SEPTAGE MANAGEMENT IN MALAYSIA

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NATIONAL WATER SERVICES COMMISSION
MALAYSIA

14th International Workshop on
Decentralized Domestic Wastewater Treatment in Asia

9–10 November 2026
Tokyo, Japan

COUNTRY PROFILE

Peninsular Malaysia & Federal Territory of Labuan

POPULATION

TOTAL POPULATION
27,942,000

Urban	75.1%
Rural	24.9%

SEWERAGE SYSTEM

PUBLIC SEWAGE TREATMENT PLANT

TOTAL
7,908
34,173,551 PE

Regional	58 Nos	9,797,538 PE
Multipoint	7,850 Nos	24,376,013 PE

PRIVATE SEWAGE TREATMENT PLANT

TOTAL	POPULATION EQUIVALENT
5,256	5,270,174

SEWER PIPES	NETWORK PUMPING STATION
23,950	1,598

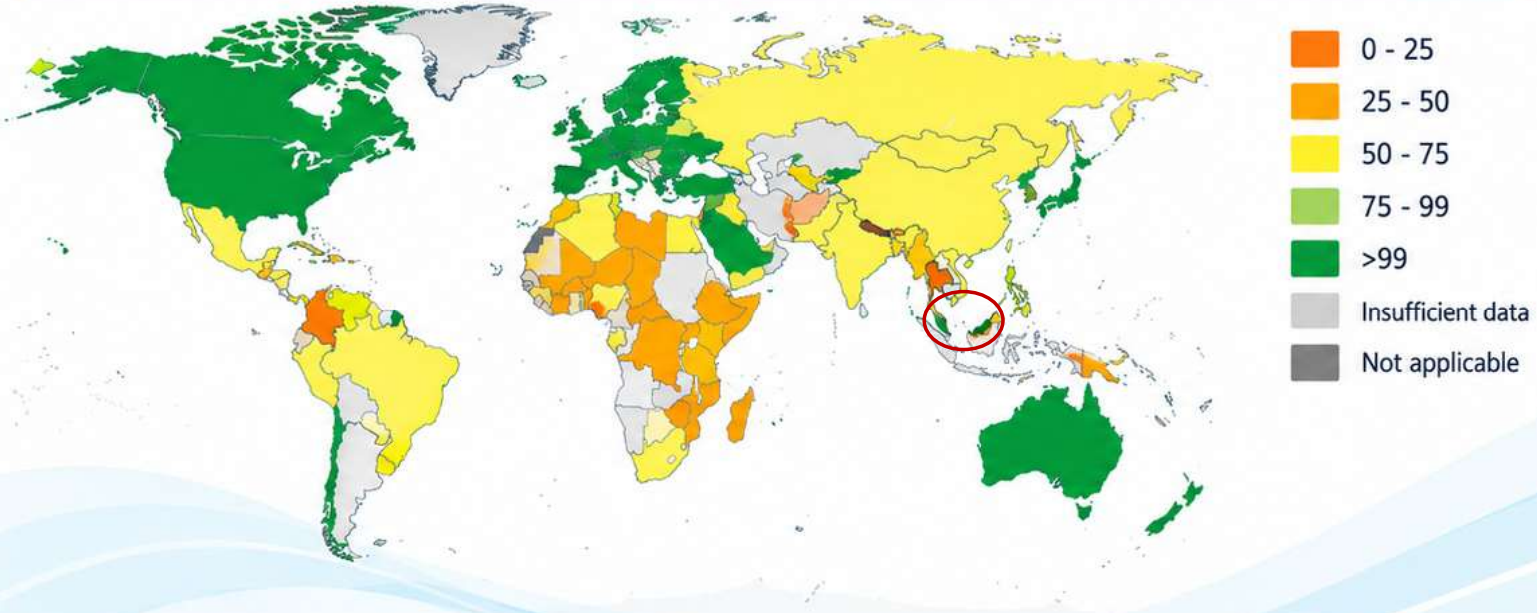
NO. OF ACCOUNTS

TOTAL 5,453,532 Nos

Industrial	0.2%
Government Premises	0.1%
Government Quarters	2.9%
Commercial	9.4%
Domestic	87.4%

Source: SPAN Water and Sewerage Fact Book 2025

In 2024, 145 countries had estimates for safely managed sanitation services



Safely Managed Sanitation Services	Urban	Rural	Overall
2024	96%	96%	96%

Source: WHO/UNICEF JMP Report on Household Drinking Water, Sanitation and Hygiene

