

COASTAL HYDRAULIC STUDY FOR PERDANA QUAY DEVELOPMENT

Project Summary

The Perdana Quay Master Plan has been developed for a coastal resort at Burau Bay, west coast of Langkawi. The waterfront development includes a marina extension, wharfs, a bay front boulevard and park areas, and is expected to modify the local physical and hydraulic regimes with potential impact to the coastal environment.

G&P Water & Maritime Sdn. Bhd. was engaged to develop the conceptual layout plan and assess the impacts of the project on the surrounding environment by undertaking hydraulic and water quality studies.

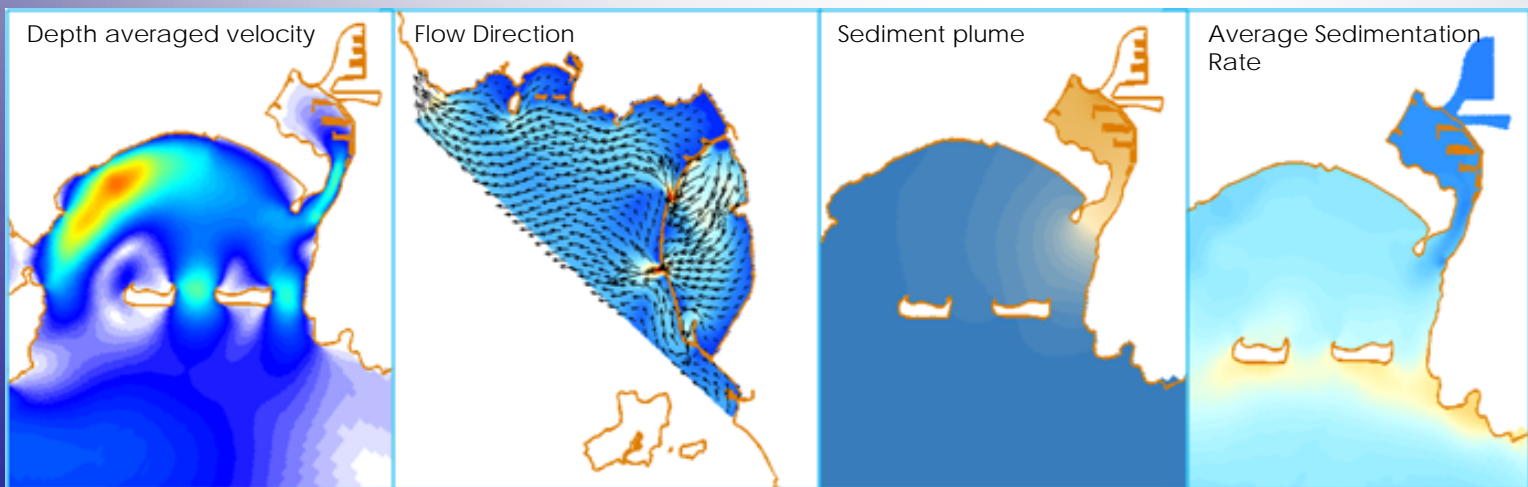
HYDRAULIC AND ENVIRONMENTAL WORKS

The scope of works included:

- Hydrodynamic modelling for marina extension design
- Study of surrounding water level and flow currents before and after the proposed project
- Study of sediment plume dispersion patterns due to excavation activities
- Sediment transport and erosion/siltation study



Overall view of Burau Bay



Hydraulic and Sediment Modelling Simulations

DETAILED DESIGN FOR FISHERMAN WHARF AT TELUK BURAU, LANGKAWI

Project Summary



PROJECT: PROPOSED DEVELOPMENT FOR PANTAI KOK – TELUK BURAU, LANGKAWI – FISHERMAN WHARF

CLIENT: BENUA MAHSURI SDN. BHD.

DEVELOPMENT COMPONENT

The project site is located on the western coastline of Langkawi, adjacent to existing Perdana Quay and Telaga Terminal. The Fisherman Wharf will replace the existing fisherman jetty at Teluk Burau and will accommodate approximately 60 local fishermen boats. The Fisherman Wharf consists of a jetty and a recreation and retail area.

SCOPE OF WORK

G&P Water & Maritime was appointed as the consultant for detailed design and contract administration for the construction stage. The Fisherman Pier development has a total area of 1.38 acres. The construction duration is 18 months. The scope of works include the following;

- Detailed design of fisherman wharf piling system for vertical wall
- Detailed design of berthing layout and arrangement
- Assisting in preparation of tender document and tender evaluation
- Contract administration, site supervision and verification during construction stage



Overall View of Fishermen Wharf

REFINERY AND PETROCHEMICAL INTEGRATED DEVELOPMENT PROJECT (RAPID), PACKAGE 3

Project Summary

RAPID is part of the bigger PETRONAS Pengerang Integrated Petroleum Complex (PIPC) development worth an estimated 27 Billion US Dollars, which comprises of RAPID and its associated facilities including the Pengerang Co-generation Plant (PCP), Re-gasification Terminal 2 (RGT2), Air Separation Unit (ASU), Raw Water Supply Project (PAMER), Crude and Product Tanks (SPV2) as well as central and shared Utilities and Facilities (UF). RAPID will consist of a 300,000 barrels per stream day refinery and petrochemical complex with a combined capacity of producing 7.7 million tonnes per annum of various grades of products, including differentiated and specialty chemicals products such as synthetic rubbers and high-grade polymers. PIPC is part of Malaysia's Economic Transformation Programme (ETP) to establish new engines of growth for Malaysia; whilst meeting future energy requirement and strengthening PETRONAS' position as a key player in the Asian chemicals market.

RAPID Package 3 occupies 180 acres in Pengerang, Johor Bahru, and consists of a gas plant, hydroheating units, catalytic reformer, gas production and removal system, pressure adjustment system, flare units and interconnecting pipelines. G&P Geotechnics Sdn. Bhd. was appointed to carry out subsurface investigation works, topographic survey and laboratory testing which was completed in early 2015 and is finalising the Geotechnical Assessment Report which includes geotechnical assessment of the soil, foundation design and seismic classification of the site.

Project Team

Project Owner:
Petroleum Nasional Berhad (PETRONAS)

Client:
Técnicas Reunidas, Spain

Geotechnical Consultant:
G&P Geotechnics Sdn. Bhd.

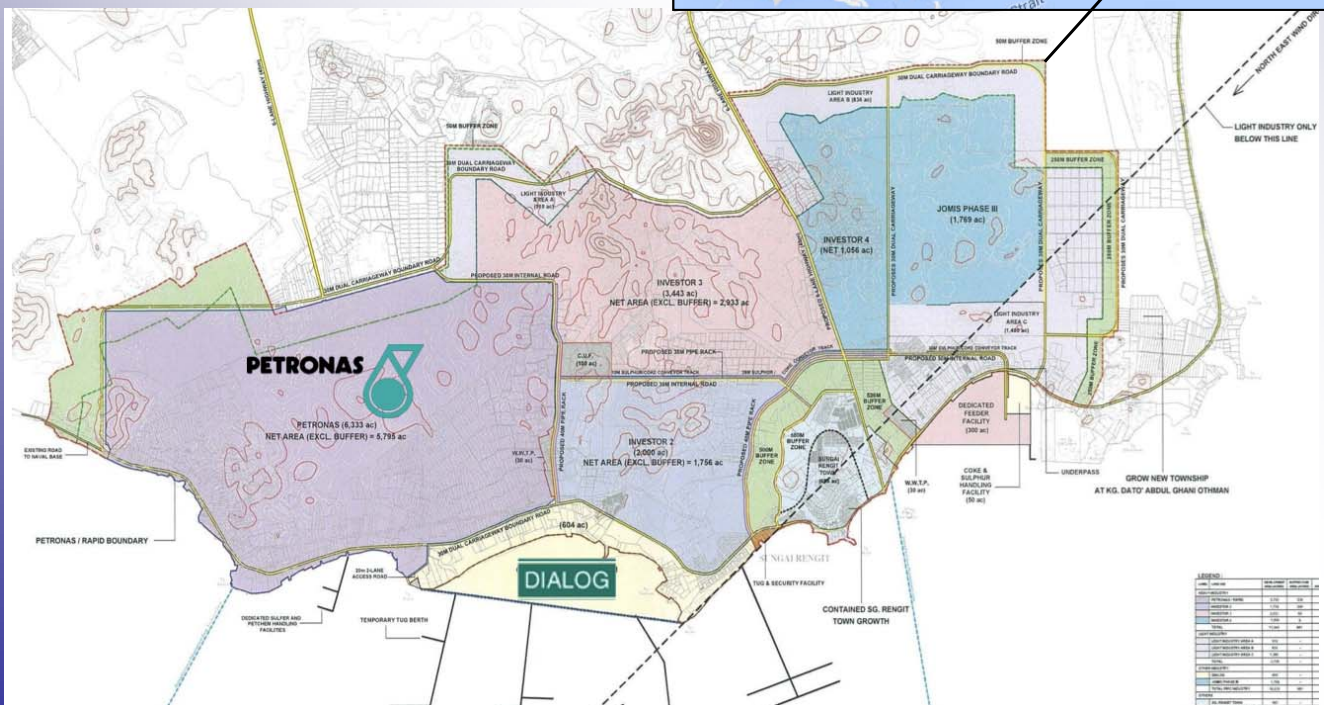
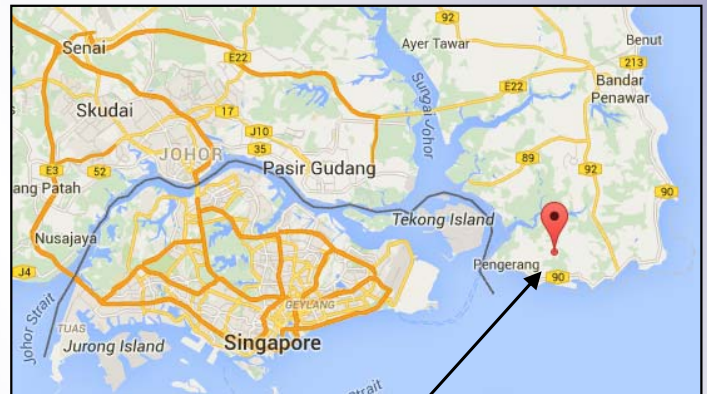


Figure 1: Overall View of Pengerang Integrated Petroleum Complex (PIPC)

REFINERY AND PETROCHEMICAL INTEGRATED DEVELOPMENT PROJECT (RAPID), PACKAGE 3



Figure 2: Crosshole Seismic Testing



Figure 3: Earth Resistivity Test (Wenner Array)



Figure 4: Plate Bearing Test



Figure 5: Cone Penetration Test



- Figures 6-9 (clockwise):
- Diesel Hydroheating Unit
 - Catalytic Reformer Unit
 - Flare Unit
 - Gas Plant

(sample images – not actual units)

HARTALEGA NGC INTAKE AND PUMPING PLANT

Project Summary

Hartalega is a world renowned nitrile glove manufacturer with yearly earnings of more than RM 2 billion. Hartalega's current infrastructure is built to support the production of 14 billion gloves per year with 6 manufacturing plants currently operating, spanning an area of 47 acres, in Bestari Jaya, Selangor. However, due to the ever increasing demand of nitrile gloves, two new manufacturing plants were constructed in Sepang, Selangor. G&P Dams and Water Services was contracted for this task.

The scope of work consists of the construction of 2 new raw water intake plants in Sg. Labu and Sg. Langat. Components of work include geotechnical, civil, structural, mechanical and electrical aspects. Each intake plant has a pumping capacity of 2,083 m³/hr and is capable of supplying raw water to Hartalega NGC plant for 24 hours of operation.



Figure (Top) – Cofferdam deep excavation for Pumping Station



Figure (Top) – Cofferdam for Intake Structure



Figure (Top) – Mid Stage Concreting for Pumping Station



Figure (Top) – Completion of Sg. Langat Pumping Station



Figure (Top) – Completion of Sg. Labu Pumping Station



Figure (Top) – Final Stage of Intake Structure

O2 RESIDENCE, PUCHONG

Project Summary

O2 Residence is part of O2 City – a 64.33 acres environmentally-friendly mixed development located in Puchong South, Klang Valley. O2 stands for oxygen and this development is a breath of fresh air for owners and visitors alike. G&P Infra was appointed as the Civil and Structural Engineer for Phase 1 development of O2 Residence which occupies an area of 5.5 ha and comprises of: -

6 Blocks - 508 Services Apartment Units (Figure 1)

Block A - 15 Stories/ 90 units

Block C - 12 Stories / 84 Units

Block B1 – 11 Stories / /66 Units

Block B2 – 12 Stories / 96 Units

Block D1 – 16 Stories / 120 Units

Block D2 – 16 Stories / 52 Units

2-3 storey elevated podium carpark

Unit Floor size ranges from 1000 sqft to 2600 sqft. There are options for singles, young couples and families.

Challenges

Functionality and Practicality:

Locating the right positions for columns and transfer beams for ideal loading capacity and carpark area.

Aesthetics:

Design of beam curvature and length, slab panel shaping, and column concept, without unwanted exposure in functional areas.



Figure 1: O2 Residence - A Life Less Ordinary



Figure 2: Block C and Podium Swimming Pool under construction



Figure 3: Block D1 & D2 Podium Floor Complete Cast and Condominium Floor Circular Beam construction W.I.P.

SKYVIEW RESIDENCE, PENANG

Project Summary

A project by Gema Intan, Skyview Residence destined to grace the centre of Penang Island high above the rest as an iconic transformation of the Jelutong skyline. 3D Architectural Impression (Figure 1) Source: <http://www.gema-intan.com/residence.html>

In association with Perunding Prisma Sejati, the scope included full Structural and Geotechnical Engineering Services of the proposed condominium development which consists of a 43-storey and a 24-storey condominium inclusive of 8 levels of elevated car parking.

BIM capabilities & value added services provided: -

- BIM model output for coordination (Figure 2)
- Building loading summary
- Building structural material quantity summary
- Building structural material cost summary



Figure 1

Post-Tensioned Transfer Plate

G&P Special Structures adopted an efficient form of construction for the transfer of a residential grid to a car park grid within the same footprint, i.e. instead of a conventional steel reinforced transfer beam and slab construction, a solid post-tensioned concrete transfer plate was adopted resulting in significant savings in concrete volume, formwork area, steel reinforcement quantity and construction duration.

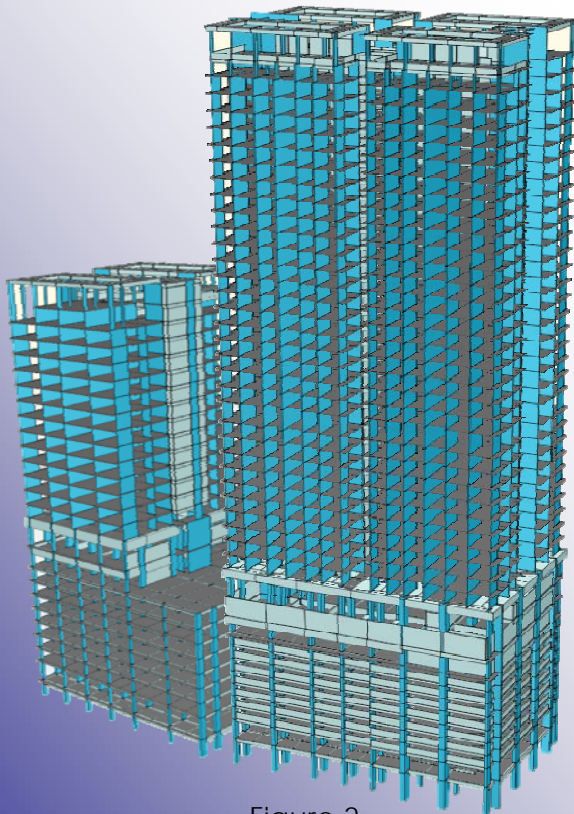


Figure 2

Benefits of post-tensioned transfer plate include: -

- Improved constructability
- Reduction of formwork
- Saving of time by allowing fit-out to start earlier
- Reduction in overall weight and steel quantity
- Reduction in terms of structural height (Figure 3)

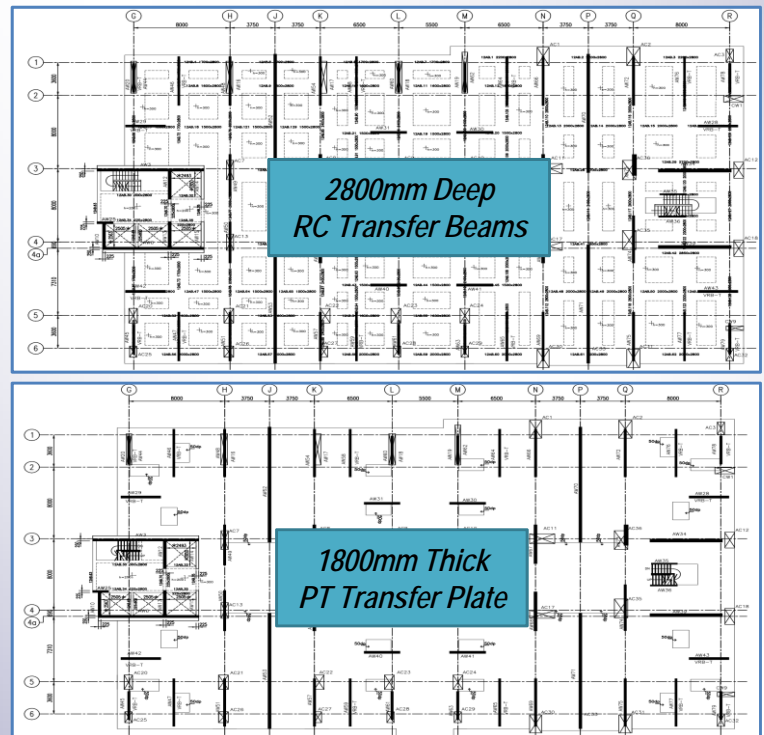


Figure 3

PUTERI HARBOUR CONVENTION CENTRE

Project Summary

The Convention and Exhibition Centre at Puteri Harbour was planned within the Puteri Harbour Development as an International Convention and Exhibition Centre, to attract and conduct medium-sized international-standard conventions and related trade shows and exhibitions, or large public or trade exhibitions.

G&P M&E was engaged by UEM LAND BERHAD to provide mechanical & electrical consultancy services which included electrical, telecommunication and information systems, security, air conditioning & mechanical ventilation, plumbing, fire protection, vertical transportation, and liquefied petroleum gas.

Among the notable M&E designs are:

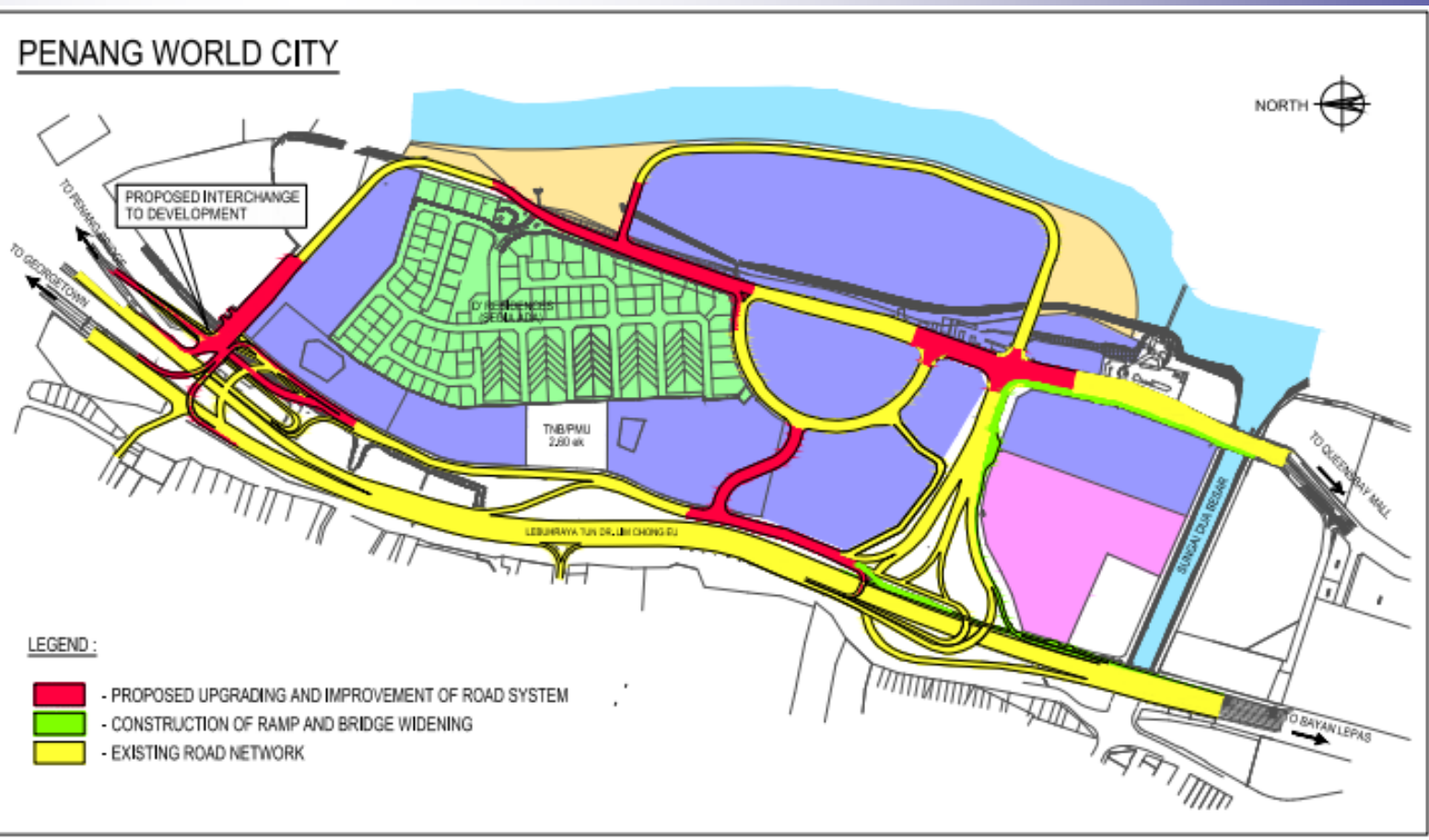
- a. Chilled water supply from District Cooling System (DCS)
- b. Large volume long throw Variable Air Volume (VAV) swirl diffuser
- c. Air Handling Unit (AHU) with electrostatic secondary filter & heat pipe
- d. Building Automation System (BAS) with Energy Management System (EMS)
- e. Compressed air supplying exhibition hall
- f. Duty & standby LPG bulk storage tank with centralized gas leak detection system
- g. Gas direct fire centralized hot water system with thermostatic valve
- h. M&E design to Green Building Index (GBI) compliance
- i. Performance based fire engineering design
- j. Elevators with multimedia LCD panel
- k. Five (5) tonne car cargo lift
- l. Special lighting & audio visual design
- m. Integrated fiber infrastructure ELV design
- n. Centralized grease trap facility with pre-treatment plant
- o. Potable & non potable cold water distribution system with Variable Speed Drive (VSD) driven direct pumping system
- p. Car parking guidance system
- q. E-sense for energy saving lighting design
- r. Centralized Uninterruptable Power Supply (UPS) to critical area
- s. Kitchen exhaust emission control



PENANG WORLD CITY

Project Summary

Penang World City in Bayan Mutiara covers a total of 41.5 ha of land, of which 14.2 ha is land to be reclaimed. On behalf of Ivory Properties Group Berhad, G&P Highway & Transportation has undertaken the development of Penang World City as a specialist consultant for the conceptual and detailed design of road upgrading works. Over several phases, the existing road network is to be upgraded, with the construction of a ramp and bridge widening being the main features of the project.

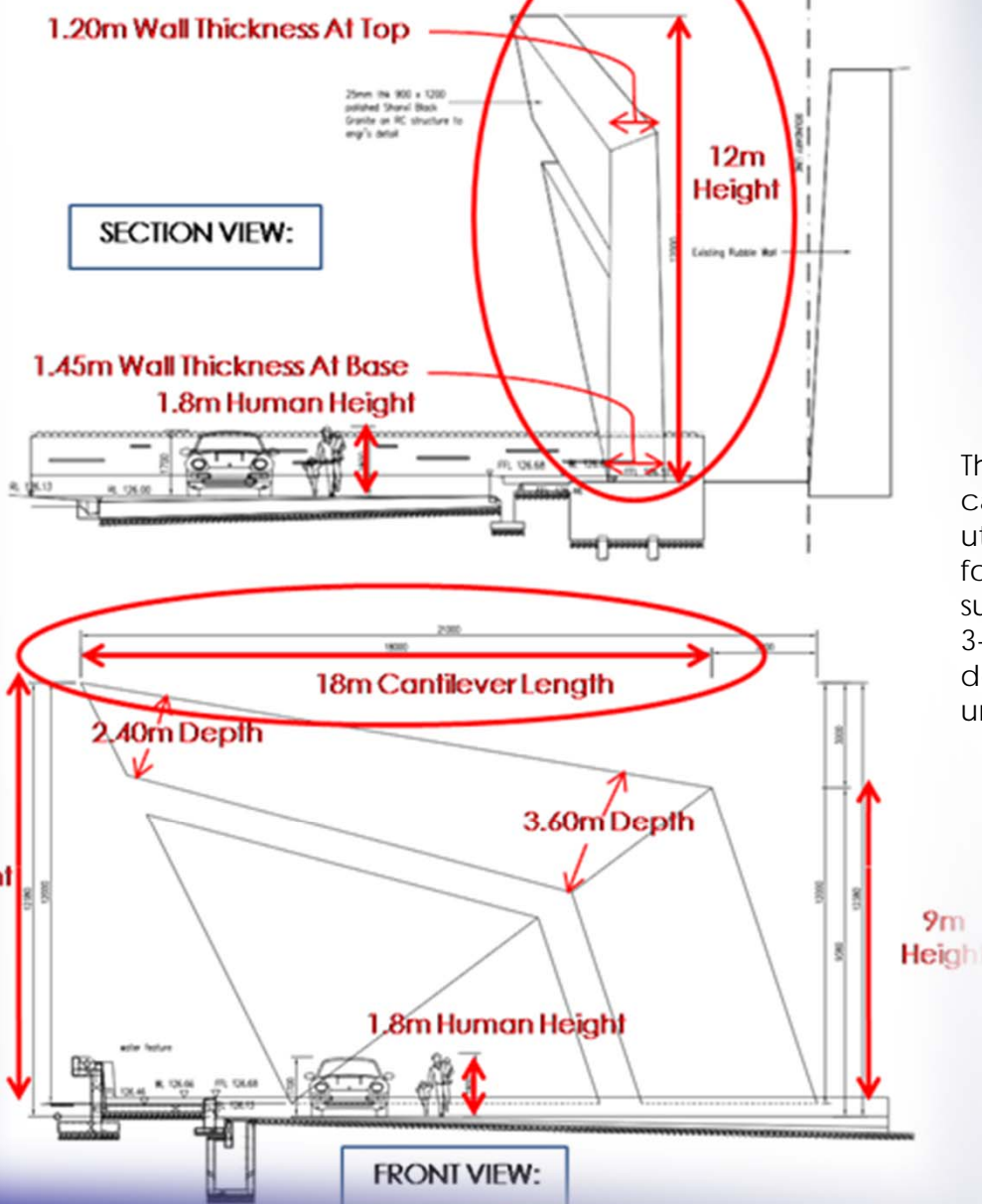


Penang World City Road Upgrading Works Plan

ENTRANCE STATEMENT AT PARKCITY HEIGHTS



In 2013, G&P Structures Sdn. Bhd. was appointed by Perdana Parkcity Sdn. Bhd. as the Structural Engineer for the construction of an Entrance Statement at Parkcity Heights alongside G&P Geotechnics Sdn. Bhd. and C' Arch Architecture Design Sdn. Bhd.



The constructed double cantilever entrance statement utilized a micropiling foundation system, and was subjected to a combination of 3-D vertical and horizontal deflections to achieve its unique tilted design.

ENTRANCE STATEMENT AT PARKCITY HEIGHTS

SEQUENCE OF WORK FOR THE CONSTRUCTION OF ENTRANCE STATEMENT:



2013.05.16 : MICROPIILING INSTALLATION



2013.06.28 : PILECAP CONSTRUCTION



2013.09.20 : STAGE CONCRETING



2013.10.25 : R.C. WORKS COMPLETION



**2013.11.22 : GRANITE FINISHES
INSTALLATION**



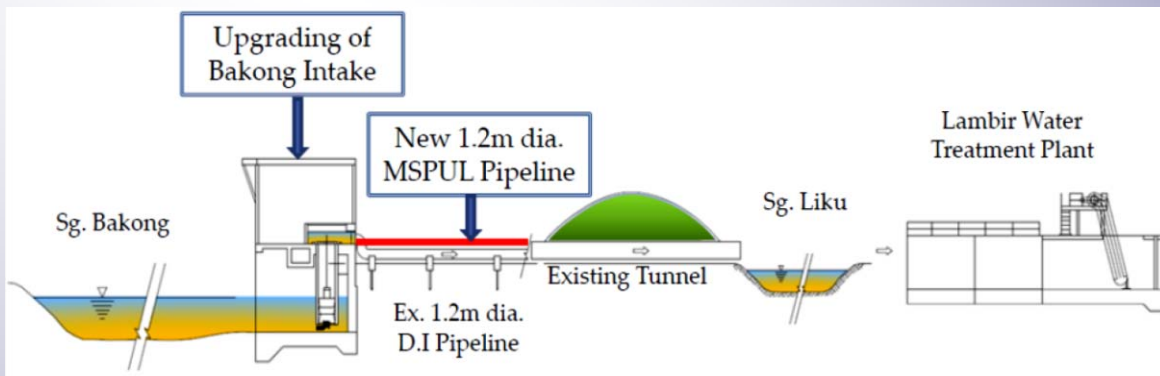
**2014.03.28 : OVERALL WORK
COMPLETION**

MIRI WATER SUPPLY SOURCE DEVELOPMENT

Project Summary

The raw water supply for Lambir Water Treatment Plant (WTP) comes from several sources such as Sg.Liku, Sg. Bakong and groundwater wells. Due to the increasing water demand from Miri and its surrounding area, and also the shortage of water supply during dry spells, there is an urgent need to increase the raw water supply to Lambir WTP. The Government of Sarawak has initiated the project implemented into 2 phases with the objective of developing future water supply sources for Miri City. G&P Professionals (Sarawak) was appointed by the government to provide consultancy services for investigation, survey, design, tender documentations and construction supervision for the project.

Phase 1 involves upgrading of existing Bakong intake and pumping main. The upgrading works consist of replacing existing 4 nos. of 40 MLD submersible pump with 6 nos. of 60 MLD submersible pump, proposed main switch board room, proposed battery room, proposed RTCC room, proposed substation and laying of new pumping main on the existing pipe support extending from Bakong intake to the tunnel. Upon completion of Phase 1 upgrading works, it will increase the capacity of Bakong Intake from 120MLD to 300MLD.



Schematic Diagram of major project component for Phase 1

Phase 2 involves the Batang Baram-Sg.Bakong Raw Water Transfer System. The works include the proposed new intake at Batang Baram, pumping main and receiving sump at Sg.Bakong. The raw water from Batang Baram will be transferred via pumping main and discharge into Sg.Bakong for abstraction by Bakong Intake.



MIRI WATER SUPPLY SOURCE DEVELOPMENT

Project Summary

Phase 1

Phase 1 of the project is currently under construction. The following works have been carried out by consultant during the design stage.

- a) Water demand projection up to year 2050 taking into consideration factors such as population, per capita consumption for demand sectors (domestic, industrial, commercial and institutional), service factors and non revenue water.
- b) Hydrologic and Hydraulic Analysis which includes:
 - The assessment of the impact to the flow regime at Bakong Intake due to the abstraction of 240 MLD.
 - The derivation of design low flow level and flood level at Bakong Intake.
- c) Determine adequate steel reinforcement for the proposed concrete structures e.g. substation, MSB Room, RTCC Room and New Battery Room
- d) Pipe loss analysis to ensure sufficient head for pumping.
- e) Surge analysis for existing and proposed water pumping system with 120 MLD and 240 MLD.
- f) Foundation design for proposed concrete structures and pipe support.
- g) Construction cost estimation.
- h) Tender documentation.

Phase 2

The phase 2 of the project is under feasibility study. The work involvement of the consultant in phase 2 of the project is as follows:

- a) Feasibility study on the proposed raw water transfer options e.g. pipeline transfer, open canal etc. and routes to recommend an ideal option by assessing the capital expenditure (CAPEX) and operational expenditure (OPEX).
- b) Detailed design of raw water transfer pipeline, service road, raw water intake and associated structures and receiving sump.
- c) Tender documentation and construction supervision.

NEWS FLASH @ G&P

G&P Water and Maritime Signs MOU with University of Wollongong

On the 1st of June 2015, Ir. Lim Sin Poh, Managing Director of G&P Water & Maritime Sdn Bhd (GPWM) signed a Memorandum of Understanding (MOU) with Judy Raper, Deputy Vice-Chancellor for Research and Innovation of the University of Wollongong, Australia. The MOU is anticipated to promote the advancement of cooperative research, development and related activities across areas of mutual interest. The general forms of cooperation listed in the MOU are:

- 1) Research and development ("R&D") collaborations in areas of common interest;
- 2) Facilitation of staff exchanges between the parties;
- 3) Allowing selected UOW students to undertake a placement with GPWM to conduct research on particular projects involving the parties;
- 4) Training of GPWM staff at UOW towards higher research degrees;
- 5) Applying for research funding by the Australian government and other International grant schemes;
- 6) Development of GPWM presence at UOW and in Australia to strengthen the parties' R&D collaborations.



NEWS FLASH @ G&P

Chinese New Year Open House

To celebrate the year of the Goat, our Chief Executive Officer, Dato' Ir. Dr. Gue See Sew held an open house dinner on the 7th of March 2015 (Saturday). Over 120 guests attended the occasion to much cheer and good food.



G&P Olympics 2015

All work and no play makes Jack a dull boy. The G&P Olympics was hosted through the month of April and May 2015 for a series of competitive events involving Ping Pong, Badminton, Futsal and Bowling with over 160 participants from across the group. Congratulations to our hearty competitors and the champions of the G&P Olympics 2015.



LIST OF SOME RECENT PROJECTS

PROJECT TITLE	CLIENT
Detailed Design of Miri Water Supply Scheme (Phase 2)	Sarawak Public Works Department
Proposed Reclamation, Ground Treatment and Associated Works at District 12, Penang Island	IDEAL GIM Sdn Bhd
Proposed Mixed Development at Pantai Sepang Putra, Sepang District, Selangor	Vintage Heights Sdn Bhd
Proposed Commercial Development (1 Block 21 Stories of Retail & Office with Carparks) at Jalan Semangat, Petaling Jaya	Vistayu Sdn Bhd
Independent Geotechnical Review of Tun Razak Exchange (TRX)	1MDB Real Estate Sdn Bhd
Highrise Development at Jalan Air Keruh, Setapak District, Kuala Lumpur	Perunding PaduReka Sdn Bhd
Development of Integrated Lake Management Plan for Jor and Mahang Reservoirs	Tenaga Nasional Berhad
Proposed Reclamation at Melaka Gateway (150 acres), Melaka	KAJ Development Sdn Bhd
Proposed Reclamation Adjacent to Lot 12174 (40 acres) and Lot 12175 (25 acres) at Batu Maung, Penang Island	Titijaya Land Berhad

CORPORATE PROFILE

G&P Professionals Group consists of the following specialist engineering consulting firms that provide a wide range of quality engineering services:

- G&P Geotechnics Sdn. Bhd.
- G&P Structures Sdn. Bhd.
- G&P Water & Maritime Sdn. Bhd.
- G&P Infra Sdn. Bhd.
- G&P M&E Sdn. Bhd.
- G&P Special Structures Sdn. Bhd.
- G&P Highways & Transportation Sdn. Bhd.
- G&P Dams & Water Services Sdn. Bhd.
- G&P Claims & Contracts Sdn. Bhd.
- G&P Project Management Sdn. Bhd.
- G&P R&D Sdn. Bhd.
- G&P Professional (Sabah) Sdn. Bhd.
- G&P Professionals (Sarawak) Sdn. Bhd.
- G&P Water (Singapore) Pte. Ltd.
- G&P - AA International Consultant Joint Stock Company, Vietnam
- G&P R International (Cambodia) Co. Ltd.
- NGI - G&P Sdn. Bhd.

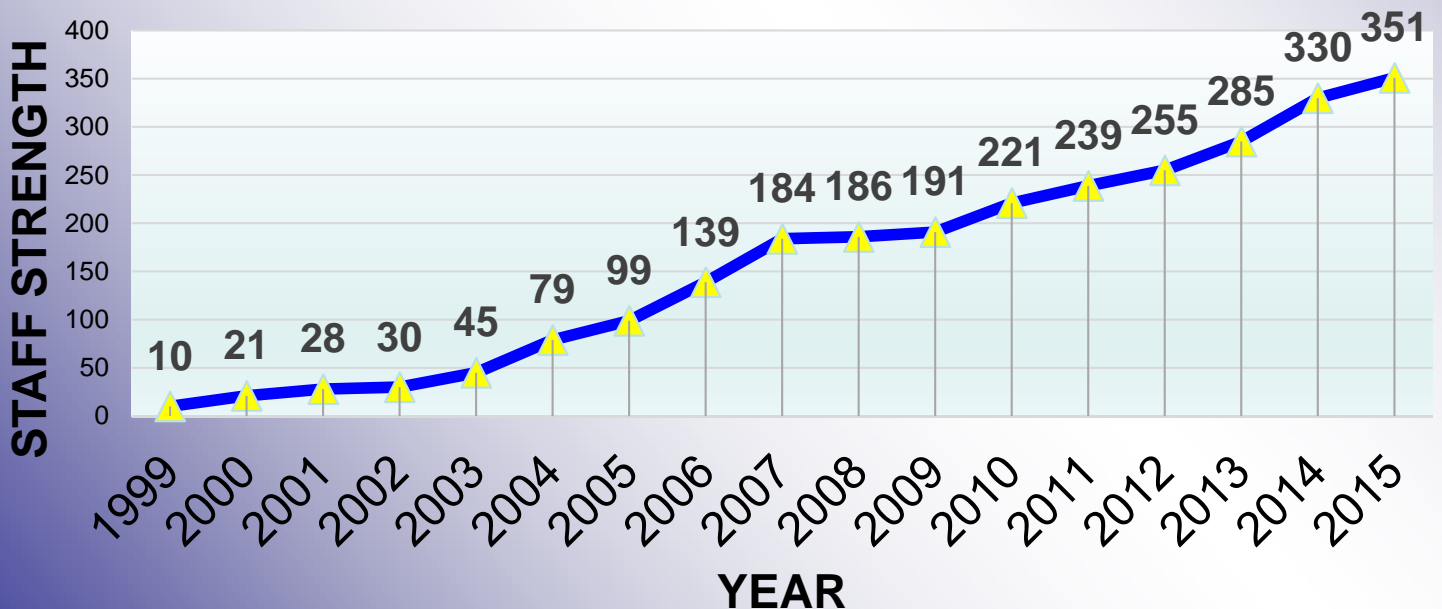
The Group has a fast expanding pool of highly qualified and experienced Geotechnical, Civil & Structural, Mechanical & Electrical, Infrastructure Maritime, Water, Highways, Railways and Transportation and Dams Engineers, Engineering Geologists and technical support staff.

The Group has several associated organizations overseas where value adding is further enhanced. The project activities are handled by the specialists within the Group to explore innovative and economical solutions tailored to the needs of the projects. Our research and development culture augments our services at the forefront of world trends.

Associated Organisation



STAFF STRENGTH (1999-2015)



G&P Professionals Sdn Bhd

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