# JURUTERA

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ENGINEERING A GREENER TOMOBROW: ESG INNOVATIONS AND INPACTS IN FOCUS

Understanding Impacts of Urban Flooding and Climate Change with Advanced Technologies

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#### Two Milestones for IEM

April 2025 marked two important milestones for IEM – our Annual General Meeting and the 66th Annual Dinner & Awards Night, both held on 19 April 2025. A heartfelt thank you to everyone who made these events a success – the dedicated secretariat, hardworking committee members and, of course, all IEM members and guests who joined us in celebrating the achievements of the Institution and our fellow engineers.

We welcome the new lineup of leaders in the Executive Committee and Council. I look forward with optimism to this new term as we work together to bring IEM to greater heights. To our newly elected leaders, may your term ahead be rewarding and impactful as we continue to champion the advancement of our profession.

As we turn the page into the 2025/2026 session, I invite all readers to enjoy this May 2025 issue of *JURUTERA*, filled with insightful articles, updates, and features which reflect the aspirations and directions for the year ahead. Here's to a fruitful session and wishing everyone continued success in all your endeavours.

## EDITOR'S Mote



by Ir. Professor Lau Hieng Ho Chief Editor of Bulletin Editorial Board

#### **Engineering a Greener Tomorrow**

This issue of *JURUTERA* invites us to reflect on a growing imperative within the engineering profession, i.e. how we design, lead, and deliver impact in ways that are environmentally responsible, socially conscious, and governed with integrity. With the theme, Engineering a Greener Tomorrow: ESG Innovations & Impacts in Focus, this edition underscores our role in building a more sustainable and resilient future.

At the centre of this direction is the 2025 Presidential Address by Ir. Prof. Dr. Jeffrey Chiang Choong Luin, at the recent 66th Annual General Meeting. In it, he builds on the ESG agenda introduced in 2024, reinforcing a continued emphasis on innovation, ethics, and integrated approaches for IEM moving forward.

The theme is further explored through contributions that examine ESG in applied contexts. A feature on implementation frameworks offers insight into how organisations can respond to increasing compliance and stakeholder expectations. A technical article on real-time switchgear monitoring illustrates the alignment between system performance and sustainability. An article on the Penchala Interchange shows the complexity of managing large-scale infrastructure in dense urban settings. Also highlighted are key outcomes from the AGM and the launch of Jurutera-i (*https://iemjurutera.my*), a new digital platform offering members timely access to institutional updates and insights.

As this issue reflects a shared commitment to advancing relevance, dialogue, and ideas within the engineering community. It is my privilege to contribute to this ongoing endeavour in my new capacity as Chief Editor.



## ENGINEERING A SUSTAINABLE FUTURE: Integrating ESG Principles with the Built Environment

As ESG principles take centre stage in global sustainability efforts, the Institution of Engineers, Malaysia (IEM) steps up with groundbreaking Guideline to simplify ESG reporting for the built environment. Ir. Ts. Dr. Leong Kah Hon, a key figure in the development of the Guideline, speaks to JURUTERA about the need for this initiative and how it can transform engineering practice.

In the face of growing environmental concerns, shifting societal expectations, and heightened governance standards, engineers are being called upon to do more than just solve technical problems — they are now also expected to help lead the sustainability agenda.

To support this. IEM has introduced the Guideline for ESG Disclosure Simplified for the Built Environment, a practical framework designed specifically to help engineering practitioners and companies in the built environment sector navigate the complexities of ESG implementation and disclosure.

At the heart of this initiative is Ir. Ts. Dr. Leong Kah Hon, Associate Professor in the Department of Engineering Environmental at Universiti Tunku Abdul Rahman (UTAR), who also serves as Deputy Dean and IEM Council Member. Dr. Leong and other members of the IEM Guideline's Working Group Committee, namely Ir. Chen Harn Shean and Ir. Yau Chau Fong, supported by the ESG Standard Taskforce, have been instrumental shaping the guideline and in have worked closely with various stakeholders to bring ESG within reach for Malaysian engineers.

## Rising Tide of ESG in Malaysia

Our move toward mandatory sustainability reporting, spearheaded by Bursa Malaysia's 2022 directive for public-listed companies (PLCs), signalled a turning point for the corporate sector. Yet, for engineers, the influx of new compliance requirements brought confusion.

"When Bursa Malaysia made sustainability reporting compulsory, the market was flooded with frameworks and templates," Dr. Leong recalls. "Many engineers didn't know where to begin. ESG reporting seemed more like an accounting or corporate affair than a technical one."

The IEM Working Group on ESG, with Dr. Leong as a key contributor, responded by creating a simplified but standards-aligned version of ESG reporting tailored specifically for the built environment, a sector that encapsulates nearly every engineering discipline and significantly impacts carbon emissions.

"The built environment was the right place to start," he says. "It includes buildings, infrastructure, transport, and utilities — and it's one of the sectors most in need of emissions management."

Ir. Razak Yakob. Deputy Chairman for the Oil, Gas & Mining Technical Division and IEM Council Member (Vice President 2025/2026), says: "Apart from supporting the ESG Working Group which Dr. Leong is involved in, IEM supports the idea of ESG as well as the entire sustainability agenda. We also have a task force to move IEM's agenda, Towards a Responsible Tomorrow. where we want to make sure the future generations can continue to enjoy a good environment."

#### What Exactly is ESG?

Before diving into how the Guideline works, it helps to first understand the foundation.

- Environmental (E) Measures a company's impact on nature, including carbon footprint, water, energy, waste, emissions, and resource use.
- Social (S) Examines how a company treats people, from employees and communities to customers and supply chains.
- Governance (G) Evaluates the company's leadership, transparency, policies, and ethics.

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The pillars are interrelated and together, they reflect how responsibly and sustainably a company operates. "ESG is not just for public image," says Dr. Leong. "It's a practical tool to identify risks, manage resources, and ensure long-term viability."

#### Making ESG Actionable for Engineers

Unlike generic frameworks that often cater to high-level business strategies, the IEM Guideline translates ESG into engineer-friendly indicators across the following categories:

#### Environmental

- Energy management
- Water management
- Carbon emissions and climate change
- Waste management

#### Social

- Diversity
- Labour practices and standards
- Community engagement (CSR)
- Supply Chain Management
- Health and Safety

#### Governance

Anti-Corruption

• Data privacy and security These indicators form the backbone

of the Simplified ESG Disclosure. Engineers can use them to build more sustainable projects, assess operational impacts, and report in ways that satisfy regulatory needs and stakeholder expectations.

#### Simplifying Without Compromising Standards

Though simplified, the Guideline references globally accepted frameworks, such as:

- Global Reporting Initiative (GRI)
- Bursa Malaysia's Sustainability Reporting Guide (3rd Edition)
- MITI's iESG Framework
- Simplified ESG Disclosure Guide (SEDG)

"We simplified, not oversimplified," Dr. Leong clarifies. "Our version aligns with international standards so organisations don't lose credibility."

These simplified ESG disclosures offer a concise overview of a company's sustainability efforts across three fundamental aspects. The environmental pillar details a company's ecological stewardship, such as its carbon footprint reduction and resource conservation efforts. The social pillar examines its impact on people, including fair labour practices and community engagement. Lastly, the governance pillar focuses on the company's internal practices, including leadership ethics, corporate transparency, and accountability. These disclosures aim to provide stakeholders with a straightforward understanding of a company's commitment to operating responsibly and sustainably, highlighting its approach to balancing economic growth with environmental protection and social equity.

The goal was to make ESG not only compliant but also accessible and relevant to engineers, who are often tasked with implementing technical aspects of sustainability but rarely given frameworks that speak their language.

"But the question is, why the built environment? It was because we believed that at that point of time when we developed the Guideline, we thought the built environment was a sector that most impacted. The environment aspect was the one that we actually 'created' because it was a sector that involved a lot of carbon emissions. That was why we tried to assist the built environment sector first. But along the way, we found that whatever we produced or defined in the guideline actually suited all engineering sectors. So that's why in the future, we are going to revise it into a more common Guideline because we find that all the elements can suit many sectors, even manufacturing. When we held roadshows to explain the Guideline, many engineers from different sectors also found that the Guideline also fitted them well," says Dr. Leong.

## Design the First Line of ESG Defence

One of the most critical insights from Dr. Leong is that environmental impact begins at the design stage, not at construction or postimplementation. "Design determines material use, energy efficiency, waste generation, among others. If you design with ESG in mind, you've already reduced impact before a single brick is laid," he says.

He urges engineers to look beyond cost optimisation, a traditional focus, and to begin prioritising environmental efficiency.

For example:

- Can materials be sourced sustainably?
- Can designs reduce construction waste?
- Are water and energy systems optimised?

These design-phase decisions can result in significant downstream benefits, both in carbon reduction and operational cost savings.

"Engineers play a very important role, especially to tackle the environment pillar as well as the social and governance pillars. I think PLCs or big organisations and even SMEs don't have big issues concerning the social and governance pillars. What they tend to struggle with is the environment pillar, which often starts from the design stage. It's very critical. So now I say, we need to include the environment element into our design considerations. Before this, we did only the bare minimum when it came to the environment, but now we must go beyond cost consideration," he says, adding that this is a challenge for engineers.

"How are we able to optimise it? How can we change in terms of reduction of cost now that we have to factor in the environment and yet bring in revenue for to our organisation. That's why the environment pillar was always the last pillar for organisations to tackle, because this really needed the experts from the engineering side. It should start at the design stage because it will be hard to make changes, for example, at the construction stage or worse, at the building completion stage," says Dr. Leong.

