

# SUSTAINABILITY REPORT

## Social

### SUPPORTING THE UN SDGs

#### Goal 4

Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

4.4 & 4.5 Promote equal access for all women and men, especially youths to have technical skills that prepare them for employment, decent jobs or entrepreneurship

#### Goal 5

Achieve gender equality and empower all women and girls

5.5 Promote women in engineering and management (and Board)

#### Goal 8

Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

8.5 Prepare differently-abled people to embrace working environment

#### Goal 9

Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation

9.4 Promote innovation and technology that encourages resource use efficiency

#### Goal 11

Make cities and human settlements inclusive, safe, resilient and sustainable

11.1 & 11.3 Catalyse the inclusivity and sustainable urbanisation while integrating sustainable human settlement planning and management

#### Goal 17

Strengthen the means of implementation and revitalize the global partnership for sustainable development

17.17 Encourage and promote effective public-private partnership in catalysing the education and employability of differently-abled people



It is our aim to sustain, support and develop the local communities through education, development programmes, environmental conservation and sustainability advocacy so that we can mutually thrive to build a sustainable planet for the future generations.



## OUR PLAN

- Tunnelling Training Academy – produce a skilled workforce in the highly specialised field of tunnel construction
- KVMRT Safety Training Centre – prioritise safety and health with best-in-class practices
- BIM Academy – promote a qualified and multi-skilled workforce on the latest construction technologies essential in Industry 4.0
- Gamuda Plant Operator School – promote training on machine operation for construction works
- Enabling Academy – enable adults with autism to embrace the working culture and provide employability
- Engaging indigenous communities for education and employment opportunities in biodiversity conservation

“You can dream, create, design, and build the most wonderful place in the world. But it requires people to make the dream a reality.”

– Walt Disney

# Sustainability Report



## TRAINING TYPES

### WHY IT MATTERS

[GRI 404-2] [GRI 103-1]



As a key infrastructure builder, Gamuda conducts high-risk and high-skilled construction works at densely populated areas. Therefore safety is important and we need to ensure our workers are well equipped with the specific knowledge and safety awareness to operate at our project sites, and that the level of competency amongst them is consistent. Establishing our own training centres that cater to the specific requirements of our projects have led to increased work efficiency and allowed us to be more professional as we execute the infrastructure projects.

On the ground for our various projects, we strive to equip all our employees with proper and structured training before they begin work as this is important to ensure all the tools, equipment and machineries are operated in a safe manner. Through proper training, we could reduce downtime and maintenance cost while ensuring the smooth operation throughout the project duration.

### HOW WE APPROACH IT

[GRI 404-2] [GRI 103-2] [GRI 103-3]



**Gamuda Plant Operator School (GPOS)** was established in 1997 to streamline the different competency levels of earthmoving plant operations in Malaysia as prior to that, construction workers learnt to operate tower cranes from experienced colleagues on the job. While it was initially set up as a non-profit centre catering to our own internal needs, GPOS has since extended training services to other construction companies in Malaysia, beyond focusing on just our employees to raise the nation's overall vocational skills and competencies.

GPOS currently offers three categories of training – skills competency, safety, awareness and youth apprenticeship programmes. These programmes enable plant operators to obtain Certificates of Competency, which is recognised by government regulatory bodies such as the Department of Occupational Safety and Health (DOSH) and Construction Industry Development Board (CIDB).

In over two decades, GPOS has trained more than 45,000 trainees in crane and earthmoving plant operation as well as safety and health programmes across the country. Training includes tower crane, crawler crane, mobile crane, gantry or overhead crane, forklift and earthmoving plant operations. GPOS remains the only private training academy for crane operators in the country and since the Government only allows Malaysians

registered with DOSH to be trained as crane operators, we are contributing to the social sustainability of the nation by upgrading the skills of local residents. As many as 75 percent of Malaysia's certified crane operators are trained by GPOS.

Meanwhile, the **KVMRT Safety Training Centre** was established in collaboration with CIDB and National Institute of Occupational Safety and Health (NIOSH) as a pioneering institution aimed at elevating the Occupational, Safety and Health (OSH) standards of the whole MRT Putrajaya Line project. It was set up as part of the plan to reduce risks and practices that are deemed hazardous to address rising public concerns and scrutiny over the construction industry. In line with this objective, the KVMRT project, especially the Putrajaya Line, was made an example by the Government to set the benchmark for best practices for the construction industry in Malaysia.

The purpose-built construction competency and safety training centre covers OSH training as well as skills to train workers involved in specific high-risk jobs and electrified rail infrastructure construction. Based on our experience from the construction of the MRT Kajang Line, the majority of the construction accidents occurred during lifting operations, or workers falling from heights.

Following the opening of the **KVMRT Safety Training Centre**, contractors for KVMRT projects must send their worker for safety induction courses, and we established a safety passport system to ensure that all workers working in the KVMRT project sites must have earned the necessary qualifications. Arrangements were also made to ensure all subcontractors, crane companies, transporters and suppliers also receive adequate training, while free courses were provided to crane operators to ensure they are totally competent to manoeuvre a crane during lifting, considered as one of the most high-risk activities in construction. With increased training and tighter safety strategy, the number of fatality and injury related accidents have declined during the construction of MRT Putrajaya Line compared with MRT Kajang Line.

The **Construction Management Programme (CMP)** is offered via the Construction Training Unit (CTU) to boost the quality of our managers by utilising real site work exposure to train young site supervisors and engineers. This programme facilitates training with internationally benchmarked construction skills adopted from the best practices in Australia, Europe and Singapore to provide a springboard to the careers of trainees in the dynamic construction industry. CMP courses are accredited by CIDB for Civil and Structural or Building and Architectural Works.



The world class **Tunnelling Training Academy (TTA)** is Asia’s first academy designed to produce a skilled workforce in the highly specialised field of tunnel construction, while simultaneously supporting the required specialist skills volume needed to roll out the KVMRT project. Training courses are designed in

collaboration with international experts from Siemens, Bosch to Herrenknecht from Germany, tailoring to the requirements of the projects. We jointly developed the training on the operation and maintenance of the Variable Density Tunnel Boring Machine (VDTBM) with supplier Herrenknecht to cater to the complex geological conditions in Greater Kuala Lumpur. Kindly refer to page 119 for Tunnelling Training Academy.

We are one of the first companies in the Southeast Asian region and among the very few in the world to implement BIM Level 2 for an infrastructure project of this scale and complexity. We are the first main contractor in Malaysia to be BIM Level 2 certified by a leading training and certification body, the British Research Establishment. In furthering the competencies in digital construction, a **BIM Academy** was established with the aim of training over 1,000 employees and subcontractors from 2020-2022 to be able to design and operate this automated process using BIM software for our employees.

**Types of Training conducted by GPOS for FY2020**

**Types of Training**

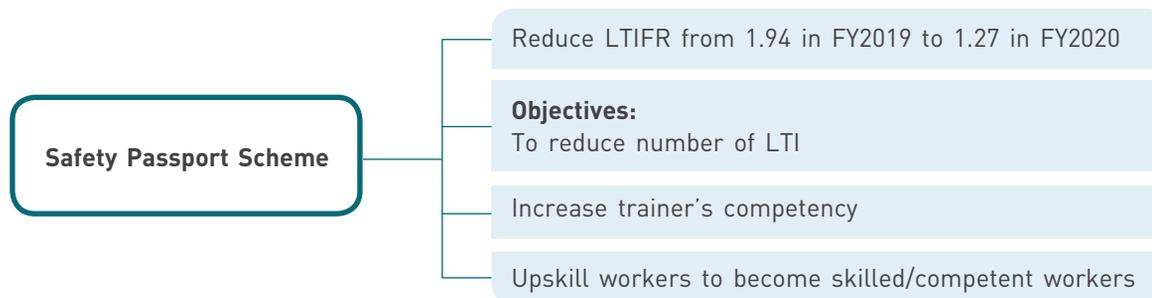
- 1 Rigging and Sligging
- 2 Crane Safety Inspection and Lifting Gears
- 3 Crawler Crane Operator
- 4 Lifting Supervisor\*
- 5 Mobile Crane
- 6 Overhead Crane
- 7 Tower Crane

**Types of Training conducted by BIM Academy for FY2020**

**Types of Training**

- 1 BIM related Training\*
- 2 Viewpoint for Projects (VFP) training\*
- 3 Fieldview (FV) – Combined Installation Programme (CIP) training\*
- 4 Augmented Reality for Construction Validation\*
- 5 Fieldview Training on-sites for data collection\*
- 6 Fieldview Training on Gamuda Building unit sites\*
- 7 Fieldview Training on-sites for COVID-19 QR Code system for temperature tracking and RTK results\*

 \* Information on the type and scope of programmes implemented and assistance provided to upgrade employee skills for FY2020 has been assured through Limited Assurance exercise with Ernst and Young.



# Sustainability Report

## SAFETY AND HEALTH

### WHY IT MATTERS

(GRI 403-2) (GRI 103-1)



Gamuda believes that our people are our most valuable asset, and creating a safe work environment has become the Group's primary objective in ensuring the safety, health and welfare of the people are protected. Our people refers to not only the employees and workers but is inclusive of subcontractors, suppliers and any other person who is impacted by the work we deliver. We trust that by ensuring our construction site is safe, it also keeps the public safe. Construction sites are usually located in busy areas where there is general public movement. Inadequate safety protocols can allow objects to fall on innocent bystanders, putting people not connected to the project at risk.

As safety and health are of paramount importance to the Group, we aim to continuously improve our safety and health performance through robust risk assessments and controls as well as the adoption of best practices and procedures. Our Safety, Health and Environment (SHE) Policy outlines the relevant processes and approach that sets our high safety and health standards while also meeting regulatory requirements. This policy is regularly reviewed to strengthen our safety and health performance and ensure it remains relevant to our business objectives. In FY2020, the Group enhanced the Occupational Safety and Health (OSH) Standard by adopting the Australian standard which meets the requirement beyond Malaysia.

We adhere to stringent safety requirements for all the high-risk activities at our construction sites, such as working at heights, crane and lifting operation, and plant and machinery management to reduce the number of accidents arising from these activities. These safety efforts have resulted in Gamuda's accreditation under the Work Health and Safety Accreditation Scheme administered by the Office of the Federal Safety Commissioner, Australia until November 2022.

