# Regulating Land Ownership for Water Assets in Malaysia: Structural Weaknesses and Policy Reforms Informed by Global Models

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## ABSTRACT

The restructuring of Malaysia's water supply industry has exposed a critical misalignment between private land ownership and the management of treated water assets, particularly when existing infrastructure such as pipeline networks is situated on privately owned land without formal ownership rights. This study examines the weaknesses in Malaysia's regulatory framework for land ownership pertaining to water supply assets, which arose from water industry restructuring and privatisation policies lacking clear mechanisms to manage treated assets on private land. Using comparative policy review analysis of 50 court cases (2015–2023), policy documents (Water Services Industry Act 2006, National Land Code 1965), and comparisons with international models (Singapore, Australia, France), the study reveals three critical weaknesses: (i) ambiguity in the definition of "treated assets" under Section 2 of Act 655, (ii) inadequate compensation mechanisms under Section 54 of Act 655, and (iii) jurisdictional overlaps between PAAB (Pengurusan Aset Air Berhad), SPAN (National Water Services Commission), and state governments. The findings that the regulatory misalignment has led to prolonged litigation, hindered infrastructure maintenance, and perpetuated ownership ambiguities. As a solution, the study proposes an integrated reform framework comprising: (1) amendments to Act 655 to introduce statutory utility easements, (2) the establishment of centralized utility corridors with an integrated asset registration system, and (3) the creation of a specialized tribunal for water-related disputes. The study's primary contribution lies in integrating perspectives from land law, public asset management, and utility policy, while proposing a contextual model for Malaysia that could mitigate conflicts, enhance industry efficiency, and strengthen sustainable land governance.

**Keywords:** land ownership rights, water utility assets, regulatory harmonization, infrastructure privatisation, statutory easement

## INTRODUCTION

The restructuring of Malaysia's water supply industry since the 2000s has precipitated complex land ownership issues regarding treated water assets, particularly existing infrastructure like water pipelines located within private lots (NWRB, 2021). This phenomenon stems directly from water privatisation policies implemented without comprehensive regulatory frameworks to manage ownership status of these critical assets (Tan, 2019), resulting in protracted legal conflicts between private landowners' rights and water operators' public asset maintenance obligations (Hassan & Ismail, 2020).

These regulatory mismatches became more pronounced after the 2015 establishment of Pengurusan Aset Air Beretika (PAAB), which brought serious attention to unregistered asset ownership (PAAB, 2018). Omar et al. (2022) found over 30% of Peninsular Malaysia's water infrastructure occupies private land without clear legal provisions, significantly hindering routine maintenance and system upgrade projects (JPS, 2020).

Current regulatory frameworks remain misaligned with industry developments. Abdullah's (2021) analysis reveals that the Water Services Industry Act 2006 (Act 655) and National Land Code still fail to provide holistic

solutions for utility asset ownership. Jurisdictional overlaps between agencies like the Department of Irrigation and Drainage (JPS), National Water Services Commission (SPAN), and Land Offices further exacerbate the situation (Yusoff et al., 2023).

This study investigates legal-regulatory deficiencies surrounding land ownership and treated water assets in Malaysia, with particular focus on the impacts of privatisation and policy fragmentation. Through comparative analysis of international models; such as Singapore's Public Utilities Act 2001 and Australia's Water Act 2007; this paper proposes a contextual regulatory reform framework. By integrating insights from land law, public asset management, and utility governance, this research represents the first interdisciplinary examination of this issue in the Malaysian context, offering a foundation for both legal clarity and infrastructure sustainability.

## LITERATURE REVIEW

The regulation of land ownership for public infrastructure, particularly water supply assets, has emerged as a critical governance challenge in Malaysia. Rooted in historical inconsistencies, privatisation policy gaps, and fragmented legal frameworks, the issue has led to frequent conflicts between public utilities and private landowners. These challenges are further compounded by operational disputes, weak inter-agency coordination, and the absence of comprehensive reform mechanisms. While international practices demonstrate more structured and balanced regulatory approaches, Malaysia continues to grapple with legal ambiguities, misaligned institutional roles, and a lack of harmonization between key legislation such as the Water Services Industry Act 2006 and the National Land Code 1965. This section reviews the multifaceted nature of the land ownership problem within Malaysia's water sector and highlights the regulatory and policy gaps that call for urgent institutional and legal reforms.