Ir. Razak shares the same concern. He says: "For example, in the oil and gas sector, factoring in the environment from the start was

the right thing to do, which was to install the environment back to what it was before we came in and drilled. For us to do this will cost millions, and it will not be economical at all. As engineers, we need to find that balance and to deliver the aspiration of putting the environment back to what it was before work began."

Dr. Leong says engineers must bear in mind that ESG and sustainability are a long-term consideration. "It is a journey, so we have a role to play in taking care of the environment and, at the same time, help to ensure profitability and survival of the company. We don't want companies to just comply with the Guideline; we also want them to sustain operations."

## Moving ESG Beyond Compliance

The shift from compliance to commitment is a recurring theme in the ESG journey. Dr. Leong notes that while many companies initially implemented ESG practices to meet



Bursa Malaysia's requirements, the real value came from using ESG data to drive internal improvement.

"Companies already have the data — energy use, water bills, materials consumed — but it is not consolidated. The Guideline helps organise this into actionable insights."

He cites the example of going paperless, a simple change that, when implemented at scale, contributes to cost savings and environmental goals. More importantly, it sends a message to stakeholders that the company is actively managing its footprint.

#### **Human Factor in ESG**

When it comes to the Social pillar, many organisations default to communityfocused CSR programmes. While these are valuable, Dr. Leong feels that employee well-being should be the priority.

"CSR can become a box-ticking exercise unless it's impactful. But taking care of your employees ensuring fair wages, low turnover, and proper training — that's where real social impact begins."

He warns that a high employee turnover is a red flag to investors. It signals instability, poor working conditions, and a potential failure in governance.

"If your employees don't feel valued, they leave. And when that happens, your company becomes a training ground for your competitors," he says.

He urges companies to rethink their HR strategies as core ESG issues and not just operational matters.

"With the sustainability journey – which I feel everyone should be aware of – whatever we are doing must be impactful. If today, you are doing CSR programmes just for the sake of doing it, then it won't bring credit or value to your ESG journey. You need to go beyond the ringgit and sen and look into the impact. I give a very good example which is in the rating agency for ESG. If a CSR programme is very impactful in terms of ESG value, then you can score a maximum rating even though you only spend a little on the programme," he says.

#### Governance: The Often Overlooked Pillar

While environment and social aspects get much of the attention, governance is often the deciding factor in whether ESG goals succeed.

"Good governance starts at the top. If the leadership doesn't care, that attitude trickles down. Engineers won't prioritise sustainability if their bosses don't," says Dr. Leong who is of the opinion that governance is the strongest out of the three pillars. "If you fail in governance, I don't think your organisation can sustain until today."

He emphasises that strong governance ensures that ESG is taken seriously across the organisation. This includes:

- Transparent policies
- Anti-corruption measures
- Inclusivity and gender equality
- Data privacy compliance

Companies that excel in governance tend to perform better financially and to attract long-term investors, proving that ethics and profitability aren't mutually exclusive.

#### Why the Guideline Has Cross-Sector Appeal

Although originally designed for the built environment sector, the Guideline has principles that are broadly applicable. Ir. Razak says: "We've seen interest from the oil and gas industry and manufacturing. ESG is not confined to one sector — it's a universal language for responsible businesses."

Dr. Leong says that core indicators such as energy and water usage remain relevant across industries. The only variation is in the parameters or performance benchmarks, which can be adapted for specific contexts.

#### From Reporting to Rewards: Making ESG a Shared Journey

A unique feature of Dr. Leong's approach is his belief in incentivising employees to participate in ESG goals. "Let your operations staff members find ways to reduce waste or save energy. Reward them with a portion of the savings. That's how you build a culture of sustainability," he explains.

This collaborative model turns ESG into a shared responsibility instead of a leadership directive. It also demonstrates that employee engagement is a crucial strategy for meeting sustainability targets.

#### A Journey, Not a Destination

Perhaps the most important message from Dr. Leong is that ESG is an ongoing process, not a one-off reporting exercise. He says: "The key is to start. Use the template, organise your data, report what you can. You'll grow over time, and so will the value you derive from the process."

He says IEM offers free templates and sample statements to help organisations get started, especially small- and medium-sized companies or those new to ESG.

"Don't wait until you're perfect. Just begin," he urges.

#### Next Steps: IEM's Own Sustainability Journey

IEM is walking the talk. Its first sustainability report, to be disclosed in 2025, will cover the operations of its headquarters, with plans to expand to its branches.

"Although IEM isn't a PLC, we still consume energy and water, and we travel for work. We need to manage our footprint too," says Dr. Leong.

This move demonstrates IEM's leadership in institutionalising ESG and setting a precedent for other professional bodies.

#### Looking to the Future: Carbon Tax and CBAM

The next edition of the ESG Guideline is already in the planning. It will include mechanisms such as:

- **Carbon Tax** Targeting domestic carbon emissions
- Carbon Border Adjustment Mechanism (CBAM) – Regulating carbon costs in imported goods

"We'll keep the Guideline relevant to market developments. The next version will ensure our engineers are ready for these new realities," Dr. Leong says.

## Final Reflections: A Message to Engineers

The world is changing, and engineering practices must evolve with it. ESG isn't just about regulation. It's also about ensuring the future of our planet, our communities, and our profession.

"If engineers don't embrace sustainability, we risk being left behind," says Dr. Leong. "We're not just builders of infrastructure; we're builders of the future."

Ir. Razak echoes this, saying IEM will continue to support its members with training, tools, and resources to help them succeed in the ESG space.

#### **Download the Guideline**

The *IEM* Guideline on Simplified ESG Disclosure for the Built Environment (Version 1, March 2024) is available for free download at:

https://www.myiem.org.my For more information: sec@iem.org.my



#### Interviewee:



Ir. Ts. Dr. Leong Kah Hon

Associate Professor at the Department of Environmental Engineering, Faculty of Engineering & Green Technology, Universiti Tunku Abdul Rahman (UTAR). He is also Deputy Dean (Academic & Undergraduate Development Programmes) and IEM Council Member (Ordinary Representative) 2025/2026.

A HRDF-accredited trainer, Dr. Leong holds a PhD. in Civil & Environmental Engineering from Universiti Malaya and professional qualifications from the Board of Engineers Malaysia and Malaysia Board of Technologists. He is the recipient of the AAET Green Award 2021, UTAR Teaching Excellence Award 2021 and Belt & Road Young Scientist, China 2021.



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THE MONTHLY BULLETIN OF THE INSTITUTION OF ENGINEERS, MALAYSIA

# URUTERA

## The monthly magazine, *JURUTERA*, has a circulation of over 50,000 among certified members of IEM.

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#### PRESIDENTIAL ADDRESS

THE INSTITUTION OF ENGINEERS, MALAYSIA • JURUTERA

MAY 2025 15

## **66th** Presidential Address

Immediate Past President, YBhg. Dato' Ir. Prof. Dr. Norlida Buniyamin, Deputy President, Ir. Yau Chau Fong, Vice Presidents Ir. Prof. Dr. David Chuah Joon Huang, Ir. Dr. Bernard Lim Kee Weng, YBhg. Dato Ir. Wan Nazari Wan Jusoh, Ir. Prof. Dr. Tan Chee Fai, Ir. Prof. Dr. Lau Hieng Ho, Ir. Simon Yeong Chin Chow and Ir. Abdul Razak Yakob.

Respected IEM Past Presidents, Members of the Outgoing and Incoming Excomm and Council, Datuk-datuk, Datin-datin, Tuan-tuan and Puanpuan, fellow IEM members, ladies and gentlemen.

A very good morning to all of you and thank you very much for attending our AGM this morning; we really appreciate your support to lend a voice to IEM members here to convey your concerns on the welfare of our Institution. These are the main reasons and purpose for us all to be here today.

I would like to express my gratitude to all active and volunteering IEM members for serving or who have served in IEM committees in various portfolios or working capacities over the years; you are indeed the backbone of our Institution. I salute you for your perseverance, patience, sacrifices and dedication in upholding IEM over the many years and months of your membership.

Today I am turning a new page and a new chapter in the second year of my Presidency and as I recall, during the first year in my IEM Presidency Address on 20 April 2024, my focus was on four key aspects with an overarching theme, i.e.:

- 1. To keep our own house in order.
- 2. To keep and serve our membership well.
- 3. To keep, fulfill and realise the vision and mission of our Institution charged upon us.
- 4. To keep up with the current technologies and issues of the day.

The over-arching theme for 2024 was Environmental, Sustainability & Governance (ESG) as the catalyst for engineering evolution. This year (2025), my address is on instilling the spirit and passion of joining and, more importantly, serving The Institution of Engineers, Malaysia. It is not Institute of Engineers or Institution of Engineering Malaysia – as many of our own serving members and even our Secretariat have got it wrong on numerous occasions, what more external parties and partners, which we seldom correct. We must take the name of our Institution very seriously – which we should because otherwise it is like not correcting someone for having mispronounced or misspelt your name or your prefix title.

#### Ir. Prof. Dr. Jeffrey Chiang Choong Luin

Saturday, 19 April 2025 Wisma IEM, Petaling Jaya, Selangor

Before I forget, my overarching theme for this year is a follow-up on last year's, i.e. **ESG: Engineering for a Greener Tomorrow**, which will encapsulate our two major upcoming events this year:

- The 66th Anniversary Annual Dinner tonight (19 April 2025) at Sunway Lagoon Resort & Spa Hotel. I would like to see you all there tonight as we are going to acknowledge and appreciate the many members who have served and are continuing to serve IEM with dedication and passion.
- The 4th Engineering Exhibition & Conference 2025, an event of IEM CONVENTION; ENGINEER 2025 with its concurrent exhibition, MARVEX 2025, on 9-12 September 2025 at Kuala Lumpur Convention Centre. Kindly note this event in your diary as we are heading into a more exciting display and presentation of up-todate technologies in the engineering field.



