



Transformation Strategy Lab on National Water Sector for 12th Malaysia Plan



Presentation 4 : Sewerage Services Industry Section

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KATS' VISION:

To spearhead the management of water, land and natural resources through sustainability for the wellbeing of the nation

**CORE 1:
STRENGTHENING
WATER
MANAGEMENT FOR
THE WELLBEING OF
THE NATION**

**CORE 2:
ENHANCING LAND,
SURVEY AND
GEOSPATIAL
MANAGEMENT FOR
THE PEOPLE'S
WELLBEING**

**CORE 3:
STRENGTHENING
NATURAL
RESOURCES
MANAGEMENT
TOWARDS
SUSTAINABILITY**

**CORE 4:
ENHANCING
GOVERNANCE
TOWARDS
ORGANISATIONAL
EXCELLENCE**

**Focus Area 1:
Water Sources**

**Focus Area 1:
Land**

**Focus Area 1:
Mineral and
Geoscience**

**Focus Area 1:
Organisational
Governance**

**Focus Area 2:
Water Supply and
Sewerage**

**Focus Area 2:
Survey and
Geospatial**

**Focus Area 2:
Biodiversity**

**Focus Area 3:
Geospatial Data
Sharing**

**Focus Area 3:
Forestry**

BACKGROUND

Global Targets and National Aspirations



Ensure availability and sustainable management of water and sanitation for all

Ensure sustainable consumption and production patterns

Strengthen the means of implementation and revitalize the global partnership for sustainable development

Closed water loop system in urban areas

WASTEWATER TREATMENT BY 2030

50% Bio-solids to be recycled
50% Bio-solids to be recycled for electricity generation
1/3 Bio-effluent to be recycled

Fragmented industry structure...

Regulated under WSIA 2006



operates in 88/154
local authorities

- 6,761 STPs
- 102 RSTPs
- 1,193 NPS
- 19,532 km network



operates in Kelantan

- 20 STPs



Johor Bahru City Council

- 113 STPs



Pasir Gudang City Council

- 53 STPs



Estate

Hotel/resort

Government Premises

Regulated under Local Government
Ordinance 1961 and Public Health
Ordinance 1960



- Regulated under Sewerage
Systems and Services Ordinance
2005



KEY PLAYERS IN SEWERAGE SERVICES INDUSTRY

	PENINSULAR & LABUAN	SABAH	SARAWAK
POLICY	Kementerian Air, Tanah dan Sumber Asli (KATS)	Kementerian Pembangunan Infrastruktur (KPI)	Kementerian Perancangan Sumber dan Alam Sekitar (KPSAS)
REGULATORY	Suruhanjaya Perkhidmatan Air Negara (SPAN)	Jabatan Kerja Raya Sabah (JKR Sabah)	Jabatan Perkhidmatan Pembetungan Sarawak (JPP Sarawak)
PROJECT IMPLEMENTER	Jabatan Perkhidmatan Pembetungan, KATS	JKR Sabah	JPP Sarawak
SERVICES & OPERATION	IWK, Majari Services Sdn. Bhd. <i>(for Kelantan)</i> , Majlis Bandaraya Johor Bahru & Perbadanan Pasir Gudang	JKR Sabah & Local Authorities	JPP Sarawak & Local Authorities

Current *Financial Investment* Structure

SEWERAGE CAPITAL INVESTMENT

GOVERNMENT FUNDED



CONCESSIONAIRE FUNDED



DEVELOPER FUNDED



- 5 years National Plans
- Sewerage Capital Contribution Fund
- Soft Loan & Capital Markets
- Built into Tariff Structure
- Part of Land & Property Development
- Major Contributor of Sewerage Capex

PUBLIC PLANTS O & M INVESTMENT

GOVERNMENT FUNDED



SERVICE LICENSEE FUNDED



- Soft loan/subsidy to IWK

- Tariff Collection

Key Projects Under the 11TH Malaysia Plan (Continuation from 10th MP)

PANTAI 2 STP – 1ST BIG SCALE UNDERGROUND PLANT WITH GREEN TECHNOLOGY APPLICATION



The Pantai 2 STP is completed as an underground facility with ground/area above the STP developed as a leisure park with sports, recreational, administration building and community facilities for the local residents.

- A 1.423 million PE (320 MLD) sludge management facility is constructed to treat and manage the waste biological sludge, with the provision of bio gas power generation facility.
- A total of 2,400 m³ of reuse water is generated per day for in-plant operation and maintenance purposes and to supplement the aquatic skylight “river water”.
- Rainwater Harvesting System (RHS) is provided at Administration Building, Community Centre and Leisure Park
- Skylight and aquatic skylight are installed on the top of the underground STP to bring direct sunlight to the underground space to supplement the illumination needs.