By adhering to strict safety and health rules, Gamuda has managed to reduce the number of major injury accidents (Class 1, 2, and 3) involving high-risk activities (working at heights, crane and lifting operation, and plant and machinery) at the workplace from nine cases in FY2019 to four cases in FY2020.

As a leading construction company, having a safe work environment has contributed to safeguarding reputation and supporting our local and international project tenders. Our emphasis on safety and health also boosted the morale of our employees, helped us retain our pool of skilled manpower, and contributed towards developing a safe work culture.



We take lessons learnt from accidents involving high-risk activities and use that as a basis to improve on the gaps in our safety and health practice. A thorough and transparent investigation will be conducted in the event of an accident to identify any gaps in work process, and the investigation findings will be used to enhance our process to prevent recurrence of the incident. Subsequently, we conduct ongoing monitoring and evaluation of the enhanced process to maintain its effectiveness.

### HOW WE APPROACH IT

(GRI 403-2) (GRI 103-2) (GRI 103-3)



Our safety and health standard is governed by the QSHE Policy (Quality, Safety, Health and Environment) established by Gamuda Berhad and Gamuda Engineering Sdn Bhd, and signed by the managing directors of both companies.

The policy stipulates that Gamuda is committed to being an industry leader in QSHE by providing timely delivery of quality products and services, safe and healthy working condition and an environmentally sustainable and responsible approach to our business.

We aim to meet the needs and expectations of our customers and other stakeholders, and we either comply with or exceed the relevant legal and other requirements when it comes to safety and health standard. We are determined to prevent safety and health incidents and environmental pollutions by continuously improving our QSHE management system and performance to uphold the safety and health standard.

Gamuda is driven to integrate the QSHE requirements into our business processes by inculcating a self-regulating mindset in our employees by encouraging them to take personal ownership of all safety and health matters. Our projects are built from teamwork and we seek to keep everyone safe by adopting open and honest communication to foster real teamwork. Most importantly, we want to develop our people so that they are equipped with sufficient skills and knowledge to keep everyone safe at work.

The proper methodology is in place to keep track of our OSH performance and progress in a systematic way. At Gamuda, safety is everyone's responsibility, all the way from the top management to the workers on the ground. To uphold the standard, we have set KPIs for every project sites and these results are reflected in Gamuda's OSH performance.

Gamuda has dedicated substantial resources to maintain and enhance our OSH performance. There are dedicated OSH Team at the headquarters and our project sites, and we regularly conduct OSH-related training.

In line with the Group's digitalisation strategy, we are gradually digitalising some processes. We have digitalised OSH monitoring, evaluation and performance analysis using Fieldview and Tableau. We started using Fieldview for SHE Inspection in the previous year. This year, the usage of Fieldview has been expanded to Internal Audit, PTW Implementation, Plant and Machinery Inspection and Site Daily Progress Report.

Gamuda adopts an integrated management system for our OSH processes. This is certified under ISO 9001, 14001 and 45001.

We are constantly monitoring our OSH practice through regular daily and weekly inspections, in addition to Safety and Health Committee inspection and monthly Inspection by SHE personnel at the project sites. This is enhanced by the internal audit as well as external audit conducted by a certification body such as SIRIM. Our operations in Australia is subjected to inspection by the Federal Safety Commissioner (FSC) Australia.

At Gamuda, all safety and health related matters come under the oversight of the Head of QSHE Department. At the project level, this is the responsibility of the respective heads of projects.

We have maintained a zero non-conformance report (NCR) for the past 11 years consistently for the SIRIM audit result. The 5-Star SHASSIC award was presented to RSKU Puncak Bestari, RSKU Bandar Serai and RSKU Cyber Valley from Construction Industry Development Board (CIDB) during CIDB SHASSIC Day 2020. We also obtained TABAS (Tapak Bina Sejahtera) for RSKU Cyber Valley from Majlis Perbandaran Sepang.

Training and development for employees and workers in FY2020:



Safety, Health and Environment induction for all new employees



Emergency Response Team (ERT) training by internal and external parties (e.g. BOMBA and St John Ambulance)



Safety, Health and Environment (SHE) Work Instruction on High-Risk Activities Training



Emergency Drill



Competency Training (e.g. Integrated Management System (IMS) Lead Auditor, Rigging and Slings, Scaffold Inspector and Lifting Supervisor)

### SHE Committee

SHE committee is established at all project sites to lead the implementation of SHE initiatives and to monitor SHE performance. SHE committee meetings are conducted at least once a month to serve as a platform in ensuring timely communication and effective Hazard Identification, Assessment of Risk and Opportunity, and Controls (HIAROC) process implementation. Employees and workers may also communicate and provide feedback to management through the following channels:

- 1 **Toolbox and pre-task briefing**
- 2 **Involvement in HIAROC during Job Safety Analysis and Method Statement review**
- 3 **During incident investigation process**
- 4 **Discussions during corporate and project level SHE committee meetings**
- 5 **Management Review Meetings**

The SHE committee team carries out regular site visits to guide our workers in implementing the Group's best practices and minimising harm at the workplace. We have put in place an Incident Investigation and Reporting procedure to respond to any safety and health related occurrences reported by employees or workers on site. Incidents reported will be investigated by trained personnel and preventive or mitigating actions will be implemented. Data and trends gathered from these incidents will be reviewed critically to enhance existing SHE strategies and procedures.

# Sustainability Report

## OUR PERFORMANCE

(GRI 403-2)



The close attention given to OSH has led to several awards and recognitions. Gamuda Engineering was accredited by Office of the Federal Safety Commissioner, Australia (OFSC), 5-Star SHASSIC Award and British Safety Council Award, just to name a few. Gamuda Land, on the other hand was awarded EdgeProp Malaysia's Responsible Developer: Building Sustainable Development Award 2020 in June.

Gamuda Land was also praised by Malaysia's Works Minister Dato' Sri Haji Fadillah Yusof for stepping up its precautionary workplace actions as part of COVID-19 containment measures, which exceeded the benchmark imposed by the industry regulator, CIDB. The Works Ministry visited twentyfive.7 development in June 2020 for a construction site inspection to ensure developers in the country are keeping up with CIDB's new standard operating procedure (SOP).

### MRT Putrajaya Line

Total Man-Hours Worked	Average Man-Power	Class 1	Class 2	Class 3	Class 4	Injury Rate*	Total Work Day Lost	Lost Day Rate#
29,647,276	12,957	0	1	18	57	0.51	441	2.97

- Class 1 - An incident that results in the death of an employee due to an occupational activity
- Class 2 - An incident which involves injury to an employee that prevents the person from following his normal occupation and involves permanent disability
- Class 3 - An incident which involves injury to an employee that prevents the person from following his normal occupation for 4 days or more
- Class 4 - An incident resulting in lost time of less than 4 days which requires medical treatment or clinic or hospital

Information on the types of injury and injury rate (for MRT Putrajaya Line) has been assured through Limited Assurance exercise with Ernst and Young.

\* Formula to calculate Injury Rate: Number of injury (class 1, 2, 3 and 4)/total manhours worked X 200,000

# Formula to Lost Day Rate: Number of workday lost/total manhours worked X 200,000

### GAMUDA BERHAD (Gamuda Engineering, Menara Gamuda and projects)

Total Man-Hours Worked	Average Man-Power	Injury Rate	Lost Time Injury Frequency Rate (LTIFR)
40,053,544	16,744	0.25	1.27

Projects include MRT Putrajaya Line, Pan Borneo (WPC-04) and Belfield



## DIVERSITY AND EQUAL OPPORTUNITY

### WHY IT MATTERS

(GRI 405-1) (GRI 103-1)

Gamuda recognises that to achieve its purpose, it must be a leader in relation to workplace diversity and equality.

We employ a diverse workforce so that we can tap into a wider talent pool with different background and expertise, thereby generating creative solutions that will help the Group stay competitive in the ever-challenging and globalised business environment.

We do not discriminate against gender, marital status, race, nationality, ethnicity, or age. Our guiding principles are to promote and protect basic human and, labour rights and values to achieve our collective goal for excellence.

### HOW WE APPROACH IT

(GRI 405-1) (GRI 103-2) (GRI 103-3)

The Group practices non-discrimination when it comes to performing organisational activities. Although the popular belief is that a construction company may tend to promote male employees, Gamuda does not discriminate in that manner. We provide equal opportunities for all to be part of our innovative team of builders. For more information on how we value talents without discriminating based on gender, kindly refer to the 'Women in Engineering' section on page 116.

Besides at the working level, we also ensure that women are part of our highest governance levels. Our Group key governance positions are led by females such as Group Human Resources and Administration, Group Corporate Communications and Sustainability, Group Chief Sustainability Officer, Legal and Company Secretarial, and the Integrity and Governance Unit. The drive to promote women in management extends to the Board level, with three out of seven of the members are female. We hope to continue having this mixture of leadership in the Group and be a precursor towards a company for all.

Other than promoting gender equality, we also do not condone any kind of discrimination especially for key processes such as employee hiring, employee benefits, appraisal, remuneration, promotion or legal action due to non-compliance. We strongly believe that any form of appreciation or retribution should be a consequence of individual workmanship or actions.



### OUR PERFORMANCE

(GRI 405-1)



Gamuda's commitment to build a diverse and inclusive workplace is reflected in the composition of our workforce, which is well represented by each age group as well as gender. In FY2020, 33 percent of our employees are under 30 years old, with 56 percent of them aged between 30-50. We have 12 percent of employees who are over 50 years old. We believe it is important to have a workforce comprising a balanced number of experienced as well as up-and-coming young workers to ensure the succession and continuity of the business as the experience accumulated could be passed down through collaboration.

Besides age diversity, Gamuda is also supportive of raising women's participation in the labour market. The Group has taken the initiative to ease concerns of working women, especially young mothers looking for an affordable and reliable childcare centre that is near to their workplace. This value added benefit acts as one of the elements to attract and retain our women in the workplace. In FY2020, 31 percent of our employees are female.