### Land Ownership Conflict and Public Infrastructure

The issue of land ownership misalignment for water supply infrastructure is not a new phenomenon in public utility management. In Malaysia, this conflict stems from the historical development of the water supply system, which predates the formulation of a comprehensive regulatory framework (Chan, 2021). A study by the National Water Resources Council (2022) found that 68% of water supply conflicts in the Klang Valley involved access issues to existing infrastructure located on private land. This situation is exacerbated by the lack of coordination mechanisms between the Water Services Industry Act 2006 and the National Land Code 1965 (Rahim & Kumar, 2023).

### Privatisation Policy and Its Impact on Asset Management

The privatisation of Malaysia's water industry between 2004–2008 created a paradox — the transfer of physical assets to private operators without resolving the underlying land ownership (World Bank, 2021). A case study in Selangor showed that 42% of water supply disruptions from 2018 to 2022 were directly related to access restrictions to infrastructure located on titled land (Gomez & Lim, 2023). This phenomenon reflects the failure of the water concession model to address the issue of "stranded assets," which has become increasingly critical after the establishment of PAAB in 2015 (National Water Services Commission, 2022).

### Weaknesses in the Existing Regulatory Framework

An analysis of the current regulatory framework reveals several significant structural weaknesses in addressing land ownership issues related to water supply assets. First, the vague definition of "treated assets" in Section 2 of the Water Services Industry Act 2006 has led to legal interpretation ambiguities (Zulkifli et al., 2023). Second, the provisions on access rights under Section 54 of the same Act are overly general and fail to address the issue of fair compensation for landowners, resulting in prolonged conflicts during implementation (SPAN, 2022). Third, there is a clear disharmony between the Water Services Industry Act 2006 and the Land Acquisition Act 1960, with no clear mechanism to reconcile public interest with private property rights (Rahim & Kumar, 2023). These weaknesses become more apparent when compared to Singapore's regulatory framework under the Public Utilities Act 2001, which includes specific provisions for statutory easement, highlighting the urgent need for legal reform in Malaysia (Tan & Ng, 2022).

## International Best Practices

Experiences from other countries offer valuable lessons in addressing land ownership issues for public infrastructure. In France, the 'land servitude' system under the Code Général de la Propriété has effectively reduced conflicts by providing permanent access rights for public utilities (Dupont, 2023). Meanwhile, Australia has developed a 'water utility corridor' system in Melbourne, enabling efficient asset management without infringing on landowners' rights (Murray-Darling Basin Authority, 2020). Thailand has introduced an innovative approach through 'public utility zoning' under the Water Resources Act 2018, providing legal clarity to all stakeholders (Bhumibol Adulyadej Institute, 2023). A comparative study by the OECD (2022) found that countries implementing specific regulatory frameworks for public infrastructure land ownership reported 40% fewer conflicts compared to those relying on general legal interpretations.

## Gaps in Existing Research

A review of existing literature reveals several critical knowledge gaps in the Malaysian context. First, most local studies, such as those by Hassan et al. (2021), focus heavily on the technical aspects of asset management without adequate attention to the legal implications of land ownership. Second, legal analyses such as by Ahmad (2022) are found to be too narrow and fail to integrate perspectives from public policy and asset management. Third, there is a lack of comprehensive solution models specifically designed for Malaysia's socio-legal context (Department of Irrigation and Drainage, 2023). These gaps highlight the urgent need for interdisciplinary studies that integrate legal, public policy, and asset management dimensions in addressing land ownership issues related to water supply assets.

## Implementation Issues at the Operational Level

An analysis of 50 court decisions from 2015 to 2023 shows a significant increase in litigation related to land ownership and access to water infrastructure, especially when landowners invoke Section 48(1) of the National Land Code 1965 to deny maintenance access (Law Review Malaysia, 2023). This trend became more pronounced after 2018, reflecting increased legal awareness among landowners. A landmark ruling in Lembaga Air Perak v. Land Lot 254 [2021] indicated a judicial tendency to narrowly interpret the concept of 'public interest', setting a precedent favoring private rights in subsequent cases. However, the case of Air Selangor v. Owner of Lot 342 [2022] presented a contrasting approach that emphasized the landowner's social responsibility, resulting in inconsistencies in judicial interpretation. The issue becomes even more complex in the context of critical water infrastructure, rapidly urbanizing areas, and large-scale upgrade projects, further compounding legal uncertainty (Zaid & Co, 2022). A cross-reference with cases in Singapore and England reveals the inadequacy of Malaysia's legal framework in balancing public interest and private property rights. The lack of consistent guidelines and alternative dispute resolution (ADR) mechanisms further aggravates the situation, underscoring the urgent need to establish a special tribunal or a more structured arbitration mechanism to manage such conflicts effectively and sustainably. This study is anchored in an interdisciplinary conceptual framework that synthesizes land tenure theory, public asset governance, and utility law reform. It views infrastructure-related land disputes not merely as legal issues, but as systemic governance failures requiring integrated legal-policy solutions

## Potential Resolution Framework

Based on the analysis of international best practices and local needs, several resolution approaches are worth considering for the Malaysian context. First, an integrated asset registration system that lists all water infrastructure along with its ownership status can provide clarity to all stakeholders (Water Policy Institute, 2023). Second, a compensation mechanism based on fair and transparent market value should be developed to balance landowners' rights and public needs (UN-Water, 2022). Third, introducing provisions for 'permanent utility easement' in local legislation can provide a solid legal basis for maintenance access without infringing on ownership rights (Tan & Ng, 2022). These models have proven effective in 12 developing countries with similar conditions to Malaysia, particularly in reducing conflict and improving water asset management efficiency (OECD, 2022).

**Significance of the Study**

This study contributes significantly to the existing body of knowledge through several dimensions. First, it offers the first comprehensive analysis that integrates legal, public policy, and asset management perspectives in examining land ownership issues for water infrastructure in Malaysia (JPS & DID, 2023). Second, the study develops an evidence-based reform framework that considers both local context and international experiences (World Bank, 2021). Third, the adaptation of international resolution models for the Malaysian context provides substantial practical value, especially given that 35% of water supply upgrade projects in the country are hindered by land ownership issues (Ministry of Local Government Development, 2023). These contributions are not only academically relevant but are also critical for the formulation of more effective future policies.

## RESEARCH METHODOLOGY

This study adopts a qualitative approach through document analysis and judicial case studies, selected based on the need to deeply understand the legal, public policy, and water asset management dynamics in the context of land ownership for existing infrastructure. This approach aligns with Yin's (2018) assertion that qualitative studies are highly appropriate for issues involving complex phenomena with multiple contextual layers. The primary data were derived from 50 systematically analysed court decisions spanning the period from 2015 to 2023, as outlined in the earlier literature review (Law Review Malaysia, 2023; Zaid & Co., 2022). The study also incorporates policy documents, technical reports, and legal texts such as the Water Services Industry Act 2006 and the National Land Code 1965 as key reference sources.

A marked increase in litigation has been observed between 2015 and 2023 concerning water infrastructure on private land, primarily involving: (1) access denial cases filed under Section 48(1) of the National Land Code 1965 (NLC), (2) ownership conflicts between water operators and landowners, and (3) inconsistent judicial interpretations of 'public interest' versus compensation rights. Notable cases include Lembaga Air Perak v Pemilik Lot 254 [2021] 1 MLJ 345, where maintenance access was blocked; Air Selangor Sdn Bhd v Pemilik Tanah Lot 342 [2022] 6 CLJ 891, which established a new precedent on utility easements; and Pengurusan Aset Air Berhad (PAAB) v Estate of Johor Bahru [2020] 2 AMR 567, which highlighted stranded asset challenges following privatisation

These cases demonstrate three recurring conflict patterns: first, the use of NLC Section 48(1) to restrict essential maintenance (evident in 65% of sampled cases), second, unresolved ownership transfers from privatisation era (30% of post-2015 cases), and third, divergent judicial approaches - with some rulings like *Air Selangor* [2022] favoring public utility access, while others like *Estate of Johor Bahru* [2020] prioritizing landowner rights. This jurisprudence inconsistency underscores the urgent need for legislative amendments to clarify access protocols and standardize compensation mechanisms under the Water Services Industry Act 2006.

Table 1: Quantitative Trends

| Year | No. of Cases | Primary Legal Basis |
|---|---|---|
| 2015 | 3 | NLC Section 48(1) |
| 2018 | 9 | Water Services Industry Act Sec 54 |
| 2021 | 14 | Land Acquisition Act 1960 |
| 2023 | 12 | Composite claims |

Table 1 quantifies the escalating litigation trend from 2015-2023, revealing a nearly fivefold case increase from 3 (2015) to 14 (2021), before stabilizing at 12 cases in 2023. Cases were selected based on relevance to infrastructure-related access or ownership disputes and were sourced from national legal databases and judicial repositories. Notably, 65% of 2018-2023 cases invoked NLC Section 48(1) injunctions against utility access, while post-PAAB operations saw a 30% surge in "stranded asset" disputes. The legal basis evolved from singular reliance on NLC provisions (2015) to composite claims incorporating the Water Services Industry Act (2018) and Land Acquisition Act (2021), reflecting growing complexity. Judicial inconsistency is evident between pro-public interest rulings (Air Selangor v Lot 342 [2022]) and pro-landowner decisions (Estate of Johor Bahru [2020]), underscoring the need for legislative clarity.

In addition, content analysis was employed to evaluate the existing regulatory framework by comparing domestic legal provisions with international ones. The comparative analysis model used was based on the OECD (2022) framework, which assesses legal clarity, compensation mechanisms, and the effectiveness of dispute resolution institutions. Secondary data from agency reports such as PAAB (2018), SPAN (2022), and JPS (2020) were utilized to understand administrative and operational contexts related to water assets. Legal case studies from countries such as Singapore, Australia, and France were included as benchmarks to identify potential reforms suitable for application within the Malaysian context (Smith & Brown, 2022; Dupont, 2023; Murray-Darling Basin Authority, 2020).

To enhance the reliability of the findings, data triangulation was conducted through cross-validation between document sources, judicial decisions, and policy reports. The court decisions were analysed using Patton's (2015) legal interpretation framework, which emphasizes the social and institutional context behind legal judgments. Judgments were also thematically coded for recurring legal themes such as compensation rights, access denial, judicial reasoning patterns, and statutory basis to ensure analytical consistency. Furthermore, an assessment of existing research gaps (Hassan et al., 2021; Ahmad, 2022) was used to construct the methodological justification and ensure the originality of this study's contribution to both academic and policy fields. This integrated approach enables the study to identify structural weaknesses, mismatches in the legal framework, and offer contextually tailored reform proposals for Malaysia's legal and administrative landscape.

## ANALYSIS AND RESEARCH FINDINGS

This study's analysis reveals that the misalignment of land ownership for water supply assets is a systemic issue stemming from structural weaknesses within the existing regulatory framework. Based on a review of 50 court decisions between 2015 and 2023, there is a noticeable upward trend in litigation related to access and ownership of water assets located on private land. This indicates that the current legal framework particularly the Water Services Industry Act 2006 and the National Land Code 1965 remains inadequate in effectively addressing operational realities and the needs of public utilities.

The findings highlight three main dimensions of regulatory weaknesses: (i) legal ambiguity, (ii) absence of coordination mechanisms between agencies, and (iii) gaps in the protection of landowners' rights and public interest. For example, Section 54 of Act 655, which grants access rights to water operators, is overly general and lacks a detailed compensation mechanism, resulting in prolonged disputes over ownership and access (SPAN, 2022; Zulkifli et al., 2023). The absence of clear implementation guidelines allows landowners to invoke Section 48(1) of the National Land Code to block access even for the maintenance of critical assets.

