

**sustainable urban infrastructure management  
::: from the viewpoint of delivery & funding  
“future city”**

***::: singapore sports & singapore water :::***

**oon, jin teik**

group executive vice president & china ceo, hyflux ltd  
former ceo, singapore sports council

19 october 2013

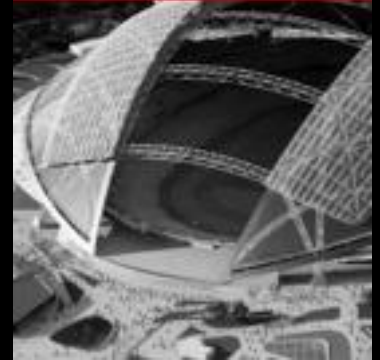
# Singapore Sports Hub

19 October 2013

3<sup>rd</sup> International Forum on “Future City”  
Kitakyushu, Japan

*Oon, Jin Teik*

*former CEO, Singapore Sports Council*



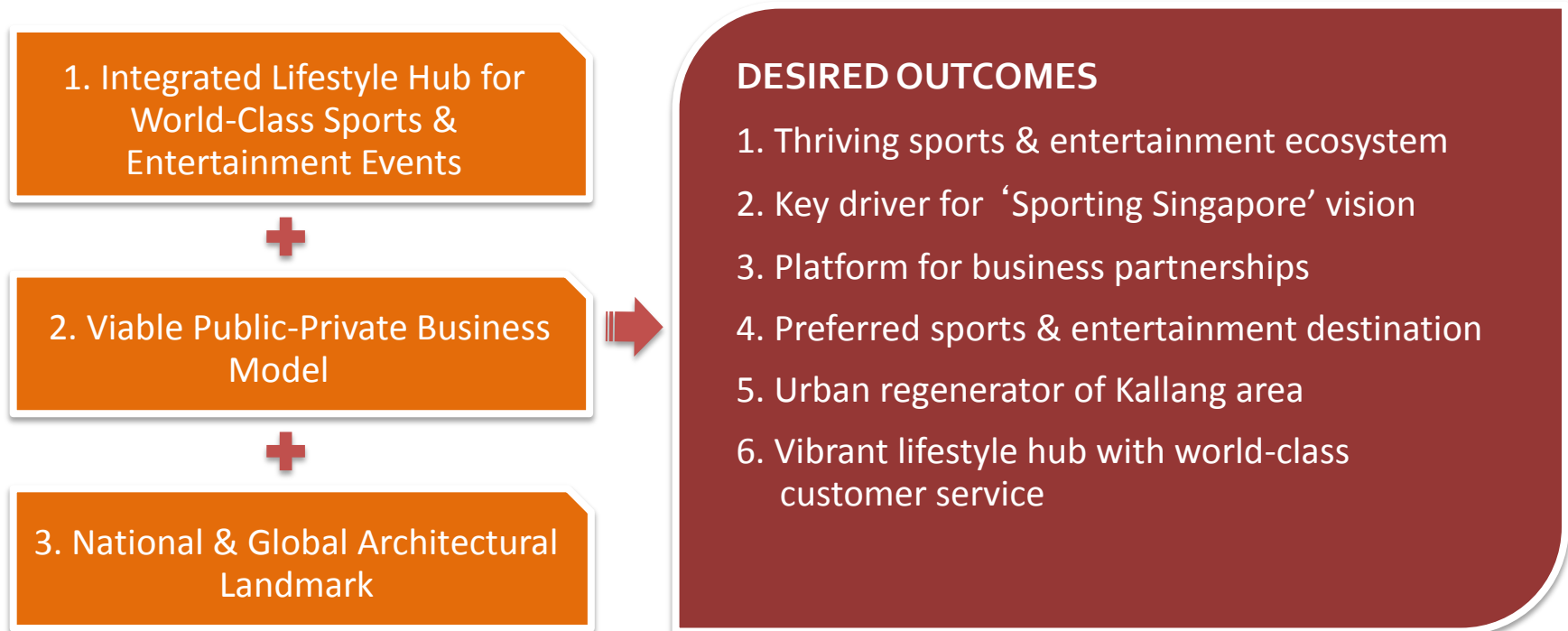
# Singapore Sports: Our Challenges



# Singapore Sports Hub | Vision & Desired Outcome

*"Fully Integrated Sports, Entertainment & Lifestyle Hub for Everyone in Singapore"*

