Stepping Up to the Water - Energy Nexus Challenges at Tai Po Water Treatment Works

Mr. Jeffrey LAI
Engineer, Water Supplies Department,
The Government of HKSAR

水務署
Water Supplies Department

BLACK & VEATCH

BXG

WORLD SBE HONG KONG 2017
WORLD Sustainable Built Environment Conference

Organisers:
CONSTRUCTION INDUSTRY COUNCIL 建造業議會
HKGBC 香港綠色建築議會

International Co-owners:
SBE SERIES
iiSBE
Sustainable Buildings and Climate Initiative
FIDIC
Global Alliance for Buildings and Construction

Content

- Introduction
- Features in Water Management
- Features in Energy Use

Introduction

Introduction of Water Supplies Department

- Functions and services

  (i) plan and manage water resources

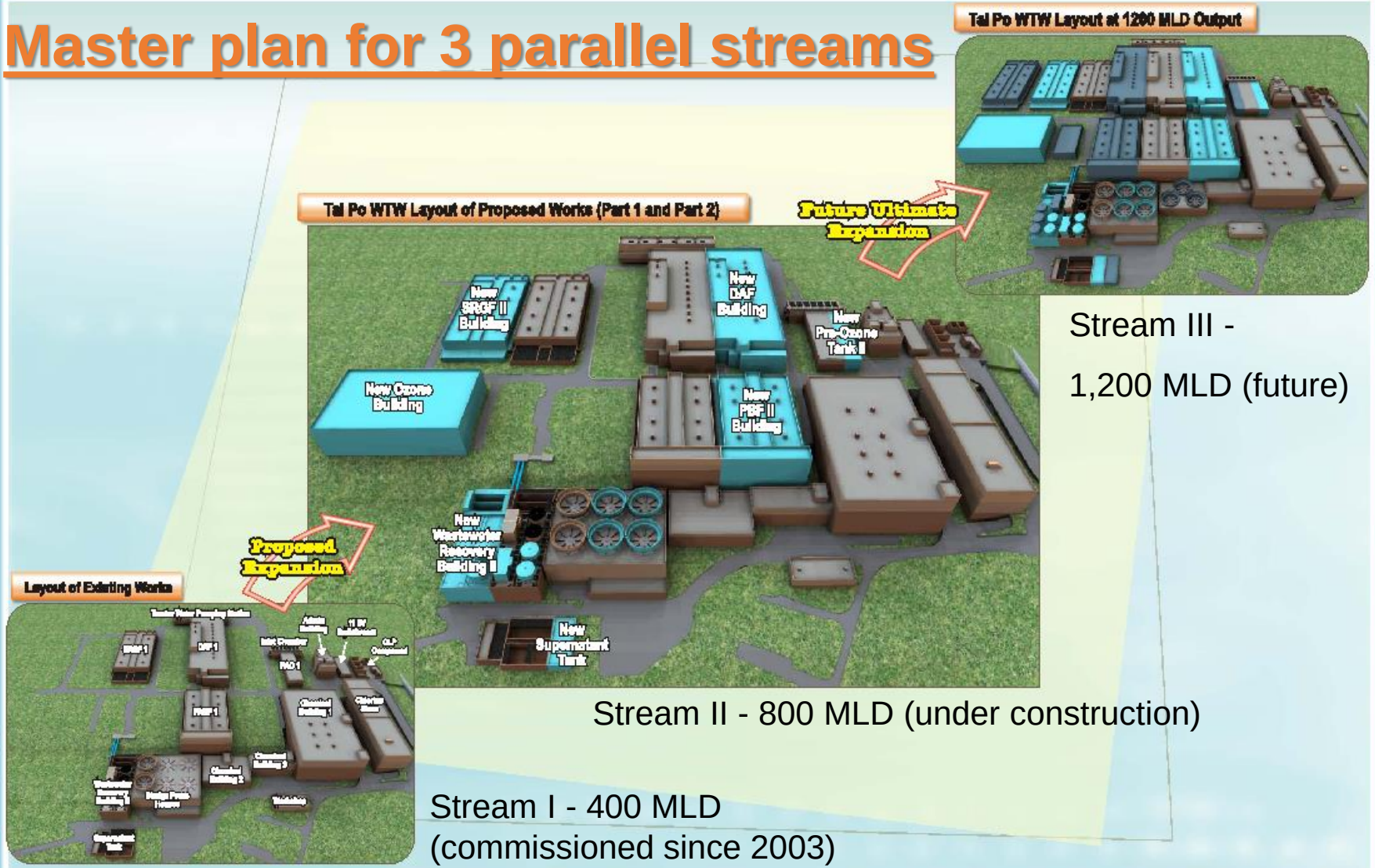
  (ii) implement waterworks projects

  (iii) operate and maintain waterworks facilities

  (iv) control quality of water supply to customers

  (v) provide customer services and enforce Waterworks Ordinance

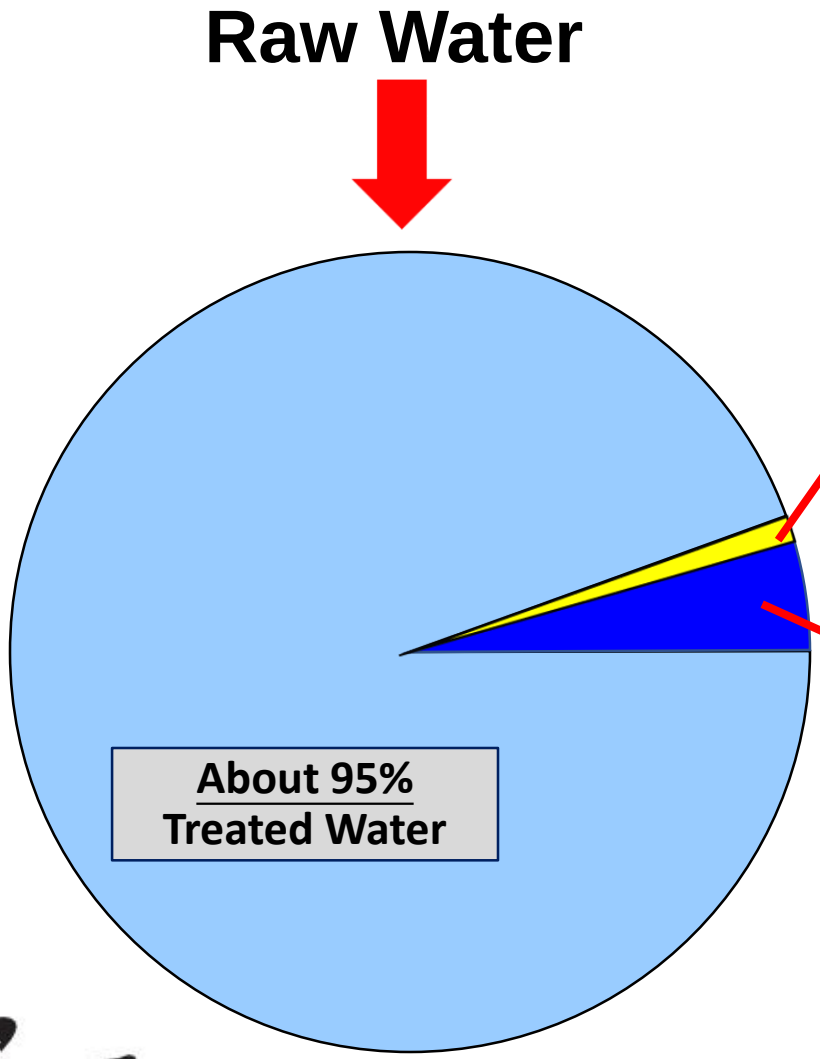
Master plan for 3 parallel streams



Tai Po WTW Water Supply Zones

Features in Water Management

High Water Treatment Efficiency



Less than 0.3%:

Taken out from treatment process as water sample for water quality control purpose

