



First Stage of Desalination Plant at Tseung Kwan O

Industry Briefing

23 May 2017



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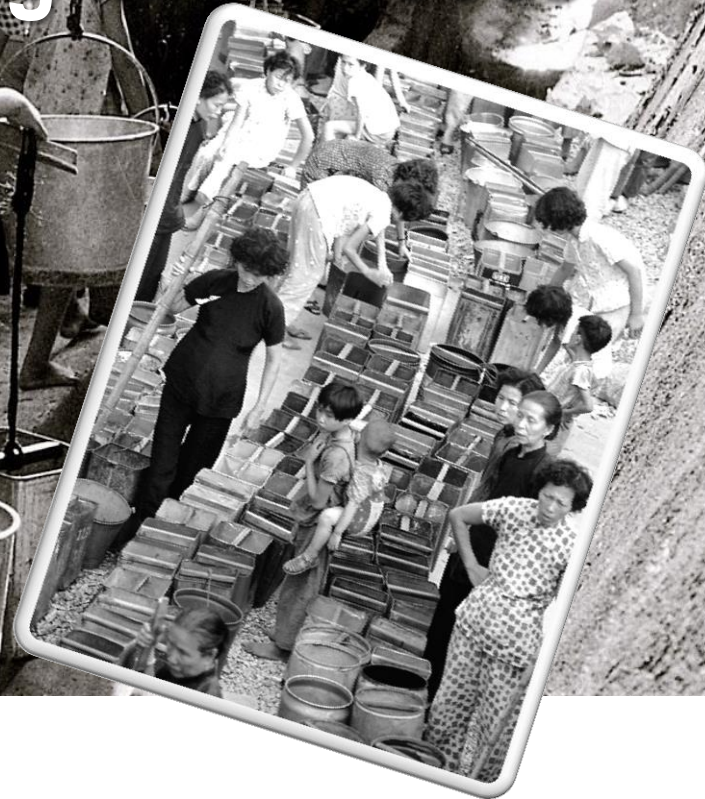


Agenda

- Introduction
- Project Overview
- Project Risks and Constraints
- Procurement Method
- Tendering
- Questions & Answers (45 minutes)

Is
Hong Kong a
WATER-SCARCE
city?

Water Rationing in the 1960s



Section 1: Introduction

Diversification of Water Sources

現行三個水源 (3 Current Taps)



本地水源
Local Yield



沖廁海水
Seawater
for Flushing



東江水
Dongjiang
Water



將來三個新水源 (Additional Three Future Taps)



海水化淡
Desalinated
Water



再造水
Reclaimed
Water



洗盥水/
集蓄雨水
Recycled Grey
Water &
Harvested
Rainwater



Section 2: Project Overview

Roles of TKO Desalination Plant

Primary role

- A climate-proof strategic facility to augment fresh water supply in the event of drought