Key Projects Under the 11TH Malaysia Plan

LANGAT CENTRALISED STP – BREAKTHROUGH IN TECHNOLOGY

Treatment Process

Step-Feed Multi-Stage
De-nitrification Process

Capacity (Design PE)

920,000 PE (Population
equivalent) = 207,000 m³/day

Unique Feature

Deep Aeration Method



TMG'S ADVANCED TECHNOLOGIES

- ☐ Contributes to high performance of de-nitrification
- ☐ Optimized Treatment Efficiency
- ☐ Sizable STP in Small Footprint

SOLVED

LANGAT KEY CHALLENGES

- ☐ Limited STP site space
- ☐ High level of ammonia

Key Projects Under the 11TH Malaysia Plan

PAPAN REGIONAL SEWERAGE TREATMENT PLANT

Design PE

1.5 million (ultimate)

Contract sum

RM479.7 million

Treatment Process

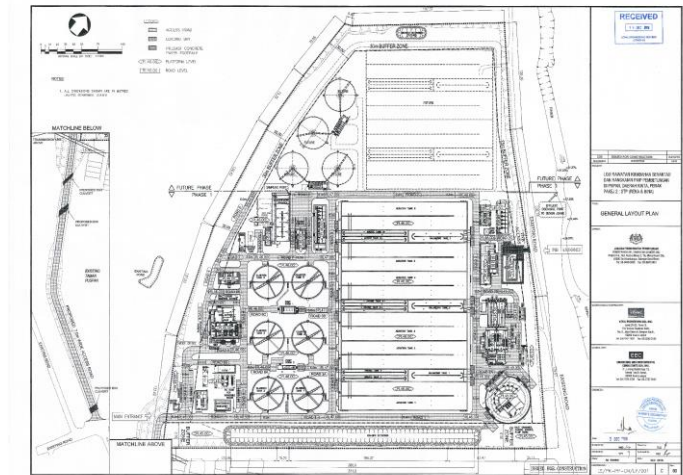
Extended Aeration

Effluent Standard

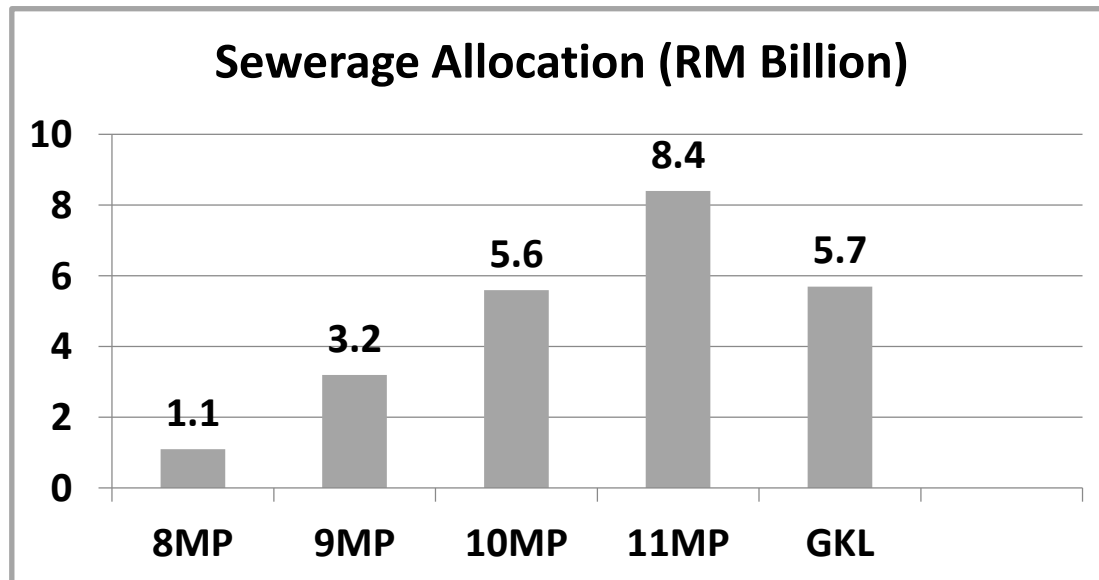
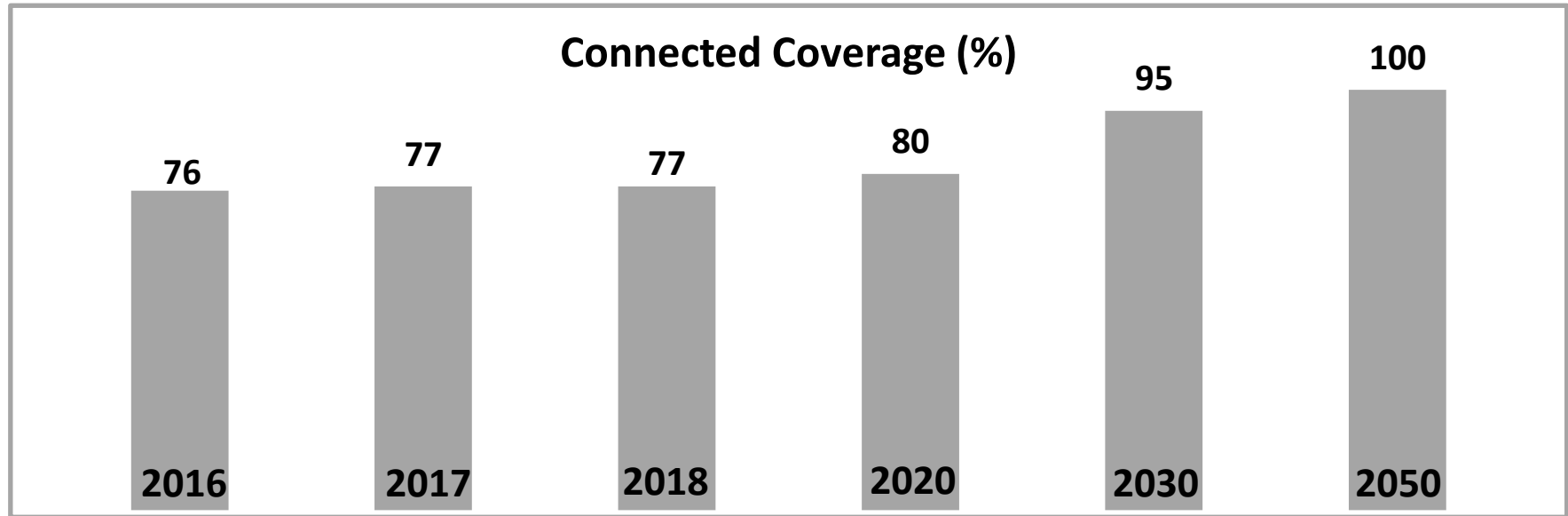
Standard A, Category 1

