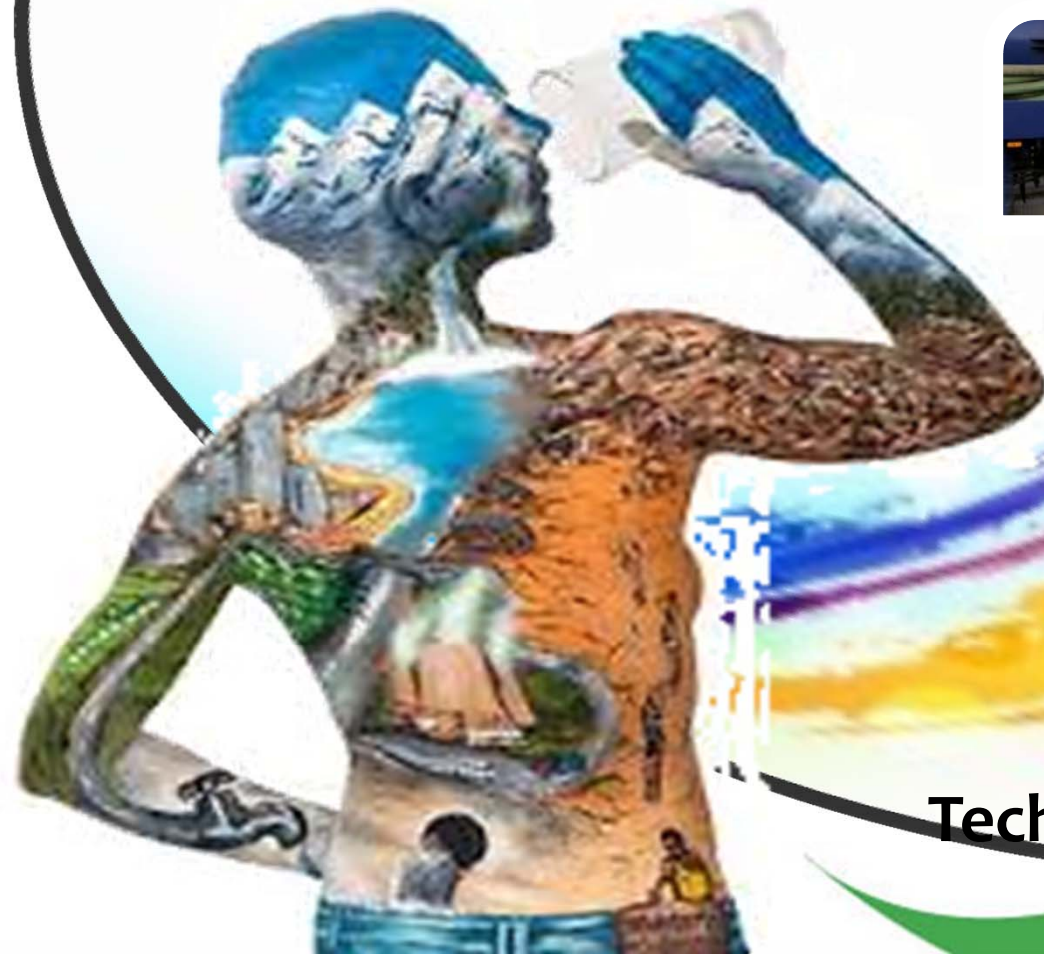


SPAN

CASE OF SEWERAGE INDUSTRY - ON SITE SYSTEM



Recca Tharmarajah
Technical Standard and Compliance Division
Sewerage Regulatory Department

GENERAL OUTLINE

MALAYSIA

Population : 29.24 mil (Urban, Rural)
Area : 330,252 sq. km.



BUMI –
PUTRA
67.4 %



CHINESE
24.6 %



INDIAN
7.3 %



Others
0.7 %

COUNTRY AT A GLANCE

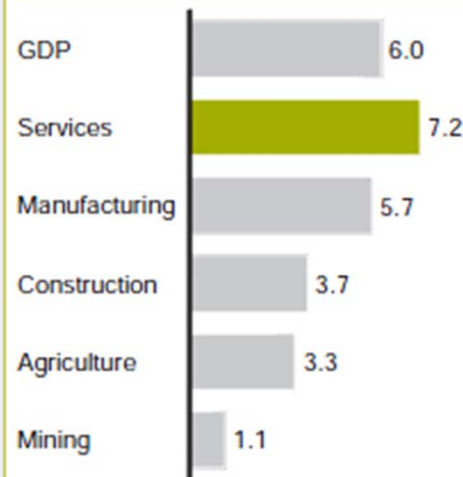


Population	29.24 million	2012
GDP	\$303.5 billion	2012
GDP growth	5.6%	2012
Inflation	1.7%	2012

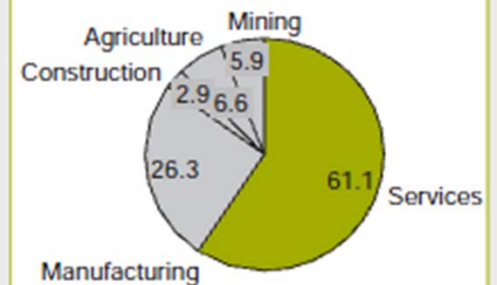
Services sector is expected to grow at 7.2% annually until 2015