Secondary roles

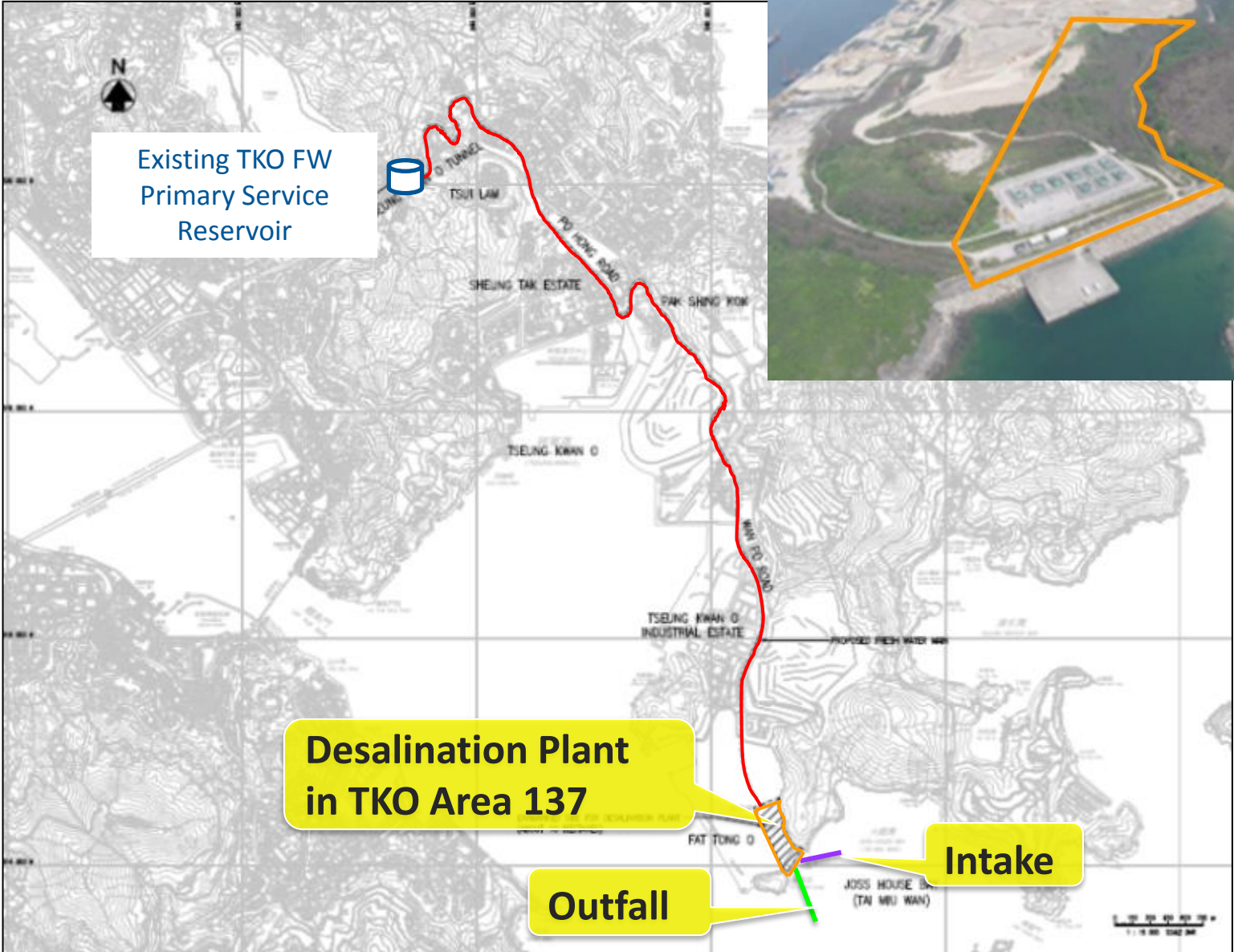
- Enhance system-level resilience
- Augment fresh water supply in the event of short-term emergencies



Operating Mode & Plant Output

- **Operational flexibility to meet varying outputs**
 - Ability to ramp up production to design capacity within a short period (e.g., 24 hours)
- **Periodic testing**
 - At least once every year to confirm readiness for operating at full capacity