My message today is basically on how to answer a perplexing question, i.e. *What benefits do I get by joining IEM? Or what do I get by joining IEM?* I am often asked this in the past at Membership Drive & Promotion (MDP) talks that I gave to companies and corporations, to young working engineers and to engineering students at universities. I have also been asked this question by existing IEM members and even seniors at Branch level during my trips to all 13 Branches in 2024 and early 2025. By the way, my last few visits in 2025 were to our Perak Branch in Ipoh on 16 January 2025 and to Sabah Branch in Kota Kinabalu, Sabah on 21 February 2025. I also stopped by the Miri Branch on 22 February 2025 to attend its AGM. I officiated at the opening of Melaka Branch AGM on 22 March 2025.

I hope you realise that this question is the most important and the most basic fundamental question that addresses the following issues in the minds of many people:

- 1. What is the relevance of IEM to members, to all engineers out there and to all our industry partners?
- 2. What is the beginning of IEM and how will it relate us to similar and different types of engineering-related organisations?
- 3. Do we place great importance on monetary benefits or tangible benefits when we join and serve IEM?

To keep my address here not too lengthy, I will address these three issues in the process of sharing with you my views and thoughts on how to answer that key question.

Just out of curiosity, let me ask our serving members, especially those in MDP, how they would answer the challenging question of "What is the benefit of joining IEM?" during their interactions with the curious public. I suppose we would usually just point at and quote from our PowerPoint slides which are:

- 1. IEM is a learned society and a professional engineering institution, the biggest NGO and non-profit organisation in the country with over 45,000 members.
- 2. IEM has all the facilities in its library for our members; we organise courses, seminars, conferences, and technical evening talks at minimal fees for members and very low fees for students and graduate members, etc.
- IEM gives us a sense of professional identity and belonging to a prestigious group of professional engineers who are well respected and praised by public for doing good jobs and deeds for the society's welfare and safety.
- 4. IEM is the centre of lifelong learning, giving the opportunity for personal development, career advancement, and fulfilment of work-life balances.

What more can we say after mentioning all of the above because the same question persists because most people are unable to relate if the reasons given are not personal in nature.

Let me give you my perspective, which is very similar to what I have imparted to our various Branch members during my recent visits to the Branches in my Presidency session in 2024. The following are the intangible benefits of joining IEM, not just as a subscription-paying member but as one actively involved in volunteering and serving as a Committee Member, organising events as well as being part of IEM delegations or groups representing IEM to outside bodies, and so forth:

- 1. Learn to master the skills and art of managing people and, most importantly, managing yourself, your time, and getting things done in a timely manner.
- 2. Build up your self-confidence, speak up with courage, communicate views, ideas, and suggestions clearly especially to the Secretariat, fellow/senior IEM members and colleagues, to get things moving.
- Challenge yourself to master public speaking as a Master of Ceremony for events, as an invited Speaker, as a Forum Panellist, as a qualified Trainer, as a Motivational Speaker or simply being the Chairman in charge of a committee meeting.
- 4. Groom yourself to be a leader among your peers: Start from the grassroots, learn the ropes and the art of leadership by example, gain and influence the confidence of others and sway people's views in your favour.
- 5. Be a good writer, a good proof reader and a good listener, one who is able to source for information, quickly, efficiently and is accurate in reporting facts and figures; in other words, you don't need to be a nervous wreck when attending meetings which is when you can expect to be grilled and questioned by others.
- Networking: Get to know people from all walks of life and from different places, people of different levels and status in career and advancement; this would lend ease in getting help and assistance when the need arises.
- 7. We must also have a sense of empathy for the enquirers, because not too long ago, we were in their shoes, posing the same questions to the MDP speaker. In our present status, we can offer perspectives from our experiences gained during the course of our IEM membership and contributions to the Institution.

The above are just some examples of the intangibles as most if not all the working committee members of IEM will testify to. So, if anyone here is asked the same question again, I will refer him to the above list and maybe I can add a few more points if I have time to think of more.

Just as Rachel Carson wrote in her book, *The Sea Around Us*, in 1951, "We can only sense that in the deep and turbulent recesses of the sea are hidden mysteries far greater than any we have solved". In other words, we have placed too high a premium on searching for the unknown in far reaches of space and stars in heaven, but there's little we know of what is in store in our ocean depths. The same goes for IEM. We tend to overreach by attending to our external partners, both local and overseas, but we tend to neglect or overlook the needs and welfare of our own IEM members.

So let us dig deep into ourselves, our own psyche and our thinking recesses, before we venture out and expand ourselves into the open yonder. Other than the intangible benefits to highlight to the novice when asked about joining IEM, I would also like to share the humble beginning of IEM, simply to inspire the young generations with how IEM started with a low profile state before we blossomed into the present Institution of today.

IEM was founded in 1959. Let me refer you to the excellent coffeetable book, *65th Anniversary of IEM*, published in 2024, which tells the story of its early formation years. [65 Years: Catalysing Engineering Evolution].

To quote our 1st President, Allahyarham Tan Sri Ir. (Dr) Hj. Yusoff Hj. Ibrahim: "*I thought it was the right time to form an Institution of our own to reflect our independence*". By the way, he was the 1st Malaysian to be appointed Director-General of the Public Works Department (PWD but now known as JKR) on 1 August 1964.

That, to me, was and is an important and profound statement, because the word "independence" indicates that IEM is an independent Institution, self-funded, selfreliant and is membership-based. It is not to be confused with Board of Engineers Malaysia (BEM) which is a Governmental regulatory body and not a membershipbased organisation.

For example, engineers can join IEM as members, but they cannot join BEM in the same manner as members because it is mandatory for ALL practising engineers in Malaysia to be registered with BEM as graduate engineers or as professional engineers. So naturally, BEM's total number of registered engineers adds up to over 200,000, whereas IEM membership is by choice and the present membership fluctuates between 40,000 to >50,000.

BEM was formed in 1967 with IEM as the founding brainchild. IEM gave away the gift of the engineer title prefix, "Ir." to be used by BEM as prefix for all registered PEs in Malaysia – this is typical love and generosity of a parent. Let us be generous to give our blessings and wish our offsprings well and to truly thrive in their undertakings.

I hope that bit of history really tells the story of how big a role IEM played then and even today, in how engineers and their work are being rightly recognised and acknowledged as one of the most significant contributions to our nation building.

Remember, IEM is the only institution that can represent all levels, categories, sectors, branches and disciplines of Engineering. For example, IEM welcomes members who are working in both private and public sectors, from students to corporate and fellow members, both academic and non-academic, those who are active or who are retired, local and overseas, with branches in every state, and from different disciplines such as civil, mechanical, electrical and electronic, chemical, marine, agricultural, materials, environmental and many more.

I should think, and I believe, that the same passion and dedication shown by our founding fathers can be instilled in the younger generations if we, the present generation of IEM leaders, take it upon ourselves to use whatever means and past records of achievements to inspire our current and future generations of member volunteers to take up the baton of leadership to lead our Institution to greater heights. I must say that volunteer work is carried out without remuneration, so members looking for monetary benefits should go look elsewhere. Notably, if they are appointed as BEM Board or Working Group members, they would normally be handsomely rewarded with monetary allowances to attend meetings – just one typical example that differentiates BEM from IEM.

Let me present to you the five pillars and five elements of IEM (which I had presented to the Council on 21 October 2024, and which were adopted by the Council on 20 January 2025).

We, the Council of IEM, are to state clearly the FIVE PILLARS of IEM as a professional engineering institution as well as a civil and learned society:

- 1. As a **learned society**, IEM is a resource centre of knowledge and a body of professional experts in various fields of engineering as depicted in the number and active roles played by all the technical divisions, special interest groups and two key sections as in YES and WE.
- 2. As a **civil society**, IEM plays the role of nurturing, guiding and developing the prospects, qualifications and welfare of engineers with priority to its members as well as to all engineers in general who are qualified and are practitioners in the industry.
- 3. As a **professional institution**, IEM plays a pivotal role in leading actively in all matters of Engineering in industry practice, protecting the image and interest of the profession and emphasising the importance of the code of ethics and professional code of conduct of Engineers in dealing with issues pertaining to public welfare and safety.
- 4. As an advocate of best practices in the engineering industry, IEM has to be in the forefront to lead and to champion the development and application of codes of practice, industrial guidelines and national standards, which shall be the benchmark for all engineers in their industry practices.
- 5. As an **ambassador** of international goodwill, cooperation, collaboration and to promote mobility of engineers, IEM stands as a leader in coordinating and bringing together international bodies of engineering institutions and professional engineers and practitioners across borders in regional groupings to assist and resolve common issues of Engineering in nature.

The above shall be the pillars of IEM in the pursuit of its vision and mission as a genuine professional engineering institution as well as being a learned and civil society that's totally relevant and recognised as such by other professional bodies, members of public as well as Government authorities.

We, members of the IEM Council, would like to resolutely make a statement with regards to the five elements of the code of ethics for engineers in practice who are members of the Institution and for all engineers in general:

 Engineers are to place paramount importance on the safety and welfare of fellow professionals and the public in the course of discharging their duties and responsibilities in the work under their care.

- 3. Engineers have a duty to disseminate the right and proper information in an objective and truthful manner, especially when sharing knowledge and experience with younger engineers under their charge.
- Engineers shall put priority on the interests of their employers and/or clients to whom they have pledged to serve professionally.
- Engineers in professional practice shall give due respect, accord and recognition to the work and practice of their peers who are their equals in qualification, exposure and with prior relevant industrial experience.