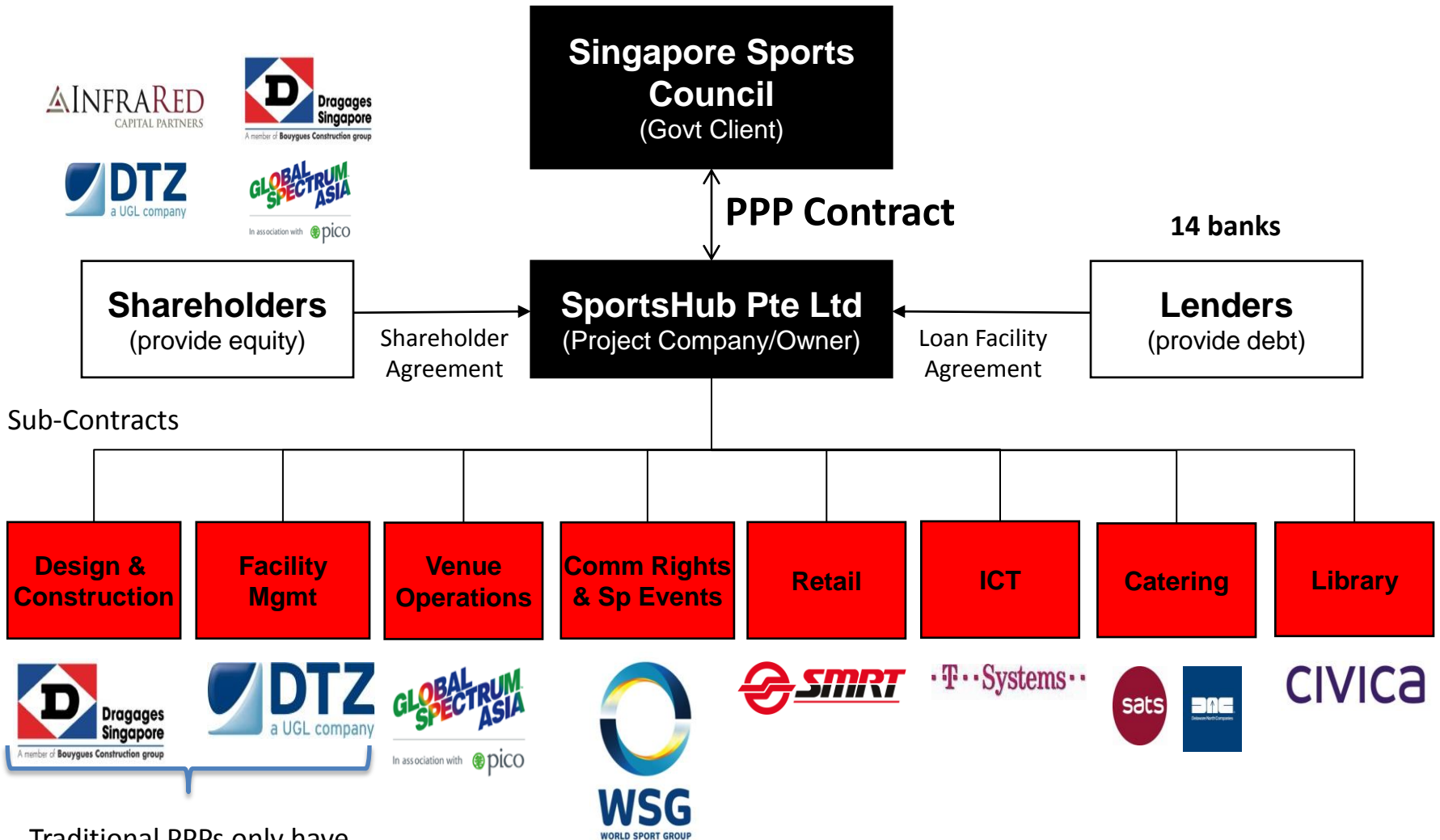
## GOVERNMENT'S OBJECTIVES & DESIRED OUTCOMES:



Singapore Sports and Leisure Infrastructure PPP Information Package Volume 2- Project Overview



# Singapore Sports Hub | Contractual Relationship



Traditional PPPs only have  
2 major sub-contracts





## Sports Hub Pte Ltd's Obligations | Facilities

# Singapore Sports Hub | Programming Objectives

## SPORTS HUB



### Strong Event Calendar

- Seasonal calendar for National Stadium
- Local, regional & International Major events
- Hosting of ASEAN Super League
- Creation of Singapore National Games

### Sports Participation

- Weekly “Experience Sports” sessions
- Community facilities for all to play sports
- Balanced program for use by public, schools, clubs, special needs groups etc.

### Lifestyle & Entertainment

- High profile productions and events
- Develop regular sports & leisure related MICE events
- A destination and lifestyle hub, with F&B, retail, sports and leisure facilities



# Sports Hub | Current Construction Status



Singapore Sports Hub - View from The Riverine Condominium Roof, Kallang Road



# *Opening April 2014*



**World's largest sports infrastructure PPP project**  
**Singapore's largest & flagship PPP project**

# Singapore Sports Hub | Key Considerations

- **Risk Management** – who is best able to manage the risk
- **Cost of Risk** – risk allocation is critical to PPP success
- **Innovation** – the desire to use private sector expertise
- **Economic Optimisation** – whole life cycle
- **Payment Related to Outputs**
- **Social Infrastructure** – the availability of the infrastructure is a base line provision
- **‘Output Specifications’** – versus input specifications
- Remains as a **Government Project**

# Singapore Sports Hub | Key Benefits

## Traditional D&B



Disconnected Process – Non Integrated - Input Specs

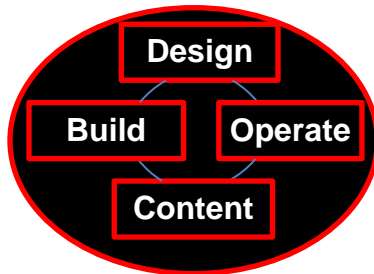
## DBO



Connected Process – Non Integrated – Input Specs

NOTE; partners will not share project risk, and look for Individual scope and payment streams, i.e. not joint & several contract responsibility

## PPP



Connected Process – Fully Integrated – Output Specs  
Life-of-Asset Planning - End-user Driven Design

| Process Control, Rigor   | Design & Construct Risk   | Cost Risk, Budget   | Govt Resource   | Performance Risk, Content   |
|--|---|---|---|---|
| <p>Low</p> <p>Short term relationships, multiple contracts &amp; interfacing</p>                                 | <p>Govt</p> <p>Technical input specs; design &amp; construct remains a Gov risk</p> | <p>Govt</p> <p>Uncertainty, exposure to variations &amp; claims</p> | <p>High</p> <p>Management &amp; supervision team required</p> | <p>Govt</p> <p>Not suitable for Programming content</p>   |
| <p>Med</p> <p>Non integrated, not joint &amp; several</p>  | <p>Govt</p> <p>Technical input specs; partial design &amp; construct risk</p>       | <p>Govt</p> <p>Uncertainty, exposure to variations &amp; claims</p> | <p>High</p> <p>Management &amp; supervision team required</p> | <p>Govt</p> <p>Non integrated, not joint &amp; several</p>  |
| <p>High</p> <p>Lenders due diligence, process review and rigorous governance; design, build &amp; operations</p> | <p>Private</p> <p>Design &amp; Construct risk fully transferred</p>                 | <p>Private</p> <p>Cost &amp; Budget certainty</p>                   | <p>Low</p> <p>Partnering role and guidance only</p>           | <p>Private</p> <p>Performance driven outcomes, KPI's, Revenue incentives. Specialist content networks</p> |