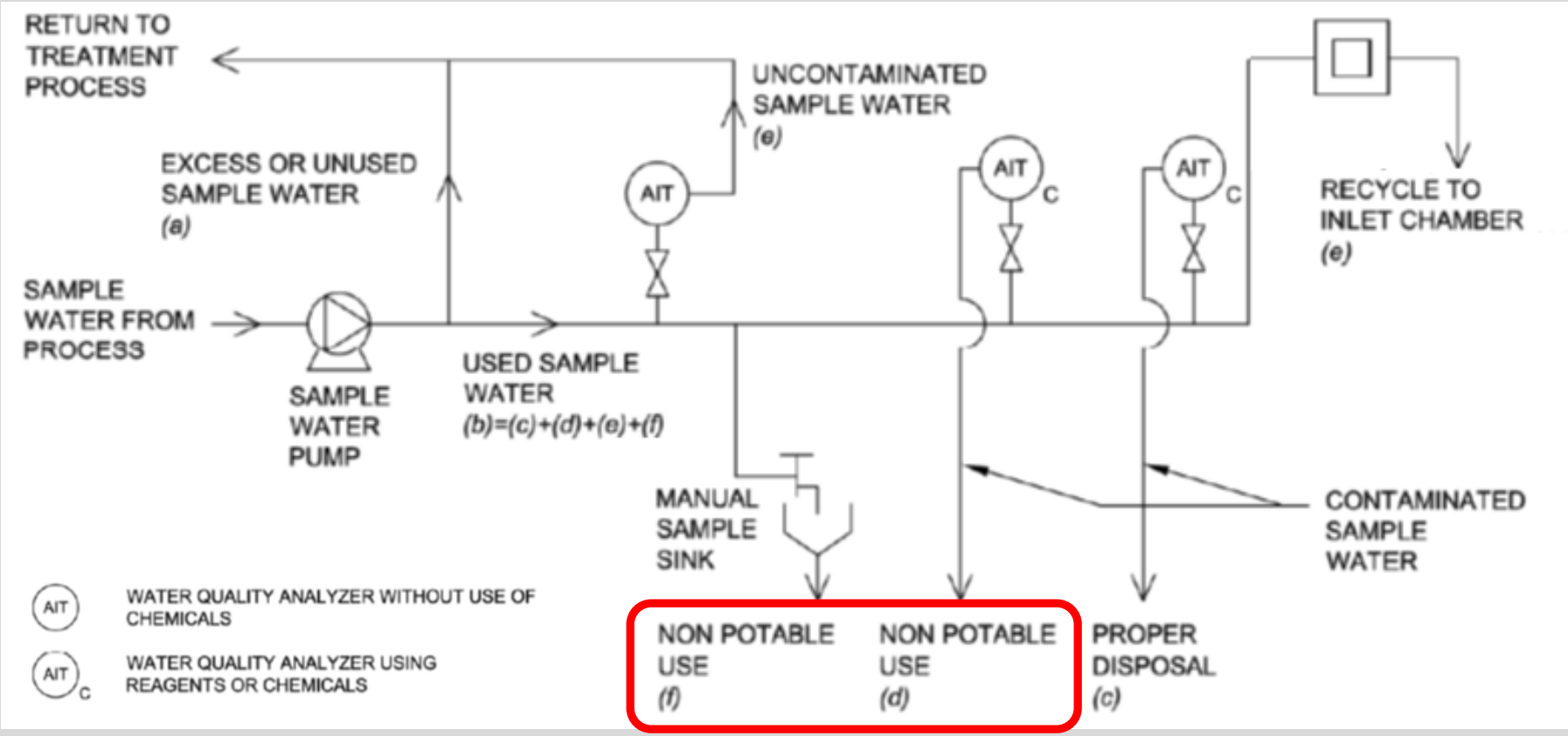
About 4.7%:

1.removed together with sludge

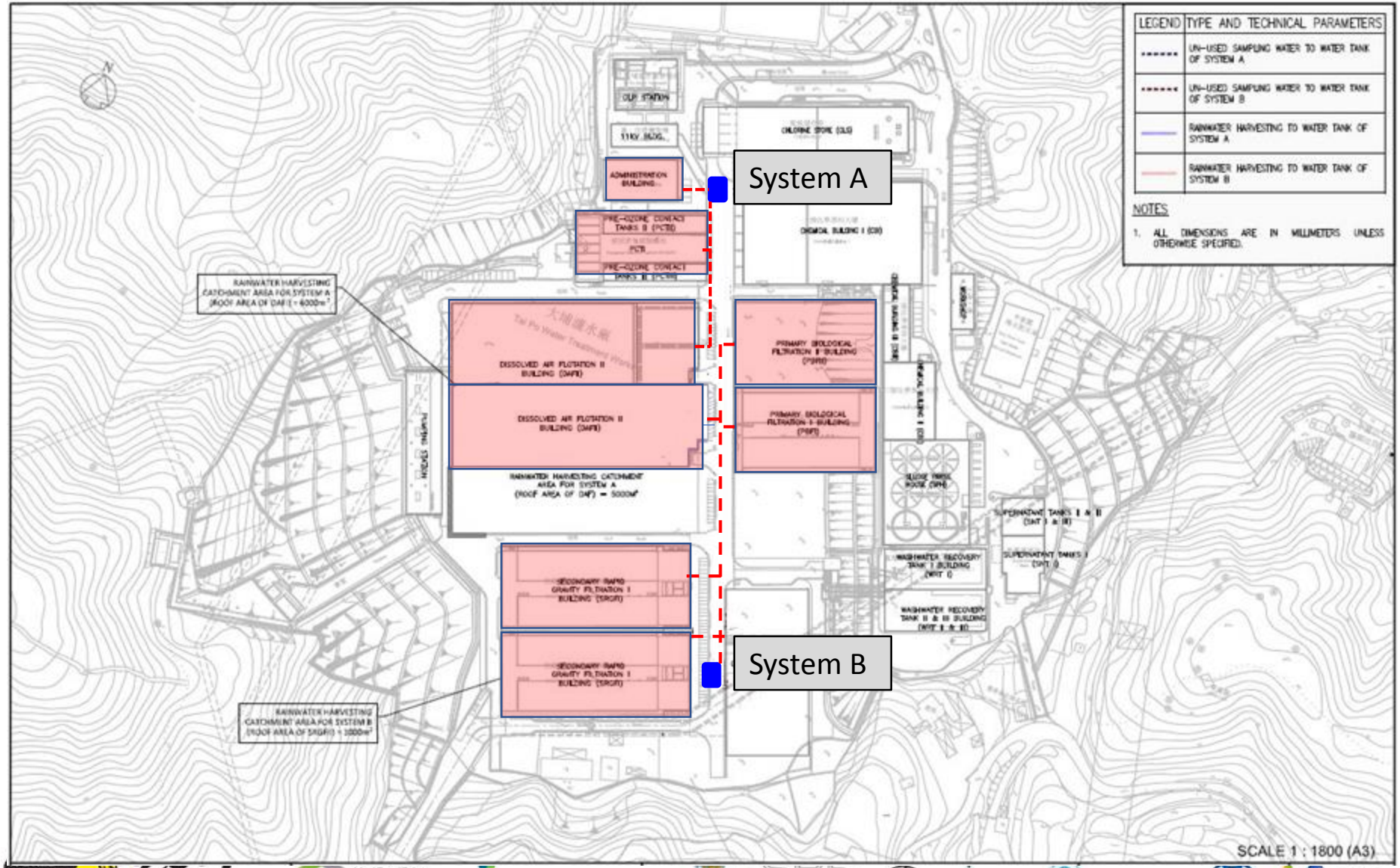
2.used for filter backwashing

Most will be **returned to inlet** via sludge treatment process

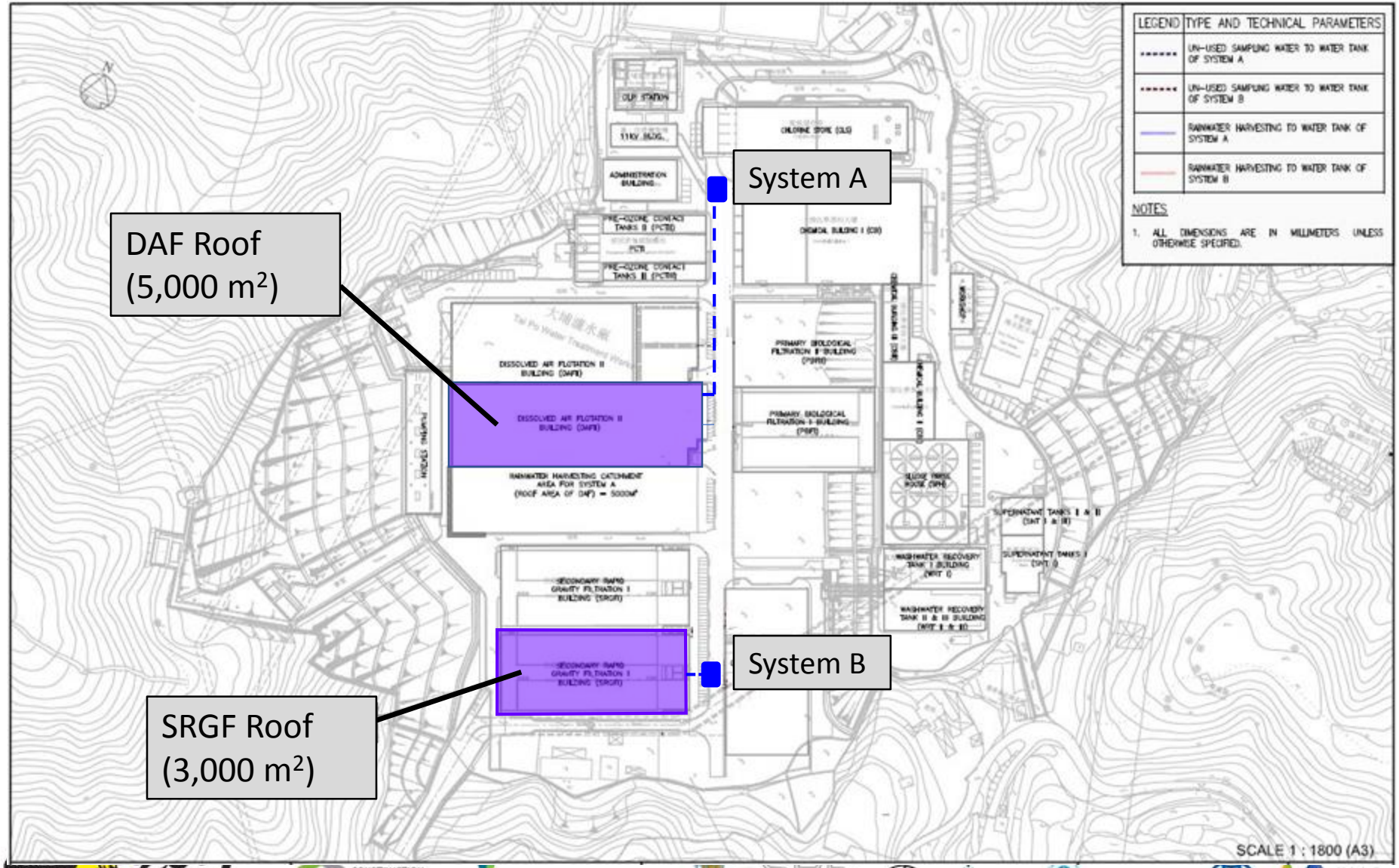
Sample Water Recycling System



Sample Water Recycling System



Rainwater Harvesting System



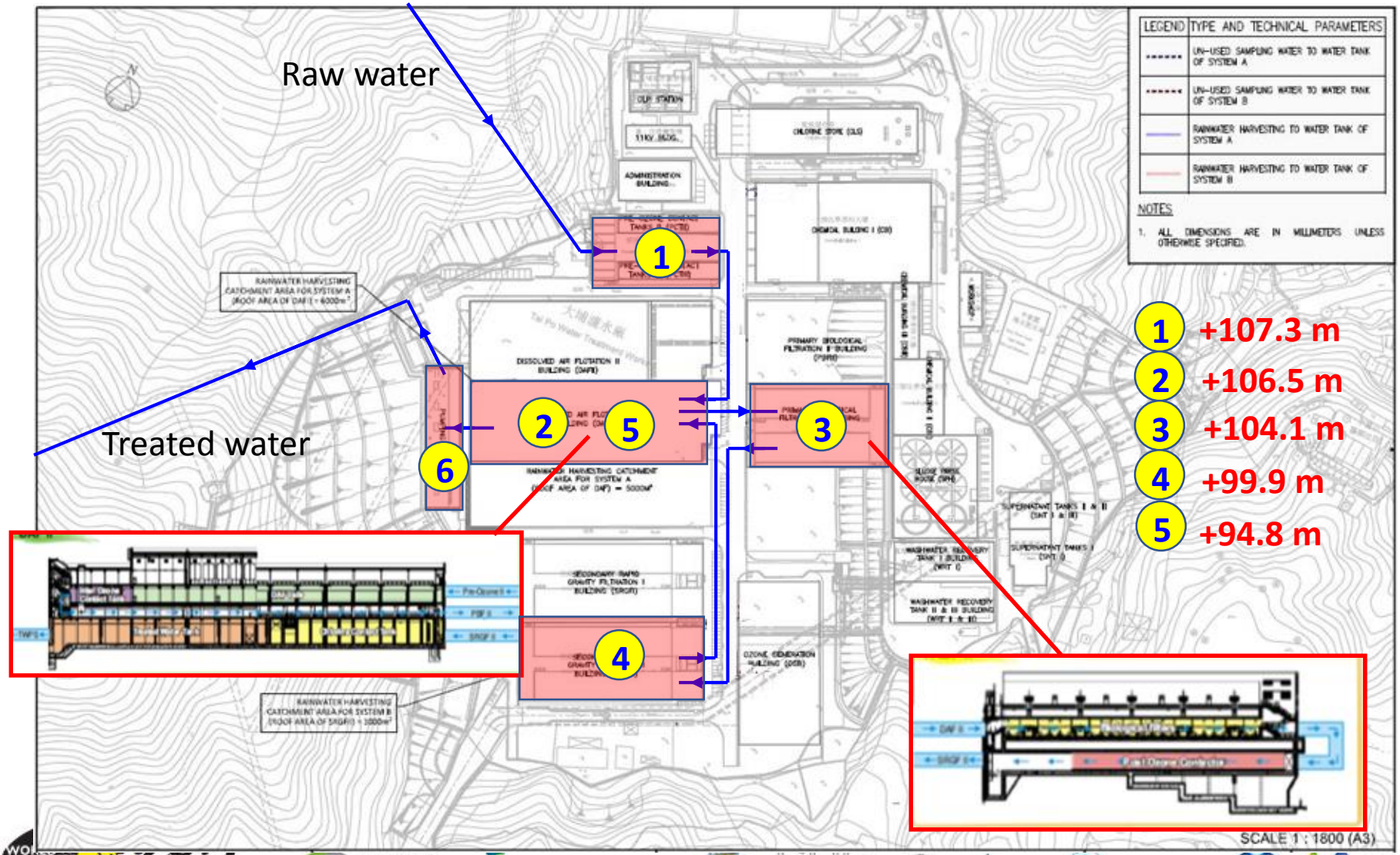
Minimize Potable Water Use

- Irrigation – 30% greenery area