I would like to propose for 2025-2026, the last session of my IEM Presidency, that the above five pillars of IEM and five elements of code of ethics, shall be the body of principles and acts to be inculcated into all our IEM memberships so as to:

- Enlighten them in order that they are aware of the importance of our Institution and the immense role played by all engineers in the welfare of our society.
- Equip them so that they can educate and inform fellow professionals, members of the public and even fellow institutional members of the special place of IEM and its members in nation building and uplifting the betterment of our community.

For this to be implemented, I would like to empower members of our Council and all active serving IEM members to be prepared to answer the call to serve, to protect the interest of our Institution and to safeguard the welfare of our members. Be prepared to answer all questions relevant to preserving the rights and functions of our Institution.

I move on to the 2025 theme, *ESG: Engineering for a Greener Tomorrow*, which is most apt as a follow-up to last year's theme. With the advent of energy renewal and storage, adapting to climate change as a way of living and working as well as preserving our natural environment and habitat have become second nature; we are keeping this in mind to safeguard the well-being of future generations.

From the RED explosion age of industrialisation to the BLUE ocean strategy of searching for workable solutions to ensure the survival of our civilisation and now, to developing new and GREENER pathways to safeguard the well-being of our future generations – that is where we are today.

We are strategically placed at the crossroads in our journey to the unknown future: To the left is spending more time and effort on enriching ourselves by depleting what's left of the earth's natural resources and to the right is moving ourselves backward by destroying ourselves through wars and major conflicts. But the way forward is for us to gear ourselves to innovate and to create a new and exciting way of life by blending with our natural surroundings and utilising the natural resources and energies in a symbiotic manner to give ourselves a chance for renewed lives and a greener tomorrow.

In appreciation, I must give thanks to our industry partners and international collaborators as in 2024, my first year of assuming office as IEM President, I inherited two key positions:

- 1. Chairman of the Building Industry Presidents' Council (BIPC). My term ended on 31 December 2024.
- Chairman of ASEAN Federation of Engineering Organisation (AFEO) – my term ended on 24 October 2024.

My thanks and appreciation goes to the 6 BIPC industry partners as well as our 10 AFEO engineering institutional partners in ASEAN Region.

With that, I come to the end of my Presidential Address for this AGM 2025. I look forward to working and collaborating with you, all our industry partners and international collaborators, to move our great Institution forward and upwards to re-make ourselves to be more relevant to our stakeholders and to be role models for future members and leaders.

My special thanks go to the Excomm and Council members who have served with me in 2024-2025, and the hard work and dedication put in by our ever-reliable Secretariat at IEM HQ. I pledge that our HQ Secretariat will work harder this year, 2025, to foster closer rapport and co-operation with the Branch Secretariats so that it is synergised as one with all Branches nationwide.

Another word of thanks goes to our serving members at IEM Branches, volunteer Branch chairs and committee members and their hard-working secretariats, either fulltime or part-time. I had a fantastic time when visiting the 12 IEM Branches for dialogues, AGMs and annual dinners. Thank you for your 'royal' hospitality and treats given to me and our HQ delegation.

We must not forget our Young Engineers Section (YES) and Women Engineers (WE) Section – please keep up the good work carried out in 2024. I look forward to grooming upcoming leaders from amongst you. Go forth and bring more students, more young graduates, and more women engineers to join us as members. The same goes for our Technologists and Technicians members. Just as I had mentioned to our Branches during my visits, "Don't just be a fisherman – be a fisher of men".

Last but not the least, my special thanks go to Ir. Mohd Yaakob (Sabah Branch Chair) and YBhg. Datuk Ir. Willy Chin Tet Fu (Organising Chairman) for giving us such good memories of CAFEO42 in Kota Kinabalu, Sabah, and to everyone who had participated in it in October 2024. Who can forget the rolling sea waves swaying the cruise boat in the waters off KK Harbour during the welcoming reception filled with good food and great companionship? I salute you all for bringing such successes to IEM in 2024.

I am looking forward to making more history and memories in 2025 and beyond to 2026. Thank you very much IEM, for your full support and kind attention.

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## ESG Unboxed: What Every Organisation Needs to Know

#### by:



#### Ir. Assoc. Prof. Dr. Leong Kah Hon

Assoc. Prof. (Dept of Environmental Engineering) and Deputy Dean (Academic Development & Undergraduate Programmes) at Universiti Tunku Abdul Rahman.

ESG began in the late 20th century with the rise of Corporate Social Responsibility (CSR) which initially centred on philanthropy and charitable initiatives. By the 1990s, growing environmental concerns such as climate change and resource depletion led to more structured sustainability practices, marked by the launch of the first ESG index fund — the Domini 400 Social Index (now MSCI KLD 400).

The movement gained global momentum in 2015 with the adoption of the UN Sustainable Development Goals (SDGs) and the Paris Agreement. In Malaysia, ESG adoption has accelerated through key initiatives such as the National Energy Transition Roadmap (NETR), Bursa

Malaysia's Enhanced Sustainability Reporting Framework, and the Securities Commission's support for sustainable and responsible investments — signalling the country's firm commitment to integrating ESG into its long-term development agenda.

In April 2021, the European Commission introduced the Sustainable Finance Package, including the Corporate Sustainability Reporting Directive (CSRD), which significantly accelerated ESG implementation, not only across Europe but also globally, influencing organisations across various sectors to embed sustainability into their core strategies. Building on this momentum, Bursa Malaysia, on 26 September 2022, mandated that all listed companies, whether on the Main Market or ACE Market, must submit sustainability reports addressing 11 key sustainability matters in a progressive approach.

The implementation is being carried out in a phased approach, starting with financial years ending on or after 31 December 2023. This marks a pivotal step in Malaysia's ESG journey, reinforcing the commitment to transparency, accountability, and sustainable growth. Since then, ESG has become a central focus across all industries in Malaysia, supported by a growing array of government policies and corporate-led

initiatives aimed at driving meaningful and measurable sustainability outcomes.

In line with the growing momentum of ESG adoption globally and nationally, The Institution of Engineers, Malaysia (IEM) has taken a proactive step to support the engineering community in navigating this evolving landscape. On 20 April 2024, during its 65th Annual General Meeting, IEM, under the leadership of President Ir. Prof. Dr. Jeffrey Chiang Choong Luin, officially launched the IEM Guideline on Simplified ESG Disclosure for the Built Environment. This initiative aims to demystify and to streamline ESG reporting by offering a simplified, yet comprehensive framework tailored for engineers and built environment professionals.

While the guideline is designed to reduce the complexity found in various existing frameworks of different authorities and agencies, it remains aligned with international standards to ensure credibility, relevance, and global compatibility. Through this initiative, IEM empowers engineers to confidently take their first steps in integrating sustainability into their professional practices and projects.



Figure 1: Importance of ESG in today's society

#### What is ESG?

ESG stands for Environmental, Social, and Governance, representing the three core pillars of sustainable and responsible business practices. More than just a reporting tool, it is a strategic framework that guides organisations in aligning their operations with sustainability goals while fostering transparency and accountability. It involves setting clear objectives, implementing actionable plans, and communicating the impacts of these actions to internal and external stakeholders.

An ESG disclosure serves as a foundational step in this journey, helping organisations assess their performance, manage sustainability-related risks and opportunities, and demonstrate their long-

term value creation beyond financial metrics. The ultimate aim is to capture and address the non-financial factors that influence an organisation's resilience, reputation, and future growth, providing stakeholders with deeper insights into the company's direction and sustainability commitment.

#### **Connection Between ESG and SDGs**

The integration of ESG criteria with the UN SDGs is central to advancing global sustainability. This connection is not merely conceptual; it also directly influences corporate strategies, regulatory frameworks, and investment decisions across sectors. The environmental dimension of ESG aligns closely with SDGs related to climate action (SDG 13), affordable and





Figure 2: Why ESG is important for your organisation

clean energy (SDG 7), life below water (SDG 14), and responsible consumption and production (SDG 12). The social pillar complements goals that promote inclusive growth and human development, including quality education (SDG 4), decent work and economic growth (SDG 8), and reduced inequalities (SDG 10), by focusing on diversity, labour rights, and community empowerment.

Meanwhile, the governance aspect of ESG reinforces SDG 16 on peace, justice, and strong institutions by promoting accountability, ethical leadership, and transparency in decision-making as well as SDG 17 on partnership for the goals. As sustainability regulations evolve globally and regionally, this ESG-SDG alignment serves as a roadmap for businesses to contribute meaningfully to long-term societal and environmental well-being while building trust with stakeholders and investors.

#### **Under the Environmental Pillar**

The Environmental (E) pillar of ESG puts emphasis on how organisations manage resource consumption, particularly raw materials used in production and operations. Companies are encouraged to adopt circular economy principles by increasing recycling rates and minimising waste. Transparent disclosure of greenhouse gas (GHG) emissions across Scopes 1, 2, and 3 is essential, aligned with global frameworks such as the Greenhouse Gas Protocol and the International Sustainability Standards Board (ISSB). Efficient water and energy usage, adoption of renewable energy, and initiatives to reduce pollution are also critical indicators of strong environmental stewardship.

In addition, organisations are expected to address their impact on land use, including concerns such as deforestation and biodiversity loss. Under Malaysia's latest Bursa Malaysia Enhanced Sustainability Reporting Framework, companies must not only disclose environmental risks but also demonstrate positive contributions, such as emissions reduction, green innovation, and conservation efforts. These actions help stakeholders understand how businesses are contributing to climate change mitigation while supporting sustainable economic growth.

#### **Under the Social Pillar**

The Social (S) pillar of ESG emphasises how organisations manage their relationships with employees, communities, and other stakeholders. A key area of focus is employee welfare, including fair labour practices, competitive compensation, career development opportunities, and continuous upskilling. Organisations are also expected to disclose detailed data on workforce diversity, including the ratio of local to non-local employees, as well as metrics on gender, age, and inclusivity, aligning with global best practices.