Overall Scheme



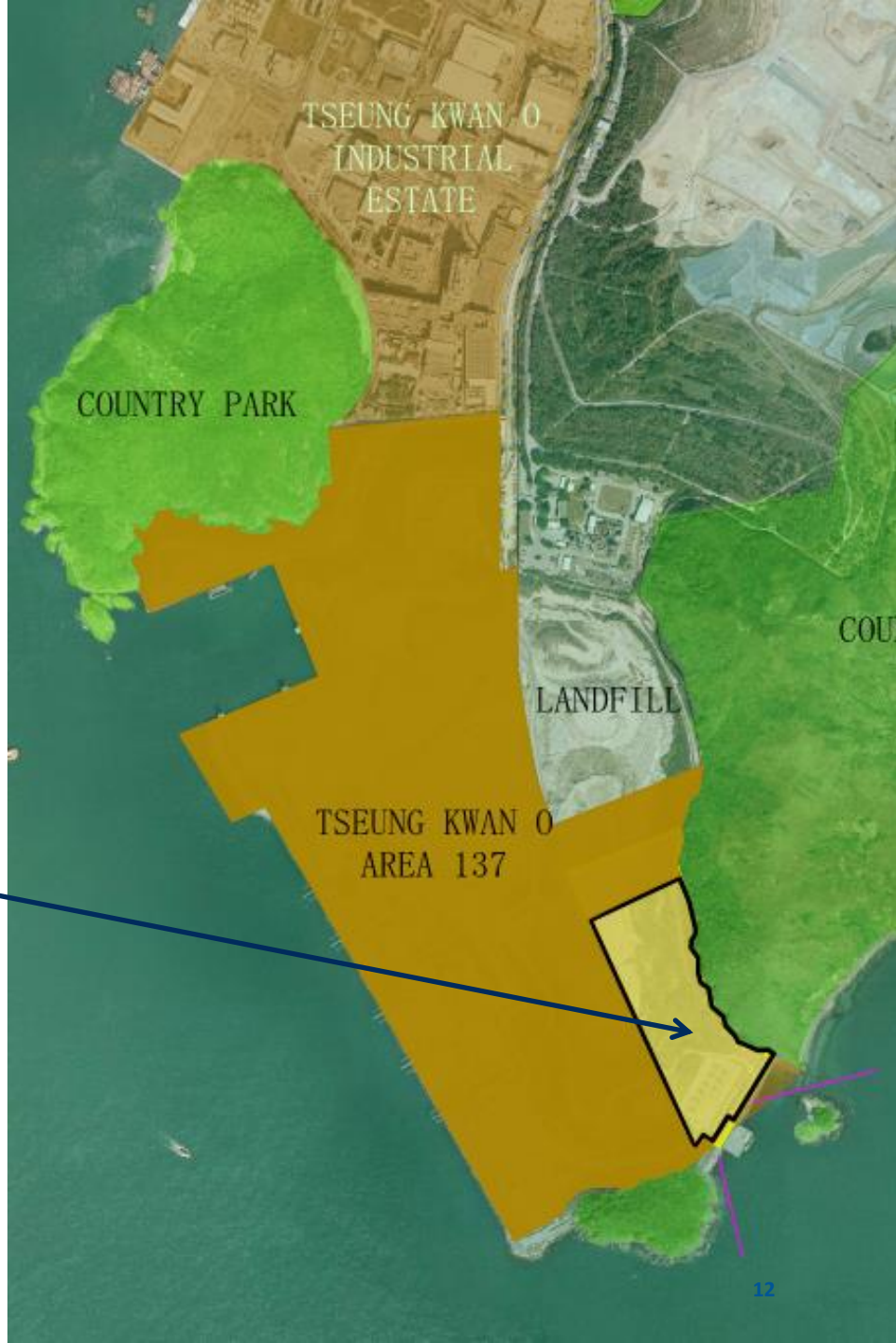
Legend:

 Current Project Scope

 New Freshwater Main (by others)

Project Information

- **Core Technology**
 - Reverse Osmosis
- **Phased Development**
 - Stage 1: 135MLD (The Project)
 - Ultimate: 270MLD Total (in future)
- **Both stages to be built within a 8ha site**



