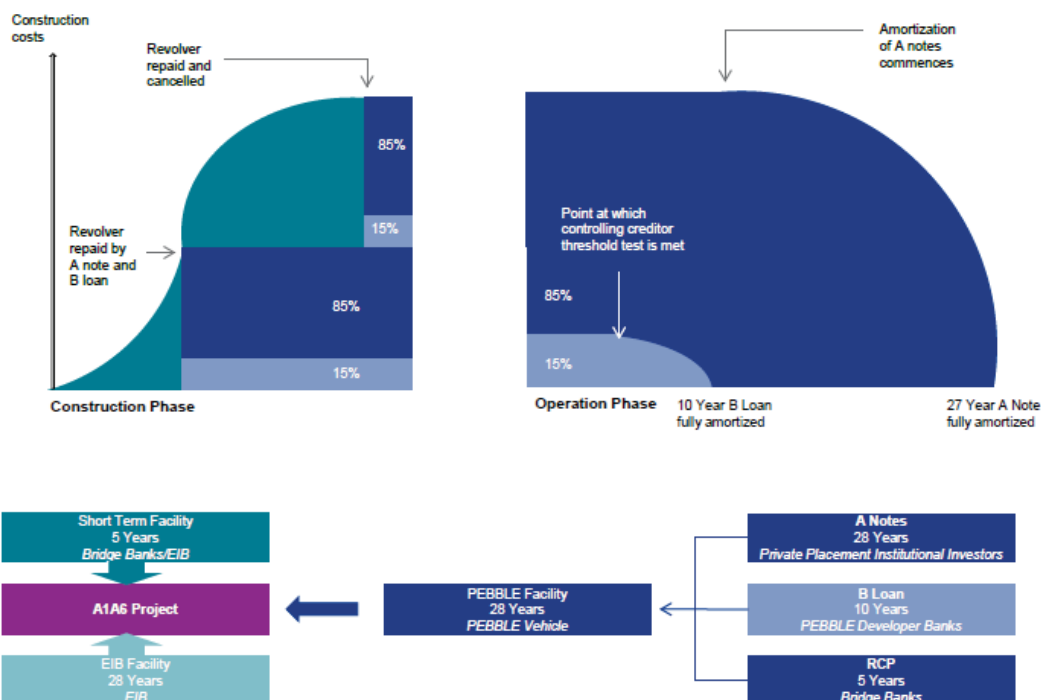
## Sources and uses during construction

Sources		Uses	
Equity bridge facility drawdowns	9%	SPC upfront	1%
Milestone bridge facility drawdowns	16%	Capex	79%
EIB Milestone bridge facility drawdowns	10%	Opex during construction	2%
Net availability payment during construction	6%	Operational SPC costs during construction	1%
EIB loan facility drawdowns	29%	Financing expenses	14%
Share capital investments	0%	Addition to debt service reserve account	3%
Revolving credit facility drawdowns	29%		
Interest earnings during construction	0%		
<b>Total</b>	<b>100%</b>	<b>Total</b>	<b>100%</b>

## Funding

- 20% Gross Availability Fees until Availability Date
- A Completion Milestone of EUR 200m, bridged by both commercial lenders and EIB
- Long-term funding by means of EIB Senior Debt and PEBBLE structure
- PEBBLE stands for Pan European Bank to Bond Loan Equitisation and was originally developed by ING. It comprises:
  - A-notes (85%) and B-loans (15%) that are issued at fixed intervals in amounts of c. EUR 35m combined
  - The pre-set issuance of A-notes (and B-loans) are bridged by a Revolving Credit Facility ("RCF")
  - A-notes are taken up by institutional investors. B-loans remain with PEBBLE developers
  - In event of delay the RCF and B-loans will be deferred, but A-notes are issued and the proceeds held on a pledged account

# 融資規劃



## Security Package

- Parent company guarantee or a Letter of Credit by the Sponsors capped to the liability caps of the EPC Contractor and Maintenance Contractor EPC Contractor
- Liability caps proposed at BAFO:
  - All events: max [30]% of the total EPC contract price; Stepping down to [25%] after completion for a period of 2 years.
- Performance bond of [10%] of EPC contract price until Completion Date, stepping down to [2.5%] after the completion date for a period of two years

## O&M Contractor

- Liability caps Maintenance contract proposed at BAFO :
  - The aggregate of the liability cap of the M subcontractor is to [240%] of the average annual routine and heavy maintenance payments.
  - If the aggregate liability exceeds [45%] of the average annual fee in any year, the cap available would be reduced by the excess. This part of the cap would be refreshed each year such that the sum available would not be eroded by deductions made under the payment mechanism and passed through.
  - At termination, the cap would increase by [140%] of the average annual routine and heavy maintenance payments to [380%] in total and the only the Availability and Performance Deductions imposed in the year of termination would be included within the cap.

## Other

- To obtain an investment grade rating the liability caps would likely have to be increased to 40% and performance bonding to levels of 10% liquid plus 15-20% adjudication bond
- Fitch applies a 25% discount for the use of adjudication bonds

## Rating process

- Although a credit rating was initially not required, ING proposed to progress at their cost
- Fitch was appointed as rating agency and initial discussions were held
- Later in the process one institutional investor required investment grade rating, with the others following suit
- Surprisingly Fitch attributed no credit enhancement value to either the B-loans or the RCF
  - Has ING sufficiently tested the structure with the rating agencies?
- No rating was obtained before BAFO

# 專案融資

## 建議與結語

- 投標前應先釐清標案契約涉及之權利義務與風險承擔，並將相關風險成本反應在財務評估
- 標案財務規劃需從專案計畫、投資股東、融資機構的角度進行評估，同時滿足三方的財務規劃才是具有財務可行性的標案
- 運用財務模組進行標案財務分析需驗證假設參數之合理性，尤其對於因地制宜之參數如會計處理與稅務規範應諮詢當地專業機構意見進行檢核
- 專案融資係以標案未來營運之現金流量作為融資擔保與還款來源，融資方為確保融資風險通常會要求借款方提出標案之信用評等或第三方擔保之信用增強機制，因此財務成本需將衍生之信用增強成本納入考量



# Thank you

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