Ensuring a safe, healthy, and conducive working environment is a fundamental responsibility. This includes regular occupational safety and health training, mental well-being programmes, and proactive safety risk mitigation. The Social pillar also extends to product responsibility, where organisations must ensure product safety, quality control, and responsible marketing practices, especially in sectors like manufacturing, pharmaceuticals, and food & beverage.

Moreover, CSR remains a vital component, evolving beyond philanthropy into long-term community engagement and impact-driven initiatives. Companies are encouraged to align their CSR efforts with national development goals and the UN SDGs to create meaningful social value. In today's interconnected economy, organisations must also enhance supply chain transparency by engaging with vendors and partners to ensure ESG compliance throughout the value chain — monitoring for ethical labour, environmental impact, and fair sourcing practices. This collective approach reinforces the social integrity of the entire ecosystem in which the organisation operates.

#### **Under the Governance Pillar**

The Governance (G) pillar of ESG centres on how an organisation is directed and controlled, with a strong emphasis on transparency, accountability, and ethical leadership. Key focus areas include the protection of shareholder rights, the structure and independence of the board of directors, and the diversity of the board in terms of gender, expertise, and background. Board diversity is being increasingly recognised as critical for effective decision-making and long-term strategic resilience. Another important component is executive compensation, which should be transparently disclosed and increasingly linked to the organisation's sustainability performance, ensuring that leadership is incentivised to deliver not only financial results but also progress on ESG targets.

Strong governance frameworks also require policies and systems to prevent corruption, bribery, and anti-competitive behaviour, in line with global standards such as the Malaysian Anti-Corruption Commission (MACC) Act and Bursa Malaysia's Corporate Governance Guide. Organisations are expected to implement effective risk management and internal controls, to conduct regular internal/external ESG audits, and to disclose their governance practices in line with the ISSB guidelines. By fostering ethical conduct and sound corporate governance, companies build stakeholder trust and ensure sustainable value creation over the long term.

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Understanding Impacts of Urban Flooding and Climate Change with Advanced Technologies

#### by:



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Climate change is not just about fluctuating temperatures; it is reshaping our world in profound ways. One significant consequence is the impact on streamflow patterns, making rainfall unpredictable and temperatures fluctuate wildly. These changes disrupt the delicate balance of ecosystems and pose serious threats to urban areas.

Urban areas, like Kuala Lumpur, face significant risks from flooding due to intense rainfall and rapid urbanisation. These floods not only damage infrastructure but also put lives and livelihoods at risk.

So, how do we tackle this growing problem? One solution lies in advanced forecasting models. These models, powered by cutting-edge technology, can give us early warnings of impending floods, allowing us to better prepare and protect our communities.

There are two main types of forecasting models: Process-driven and data-driven. Process-driven models rely on physics to simulate flood formation, while datadriven models use historical data and statistical techniques to predict future outcomes. Both have their strengths and weaknesses, but when combined, they are a powerful tool for flood management.

One exciting development in this field is the rise of deep learning, particularly Long Short-Term Memory (LSTM) networks. These networks excel at understanding complex patterns in data, making them ideal for forecasting streamflow. By harnessing the power of deep learning, we can improve the accuracy of our flood forecasts and better protect our cities.

Our study focused on Kuala Lumpur and the Stormwater Management & Road Tunnel (SMART) project (Figure 1), a groundbreaking initiative aimed at mitigating urban flooding. By analysing data from telemetry stations along the Klang River basin, we hoped to develop more accurate forecasting models that could help us anticipate and respond to floods more effectively.

But developing these models is not easy.

They are sensitive to input variables and uncertainties. Getting them right requires careful calibration and validation. This was where our research came in. By combining the latest advancements in deep learning with real-world data, we aimed to create forecast models that were not only accurate but also practical and easy to use.



Figure 1: Study location and rain gauge sites

Our goal is simple: To make our cities safer and more resilient in the face of climate change. By understanding the complex dynamics of floods and harnessing the power of technology, we can build a better future for all.

This section presents the results obtained from training various models for streamflow forecasting. The models used were the Multilayer Perceptron (MLP) network, specifically the Feedforward Backpropagation (FFBP) model, and LSTM models. Initially, the analysis was conducted without any preprocessing steps. Later, a preprocessing step was introduced to enhance the accuracy of the forecasts. The results were assessed based on different input parameters and target variables.

The input parameters consisted of precipitation data from 11 stations located in the upper catchment area of the SMART watershed, with readings taken at 30-minute intervals. The data was used to train both the FFBP and LSTM models to predict flows at the confluence of the Ampang River and Klang River.

For the FFBP model, the analysis began with one hidden layer and was later extended to include two hidden layers. The number of neurons in each hidden layer varied from 2 to 16. The trained models exhibited varying levels of accuracy depending on the combination of algorithms used. The best accuracy was achieved by a model with one hidden layer and 10 neurons, resulting in an overall correlation coefficient (R) of 0.4465, Mean Absolute Error (MAE) of 3.7135, Nash Sutcliffe Efficiency (NSE) of 0.1994, Root Mean Square Error (RMSE) of 8.856 (Table 1). However, this level of accuracy was deemed insufficient for flood warning purposes.

Table 1: Performance of MLP model with single hidden layer

Neuron	R	MAE	NSE	RMSE
2	0.3181	3.8922	0.0943	9.4185
3	0.3856	3.8002	0.1442	9.1555
8	0.4313	3.7432	0.1860	8.9294
9	0.4437	3.7516	0.1965	8.8713
10	0.4465	3.7135	0.1994	8.8556
11	0.4408	3.6478	0.1939	88,855
12	0.4387	3.7405	0.1925	8.8936

Following the initial training, additional training and validation were conducted using the LSTM model in MATLAB, utilising the same input parameters and target variables. The performance of the LSTM model was evaluated (Table 2). Compared to the FFBP model, the LSTM model demonstrated satisfactory performance.

Table 2: Performance evaluation of LSTM model for streamflow simulation



Figure 2: Visualisation of model simulation: flow target vs flow output

Later, peak-to-peak values of the forecasted and observed flows were depicted in Figure. 2. It was noticeable that the majority of outputs were under-forecasted. At the initial stage, it was observed that while the input data exhibited repetitive values, the target values varied inconsistently over different time intervals. This inconsistency reduced the efficiency of the training process. To address this issue, the flow at time t (Qt) was introduced as part of the input data, in addition to the existing rainfall data from the 11 stations. The target variable was set as Qt+0.5, aiming to forecast streamflow at the confluence 30 minutes ahead. The results presented in Table 3 indicated that the most optimal model (R=0.9359, MAE=0.7722, NSE=0.8756, RMSE=3.4911) was achieved with two hidden layers, consisting of 17 and 8 neurons in the first and second hidden layers, respectively. However, there was a trade-off in increased epoch time when transitioning from a single hidden layer to two hidden layers. Nonetheless, significant improvements were observed in the results following the inclusion of Qt as an input parameter.



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Table 3: Performance co	omparison of MLP	model with two	hidden layers
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Neuron 1st layer	Neuron 2nd layer	R	MAE	NSE	RMSE
17	2	0.9267	0.7101	0.8588	3.7189
17	3	0.9229	0.9113	0.8512	3.8182
17	8	0.9359	0.7722	0.8756	3.4911
17	9	0.9321	0.7276	0.8687	3.5863
18	2	0.9238	0.7273	0.8534	3.7897

Following the training and validation processes, the LSTM model was utilised with the same input parameters and target variables. The results of the LSTM model are presented in Table 4. Notably, there was significant enhancement in the performance of the LSTM model, with a 5% increase in training regression and a 10% improvement in validation regression. Additionally, the Nash Sutcliffe efficiency (NSE) increased from 0.8190 to 0.8963, indicating notable progress in model accuracy and reliability.

Table 4: Performance evaluation of LSTM model for 30-minute ahead streamflow

Model	R.Train	R.Valid	MSE. Train	MSE. Valid	MAE. Train	MAE. Valid	NSE	RMSE
LSTM	0.9470	0.9476	10.2326	10.0042	0.5640	0.6935	0.8963	3.1629



Figure 3: Graphical representation: Target flow vs output flow for 30-minute ahead forecast model

The training progress was visualised for a 30-minute ahead forecast, showing promising results. Furthermore, the peak-to-peak values of the forecast and observed flows in Figure 3, revealed that the majority of the forecasts were accurate and superior to those shown in Figure 2.

Subsequently, training was conducted for a one-hour ahead forecast to explore the potential for achieving higher accuracy or encountering challenges as the forecast time increased. The input parameters consisted of 11 stations rainfall data with 30-minute intervals and flow Qt, while the target variables were replaced with Qt+1, representing flows one-hour ahead at the confluence of Ampang River and Klang River.

From the results presented in Table 5, the most optimal outcome was achieved with a model featuring two hidden layers, each with 14 and 5 neurons, respectively. The corresponding performance metrics were R=0.8671, MAE=1.1305, NSE=0.7515, RMSE=4.9333. A comparison of the results revealed a gradual decline in overall performance as the forecast time increased.

Additionally, we conducted further training and validation using the LSTM model with the same input parameters and target variables. The results are summarised in Table 6.