The Site and Surroundings

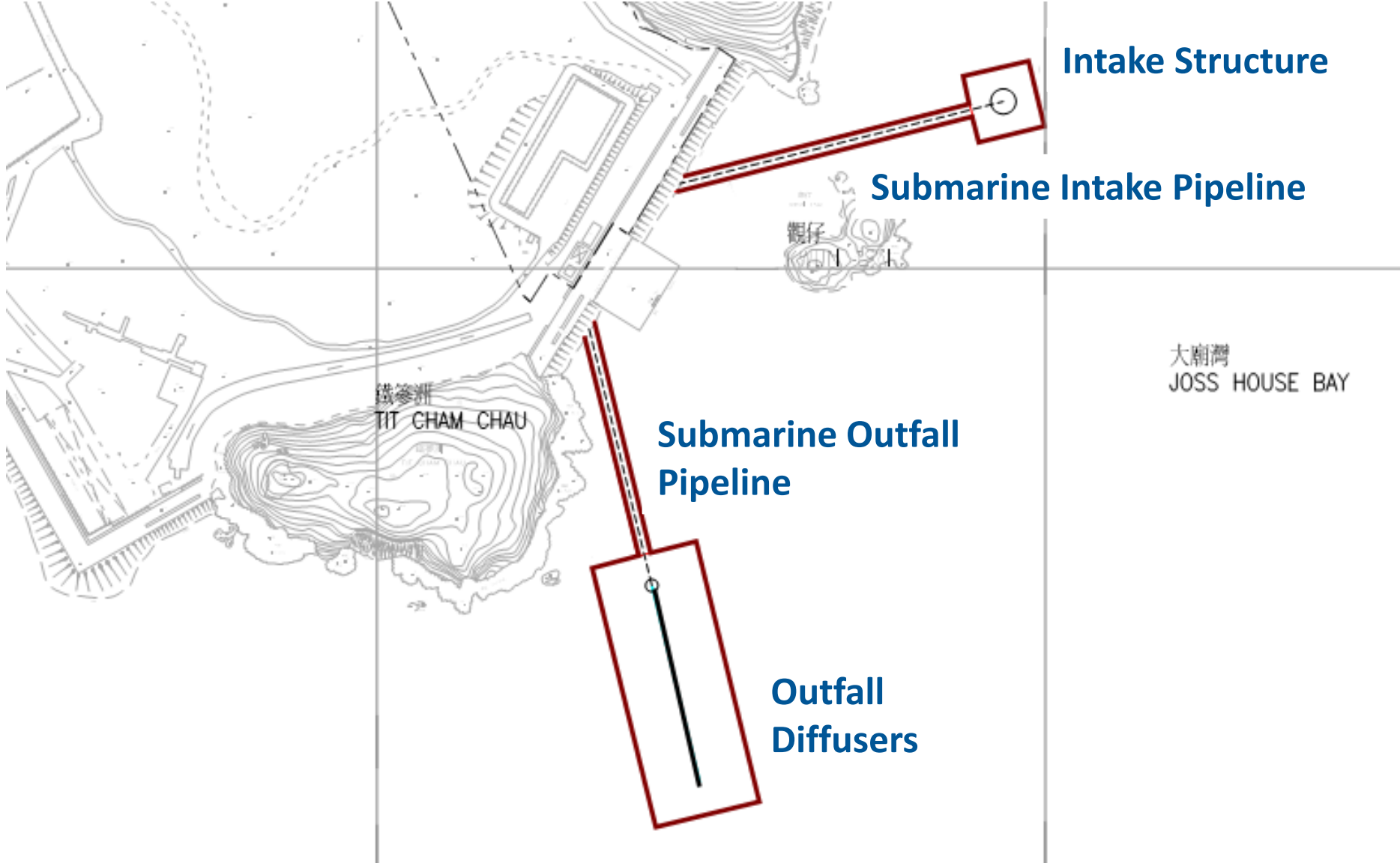


Environmental Permitting



- Environmental Permit (EP) granted in December 2015
- Approved EIA Report available at:
 - <https://www.tkodesal.hk>
- Approval from the Environmental Protection Department is required for design changes

Intake & Outfall



Marine works authorised under the Foreshore and Sea-bed (Reclamations) Ordinance

Mandatory Requirements

Fresh Water Quality

- Boron ≤ 1.0 mg/L
- Bromide ≤ 0.2 mg/L
- TDS < 250 mg/L

On-site Generation of Chlorine Gas for Final Disinfection

- Chlor-alkali process
- High-purity grade salt as feedstock

Operation & Maintenance Skill Transfer

- Through a structured secondment programme

BEAM Plus

- Platinum Rating



Other Requirements

Architectural Treatment

- Must “blend in” with country park and future developments in TKO Area 137

Use of Renewable Energy

- Solar
- Landfill Gas





Section 3: Risks and Constraints

Seawater Quality

Seawater quality parameters for which the plant must be able to operate to meet full performance requirements

Parameter	Value
Temperature	15 to 30 °C
Total Suspended Solids	≤ 30 mg/L
Total Dissolved Solids	≤ 38,740 mg/L
Bromide	≤ 80 mg/L
Boron	≤ 5.3 mg/L

Red tide events could occur occasionally; plant output may be relaxed during such periods

Site Apportionment and Hand Over



Access Road

Stage 2 site
(Handover
within 2nd year)

Stage 1 site
(Handover
within 1st year,
potentially in
phases)

Stage 1 site
(Handover upon
commencement)

Construction Access

Shared Access with the Existing Pier Operations (explosive handling by Mines Division of CEDD)

