

20<sup>th</sup>

**ANNIVERSARY  
CELEBRATION**



**Celebrating 20 Years  
*of* Value Adding**



**Wisma G&P**

39-5, Jalan Tasik Selatan 3,  
Bandar Tasik Selatan,  
57000 Kuala Lumpur,  
Malaysia.

Tel : +60(3) - 9059 5396

Fax: +60(3) - 9059 5896

Website: [www.gnpgroup.com.my](http://www.gnpgroup.com.my)

Email : [gnp@gnpgroup.com.my](mailto:gnp@gnpgroup.com.my)

## Vision

To obtain the hallmark for quality services, technical excellence, reliability and safety.

## Objective

To provide innovative & economical design and to ensure safety & ease of construction.

## Core Values

- Structured quality control
- Structured training
- Structured sharing
- Structured research & development

# Table of Contents

01	Chairman & CEO's Foreword
03	About Us
13	Tunnelling Through Kuala Lumpur
23	Building Next to MRT Line
25	Queens Waterfront
27	Jade Hills - By The Hills, By The Lake
31	Shaping Mont' Kiara
39	Geohazard Management in Mining & Quarry Slope Protection
41	Understanding The World Beneath Us
43	Homes In A Garden
45	Kuala Terengganu Drawbridge
47	Imagine The Days Without Water
49	Our Source of Life...Water
50	Connecting North to South
51	Miri City: Future-proofing Water Supply
53	Gerugu Dam: Multi-faceted Dam Safety Review
55	What Our Clients Have to Say About Us
57	Working in G&P
59	Reference for Construction Rate/Cost
60	Our Corporate Social Responsibility
63	Acknowledgments





# Chairman's *Foreword*

**Tan Sri (Dr.) Ir. Jamilus Bin Hussein**  
Chairman of G&P Professionals Sdn Bhd

and lastly, the Zero-In, Zero-Out equity system where staff can enjoy the benefits of shareholders without the need of buying the company's shares.

Apart from our vision and principles, it is undoubtedly the people who make all the differences, they are the engine for growth and productivity. Our team members are the most inspiring people I know. They are problem-solving, project-saving superheroes who never give up. I would like to take this opportunity to thank G&P's team members for sharing the same vision and having the necessary persistence with the intent to deliver outstanding services and value-engineering solutions that add value for our clients. Great things happen when we combine our client's vision with our innovative ideas. On behalf of G&P Group, thank you once again to G&P's team members, clients and partners.

What matters most now is what we do next. We hope to inspire our people to build on the foundation created since the establishment of the firm. We will also continue to empower people to realise their full potential. Talent will be identified and nurtured to take on more demanding roles.

“

**Going forward, we will continue to aspire to be an even more successful Group in the years to come and we look forward to this exciting new chapter with the support of G&P's team members, clients and partners**

”

From the first day of service (15th September 1999) with a team strength five to where we are today with more than 340 team members, I am very proud to see how far we have come, what our directors and team members have achieved and the innovative and respected work we continue to do. As we celebrate this momentous occasion, we are taking the opportunity in this booklet to look back not only at the role G&P has played in the development of the engineering industry, but also at our corporate social responsibility efforts with inputs on national policies to government agencies, university lectures and sitting in the Board of public and private universities which have had a significant impact on the wider community and society.

G&P was founded 20 years ago based on four core values that are still relevant today. Our vision has always been to provide the highest quality of services to our clients in terms of innovative, economical and value-added designs, reliability and safety in constructions. To achieve this, we practise four core values, namely implementing various quality control measures, including reviews by another director who is not involved in the said project. Secondly, we have structured trainings and colloquiums to encourage knowledge sharing, teamwork and inspiration among our team members. Thirdly, the introduction of Research and Development (R&D) projects further enhances creativity and commitment towards the betterment of knowledge

# CEO's *Foreword*

**Dato' Ir. Dr. Gue See Sew**  
CEO of G&P Professionals Sdn Bhd

G&P started as a very small specialist firm on 15 September 1999 and has grown to become the top five of multi-disciplinary engineering consultancy firms in Malaysia. Moving forward, I think it is good to reflect on what made us successful and set out the strategies going forward. I credit our success to the stellar people whom have helped realise our vision.

Here at G&P, we appreciate the value of our incredible talents. Indeed, some of the most brilliant, innovative and efficient designs in the industry originated from our people. I am so grateful for the opportunity to work every day with a group of talented, passionate and inspiring people. Therefore, to all G&P team members, your willingness and diligence to go the extra mile are very commendable and are deeply admired. You are the best.

Special thanks also go to our clients for their trust in us and our abilities to help them achieve their goals while always challenging us to be better. The G&P team is continuously enriched by the people that we have met and worked with. Many of these people have also become friends, allowing us to grow and learn individually and as a company.

I would also like to thank our consultancy partners we collaborated with on mega projects to deliver outstanding works that make a positive and sustainable impact on our client's projects. We are proud and honoured to work with you. Undoubtedly, success is incumbent on everyone working as one integrated team.



We have accomplished a lot together during our first 20 years and to ensure sustainable success in the future, we have to continue to uphold our core values and ensure uniform high standards throughout the Group. Given the great people we have and our capacity for mega projects, my wish is to build a high performance Group that commands respect from the industry and society for the quality of its value-added services, the sincerity of its values and the integrity of its people.

“

**Thank you for helping to continue this legacy and making G&P an extraordinary Group now and for decades to come.**

”

# Our History

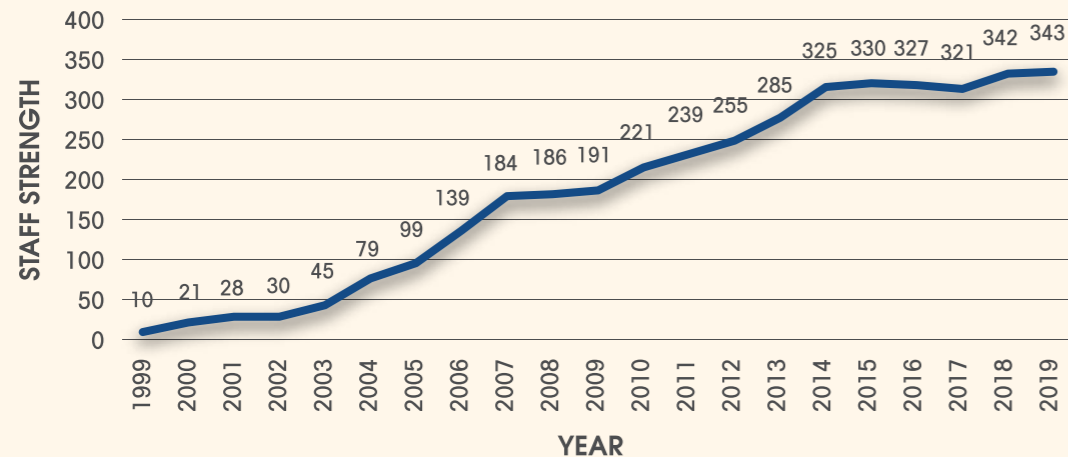
“ On 15th September 1999, Dato’ Ir. Dr. Gue See Sew, Ir. Dr. Tan Yean Chin & Ir. Liew Shaw Shong established Gue & Partners Sdn Bhd (now known as **G&P Geotechnics Sdn Bhd**). ”



On 23rd July 2004, G&P’s group of specialist firms have been established together with G&P Geotechnics Sdn Bhd to form a One-Stop Value Adding Engineering Consultancy Service Provider. Today the group has a staff strength of more than 340, with a diverse team of specialists dedicated to provide value added services. We are now ranked 5th largest in the latest Directory of the Association of Consulting Engineers Malaysia.

## G&P Staff Strength

Growth of G&P Professionals 1999-2019



## G&P’s Portfolio



• Homes Built  
**> 140,000 units**



• ETS-Double Track  
**> 310 km**  
(transporting 4.15million people by Q3 2017)



• MRT Tunnels & Elevated Tracks  
Line 1 & Line 2  
**> 19.1 km**  
(transporting 140,000 people per day)



• MRT Stations (Line 1 & Line 2)  
**5 nos. Underground Stations**  
**4 nos. Elevated Stations**



• Bridges Built  
**38 nos.**



• Total Projects  
**> 1,900 nos.**



• Contribution in Universities,  
Institutions & Associations  
**118 organisations**



• Contribution to Charitable  
Organisations  
**72 nos.**



• Technical Publications  
**277 nos.**



## G&P Professionals Group



- G&P Geotechnics Sdn Bhd



- G&P Structures Sdn Bhd



- G&P Professionals Sdn Bhd



- G&P Water & Maritime Sdn Bhd



- G&P Dams & Water Services Sdn Bhd



- G&P Professionals (Sarawak) Sdn Bhd



- G&P Professionals (Sabah) Sdn Bhd



- G&P Energy Sdn Bhd

1999

2003

2004

2005

2006

2009

2010

2011

2016

2018



- G&P Infra Sdn Bhd



- G&P Project Management Sdn Bhd



- G&P Claims & Contracts Sdn Bhd



- NGI-G&P Sdn Bhd



- G&P Highway & Transportation Sdn Bhd



- G&P Mechanical & Electrical Sdn Bhd



- G&P MYU Sdn Bhd



## Board of Directors

### From Right to Left:

- **Front Row:** Ir. Tan Kok Leong, Ir. Lalchand Gulabrai, Datuk Wira Ir. Md. Sidek b. Ahmad, Dato' Ir. Dr. Gue See Sew, Tan Sri (Dr.) Ir. Jamilus Bin Hussein, Lt Gen (R) Dato' Ir. Ismail Bin Samion, Ir. Dr. Tan Yean Chin, Ir. Liew Shaw Shong, Ir. Heng Tang Hai

- **2nd Row:** Ir. Yong Siew Fang, Dr. Nazrin bin Abdullah @ Balasekaran, Ir. Chong Sun Fatt, Ir. Lai Sze Ching, Ir. Saw How Teong, Ir. Lim Choon Lin, Ir. Steven Ng Tak Kee, Ir. Leong Choon Kee, Ir. Beh Hong Lin, Ir. Shafina Sabaruddin

- **3rd Row:** Ir. Lim Sin Poh, Ir. Chow Chee Meng, Ir. John Lim Chee Kiang, Ir. Loh Woei Chung, Ir. Lee Peir Tien, Ir. Lee Choy Hin, Ir. Teoh Tian Leng, Ir. Tan Wee Keong, Ir. Mohd Fairuz Bin Abdul Hamid, Ir. Kho Lip Khiong



# G&P Project Involvement Timeline

Sering Ukay, Hillside Development (124 acres)



Bandar Botanic (1200 acres)



The View, Penang

Mapo Plant, Pulau Indah

1999

2000

2001

2002

2003

2004

2005



Indonesia Pulau Palm Oil Mill



SILK Highway Section 3



Slope Remedial works at North-South Expressway

North West Corner, Hillside Development (86.9 acres)



Solaris Dutamas

Berjaya Time Square



Jade Homes (366 acres)  
Hydrogen Plant in West Port Klang



Taman Beringin Landfill, Jinjang Utara

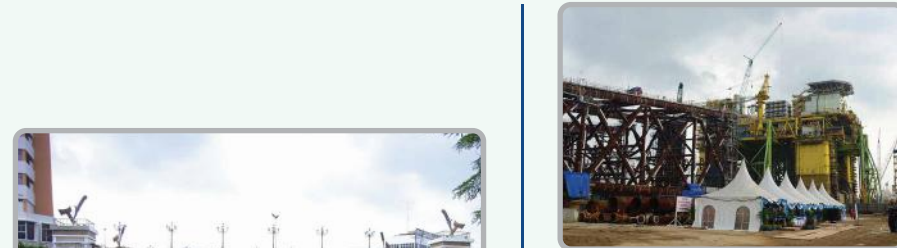


10 @ Mont' Kiara



Selangor Flood Mitigation

Hang Tuah Bridge



55,000 MT Loadout Facility

Weir Structure at Lingga-Banting Granary Area

Miri Raw Water Transfer Scheme



Double Track Railway Project (200km)



2006

2007

2008

2009

2010

2011

2012



Tanjung Langsat Port, Johor



11 Mont' Kiara

Giant Distribution Centre, Sepang

Kajang 2, Hillside Development (270 acres)

HillPark, Hillside Development (280 acres)

Kelantan Flood Mitigation

Ipoh Hospital (Expansion)



SNC-Lavalin Hydro Power Dam



First MRT Line in Malaysia (SBK Line)



Pulau Jerejak Bridge (980m)

Sunway Geo Residence (RC2)

Refinery and Petrochemical Integrated Development (RAPID), Pengerang



Sunway Geolake Residence (RC1)



Jacking Foundation for offshore topside



Kuala Terengganu Muara Drawbridge



Sunway Mont Residences



Gamuda Cove Interchange



Aeon Maluri



Sunway Mont Residences



Sunway Mont Residences

2013

2014

2015

2016

2017

2018

2019

Pulau Melaka, Reclamation (500 acres)