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#### Table 5: MLP model performance with two hidden layers for 1-hour streamflow forecast

Neuron 1st layer	Neuron 2nd layer	R	MAE	NSE	RMSE
14	2	0.8472	1.1499	0.7177	5.2584
14	3	0.8536	1.2050	0.7286	5.1559
14	5	0.8671	1.1305	0.7515	4.9333
14	6	0.8457	1.6626	0.7127	5.3051
14	7	0.8436	1.4802	0.7117	5.3137

#### Table 6: LSTM model performance for 1-hour ahead streamflow forecast

Model	R.Train	R.Valid	MSE. Train	MSE. Valid	MAE. Train	MAE. Valid	NSE	RMSE
LSTM	0.8849	0.8677	21.4296	25.0978	0.9397	1.2829	0.7828	5.0098



Figure 4: Graph flow target vs flow output for 1-hour ahead forecast model

The training progress was then plotted for a 1-hour ahead forecast. As for the peak-to-peak values of the forecast and observed flows (Figure 4), it was evident that the majority of the forecasts were accurate, although not as precise as that in Figure 3.

In the next phase of training, we introduced the rate of change as part of the model development to explore the potential for achieving higher forecast accuracy. We kept the input parameters consistent, using data from 11 rainfall stations at 30-minute intervals, along with flow data, while changing the target variables to rates of change. These rates were derived from the difference between Qt+0.5 and Qt, divided by the time interval.

The best results were obtained with a two-hidden-layer configuration, with 23 and 10 neurons for each layer, respectively. This configuration achieved a notable performance, with R=0.7303, MAE=0.0263, NSE=0.5334, and RMSE=0.1297 (Table 7). However, it's worth noting that this set-up required a longer epoch time of 5 minutes 40 seconds, with 116 iterations, compared to a single hidden layer of 15 neurons, which achieved R=0.7129, MAE=0.0279, NSE=0.5073, and RMSE=0.1333, with an epoch time of 53 seconds and 83 iterations. While there was no significant increase in accuracy, there was a trade-off in terms of computing speed.

Table 7: Performance of MLP model with two hidden layers and target  $\delta Q$ 

Neuron 1st layer	Neuron 2nd layer	R	MAE	NSE	RMSE
23	2	0.7131	0.0274	0.508	0.1332
23	3	0.7182	0.0274	0.5156	0.1322
23	10	0.7307	0.0263	0.5334	0.1297
23	11	0.6624	0.0306	0.4388	0.1423
23	12	0.7042	0.0268	0.4956	0.1349



Figure 5: Plotting of actual flow vs predicted flow using  $\delta Q$  model

The LSTM model was then executed using the same input parameters and target variables to assess its testing and validation performance accuracy. The results of the LSTM model are presented in Table 8.

The rates of change were subsequently converted into predicted flow values and a graph illustrating the actual flow versus the predicted flow at the confluence was plotted (Figure 5).

#### **Future Flood Forecasting Systems**

The efficacy of flood forecasting systems hinges on their accuracy, vital for supporting water managers in critical operations like controlling hydraulic gates to redirect river flow and ensure public safety. The aim of this case study is to develop the optimal deep learning model with appropriate hyperparameters for the SMART control centre in Kuala Lumpur. It seeks to introduce a novel technique by incorporating rates of change into artificial intelligence models and providing multi-step ahead streamflow forecasts.

Multiple models of artificial neural networks (ANNs) were deployed and trained to forecast flow at the confluence of the Ampang River and Klang River. The initial simulation phase yielded unsatisfactory results, possibly due to the redundancy of input parameters with different target values, known as the multifinality issue. However, the LSTM model exhibited significantly better results than ANN, with a 45% improvement in regression value from 0.4465 to 0.9055, aligning with Ni et al.'s assertion that LSTM networks outperform ANN due to their memory cells.

To address the redundancy issue, the flow at time t (Qt) was introduced into the model as input parameters, while the flow at time t+0.5 (Qt+0.5) served as the target variables. This led to a significant improvement in model performance, with ANN achieving values of R=0.9359, MAE=0.7722, NSE=0.8756, and RMSE=3.4911, equivalent to a 30-minute ahead forecast. The LSTM model continued to outperform the ANN model.

Subsequent experiments involved forecasting one hour ahead, where both ANN and LSTM models exhibited less accurate performance compared to the 30-minute ahead forecast. This confirmed Lv et al.'s statement suggesting a deterioration in model performance with increased forecast lead time.

The crux of this study lay in introducing rates of change ( $\delta Q$ ) as target variables into the model. While the R and NSE values were not satisfactory for flood mitigation operations, the MAE and RMSE values were significantly reduced. The forecasted rates of change were then translated into forecasted flow and the observed vs forecasted flow graph showed promising results. Rates of change could serve as early detection to track changes in flow patterns, aiding water managers in staying alert.



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In summary, these findings not only validated previous theoretical understandings regarding model performance but also uncovered an additional layer of protection in flood mitigation operations. This is particularly useful as a stepping stone for further exploration of rates of change behaviour in model development. Limitations of the study include the use of ANN and LSTM models exclusively. Future research can explore evolutionary computing methods such as nature-inspired optimisation models to generate higher quality data for better outcomes. Additionally, incorporating features such as land condition and evaporation rate as additional input parameters can provide more comprehensive insights, considering the complexity of hydrological processes.

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## Continuous Condition Monitoring Visibility for Primary Switchgears in TNB Distribution Network (DN)

#### by:



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TNB's Distribution Network (DN) is evolving to become a smart utility through the integration of five essential pillars: Asset Management, Work Management, Grid Operation, Energy Management, and Customer Management.

The Asset Management pillar is dedicated to optimising resources and ensuring the longevity and reliability of assets. By adopting Condition-Based Maintenance (CBM), TNB seeks to enhance the operational performance of its assets. CBM entails the continuous monitoring of equipment conditions to anticipate and prevent failures, thereby optimising maintenance schedules and reducing operational costs. TNB's commitment to resource optimisation underpins this approach. CBM, as a proactive maintenance strategy, assesses the actual condition of assets to determine the appropriate timing for maintenance interventions. This methodology yields several benefits:

**Early Fault Detection:** Continuous monitoring allows for the early detection of potential faults before they escalate into major issues. This reduces downtime and maintenance costs.

**Extended Equipment Life:** By addressing issues promptly, the lifespan of primary equipment, such as transformers, circuit breakers, and switchgear, can be significantly extended.

**Enhanced Reliability:** Ensuring that equipment operates within optimal parameters enhances the overall reliability of the electrical distribution network.

**Safety Improvements:** Real-time data helps prevent catastrophic failures that can pose safety hazards to personnel and infrastructure.

#### CBM: Foundation of Predictive Maintenance

CBM is the foundational step towards the future paradigm of predictive maintenance.

Predictive maintenance extends beyond the scope of CBM by not only identifying potential issues but also forecasting potential failures through the analysis of data trends and patterns. This advanced approach leverages several cutting-edge technologies, including:

**Sensor Technology:** Advanced sensors monitor parameters such as temperature, humidity, vibration, and partial discharge. These sensors yield critical data regarding the operational status of equipment.

**Internet of Things (IoT):** IoT devices enable the seamless collection and transmission of data to centralised systems for comprehensive analysis.

**Machine Learning & Artificial Intelligence (AI):** These technologies process and analyse vast datasets, discerning patterns and predicting potential failures with high precision.

#### **Condition Monitoring Parameter Visibility**

Partial Discharge (PD) and thermal issues are critical concerns in switchgear systems. PD refers to small electrical discharges within insulation that can degrade insulation, lead to component failure, and pose safety hazards over time. Causes of PD include defects, contaminants, ageing, and high electrical stress. PD can be detected using electrical, ultrasonic, optical, and chemical methods.

Thermal issues arise from excessive heat caused by high electrical loads, poor ventilation, or faulty components. These issues result in overheating, accelerated insulation ageing, and potential failure. Both PD and thermal problems require regular monitoring, maintenance, and proper design to ensure the reliability and safety of switchgear systems. The benefits of these parameters are:

**Enhanced Decision-Making:** The availability of realtime data equips operators with the necessary information to make informed decisions regarding network operations and maintenance strategies.

**Improved Efficiency:** Optimising parameters for condition monitoring minimises energy losses and enhances the overall efficiency of the electrical distribution system.

**Preventive Maintenance:** The identification of trends and anomalies within condition monitoring data facilitates proactive maintenance measures, thereby reducing the incidence of unexpected equipment failures.



Figure 1: Smart Utility

**Regulatory Compliance:** Continuous monitoring ensures adherence to industry standards and regulatory requirements, thereby mitigating the risk of penalties and fostering public trust.

#### Surface Acoustic Wave Technology

Surface Acoustic Wave (SAW) technology is used for sophisticated temperature measurement in switchgear systems. The system uses a piezoelectric sensor and a transceiver. Initially, the transceiver sends an electromagnetic signal to the sensor, similar to a monostatic Radar system. The sensor, equipped with an antenna, captures the incoming signal. An Interdigital Transducer (IDT) on the piezoelectric quartz substrate converts this electromagnetic signal into a SAW (Figure 2). The signal, modified by temperature changes, is then reflected to the transceiver. requiring precise temperature and PD monitoring, such as industrial environments, remote locations, or situations demanding high accuracy.

This processed data is then transmitted to a local Human-Machine Interface (HMI) or a cloud platform for trend analysis. Customisable alarms can be set to alert users when temperature and PD events exceed predefined thresholds, ensuring proactive maintenance and management. This advanced system effectively monitors and analyses various temperature and PD events, ensuring the reliability and safety of high-voltage equipment.

#### **Pilot Project on Primary Switchgear Systems**

Currently, TNB has a pilot project using IoT sensor solutions for primary switchgear systems. For example, the SAW Temperature PD and Humidity Monitoring System has been evaluated for 33KV Air Insulated Switchgear (AIS) at PPU Kompleks Sukan. The system demonstrated its ability to detect abnormal conditions early, allowing for corrective actions to avoid equipment failure and unplanned outages.