Desalination Contractor shall not hinder CEDD/Mines explosive transport



Co-Use of Pier during Construction and Operation



Influence Zone wrt loading
/unloading of explosives by
Mines Division

- Use of pier subject to conditions imposed by CEDD/Mines
 - No activities at pier between 11am and 1pm each day
 - 3 days advanced notice on scheduled use of pier
 - No stockpiling of plant and materials at the pier

Key Statutory Approvals



環境保護署
Environmental Protection Department

- **Environmental Impact Assessment Ordinance (EIAO)**
 - Compliance with EP requirements
 - Variations to Environmental Permit (VEP) for non-material changes
 - Supplementary EIA for “material” changes



Fire Services Department
The Government of the Hong Kong Special Administrative Region

- **Compliance with Fire Services Department’s**
 - Codes of Practice for “Minimum Fire Service Installations and Equipment” and “Inspection, Testing and Maintenance of Installations and Equipment”

Other Risks and Constraints

- Stringent requirements on importation of skilled labour
- Presence of plant species of conservation interest in the Clear Water Bay Country Park
- Presence of coral communities and fisheries resources
- Working in and around an operating “fill bank”
- Requirements on CO2 storage area
- Requirements on the footprint, location and construction programme of CLP (power supply company) substation

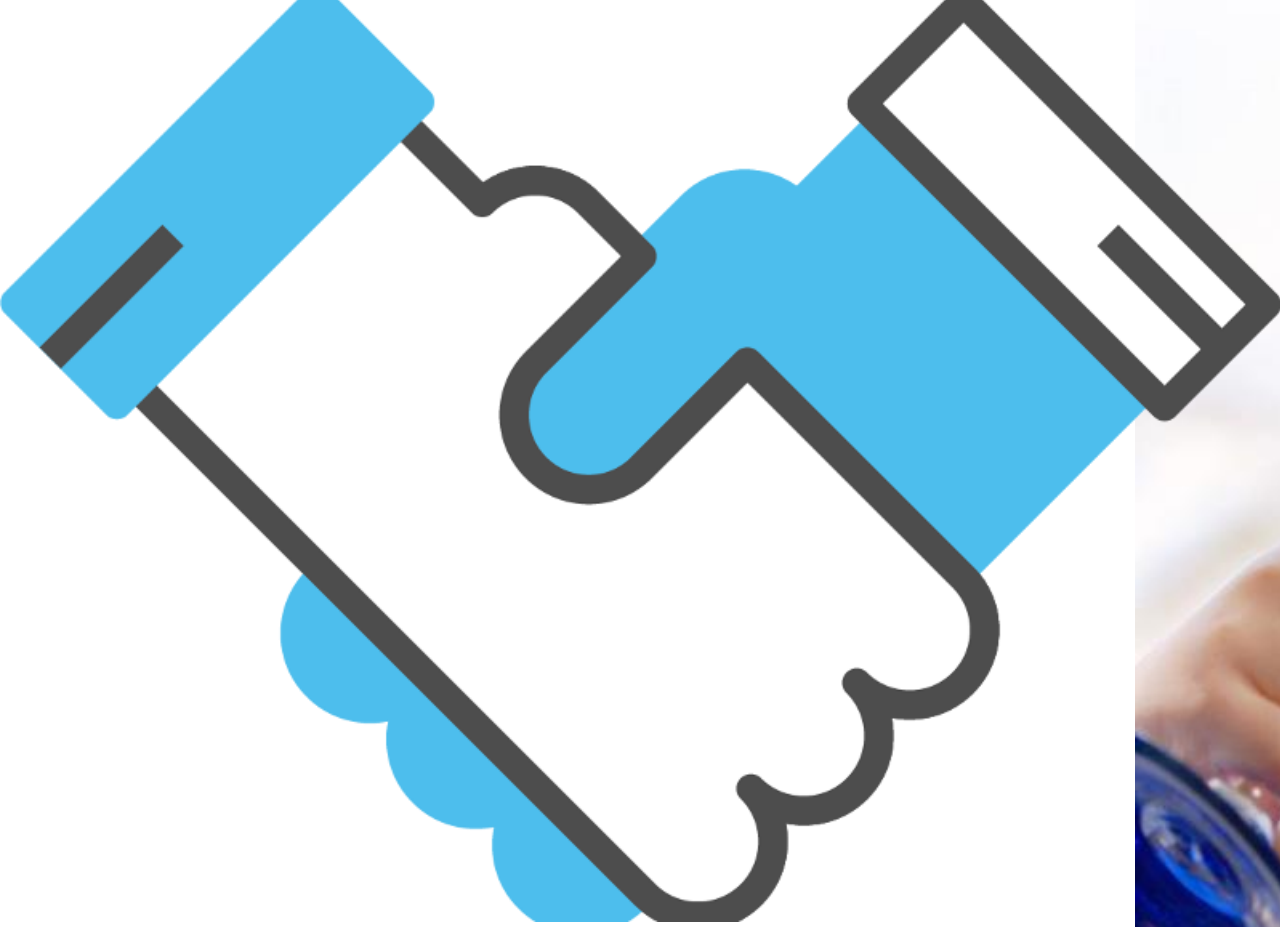


Slope mitigation measures to follow detailed design provided by the Employer

- **Flexible barrier**
- **Rock dowels**
- **Boulder removal**

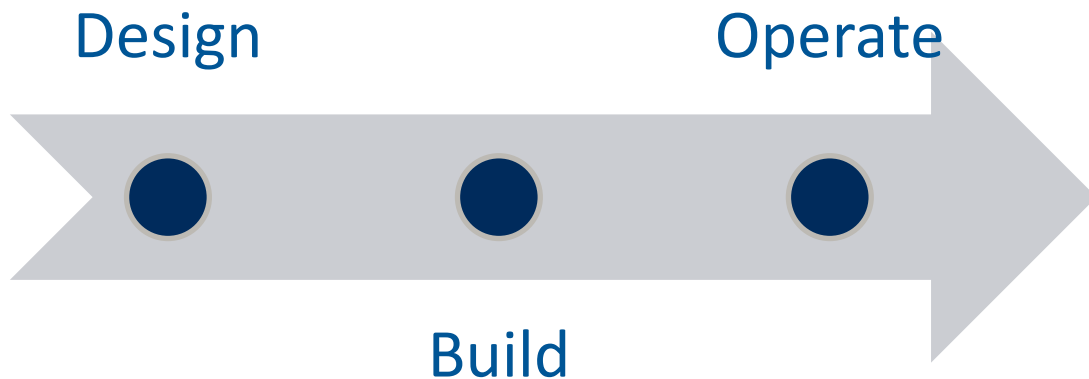
Other Requirements

- **Natural terrain hazards mitigation measures approved by GEO**
- **Building height limitation per Environmental Permit**
- **90-day chemical storage for stage 1 plant**
- **Sizing of chlorine contact tank(s) per WSD requirements**
- **BIM with asset management**



Section 4: Procurement Method

Proposed Project Delivery Model



- Time for Completion of Design/Build Phase
 - 39 months + allowance for inclement weather
- Operations Term:
 - 10 years (base)
 - Additional optional extension of 5 years (at WSD's sole discretion)