SEWERAGE STATISTIC

Off-Site Sanitation Services

Regional STP

Multipoint STP

On-Site Sanitation Services

Communal Septic Tank

Individual Septic Tank

Traditional System/ Pour Flush

Off-Site Treatment

Sewage Treatment Plant (STP)		Nos	Population Equivalent (PE)
Public	Regional	58	9,797,538
	Multipoint	7,850	24,376,013
Private		5,256	5,270174

On-Site Treatment

Septic Tank	Nos	Population Equivalent (PE)
Communal	3,448	378,657
Individual	1,377,066	7,301,879
Non-Standard Septic Tank	**Nos**	**Population Equivalent (PE)**
Traditional System/ Pour Flush	1,134,867	4,539,468

Source: SPAN Water and Sewerage Fact Book 2025

SEWERAGE SECTOR FUNDING

CAPEX

SEWERAGE CAPITAL INVESTMENT

GOVERNMENT FUNDED

SPAN
Suruhanjaya Perkhidmatan Air Negara

- 5 years National Plans
- Sewerage Capital Contribution

CONCESSIONAIRE FUNDED

Indah Water
New Life for Water

DEVELOPER FUNDED

PERBADANAN PUTRAJAYA · GAMUDA · REHDA · PNB Permodalan Nasional Berhad

- Part of Land & Property Development
- Major Contributor of Sewerage Capex

OPEX

PUBLIC PLANTS O&M INVESTMENT

Indah Water
New Life for Water

Tariff Collection

STANDARDIZATION & CERTIFICATION
OF ON-SITE DOMESTIC WASTEWATER TREATMENT SYSTEM

WATER SERVICES INDUSTRY ACT 2006

SECTION 45

Plans and specifications for the construction of sewerage systems and septic tanks **require the approval of the Commission.**

SECTION 180

Provides the basis for establishing **minimum standards and specifications** for sewerage systems and septic tanks.

GUIDELINES FOR ON-SITE SYSTEMS

- General Guidelines
- Design Guide
- Septic Tanks Located in Sensitive Receiving Watercourses

MALAYSIAN STANDARDS FOR ON-SITE SYSTEMS

MALAYSIAN STANDARD
MS 2411 : 2012

On-site sewage treatment units – Part 1: Prefabricated septic tanks – Specifications

Published in **June 2012**

MALAYSIAN STANDARD
MS 2441 : 2014

On-site sewage treatment units – Part 2: Packaged prefabricated small sewage treatment systems – Specifications

Published in **June 2014**

SEPTIC TANK

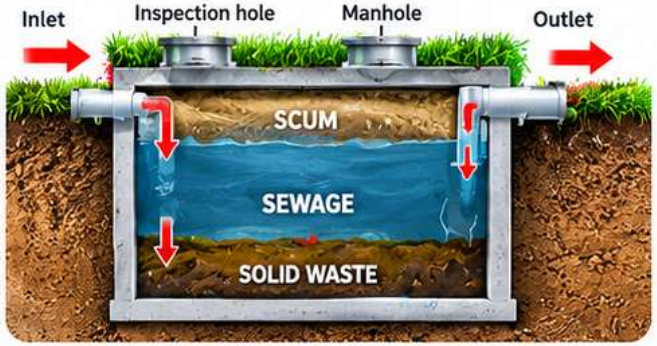
Individual Septic Tank (IST)

The owner, management corporation or occupant of any premises that uses a septic tank can be fined **not more than RM50,000.00** if the septic tank is not being desludge once every 2–3 years to guarantee the efficiency of the septic tank.

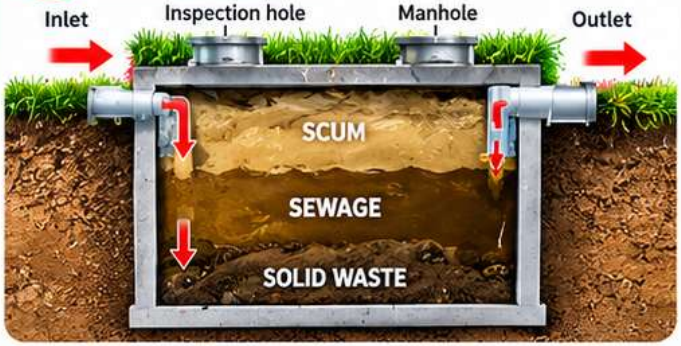
SECTION 65(3)
WATER SERVICES INDUSTRY ACT 2006

Septic tank in optimal condition — 1 to 2 years

An efficient septic tank can store sludge **up to 2 years.** The sludge in the septic tank needs to be desludged to ensure it is in good condition for efficient usage.



