

PENANG | MALAYSIA



Butterworth Gateway

A multimodal transit-oriented district for the Malaysia-Thailand Special Border Economic Zone



Butterworth Gateway

A multi-modal transit-oriented district, serving northern Malaysia, the Malaysia–Thailand border economy, and beyond.

OVERVIEW

Butterworth is a port town in northern Malaysia, facing Penang Island — the country's electronics manufacturing hub — across a 3 km strait, and 100 km south of Thailand.

Butterworth Gateway is a proposed transit-oriented district on the Penang mainland, serving Malaysia's Northern Region and the Malaysia–Thailand border economy.

The site sits at an unusual convergence. Butterworth holds a deep-water port, an electrified rail north to the Thai border, a rail interchange to Kuala Lumpur, a working jetty, and, from December 2031, an LRT terminus linking it to Penang Island's electronics economy. Alongside these sit the USD1.1 billion Straits City waterfront development.

However, due to the lack of a coordinated masterplan, land and assets sit across multiple controlling entities from both the public and private sectors. This creates fragmentation of assets, and a missed opportunity to realise Butterworth's economic potential as a transit hub for the Northern Region and beyond.

We propose a multi-modal transit-oriented district organised around three zones and an 800-metre walk radius, anchored in cross-border trade services, logistics technology and skills, along with retail, hospitality, and residential developments.

EXISTING DEVELOPMENTS

- 1 KTM Butterworth (ETS Station). Electric Train Services to Kuala Lumpur and to Padang Besar and the Thai border. Adjacent to Penang Sentral.
- 2 Penang Sentral (MRCB) Malaysia's northern integrated transport terminal, developed by MRCB across 22.65 acres in seven phases, combining bus, taxi and retail.
- 3 Butterworth Ferry Terminal (MMC Group): Mainland terminal of the Penang ferry, crossing three kilometres to Weld Quay in ten to fifteen minutes.
- 4 Penang Port (MMC Group): The northern region's gateway port. North Butterworth Container Terminal offers seven berths, 1,500 metres of quay and up to two million TEU.
- 5 ASEAN Express Cargo Train: KTMB's freight service from Malaysia to Chongqing via Bangkok and Laos, launched in 2024. Around 9 days versus 2–3 weeks by sea.
- 6 Straits City: A 40-acre waterfront development by Straits Trading and Malaysia Smelting Corporation, valued at RM4.3–4.6 billion across ten phases to 2038.

FUTURE DEVELOPMENTS

- 7 Penang Mutiara LRT Line (MRT Corp): Running roughly 29.67km across 20 stations from Penang Island to Penang Sentral. Opening targeted for December 2031.
- 8 Bangkok–Butterworth Train: Proposed cross-border service between Krung Thep Aphiwat Central Terminal and Butterworth, discussed by SRT and KTMB.



THE CHALLENGES

- 1 Multiple asset owners: Port, rail, state, city and developers each hold a piece.
- 2 Freight meets passengers. Two kilometres of waterfront must serve containers, commuters and housing.
- 3 No export-earning anchor. A station, a mall and apartment towers, then waiting for demand.
- 4 Gateway without capture. Geography is not a business model; other border towns pass value through.

Project Concept

Three transportation, lifestyle, and logistics precincts integrated into one transit-oriented district, serving the Northern Region and beyond.

Precinct A — Multimodal Transit Hub: The 800-metre walk radius around Penang Sentral: KTM Butterworth, the LRT terminus, the bus terminal, the ferry terminal and the connecting pedestrian infrastructure. Highest permitted density in the precinct. This is where the trade services cluster, the campus and the facilitation centre are sited.



Precinct A



Precinct B

Precinct B— Waterfront CBD: Straits City and the public waterfront, running continuously from the ferry terminal south. Mixed use, mixed income, active ground-floor frontage.

Precinct C — Integrated Logistics Hub: North Butterworth Container Terminal (NBCT), its expansion envelope, the rail spur, and a dedicated freight road connection.



Precinct C

Multimodal Connectivity

MODES OF TRANSPORTATION

Electric Train System — Butterworth sits on Malaysia's electrified west coast main line, with express services reaching KL in 3.5 hours.

Ferry — Roughly three kilometres to Weld Quay in 10–15 minutes. Ridership reached 3.13 million in 2025, up almost 9% — about 8,600 a day.

LRT Mutiara Line — A 29.5km elevated line, twenty stations plus two provisional, terminating at Penang Sentral. Maximum 10,900 passengers per hour per direction — a low-to-medium capacity system by design. Silicon Island to Penang Sentral in 49 minutes, opening December 2031.