Proposed Commercial Model



**Contract
Payments**

**Design Build
Phase**

**Lump Sum,
milestones**

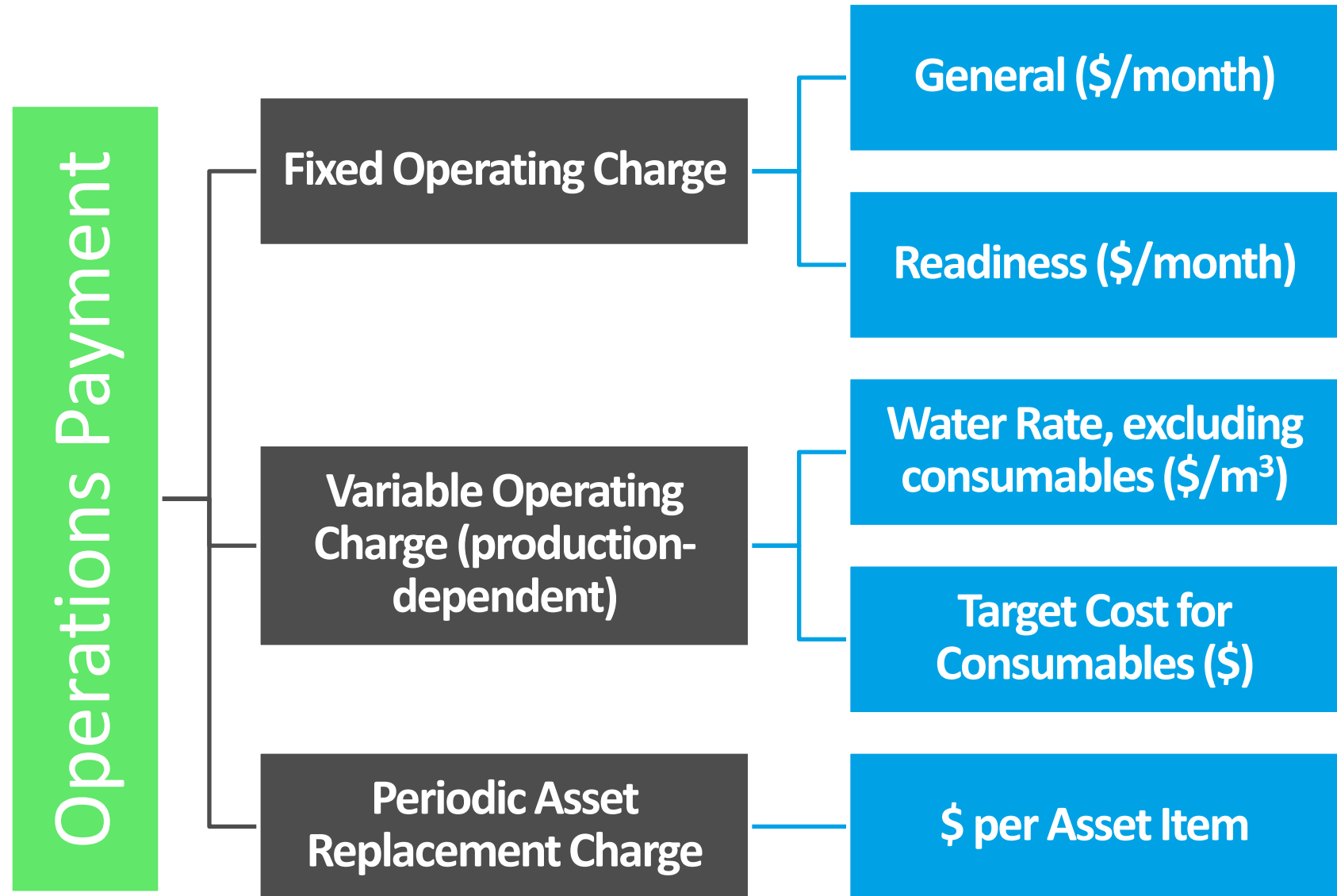
**Operations
Phase**

**Fixed
Operating Costs**

**Variable
Operating Costs**

**Asset
Replacement**

Proposed Hybrid Operations Payment Model





Section 5: Tendering

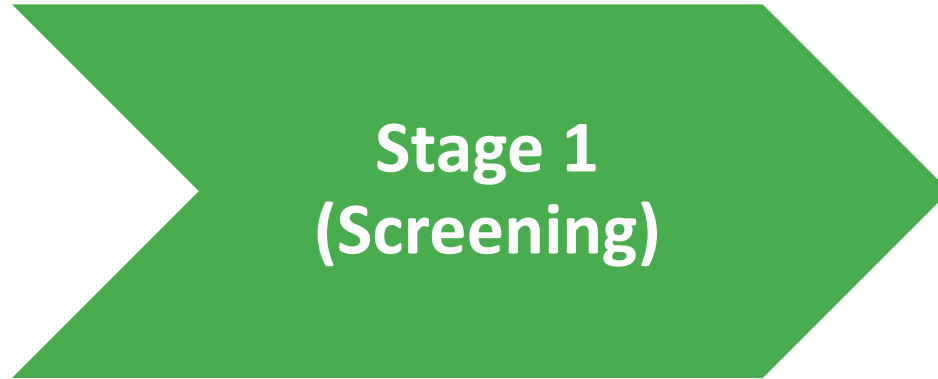
Tender Process and Tentative Timeline



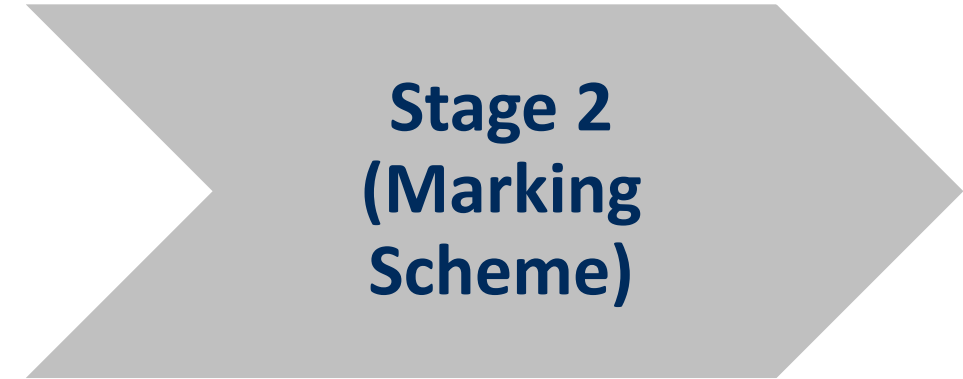
* Date is tentative and if everything is smooth and is subject to relevant approval



Prequalification Process



- Yes/No questions
- Minimum experience requirements of applicants
- Applicants not passing the screening criteria will not be further assessed



- Project experience
- Work methodology
- Proposed resources
- Past performance in **relevant** projects
- Top 4 applicants will be shortlisted

Screening Criterion 1

(tentative, subject to change)

- One or more “equivalent relevant” contract for **design and construction** of SWRO desalination facility(ies)
 - Design capacity \geq 50 MLD; **AND**
 - Design and construction part of the contract completed within the past 10 years from PQ closing date or is currently being undertaken
- **No. of past contracts will be discounted**
 - % financial participation in referenced contract, if undertaken as part of a JV
 - % financial participation, if applicant is part of a JV for TKO

Screening Criterion 2

(tentative, subject to change)

- **One or more equivalent relevant contract for operation and maintenance of SWRO desalination facility(ies)**
 - Design capacity \geq 50 MLD; **AND**
 - Operation and maintenance part of the contract has a continuous period \geq 2 years carried out within the past 10 years from PQ closing date or is currently being undertaken
- **No. of past contracts**