Septic tank not in optimal condition — More than 2 years



Septic tank that is not well maintained will result in fecal sludge to overflow into the drain and eventually **polluting rivers and water sources.**

PROVISION OF LAW
ON SEPTAGE MANAGEMENT

Water Services Industry Act 2006 (Act 655)

Section 44 (1)
Obligation of service licensee to desludge septic tanks as prescribed.

Section 65
Provision to liberalize desludging works to SPAN permit E holders.

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

Section 179
Empowers Minister to make Rules for Desludging.

SPAN

Service Licensee

Indah Water
New Life for Water

IWK is licensed by SPAN to provide desludging services.

Indah Water Konsortium Sdn Bhd

Private Desludging Contractor (SPAN Permit E Holder)

Desludging activities can only be carried out by **Permit E** contractor registered by SPAN.

SPAN
Suruhanjaya Perkhidmatan Air Negara

Desludging Charges

- Charges for services rendered.
- Executed upon premise owner's request.
- No official agreement between operator and the premise owner.

RESOURCES & CAPACITY

IWK and Permit E Holder

SPAN

Indah Water Konsortium (IWK)

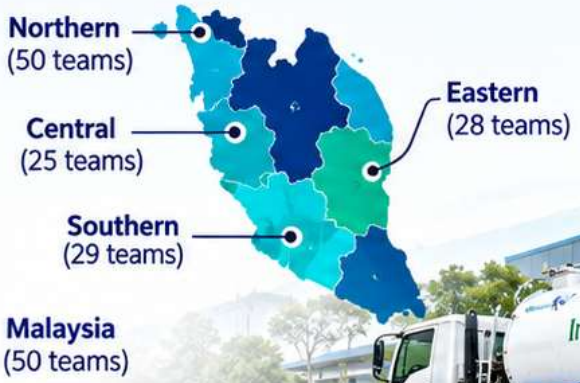
National Septage Management Operator

Indah Water
New Life for Water

425 Total Staff

151 Tankers

132 Field Teams



Tanker Capacity

31 × 2.5 m³	
97 × 5.0 m³	
17 × 8.0 m³	
3 × 11.0 m³	

Source: IWK

Private Sector (Permit E Holders)

Licensed by SPAN under Section 50(1)

211 Registered Permit E Holders

284 Tankers

- Valid business license ✓
- Painted to specification ✓
- Continuous GPS tracking ✓
- Disposal at DOE/IWK approved sites ✓

PERMIT E CONTRACTOR

SECTION 50(1) | WATER SERVICES INDUSTRY ACT 2006

SPAN
Suruhanjaya Perkhidmatan Air Negara

SECTION 50(1)
WATER SERVICES INDUSTRY ACT 2006

"Subject to such exemptions as may be specified by the Commission, no person shall – **(e)** *undertake, provide or make available sewerage desludging services or any other sewerage services,* **without a written permit issued by the Commission."**

TYPE E PERMIT

- Desludging Contractor
- To undertake, provide or make available sewerage desludging services

REQUIREMENT

- Valid registered business license
- All vehicle used must be painted according to given specification
- All vehicle must be equipped with GPS navigation and activated at all time
- Collected sludge must be disposed at approved disposal facilities by Department of Environment (DOE) or Indah Water Konsortium (IWK)
- All desludging work must be recorded and presented as when required by the Regulator

VEHICLE PAINTING SPECIFICATION
(AS PER SPAN REQUIREMENT)

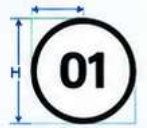
Side View

Rear View

Colour Scheme
(approximate proportion)

Blue	: 1/3 H
Green	: 1/3 H
White	: 1/3 H

Markings



H = 300 mm
(approx.)

