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IBM Business Consulting Services

Presentation to Legislative Council Panel on Planning, Lands and Works

Reprovisioning of Sha Tin Water Treatment Works and Delivering of Water Supply Distribution and Customer Services – Feasibility of using Public Private Partnership approaches

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Objectives of the Feasibility Studies

- Assess feasibility of a PPP approach
  - Review international experience and identify learning points
  - Assess interest and capability of service provider market
  - Define service requirements
  - Identify risks and mitigation strategy, develop commercial principles
- Establish the business case
  - Evaluate potential benefits and impacts for a PPP approach
  - Assess possible business models for STWTW alone and those for supply and distribution systems
  - Compare PPP for STWTW alone versus STWTW coupled with each of the three different geographical scenarios
  - Assess implementation issues

Numerous PPP projects in water sector worldwide

- Objectives of other jurisdictions
  - Expand water infrastructure, improve water quality and efficiency of operations
  - Introduce latest technology and external management expertise
  - Reduce public sector financial burden and transfer risks
- Scope of projects
  - Building/ reprovisioning of complete water treatment plants and subsequent operation and maintenance
  - Ownership and financing of treatment plants and associated infrastructure
  - Management of entire distribution systems
- Specific examples in China
  - Shanghai Pudong – operate distribution system, expand infrastructure
  - Chengdu – build a new water treatment plant and subsequently operate
  - Tianjin – reprovision an old treatment plant and subsequently operate
  - Macau – operate distribution system

Positive and negative experiences inform better outcomes for the future

- Typically 10 to 20% savings compared to public sector benchmark
- Payment mechanism, financing and asset ownership arrangements should be commensurate with objectives of PPP
- Performance adjusted fees to motivate service/ efficiency improvement
- Clear, measurable and realistic performance targets
- Adequate information on existing assets and due diligence
- Comprehensive risk assessment and reasonable risk allocation
- Pricing balances between public sector savings and Provider's viability
- Opportunity for staff transfer to Provider

Robust service provider market in reprovisioning

- Conducted a public Market Enquiry Exercise on STWTW reprovisioning
- Respondents include 6 international water service operators, some being consortium/ JV with local companies
- Other respondents in construction, water engineering consultants, financial and legal
- Worldwide experience in various PPP models in water sector
  - Involved in reprovisioning, incl. in situ-reprovisioning
  - Projects with scope and complexity similar to Hong Kong
- Willing and able to arrange financing and accept ownership obligations