Data evaluation from pilot projects shows that the temperature pattern of the monitored systems is consistent, ranging from 60°C to 118°C (Figure 3). This range is uncommon for normal cable termination points, indicating potential issues. Verification by TNB's diagnostic team confirmed abnormal conditions, highlighting the



effectiveness of IoT sensor solutions in early anomaly detection.

Based on the verification. the IoT sensor solution is capable of monitoring and sensing any abnormal condition earlv. allowing corrective action to be taken to avoid equipment failure and unplanned outages. Potential load loss avoidance of 4MW that could affect up to 18 distribution substations. By employing this technology, organisations can achieve improved asset health and

Figure 2: Surface Acoustic Wave (SAW)

The transceiver processes and interprets the reflected signal to determine the temperature with an accuracy of ±2°C across a range of -25°C to 150°C. PD events are detected in a cubicle using RF radiation, specifically targeting various discharges. Any PD event, including floating electrode discharges, corona discharges, inner discharges, surface discharges, and particle discharges, generates RF radiation. Antennas serve as probes to detect these events in the Ultra High Frequency (UHF) range, covering a frequency spectrum from 300 MHz to 3 GHz. This system can monitor temperature and PD sequences, providing comprehensive data for effective monitoring and maintenance. It is ideal for applications

longevity, reduced risk of outages and supply interruptions, increased operational efficiency & cost-effectiveness, and enhanced decision-making through data-driven insights.



Figure 3: Temperature pattern graph



Figure 4: Thermal images from handheld device

#### Conclusion

The implementation of continuous condition monitoring visibility within TNB's Distribution Network is an integral element of a robust electrical distribution system. By adopting these advanced technologies, TNB significantly enhances the reliability, efficiency, and safety of its operations, thereby contributing to a more resilient and sustainable power grid. The advantages of this approach encompass improved asset health, reduced risk of supply interruptions, increased operational efficiency and cost-effectiveness, and enhanced decision-making through data-driven insights.

TNB's adoption of CBM methodologies marks a critical step in optimising resources and enhancing asset performance. CBM forms the foundation for predictive maintenance, which will be further advanced with the

integration of IoT technology, thus paving the way for future automation and smarter grid operations. Pilot projects and case studies have demonstrated the efficacy of these technologies in real-world applications, highlighting their capacity to improve reliability and efficiency within the Distribution Network.

In conclusion, TNB's proactive stance on continuous condition monitoring and its strategic focus on integrating advanced technologies will ensure the sustained reliability and sustainability of Malaysia's power distribution network.

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## The Institution of Engineers, Malaysia

## IEM 66th AGM

The 66th AGM was held earlier in the morning at Wisma IEM. In addition to the usual business of presenting the annual report, financial statements and election results, awards and recognitions were also presented.

ENGINEERS

A total of 1,068 IEM members attended the AGM, both physically and online. IEM President Ir. Prof. Dr. Jeffrey Chiang started by presenting prizes and certificates to the Tan Sri Ir. Haji Yusoff Ibrahim Final Year Project (FYP) winners (see list below):

#### Grand Prize

#### **Tan Ser Lee**

From Tunku Abdul Rahman University of Management & Technology. Topic: Effect of Doping Calcium Oxide Extracted from Clamshell on Hydroxyapatite Derived from Chicken Bone Food Waste.

#### 2nd Place

Lam Ji Teng From Universiti Tun Hussein Onn Malaysia

*3rd Place* **Lim Sian Ping** From Universiti Tunku Abdul Rahman

#### Consolation Prizes

Tey Shu Qi From Universiti Tunku Abdul Rahman

See Xu Ze

From Curtin University Malaysia

Taha Minhaj Ahmad From University College of Sedaya International In addition, the awards for Best Technical Paper were also presented to the following members:

1. Tan Sri Haji Yusoff Prize (for outstanding technical paper on any subject contributed by Corporate Members of IEM)

Civil

#### Ir. Dr. Lim Siong Kang Paper Title: Strength Properties of Lightweight Foamed Concrete with Steel Fibre

General & Other Categories Ir. Prof. Dr. Khoo Hooi Ling

Paper Title: New Capacity Model for Malaysian Urban Roads Using Macroscopic Fundamental Diagram and Multiple Linear Regression Approach

2. Thean Lip Thong Prize (for outstanding technical paper on any subject contributed by Student Members of IEM)

#### Mechanical

Yathava Arulappan

Paper Title: The Effect of Different Cutting Tool Materials and Machining Parameters on the Surface Roughness of Biomedical – Grade Titanium Alloys

Next, Ir. Dr. Tan Inn Shi received the award for IEM Young Engineer Award 2025 (Academia Category) and 20 retiring Council Members were presented with mementos for their unwavering support and services.

The AGM ended with Ir. Prof. Dr. Jeffrey Chiang giving his Presidential Address 2025, titled ESG: Engineering for A Greener Tomorrow. ■



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## IEM 66th Annual Dinner 2025

The Institution of Engineers, Malaysia (IEM) held its 66th Annual Dinner & Awards Night 2025 at the Grand Lagoon Ballroom, Sunway Resort Hotel, Bandar Sunway, Selangor, on 19 April 2025. The event, themed ESG: Engineering for a Greener Tomorrow, followed the 66th Annual General Meeting held earlier the same day when new Council Members and the Executive Committee line-up for Session 2025/2026 was elected.

The Guest of Honour was the Minister of Works, YB. Dato Sri Alexander Nanta Linggi, who was also awarded the IEM Award for Honorary Fellow 2025. Also present were distinguished local and foreign personalities, as well as senior government officials in the engineering field. The evening was further enlivened by a special performance by Malaysia's Queen of Jazz, Sheila Majid.

#### **Digital Content**





Over 1,285 members and guests, including representatives from professional bodies, government agencies, and regional engineering organisations, gathered to witness the presentation of awards to deserving individuals and companies. Below is the list of the award recipients:

#### **IEM Honorary Fellow**

- YB. Dato Sri Alexander Nanta Linggi
- · YBhg. Dato' Seri Ir. Jaseni Maidinsa

#### IEM Award for Contribution to Engineering Profession Mr. Tan Eng Tong

#### **Top Membership Drive Award**

- Ir. Dr Kwong Kok Zee
   Individual for Graduate Member Category
- Ir. Sh Mohd Firdaus Sh Abdul Nasir Individual for Corporate Member Category
- Tenaga Nasional Berhad
   Organisation for Graduate Member Category
- Tenaga Nasional Berhad
   Organisation for Corporate Member Category

#### **IEM Top Mentor Award**

- Ir. Choo Chee Ming
- Ir. Chuah Rhun Riang
- Ir. Sheikh Mohd Firdaus
- Ir. Sukhairul Nizam Abdul Razak
- Ir. Dr. Mui Kai Yin

#### IEM Presidential Award of Excellence

#### Champion

Tunnelling & Underground Space Technical Division (TUSTD)

#### 1st Runner-Up

Young Engineers Section (YES)

2nd Runner-Up Geotechnical Engineering Technical Division (GETD)

#### 3rd Runner-Up

Electrical Engineering Technical Division (EETD)

*4th Runner-Up* Project Management Technical Division (PMTD)

#### Most Improved

Marine Engineering & Naval Architecture Technical Division (MNATD)









#### Contribution to Engineering Industry Award

Water Industry Indah Water Konsortium (Pinnacle Award – Champion)

*Facilities Management* Sedafiat Sdn. Bhd. (Pinnacle Award – Champion)

#### Power Energy & Green Technology Industry

- Schneider Electric Industries (M) Sdn. Bhd. (Pinnacle Award – Champion)
- American Air Filter Sdn. Bhd. (Trailblazer Award – 2nd Place)

#### Engineering Consultancy Practices (ECP)

- H&T Consulting Engineers Sdn. Bhd. (Pinnacle Award – Champion)
- Jurutera Perunding Meinhardt Sdn. Bhd. (Pinnacle Award – Champion)
- AECOM Perunding Sdn. Bhd. (Catalyst Award – 3rd Place)

#### **Engineering Construction**

- PPES Works CCCC JV Sdn. Bhd. (Pinnacle Award – Champion)
- China Communications Construction (ECRL) Sdn. Bhd. (Section 7) (Trailblazer Award – 2nd Place.

*Digital Industry* Selesa Technology Sdn. Bhd. (Pinnacle Award – Champion).

Outstanding Engineering Achievement Award Arup Jururunding Sdn Bhd. The following top engineering students from local universities received IEM Gold Medal Awards in recognition of their excellent performance in their studies.

Chan Wei Juan Universiti Malaya

Cheah Jun Yan Monash University Malaysia

Chong Chee Kin Asia Pacific University of Technology & Innovation

Goh Yan Jing Universiti Tenaga Nasional

Gui Zheng Xuan Southern University College

Hanif Zamri Infrastructure University Kuala Lumpur

Jason Ting Zhi Cheng Swinburne University of Technology Malaysia

Jassper Lawrence Tunku Abdul Rahman University of Management and Technology

Lee San Hang Multimedia University

Lim Wei Tatt Universiti Tunku Abdul Rahman

Lim Zhi Min UCSI University

Loke Yan Kuang Universiti Sains Malaysia

Malvin *Xiamen University Malaysia* Miriam Elena Ondo Nguba

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Muhammad Nur Aiman Haja Maidin Universiti Teknologi Petronas Ng Shao Ming University of Nottingham Malaysia

Nur Amirah Nadhirah Abdul Halim Universiti Malaysia Sabah

Nurin Syauqina Yusof Universiti Malaysia Pahang Al-Sultan Abdullah

Nurul Shafrina Atika Saiful Nizam Universiti Pertahanan Nasional Malaysia

Richie Anak Romeion Universiti Malaysia Sarawak

Rooshwini Asokan Universiti Selangor

Tan Hui Yee First City University College

Tan Zhi Lin Universiti Putra Malaysia (UPM)

Tay Shuen Nee University of Wollongong, Malaysia

Walldan Wazeel Bari SEGI University

Wong Jing Xiong University of Technology Sarawak

Wong Zhe Ming Curtin University Malaysia

Yeoh Chong Meng INTI International University

Zeynab Tahir Taylor's University

## IEM JURUTERA-i

To enhance the readership and accessibility of JURUTERA, the Chairman of the Bulletin Editorial Board has initiated the development of a dedicated website, Jurutera-i. This standalone platform aims to provide readers with a seamless and engaging digital experience, offering easy access to the latest issues, featured articles, and exclusive content. Beyond serving as a digital repository, Jurutera-i will also introduce interactive features, such as article sharing, multimedia integration, and an archive of past editions, ensuring that members and industry professionals can stay informed on the latest engineering trends and developments. This initiative reflects IEM's commitment to modernising its publications and broadening its outreach to a wider audience, both locally and internationally.