Code Example

Colour: RAL5015 (Blue),
RAL6018 (Green),
RAL9003 (White and fittings)

DESLUDGING SERVICES

Water Services Industry Act 2006 (WSIA)

Sec. 44
Sec. 179

Water Services Industry (Desludging Services) Regulations 2021

30th March 2021

Service licensee shall desludge septic tank

Within Local Authority Area
Once every **24 months**

Outside Local Authority Area
Once every **36 months**

House / Premise

Septic Tanks

Sludge Treatment Facility

Disposal Site

SPAN

Regulatory Jurisdiction

From house/premise to disposal site

JABATAN ALAM SEKITAR MALAYSIA

Disposal site

Regulatory Jurisdiction

MONITORING METHODOLOGY ON SEPTAGE MANAGEMENT

1 ROLES & RESPONSIBILITY OF UPSTREAM & DOWNSTREAM STAKEHOLDERS

Water Services Industry Act 2006

RESPONSIBILITY OF UPSTREAM STAKEHOLDERS

- **Desludging Operator IWK** must acknowledge all desludging requests and ensure proper record keeping.
- **Permit Holder** able to choose service to desludge.
- **Sludge Treatment Facility Operator** validates quantity of sludge.

RESPONSIBILITY OF DOWNSTREAM STAKEHOLDERS

- Maintain their septic tank and all accessories to avoid nuisance or harmful to health.
- Ensure septic tank to be serviced or maintained by service licensee or permit holder.

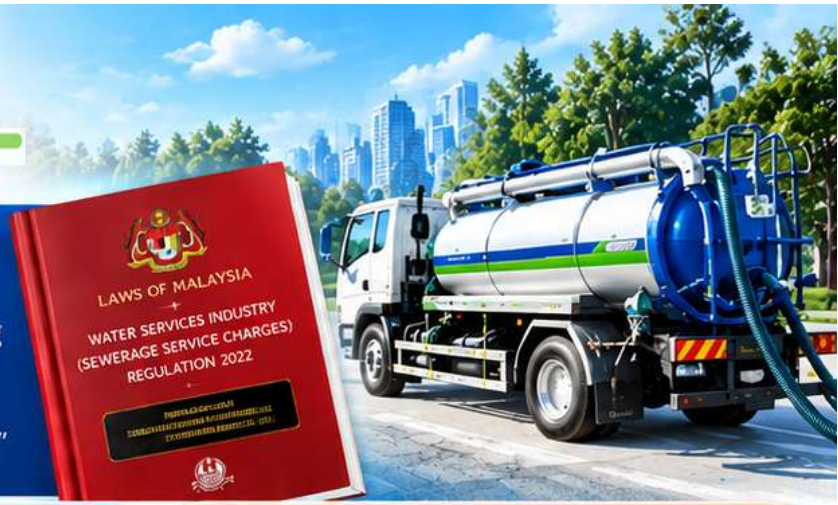
2 KEY PERFORMANCE INDICATOR SETTING (SERVICE LICENSEE KPI)

- **Objective** is to monitor and drive efficient performance delivery of sewerage services operators.
- **Four main indicators** identified for Service Licensee KPI – Operation & Maintenance, Customer Service, Financial & Environment.
- **Sub indicators** – Operation & Maintenance (Desludging & Sludge Disposal), Customer Service (Desludging Enquiry & Complaints), Financial (Operational Cost Efficiency for Desludging Services) & Environment (Recycling of Bio solids).

3 OPERATION & MAINTENANCE REGULATORY AUDIT

- Part of Commission's key functions to ensure the productivity of sewerage services industry and monitoring of operator's compliance.
- One of the performance scope in O&M Regulatory Audit Manual – Sludge Handling (Sludge Equipment Maintenance and Sludge Received, Treatment & Disposal Record) used by SPAN Regional Office to monitor the sewerage operator on sludge management.

DESLUDGING CHARGES



SECTION 7(1)

WATER SERVICES INDUSTRY (SEWERAGE SERVICES CHARGES) REGULATIONS 2022

"The owner, management corporation or occupier of a premises receiving desludging services after the commencement of these Regulations and charge for the service rendered shall pay desludging services charges in **lump sum** and these charges allows the owner, management corporation or occupier of the premises to pay the charges **by instalment** for a duration agreed by the service licensee."