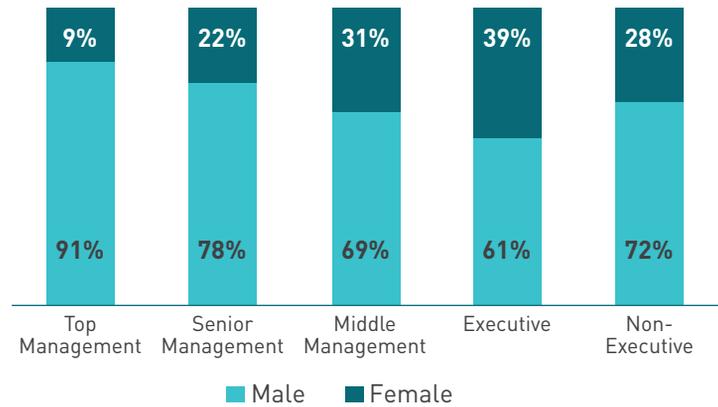


# Sustainability Report

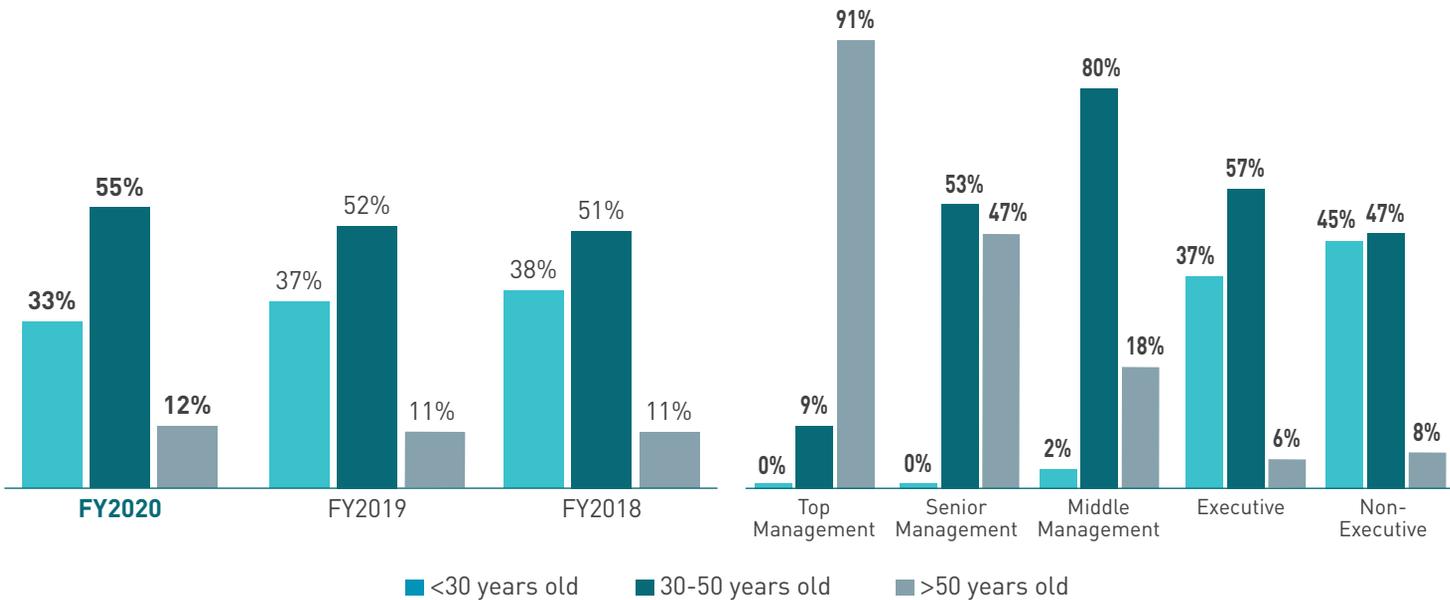
## The Group's Gender Diversity for FY2020



 Total number of employee for FY2020: 4,284  
 \* Excluding Joint Venture, Subsidiaries and Associates



## The Group's Age Diversity for FY2020





## NEW EMPLOYEE HIRES AND EMPLOYEE TURNOVER

### WHY IT MATTERS

[GRI 401-1] [GRI 103-1]



Gamuda views our people as the greatest asset of the Group. As an infrastructure company, our success is heavily dependent on engineering excellence and expertise to drive technological advancement. This core competency is deeply rooted in the knowledge and dedication brought by our employees, as humans are behind each technology advancement and breakthrough.

This is evidenced by our latest award-winning (Autonomous Tunnel Boring Machine, A-TBM), a true Malaysian innovation designed by an in-house team of engineers at MMC Gamuda that is undertaking the Klang Valley Mass Rapid Transit construction project. Therefore, efficient manpower planning is important for Gamuda to maintain an optimal level of talents to sustain the business. At the same time, we seek to keep employee turnover to a minimum by providing a positive employee experience overall through continuous engagement and retention strategies.

Our hiring activity will typically increase when the Group embarks on a new project. This is balanced against a healthy turnover as this will enable the replenishment and growth of new talents with new skill sets.

The management of our human capital is a material sustainability matter as our people are the primary stakeholder that drives the business, bringing innovation to our projects. All of these will have an indirect impact on the construction and engineering industry in Malaysia due to Gamuda's position as an industry leader. An event that may alter the Group's hiring and retention rate would be an industry slowdown or a lack of new business for the Group to sustain its workforce expansion.

### HOW WE APPROACH IT

[GRI 401-1] [GRI 103-2] [GRI 103-3]



Whenever a new hire joins the Group, they will be introduced to the Group's structure and work culture through a formal orientation programme that promotes an informed on-boarding experience. These new hires will undergo a supervised and structured on-boarding programme within their departments during their probationary period. The Recruitment and Selection Policy is in place for everyone to view and follow when hiring is concerned.

We also share Gamuda Values with new employees and equip them with awareness on discipline, sexual harassment and grievance guidelines and policies during the Corporate Induction Programme for all new employees.

A Cessation of Service policy is in place to help manage employee resignation. We will conduct a formal exit interview to obtain feedbacks on reasons for resignation, which allows us to ensure actions are taken to improve and close any necessary gaps that may exist.

The new hires and employee turnover are managed by our talent managers from the Group Human Resources. They assist the business to manage and advise on the required resources. Heads of departments are given the responsibilities to manage the resource planning.

The Group has dedicated resources in place through the various HR teams to manage the full cycle of employment experience at Gamuda, from hiring right through managing the employee's exit. This includes the teams responsible for Talent Acquisitions, HR Operations, Compensation and Benefits, as well as Talent Management. On the technology front, we have invested in computer systems and have the relevant HR processes in place for the management of our employments.

We continuously strategise our annual plans to build our talent pipeline through Employer Branding initiatives. We constantly engage with university students both locally and abroad through workshops and talks, career fairs, internship programme intakes and employer branding by participating in various publications and activities. In addition, we have built a strong social media presence on several platforms with assistance from the Group Corporate Communications and Sustainability department.

Our ongoing branding efforts have resulted in Gamuda being recognised in the latest Graduan Brand Awards as the sector leader in the Construction and Property Development industry. We have maintained our top five positions in the awards for the past three years.

To monitor our approach in employment management, we conduct internal audits to ensure check and balance in the process and feedback are collected on areas that needed improvement. The respective business unit's HR representatives will oversee the evaluation and the findings are discussed with the Head of HR.

# Sustainability Report

## OUR PERFORMANCE

(GRI 401-1)

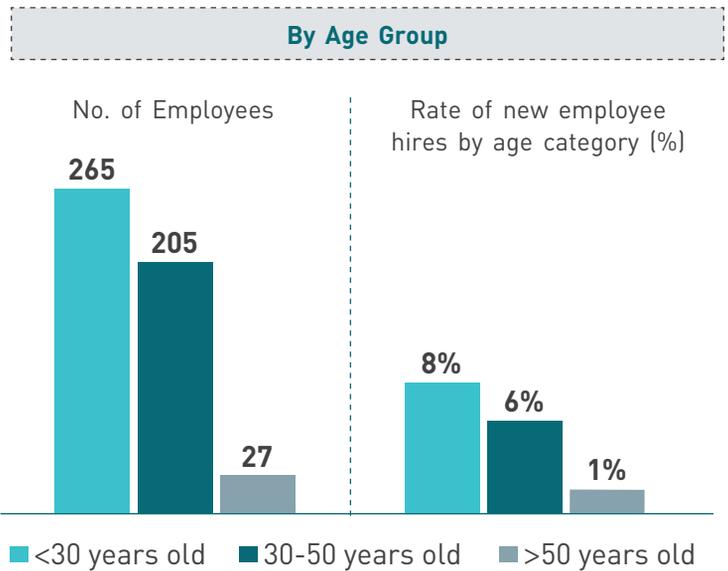
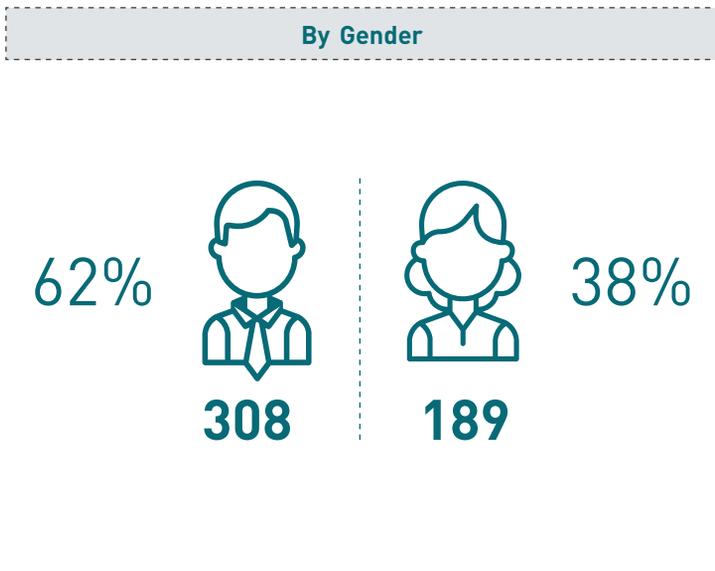


We hired 497 new employees in FY2020, representing 14 percent of our total workforce. The turnover rate stood at 9.2 percent, slightly lower than the 10 percent recorded in the previous year. Our employee turnover rates have been relatively stable over the past three years, with a turnover rate of 9 percent in FY2019.