JURUTERA-i was officially launch during the IEM 66th Annual Dinner and Awards Night on 19th April 2025. ■

#### **Digital Content**







#### NOTICE OF IEM (KELANTAN BRANCH) EXECUTIVE COMMITTEE MEMBER FOR SESSION 2025/2026

The 13th Annual General Meeting of The Institution of Engineers, Malaysia (Kelantan Branch) was successfully conducted on 26th April 2025 and we are pleased to introduce the new Executive Committee IEM Kelantan Branch for session 2025/2026 as follows:

IEM (Kelant	IEM (Kelantan Branch) Executive Committee Member Session 2025/2026			
Chairman	Ir. Hj. Nik Burhanuddin Nik Yusoff			
Vice Chairman	Ir. Che Sufian Che Hussin Ir. Mohd Nor Ismail			
Honorary Secretary	Ir. Wan Muhammad Faisyal Mohd Noor			
Honorary Treasurer	Ir. Hj. Mohd Anuar Musardar Hj. Yusoff			
Immediate Past Chairman	Ir. Ts. Hj. Abrizan Abdul Kadir			
Ordinary Committee Members	Ir. Hj. Nik Ab. Hadi Nik Hassan Ir. Dr. Mustafa Salleh Ir. Khairul Nizam Berahim @ Ibrahim Ir. Nohaimi Ismail Ir. Ts. Gs. Dr. Mohd Amiruddin Fikri Yaakob Ir. Abu Hanifah Yusof Ir. Cheok Ka Hiang Ir. Hjh. Wan Noorul Hafilah Wan Ariffin			



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## Penchala Interchange: Solution or Symptom of Larger Urban Planning



Mr. Mark Omar Mohsen

The Penchala Interchange, a key nexus between the Damansara-Shah Alam Elevated Expressway (DASH), Damansara-Puchong Expressway (LDP), and Sprint Expressway (Penchala Link), serves as a crucial link in Kuala Lumpur's extensive highway network. It also connects to several local roads, providing access to areas such as Damansara Perdana, Mutiara Damansara, and Kampung Penchala. However, despite its strategic importance, questions linger about whether this "spaghetti junction" has effectively eased traffic congestion in the area.

It's challenging to definitively assess the impact of the interchange on traffic. While it may have alleviated some bottlenecks, the high cost of such infrastructure projects raises concerns. The Penchala Interchange is emblematic of a broader issue in urban development: The lack of coordinated and strategic planning.

In many cases, developers approach these massive infrastructure projects from isolated perspectives, focusing on solving specific, localised issues rather than considering the broader implications for the urban environment. This piecemeal approach often leads to fragmented solutions that fail to address the overarching traffic challenges faced by the city.

As a result, what may seem like progress at an isolated level can ultimately contribute to a lose-lose situation for the broader community.

#### **The Sustainability Question**

Moreover, the reliance on infrastructure-heavy solutions like the Penchala Interchange raises questions about sustainability. Such projects are not only costly but also perpetuate a cycle of dependence on extensive road networks, which may not be viable in the long run. As cities grow and evolve, the need for more holistic and integrated urban planning becomes increasingly urgent.

In conclusion, while the Penchala Interchange plays a significant role in Kuala Lumpur's transportation network, its effectiveness in improving traffic is difficult to determine.

More importantly, it highlights the critical need for better coordination and strategic planning in urban development. Only through such efforts can we hope to create sustainable, liveable cities which effectively address the complex challenges of modern urban life.







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### To all Members,

#### LIST OF CANDIDATES ELIGIBLE TO SIT FOR THE PROFESSIONAL INTERVIEW FOR THE YEAR 2025

The following is a list of candidates who are eligible to sit for the Professional Interview for the year 2025.

According to the IEM Bylaws, Section 3.8, the names listed below are published as eligible candidates to become Insitution Members, provided that they pass the Professional Interview in 2025.

If there are any Corporate Members who have objections against any candidate deemed unsuitable to sit for the Professional Interview, a letter of objection can be submitted to the Honorary Secretary, IEM. A letter of objection must be submitted within one month from the date of publication.

#### Ir. Chen Harn Shean

IEM Honorary Secretary

MOHAMAD AZWAN BIN MOHAMAD

NEW APPLICATION			
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FAHTHUL HEDZRI BIN MOHAMED SHUKRI	BE (KUITTHO) (CIVIL, 2005)		
ELECTRONIC ENGINEERING			
AHMAD FAISHAL BIN AHMAD RAZALI	BE (UTM) (ELECTRICAL-INSTRUMENTATION AND CONTROL, 2009)		
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RUKAINI BIN KAMARUDIN	BE (IIUM) (MANUFACTURING, 2014)		
APPLICATION	FOR CORPORATE MEMBER		
NAME	QUALIFICATION		
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MOHD ALI BIN PAIMIN	BE (UTM) (CIVIL, 1998)		

MOHD ALI BIN PAIMIN	BE (UTM) (CIVIL, 1998)
YUSRI BIN ZAINUDDIN	BE (USM) (CIVIL, 2001)
YUE WEI MIN	BE (USM) (CIVIL, 2015)
NORMALA BINTI YAHYA	BE (UKM) (CIVIL & STRUCTURAL, 2000)

BE (UITM) (ELECTRICAL, 2017)

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80270	WONG SHYANG HAW	BE (UTAR) (CIVIL, 2017)
64831	MOHD EDZHAM FAREEZ BIN OTHMAN	BE (UITM) (CIVIL, 2012) ME HONS (UITM) (CIVIL, 2014)
44229	MD DAUD BIN MILI @ HASSIM	BE (UITM) (CIVIL, 2011)
22049	NG CHIN HUI	BE (KUITTHO) (CIVIL, 2002)
ELECTRIC	AL ENGINEERING	
121609	MOHD NORFAEZ BIN MOHAMAD FOUZEI	BE (UNITEN) (ELECTRICAL & ELECTRONICS, 2015)
64556	MOHD ZAKI BIN PAIJAN	BE HONS (UTHM) (ELECTRICAL, 2005)
101696	FRANKCO FERNANDO AMANDOS	BE (UMS) (ELECTRICAL & ELECTRONIC, 2018)
117071	SAU YUNG YI	BE (UPNM) (ELECTRICAL & ELECTRONIC, 2018)
101794	KIEW LI XUAN	BE (UNITEN) (ELECTRICAL POWER, 2020)

ELECTR	ONIC ENGINEERING	
130222	ALYAA ADIBAH BINTI IDRIS	BE (UNITEN) (ELECTRICAL, 2021)
MECHAN	ICAL ENGINEERING	
111793	SIGITHASAN A/L NAGANTHERAM	BE (UMP) (MECHANICAL, 2016)
43086	CHIN YEW SIN	BE (UTM) (MECHANICAL, 2002)
MECHAT	RONICS ENGINEERING	
106164	CHU YIH BING	BE (MONASH) (MECHATRONICS, 2012) PhD (MONASH) (2016)

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117079	TANG KOK PING	BE (LEEDS) (CIVIL & STRUCTURAL, 2010) MSc HONS (NANYANG) (CIVIL, 2013)			
28244	NG SOON MIN	BE (USM) (CIVIL, 2009) MSc HONS (USM) (CIVIL, 2012) PhD (USM) (2016)			
MECHANIC	CAL ENGINEERING				
88474	LOW JUN HENG	BE (TARC) (MECHANICAL, 2016) MSc HONS (CENTRAL LANCASHIRE) (CIVIL, 2019)			
99435	MOHD HASNI BIN MOHD TAMIN	BE (UTM) (MECHANICAL, 2016)			
119013	YIT JING EE	BE (UM) (MECHANICAL, 2018) PhD (UM) (2023)			
ELECTRIC	AL ENGINEERING				
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54213	PRAKAS A/L GOPAL SAMY	BE (UTHM) (ELECTRICAL, 2010) ME HONS (UM) (MECHATRONICS, 2014) PhD (UM) (2024)			
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## **PUBLIC NOTICE**

## Patent Infringement

Nehemiah Reinforced Soil Sdn Bhd ("Nehemiah") is the owner of a Malaysian patent for its retaining wall system, commonly known as the "Nehemiah Wall".

On 21<sup>st</sup> March 2025, the High Court in Kuala Lumpur ruled that a company called RSEG Sdn Bhd ("RSEG") had infringed Nehemiah's patent by making, selling or installing a similar product called the "RSEG Wall". Accordingly, the High Court has granted ancillary reliefs including injunctive reliefs and damages against RSEG.

We wish to alert the public that using, selling, buying or promoting the RSEG Wall could also be considered a violation of Nehemiah's patent rights.

If you have any information about the making, sale or use of the RSEG Wall, please contact us as soon as possible.

For more information, please contact:-Nehemiah Reinforced Soil Sdn Bhd

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