# The Singapore Water Story

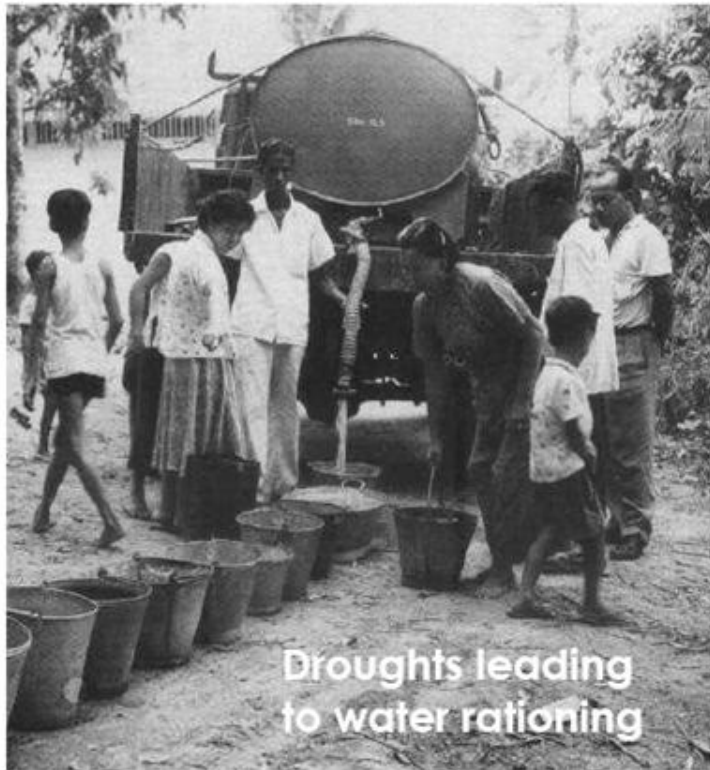
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**Hyflux**



# Singapore's Water Challenges in Our Early Days



Droughts leading to water rationing

- **Population Growth** - Population from 1.65 million in 1960 to 5.1 million in 2010
- **Rapid Economic Growth** – Per capital GDP from USD 428\* in 1960 to USD 43,867 in 2010
- Only 2 national taps - **catchment** (dependent on weather) and **imported water** from Malaysia
- **Not all homes are sewerred** (bucket system)
- *Street hawkers*
- **Unaccounted for water** is high