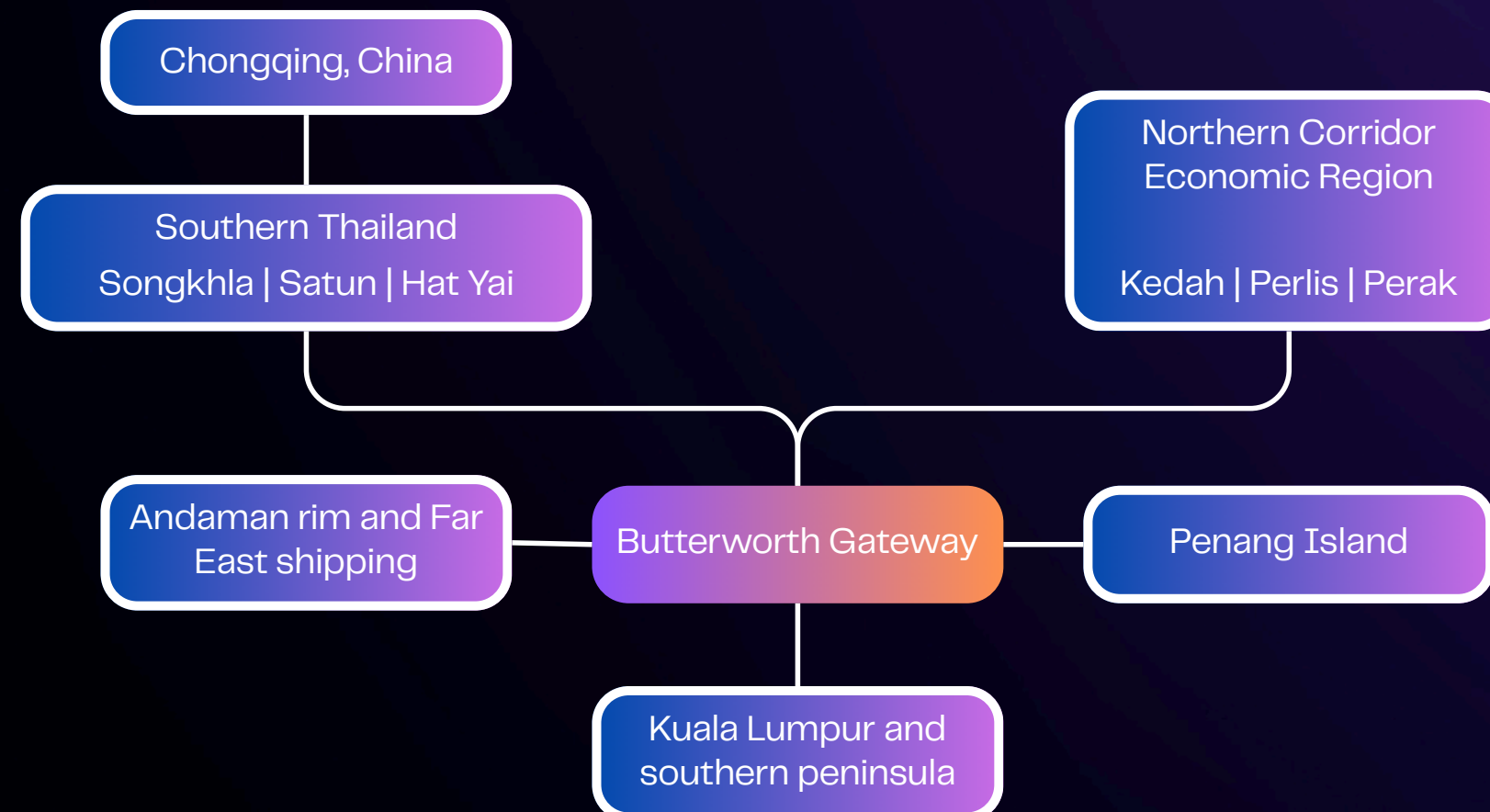
Introduce Water Taxis — several island stops instead of one, on developer-funded berths, years before the rail opens.

Cargo Ships — Penang Port works 26 berths at 12 metres draft, with NBCT contributing seven berths, 1,500 metres of quay and 2.3 million TEU of capacity under Free Commercial Zone status. Throughput sits near 1.45 million TEU — about 63% utilisation.

Cruise Ships — A RM100 million expansion extended the quay from 540 to 840 metres, allowing two Oasis-class ships alongside — or four vessels in mixed sizes — and up to 12,000 passengers at once. The port is now pursuing homeporting rather than transit calls.



Regional Connectivity



Butterworth Gateway is the only point on the peninsula where four systems of movement converge: a deep-water port with Free Commercial Zone status, electrified rail running unbroken from the Thai border to Singapore, a committed urban rail link to Penang's electronics economy, and a working maritime crossing. These corridors are not aspirations — a China-bound freight train passes through weekly, the Sadao border crossing has opened, and the port runs at roughly two-thirds of quayside capacity. What Butterworth lacks is not connectivity but capture. Its strategic position is to become the point at which the corridor's value is consolidated, processed and cleared: Malaysia's northern rail-sea interchange on the ASEAN-China axis.

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