%

Average annual growth rate for 2011-15 period



Share to GDP in 2015



Source: 10th Malaysian Plan

Road To Urbanization

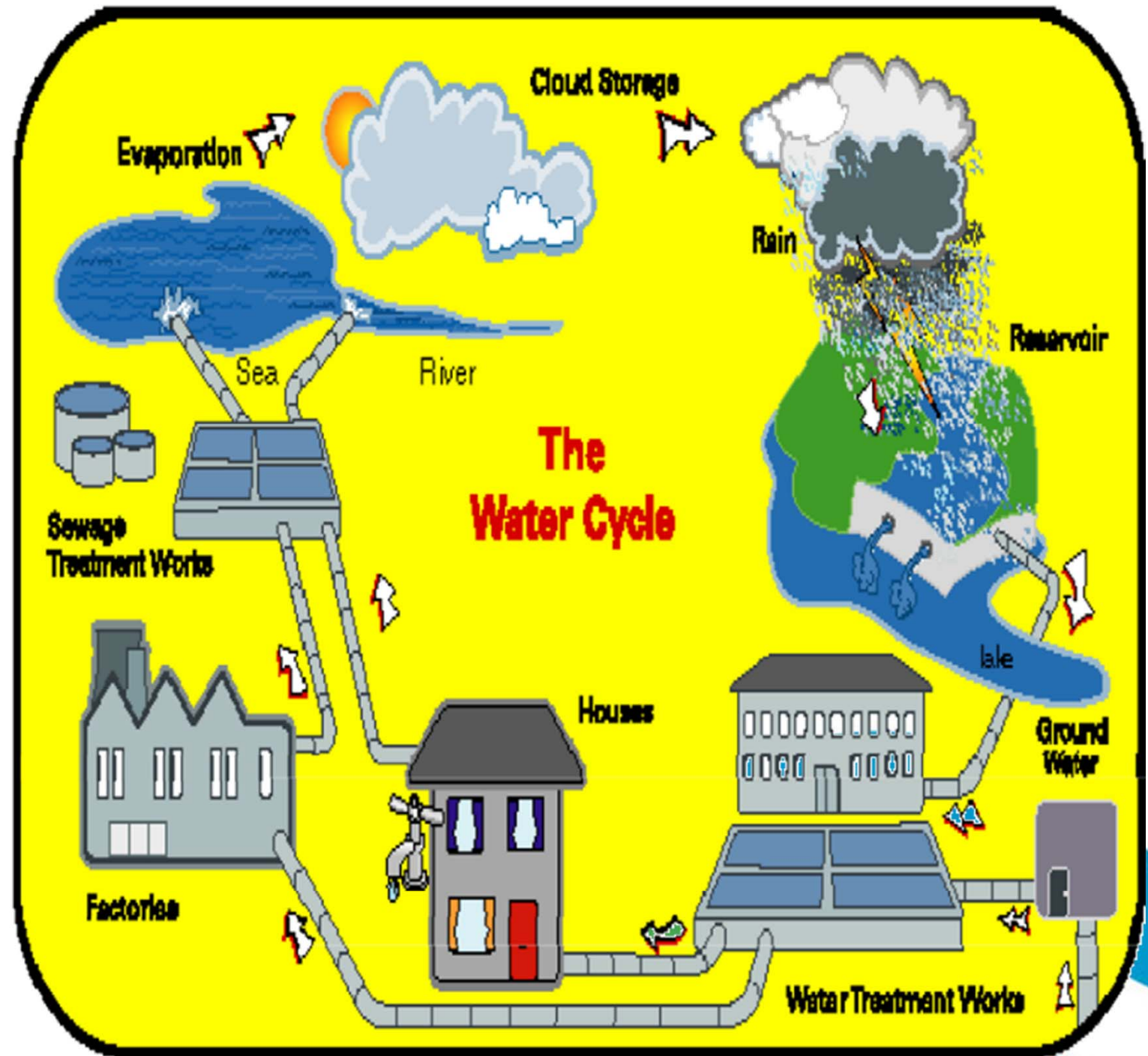
In 1957
number of cities:
33

➔ More issues
on inadequate
access to
sanitation -
less pollution
on water
course

400% Increase

In 2000
number
of cities:
140

➔ More
pollution of
water course
although
access to
sanitation
increased



REGULATORY EVOLUTION – WATER SERVICES

- 11 Operators
- 11 Regulators

- 11 Operators
- 1 Regulator



- Uniform legislation
- Uniform regulation and rules
- Uniform tariff-setting principles and procedures
- Standard Key Performance Indicators (KPIs)
- Standard Operating Procedures
- Standard product certification procedures

REGULATORY EVOLUTION – SEWERAGE SERVICES



Urban by
Municipals,
Rural by
Ministry of
Health

1957 - 1993

Sewerage
Services were
managed by the
**144 Individual
Local
Authorities**

1994 - 2005

June 1993:
A new
sewerage
Act 1993
(Act 518)
was
passed
by the
parliament



Dec 1993:
Sewerage
Services
Department (SSD)
was formed as
regulator Agency
for Sewerage
under the
new Act

2006 - 2008

1994 onwards,
Indah Water
took over
sewerage
management in
most states in
Peninsular
Malaysia



Indah water provides
sewerage services in
88 out of the 144 Local
Authorities in Malaysia
(however not on
holistic manner) Rest of
the areas is still
managed on Ad-Hoc
basic

Current

2006, WSIA
/ SPAN
Acts was
enacted



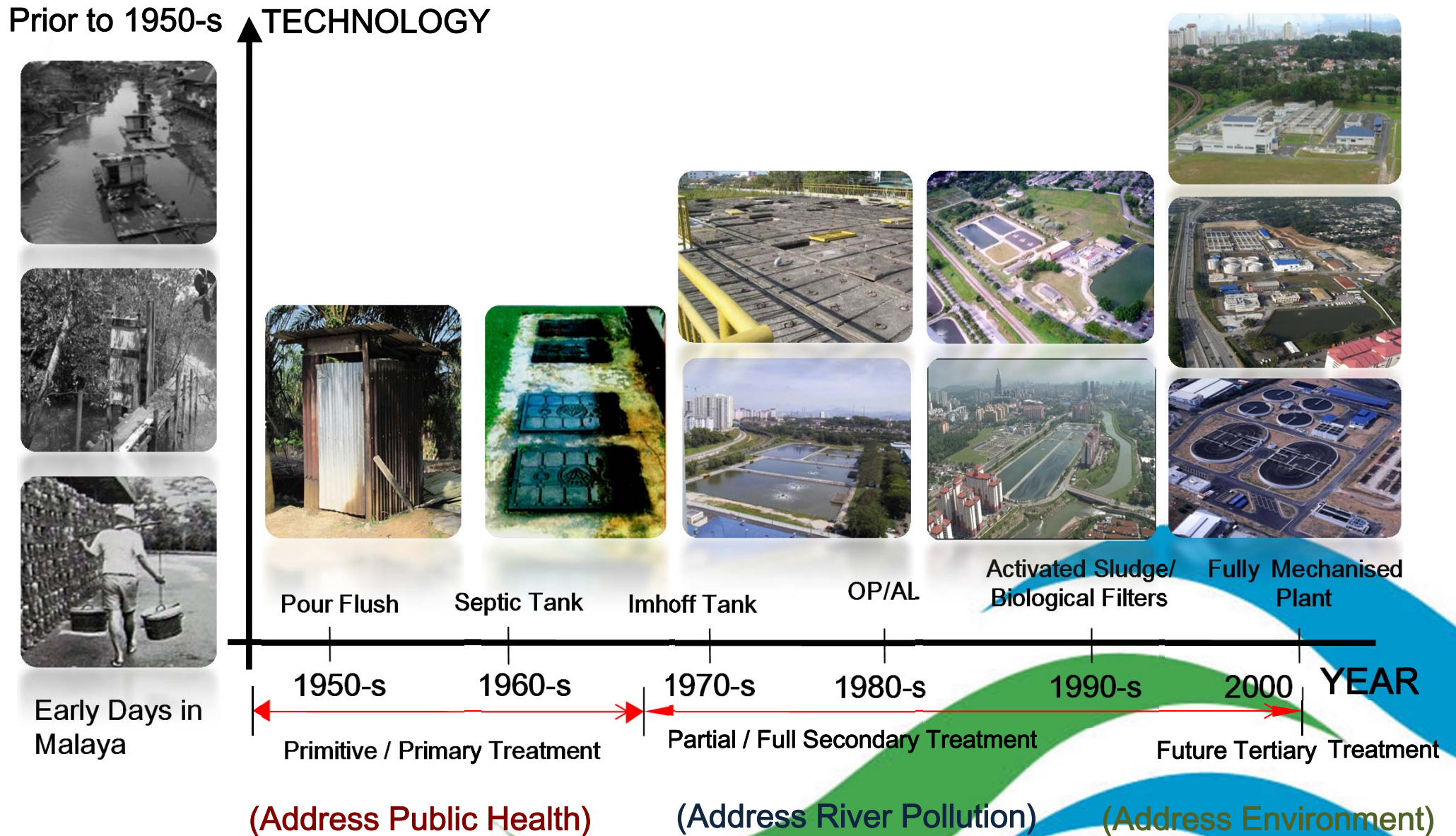
Suruhanjaya Perkhidmatan Air Negara



Indah Water to
be Service
licensee under
WSIA regime.