\* Adjusted for Inflation



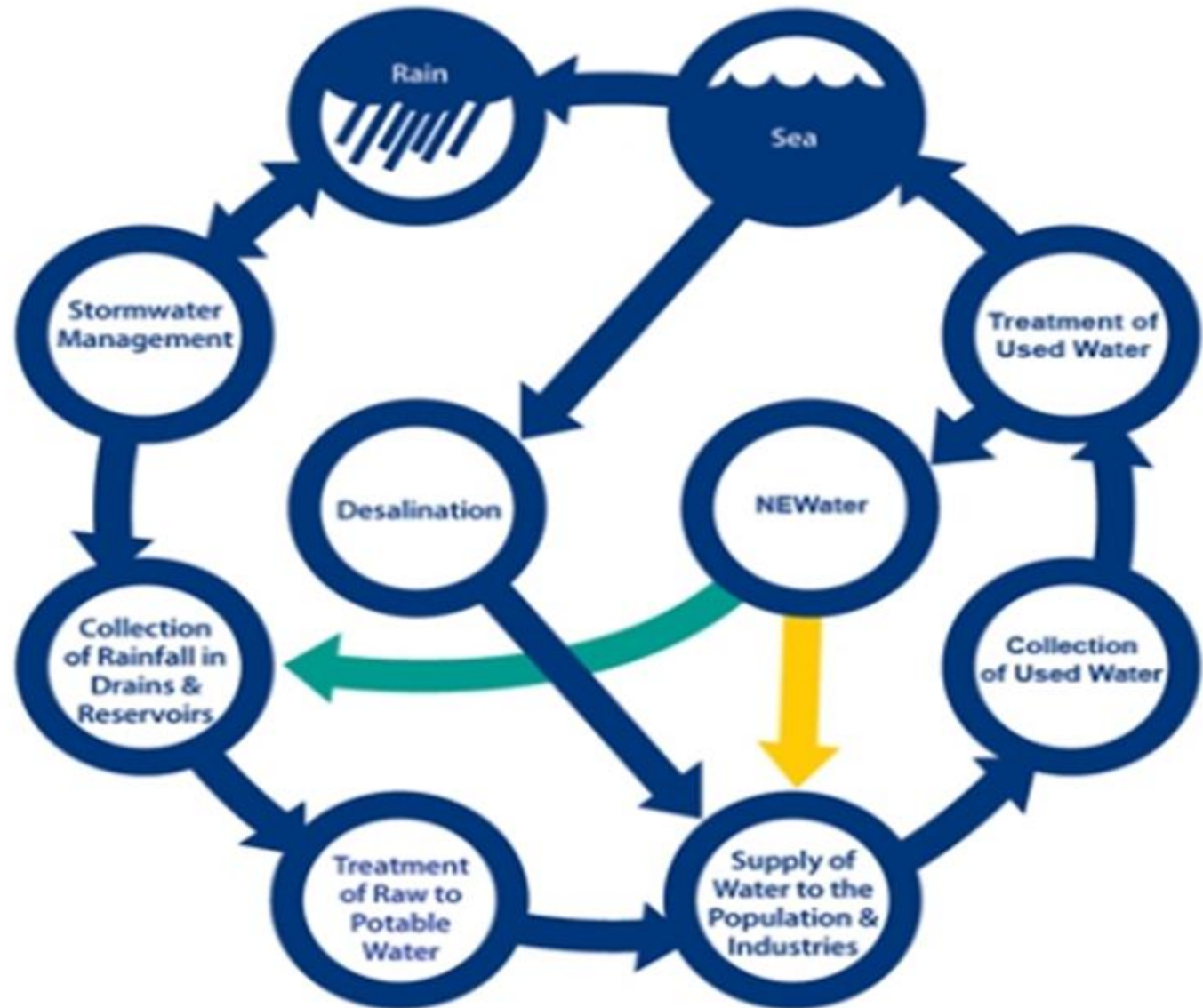
Bucket System



River pollution

# Singapore Water: From Vulnerability to Strength

## The Water Loop



- Indirect Potable Use
- Direct Non-Potable Use



# Hyflux: An Integrated Water Solutions Provider

Desalination



Water Recycling



Wastewater Treatment



Potable Water Treatment



## HOW THEY COMPARE





# Hyflux's Landmark Projects

## SingSpring Desalination Plant & Tuaspring IWPP, Singapore



### Singapore's first SWRO desalination plant and PPP project

Capacity 136,380 m<sup>3</sup>/day

Completed 2005

#### Awards

- Euromoney Asia Pacific Water Deal 2003
- Distinction Award for Desalination Plant of the Year, GWI Global Water Awards 2005