 - Will not be counted if applicant has $<$ 25% of financial participation in the claimed contract experience
 - Will be discounted according to % financial participation if applicant is part of a JV proposed for TKO

Screening Criterion 3

(tentative, subject to change)

- One or more equivalent local civil engineering and/or building contract
 - Awarded contract sum \geq HK\$500 million
 - Completed within the past 10 years from PQ closing date
- **No. of past contracts to be discounted**
 - % financial participation in the referenced contract, if undertaken as part of a JV
 - % financial participation, if applicant is part of a JV proposed for TKO

Common Pitfalls

- Misspelling of Contract Names and Personnel
- Inconsistencies in submitted documentations
- Uncertified documents
- Incorrect Dates

**Uncertified documentation will be disregarded
Inconsistent / insufficient information may be disregarded**

Tender Evaluation



- **Two-envelope system**
- **Technical Proposal will be evaluated and finalised, prior to reviewing the Fee Proposal**
- **Weighting of Proposals, to be determined**

Typical Tender Marking Scheme

Assessment Criteria	Sub-criteria	Marks	
		Maximum	Passing
A.	Price (See item 1 of Annex I)		
	1.1 Tender Price	600	--
	Maximum Price Mark	600	

	Assessment Criteria	Marks	
		Maximum	Passing
B.	NON-PRICE		
	1.0 Design and construction of the Works		
	2.0 Operation		
	3.0 Project Management and Human Resources		
	4.0 Environmental Management, Quality, Safety and Health		
	5.0 Past Performance		
	TOTAL		

Refer to “Administrative Procedures 2015
for Use with the Government of the Hong Kong Special Administrative Region General
Conditions of Contract for Design and Build Contracts 1999 Edition”

Tseung Kwan O Desalination Plant

News

02 May 2017

Industry Briefing Session
to be held on 23 May
2017

Section 6: Questions & Answers

THANK YOU