EVOLUTION OF SEWERAGE INFRASTRUCTURE

EVOLUTION OF SANITATION IN MALAYSIA

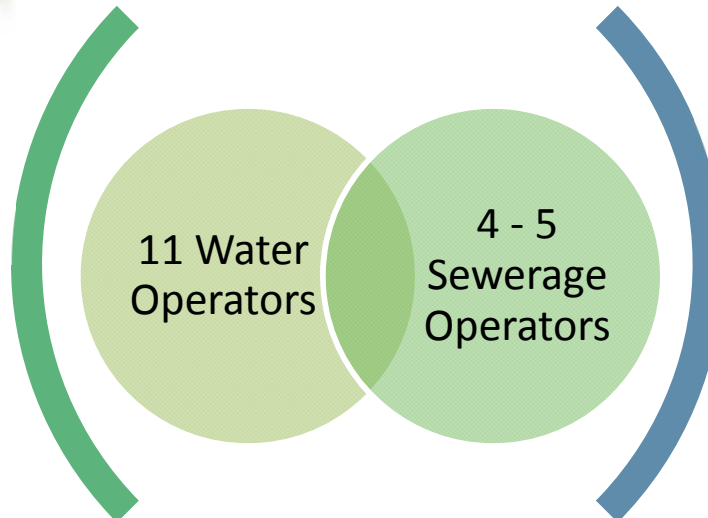


WAY FORWARD



Before

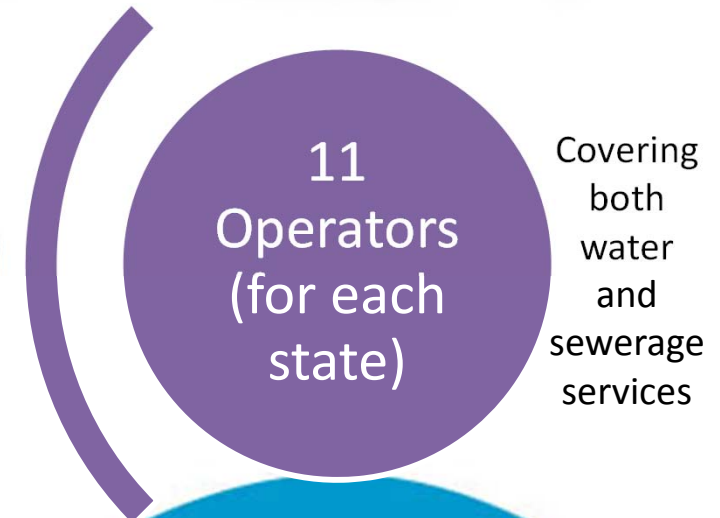
1 Regulator



Current

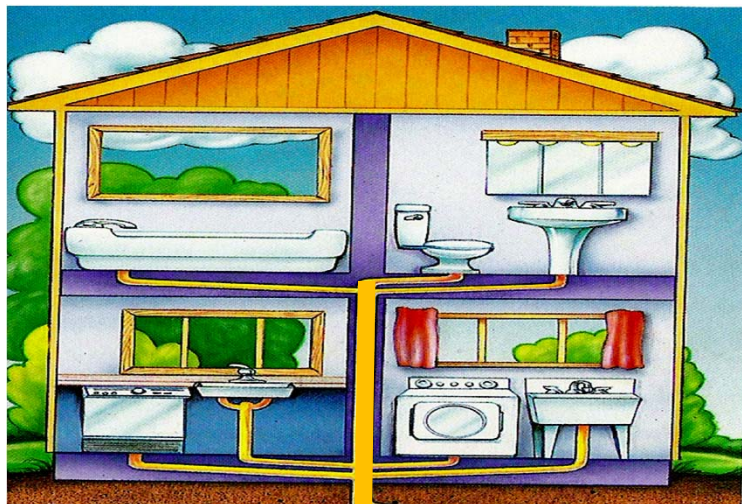


1 Regulator



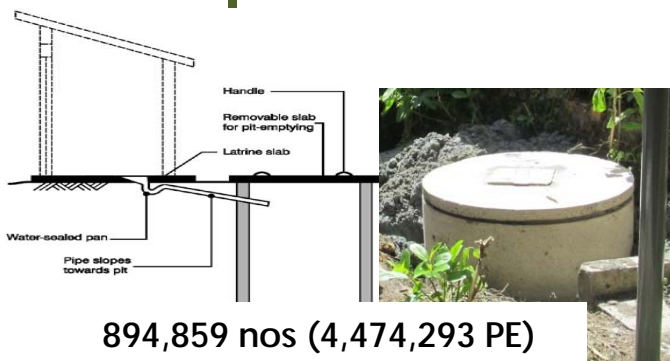
Ideal

SEWERAGE SYSTEMS PROFILE IN MALAYSIA



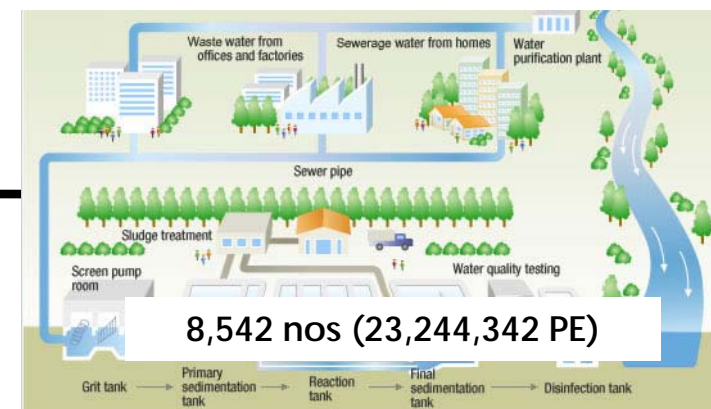
Off-site

On-site



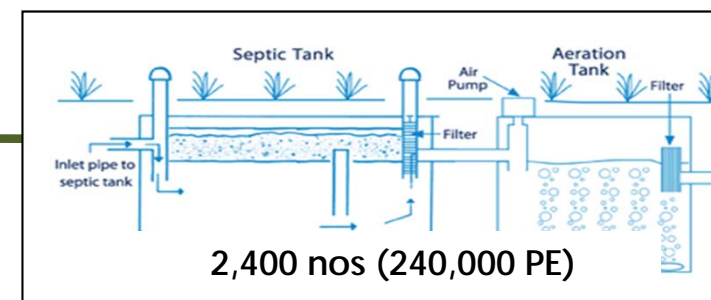
894,859 nos (4,474,293 PE)

Cess pit



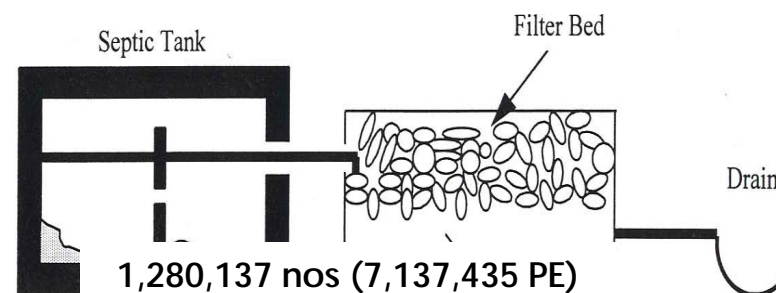
8,542 nos (23,244,342 PE)

Sewage Treatment System



2,400 nos (240,000 PE)

Small Sewage Treatment System



1,280,137 nos (7,137,435 PE)

Individual Septic Tank (include CST)

FOCUS UNDER THE LAW

Economic



- ✓ License operators
- ✓ Review Business Plans
- ✓ Define obligations of licensee
- ✓ Advise tariffs
- ✓ Integration of water & sewerage services

Technical



- ✓ Technical and performance standards
- ✓ Permit and certification of contractors
- ✓ Water supply and sewerage systems

Consumer



- ✓ Quality of services
- ✓ Resolutions of consumer complaints/disputes
- ✓ Provision of information
- ✓ Water forum
- ✓ Rates and deposits