Expect market interest and capability in supply & distribution

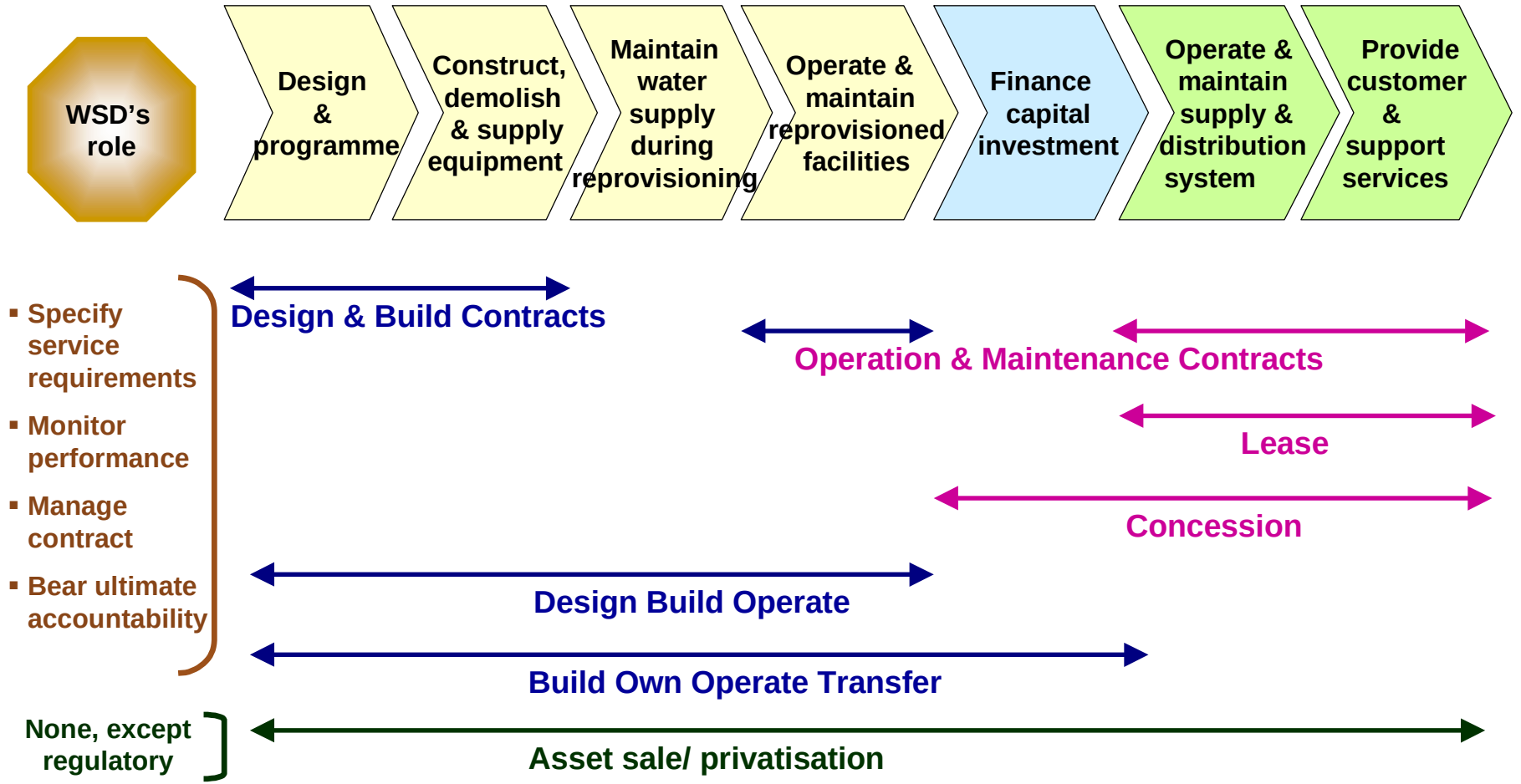
- Indicated clear interest in wide ranging services including
  - In-situ reprovisioning of STWTW
  - Management of supply and distribution systems
  - Reducing leakage
  - Provision of customer and support services
- Building/ reprovisioning of treatment plants often coupled with operation/ maintenance of supply & distribution systems and customer services
- Respondents prefer a fully integrated approach from design, reprovisioning to operation/ maintenance and advanced reasons for greater efficiency and effectiveness for the fully integrated approach

Possible scope of services

- For Sha Tin Water Treatment Works
  - Conduct in-situ reprovisioning of treatment plant and associated facilities
  - Maintain normal supply of treated water during reprovisioning
  - Operate the reprovisioned plant to supply treated water
  - Provide maintenance of the reprovisioned facilities

- For operation and maintenance of designated supply zones
  - Operate the complete fresh water supply and distribution systems
  - Operate the complete salt water supply and distribution systems
  - Maintain the fresh and salt water supply and distribution systems
  - Provide necessary customer and support services, excluding billing and charging of water and related tariffs
  - Provide new assets include rehabilitating the water distribution mains to meet demand and maintain service level

Business models depend on division of role/responsibilities between Government and Provider



Different business models applicable to reprovisioning of treatment plant and operating supply/ distribution systems

- Models for STWTW itself
  - Design and Build Contracts
  - Operations and Maintenance Contracts
  - Design Build Operate Contracts
  - Build Own Operate Transfer Contracts
  - Full Disposal