### Singapore's second and largest SWRO desalination plant

Capacity 318,500 m<sup>3</sup>/day

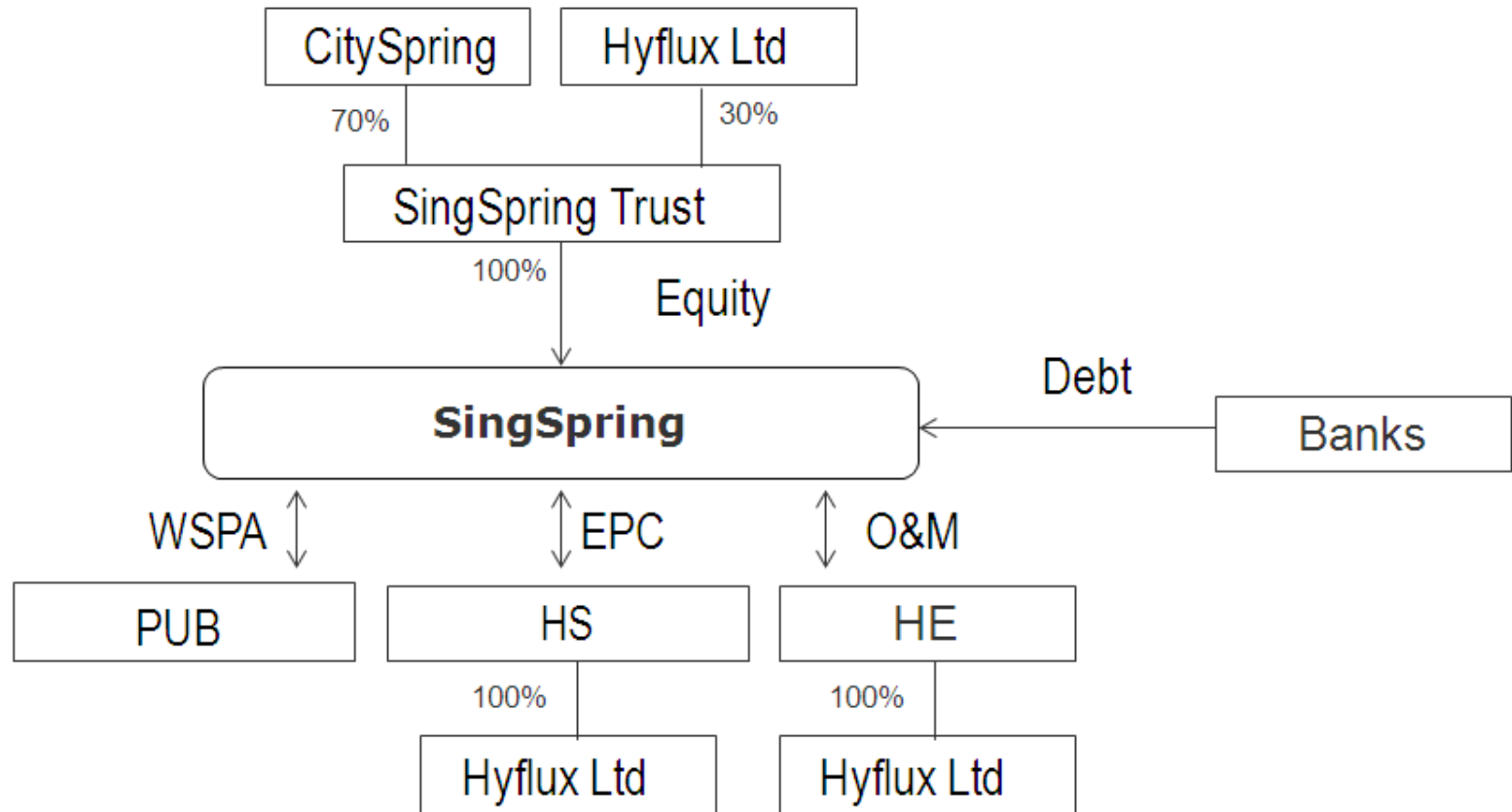
Completion 2013

#### Other details

411 MW power plant that will supply power to desalination plant



# SINGAPORE: SINGSPRING



# New desalination plant in Tuas

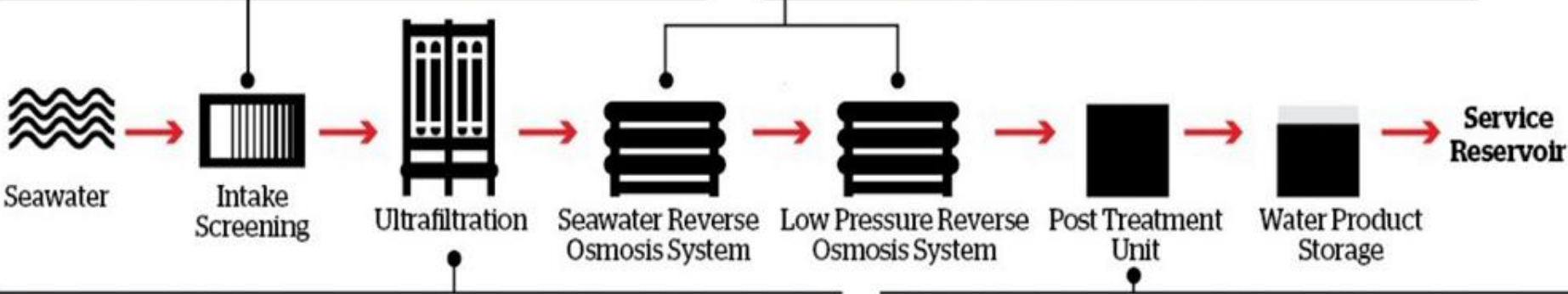
Singapore's second and largest desalination plant was opened yesterday by Prime Minister Lee Hsien Loong. Here is a look at what goes on behind the desalination process.



Seawater enters the plant and passes through filter screens and auto strainers.



After ultrafiltration, the water goes through a two-stage reverse osmosis treatment process to remove salt.



Ultrafiltration membranes are used in desalination pre-treatment to remove micro-organisms and suspended solids in the seawater. The ultrafiltration membranes filter impurities as small as 0.01 micron and block 99.9999% of bacteria.



The water is now very pure and is re-mineralised, with lime and carbon dioxide used to adjust the pH level. Chlorine, fluoride and ammonium sulphate are added.



# Singapore Today



- 4 National Taps - *Resilient supply of water*
- Unaccounted for Water below 5 % – *One of the lowest in the world*
- Domestic water consumption per capita at 155litre/day
- 100% served by modern sanitation system
- Integrated urban and water planning to enhance the quality of our living environment



