



# MALAYSIA GEARS UP TO MEET ASIAN PETROCHEMICAL DEMAND

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**U**nder the Economic Transformation Programme (ETP) launched in 2010, amongst the Government initiatives to transform Malaysia into a high-income economy by 2020, is to create a more dynamic and progressive oil and gas industry. In line with this aspiration, the Pengerang Integrated Petroleum Complex (PIPC) developed by Johor Petroleum Development Corporation (JPDC), is a major step in adding value to the downstream oil and gas value chain. The project is located in the south-eastern part of Peninsular Malaysia in the state of Johor.

The PIPC will be developed on a 20,000 acre site at Pengerang in the Kota Tinggi district. The site benefits from a strategic location at the south-eastern tip of Johor with the following competitive advantages:

- A safe, sheltered area with a natural deep-water harbour of up to 24 metres' depth;
- Access to existing major shipping lanes;
- Proximity to target markets within Asia
- Proximity to an existing major trading hub;
- Availability of sufficient land for development.

PETRONAS' Pengerang Integrated Complex (PIC) occupies 6,242 acres of the land in PIPC. With an estimated cost of US\$27 billion, PIC is PETRONAS' largest downstream investment in Malaysia to date. The complex comprises a world-scale Refinery and Petrochemical Integrated Development (RAPID) complex with associated facilities, including:

- Pengerang Co-generation Plant (PCP);
- Re-gasification Terminal 2 (RGT2);
- Air Separation Unit (ASU);
- Raw Water Supply Project (PAMER);
- Liquid Bulk Terminal (SPV2); and
- Centralised and Shared Utilities and Facilities (UF).

PIC is set to further strengthen PETRONAS' position as a key player in the Asian chemicals market. The strategy is to focus on key growth areas of differentiated and specialty chemicals, intent on capturing the growing demand from automotive, pharmaceutical and consumer products sectors. Domestically, PIC will be able to meet Malaysia's demand for petroleum products complying with future legislative requirements on Euro 4M (Petrol) and Euro 5 (Diesel) specifications. PIC is currently progressing as planned, with the Ready for Start-Up (RFSU) date targeted for Q1 2019 and the commercial operations planned to begin by Q2 2019.

The following are the major projects to be developed in PIC:

## Refinery and Petrochemical Integrated Complex (RAPID)

The RAPID project is targeted to increase and the volume of Malaysia's refined petroleum products and petrochemicals outputs and cater to Asia Pacific's demand for premium specialty chemicals. RAPID will be equipped with state-of-the-art technologies with a refining capacity of 300,000 barrels per day (bpd) and could produce three million tonnes per annum (MTPA) of ethylene, propylene and olefins products through steam cracking processes<sup>1</sup>.

## Pengerang Co-generation Plant (PCP)

The PCP is developed as a sophisticated, stand-alone utilities provider to RAPID and capable of generating 1,220 megawatt (MW) of electricity, of which 400MW will be supplied to the national grid system. In addition, PCP will also produce up to 1,480 tonnes per hour of steam to meet the demands of the plants within



Construction of the RGT-2 Regasification Terminal

<sup>1</sup> The steam cracking process is a petrochemical process in which saturated hydrocarbons are broken down into smaller, often unsaturated, hydrocarbons. Products from the steam cracking process will be the feedstock to produce premium differentiated specialty petrochemical products.

the PIC area. PCP's existing configuration presents a unique opportunity to generate electricity at up to 85 per cent efficiency.

### Regasification Terminal (RGT-2)

RGT-2 will provide primary gas supply to RAPID, PCP and the Peninsular Gas Utilisation grid to expand the availability of gas for domestic demand, which consists of:

- A regasification unit;
- Two units of 200,000 cubic metre (m<sup>3</sup>) LNG storage tanks with a send-out capacity of 3.5 MTPA (490MMscfd) which could be expanded to 7 MTPA (900MMscfd); and
- A jetty to accommodate LNG vessel of sizes ranging from 5,000m<sup>3</sup> to 265,000m<sup>3</sup>.

The current progress at site for RGT-2 is as in the opposite photograph.

### Pengerang Deepwater Terminal (PDT)

The Pengerang Deepwater Terminal is another major oil and gas venture in PIPC to meet the growing need for storage capacity of crude oil and petroleum products in Southeast Asia and the Asia region. The project is being led by Dialog and is a joint venture between Dialog, Royal Vopak and the Johor State Government. It is being developed in several phases with capability to handle storage, blending and distribution of crude oil, petroleum products, chemical and petrochemical feedstock, products and by-products.

### PDT Phase 1

The construction of an initial storage capacity of approximately 1.3 million m<sup>3</sup> on 150 acres of reclaimed land consisting of 6 deep water berths at a cost of RM2.0 billion. It commenced operations in Q2 of 2014.

### PDT Phase 2

Phase 2 is currently under development at an estimated cost of RM6.3 billion. Upon completion, the storage facilities will have a capacity of approximately 2.1 million m<sup>3</sup> and a deep water jetty with 12 berths. PDT Phase 2 is anticipated to be commissioned concurrently with the RAPID refinery complex in 2019.

### Conclusion

PIPC is one of the largest oil and gas investments in Malaysia in recent years. Successful construction and commissioning of the complex will put Malaysia in a strategic position to capitalise on the growing need for energy and petrochemical products in Asia for the next 20 years. It is envisaged Pengerang and Singapore could complement each other similar to Amsterdam-Rotterdam-Antwerp as a hub for refining facilities, independent storage and blending capacity to access the global markets. PIPC will spur the growth of the national oil and gas downstream sector, pushing Malaysia into a new era of technology and economic development of the sector. ■



Pengerang Deepwater Terminal: a joint venture between Dialog, Royal Vopak and the Johor State Government