- Models for water supply distribution and customer services
  - Service Contracts
  - Operations and Maintenance Contracts
  - Lease Contracts
  - Concession Contracts
  - Joint Venture Lease Contracts and Concession Contracts
  - Build Own Operate Transfer Contracts
  - Full Disposal

BOOT likely results in better performance and financial outcomes for reprovisioning of STWTW

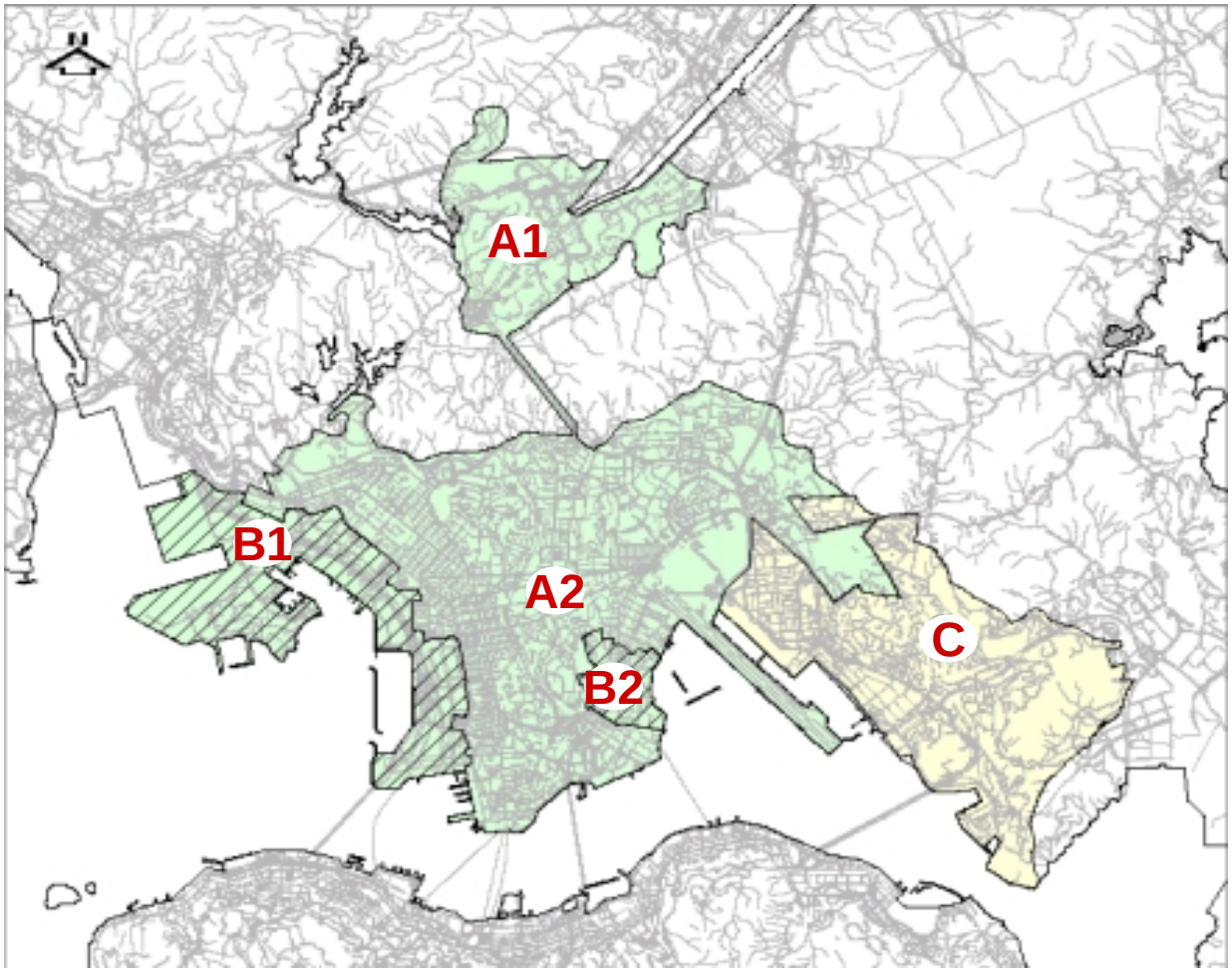
Key desirable outcome	Favoured model	Unfavoured model
Better value for money	BOOT	DBO
Lower performance risks	BOOT	DBO
Government's cash flow more closely aligned with tariff income	BOOT	DBO
Funds for capital investment sourced externally	BOOT	DBO
Lower cost of funding of the capital investment itself	DBO	BOOT
Simpler documentation, lower transaction costs	DBO	BOOT