# Key Considerations of Potential Developers

- **Political stability**
- **Country's water demand and supply**
  - Population and industries to offtake the water, water shortage
- **Offtaker profile**
  - With government guarantee or has strong financial resources
- **Project must be bankable**
  - Take or pay offtake by credible offtaker
  - Tariff is part local currency and part forex (to repay loans)
- **Taxation & Forex**
  - Withholding taxes, VAT/ tax holidays/ custom duties exemption
  - Exchange rate control
- **Project must be commercially viable**
  - Tariff must be affordable to the offtaker and profitable to developer



# Singapore Water PPP Projects: Key Benefits

- **Alignment of interest of plant builder, operator and owner**
  - Ensures efficient plant design, construction and operations
  - Long term commitment of plant builder, operator and owner
- **No government capital spending required for the construction of the plant.**
  - Government need only pay for the water
- **Operation and maintenance of the plant undertaken by plant builder**
  - Ensures plant well operated and maintained with necessary spare parts
- **Skills training of locals to operate and maintain the plant**
  - Ensures knowledge transfer from private investors, skill up locals
- **Development of the local financial market**
  - Project Financing of the plant
  - Initial Public Offering of the JVCO in the future



# 1 - 5 June 2014

## Sands Expo & Convention Centre, Singapore



Organisers:

