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KUSEL, Underground Matters

The Edge, Malaysia



KUSEL, Underground Matters Game-changing underground utility asset management

Infrastructure - the backbone of any thriving economy, is typically born out of a combination of necessity and the will to find a workable solution to benefit the population.

Investment in high-quality infrastructure, such as public transportation systems to increase accessibility and telecommunication networks to facilitate faster communication, is essential for any country, particularly those with rapidly expanding populations.

Being the most populous and industrialised state in Malaysia, Selangor emphasises the role of underground construction in strengthening the State's critical infrastructure network, to ensure and elevate Selangor's standing as it navigates the path to a sustainable and liveable society.

The optimisation of the underground landscape for the provision of utilities and services is also recognised for its compatibility with Malaysia's sustainability objectives. In light of persistent challenges like pollution and the scarcity of open spaces for construction, Selangor's exploration of underground spaces for infrastructure development is a logical progression that alleviates strain on the surface and has the potential to be an effective strategy for addressing traffic issues and enhancing mobility.

However, utility providers are confronted with multiple complexities at every stage in developing these underground spaces. Dedicated bodies that facilitate or supervise underground infrastructure, such as Singapore's Digital Underground SG and the United Kingdom's National Underground Asset Registrar (NUAR), are pioneers in the third dimension of infrastructure development.

Nevertheless, both are solely dedicated to underground mapping, whereas Koridor Utiliti Selangor (KUSEL) has a broader scope, as a multifaceted system that streamlines application and excavation processes for underground utilities.

Koridor Utiliti Selangor (KUSEL)

Established in December 2020 by Menteri Besar Selangor (Incorporated) (MBI), KUSEL acts as a One-Stop Agency (OSA) to manage, facilitate and coordinate the State's underground utility infrastructure. This is in alignment with the federal government's directive through Kementerian Perumahan dan Kerajaan Tempatan (KPKT) to further develop Malaysia's Underground Utility Corridor. Thus, each state has established its own underground utility infrastructure management to better manage underground utility coordination. For Selangor, KUSEL strategically underpins the vision of developing a liveable smart state by leveraging digital technology solutions, recognising that becoming a smart state requires smart infrastructure.

KUSEL's mandate fits seamlessly into the larger framework of Rancangan Selangor Pertama (RS-1), which aims to provide a strategic direction for Selangor to become a smart, habitable and productive state through the usage of cutting-edge technology.

Rancangan Selangor Pertama (RS-1)

Rancangan Selangor Pertama (RS-1) underlines the crucial role of KUSEL as the OSA for Selangor's underground infrastructure, in the introduction of Common Utility Trenches or Tunnels within the numerous infrastructure developments indicated in the plan.

KUSEL will be spearheading a more sophisticated underground utility infrastructure system to provide the advanced utility corridor required by developments such as the Integrated Development Region in South Selangor (IDRISS), the Sabak Bernam Development Area (SABDA) and the Zon Pembangunan Ekonomi Selangor Maritime Gateway (ZPE SMG), which will see increased development in both brownfield and greenfield areas.

Meanwhile, KUSEL via its wholly owned subsidiary, Smartsel Sdn Bhd has been tasked to spearhead the Jalur Lebar Industri Selangor (JALIN) programme - an effort to enhance connectivity in industrial areas that necessitates extensive underground infrastructure works. JALIN is one of the several vital components recognised by the Selangor State Government in the five-year plan described in RS-1.



“The Selangor State Government acknowledges that solid infrastructure plays an important role in the State's rapid economic growth.”

- Khairul Azmi Misran
 Managing Director of KUSEL

Adding value underground

Managing Director of KUSEL, Khairul Azmi Misran says, “The Selangor State Government acknowledges that solid infrastructure plays an important role in the State's rapid economic growth. Prior to the formation of KUSEL, utility service providers had to go through a manual permit application process for the installation of underground utility assets. This would involve respective State Authorities or 'Pihak Berkuasa Melulus' (PBM), comprising the Local Authorities or 'Pihak Berkuasa Tempatan' (PBT) and the Public Works Department or 'Jabatan Kerja Raya' (JKR). With KUSEL, we are now expediting the permit application process through a tri-party working mechanism that includes the State Authorities (PBM).”

“In a nutshell, all entities conducting underground utility asset installation works submit applications to KUSEL, which then coordinates the location, ensures underground projects are completed on time and keeps track of the existing underground infrastructure data to prevent unwanted incidents that may cause inconveniences to the rakyat of Selangor.”

“Obtaining workleave, or permission to access and conduct work on landowners' property and other numerous permits for utility works from the Local Authorities has become more straightforward and increasingly simplified under the management and coordination of KUSEL,” he adds. KUSEL's guided application process is in line with the newly approved Garis Panduan Laluan Kemudahan Utiliti dan Penggalian Jalan Negeri Selangor, which came into effect on 1 September 2022 and published by PLAN Malaysia Negeri Selangor.

The guidelines were introduced to implement a proper management and planning of Selangor's underground utility corridor through supervision of excavations for utility asset installations or repairs. This in turn ensures the protection of good road conditions and the safety of road users.

Underground utility works requiring one-stop coordination include internet and telecommunication cables, electricity cables, water pipes, natural gas pipelines and wastewater drainage, among others. In Malaysia, utility service providers operate as privately-owned businesses or government-linked companies (GLCs). For instance, Gas Malaysia Sdn Bhd oversees the building of gas pipelines; Air Selangor commands the water supply in Selangor; Indah Water Konsortium Sdn Bhd handles sewerage facilities; Telekom Malaysia (TM) is in charge of telecommunication cables, while Tenaga Nasional Berhad (TNB) is responsible for supplying electricity across Peninsular Malaysia. With each application, KUSEL will allocate a dedicated team to oversee and manage the end-to-end process. It ensures that Selangor's underground infrastructure development is well-coordinated and connected, minimising inconvenience to both utility service providers and the public. KUSEL also distinguishes itself by providing clarity on costs and practising good governance in its operations.



“With the establishment of a systematic application process effectively integrating all relevant state bodies, the relevance of KUSEL's institutionalisation to act as a single point of contact has been transformational for utility service providers. With KUSEL in the picture, they are now able to focus on their core strengths to continuously improve utility services while KUSEL ensures that the management of utility infrastructure is integrated and systematic. “We aim to provide improved turn-around time for applications by the utility service providers, which then leads to similar improvement in business management processes,” Khairul adds.

Digitising Underground Utilities

Founded during a trying time when the Covid-19 pandemic drastically accelerated the need for most industries to pivot towards digitalised operations, KUSEL introduced its own set of new standards to revolutionise the way underground utility service providers operate as a whole, while new norms were simultaneously implemented to meet the challenges brought forth by the pandemic. “We recognise that, by their very nature, underground assets are not visible and are therefore susceptible to damage during excavations. Herein lies the significance of KUSEL's integrative digital system,” Khairul says.

KUSEL is developing the Selangor Geographic Information System also known as SELGIS, a comprehensive database of Selangor's underground utility maps. The database is efficiently curated and grows with each application to KUSEL which necessitates the scanning of the underground utility assets. The ability to accurately identify buried utility assets prevents damage to existing utilities, thus avoiding inconvenience to the public, from broken pipes to loss of electricity. To-date, since its establishment, KUSEL has processed over 1,000 requests for underground works. Through KUSEL, utility service providers no longer need to manually apply for multiple permits for underground works. The digitalised online application system or Sistem Aplikasi Atas Talian KUSEL (SAAT), enables utility companies to obtain updates on the status of their application through the dedicated team assigned to manage online applications.

The combination of the database with digital applications allows for efficient asset evaluation and decision-making. With a more precise underground utility map, utility providers will be able to plan more effectively and ensure safe distances between utility lines before installing new ones.

KUSEL also offers complementary services under the Traffic Management Plan (TMP), which provides traffic management equipment to utility service providers during the execution of road works. TMP ensures that all equipment used during any underground works are of the best quality, standardised, transparent and complies with safety regulations. It increases accountability and allows local authorities and the public to better monitor work undertaken by vendors

This is a huge step towards bettering Selangor's management of its utility corridor by placing the safety and quality of life of Selangor's citizens as well as the utility providers that conduct businesses in Selangor, at the forefront of their services. Khairul further adds, “KUSEL is committed to refining its offerings and services to ensure that utility service providers and the people of Selangor continue to benefit throughout the years”.