Tailing Dam, Kota Bunyi



Xiamen University Malaysia



Queens Waterfront



MRT Line 2 (SSP Line)



Astrea

Butterworth Reclamation (1000 acres)

East Coast Rail Link (ECRL)

High Speed Rail (HSR)

Gemas - Klauk Double Track  
Glengowrie Development (800 acres)



Mine Pit



Residensi Solaris Parq



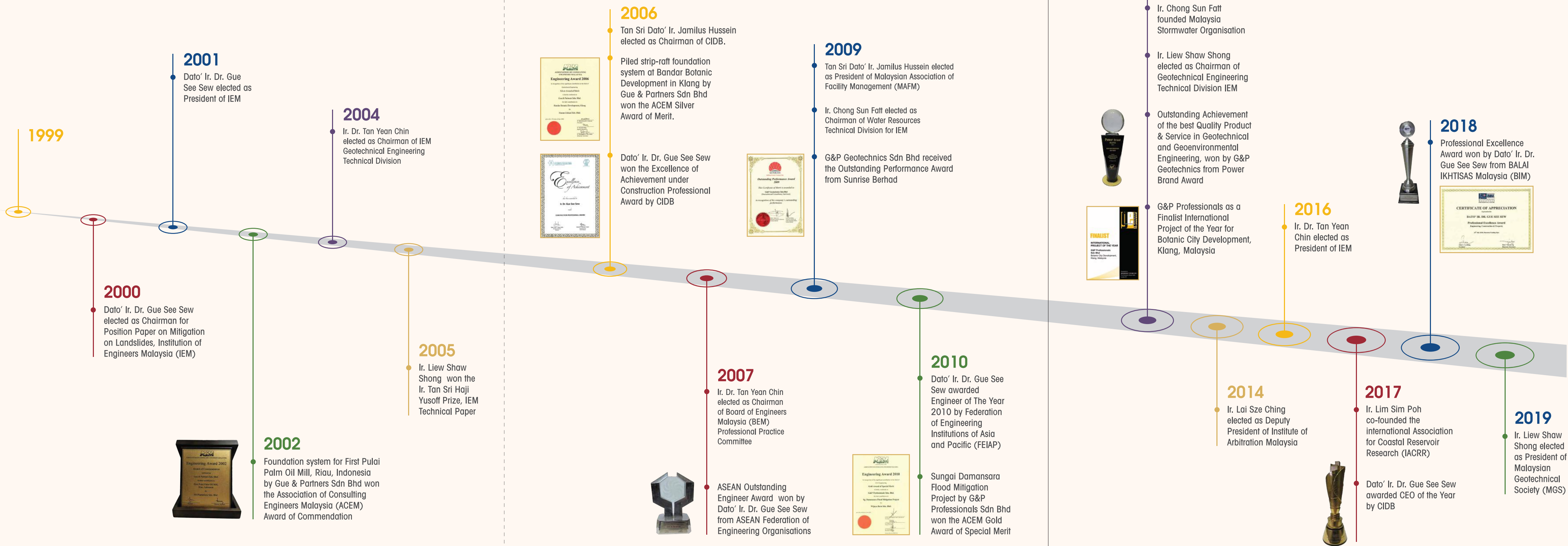
Setia Mayuri (209 acres)



Setia Mayuri (209 acres)



# G&P Awards & Accolades





# Tunnelling

## Through Kuala Lumpur

MASS RAPID TRANSIT LINES 1 & 2

### MRT L1 & L2 in Numbers:

- 23 km tunnels
- 18 underground stations
- 12 tunnel boring machines
- Designed daily ridership: 929,000
- Tunnelling through Limestone, Kenny Hill & Granitic formations

G&P's Scope	Line 1	Line 2
Tunnel	3.6 km	13.5 km
Shafts	Escape Shaft 3	Escape Shaft 1 Escape Shaft 2 Escape Shaft 3 Intervention Shaft 2 Intervention Shaft 3
Portals	Maluri South	Desa Water Park
No. of Existing Building Structures Assessed	51	204
Underground Stations	<ul style="list-style-type: none"> <li>• TRX</li> <li>• Maluri</li> <li>• Cochrane</li> </ul>	<ul style="list-style-type: none"> <li>• Conlay</li> <li>• Chan Sow Lin</li> </ul>





Announcement of MRT Line 1

Excavation commenced at Cochrane Station

Excavation started at Maluri Station, Crossover and Portal

Announcement of MRT Line 2

Excavation started at Conlay Station, Chan Sow Lin Station, Escape shafts & Intervention shafts

2010

2011

2012

2013

2014

2015

2016

2017

2018

2019

Ground investigation for Malaysia's first MRT line

Wall installation at Cochrane Station

Excavation started at TRX Station and Inai Launching shafts

Ground investigation for Malaysia's second MRT line

Awarded as detailed design consultant for tunnelling works

Commencement of tunnelling works



• Selected photos courtesy of Mass Rapid Transit Corporation Sdn. Bhd



# Station & Shaft Excavation Design



Secant Bored Pile Wall



Support System  
• Steel Strutting



Support System  
• Ground Anchor



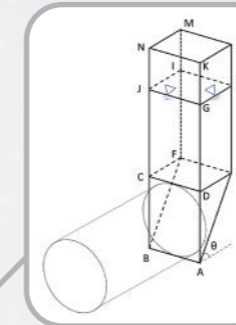
Rock Stabilisation



In partnership with :

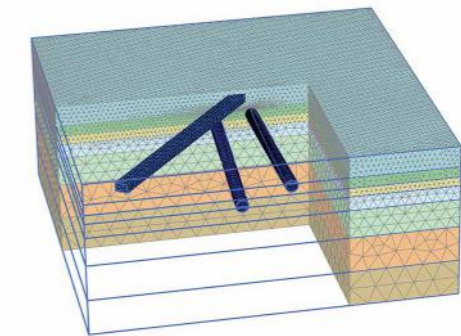


# Tunnelling Design



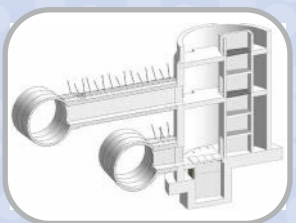
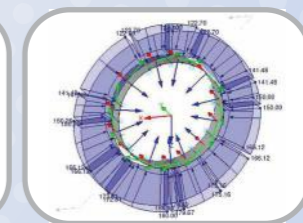
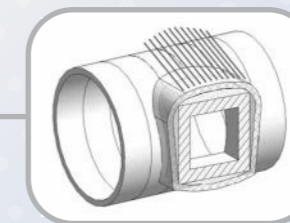
## TBM Pressure Design

- Face Pressure
- Secondary Grouting
- Tail Void Grouting



## Tunnelling Impact Assessment

- Foundation of Buildings and Structures
- Utilities
- Protective Works Design
- Instrumentation & Monitoring



## Tunnel Lining Design

- Precast Lining
- Mined Tunnel Lining



# Stairway to Safety

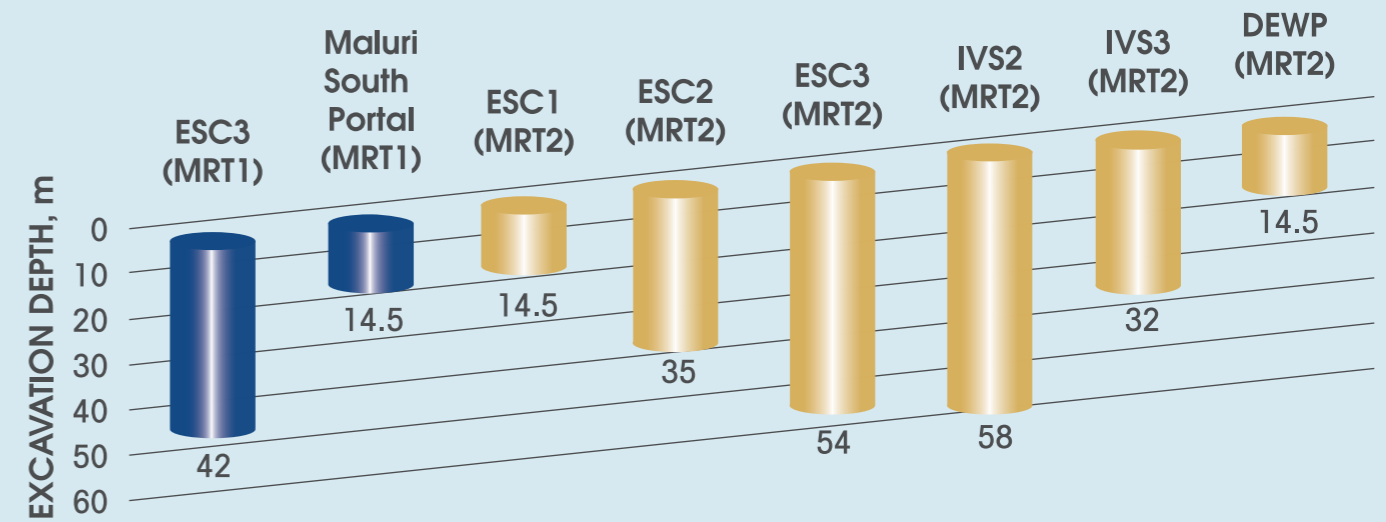
Escape & Intervention Shafts

G&P with the support of our partners, Geoconsult Asia Singapore PTE LTD and Zaidun-Leeng Sdn.Bhd., are the detailed design consultants for the MRT SSP line (Line 2) underground tunnels and the tunnel's ancillary structures (Escape & Intervention shafts and a portal).

Escape shafts serve primarily as egress points in case of emergencies while intervention shafts have additional function of providing ventilation into the tunnels.

The beauty of circular shafts lies in their ability to transfer the lateral forces in the form of hoop stresses (eliminating bending stresses), similar to arch bridges. This allows for a more efficient and cost effective design. Good cooperation with the construction team and stringent construction controls are required to ensure success.

## Depth of Shafts & Portals



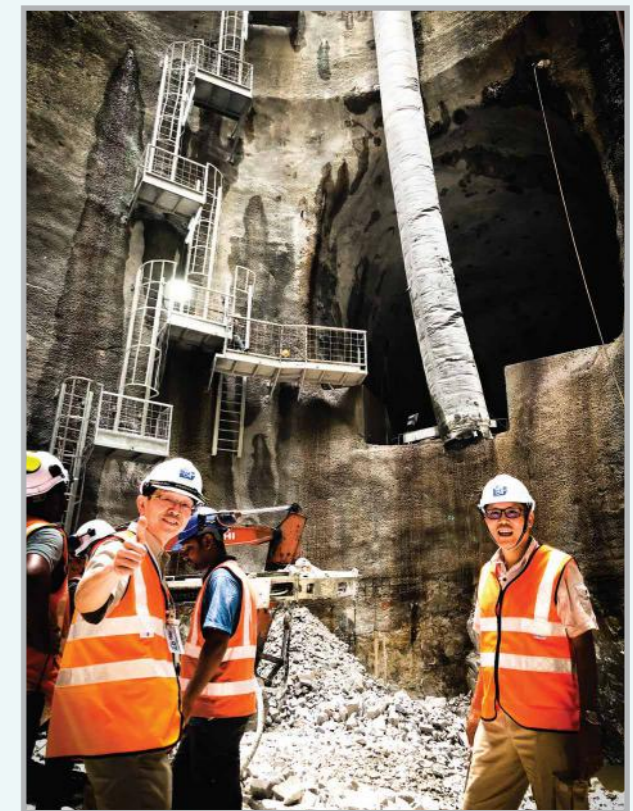
### DID YOU KNOW ?

Intervention Shaft 2 is the deepest shaft in MRT L2 at 57.5m.

The shafts were constructed in Kuala Lumpur limestone formation which is notorious for its karstic features. The unpredictability of rock levels with high groundwater table adds on to the list of technical challenges for the shaft excavation.

The MRT Line 2 Intervention shaft 2 (IVS2) is the deepest at a challenging depth of 57.5m below ground level. Harnessing the rock strength to support itself, shafts constructed in rock was designed to be carried out without the need for temporary support structures.

A combination of ground improvement via deep soil mixing/curtain grout and rock stabilisation methods allowed for a much faster construction rate at a lower cost.



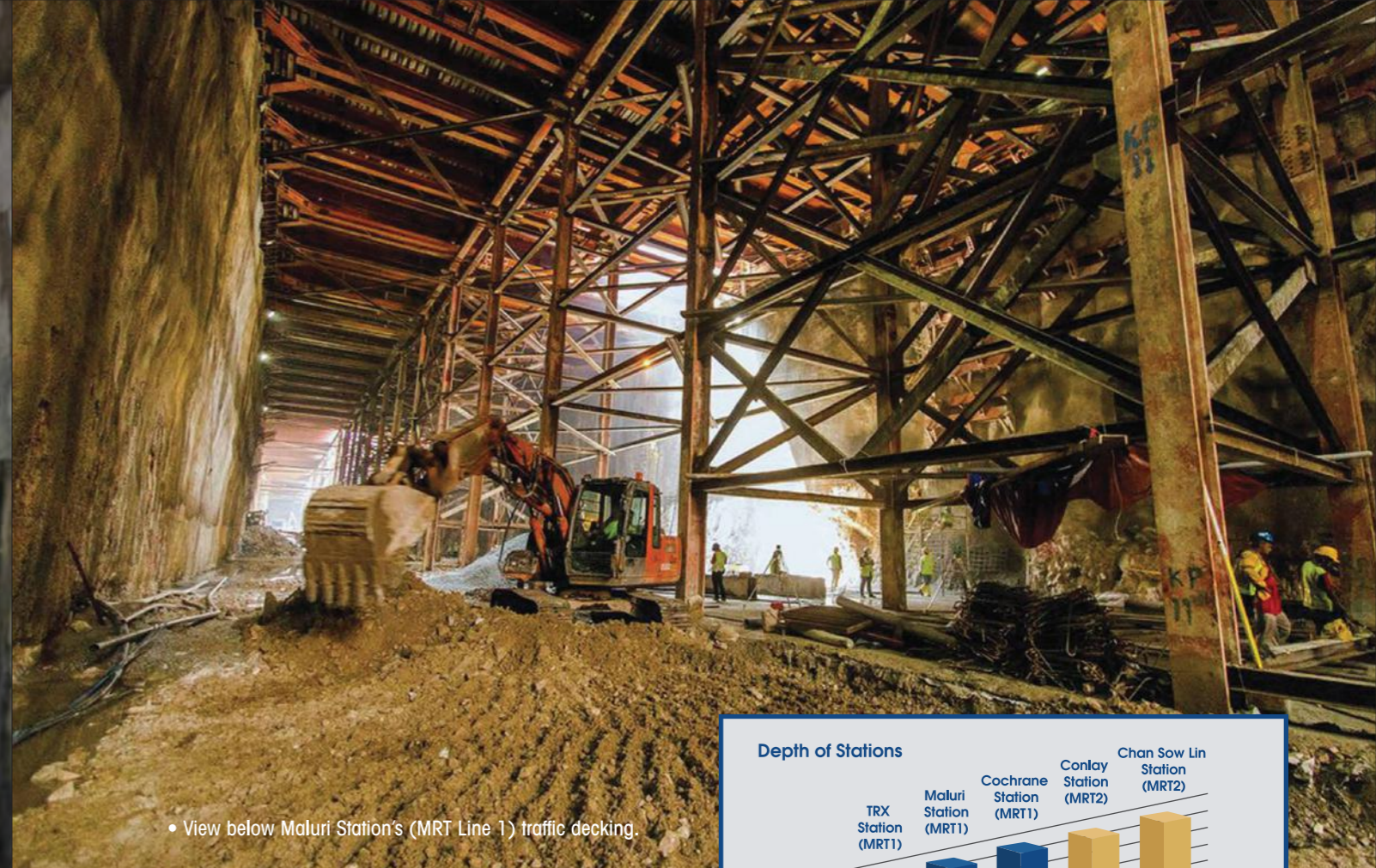
• View from the final excavation level of IVS2 at the adit opening with CEO of G&P Professional Sdn.Bhd., Dato' Ir. Dr. Gue See Sew (Left) and the G&P's project director for MRT Line 2, Ir. Dr. Tan Yean Chin (Right).



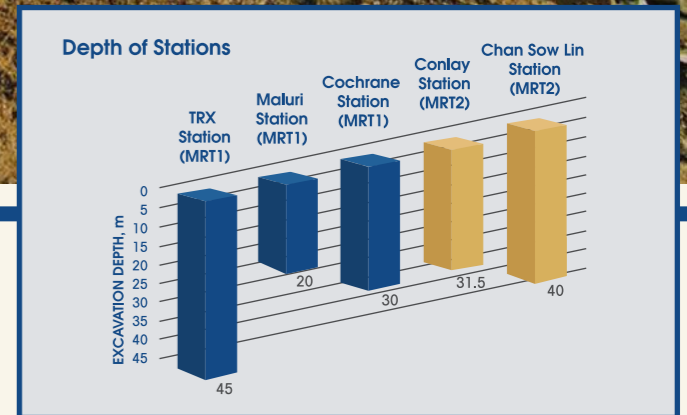
# Maintaining a Straight Face

Underground Station Excavation  
In Limestone

As land space is limited within the city centre, vertical excavation is always more attractive for its high efficiency of land use. This of course comes with its own technical challenges. Once again, G&P's design approach makes full use of the strength of rock itself but providing additional rock stabilisations as necessary. Shallow soil cover could be in turn stabilised by means of deep soil mixing. This means that the station could be excavated vertically without the need for any costly structural retaining solution (e.g. diaphragm wall, etc).



• View below Maluri Station's (MRT Line 1) traffic decking.



## DID YOU KNOW ?

The depths of TRX station (45m) and Chan Sow Lin Station (40m) were mainly governed by the existing Stormwater Management & Road Tunnel (SMART). Excavation works at Conlay Station were carried out just a mere 5m away from an existing 12 storey building.

**“Controlled rock blasting was successfully carried out up to 1.0m away from king posts supporting a traffic decking.”**

Tight regulatory requirements for rock blasting were extremely challenging given the close proximity of pre-existing and temporary structures. G&P's innovative design allowed blasting to be successfully carried out at Maluri Station with only a 1m blasting exclusion zone from the temporary king posts; steel columns supporting traffic decking. This expedites the construction progress with minimal traffic disruption.

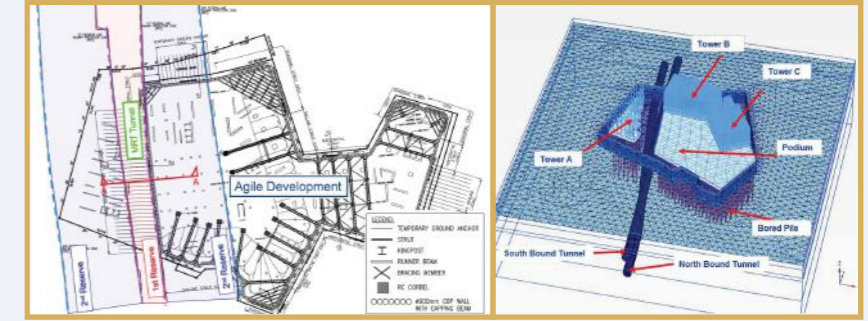


# Building Next To MRT Line?

**DID YOU KNOW ?**

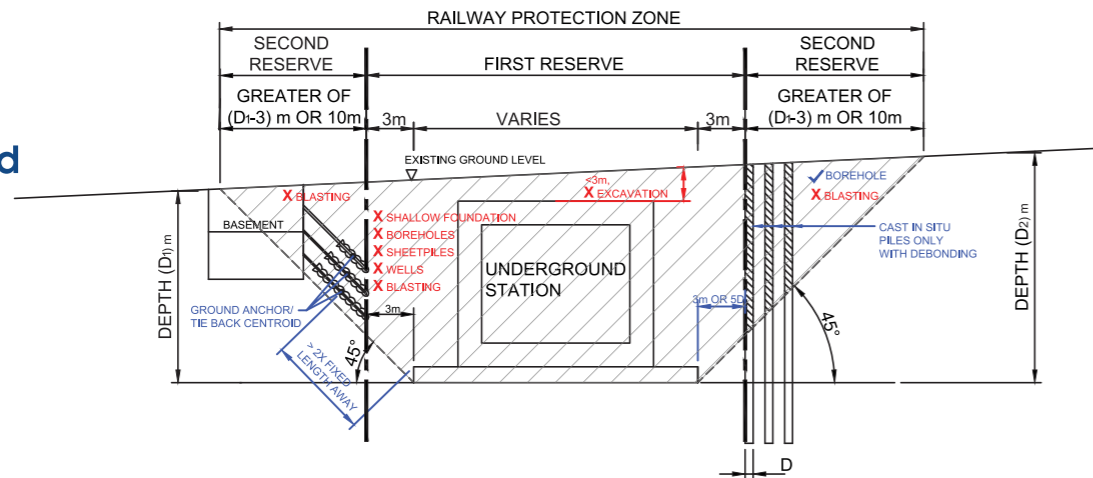
Any development adjacent to MRT structures would need to comply with **RAILWAYS ACT 1991 (ACT 463), P.U.(A) 367/98** (also cited as Railways (Railway Protection Zone) Regulations 1998 ) with the purposes of protecting the rail / track for public safety.

What activities are generally allowed (✓)/not allowed (X) within MRT's 1<sup>st</sup> and 2<sup>nd</sup> reserve?

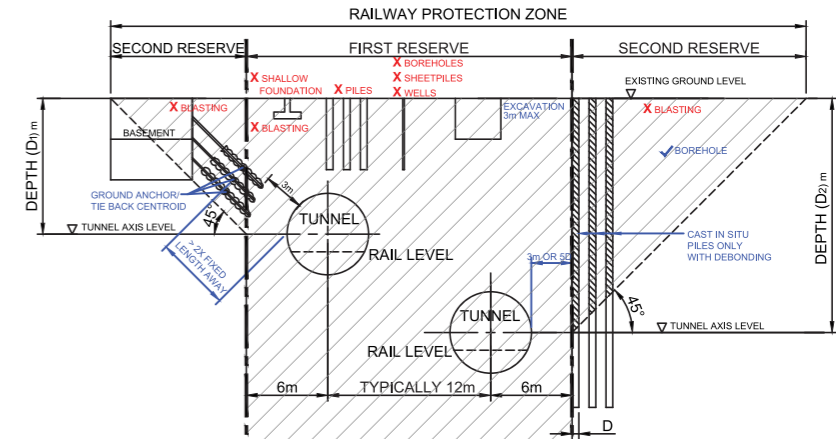


**Agile Tropicana Bukit Bintang**  
**Alternative by G&P: Waiver of pile debonding approved** within 2<sup>nd</sup> reserve of MRT SSP Line Tunnel.  
**Cost savings on 50% of piles**

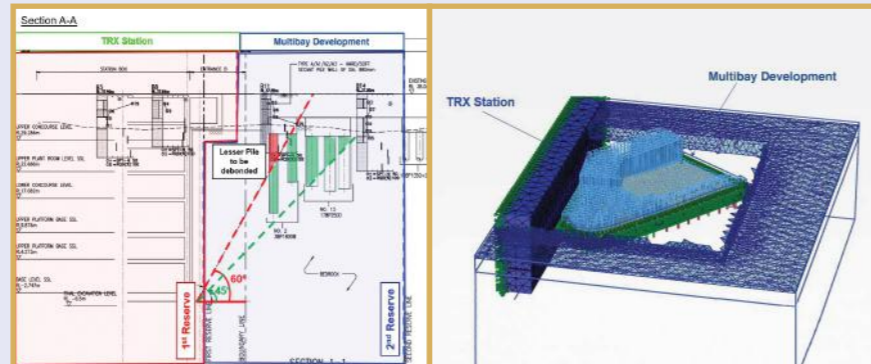
## Next To Underground Station



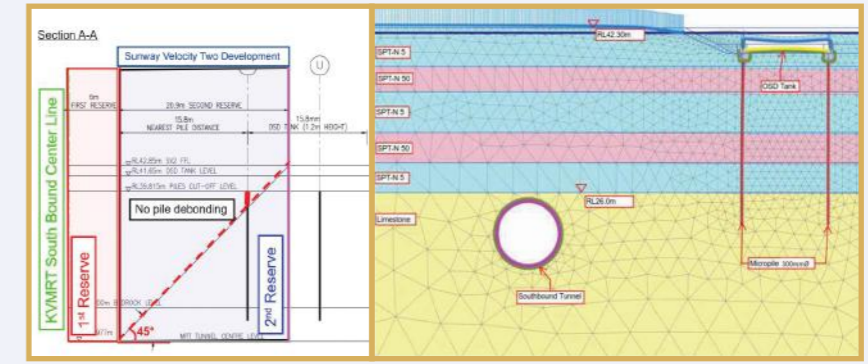
## Adjacent To Bored Tunnel



**Disclaimer:** The above restrictions depicted in the first and second reserves are based on G&P's interpretation and are not part of the Railways Act 1991. Railways Act 1991 shall serve as the ultimate reference in case of any discrepancies.

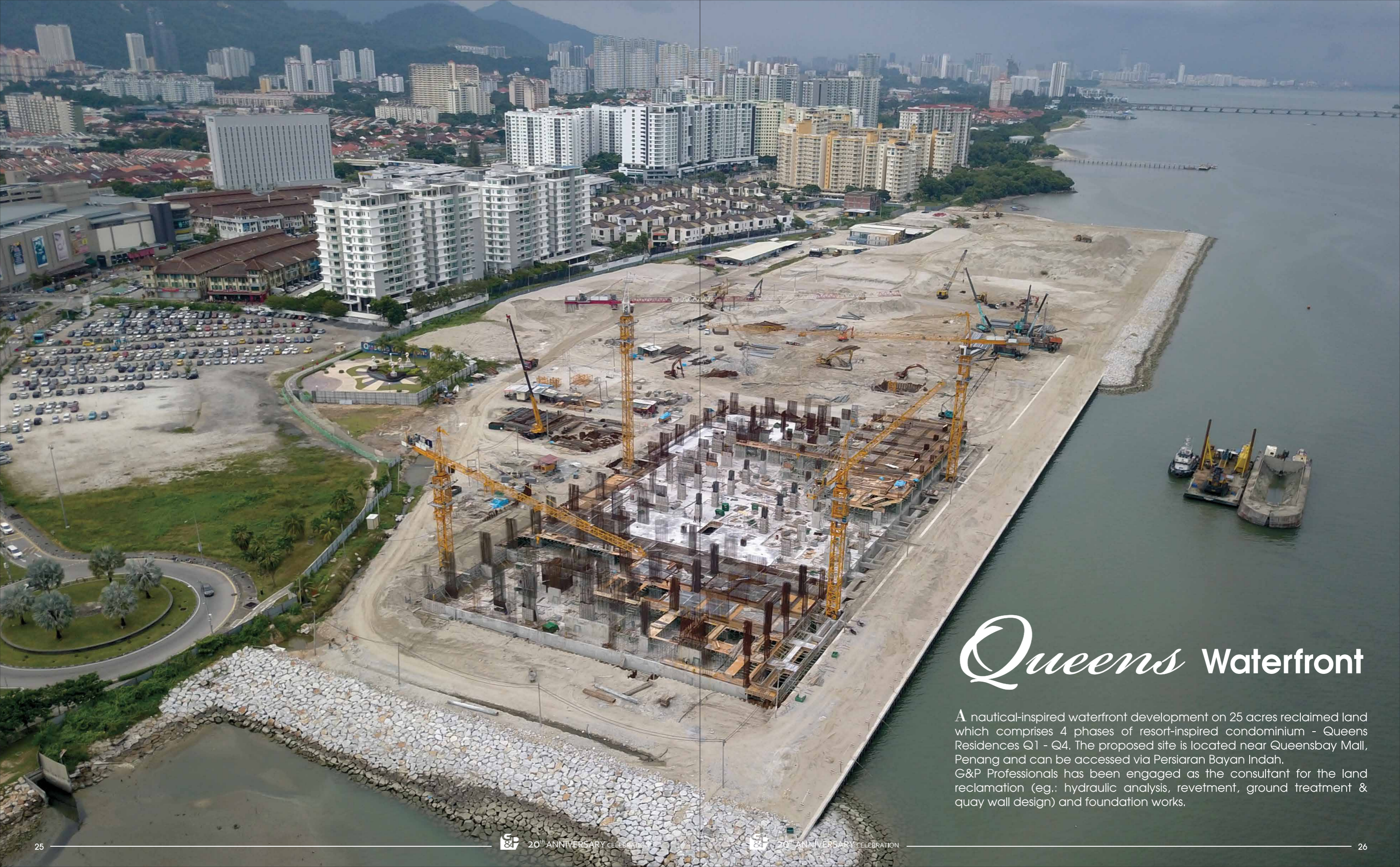


**Multibay Development**  
**Alternative by G&P: Reduction of debonded piles** approved based on **60° influence zone** instead of 45° at 2<sup>nd</sup> reserve of MRT TRX station.  
**Cost savings on 78% of piles**



**Sunway Velocity Two**  
**Alternative by G&P: Waiver of pile debonding approved** within 2<sup>nd</sup> reserve of MRT SSP Line Tunnel.  
**Cost savings on 7% of piles**





# Queens Waterfront

A nautical-inspired waterfront development on 25 acres reclaimed land which comprises 4 phases of resort-inspired condominium - Queens Residences Q1 - Q4. The proposed site is located near Queensbay Mall, Penang and can be accessed via Persiaran Bayan Indah. G&P Professionals has been engaged as the consultant for the land reclamation (eg.: hydraulic analysis, revetment, ground treatment & quay wall design) and foundation works.



# G&P's *Involvement*

**selangorku**

**The GARDENS**  
TWIN VILLAS  
by the hills by the lakes

**THE LAKES**

**Rymba**  
GARDENS

**Hana**  
GARDENS  
@ JADE HILLS

**The HILLS**  
VILLAS  
by the hills by the lakes

**JADE**  
SQUARE

**JADITE**  
SUITES

**EATON**  
INTERNATIONAL SCHOOL

- **The Lakes, The Garden and The Hills**  
2 stories link bungalow, 2.5 stories lakeside villa and 2.5 stories garden villa.
- **Jadite Suites**  
High-rise development, 4 blocks with 366 units of services residence.

- **Jade Square**  
Commercial plots with 66 units of 2 and 3 stories retail space.
- **Rymba Garden**  
2-storey linked Villa
- **Eaton International School**  
International School offers comprehensive international curriculum for the youth.
- **Hana Garden**  
2 and 3 stories quad homes (link semi-d) and 3 stories terrace
- **RSKU at Jade Hills**  
Rumah Selangorku 3 blocks with 671 units.





# JADE HILLS

by the hills, by the lakes

Jade Hills, the pioneer of Kajang Town sophisticated mixed developments on 366 acres of hilly terrain by Jade Homes Sdn Bhd under Gamuda Land. Incorporating attractive landscape and pond features of the natural undulating terrain and mountain plateau a Fashionably styled township has been created



**G&P has marked her milestone of 13 years of continuous professional services to Jade Hills development since 2006, for providing professional technical support on earthworks, infrastructures, retaining walls, foundations, building structures and both internal and external building services.**

The professional services started as early as overall layout Master Planning where we work very closely with the project planner, our services continue to the subsequent stage for detail design, local authority submission and contract management of earthworks and major infrastructure packages. Demarcating the 12 residential phases and 8 commercial plots each with its unique land form and special selling features over the undulating ground profile. The project implementation has been successfully implemented since 2007 and remained active until today.

Various stages of subsurface investigation have been performed to provide good and reliable information to minimise rock cutting from the interpreted bedrock profile. The interpreted soil profile was used to handle unsuitable materials (USM) at water logged areas and to incorporate combination of deep and shallow foundation systems for the intended building types over large variation of subsoil profile. The earthwork design is certainly an art in balancing the cut volume of semi-rock mass and filling it over low lying terrain in order to provide favourable building platforms suitable for the intended housing products, road networks with gradient in compliance with Bomba and normal vehicular traffic requirements, efficient gravitational flow and landscape utilities, likes drains and sewerage networks, as well as friendly recreational facilities and features.



• Semi D on Hilly Terrain



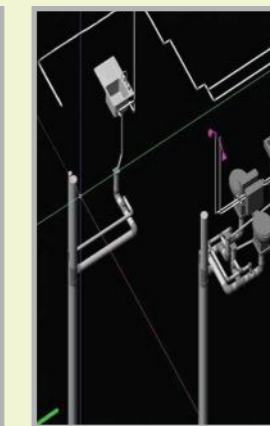
• Rotary Auger Bored Piling



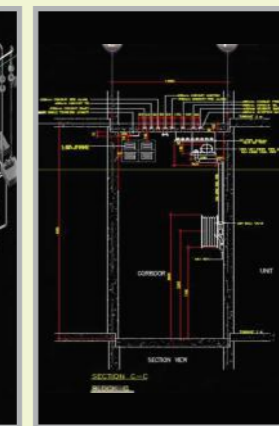
• Bucket Drilling



• Reinforced Soil Retaining Wall



• BIM



• MEP Services Coordination in 2D



• Installation on Site

Numerous forms of retaining wall are used to retain filled platform to maximise use with boundary constraints. **The design of the wall system has been carefully selected to achieve aesthetic requirements, retaining function and cost effectiveness.** Groundwater controls and ground treatment at wall base are also carefully managed to ensure compliance with both ultimate and serviceability limit state conditions.

**Internal M&E building services include electrical, extra low voltage, fire protection, lift, plumbing, air conditioning & mechanical ventilation services.** External infrastructure M&E services include street lighting, electrical infrastructure and telecommunication infrastructure.

The water supply networks are intentionally partitioned into low and high zone with efficient distribution networks and phasing consideration due to elevation constraint of the natural terrain. **The detention pond function as stormwater management system, designed to mitigate flood and erosion by elongated downstream flow rate that delays the surface runoff while the inflow and discharge volume remain the same.** This measure focuses on capturing stormwater on-site, immediately after rainfall and releasing it slowly at controlled rates downstream or allowing it to infiltrate back into the soil. During construction, good practice of isolating and bypassing sequence of flow into the downstream ponds have shown great success to maintain the clarity and water quality of the downstream pond water. It is achieved by detention, extended detention, infiltration and rainwater harvesting while it has an aesthetically pleasing park-like appearance that could increase property values due to the waterfront effect.



• Silt Trap



• 20 Floors Jadite Suites Under Construction





*Mont' Kiara*  
Greater Kuala Lumpur



Shaping

# Mont' Kiara



2002	2004	2005	2006	2007	2008	2012	2013	2015	2016	2017
1. Mont' Kiara Aman	2. Solaris Mont' Kiara 3. Mont' Kiara Banyan 4. Kiara Designer Suite 5. Mont' Kiara Meridin	6. Verve Suites	7. 10 Mont' Kiara 8. The Residence	9. 11 Mont' Kiara	10. Arcoris Mont' Kiara	11. Residensi 22	12. Kiara 163	13. Residensi Sefina	14. Sunway Mont Residences	15. Residensi Astrea



## The Featured Development In Mont' Kiara



### ARCORIS

**Arcoris** is a 6-acre mixed development located within the thriving hub of Mont' Kiara. It comprises 2 blocks of 35-storey and 18-storey towers, known as the Southern block and Northern block respectively. The development consists of Hotel, Retail, Business Suites, SoHo & Serviced Residence.

Deep excavation near the existing structures as well as deep lift pit excavation are the most challenging parts of the substructure works. For the construction of 5 basement levels, soil nailed wall (up to 16m high with maximum 15m nail length) and contiguous micropile wall (300mm diameter) were adopted using bottom-up construction method. Temporary sheet pile cofferdams were adopted for the deep lift pit excavations. Foundation system utilised 300mm diameter micropiles, bored piles (ranging from 600mm to 1800mm diameter) and caisson piles (ranging from 1800mm to 2700mm diameter) to support the high-rise structure.

### RESIDENSI SEFINA

**Residensi Sefina** is permanently docked in one of the trendiest neighbourhoods in the Klang Valley. Well-designed accommodation comes with an abundance of facilities, set in a tropical beach theme. The low-density development offers only 245 units in a single tower, and occupies 3.06 acres of freehold land. It received the Best Residential High-Rise Architecture Malaysia award for the 2015-2016 Asia Pacific Property Awards and the Best High-Rise Development award for the iProperty.com People's Choice Awards in 2015. The development consists of 1 tower block of 38-storeys and 7 levels of podium, in which G&P is involved in its full geotechnical scope. 3 types of foundation systems are adopted in the design according to the suitability of the site; they are bored piles (900mm, 1200mm and 1350mm diameter) adopted in tower area where the column load are high, micropiles (300mm diameter) adopted in low column load area, and footing adopted in area with very shallow bedrock.



### SUNWAY MONT RESIDENCES

**Sunway Mont Residences** is one of the luxurious residential condominium developments located in Mont' Kiara. The development consists of one block 38-storeys of 288 units condominium, one level of sub-basement and seven levels of podium carpark. G&P was appointed as the geotechnical consultant for this project to design safe and cost-efficient slope stabilisation and foundation works.

Slope stabilisation of the existing natural hill slope is the most challenging part in this project, where 1.2m diameter Contiguous Bored Pile (CBP) wall and soil nails were adopted as the slope retaining and stabilisation system. The CBP wall was designed to retain up to 7.6m high wall to achieve the space needed. Bored pile (750mm diameter) and jack-in spun pile (450mm, 500mm and 600mm diameter) were designed as the foundation system for this project.



### RESIDENSI ASTREA

**Residensi Astrea** is one of the last few residential plots in Mont'Kiara, developed by UEM Sunrise. At 240 units over 3 acres, it is considered a low-density project, with 1 tower block of 37-storeys and 7 levels of podium carpark and recreational facilities. This project has been awarded as the Best Highrise Development in the Asia Pacific Property Awards 2019.

The development is located adjacent to natural hill toe where majority of the development land area are within sloping terrain. G&P is appointed as the geotechnical consultant for this project. Various geotechnical structures were designed for this project, i.e. Contiguous Bored Pile (CBP) wall (with soil nail tied back, struts, cantilever), reinforced concrete wall, reinforced soil wall and soil nailed slope. Combination of bored piles, caisson piles and micropiles were adopted as the foundation system to the site terrain. The largest bored pile adopted is 2.2m diameter, while largest 2.6m diameter caisson pile is adopted at the location that is inaccessible by heavy machinery.



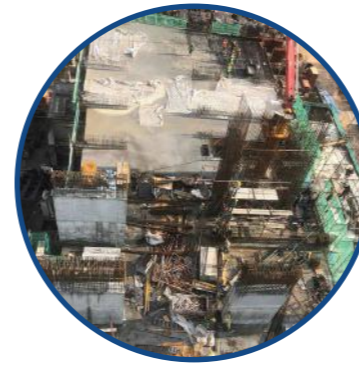
1.2m diameter CBP wall (with support system to retain up to 15.4m high) and 1.5m diameter cantilever caisson pile wall (to retain up to 8.2m high) are adopted to retain the highest original ground level to enable vertical cut and maximising land use.



# Urban Park Living

Residensi Solaris Parq

Located at the heart of Solaris Dutamas, Residensi Solaris Parq is an upcoming residential development with two (2) tower blocks of 41-storeys including six (6) levels of podium carpark and recreational facilities.



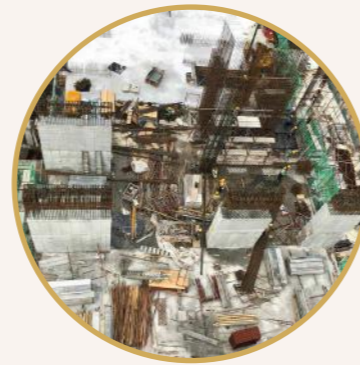
These follows by the contribution of structural works in which the structural and architectural works are expected to complete by 2020.

In terms of structural design, shear wall system at apartment units is adopted to resist both gravity load and horizontal load from wind. The shear walls are then transferred to columns at podium floors by 1.9m thick Post-Tensioned transfer plates for both Tower A and Tower B. This system is commonly adopted for high rise residential buildings in Kuala Lumpur, Singapore and Hong Kong as this system has credits for better and efficient architectural design in terms of space planning. As Post-Tensioned transfer plate system is adopted for the transfer floor, resulting in thinner slab sections compared to transfer beams and hence achieving greater headroom clearance at M&E service transfer levels.

The floor system adopted is a combination of its conventional R.C. beam and slab system at lift lobbies, landscapes and recreational facility areas and post-tensioned flat slab for carpark floors. For carpark floor with post-tensioned flat slab, higher headroom clearance is achieved.

In terms of construction, the apartment floors above the transfer floor are constructed by using aluminium formwork system in which fast and efficient construction process can be achieved, coupled with good concrete surface quality.

“ This prestigious project gained its international recognition by clinching the “Best International Apartment” award in the International Property Awards 2018. It also recently received “Highly Commended Best High End Condo (Klang Valley)” award at 2019 PropertyGuru Asia Property Awards (Malaysia). **G&P** is involved in this prestigious project in both geotechnical and structural aspects. ”



With such high tower blocks, bored piles would normally be the adopted foundation system. However, the adopted foundation system for Residensi Solaris Parq is jack-in RC square piles (Grade 60) with three (3) sizes, i.e. RC350, RC380 and RC400. The use of jack-in piles has managed to reduce construction noise and also environmental impact as it will reduce the amount of spoils (soil) to be removed from the construction site. Furthermore, it also eliminates the use of bentonite or polymer slurry needed for bored pile construction which may results in contamination of ground and groundwater if it's not being handled properly during construction. The substructure works were successfully completed in year 2018.



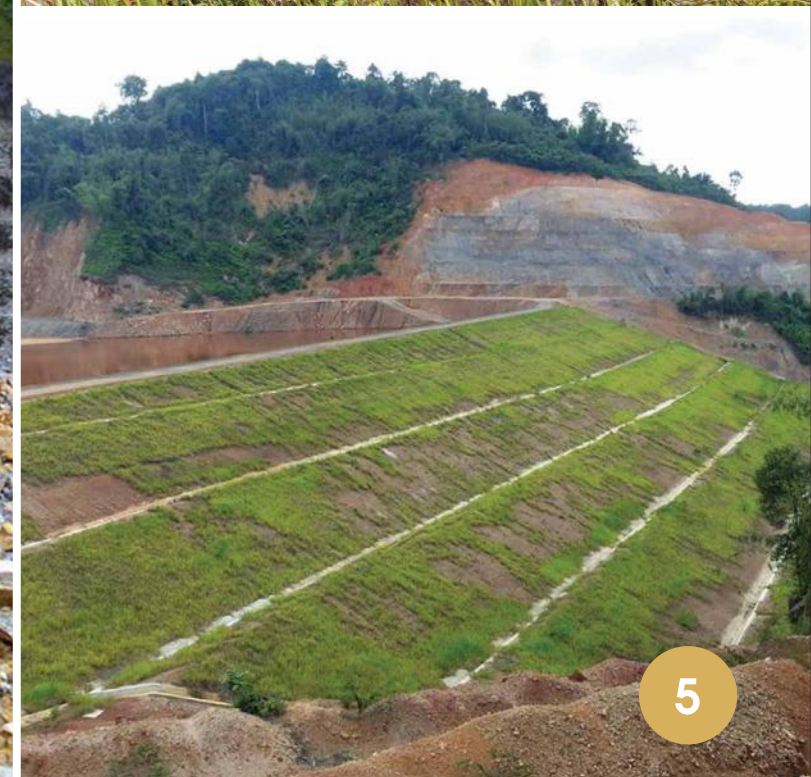


# Geohazard Management in Mining & Quarry Slope Protection



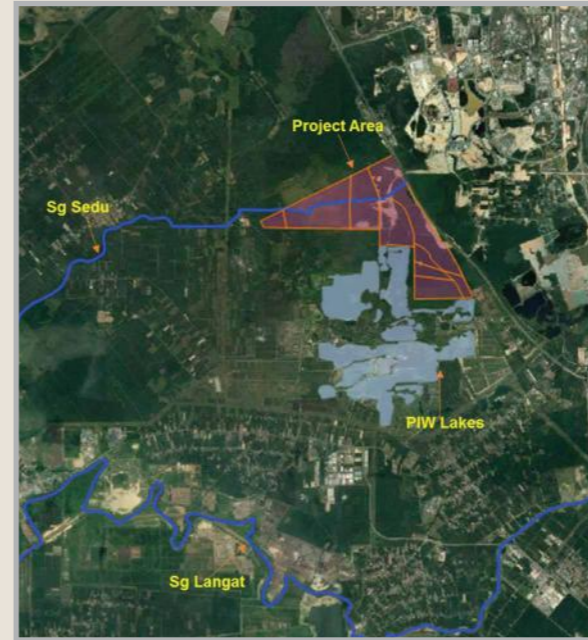
Over 10 years of experience in mining and quarry related works which includes:

- 1 | Boulder stabilisation
- 2 | Hydrogeological assessment
- 3 | Mining pit rock face stabilisation
- 4 | Quarry bench stabilisation
- 5 | Tailing dam construction & raising

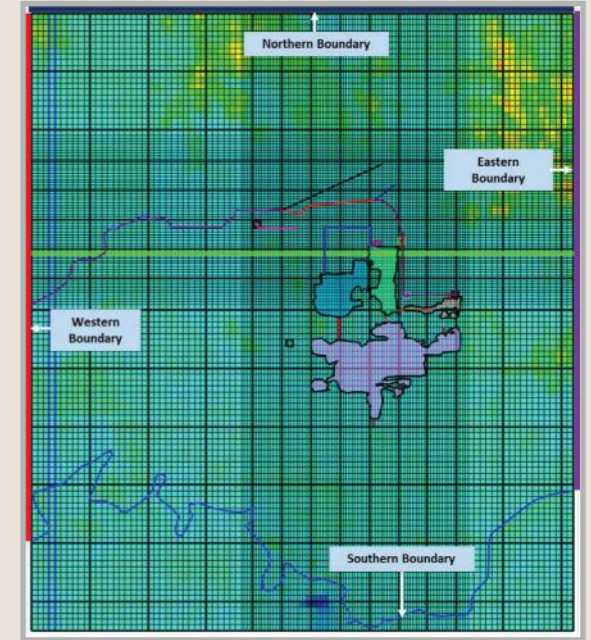




# Understanding The World Beneath Us



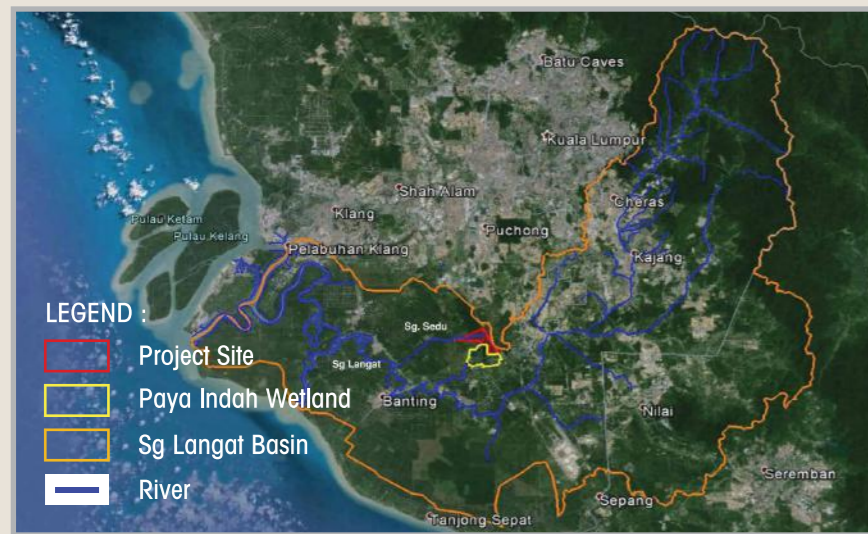
• Model extent of the study area



• MODFLOW groundwater model setup

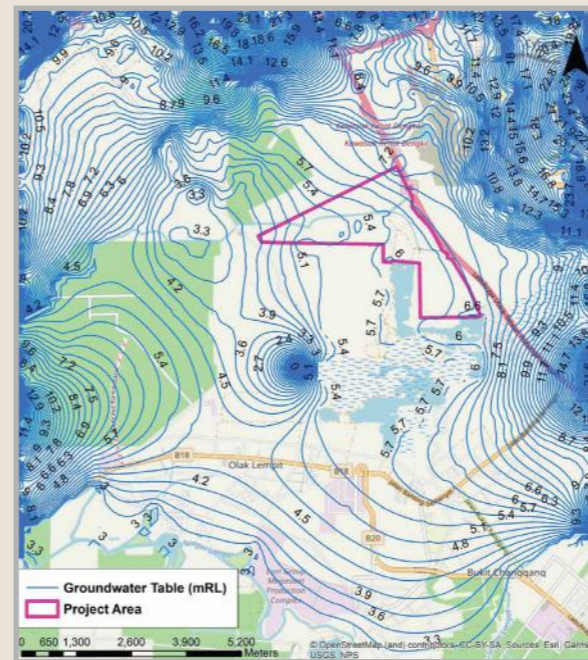
Gamuda Land (T12) Sdn Bhd has appointed G&P Water and Maritime Sdn Bhd (GPWM) to conduct a study entitled **Drought Risk Analysis** and **Groundwater Modelling Study** for Gamuda Cove. This study focused on assessing the drought risk due to the changes in groundwater table around the Project site during its various development stages.

The 3-dimensional groundwater flow model MODFLOW, originally developed by the United States Geological Survey (USGS), was used as the primary modelling tool for this study. The model was set up to cover the major components of the study area such as the Gamuda Cove project site, PIW lakes, KLNFR, sand mining pits, the drainage waterways, Sg Sedu and Sg Langat.



• Project site and overall surface water catchment

The Gamuda Cove is a 1,500 acres prestigious mix-development project bordering the ELITE highway, Paya Indah Wetlands (PIW) and Kuala Langat North Forest Reserve (KLNFR). Although Gamuda Cove has incorporated effective soil treatment method and provision of waterway systems to prevent peat fire occurrence within the site, drought risk may still exist in adjacent peat areas due to some sand mining operation in the vicinity.



Groundwater modelling was carried out in a scenario-based manner, preceded with a model calibration and validation stage. Eight modelling scenarios were simulated which include; existing conditions prior to development, completion of the phase 1 and a fully developed phase with and without the neighboring sand mining activities.

The modelling results have provided useful information on areas vulnerable to drought risk under different conditions, based on the groundwater table contours corresponding to the modelling scenarios. This allows the Client to adjust the environmental management plan accordingly and to better understand the surrounding ground conditions.





# Homes in a Garden

**Bandar Botanic is a 1200-acre residential township developed by Gamuda Land (Botanic) Sdn. Bhd. located at Bukit Tinggi, Klang. This development is constructed over a deep deposit of highly compressible soft silty clay, known as Klang Clay.**

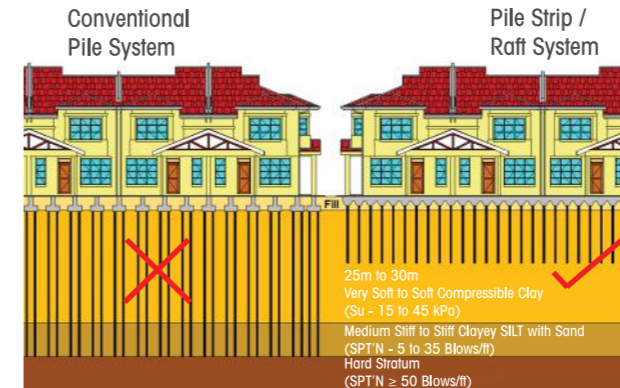
An award winning foundation system of The Piled Strip Raft was adopted for this development to resolve the long standing common problem in structures overlying soft grounds - gap formation between the building & platform as the platform settles and settlement induced cracks.

The system adopted piled-to-length foundation which eliminated negative skin friction and part of the loads were supported by the strip-raft. This has reduced the foundation cost by having lesser piles and increased the cost-effectiveness of the project.

Small sized piles such as 150mm and 200mm R.C. square piles with short lengths (9m - 12m length) were adopted for the low-rise houses. This has solved the slenderness issue and increased the cost-effectiveness of the project.

Flexible underground piping system was adopted and the building was also designed to settle together with the building platform. Hence no gaps formed beneath the building and providing a safe environment for its residents. These also greatly reduced the breakage and leakage of underground services with minimum long term maintenance.

## Low Rise Buildings (Link Houses)

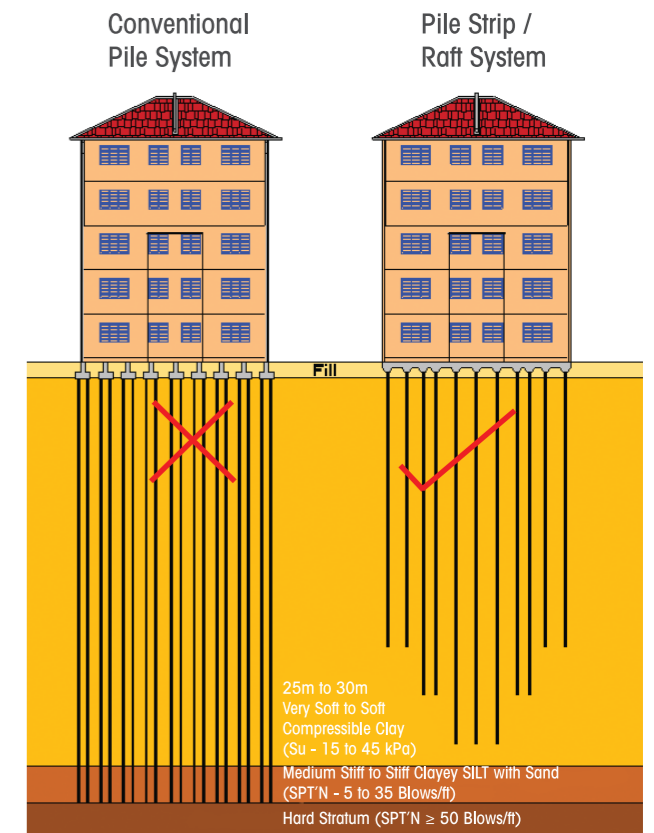


• Foundation Design for 2-Storey Link Houses



• Strip-footing Excavation

## Medium Rise Buildings



• Foundation Design for 5-Storey Low Cost Apartment



• Laying of Plastic Sheet Lining



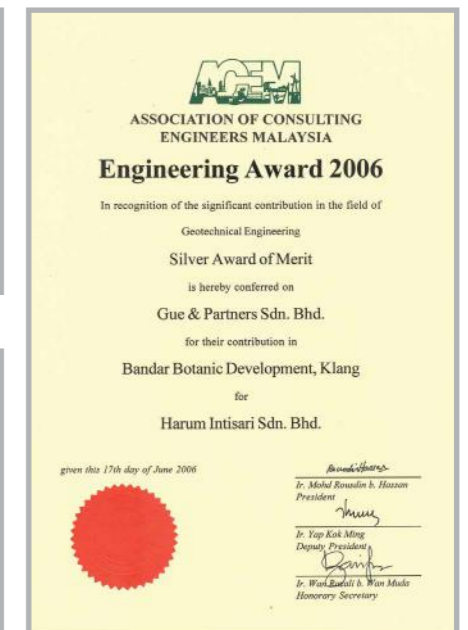
• Laying of Reinforcement Bars



• Erection of Superstructure



• Casting of Strip-raft Foundation





# Kuala Terengganu

# *Drawbridge*

First in Southeast Asia



Kuala Terengganu Drawbridge is the first drawbridge in Southeast Asia linking Kuala Terengganu City Centre to Kuala Nerus via Seberang Takir. G&P Geotechnics Sdn Bhd has been engaged by Zelan-Hasrat Sedaya Consortium to carry out value engineering for the foundation system, by converting the foundation system from the conforming bored pile to precast spun pile with significant saving in cost and time.

Photo credits: SKYRUN™



# Imagine The Days Without Water

Syarikat Air Negeri Sembilan (SAINS) foresees significant increase in water demand in view of the proposed Malaysia Vision Valley (MVV) by the State Government of Negeri Sembilan which is a large-scale long-term project. SAINS has therefore appointed G&P Dams & Water Services Sdn Bhd (GPDW) to conduct a study on the water supply demand and distribution for the whole state.

The purpose of the study is to identify where improvement and upgrading works are needed to ensure the required quantities of water can be distributed at adequate pressure to all new development areas and other anticipated water stressed areas.

## Scope of Works

The appointed scope of works by GPDW involves:

- Review of current water demand data in the study area
- Conduct water demand projection up to year 2050
- Provide recommendations on necessary improvement works based on identified supply-demand scenario assessment.

The Study has been successfully completed in January 2019 which leads to the recommendation of the proposed upgrading or improvement works such as new reservoir, additional distribution main to complement the existing distribution network, new booster station and pipeline interconnection works. These enable SAINS to achieve a holistic water resources management for upcoming development area within the 7 districts.



• General Location Of Existing Water Treatment Plants in Negeri Sembilan

## LEGEND :

	EXISTING DAM		RIVER		STATE BOUNDARY		DISTRICT BOUNDARY
	WATER TREATMENT PLANT		HIGHWAY		ROAD		RAILWAY TRACK



# Our Source of Life... *Water*

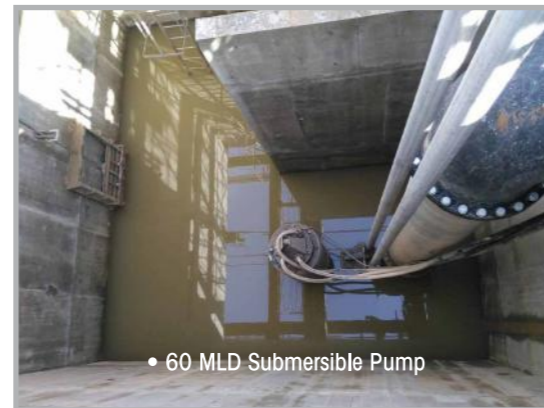
## G&P Dams & Water Services Sdn Bhd (GPDW)

was appointed by Hartalega NGC Sdn Bhd to provide engineering consultancy services for detailed design, tender exercise and construction supervision of Sg Langat raw water intake plant. The Sg Langat raw water intake plant is located at about 2.5 km from the Hartalega NGC factory in Sepang, Selangor. The raw water intake from Sg. Langat is designed for the extraction of 60 MLD and subsequently being channelled to water treatment facility in Hartalega factory, via a 700mm diameter mild steel pipe. The treated water will be used for Hartalega NGC rubber glove production, office and staff quarters.

### Project Fact Sheet:

- Construction duration - 12 months
- Main components within Intake Facility
  - i) 1 unit of raw water intake structure
  - ii) 1 unit of TNB substation
  - iii) 1 unit of switch room and generator room
  - iv) 2 units of 60 MLD capacity submersible pumps
  - v) A series of connecting piping works

As the facility is located at a riverbank, riverbank erosion and flooding is naturally the main hazards anticipated. Therefore, surface water diversion with effective erosion & sediment control measures were implemented during construction. With persistent reminders & closed monitoring by the team, the project has been successfully completed within budget.



• 60 MLD Submersible Pump

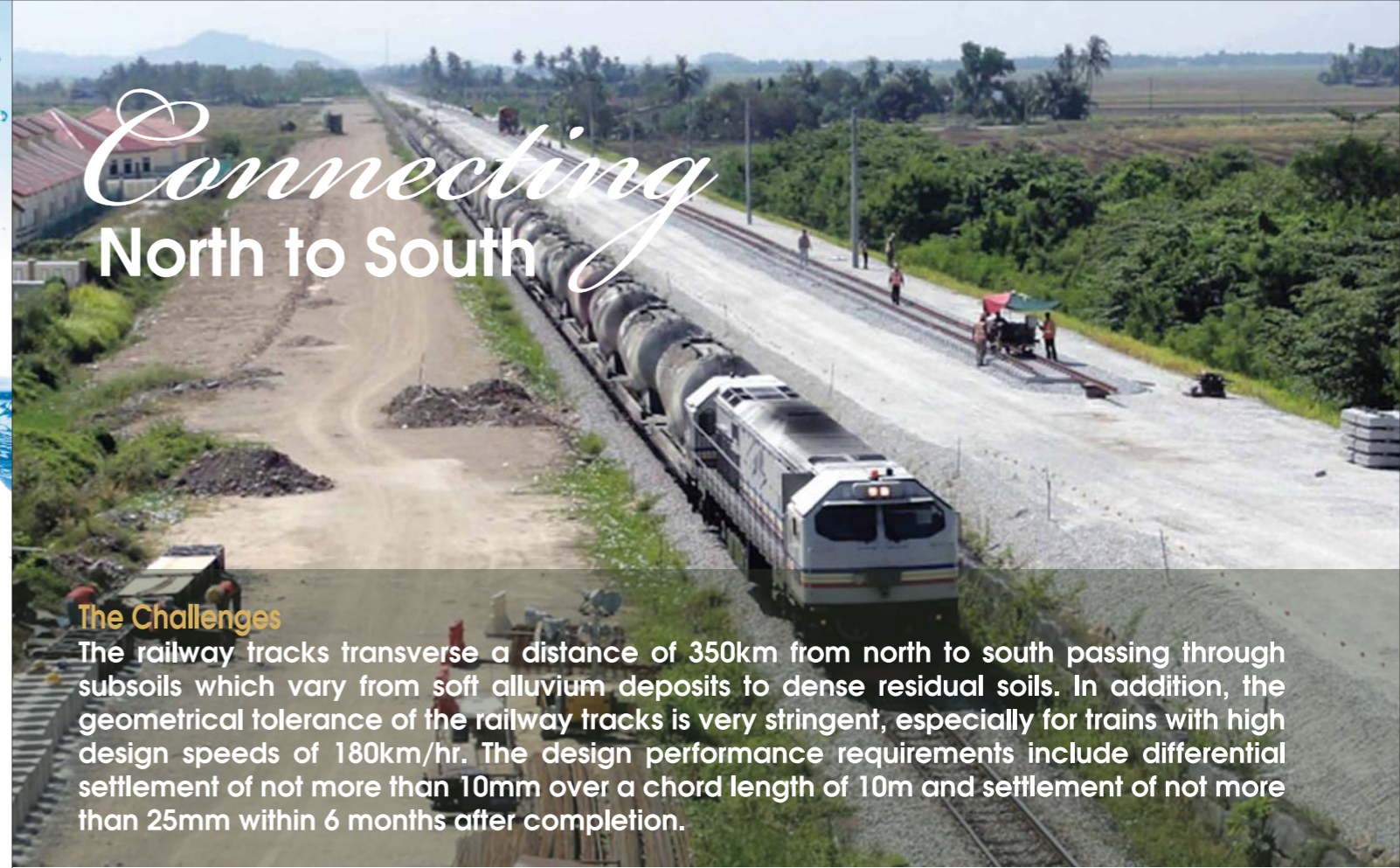


• Overall View of Hartalega Sg Langat Raw Water Intake



• TNB Substation, Switchroom & Genset Room

# Connecting North to South



## The Challenges

The railway tracks transverse a distance of 350km from north to south passing through subsoils which vary from soft alluvium deposits to dense residual soils. In addition, the geometrical tolerance of the railway tracks is very stringent, especially for trains with high design speeds of 180km/hr. The design performance requirements include differential settlement of not more than 10mm over a chord length of 10m and settlement of not more than 25mm within 6 months after completion.

Hence, various **ground treatment techniques were adopted** to meet the performance requirements and construction schedules, especially when long stretches of the embankment supporting the tracks traverses very soft to soft alluvium deposits with thickness of 15m to 20m.

### Adopted Ground Treatment Techniques:

- Excavation & Replacement of soft soil
- Surcharging
- Prefabricated Vertical Drain
- Stone Column

### Design Of Embankments:

- Embankment Behaviour on Soft Ground
- Stability Analyses
- Dynamic Analyses
- Settlement Analyses



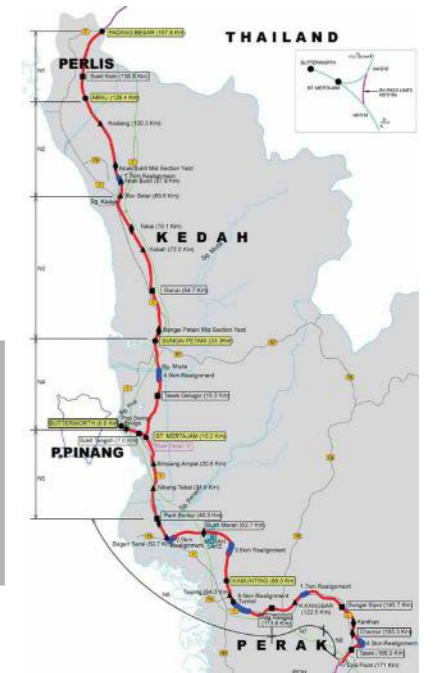
Temporary Sheet Pile for Excavation and Replace Method (E&R).



Embankment fill with surcharge next to existing live tracks



Typical PVD Machine working beside the Live Track







# Miri City : Future-proofing Water Supply

Phase 1 scope of works included supplying new raw water pipeline of 120mm nominal diameter mild steel polyurethane lining (MSPUL) 120mm N.D. MSPUL, upgrading of existing Bakong intake pumping station, construction of new substation, refurbishment of existing barracks, new telemetry system, and provision of 33kV incoming power supply.

For Phase 2, It is the largest raw water transfer project at Northern Region of Sarawak at 300 million litres per day (MLD) with a raw water pumping main of 1600mm diameter at an approximately 16km length. In Phase 2, the main components involved were Intake Structure and Ancillary Buildings at Batang Baram, a new Collection Tank and ancillary buildings at Sungai Bakong, raw water pipeline with access road, and electrical power line along the pipeline route.

**The benefits for The Proposed Miri Water Supply Source Development, Phase 2, Miri Division are:**

- The raw water transfer system from Batang Baram to Sungai Bakong when completed will secure the future raw water supply up to year 2030 with a final capacity of 300 MLD.
- To support raw water source for more than 800,000 population of Miri City and its surrounding areas.

**G&P Professionals (Sarawak) Sdn Bhd was engaged by the Government of Sarawak to provide consultancy services for investigation, survey, design, tender documentation and construction supervision for the Miri Water Supply Source Development in the year 2011.**

Wastewater management system was carried out at areas of poor water quality. **One of the objectives is to increase and provide raw water source capacity to meet requirement of Miri City and its vicinity up to the year 2030.** Phase 1 is to upgrade the existing Bakong Intake and Pipeline from Bakong to Tunnel and Phase 2 is to develop the raw water transfer system from Batang Baram to Bakong Intake.







# Gerugu Dam : Multi-faceted Dam Safety Review

• Site photo for the Gerugu Dam



**G&P Professionals (Sarawak) Sdn Bhd has been appointed by Jabatan Bekalan Air Luar Bandar Sarawak (JBALB) to carry out a dam safety and yield study for Gerugu Dam located nearby Sarikei town, being one of the major towns at the river banks of Batang Rajang.**

Gerugu dam is an earthfill dam which was constructed during the early 2000's and commissioned in 2008 as a water supply dam, providing water supply to the areas of Sarikei, Belawai, and Tanjung Manis. The dam is located within the upstream regions of Sarikei sub-catchment, approximately 17km south of Sarikei Town with a reservoir and catchment area of 1.33 km<sup>2</sup> and 13.6 km<sup>2</sup> respectively.

Moreover, it acts as a regulating reservoir to ensure sufficient water supply at the Bayong Intake plant located approximately 4.5km downstream. During drought when high river level is not attainable for pumping at Bayong intake, the rubble weir located immediately downstream of Bayong intake will be closed to raise the river level.

## The benefits of Dam Safety Review are:

- Reservoir storage prediction model is able to enhance reservoir storage management especially during drought period and increase demand in the future. It is able to allow the storage prediction up to 12 months ahead.
- The effects of dam failure can be evaluated with the aid of dam break flood inundation map to delineate the area which would be inundated in the event of a dam failure.
- Dam Safety Emergency Response (ERP) study carried out is useful to identify emergency conditions that could endanger the dams, able to prescribe procedures to mitigate emergency condition at dam and to provide timely warning to the appropriate emergency management agencies for their implementation of protection measures for downstream communities.
- A facility plan which guides authorised personnel at Gerugu Dam in actions to take in response to emergency incidents affecting the dam.
- Drill exercise workshop was conducted to prepare authorized personnel the actual readiness capability of dealing with emergencies.





# Client's Testimonial

**Tan Sri Datuk Alex Ooi**  
Group Executive Chairman  
Ideal Property Group

The Ideal Property Group has engaged G&P for projects that varied in nature including foundation design, coastal hydraulics studies, sea reclamation, highway and bridge design, to name a few.

G&P has consistently provided innovative problem solving skills, with emphasis on safety & cost effectiveness, as well as practical engineering solutions, which contributed to significant savings on the foundation design for our high-rise projects.

Besides, they have assisted us in completing successfully the design and construction of our reclamation projects at Queensbay.

The G&P team is very friendly, passionate and committed in delivering their engineering services. As such, we highly recommend G&P for their professional consultancy services.

**Mr. Loh Jong Lee**  
Senior Manager  
Beverly WM Sdn Bhd

We have appointed G&P as our piling works specialist for all of our projects. They have been showing us consistently good quality services and are responsive towards all design and technical issues.

Their responsibilities also include providing advices and comments on piling contractor's alternative design to ensure the integrity of design, thus, eliminating the risk of having a problematic building in the future due to faulty building foundation design.

As such, we have no hesitation to engage G&P again for our future projects.

**YV Gopala Krishna**  
Regional Geologist (Asia)  
Lhoist Malaysia Sdn Bhd  
(part of Lhoist Group)

We, at the Lhoist Group, engaged G&P Professionals in the study of hydrogeological conditions and slope stability for our large mining operation in Malaysia.

Being the project co-ordinator, I found that the G&P team is very knowledgeable, willing to be hands-on to understand our issues and proficient computationally at analysing large data to provide recommendations for mitigation works.

I highly recommend G&P Professionals for any such large hydrogeological projects.

**Mr. Alex Loo**  
Executive Chairman &  
Chief Executive Officer  
Hyper Act Marketing Sdn Bhd

We, Hyper Act Marketing Sdn Bhd appreciate the responsiveness of services from G&P. It is a pleasure to work with the team and we thank G&P for the assistance. Special thanks to Ir. Liew Shaw Shong and Mr. Chee Fong Wah for the works.

**Mr. Sati Bhogal**  
Project Director  
MMC Gamuda  
KVMRT (T) Sdn Bhd

G&P Group has provided us with their engineering consultancy services on KVMRT Line 1 and Line 2 Projects over the last 7 years.

G&P has been consistently demonstrating their professionalism, collaboration and endless commitment in delivering their quality engineering service in compliance with project requirements and good code of ethics.

The G&P professional team has proven their capability in providing sophisticated, innovative and cost-efficient engineering solutions for the effective implementation of such large scale and complex projects.

We look forward to continuing a long term business collaboration with G&P.

**Ir. Lum Tuck Ming**  
Deputy Managing Director -  
Malaysia Property Development  
Sunway Integrated  
Properties Sdn Bhd

A well organized and professional geotechnical consultant, led by a very knowledgeable team of directors, and supported by well-trained engineers and geologists.

Their quality of service is exemplary which is hard to find nowadays in the consultancy industry. They are always responsive whenever advice is needed to resolve design and technical issues related to foundation works.

They are one of the few Consultants that does not need to be reminded of deadlines, with their directors actively involved from design until the completion of foundation works.

Having known and worked with them for the past 20 years, it's great that they are continuously setting a high standard of professionalism all these years for others to follow in their footsteps.

**Mr. Siu Woei Ann**  
Vice President, Project  
YTB Impression Sdn Bhd

We want to render our appreciation to the G&P Geotechnical Team for their extraordinary contribution to our project.

The team has exhibited skilled, quality workmanship and has been responsive throughout their service in the project.

The project has been challenging yet they have achieved multiple milestones on time.

We have no hesitation to cooperate with G&P Professionals for any future projects.



# Employee's Testimonial



From left to right: **En Yazid, Cik Shikin, En Firdaus, Ir. Safrina, Ir. Leong and Ms Maggie Liaw**  
**G&P Dams & Water Services Sdn Bhd**

We used to play "LEGO" alone when we were kids. A career as engineers allows us to play "LEGO" with a group of people. We love our work family.



**Ang Jen Shen** | Geotechnical Engineer  
**G&P Geotechnics Sdn Bhd**

G&P is a company that supports and believes in their staff. I have developed a lot throughout my time here and am continuously growing because of the challenges and opportunities given to me. What I find most impressive about G&P is the People and the Management. I am proud to be a part of G&P.



**Yee Keh Vin** | Senior Engineer  
**G&P Infra Sdn Bhd**

G&P is my first job and I've been here for almost seven years. Everyone here has tirelessly helped me not only as an employee but has also shaped me to be a better person. It feels great knowing I could make a career here. G&P is more than just a team, we are a family.



**Low Ying Binng** | C&S Engineer  
**G&P Infra Sdn Bhd**

Although I have only been with G&P for a short period of time, working here is a great pleasure. The thing I appreciate the most in G&P is the culture and positive working environment as I am surrounded with great individuals. The peoples are always willing to provide guidance and are generous in sharing knowledge whenever needed. My journey in G&P has added significant values to my personal and professional development.



**Jackie Teo** | Electrical Engineer  
**G&P M&E Sdn Bhd**

During my working time in G&P, I am proud to say that I am honoured to be part of the G&P family. Although I applied as a fresh graduate in this company, I have developed a lot of knowledge and skills throughout my time here which are very useful for my future career. Thanks to the staff and the management that have given all the opportunity to me working on projects and helped me overcome any obstacles and challenges. Everyone in the company is also encouraged to share his or her own experiences and provide better solution to valued clients



**Yap Shein Hong** | C&S Engineer  
**G&P Infra Sdn Bhd**

Most of all, I love working with the people at G&P. It's a very positive team environment and I can't imagine not working with some of these guys. I value the relationships I've built and am so glad that they are part of my day-to-day work life.



**Mathilda Tupang Montegrai** | Senior Engineer  
**G&P Professionals (Sarawak) Sdn Bhd**

I entered G&P Professionals Sarawak as a fresh graduate in year 2012 and I feel really glad to be associated with the company's journey. I have enjoyed working with this Company as it provides a conducive and employee-friendly work environment. In terms of career growth, it provides the best platform to enhance knowledge and skills. Being with G&P Professionals Sarawak for around 7 years, I have seen the company grow.



**Ooi Qi Wei** | Senior Geotechnical Engineer  
**G&P Geotechnics Sdn Bhd**

Entering G&P as a fresh graduate has accelerated my growth with its vast resources and experiences such as structured trainings and R&D systems. While working on projects, everyone is encouraged to conduct self-study and research to broaden the G&P knowledge base and ultimately provide better solutions to our clients.



**Jessie Aileen anak James Ajisen** | Civil Engineer  
**G&P Professionals (Sarawak) Sdn Bhd**

I had my industrial training with G&P Professionals Sarawak in 2017 and the experience has taught me essential and valuable skills and has developed in me a greater enthusiasm and passion for civil engineering. I am forever grateful to have been given the opportunity to join this esteemed organisation in 2019 after my graduation and to excel in this company alongside the best professionals.



**Khairol Azhar Nordin** | Engineer  
**G&P Highways & Transportation Sdn Bhd**

Commencing my employment as an engineer with G&P since 2016 has been the most fantastic career move of my life.

Working with a company that does not only specialise in road design but also traffic studies and traffic impact assessment enables me to widen my perspective on road and infrastructure projects. I am also happy to be working with the company with multiple levels of project involvement from road and infrastructure planning, design, contract management to construction implementation.

The most impressive aspect about G&P Group is the people in this company. It's a very positive team environment and I value the support and cooperative attitude working with my colleague; with whom I have established a very close and cordial working relationship.



## Reference for Construction Rate/Cost

### Deep Foundation

Bored Pile Installation and Productivity  
(Granitic Formation)

Pile Sizes (dia.)	Drilling in Soil
900mm	7m/hr
1200mm	5.5m/hr
1350mm	5m/hr
1500mm	4m/hr
2000mm	1m/hr

Pile Sizes (dia.)	Drilling in Rock
900mm	0.5m/hr
1200mm	0.45m/hr
1500mm	0.35m/hr
2000mm	0.10m/hr

### Cost of Pile Installation

Pile Type*	On-site Pile Supply & Installation Rate (RM/m)	
	Range	
Bored Piles	BP2500	RM4,700-RM6,100
	BP2000	RM2,750-RM3,600
	BP1800	RM2,100-RM2,800
	BP1500	RM1,450-RM1,900
	BP1200	RM1,100-RM1,400
	BP1050	RM1,000-RM1,300
	BP900	RM750-RM1,000
	BP600	RM500-RM800
Spun Piles	SP600	RM310-RM400
	SP450	RM200-RM225
RC Piles	RC300	RM80-RM120

### Infrastructure

Major Infrastructures	Cost
Suction Tank, Pump House & Reservoir	RM25,000-RM35,000 per acre
Sewerage Treatment Plant	RM18,000-RM25,000 per acre

Local Infrastructures	Cost
Road	RM90,000-RM120,000 per acre
Drainage	RM90,000-RM120,000 per acre
Sewerage Reticulation	RM20,000-RM35,000 per acre
Water Supply	RM20,000-RM35,000 per acre

### Structure

Steel Pounding for Landed Properties	Column	Beam	Slab	Stairs
Single Storey Link House	100-150 kg/m <sup>3</sup>	100-120 kg/m <sup>3</sup>	80-100 kg/m <sup>3</sup>	-
Double Storey Link House	200-220 kg/m <sup>3</sup>	120-150 kg/m <sup>3</sup>	80-110 kg/m <sup>3</sup>	120-140 kg/m <sup>3</sup>
Semi-Detached and Bungalow	200-220 kg/m <sup>3</sup>	120-150 kg/m <sup>3</sup>	80-110 kg/m <sup>3</sup>	120-140 kg/m <sup>3</sup>

### M&E

Major Infrastructures	Cost
M&E for External Infrastructure works	RM50,000-RM80,000 per acre

### Retaining Walls

General Recommendation for selection of Wall Type\*\*

Retaining Structure	Condition
Soil Nailed Wall	Cut ground especially retained height > 5m
Reinforced Soil Wall	Filled platform with retained height > 5m
Reinforced Concrete Wall	Retained height < 5m
Rubble Wall	Low retained height < 2m (due to concerns on workmanship)

### Subsurface Investigation\*\*\*

Cost per Borehole	RM7,000-RM13,000
Average cost per borehole	RM10,000

### Cost of Retaining Wall Construction

Reinforced Soil Wall	Rate (RM/m <sup>2</sup> )	Reinforced Concrete Wall	Rate (RM/m <sup>2</sup> )	Soil Nailed Wall	Rate (RM/m <sup>2</sup> )
3m < H ≤ 6m	600-950	H ≤ 3m	400-700	H ≤ 5m	600-850
6m < H ≤ 12m	900-1,550	3m < H ≤ 5m	650-950	5m < H ≤ 10m	750-1,000
12m < H ≤ 15m	1,500-1,950			10m < H ≤ 15m	900-1,200

### Notes:

- \* The piling rates exclude mobilisation works and provisions of necessary piling and jack-in equipments.
- \*\* Proper selection of wall system depends on actual site condition, soil parameters, project specification, requirements, etc.
- \*\*\* The values presented are indicative of and limited to SI cost for common geological formations in Klang Valley by drilling with water including mobilisation & demobilisation, laboratory tests, instrumentation & monitoring.

# Our Corporate Social Responsibility



01  
Welfare & Charitable Organisations



02  
Government



03  
Universities



04  
Institutions & Associations



05  
R&D

01

G&P helped 72 qualified welfare and charitable organisation including Badan Kebajikan Anggota Perkhidmatan Hasil Negara Malaysia, Berita Kesatuan Pekerja Bomba Dan Penyelamat S.M., Berjaya Cares Foundation, Dana Pembangunan Insan OKU Penglihatan, Desa Amal Jireh (Welfare Home for Needy Children), Dignity for Children Foundation, Eco World Foundation (Humanitarian projects), Handicapped and Mentally Disabled Children Centre Melaka, etc.

02

G&P has been appointed by the Malaysian government in various capacities (pro-bono) to provide technical expertise in resolving engineering issues. Dato' Ir. Dr. Gue See Sew was a Chairman of the Committee for the "Safety Guideline for Hillside Development for Penang" and Panel on Safety Issues for KLIA2. Ir. Dr. Tan Yean Chin was appointed Council Member of Nexus Governing Committee (NGC).

03

Directors/staff of G&P have been contributing to advancement of technical skill to members of local and foreign universities, institutions and schools. G&P's engineers also provided human capital development in various capacities from Board Members to Adjunct Professors, Adjunct Lecturers, Advisory Panel and Lecturers (Pro-Bono).

04

G&P's engineers continue to be involved in the human capital development in the Institutions and Associations like The Board of Engineers, Malaysia (BEM), Malaysian Association of Facility Management (MAFM), Construction Industry Development Board (CIDB), Project Management Institute Malaysia Chapter, Institution of Engineers, Malaysia (IEM), The Department of Environment, Malaysia (DOE), National Council for Scientific Research and Development (MPKSN), etc.

05

G&P has a structured system to carry out R&D where each engineer in the company undertakes an R&D project every year, to improve consultancy practices. Some of these R&D projects have generated Innovative Designs and two of the engineers (Ir. Dr. Tan Yean Chin and Ir. Dr. Puspanathan a/l Subramaniam) were awarded doctorate degrees from Universiti Teknologi Malaysia for their extended R&D projects.



# Some of Our *Contribution*

<p><b>1. Tan Sri (Dr) Ir. Jamilus Hussein</b></p> <ul style="list-style-type: none"> <li>• <b>Universiti Teknologi Malaysia (UTM)</b> Chairman, Endowment Trust Committee (2017-2020)</li> <li>• <b>Universiti Tun Hussein Onn Malaysia (UTHM)</b> Chairman, Board of Directors (2009-2018)</li> <li>• <b>Board of Engineers, Malaysia (BEM)</b> Member, Engineering Accreditation Council (2018-2019)</li> </ul>	<p><b>2. Dato' Ir. Dr. Gue See Sew</b></p> <ul style="list-style-type: none"> <li>• <b>Tunku Abdul Rahman University College</b> Board of Governor (2013-2019)</li> <li>• <b>Institution of Engineers, Malaysia (IEM)</b> President (2001-2003)</li> <li>• <b>Construction Industry Development Board (CIDB)</b> Chairman, Expert Standing Committee on Slope Safety (2013-2015)</li> <li>• <b>Universiti Malaysia Perlis (UniMAP)</b> Board Member (2010-2014)</li> </ul>
<p><b>3. Ir. Dr. Tan Yean Chin</b></p> <ul style="list-style-type: none"> <li>• <b>Institution of Engineers, Malaysia (IEM)</b> President (2016-2018)</li> <li>• <b>Board of Engineers, Malaysia (BEM)</b> - Board Member (2007-2012 &amp; 2013-2018) - Chairman, Professional Practice Committee (2008-2012 &amp; 2013-2018)</li> </ul>	<p><b>4. Ir Liew Shaw Shong</b></p> <ul style="list-style-type: none"> <li>• <b>Malaysian Geotechnical Society (MGS)</b> President (2019-2021)</li> <li>• <b>Association of Consulting Engineers Malaysia (ACEM)</b> Council member (2018-2019)</li> <li>• <b>Institution of Engineers, Malaysia (IEM)</b> Advisor, Geotechnical Engineering Technical Division (GETD) (2014-2017)</li> </ul>
<p><b>5. Ir. Lalchand Gulabrai</b></p> <ul style="list-style-type: none"> <li>• <b>UCSI University</b> Industrial Advisory Panel &amp; Adjunct Professor (2014-Present)</li> <li>• <b>Academy of Sciences, Malaysia (ASM)</b> Member, Fellow Application Assessment WG (2017-2018)</li> </ul>	<p><b>6. Ir. Chong Sun Fatt</b></p> <ul style="list-style-type: none"> <li>• <b>INTI International University</b> Industry Advisory Board Member (2016-2018)</li> <li>• <b>IEM, Water Resources Technical Division</b> Adviser (2010-2011)</li> <li>• <b>ASEAN Experts Group on Disaster Management</b> Country Representative (1993-2003)</li> </ul>
<p><b>7. Ir. Lim Sin Poh</b></p> <ul style="list-style-type: none"> <li>• <b>Universiti Teknologi Petronas (UTP)</b> External Examiner</li> <li>• <b>International Association for Coastal Reservoir Research (IACRR)</b> Treasurer (2018-Present)</li> </ul>	<p><b>8. Ir. Lai Sze Ching</b></p> <ul style="list-style-type: none"> <li>• <b>Multimedia University (MMU)</b> Industrial Advisory Panel (2013-2019)</li> <li>• <b>Institution of Engineers, Malaysia (IEM)</b> Vice President (2014-2018)</li> <li>• <b>Bar Council</b> Disciplinary Committee (2011-2015)</li> </ul>
<p><b>9. Ir. Beh Hong Lin</b></p> <ul style="list-style-type: none"> <li>• <b>Malaysian Water Association (MWA)</b> Council Members (2017/2019)</li> </ul>	<p><b>10. Ir. John Lim Chee Kiang</b></p> <ul style="list-style-type: none"> <li>• <b>Institution of Engineers, Malaysia (IEM)</b> Committee Member, Water Resources Technical Division (2017-Present)</li> </ul>

<p><b>11. Ir. Lee Choy Hin</b></p> <ul style="list-style-type: none"> <li>• <b>Universiti Malaya (UM)</b> Industrial Panel for ENGENIUS '18 &amp; '19 (2018-2019)</li> <li>• <b>University Tunku Abdul Rahman (UTAR)</b> Industry Advisory Panel for ENGENIUS (2015-2019)</li> <li>• <b>Intelligent Transport System Malaysia (ITSM)</b> Council Member</li> </ul>	<p><b>12. Ir. Chow Chee Meng</b></p> <ul style="list-style-type: none"> <li>• <b>SEGi University, Faculty of Engineering and Built Environment</b> Industry Advisory Panel (2016-2023)</li> <li>• <b>Board of Engineers, Malaysia (BEM)</b> Investigating Committee Member on Professional Practice (2014 - Present)</li> <li>• <b>SIRIM</b> Technical Committee on Geotechnical Works (2018)</li> </ul>
<p><b>13. Ir. Lee Peir Tien</b></p> <ul style="list-style-type: none"> <li>• <b>Malaysian Geotechnical Society (MGS)</b> Committee Member (2016-2019)</li> <li>• <b>Institution of Engineers, Malaysia (IEM)</b> Chairman, Geotechnical Engineering Technical Division, IEM (2018 &amp; 2019)</li> </ul>	<p><b>14. Ir. Dr. Gue Chang Shin</b></p> <ul style="list-style-type: none"> <li>• <b>Universiti Teknologi Petronas (UTP)</b> Adjunct Lecturer (2016-2020)</li> <li>• <b>Heriot-Watt University Malaysia (HWUM)</b> Industrial Advisory Board (2018-2021)</li> <li>• <b>Institution of Engineers, Malaysia (IEM)</b> Secretary &amp; Treasurer of the Geotechnical Engineering Technical Division (GETD) (2017-2020)</li> </ul>
<p><b>15. Ir. Low Chee Leong</b></p> <ul style="list-style-type: none"> <li>• <b>Universiti Malaya (UM)</b> Industrial Panel for Final Year Project (2018, 2019)</li> </ul>	<p><b>16. Ir. Dr. Wong Shiao Yun</b></p> <ul style="list-style-type: none"> <li>• <b>Universiti Malaya (UM)</b> Industrial Panel for Final Year Project (2018, 2019)</li> </ul>
<p><b>17. Ir. Noor Azlina Bte Azhari</b></p> <ul style="list-style-type: none"> <li>• <b>Universiti Malaya (UM)</b> Industrial Panel for Final Year Project (2018)</li> </ul>	<p><b>18. Ir. Teh Wai San</b></p> <ul style="list-style-type: none"> <li>• <b>Institution of Engineers, Malaysia (IEM)</b> Committee Member of Tunnelling and Underground Space Engineering Technical Division (TUSTD) (2019)</li> </ul>
<p><b>19. Ir. Colin Lim B.L.</b></p> <ul style="list-style-type: none"> <li>• <b>Malaysia Geotechnical Society (Young Section) YMGS</b> Treasurer (2018-2020)</li> </ul>	<p><b>20. Chee Fong Wah</b></p> <ul style="list-style-type: none"> <li>• <b>Malaysia Geotechnical Society (Young Section) YMGS</b> Committee Member (2018-2020)</li> </ul>





The G&P 20<sup>th</sup> Anniversary Booklet & Video is Brought to You by

From left to right:

1 Andrew Yap Voon Yew	2 Tan Chin Giap	3 Carmen Law Chia Wen	4 Tei Chiew Ling	5 Kwan Hui Yee
6 Ang Jen Shen	7 Derrick Tan Wee Keong	8 Lok Li Wen	9 Lim Saw Yin	10 Ir. Ho Shu Feng
11 Ir. Colin Lim Boon Lin	12 Neoh Xiao Binn	13 Dr. Gue Chang Ye	14 Ir. Shafina Sabaruddin	15 Yong Hui Yen
16 Ir. Dr. Wong Shiao Yun	17 Ir. Dr. Gue Chang Shin			

#### Editor's Note

"First of all, a big thank you to the staff and Directors of all specialist companies for compiling and sharing their projects featured in this booklet and providing useful construction database in their respective field. Also, my greatest appreciation to our clients who has given us their kind words in their testimonials, those who has given us consensus in featuring their projects and providing high resolution photos. Finally, I'm utterly grateful to have such wonderful team in the Editorial Board. With their continuous efforts and creative ideas, I hope this can be an engaging and informative coffee table book to keep." WongSY

*Thank You* for Choosing



Your One-Stop Value Adding Engineering Consultancy Service Centre