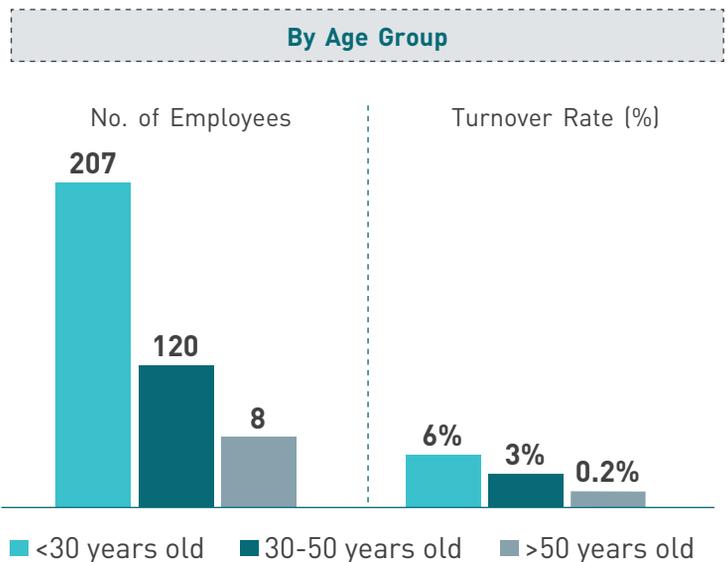
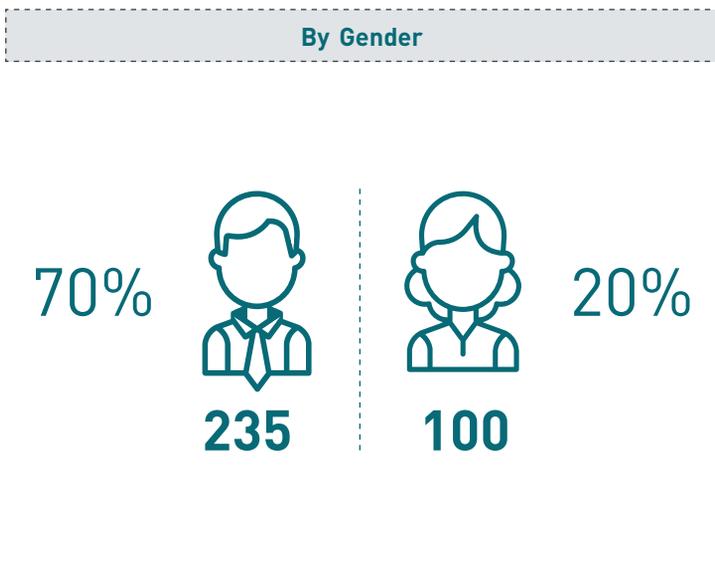
Our employment data consist of those from Gamuda Berhad, Gamuda Engineering, Gamuda Land, Clubs and other subsidiary companies of the Group in Malaysia, Australia, Singapore and Taiwan. The data excludes those from our joint venture and associate companies.

Gamuda's commitment to diversity and inclusivity is demonstrated in the well-balanced number of experienced employees compared with younger employees being hired during the year. Of the total new hires in FY2020, 33 percent are under 30 years old, while 55 percent are 30-50 years old. The remaining 12 percent are over 50 years old.

### New hires



### Turnover





## BENEFITS PROVIDED TO FULL-TIME EMPLOYEES

### WHY IT MATTERS

[GRI 401-2] [GRI 103-1]

We are committed to provide competitive benefits that promotes health and well-being while appreciating the workforce as part of our ecosystem. These benefits can improve our bottom line by engaging employees to care for themselves. Healthier employees mean lowering the risk for sick days, bringing employees best selves to work every day and be available for their lifestyle needs. As a company that promotes family values, we extend our employee benefits to the family members especially on key aspects such as health and flexible working arrangement. By providing these benefits, we hope to journey longer with the employees and retain our valuable talents within the Group.



### HOW WE APPROACH IT

[GRI 401-2] [GRI 103-2]



We continuously review and refine the employee benefits to suit the current needs of employees. We conduct frequent employee engagements through different mediums such as town hall meetings and appraisal sessions. The Group ensures that all employees understand their benefits through roadshows and ongoing communication. Rewards and compensations are offered on a merit basis, according to the employee's performance. Rewards and benefits matters are overseen by the Group Rewards Team and respective HR representatives.

### OUR PERFORMANCE

[GRI 401-2]



We offer comprehensive packages of benefits to our full-time employees to care for their overall well-being, such as healthcare, insurance, leaves, as well as retirement benefits. The table below lists some of the key benefits offered:

Types of benefit	Details
Leaves	Annual Leave, No Pay Leave, Sick or Hospitalisation Leave, Marriage Leave, Paternity Leave, Maternity Leave, Family Care Leave, Examination Leave, Compassionate Leave, Prolonged Illness Leave, Replacement Leave
Flexi-Wellness	Outpatient, Additional Pre and Post Natal Expenses, Annual Medical Check-up, Wellness Membership, Optical, Dental, Vaccination
Allowance and Subsidy	Professional Membership Subsidy, Childcare Subsidy, Business Travel Reimbursement (BTR)
Insurance	Group Term Life Insurance, Surgical and Hospitalisation Insurance, Personal Accident Insurance
Flexi-Work Arrangement	Staggered Working Hours, Flexi Time, Seasonal Flexi-Time, Flexi Place, Flexi Lunch Hours, Replacement Hours, Work from Home (WFH)
Others	Car Park Facility, Retirement benefits, Bona Fide benefits, Employee Education Assistance

Full-time employees refers to those working on a permanent or contract basis with Gamuda only, excluding our joint ventures and associate companies.

# Sustainability Report



## LOCAL COMMUNITIES

### WHY IT MATTERS

(GRI 413-1) (GRI 103-1)



As a socially responsible corporate citizen, Gamuda supports local communities. We aim to create social value to the local communities by fostering collaboration or partnership across sectors with government, media and community members. We believe this will lead to a more equitable and inclusive solution in delivering a positive impact to society.

Communities where we operate are critical to our long-term success while our operations can affect these local stakeholders. It is our aim to sustain, support and develop the local communities through education, development programmes, environmental conservation and sustainability advocacy.

### HOW WE APPROACH IT, OUR PERFORMANCE

(GRI 413-1) (GRI 103-2) (GRI 103-3)



We actively engage the indigenous children, families and communities to tap their expertise and knowledge with the natural habitat of flora and fauna in our biodiversity conservation works, while offering them education and employment opportunity in return to effectively reduce the disadvantage faced by the aboriginal people in Malaysia.

Our approach to engaging and supporting indigenous people is articulated in several programmes, which seek to ensure our relationship contribute to their economic empowerment, social development needs, and cultural well-being.

**Orang Asli (indigenous) Temuan Villages** – we encourage the enhancement of the craft and skills, and preservation of traditional knowledge for medical and plant gardening with the five *Orang Asli* Temuan Villages that are located within the vicinity of our developments – Gamuda Cove and Paya Indah Discovery Wetlands.

**Wild Tree Seed Bank** – a project jointly conducted with native communities towards the propagation of tree species at Gamuda developments. Wild tree seeds are collected in an ex-situ conservation nursery site at Pulau Kempas, Dengkil. Using the traditional knowledge and experiences from the native communities, tree species are identified for conservation, with saplings then planted at our developments and arboretum to support Gamuda Parks' policy of planting more than 50 percent of native trees at our project sites.

**Kuala Langat North Forest Reserve** – As an adjacent landowner, we have committed towards the funding and resources to the rehabilitation of the Kuala Langat North Forest Reserve that covers about 2,372 acres of peat swamp forest. This is aimed at arresting the further degradation of the site to preserve the biodiversity of this natural resource that is of significance to rare animal species such as the Malayan Sun Bear and Leopard, as well as the *Orang Asli* communities.

The Peatland Water Management and Forest Rehabilitation work is implemented in partnership with NGO Global Environment Centre, the Selangor State Forestry Department and the *Orang Asli* Development Department. The objectives of this programme are to establish a local community group to help in forest patrols in the prevention of fire, to support the implementation of the Forest Fire Management Plan, and to create awareness among primary school children in peat swamp forest conservation.

**Junior Peatland Forest Ranger and Peatland Forest Ranger Programmes** – Together with BOH Plantation, we have invested in the Junior Peatland Forest Ranger and Peatland Forest Ranger Programmes, aimed at educating students on peat swamp forest. A total of 126 students and 25 teachers from various schools in Kuala Langat, Hulu Selangor and Kuala Selangor districts benefitted from these programmes.

**International Day for Biological Diversity 2020** – Gamuda Parks collaborated with Think City for the first time in its digital campaign due to the ongoing COVID-19 pandemic. The campaign saw a total of 1048 participants.

**Face masks production to support indigenous and underprivileged communities** – We collaborated with The Asli Co in making and distributing 500 reusable cotton face masks to the *Orang Asli* and homeless communities.

LOCAL COMMUNITY ENGAGEMENT



**PRESERVING TRADITIONAL KNOWLEDGE**

**FOR MEDICINAL PLANT GARDENING**

A knowledge transfer workshop for medicinal plant gardening, benefitting community in terms of food security



**UPSKILL TRAINING OF TEMUAN WOMEN**

Training provided to women from the Temuan *Orang Asli* community to sew and sell reusable face masks

**500 pieces**

of reusable face masks to native communities and homeless



**WILD TREE SEED BANK CONSERVATION OF TREE SPECIES**

Propagation of tree species with conservation value

**2000**

*Melicope lunu-akenda* preserved and procured for Gamuda Cove

**NATIONAL POLICY ON BIOLOGICAL DIVERSITY GOAL 5**

"We have improved the capacity, knowledge and skills of all stakeholders to conserve biodiversity"

**NATIONAL POLICY ON BIOLOGICAL DIVERSITY GOAL 3**

"We have safeguarded all our key ecosystems, species and genetic diversity"



Engagement with native community



Procuring of *Melicope Lunu Akenda* in nursery



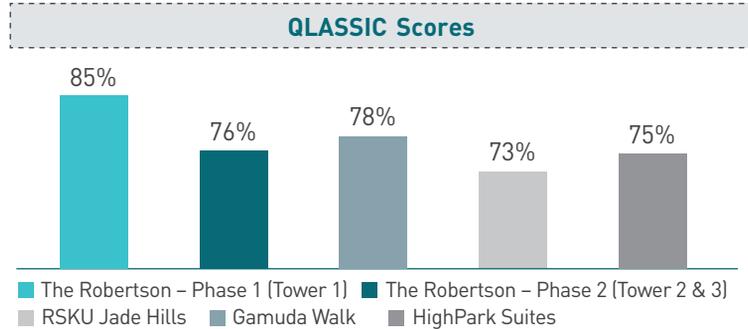
Making of reusable mask

# Sustainability Report

## INITIATIVE

### QLASSIC

Quality Assessment System in Construction (QLASSIC) is a voluntary third party assessment with CIDB to evaluate the workmanship of a building construction based on the Construction Industry Standard (CIS7:2014). QLASSIC enables the quality of workmanship between construction projects to be objectively compared through a scoring system. In FY2020, our Gamuda Land HighPark Suites received the QLASSIC certification with a score of 75 percent.



### STAR GOLDEN HEARTS AWARD (SGHA)

Since 2016, we have contributed more than RM4 million to the annual Star Golden Hearts Award and Gamuda Inspiration Award a joint initiative by The Star, Star Foundation, and Yayasan Gamuda to celebrate the work of unsung heroes who go the distance in helping those in need irrespective of race, culture and religion. This is reflective of the values we hold dear as an organisation to galvanise and recognise an entire ecosystem of humanitarian and inclusive initiatives.

Every year, the number of nominations received increases double fold. In 2020, more than 500 nominations were received. This is a reflection of the growing humanitarian ecosystem in Malaysia over the years when we received 100 nominations when SGHA first started in 2016.

The nominations cut across all categories ranging from individuals, NGOs, social enterprises and companies. The range of benevolent, public-spirited and altruistic causes include education, environment and social purposes. The charitable initiatives involve employment, entrepreneurship, youth empowerment, digital literacy, waste management, nature conservation, urban agriculture, ecotourism, community welfare for the homeless and urban poor, disabled with special needs, water and sanitation in rural and indigenous communities, and animal welfare.

Each year, 10 outstanding individuals or groups are chosen as award winners and among them a Gamuda Inspiration Award winner will be selected to receive a grant of RM50,000 in contribution towards their cause. This resonates with our goal in empowering community-building efforts that leave a positive impact on the lives of others through socio-economic development.

## GAMUDA INSPIRATION AWARD



**2019**  
**Sujana Mohd Rejab**  
 Makes 3D-printed prosthetic limbs for disabled children; enabling them to have equal access to a quality life with dignity.



**2017**  
**Barefoot Mercy**  
 Provides electricity and education support to improve quality of life in rural Sarawak.



**2018**  
**UmieAktif**  
 Empowers underprivileged mothers in Chow Kit through sewing and crafting skills.



**2016**  
**Kedai Jalanan**  
 Set up 'Kedai Jalanan', a pop-up store to clothe the homeless with dignity.

INITIATIVE

INTERNATIONAL WOMEN'S DAY

On 6 March 2020, we organised an event for our employees at Menara Gamuda to mark the International Women's Day, a global day in celebration of the social, economic, cultural and political achievements of women.

At Gamuda, we strongly believe in the power of harnessing the potential of women and we are dedicated in providing all the support we can to help keep women in the workforce while they strive to raise a family at the same time. Gamuda is committed to invest in our employee to go on contributing, move up the corporate ladder and be eligible for decision-making roles in the boardroom – and we want them to do so deservingly, on their own merits.



At present, 33 percent of the board is made up of women, who constitute the board. While we are supportive of equal opportunity for women's participation in the labour force through family-friendly employment policy and facilities, continual participation remains the most critical workplace issue. Currently 31 percent of the workforce in Gamuda comprises of women, compared to 29 percent in 2019.

The highlight of the event during the International Women's Day this year was the "Stay On, Everyone Wins" forum that we hosted, aimed at building awareness on empowering women at workplace and its significance. Featuring Malaysia's longest-serving Minister of International Trade and Industry Tan Sri Rafidah Aziz, the forum discussed how, in more recent decades, gender gaps at work were found to have been based on women's own decisions that were influenced by social norms rather than a result of overt discrimination.

**43%**  
Women on Board

**31%**  
Women in the workforce

**Family friendly**  
employment policy and facilities

GAMETIZE

As the Group continues to further drive digitalisation, Gamuda's Talent Management is leveraging on technology to facilitate knowledge and skill development among our employee by utilising a mobile learning gamification application called Gametize.

Classroom training is no longer the only way to learn and acquire skills, and gamification is the latest and more interesting way to learn. Gamification is well-suited for today's learners who have grown up with technologies and want strong engagement while learning, as the game-based mechanics and aesthetics motivate action and problem solving.



Gametize is a flexible learning platform that can be customised for any training topic, which is especially useful during the year when social distancing have affected physical training plans. Gametize uses online quizzes, diagrams and flashcards to entice learners to complete challenges toward defined learning objectives.

The Gametize way of e-learning in bite-sized modules that takes only 10-15 minutes to complete has proven to be popular not only among the younger audience, but also among the tech-savvy seniors in Gamuda.

# Sustainability Report

## INITIATIVE

### WOMEN IN ENGINEERING

While engineering is a male-dominated profession, Gamuda is dedicated to shake up the perception and diversify its workforce with a more gender-balanced talent pool. We constantly offer opportunity and encourage women to take up roles that are traditionally occupied by men, and we are proud to know many women who took up the challenge persevered and excelled in the tasks assigned to them. From a specialty instructor who conducts fire safety training for all site workers working underground at the MRT Kajang Line, to a site engineer who was promoted to become the Section Head of KLCC East underground station, we have groomed many female workers who excelled in the engineering roles along with their male counterparts.

To further increase female participation in our workforce, we have started the Gamuda Women Empowerment Network (GWEN), aimed at providing women a support network to help advance their careers. Through GWEN, we hope to encourage more women participation especially at managerial and senior levels. We want to educate our workforce in removing cultural impediments about women in leadership positions as well as discuss the types of policy measures needed to promote more diversity and inclusion in the workplace.

We also seek to retain more female employees in the workforce through a host of benefits under the Women@Work initiative, offering options to women to raise their family amid career development such as extended maternity leave and Flexi Work Arrangement to accommodate to the needs of working mothers.



Increase  
**female**  
participation in  
our workforce

Encourage more  
**women**  
participation

## PANDEMIC PREPAREDNESS

### COVID-19

Gamuda adhered to all regulations and guidelines issued by the Malaysia Government in response to the COVID-19 outbreak to safeguard our employees and communities from the disease.

Malaysia entered a period of Movement Control Order (MCO) from March 18 to May 4, when almost all businesses and economic activities were halted and people were ordered to stay at home under the Government's directive. This followed by Conditional Movement Control Order (CMCO) from May 4 to June 9 with more relaxed regulations following a decline in COVID-19 cases in the country. Most economic sectors and activities were allowed to operate during this time with strict adherence to business standard operation procedures (SOPs) such as social distancing and keeping patrons' contact details for tracing purposes. Movement restrictions in Malaysia were further relaxed under the Recovery Movement Control Order (RMC0) phase between June 10 and December 31.

A special committee was set up to handle the pandemic, which consists of the COVID-19 Steering Committee headed by the Managing Director of Gamuda Engineering Sdn Bhd, the COVID-19 Working Committee, Business Unit and Project Task Force. The COVID-19 response plan is chaired by the Group Managing Director through a Steering Committee for business resumption, led by the Managing Director of Gamuda Engineering and the CEO of Gamuda Land. The Working Committee consist of



personnel from the Group Human Resources and Admin, Group Corporate Communications and Sustainability, and the Quality, Safety, Health and Environment (QSHE) departments, while the Board aided the management as appropriate. We had also revised the Emergency Response Plan and included COVID-19 as a potential emergency.

Gamuda responded to the Government's directives with several key measures, mainly related to the establishment of a process related to testing and contact tracing to ensure that early detection of COVID-19 can be done to prevent further spread of the virus. Centralised Quarantine Quarters (CQQ) were set up to serve as facilities to quarantine Patients Under Investigation (PUIs) while they wait for confirmation on the COVID-19 status. We had also introduced testing approaches such as RT-PCR and Antibody RTK tests, and redesigned the Centralised Labour Quarters (CLQ).

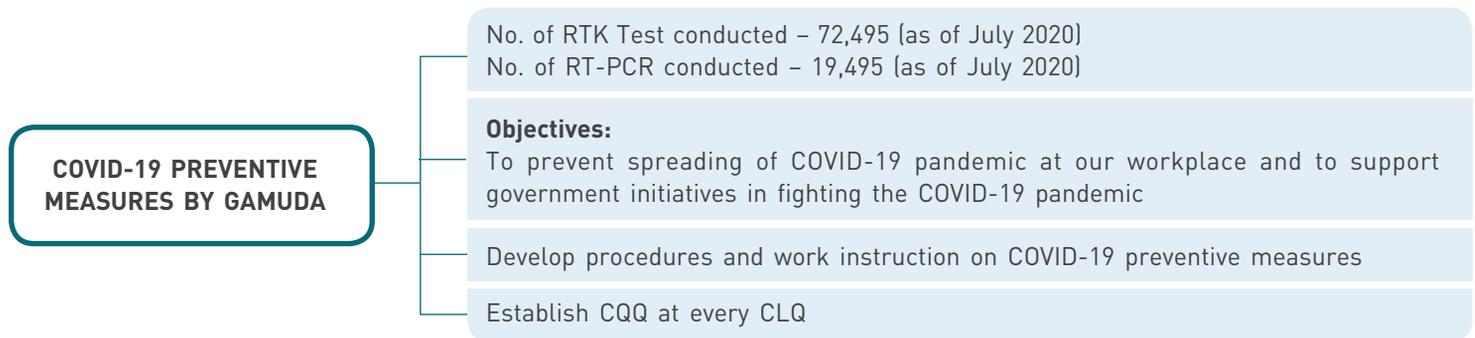
**PANDEMIC PREPAREDNESS**

We have set up our RT-PCR testing facility to enhance our COVID-19 control measures to bolster infection prevention while mitigating the risk of the spread of the virus within our workforce. This in turn will support our business continuity plan. Our internal testing process is not intended to replace the Ministry of Health’s RT-PCR test, but rather to support the Group’s operations by preventing downtime and cost through the rapid establishment of any potential infection cases promptly. In the event of an internal test turned out to be COVID-19 positive, we would follow the usual practice of sending the case to a MOH Accredited Laboratory for due process. In such an event, we will be better prepared for the eventual outcome and this will enable us to take speedy action to prevent spread through isolation

Other preventive measures put in place include having our employees working from home at the beginning of movement restriction period, while facilitating social distancing at our

premises. We are in 100 percent compliance with the Government guidelines at both Menara Gamuda and our project sites. Gamuda’s commitment in adhering to the SOPs has helped our project sites obtain the approval from the Ministry of International Trade and Industry (MITI). Special approval was granted to continue works at selected MRT Underground sites during the MCO with stringent adherence to precautionary safety measures and a limited workforce, as tunnelling works could not be temporarily halted due to public safety risk.

We are cognisant of the need to take care of the mental well-being of our employees due to the prolonged MCO period. Action was taken to organise sharing sessions online for all employees on a frequent basis to help ease the effect of isolation. Throughout this period, we have boosted internal communications through Workplace and other platforms to keep our employees updated about the pandemic.



**UPSKILLING AND RESKILLING MALAYSIANS**

**ENABLING ACADEMY**

Over the years, Gamuda has benefitted from the dedication and hard work of many talented Malaysians who chose to build their career with us. This contributed to the Group’s success and market-leading position we enjoy today. Gamuda is determined to contribute back in building the community that built us, by making our growth more sustainable and our success more inclusive.

This vision has led us to launch the Project Differently-Abled in 2013, which resulted in the Group’s hiring of 20 employees with autism. The project was also a precursor to the establishment of the Enabling Academy (EA) in 2017, aimed at preparing more people with autism for gainful and sustainable employment.

The Enabling Academy seeks to achieve this mission through an Employment Transition Programme (ETP) that trains and places young adults on the autism spectrum into companies that embrace diversity and inclusion in their workforce. The three-month programme sponsored by Yayasan Gamuda comprises two courses designed to equip trainees with the relevant soft skills and practical job training that are essential for employability.

We are aware of the tremendously positive impact this programme could bring to the society and we aim to share our experience more widely. To facilitate the replication of more ETPs nationwide, EA has developed and published a Trainer’s Manual, the first in Malaysia that is used by the EA team to conduct Course I (Personal Development for Career Sustainability) and Course II (Job Skills Development).

These courses are useful to help equip job seekers on the autism spectrum, in particular those with high-functioning autism, for sustainable employment. Nevertheless, the concept and contents of EA ETP can be adapted to suit the needs of youths in general to prepare them as they transition to life after school and employment. As such, the Trainer’s Manual works as a guide and resource book for special education teachers, vocational trainers and job coaches for persons with disabilities and other youths in general.

The EA team is planning a nationwide outreach to share the EA ETP manual to the relevant educators, practitioners and job coaches to enhance their existing programme to better equip these youths to achieve sustainable employment and independent living.

# Sustainability Report

## UPSKILLING AND RESKILLING MALAYSIANS



Gamuda believes that employment is particularly challenging for people with autism because societal institutions like workplaces, organisations and tertiary institutions are often not ready or lack the willingness and ability to engage with persons with disabilities as full employees and citizens of society. We want to help raise the awareness that society are in it together to tackle this challenge and we need to embrace persons with disabilities in ways that acknowledge their potential.

According to Professor Dan Goodley, Co-Director for iHuman at the University of Sheffield in the U.K., many people in the world adopted a deficit perspective about persons with disabilities which views them as lacking, lowered in capacity and unable to act as full members of society. This view is wrong as it does not recognise the potential of persons with disabilities and those with autism to work just like other colleagues when offered specific kinds of support in their activities as employees.

However, we all need help at work and none of us can do our jobs in isolation. With that view in mind, EA had designed a series of activities that seek to put in place the support needed by employees with autism, focusing on capacity building. This approach assumes competence on the part of individuals with autism and persons with disabilities in general.

We hope that through supporting people with autism into work, we are also respecting and promoting a diverse workforce that is positive and in turn contribute towards building a more inclusive and sustainable organisation. Our efforts with EA and the Trainer’s Manual is aligned with UN Sustainable Development Goal 4 (Quality Education), 8 (Decent Work and Economic Growth), and 10 (Reduced Inequalities).

### Our Impact

Public Awareness Outreach on the Employability of persons with autism by Enabling Academy

- 150** Companies
- 1,963** Local Communities
- 2,235** Gamuda Employees

All data are since 2017

Current Partner Companies	No. of EA Graduates Employed
DRB-HICOM Bhd	
CIMB Bank Berhad	
Agrifert Malaysia Sdn Bhd	
Macro Dimension Concrete Sdn Bhd	
Feruni Ceramiche Sdn Bhd	
Brick Dotcom Sdn Bhd	
Hap Seng Land Sdn Bhd	
SalesCandy International Sdn Bhd	
SalleWan Property Management Sdn Bhd	27
Maran Road Sawmill Sdn Bhd	
UNIQLO Malaysia Sdn Bhd	
HSBC Electronic Data Processing (Malaysia) Sdn Bhd	
OCBC Bank (Malaysia) Berhad	
Nehemiah Reinforced Soil Sdn Bhd	
Roche (Malaysia) Sdn Bhd	
United Overseas Bank (Malaysia) Bhd	
<b>Gamuda Group</b>	
Gamuda Berhad	
Gamuda Engineering Sdn Bhd	
MMC Gamuda KVMRT (T) Sdn Bhd	6
Gamuda Trading Sdn Bhd	
<b>Self-Employed</b>	
Caryn Personal Care Sdn Bhd (Family business)	
Snack Stall at Damansara Jaya Food Court	3
Vegetable Supplier (Provide dispatch service)	
<b>Total</b>	<b>36</b>

### Awareness Sessions for Companies from 2017 – July 2020

No. of	FY2020	FY2019	FY2018	FY2017	Total
Sessions	5	33	31	28	97
Participants	102	639	367	238	1,346
Companies	4	60	58	28	150

## UPSKILLING AND RESKILLING MALAYSIANS

### TUNNELLING TRAINING ACADEMY

Gamuda has accumulated years of deep experience and highly specialised knowledge in tunnelling works through the various underground construction jobs in the Klang Valley and abroad. Our tunnel building track record includes the world's first dual-purpose Storm Water Management and Road Tunnel (SMART), the Western Kuala Lumpur Traffic Dispersal Scheme (SPRINT), the Electrified Double Track Project (Ipoh – Padang Besar), Kaohsiung Metropolitan MRT in Taiwan, the Klang Valley Mass Rapid Transit (KVMRT) Kajang Line, as well as the Putrajaya Line which is under construction.

Social sustainability is an important aspect of these mega infrastructure projects we embarked on in Malaysia, and we believe these specialised skillsets must be passed on to empower and enrich a new generation of youths, so as to help develop the local workforce in support of the country's aspiration to move up the value chain.

With this in mind, the Tunnelling Training Academy (TTA) was set up by the joint venture between Gamuda and MMC Corp in 2011 during the construction of the MRT Kajang Line to address the shortage of a competent workforce for tunnelling works. Aimed at producing highly skilled workforce in the local tunnelling works, RM10 million was invested to set up the academy in Shah Alam, Selangor to meet the need for the construction of the KVMRT project. An additional RM2 million a year is spent on the operations of the TTA.

The establishment of TTA, the world's first learning institution specialised in Tunnel Boring Machine (TBM) technology, helps reduce Malaysia's dependence on foreign labour for construction projects, fulfilling the country's requirements for skilled labour for upcoming infrastructure projects. This specialised and niche training also elevates the standard of the national technical and vocational training and education (TVET) initiative, making it on par with other specialisation globally.

TTA works closely with the Education Ministry, Human Resources Ministry, the Youth and Sports Ministry and leading TVET institutions in the country such as Institut Latihan Perindustrian (ILP) and Akademi Binaan Malaysia (ABM) to select the graduates to join our training.

About 1,000 trainees have been trained at TTA and worked in MRT Kajang Line, of which 30 percent of the workforce are from Sabah and Sarawak. Training at TTA focuses on the operation and maintenance of the Variable Density TBM (VD TBM) that was jointly developed by Gamuda and the TBM supplier, Herrenknecht from Germany, to meet the complex geological conditions in the Klang Valley.

TTA students first undergo theory and simulator training at the academy in Kota Kemuning, Shah Alam, and they will subsequently be posted to KVMRT job sites including Cochrane, Bandar Malaysia, Titiwangsa, and Chan Sow Lin. Some are also posted to Malaysia's first TBM Refurbishment Plant located in Pusing, Ipoh.

The training modules, which take up to 16 weeks for specialist training, cover TBM operation, tunnel electrical application, ring building, cutting disc changing, to bi-component grouting and will equip graduates for roles ranging from assistant TBM operator, erector operator, tunnel mechanic and electrician, to tunnel crew.

A significant number of TTA graduates were later promoted to become electricians, mechanics, operators and supervisors, in line with Gamuda's objective to upskill Malaysians and providing them with career growth opportunities.

Beyond Malaysia, tunnel-related expertise is a field that has a huge demand globally. TTA constantly collaborates with leading international players such as Siemens and Bosch to ensure only the best solutions are deployed to deliver our tunnelling jobs. For instance, TTA collaborated with Siemens to localise a course on Programmable Logic Controller (PLC) module for tunnel electricians. This is an important course as mastering the PLC is akin to controlling the brains of the TBM and tunnel electricians will be better equipped to understand all the mechanisms that control the VD TBM. TTA also invested in Bosch training facilities through the VD TBM's electro-hydraulic system to train tunnel mechanics on the mechanical and hydraulic components of the TBM.

To replicate the success of TTA while supporting Gamuda's expansion into the Australian infrastructure market, plans are underway to set up a TTA in Sydney to provide transferrable skills to the workforce for the benefits of the industry.