Furthermore, an in-depth analysis of policy documents and technical reports reveals that the lack of a comprehensive asset inventory system leads to confusion in identifying ownership status, location, and responsibility boundaries over water infrastructure. Reports by PAAB (2018) and JPS (2020) confirm that approximately 30% of main pipeline alignments; based on a survey of 5,200 kilometres of pipelines across Peninsular Malaysia (covering 1,850 km² of urban and peri-urban areas) are situated on private land without formal ownership rights or valid utility servitudes. The implications of these findings include delays in 15–20% of upgrade projects, a 25–30% increase in operational costs due to legal disputes and rerouting, and chronic disruptions to the sustainability of water service delivery in high-density zones

Table 2 presents a comparative analysis of land ownership regulations for water assets based on the OECD (2022) framework. This analysis involves a comparison between regulatory practices in Malaysia and international practices from countries such as Australia, Singapore, and others, with a focus on five key components: legal clarity, compensation mechanisms, dispute resolution institutions, the suitability of legal frameworks for water asset operations, and access to land for operational and maintenance works. The study's findings indicate that Malaysia faces major challenges such as unclear definitions of "water assets," the absence of a clear compensation mechanism, and a lack of effective dispute resolution systems. In addition, the separation between asset ownership and land ownership hinders long-term management and planning. The comparison with international practices highlights an urgent need for legal reform in Malaysia, including the establishment of a more structured compensation mechanism, more efficient dispute resolution institutions, and harmonization of right-of-way and land ownership to facilitate the operation and maintenance of water assets.

Table 2: Comparative Analysis of Land Ownership Regulations for Water Assets Based on the OECD Framework (2022)

| ANALYSIS COMPONENT | MALAYSIA (Based on PAAB, SPAN, JPS) | INTERNATIONAL PRACTICES (OECD, AUSTRALIA, SINGAPORE, etc.) | KEY NOTES / FINDINGS |
|---|---|---|---|
| Legal Clarity | • Definition of "water asset" is unclear in legislation.<br>• Jurisdictional overlap between state and federal authorities. | • Definitions of assets and easements are clear.<br>• Utility zones are gazetted. | Malaysia needs to harmonize asset definitions and easement rights to avoid administrative confusion. |
| Dispute Resolution Institutions | • No specific compensation mechanism for assets built on private land.<br>• Relies on the Land Acquisition Act 1960. | • Compensation mechanisms are clearly defined and phased.<br>• Early compensation schemes are in place. | Lack of specific compensation procedures in the water sector affects public acceptance. |
| Dispute Resolution Institutions | • SPAN does not have full adjudicative authority.<br>• Land disputes are referred to the courts. | • Independent tribunals are established for utility and compensation disputes.<br>• Processes are faster. | Need to establish a special tribunal or more flexible mediation methods in Malaysia. |
| Suitability of Legal Framework to Water Asset Operations | • Asset management by PAAB is not accompanied by permanent land ownership.<br>• No unified asset registration. | • Centralized utility registration systems<br>• Asset protection zones are gazetted and managed consistently. | The separation between asset ownership and land complicates maintenance and long-term planning. |
| Access to Land for Operational and Maintenance Works | • Relies on ad hoc agreements or access route applications.<br>• No registered easement rights. | • Registered utility easements exist.<br>• Access rights are automatic under utility law. | Malaysia requires legal reform to enable registered access rights for agencies. |

Comparatively, the approaches in countries such as Singapore through the Public Utilities Act 2001 and Australia through the Water Act 2007 offer important lessons. In Singapore, provisions on "statutory easement" allow utility operators to access private land without needing to obtain ownership, with compensation determined based on fixed rates and a straightforward administrative process (Tan & Ng, 2022). Meanwhile, in Australia, the 'utility corridor' approach in Melbourne has successfully maintained a balance between utility operation needs and property rights by establishing special zones gazetted as public infrastructure corridors (Murray-Darling Basin Authority, 2020).

The findings also reveal that a litigation-only approach is unsustainable in this context. Inconsistencies in judicial interpretation between cases such as Lembaga Air Perak v. Tanah Lot 254 [2021] and Air Selangor v. Pemilik Lot 342 [2022] reflect weaknesses in the legal system's ability to deliver uniform resolutions. Therefore, there is an urgent need to establish a more structured alternative dispute resolution (ADR) mechanism such as a special tribunal or mandatory arbitration for public utility issues.

Finally, this study identifies the need for the development of a reform framework that incorporates elements such as an integrated water asset registration system, specific legal provisions for 'permanent utility easement', and a transparent and fair compensation mechanism. These findings align with recommendations by the Water Policy

Institute (2023) and OECD (2022) that an effective utility delivery system requires a clear legal foundation and strong institutional support.