Social



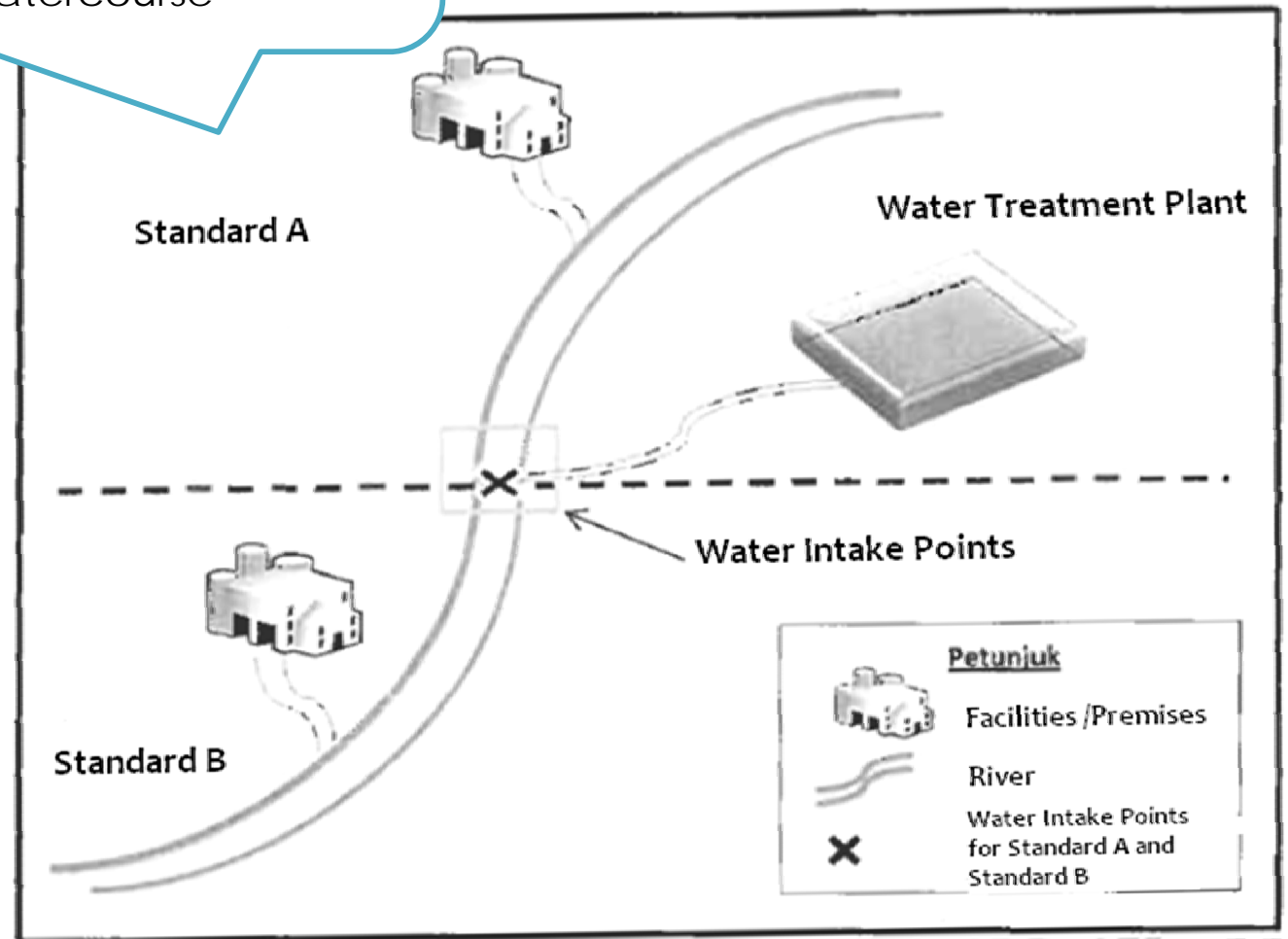
- ✓ Sewerage capital contribution fund
- ✓ Water industry fund
- ✓ Environmental aspects

ENVIRONMENTAL REQUIREMENTS #1

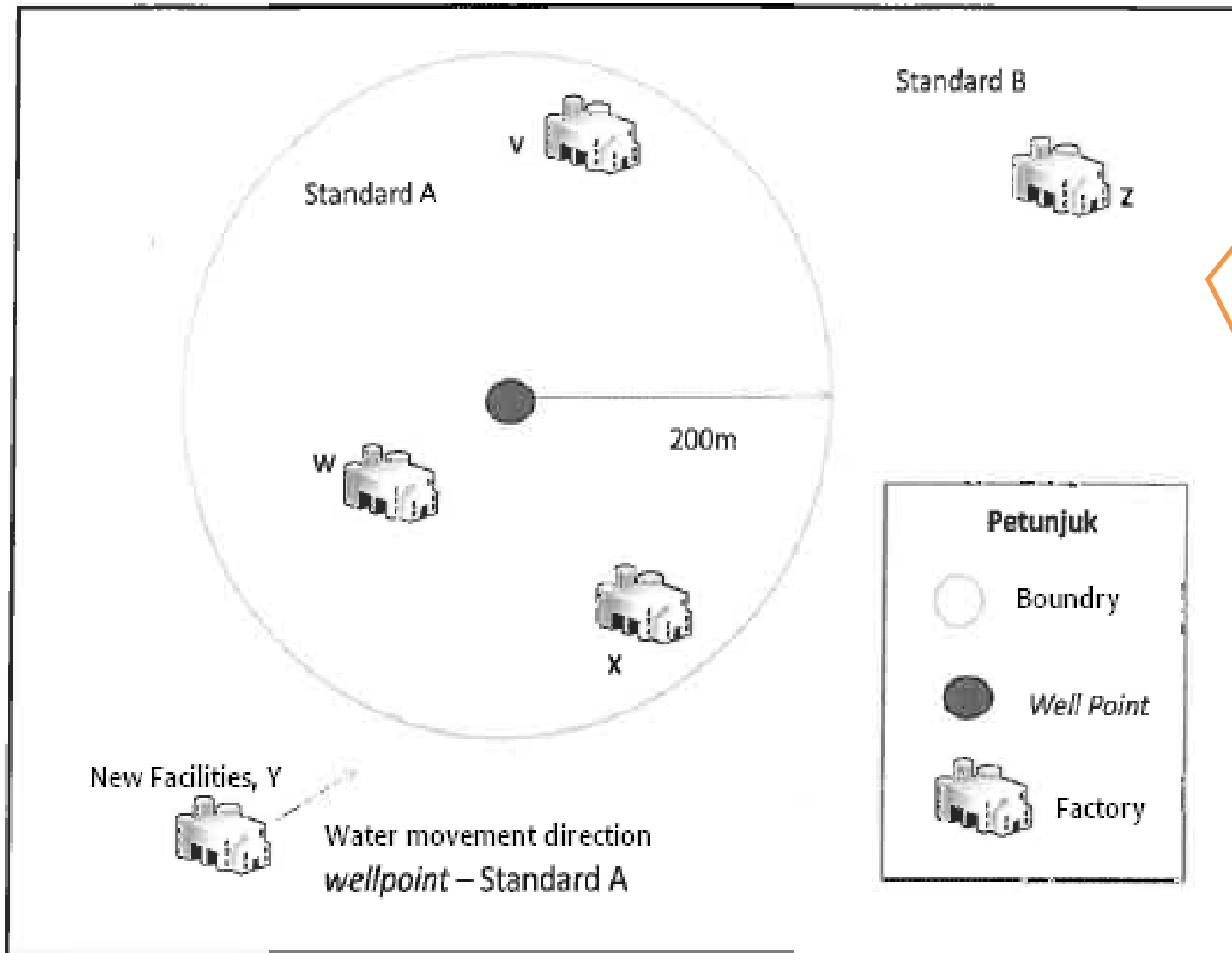
Design standards stringent to achieve effluent quality if :
Discharge of treated effluent **located upstream**
the of water catchment areas and/or in certain
sensitive receiving watercourse

DESIGN CRITERIA

Governed to a large
extend by the hydraulic
aspects of treated
effluent discharge to
suitable watercourse



ENVIRONMENTAL REQUIREMENTS #2



If location of the ground water in the premises to be built is moving towards the well field, even though premises is located outside the 200m radius, thus the premise effluent discharge must comply with the Standard A