Unique Features

Solar Panel for energy use
and effluent recycle component
for plant use



Target Of Coverage For 11MP And Beyond



Note: Based on KPMG Study *Development of Strategic Direction for The Sewerage Services Industry (2008)*, **RM64 billion** is required for CAPEX from 2008 to 2040.

TRANSFORMATION STRATEGY FOR THE 12TH MALAYSIA PLAN



Strategy 1:

Sewerage Tariff Rebalancing

1. Tariff has never been adjusted upwards to reflect actual cost of service since 1997
2. OPEX continue to increase due to growth, inflation, higher electricity cost, increased mechanized plants, increased compliance and service levels, and higher risk mitigation
3. Revenue from tariff is inadequate to meet operating cost and gap is getting bigger
4. Subsidy provision is a temporary measure
5. Operational break-even can be achieved by implementing appropriate volumetric tariff

Strategy 2:

Resource Recovery / Waste-to-wealth Initiative / WRP

GTMP Targets for Recycling of Sewerage Byproducts to be achieved by 2030.

- Resource recovery – potential reuse of byproduct from sewerage treatment plant (biosolid, bioeffluent, biogas)

GREEN TECHNOLOGY MASTER PLAN (2017-2030)

- 100% Biosolids to be recycled
- 1/3 Bioeffluent to be recycled
- Potential energy from Biosolids

WASTE-TO-WEALTH APPROACH

- Participation of third party / enhancement of the scope of Concessionaire to Non core business
- Income generation
- Employment opportunities



1st Water Reclamation Plant - solution for water stress in Southern Johor...

Water Stress

1962 Johor River
Water Agreement
– 250 MGD

Drop of raw water
storage –
prolonged dry
seasons

Demand higher
than supply

Additional demand
of 600 MLD by 2025

Solution



Water source for further
treatment

Agriculture (Non-food crop)

'Non-potable' application

Industrial Water

Strategy 3:

Modernising sewerage infrastructure

1. Towards full compliance of DOE Standards according to **Environmental Quality (Sewage) Regulations 2009 (EQSR) [P.U. (A) 432/2009]**.
 - focusing on 4,692 STPs to be upgraded to meet the EQSR standard - estimated at RM5.3 billion;
2. Towards Green sewerage infrastructure
 - energy efficiency plant (installing equipment to STPs such as solar panel, mini turbine, etc.)
 - By-product Treatment Facility for new RSTPs
3. Alternative model – constructed wetlands, in-situ treatment plants
4. Sewerage Line Inspection and rehabilitation program

Strategy 4:

Joint billing & integration

1. Customer-friendly
2. Improve rate of collection
3. Nationwide expansion
4. Towards volumetric approach
5. Integration of industry by 12MP

Strategy 5:

Property connection

1. Increase level of connection to public sewer to protect water resources
2. Mapping and detailed study to identify priority areas for implementation of property connection
3. Allocate budget for property connection in priority areas

Thank You!

A decorative graphic consisting of two wavy lines. The top line is dark blue and the bottom line is a lighter blue, creating a layered effect.

Legal framework under WSIA 2006...

- Sec. 4 – Individual license
- Sec. 20 – Class license
- Sec. 47 – Hand over sewerage services to SL
- Sec. 50 – Permit for contractors
- Sec. 172 – Sewerage Capital Contribution Fund
- Sec. 198 – Authorization for local authorities
- Sec. 191 – Authorization for concession holders
- MSIG – Guidelines for sewerage system development