**Proposed Regulatory Reform Framework**

Based on the study's findings, a regulatory reform framework for land ownership of water supply assets in Malaysia is proposed, grounded on the principles of institutional inclusivity, legal clarity, and administrative effectiveness. This framework is designed to address the misalignment in the current structure and support the sustainability of the water services industry in the post-restructuring era.

**Enactment of Specific Provisions for Water Assets in the National Land Code**

The key proposal is the introduction of a dedicated section in the National Land Code that directly refers to "water supply facilities" as a category of public infrastructure. This section should define water assets, rights of access to land, mechanisms for acquiring servitudes, and standard compensation rates. Such a provision would offer legal clarity for all stakeholders which is includes state governments, landowners, water operators, and financial institutions.

**Gazettement of Permanent Utility Corridors**

The framework proposes the gazettement of Permanent Utility Corridors involving all major water supply assets – treatment plants, transmission pipes, reservoirs, and balancing tanks. These corridors should be incorporated into state physical development plans and registered in the land registration system. This approach aligns with practices by Melbourne Water (Australia) and Singapore's PUB, where water utilities are placed in designated zones without the need for full land acquisition.

**Centralized Registration of Utility Servitudes**

Previously ad hoc utility servitudes are proposed to be centralized through an integrated registration system. This system could be managed by a special unit under PAAB or SPAN, coordinating with Land Offices and the Survey Department to register utility rights of way. This would facilitate ownership monitoring and reduce the risk of overlapping claims.

**Establishment of a Public Utility Tribunal**

To resolve disputes related to access, compensation, or ownership status of water assets, it is proposed that a special tribunal be established under the jurisdiction of the Ministry of Natural Resources and Environmental Sustainability. This tribunal would act as an alternative dispute resolution (ADR) mechanism that is faster, cheaper, and more efficient than civil court litigation. It should also be empowered to legally and conclusively affirm the legal status of water assets.

**Establishment of a Fixed Compensation Fund**

A fixed compensation fund should be established, either at the state level or through industry contributions, to ensure that landowners are not financially burdened when utility assets are located on their land. Compensation rates should be set through a standard schedule based on asset type, affected area size, and duration of use. This would avoid uncertainty during negotiations and expedite project implementation.

**Amendments to Act 655 and Legal Harmonization**

The final proposal involves amending the Water Services Industry Act 2006 (Act 655) to include clauses that allow for automatic land access acquisition for public service purposes under specified conditions. These amendments should be harmonized with the National Land Code and respective State Enactments. Procedures and form formats should also be standardized to reduce administrative burdens.

# CONCLUSION AND IMPLICATIONS OF THE STUDY

This study has identified key weaknesses in the regulation of land ownership for water supply assets in Malaysia, stemming from legal inconsistencies, the absence of a uniform ownership mechanism, and challenges in the administration of infrastructure ownership following the restructuring of the industry. Through the analysis of domestic legislation and comparison with international practices, this study has formulated an institutional and pragmatic regulatory reform framework to address these issues comprehensively.

The findings from a review of 50 court decisions between 2015 and 2023 revealed a rising trend in litigation related to access and ownership of water assets on private land, underscoring the real-world need for reform. For instance, over 30% of main pipeline alignments are situated on private land without formal ownership rights or valid utility servitudes, which results in operational inefficiencies and delays in upgrading essential infrastructure. This illustrates the urgent need for regulatory changes to streamline land access and ensure the sustainability of water services.

The proposed reform framework emphasizes the need for specific legal provisions for water assets in the National Land Code, gazettment of permanent utility corridors, centralized registration of servitudes, the establishment of a public utility tribunal, and the creation of a fixed compensation fund. Amendments to Act 655 are also recommended to strengthen land access acquisition. These recommendations are designed to address the critical gaps identified, particularly the legal ambiguity and the lack of coordination between agencies, and to provide a more structured and predictable system for both landowners and water operators.

From a policy perspective, the study provides a foundation for policymakers, industry regulators, and state governments to develop a more systematic and resilient approach to managing land ownership of water assets. Its practical implications include improvements in water service delivery systems, reduction of overlapping land rights, and protection for both landowners and water operators.

Overall, the findings of this study open the door for broader legal reform in land legislation within the context of public infrastructure and make a significant contribution to the national agenda for a sustainable water services industry.

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