1 INDIVIDUAL SEPTIC TANK (IST)
CHARGES FOR DOMESTIC CLASS

All new service and repeated services after 30 days warranty period will be charged

RM192
per service

2 NON STANDARD SEPTIC TANK
CHARGES FOR DOMESTIC CLASS

RM260
for tank size < 2.5m³

RM390
for tank size > 2.5m³ – 4.5m³

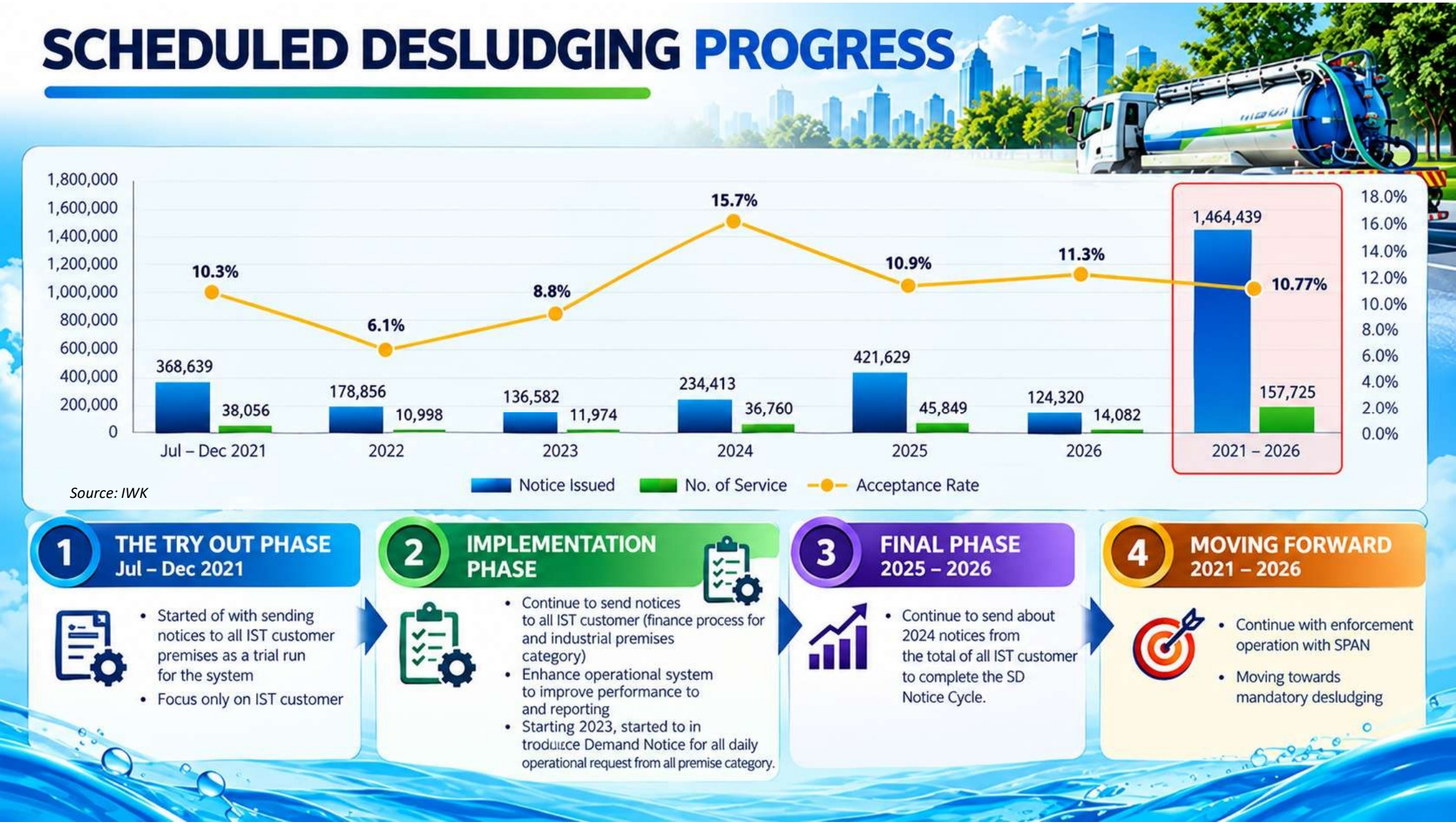
RM130
for additional cubic meter for tank size more than 4.5m³

3 ABORTIVE CHARGES
FOR ALL SEPTIC TANK TYPE

RM80

Abortive Charges will be impose to all customer that failed to provide adequate access to septic tank, refused desludging service or septic tank appears to be empty upon team's arrival at site.

SCHEDULED DESLUDGING PROGRESS



Source: IWK

1 THE TRY OUT PHASE
Jul – Dec 2021

- Started of with sending notices to all IST customer premises as a trial run for the system
- Focus only on IST customer

2 IMPLEMENTATION PHASE

- Continue to send notices to all IST customer (finance process for and industrial premises category)
- Enhance operational system to improve performance to and reporting
- Starting 2023, started to in troduice Demand Notice for all daily operational request from all premise category.