# Sustainability Report

## TUNNELLING INNOVATION ROADMAP

A proven track record of continuous innovation in construction, particularly within our niche of tunnelling with a highly skilled talent pool armed with digital skills and diverse supply chain.

### SMART TUNNEL

Listed by Cable News Network, CNN as one of the world's Top 10 greatest tunnels, SMART is the world's first traffic and stormwater management tunnel built with the largest TBM in South East Asia at the time.



### PRECAST SFRC TECHNOLOGY

Pioneers of Steel Fibre Reinforced Concrete (SFRC) technology in the region for precast tunnel segment production offering increased productivity and improved durability benefits. Upskilled four local precast SMEs.



### LOCAL TBM REFURBISHMENT

Partnered local engineering SMEs to set-up a facility to refurbish eight Kajang Line TBMs for the upcoming Putrajaya Line utilising over 70 percent locally manufactured parts, offering cost savings to the Government and upskilling our local workforce in the process.



## 2002

### TUNNELLING TRAINING ACADEMY

The world's first tunnelling academy set-up to produce a highly skilled local workforce which has provided Technical and Vocational Education, and Training (TVET) to 1,000 Malaysian tunnellers reducing our reliance on foreign expertise.



## 2013

### VARIABLE DENSITY (VD) TBM

The VD TBM is a multimode TBM designed specifically to address the unique challenge of tunnelling in KL's notoriously difficult karstic limestone geology. It is a culmination of our lessons learnt from the SMART project in 2004 and was the key contributor to safe tunnelling on the MRT Kajang Line



## 2016

**TECHNICAL INNOVATION OF THE YEAR AWARD 2014**  
International Tunnelling & Underground Space Association  
London, UK

 **2,400+**  
Upskilled

 **>RM40 million**  
Direct R&D Investment

 **3** International  
Innovation Awards

**DIGITAL CONSTRUCTION**

Digitalisation of processes for a paperless workflow with construction data and information housed on a Common Data Environment (CDE) as a single source of truth accessible on mobile devices in real-time.



**2018**

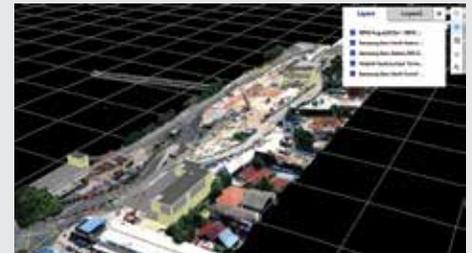
**TUNNEL COMMAND CENTRE**

Integrated tunnel construction and crisis management centre utilising cloud technology for 360° awareness and real-time connectivity to all TBMs operating on the Putrajaya Line.



**WEB 3D GLOBAL INFORMATION SYSTEM (GIS) PORTAL**

Integration of drone and BIM assets onto a common web platform. Digitising the construction landscape on the cloud was a first for the region.



**DRONE SURVEYING**

Winner of Bentley Year in Infrastructure 2019 Reality Modelling Award for novel use of drone surveying for BIM and GIS capture.



**SPEARHEADING BIM IN THE REGION**

First main contractor in Malaysia to be BIM Level 2 certified by a leading training and certification body, the British Research Establishment (BRE). Established BIM Academy to train more than 1,000 professionals in BIM utilisation.



**2019**

**AUTONOMOUS TBM (A-TBM)**

Our A-TBM was developed 100 percent in-house by our local engineers and utilises Artificial Intelligence (AI) Control Algorithms to autonomously operate the TBMs on the Putrajaya Line with proven tangible improvements in productivity, safety and quality for tunnel construction.



**TECHNICAL EQUIPMENT INNOVATION OF THE YEAR AWARD 2019**  
International Tunnelling & Underground Space Association Miami, USA

**INNOVATION IN TUNNEL EXCAVATION OF THE YEAR AWARD 2019**  
New Civil Engineer London, UK

# Sustainability Report

## LOCAL IN-HOUSE DEVELOPMENT UTILISING KEY INDUSTRY 4.0 ENABLING TECHNOLOGIES

Creating a platform for driving continuous growth, increasing productivity, raising innovation capabilities and creating higher skilled digital employment.



**Upskilling and reskilling** existing and future labour pool need to be at the heart of Malaysia's transformation



**Inclusive involvement of SMEs** is critical to power a holistic step up in labour productivity across the economy



**Significant evolution in innovation** capabilities and collaboration platforms is essential to foster the development of and access to cost-effective technologies that address specific sector needs



**Good digital infrastructure** is required to enable reliable and secure Industry 4.0 operations

### AUTONOMOUS TBM (A-TBM)

 **Artificial Intelligence (AI)**

 **Systems Integration**

### TUNNEL INSIGHT

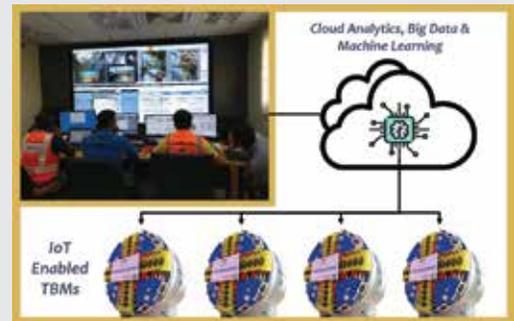
 **Big Data Analytics**

 **Cloud Computing**

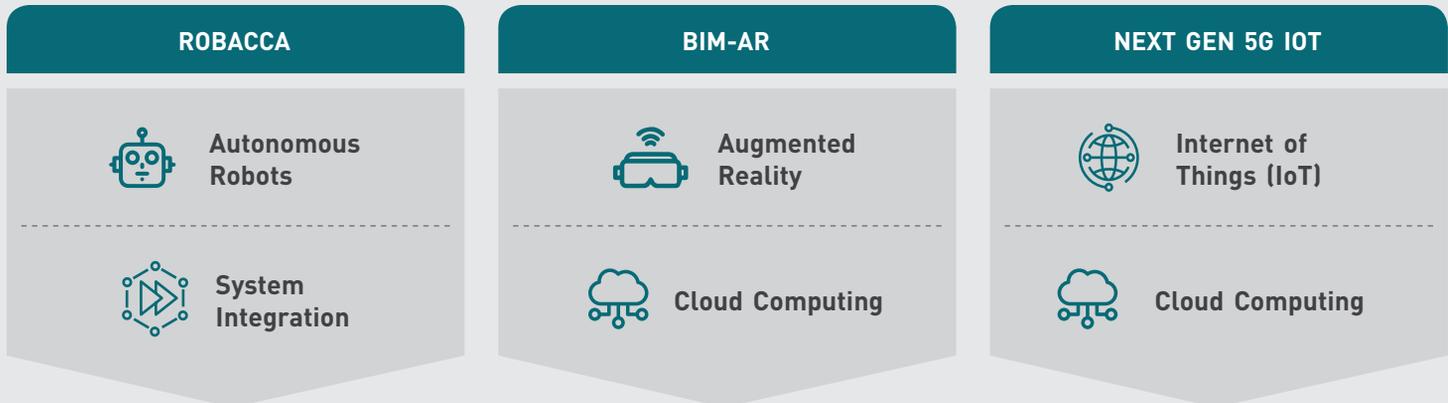
## INDUSTRY 4.0 ENABLING TECHNOLOGIES



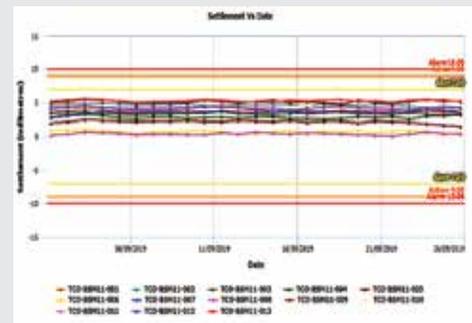
- Winner of two international innovation awards and acclaimed as a "significant milestone event in the history of underground construction for the world" by the International Tunnelling Association.
- Our A-TBM system garnered global attention, cementing our position as one of the leading innovative tunnelling contractors internationally.
- Developed 100 percent in-house by our local engineers and uses AI control algorithms to autonomously operate TBMs on the Putrajaya Line. Local tunnel operatives are upskilled as systems supervisors of the A-TBM system.



- A cloud-based big data system currently under development by our in-house innovation team. Utilises AI and machine learning to glean insights from TBM data for enhanced A-TBM performance, increased 360° awareness and improved risk management in tunnelling.
- Works as an extension of our A-TBM technology offering predictive and prescriptive analytics for actionable insights.
- Upskilling opportunities for our local software engineers to build big data lakes and pipelines with analytics in the Google Cloud Platform in tandem with AI and machine learning techniques.



INDUSTRY 4.0 ENABLING TECHNOLOGIES



- Our ROBot Assisted Cutter Change Apparatus (ROBACCA) is a human assistive and autonomous robotic tool which reduces the exposure of humans to dirty and dangerous tunnelling environments. It represents the first step towards fully automated maintenance of TBMs.
- ROBACCA is currently in the final prototyping phase and will move into beta testing soon.
- Design, development and prototyping have been carried out by our own in-house engineers and programmers in partnership with local manufacturing and automation SMEs with 100 percent local fabrication and components.

- Winner of Malaysia Technology Excellence Award – Augmented Reality Category 2020.
- Developed by our in-house engineers extending and mating our Building Information Modelling (BIM) technology with Augmented Reality (AR). The generated 3D walkthroughs allow real-time detection of clashes and errors onsite thus minimising rework costs and enhancing collaboration.
- Upskilling of engineers and surveyors utilising this system as part of their construction workflow and further enhancing our lead in our BIM capabilities ahead of our competition.

- Leveraging modern 5G networks to deliver real-time monitoring of ground and building conditions, offering increased safety and reduced risk during critical tunnelling operations.
- The large quantity of sensors, the scale of our projects and the criticality of real-time information make this an ideal Internet of Things (IoT) use case. Complementary data streams will be fed into our A-TBM and Tunnel Insight systems.
- Upskilling opportunities for software engineers to develop IoT and cloud based data pipelines and cultivation of local supply chain for IoT devices.

# Sustainability Report

## PROMOTING INNOVATION



### TUNNEL BORING MACHINE

Gamuda strives to make lives better and the planet greener through technology and innovation, and we always seek to push the boundaries with design breakthroughs that would transform the industry. This is also aligned with the UN Sustainable Development Goal 9, which aims for industry innovation and infrastructure development to leave a positive impact on the society.

Our quest for excellence was yet again demonstrated through the technological advancement we made with key equipment used in our core business of constructing underground tunnels as part of the public transport infrastructure – the tunnel boring machine (TBM). A TBM is used to excavate tunnels with a circular cross-section through a variety of soil and rock strata.

A vision from a young Malaysian tunnel manager that began in 2015 during the construction of the MRT Kajang Line to increase efficiency in the tunnelling work and to reduce risks, such as human error or erratic machine operation when operating under the most sensitive conditions, has led to the design of a TBM that could be operated with human oversight rather than control.

An in-house working team was eventually formed in July 2018 and within four months, the algorithms for auto-steering were written, synchronised into TBM programmable logic controllers (PLCs), and validated on a machine mining underneath a 13-lane highway. Within a year, the system was expanded into three more major sub-systems of tunnelling. This Autonomous TBM (A-TBM) system has been deployed on our TBMs currently excavating 13.5km of twin running tunnels under the Kuala Lumpur city centre.

The Malaysian invention of the A-TBM, designed by MMC Gamuda KVMRT (T) Sdn Bhd, has landed us a number of prestigious international awards in late 2019. These include the Technical Product/Equipment Innovation of the Year award at the 2019 International Tunnelling and Underground Space Association (ITA) Tunnelling Awards in Miami, Florida. The innovation also received recognition at the Tunnelling Festival Awards in the UK sponsored by the British Tunnelling Society in the category of Innovation in Tunnel Excavation.

The A-TBM stood out as a new approach to tunnelling as the world's first automated system comprising custom artificial intelligence control algorithms enabling autonomous control of TBMs. The system analyses machine data in real-time and assumes control of steering, advance, excavation and slurry sub-systems with minimal human input. The overall result of this autonomous TBM is safer tunnelling, which means improved cost and programme efficiency. Our A-TBM has resulted in tangible benefits including faster response time and higher accuracy.

The idea of creating this autonomous TBM had stemmed from the difficult terrains in the Klang Valley encountered during the construction of the MRT Kajang Line. We had decided to deploy the variable density tunnel boring machines (VDTBMs), which was relatively new at the time. The VDTBMs are a mix between earth pressure balance and slurry machines where the density of slurry can be adjusted and are highly effective as they can maintain pressure ahead of the cutter head through a variety of terrains. We would continue to utilise the same technology for the construction of the Putrajaya Line.

Nevertheless, the concurrent construction of the Kajang Line and the beginning parts of the Putrajaya Line coupled with a shortage of skilled personnel to operate the VDTBMs had eventually prompted us to try automating the steering of TBM to reduce the reliance on human operators. We subsequently developed three sub-systems beyond auto-steering, auto-advance, auto-excavation and auto-slurry – which means our automation covers all main tasks of a TBM operator. We have progressively applied our A-TBM technology to our VDTBMs working on the Putrajaya Line with success.

In addition to lowering the risks to human lives by automating the TBM system, the higher efficiency of the A-TBM as compared to the conventional TBM also helps reduce the greenhouse gas emissions with less water and electricity consumption required in its operation. That in turn contributes toward the global fight against climate change and is in line with the UN SDG 12 (Responsible Consumption and Production) as well as 13 (Climate Action).

## PROMOTING INNOVATION

### DIGITAL CONSTRUCTION WITH BIM, DRONES & GEOGRAPHICAL INFO SYSTEM (GIS)

In this age of Fourth Industrial Revolution (Industry 4.0), the advent of big data, Internet of Things, and artificial intelligence and other enabling technologies have allowed for greater innovations and efficiency in the ways infrastructure and homes are built.

Gamuda has been at the forefront of embracing and spearheading technology to transform and innovate our products and services to stay ahead, and one of the more significant digitalisation we adopted in our construction processes is the Building Information Modelling (BIM) technology.

BIM is a computerised system that facilitates multi-stakeholder coordination while allowing for greater precision and speed in the design and implementation of construction plans. BIM integrates information and communicates real-time changes where all design data is captured online on a collaborative platform and all design clashes are resolved before construction. It creates a model which contains digital description for every aspect of the project, providing various benefits throughout the entire project lifecycle.

This leads to cost saving, increased productivity, and allows for better collaboration, communication, as well as risk mitigation.

At our Klang Valley Mass Rapid Transit construction sites, we use BIM tools such as Viewpoint for Projects and Fieldview for Common Data Environment (CDE) efforts. These BIM tools integrate into the Geospatial Information System (GIS) that allows unified data in terms of access to information. This data is presented on an interactive dashboard enabling decision making and construction progress updates to be more efficient. The entire digitalised process is aided by the use of other high-technology tools such as laser scanning, drones, and Virtual Reality.

The synergistic nature of the Group's core businesses means that we can leverage on the progress made in construction to make our home-building processes more efficient as well. The BIM technology is also adopted by our property arm, Gamuda Land, as part of its digitalisation plan to build smarter developments for a sustainable living environment.

BIM is now incorporated into every stage of the property development at Gamuda Land. Starting at the feasibility study stage, information on the existing nature of a site is captured and fed into the BIM platform, giving designers a greater understanding of the proposed site and making better decisions to develop it. By analysing this information, our designers will then optimise each design and development to achieve higher Green Building Index scores to fulfil the Group's commitment to make the urban environment more liveable and sustainable.



Subsequently, the BIM platform allows the conceptualised 3D designs to be further developed by combining architectural, structural, mechanical, electrical and plumbing elements — all within the cloud-based system allowing everyone working on the project access to real-time updates. The seamless integration from design to construction is completed with digital manufacturing under Gamuda IBS (Industrialised Building System), whereby the virtual designs are turned into reality with robotics production to make faster home-building at more affordable prices by making the process more efficient and error free.

As a Group, we are proud that the use of BIM, in combination with other Industry 4.0 technologies has propelled us on our efforts to contribute toward building a more sustainable future for both Gamuda and the future generations.

In November 2019, our project joint venture MMC Gamuda KVMRT (T) Sdn Bhd beat two other finalists from Madinah and China to clinch the first place in the Reality Modelling Category at the Year in Infrastructure Bentley Awards. The annual awards programme honours the extraordinary work of Bentley Systems, Incorporated, users worldwide for advancements in infrastructure design, construction and operations and it was Gamuda's second time winning an award from Bentley Systems.

MMC Gamuda presented our extensive use of multiple Bentley software, particularly that of Bentley Systems ContextCapture reality modelling software, to generate digital twins of our construction sites in the MRT Putrajaya Line project. Using drones to capture hyper-realistic visuals which are then overlaid on BIM designs, MMC Gamuda has effectively reinvested conventional surveying and regular site reporting with digitisation.

# Sustainability Report

## COMMUNITY INVESTMENT

### YAYASAN GAMUDA

Yayasan Gamuda was established in 2016 to oversee the Group's charitable efforts while ensuring all these initiatives are aligned with Gamuda's aspirations for community investments and development. The foundation arm that focuses primarily on educational aid and empowering social enterprises for community improvement has year after year contributed to various impactful causes, be it a Group initiative or an external movement.

These efforts invariably aligned with the United Nations' Sustainability Development Goals 4 (Quality Education) and 6 (Clean Water and Sanitation).

Gamuda strongly believes in contributing back to build the community that made us, and Yayasan Gamuda is our way to institutionalise the efforts to reinvest the profits earned in areas that will bring about significant social and economic difference in the places we do business.

Every year, Yayasan Gamuda conducted three recurring anchor projects under its Local Community Engagement initiatives, namely the Gamuda Scholarship, Enabling Academy, and the Star Golden Hearts Award.

Since 1996, Yayasan Gamuda has invested RM44.7 million and awarded 444 scholarships to outstanding Malaysian students to complete their tertiary education every year at the best universities in Malaysia, including at the local campus of foreign universities. We do this by awarding funds covering the course fees and welfare of scholars, as well as engagement and development activities throughout the funded period. In reflection of the Group's core businesses, scholarships are offered to those pursuing engineering, quantity surveying, development and urban planning, property and real estate management, and architecture.

Gamuda has set up the Enabling Academy in 2017, aimed at preparing more people with autism for gainful and sustainable employment. The Enabling Academy conducts an Employment Transition Programme that trains and places young adults with autism into partner companies that embrace diversity and inclusion in their workforce.

Yayasan Gamuda has been supporting the Star Golden Hearts Award since 2016. The event honours and celebrates the work of unsung Malaysian heroes who go the extra mile to help those in need irrespective of race, culture and religion, which are the values we hold dear as an organisation. The award serves as an encouragement for increasingly more Malaysians to rise and become better citizens. Each year, ten (10) individuals or groups are chosen as award winners, and out of the 10, a Gamuda Inspiration Award winner is chosen to receive RM50,000



for their cause. The winner for 2019 was Sujana Mohd Rejab, whose efforts enabled physically impaired individuals to have equal privileges and access to a quality life with dignity. Other past winners were UmieAktif (2018), a social enterprise project which empowers underprivileged mothers in the Chow Kit area through sewing and crafting skills; Barefoot Mercy (2017), which brings light and builds schools in rural Sarawak; and Kedai Jalanan (2016), a pop-up store that clothes the homeless with dignity.

In addition to these anchor projects that were initiated, Yayasan Gamuda also funds initiatives that meet our objectives for community enhancement.

Yayasan Gamuda adheres to several guiding principles to ensure that all initiatives we support are in line with the Group's aspirations for community investments. We want our projects to be transformative and be able to uplift our beneficiaries with real, effective change that would otherwise not have been possible. All our activities are sustainable in itself, as well as promote self-sustainability in the lives of the beneficiaries for the longer term.

We also wish to empower so our beneficiaries are able to become independent and empowered to take control of their own destiny. We strive to be inclusive, and Yayasan Gamuda activities need to promote inclusiveness in the community. To make an impact, we focus on activities where we have the knowledge and commitment to make a meaningful difference. We promote partnership, as we believe that being co-participants with the beneficiaries in the change process will encourage and promote ownership for both parties.

Lastly, we want to ensure our target projects are in line with the UN Sustainable Development Goals 4 and 6.