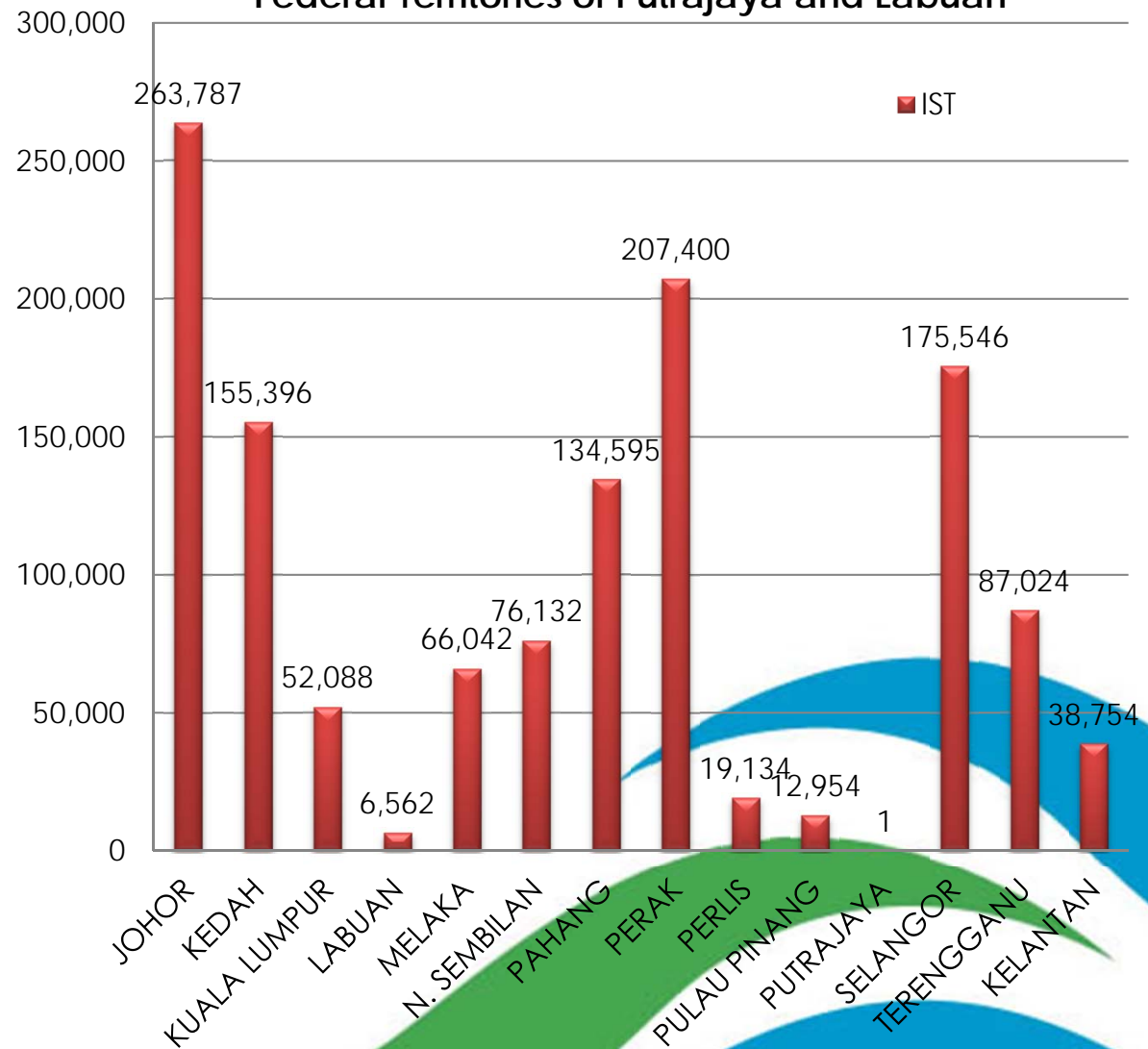
BACKGROUND

In January 2008,
Water Services
Industry Act 2006
became
enforceable

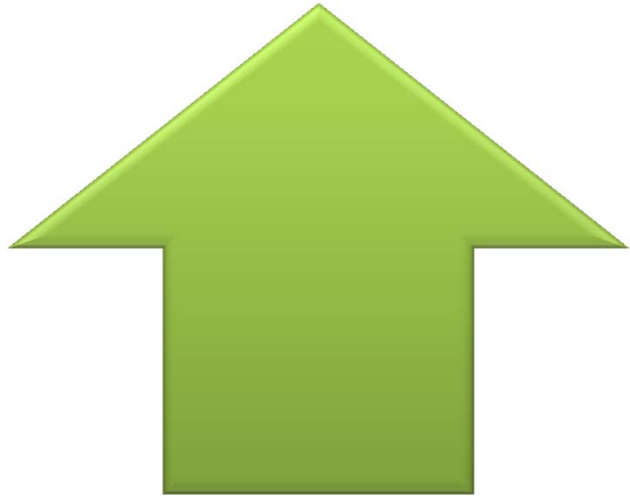
Responsibility of
desludging
individual septic
tank falls under
the owner

Prior to WSIA
mandatory
scheduled
desludging was in
place

Chart 1: Number of ISTs in Peninsular Malaysia and
Federal Territories of Putrajaya and Labuan



ADVANTAGE & DISADVANTAGE OF ON-SITE TREATMENT SYSTEM



ADVANTAGES

- Low installation cost
- Easy installation
- Serving a single premise

DISADVANTAGE

- Inconsistent treatment performance
- Require regular desludging frequency of once every 3 years
- Capacity allowed only up to 30PE
- Lacking of Enforcement



MAIN ACT – WATER SERVICES INDUSTRIAL ACT 2006 (WSIA)

Sec 65 (1) ...Service licensee or permit holder must be given access for the purpose of servicing and desludging

Sec 179 - empowers Minister to make Rules for desludging

Sec 44 (1) – Obligation of service licensee to desludge septic tanks as prescribed

WHAT A WASTE!!

Our Health! Our Rubbish! Our Money!

Current plans for our waste will have an impact on us for years to come. Can we live with it?!

APPROVED RULES – PENDING TO BE GAZETTED

Water Services Industry (Desludging And Discharge Of Sewage Sludge) Rules 2011

SECTION 3

RESPONSIBILITY OF DESLUDGING AND SEPTIC TANK MAINTENANCE

Owner, management corporation or occupier of any premise connected to a septic

SECTION 3

Shall desludge once in every thirty six (36) months

IWK/Majaari and all contractors are subjected to the stipulated fees and charges

IWK/Majaari and all contractors ' responsibilities are specified and regulated



Note:

Contractor means the desludging contractors registered with SPAN

APPROVED RULES PENDING TO BE GAZETTED

Charges for desludging services

- Desludging based on request
- At least once every 3 years (base on the design specification)



RM 230 (*for permit E holders*)

- For septic tanks with volume up to 2 m³

RM 300 (*for service licensee - IWK*)

- For septic tank with volume up to 2 m³ (allowed payment in instalment)



RM 115/m³

- every meter cubic after the first 2 m³

ROLES OF UPSTREAM STAKEHOLDERS



(REGULATOR)



OWNER, MANAGEMENT CORPORATION, OCCUPIER

- Desludge once in every 36 months
- Retain desludging records

DESLUDGING OPERATOR



DESLUDGING CONTRACTOR

- Able to choose services to render

INDAH WATER KONSORTIUM

- Must acknowledge all requests
- Record keeping center



OPERATOR OF SLUDGE TREATMENT FACILITIES

- Validates quantity of sludge



ROLES OF DOWNSTREAM STAKEHOLDERS

SLUDGE



Provide proper access to septic tank for desludging activities by IWK/Majaari or other contractors

Shall ensure that the septic tank is desludged once in every thirty six (36) months. Penalty for negligence is not exceeding RM 50,000.

Retain the desludging services works completion copy

Sludge must be disposed at an authorized site, approved by DOE/SPAN

Shall not discharge, dispose and place non-domestic waste into septic tank. Can be charged not exceeding RM 100,000 or imprisonment for term not exceeding 1 year



ADVERTORIAL

WHY DESLUDGING SEPTIC TANKS IS IMPORTANT

What are Individual Septic Tanks (IST)?

An individual septic tank (IST) is widely used in Malaysia as a method of treating domestic sewage. It can be found within domestic, commercial and industrial premises.

The easiest way to confirm whether you have an IST is by identifying the tank covers around the premises. An individual tank has two or three covers in parallel to each other.

Desludging Trend in Malaysia

Since January 2008, when the Water Services Industry Act 2006 [Act 655] became enforceable, the responsibility to desludge ISTs was handed over to the property owners. Previously, Indah Water Konsortium Sdn. Bhd. or IWK used to provide scheduled desludging of ISTs.

However, since then, there has been a substantial decline in the overall exercise of septic tank desludging as shown in the chart below:

Year	Number of ISTs Desludged
2008	~140,000
2009	~100,000
2010	~120,000

What Happens When You Don't Desludge

1. Unbearable stench permeating the air
2. Malfunctioning of toilets, sinks and sanitary pipes
3. Higher risk of being confronted with water borne diseases such as cholera and typhoid
4. Quality of water resources, for example rivers/lakes/ponds will be affected.

How Often Do You Desludge

1. In principle, desludging must be done once in every three years.
2. In Peninsular Malaysia, two major operators are licensed to provide desludging services, namely IWK and Majasi Services Sdn. Bhd. (Majasi Services).

More contractors will be able to provide desludging services in future when the demand for such service increases. These contractors will be given Permit 1 by National Water Services Commission (NWSC) to provide the service.

For more information about desludging services, please contact IWK at 1-800-88-1495 (for all Peninsular Malaysia except Kelantan) or Majasi Services at 09-747 0005 (for Kelantan).

The list of other contractors (Permit 2 holders) is available at www.spn.gov.my under the heading "Register" and "Permit".

How to find out if your septic tank needs desludging

This message has been brought to you in conjunction with the launching of our nationwide Septic Tank Desludging Awareness Campaign on 26 June 2011 in Muar, Johor.

SPAN
Suruhanjaya Perkhidmatan Air Negara

Individual Septic Tanks

Desludging in Progress

Desludging Station

AWARENESS PROGRAMME

Campaign being held through Malaysia to encourage Malaysian desludging their IST.

The message brought to public to address **key issues** and awareness in desludge their septic tanks :

KEY ISSUES

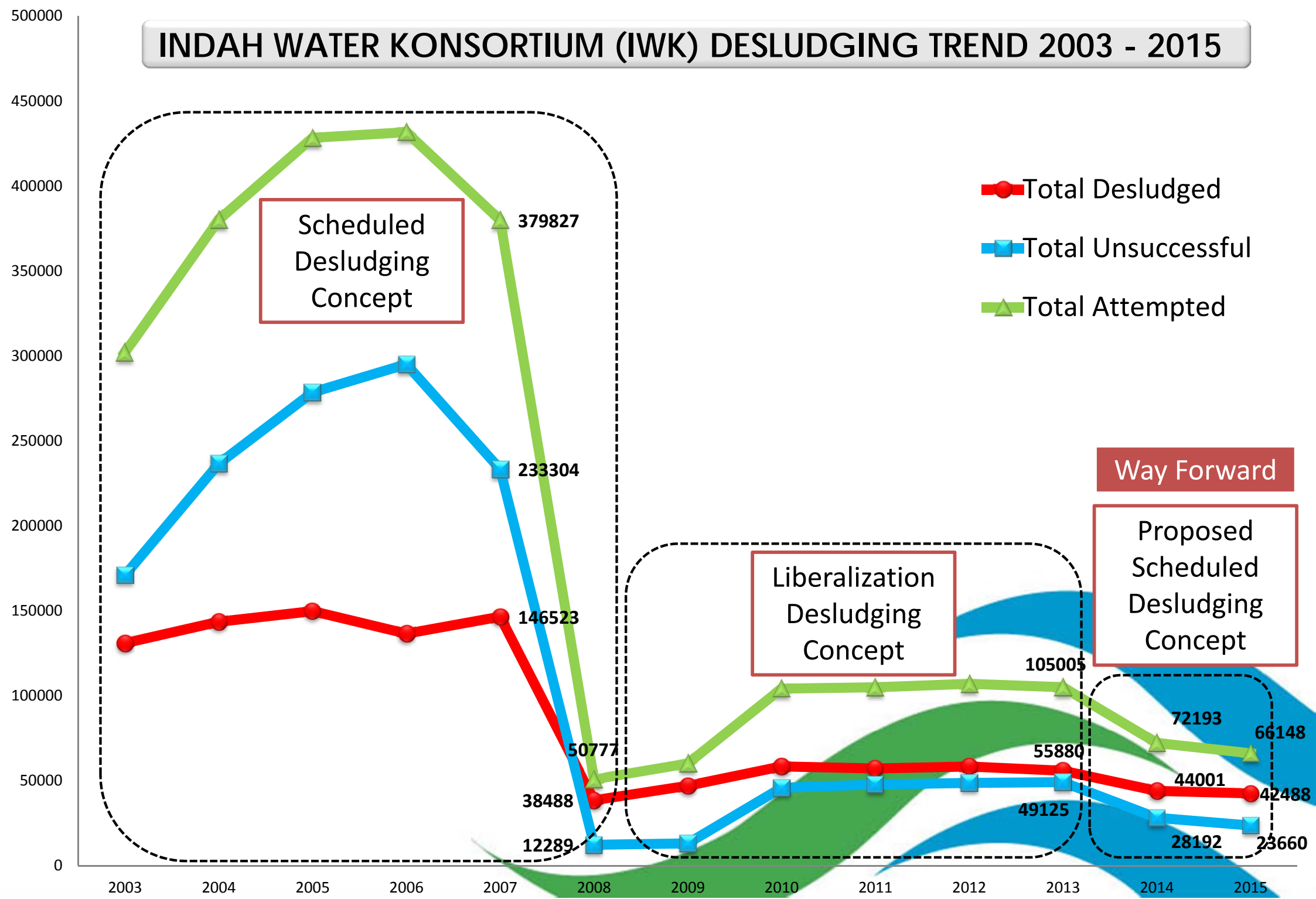
Unbearable stench permeating the air

Malfunctioning of toilets, sinks and sanitary pipes

Higher risk of being confronted with water borne diseases

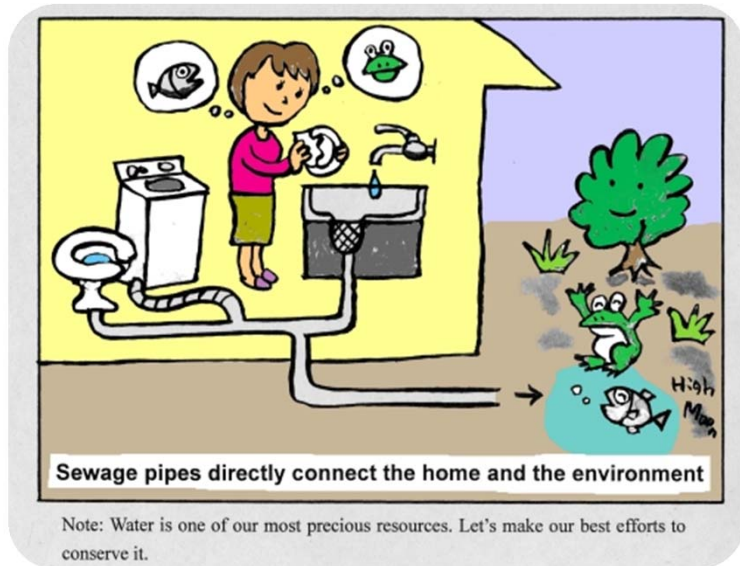
Quality of water resource will be affected

INDAH WATER KONSORTIUM (IWK) DESLUDGING TREND 2003 - 2015



REFUSAL OF DESLUDGING

Why Desludging Rate Is Low?