Water supply & distribution: Different models fit different objectives and circumstances

Key desirable outcomes	Favoured model	Unfavoured model
Maximum transfer of renewal risk to Provider	Concession	O&M contract Lease
Provider incentivised to reduce leakage	Lease Concession	O&M contract
WSD can adjust rehabilitation programme & expenditure more flexibly over life of contract	O&M contract Lease	Concession
Clearest demarcation of responsibilities	Concession	O&M contract Lease
WSD maintains long term direct knowledge of asset base	O&M contract Lease	Concession

Geographic scenarios

- **Small scale**
  - STWTW plus A1
- **Medium scale**
  - STWTW plus A1, A2 (supplied by STWTW)
- **Full scale**
  - STWTW plus A1, A2 (supplied by STWTW) and B1, B2, C (supplied by other treatment works)



Full scale is more desirable technically & financially, while Small scale is simpler and has minimal impact to status quo

Key desirable outcome	Favoured geographical scenario	Unfavoured geographical scenario
Achieve economies of scale	Full scale, Medium scale	Small scale
Motivate capital investment in new technology	Full scale, Medium scale	Small scale
Facilitate benchmarking	Full scale, Medium scale	Small scale
Minimal operation interface	Full scale	Medium scale, Small scale
Minimal customer service interface	Full scale, Small scale	Medium scale
Minimal impact on staff	Small scale	Full scale, Medium scale
Minimal impact on other WSD service areas	Small scale	Full scale, Medium scale
Ease of implementation	Small scale	Full scale, Medium scale

A PPP approach to reprovisioning STWTW generates both financial and non financial benefits

- Minimise whole life cycle costs – balancing costs and risks in different stages, and mechanisms for delivering ongoing value for money
- Fast tracking of reprovisioning to meet WSD deadline
- Long term commitment (typically 20 up to 50 years) motivates Provider to invest in the new assets and most suitable technology
- Greater transfer of risks to private sector who can manage risks better
- Access to latest international technology and management expertise
- Integrating new and existing assets with more innovation
- Economic benefits such as the opportunity to export expertise

There are additional specific benefits of a PPP approach to water supply and distribution

- Single party held responsible for reprovisioning and supply and distribution allows minimisation of whole life cycle costs
- Potential savings through lower staff costs, more flexible work practices and introduction of technology
- Payment mechanism and incentive scheme motivate Provider to improve efficiency and reduce non revenue water
- Shared responsibility in asset management would allow WSD continued knowledge and control over asset conditions
- Possible to have separate contracts to cater for different PPP models applicable to STWTW and water supply/ distribution

Conclusion

- PPP is feasible and beneficial
  - Numerous international precedents
  - Strong market with sufficient interested and capable providers
  - Service requirements can be specified in an output/ outcome format for effective monitoring
  - Likely to generate significant financial and non financial benefits

- Recommended business models
  - For in-situ reprovisioning of STWTW itself, BOOT is recommended subject to resolution of any issues including those associated with asset ownership and land access
  - For water supply distribution and customer services, service models and geographical scenarios depend on government's objectives