3 FINAL PHASE
2025 – 2026

- Continue to send about 2024 notices from the total of all IST customer to complete the SD Notice Cycle.

4 MOVING FORWARD
2021 – 2026

- Continue with enforcement operation with SPAN
- Moving towards mandatory desludging

ACTUAL ACCOUNTS & VOLUME (m³) DESLUDGED

Source: IWK

CAPACITY BUILDING FOR SEWERAGE SECTOR & INTER AGENCY COLLABORATION

COLLABORATION WITH DSD

SkillsMalaysia
DEPARTMENT OF SKILLS DEVELOPMENT
(DSD)

JPK

- DEVELOPMENT OF NATIONAL OCCUPATIONAL SKILL STANDARD (NOSS)
- TRAINING SCHEME FOR SEWERAGE SECTOR
- ACCREDITATION OF TRAINING PROVIDERS
- RECOGNITION OF ACCREDITATION ISSUED BY DSD (MALAYSIA SKILLS CERTIFICATE & PENYATA PENCAPAIAN) FOR SPAN'S COMPETENCY QUALIFICATION

SPAN

COLLABORATION WITH THE RELEVANT AGENCIES IN RECOGNIZING THEIR EXISTING COURSES

CIDB MALAYSIA
CONSTRUCTION INDUSTRY DEVELOPMENT BOARD

- CONSTRUCTION
- CONSTRUCTION SKILLS
- CONSTRUCTION QUALITY AWARENESS
- COMPLIANCE

DEPARTMENT OF OCCUPATIONAL SAFETY AND HEALTH

SAFETY & HEALTH

- OPERATIONAL & SAFETY
- CONFINED SPACE
- EMERGENCY RESPONSE PLAN
- RISK MANAGEMENT
- SAFETY & HEALTH LEGISLATION

RESOURCE RECOVERY

RESOURCE RECOVERY MATRIX

PRODUCT TYPE	CURRENT STATUS	WAY FORWARD (PROJECTIONS)
BIOFERTILIZERS	Pilot plant at Titiwangsa 1 STP generated 200 tonnes. MOU signed with Koperasi Kebuniti Selangor.	Scaling to commercial production; pushing for MS policy updates. Projected volume: **10,400 tonnes by 2028.**
BIOFUEL	Northern Region project exploring energy recovery via Private Finance Initiative (PFI).	Projected to handle **40 tonnes per day (10,400 tonnes total by 2029).**
BIOCHAR	Central Region (Klang Valley) producing 200 tpd of biosolids.	RFP launched to convert into Biochar/fertilizer; projected **52,000 tonnes capacity by 2027.**

FERTILIZER (PACKAGING)

ORGANIC FERTILIZER (POWDER)

Source: IWK

CHALLENGES

The desludging rate for individual septic tanks (IST) in Malaysia remains relatively low due to a combination of economic, behavioral, operational, and enforcement factors.

1. LOW PUBLIC AWARENESS
2. PERCEIVED COST BURDEN
3. WEAK ENFORCEMENT
4. ACCESS PROBLEMS
5. MISCONCEPTION THAT SEPTIC TANKS DO NOT NEED MAINTENANCE
6. LIMITED PERCEPTION OF ENVIRONMENTAL IMPACT

SPAN'S STRATEGY TO IMPROVE IST DESLUDGING RATES

Can be summarized under four pillars:

1	REGULATION	Mandatory periodic desludging requirements.
2	AWARENESS	Public education and outreach with IWK.
3	ENFORCEMENT	Compliance inspections, notices, and special operations.
4	DETERRENCE	Fines and legal action against non-compliant owners.

KEY MESSAGES

1

Sanitation coverage must be supported by **effective management of on-site systems**, including the safe handling of accumulated septage.

2

A **clear legal framework** is essential to define the responsibilities of service providers, contractors, and property owners.

3

Adequate **operational capacity, digital work processes**, and **competent personnel** are needed to deliver reliable desludging services.

4

Monitoring, performance indicators, and regulatory audits help ensure that sludge is properly collected, transported, treated, and disposed of.

5

Improving desludging rates requires a combination of **public awareness, affordable and accessible services**, effective enforcement, and appropriate deterrence.

SPAN®

Suruhanjaya Perkhidmatan Air Negara

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THANK YOU