Refusal From Owners

Septic Tank Covers Sealed

Location Inaccessible

Owner Not In During Visit

Septic Tank Not Found/ Missing

Premise Not Found

Unoccupied Premises

Non Standard Septic Tank

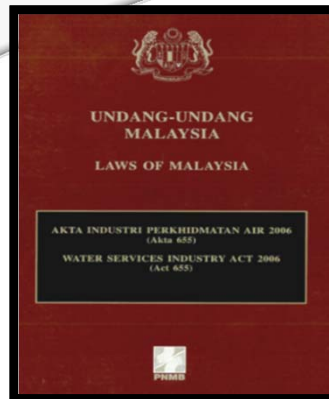
SCHEDULE VS LIBERALIZATION

- Schedule desludging - 2 years once
- Desludging services by IWK or by contractor appointed by IWK
- Septic tanks users are charged monthly
- Charges RM6/ monthly

BEFORE 2008

2008

**WATER SERVICES
INDUSTRY ACT
2006 ENFORCED**

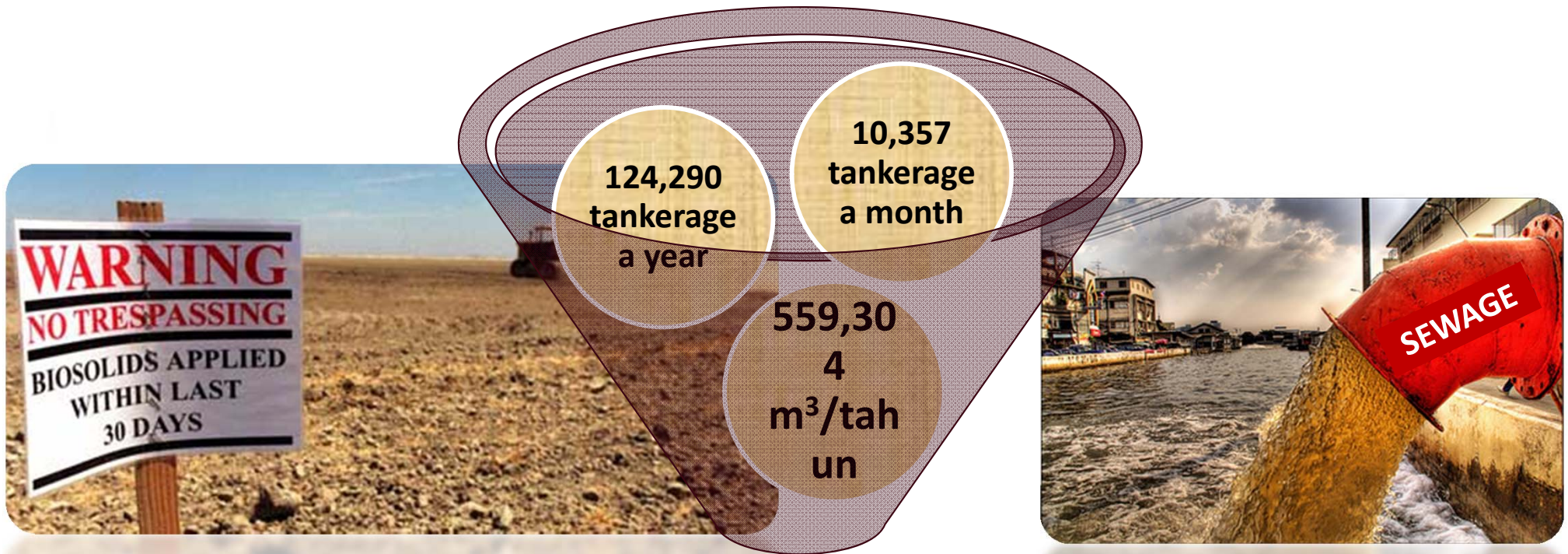


LIBERALIZATION CONCEPT

APPROVED DESLUDGING RULES

- Desludging based on request of septic tank user
- Desludging services can be performed either by IWK or permit E holder
- Charges are one of after the services are rendered (IWK = RM 300, Permit E= RM 230)

EFFECTS OF NOT DESLUDGING



Only 30% desludged

70% Not Desludged =

- 242 tankers releasing sludge into rivers 365 days a year

70% Not Desludged =

- Or equivalent to filling up 120 football field with 1 foot height of sludge every year

Septic tank will overload in time causing untreated sewage, scum and sludge to be carried out of the septic tank into the waterways if not desludged.

~ This directly leads to the pollution of our waterways and is a health hazard~

NEEDS OF DESLUDGING

- A good septage management should consider:
 - Legal component, economic aspect and technical requirement
- The impact, increased risks such as:
 - Health hazards
 - Water resources pollution
 - Environmental pollution
- Services charges should not be limited to desludging services alone but should include sludge treatment and safe disposal
- Importance of desludging and its impacts on environmental must be shared with the public



LANDSCAPE ANALYSIS AND BUSINESS MODEL ASSESSMENT IN FAECAL: EXTRACTION AND TRANSPORTATION MODEL

BILL & MELINDA
GATES foundation

Findings

- New business model based on liberalization has an **adverse effect** on the desludging operators
- If the revenue declines even slightly by 5%, after tax IRR is plunges to 0%
- Expected to **trigger losses** to medium scaled operator within 2 years and large operator such as IWK within 5 years
- 96% of the respondents in the survey conducted for the study are **not willing to pay more than RM 250** for the services

"LIBERALISATION TRIAL PERIOD"

LIBERALISATION OF DESLUDGING SERVICES

Unsustainable sector in term of business and operations

Does not allow contractors and operators to have a feasible and economical business model

Financial burden on service users

Increases the regulatory burden on SPAN. Needing to monitor contractors and enforcement actions of approximately 340,000 users of septic tanks for not desludging

NEW WAY FORWARD FOR DESLUDGING



Review Water Services Industry (Desludging and Discharge Sewage Sludge) Rules



Implementation of **Scheduled Desludging**



The tariff is proposed to be spread over a 3 year period (monthly billing)



Desludging Tariff for Domestic Premises is set at RM 8 a month



Commercial and Industrial the Desludging Tariff is suggested to be matched to the tariff of connected services

the
CHOICE
is
YOURS



INITIATIVE TO BUILD IN GOOD GOVERNANCE

“The only way forward, if we are going to **improve** the quality of the environment, is to get everybody **involved.**”

Richard Rogers

Promote Transparency In
Decision Making Process

Promote Public
Participation

Encourage Participation of
Industry Players

Improving Regulatory
Coordination & Reducing
Red Tapes

Continuous Reform
Initiative

AIMS OF STANDARDIZATION

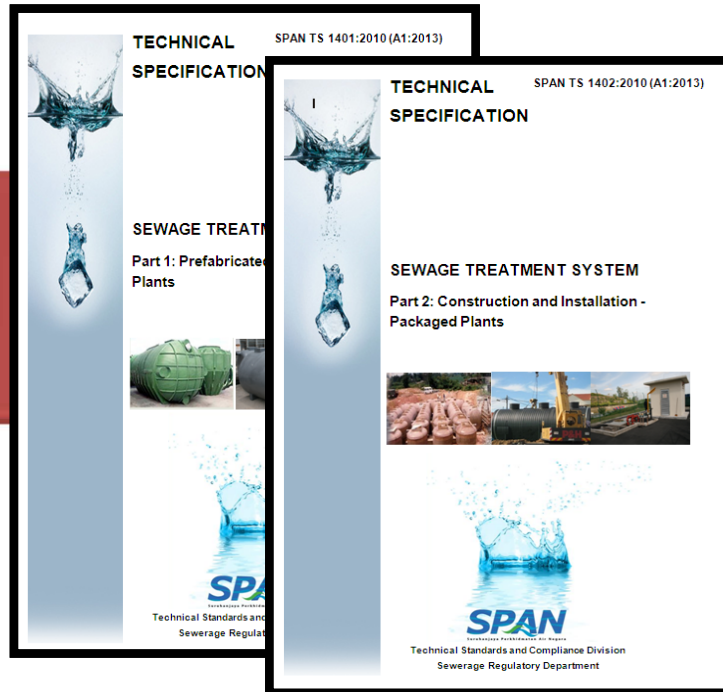


- Sustainable development and quality of life
- Quality of goods and services
- Efficient and effective use of resources
- Friendly and transparent conditions for trade
- Benchmarking for gradual improvement in the sector
- Establish consensus goal post for regulator, private sector and users