- Flushing
- Annual saving of Potable Water
  ~ **12,000m³**

Features in Energy Use

Efficient Layout – Gravity Driven



Other Energy Saving/Efficient Features

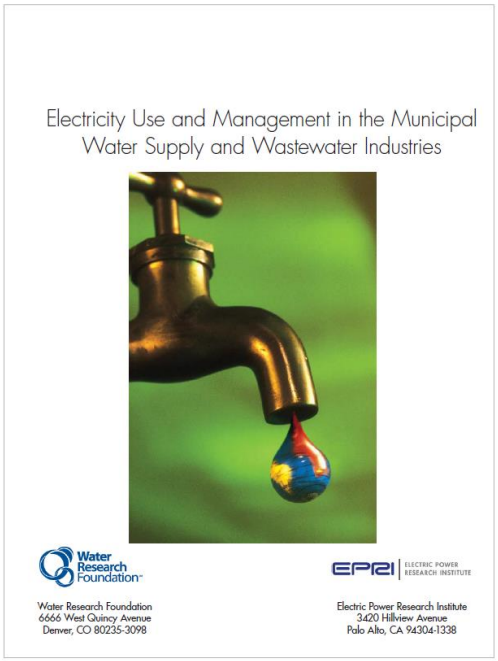
- Light Emitting Diodes (LED) lighting
- Variable Speed Pumps for different types of pumps
- Photovoltaic system
- Zone and dimming control for area and security lighting
- Building and Energy Management System for Building Services

Comparison

- Compare with ***"Electricity Use and Management in the Municipal Water Supply and Wastewater Industries"*** (i.e. EPRI report 2013)

- Jointly prepared by
  - **Electric Power Research Institute**
  - **Water Research Foundation**

	Saving of Tai Po WTW
Treated water pumping	23%
Processes	30%
Building Services	67%



Thank you