BENEFITS OF TECHNICAL DOCUMENTS



**Well Planned
Sewerage
Services**



**Good Quality
Assets**



STANDARDIZATION - TECHNICAL MECHANISM

GENERAL GUIDELINES

DESIGN GUIDE

SEPTIC TANK IN SENSITIVE RECEIVING WATERCOURSE

- Condition of Installation
- Development too small for off site facility
- No existing public sewer to connect
- Homestead Developments

- Design
- Non-proprietary systems (cast in situ)
- Proprietary systems (prefabricated/ quality controlled)

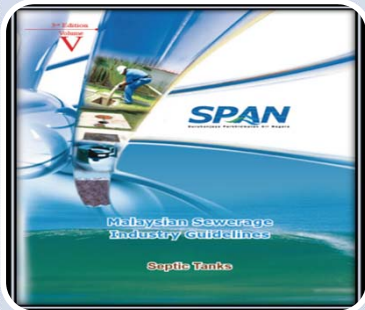
- Further treatment methods for achieving higher effluent quality
- Nutrient removal
- Disinfection

STANDARDIZATION - TECHNICAL TOOLS

SEPTIC TANKS

✓Application
✓Design

✓Certification
✓Performance



MALAYSIAN SEWERAGE INDUSTRY GUIDELINES VOL. 5 – SEPTIC TANKS

3rd Edition
January 2009
Published by
SPAN

MALAYSIAN STANDARD ON SITE TREATMENT UNITS PART 1 : PREFABRICATED SEPTIC TANKS SPECIFICATIONS

Publish on June
2012

SEWAGE TREATMENT SYSTEM

✓Certification

✓Guideline
✓Construction
& Installation

✓Certification
✓Performance



TECHNICAL SPECIFICATION SEWAGE TREATMENT SYSTEM

Part 1: Prefabricated Tanks - Packaged Plants

First Edition
October 2010,
Revision March
2013

Publish by SPAN

TECHNICAL SPECIFICATION SEWAGE TREATMENT SYSTEM

Part 2: Construction and Installation - Packaged Plants

First Edition
October 2010,
Revision March
2013

Publish by SPAN

MALAYSIAN STANDARD ON SITE TREATMENT UNITS PART 2 : PACKAGED PREFABRICATED SMALL SEWAGE TREATMENT SYSTEM SPECIFICATIONS

STANDARDIZATION - TECHNICAL TOOLS

STANDARD DRAWINGS

- ✓ Application
- ✓ Design



STANDARD AND TYPICAL DRAWINGS FOR SEWERAGE SYSTEM

PART 1: SEWER AND APPURTENANCES – GRAVITY SEWER

1st Edition 2011
Published by SPAN

PROCEDURE GUIDELINES

- ✓ Certification

- ✓ Guideline
- ✓ Construction & Installation

- ✓ Certification
- ✓ Performance



TECHNICAL SPECIFICATION SEWAGE TREATMENT SYSTEM

Part 1:
Prefabricated Tanks
- Packaged Plants

First Edition
October 2010,
Revision March
2013



TECHNICAL SPECIFICATION SEWAGE TREATMENT SYSTEM

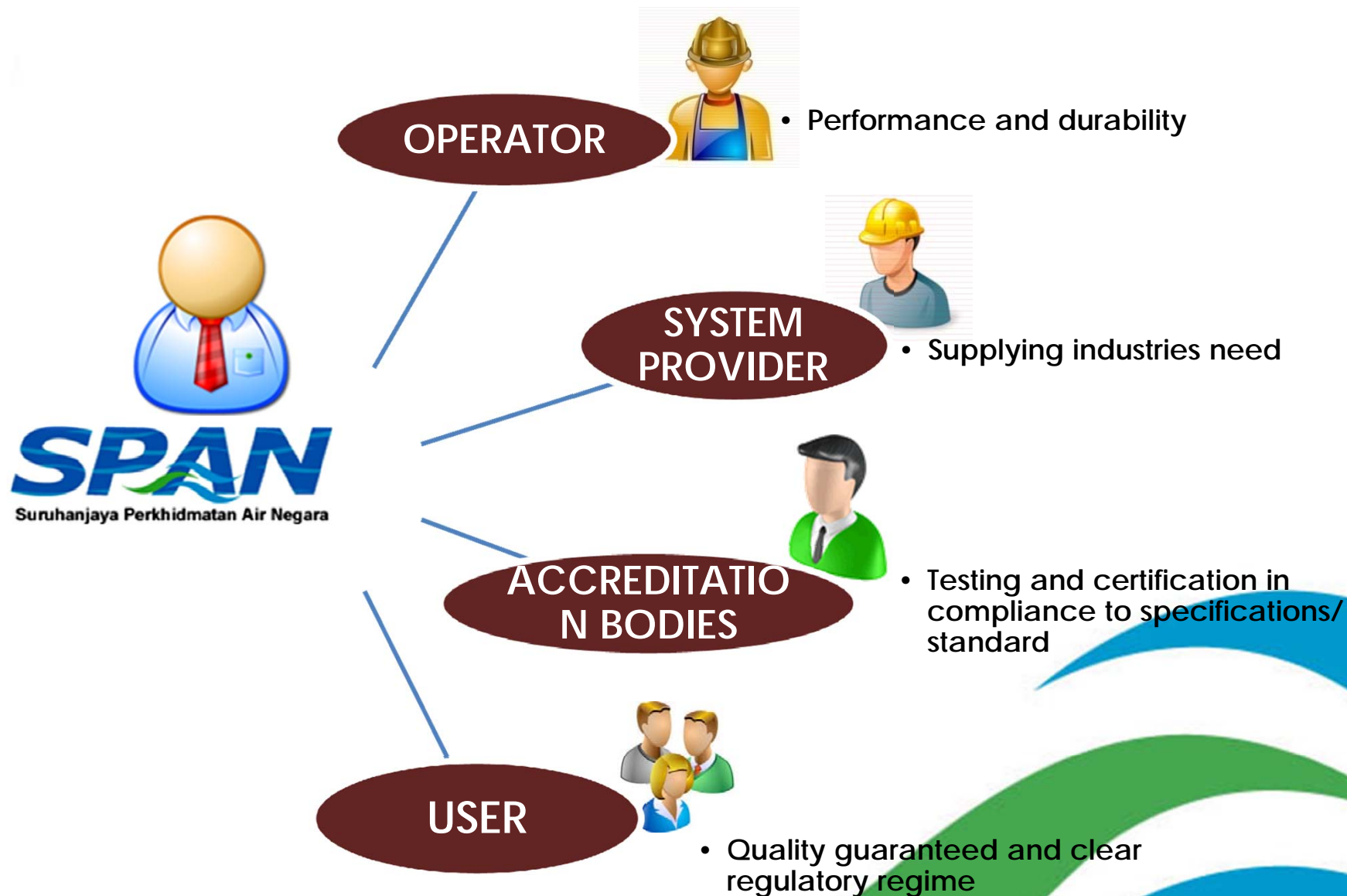
Part 2: Construction
and Installation -
Packaged Plants

First Edition
October 2010,
Revision March
2013



MALAYSIAN STANDARD ON SITE TREATMENT UNITS PART 2 : PACKAGED PREFABRICATED SMALL SEWAGE TREATMENT SYSTEM SPECIFICATIONS

STANDARDIZATION - COLLABORATIVE EFFORTS





THANK YOU

**"No country can
really develop
unless its citizens
are educated"**

