Refining on Pulau Bukom and Jurong Island

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From kerosene depot to Singapore's first refinery

The oil business of Singapore began as a storage and distribution trade. In the early 1890s the London firm M. Samuel & Co. chose Singapore as a base for the import and distribution of Russian kerosene and appointed the local firm Syme & Co. to build and manage a petroleum tank depot on Pulau Bukom. M. Samuel & Co. created Shell Transport and Trading in 1897 to handle its growing oil business. In 1907 that company merged with the Royal Dutch Petroleum Company.[1] Tilak Doshi, in the standard study of the Singapore petroleum industry, dates the first three bulk storage tanks for kerosene on Pulau Bukom to 1892. He describes Singapore between 1892 and 1960 as essentially a storage, transshipment and distribution centre for the Far East.[2]

The choice of an offshore island had practical reasons. Since kerosene was inflammable, a depot on an island kept the risk away from the town and its godowns. Deep water close to the shore allowed tankers to berth directly at the tanks. The island also lay on the route of every ship passing through the Strait, which allowed the depot to supply bunkers as navies and merchant fleets converted

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from coal to oil. Chapter V of Part B describes the coaling port that preceded this trade. By the middle of the twentieth century Pulau Bukom had become a major centre for the storage, blending, packing and bunkering of oil products.

The decision to refine came in the first years of self-government. In December 1959 Shell announced plans for a refinery on Pulau Bukom. The Minister for Finance, Goh Keng Swee, opened the plant on 26 July 1961. It had cost $30 million and was described at the time as Singapore's first oil refinery.[3] About 5,000 people lived on Bukom in the early 1960s, most of them employees of Shell and their families. The refinery was one of the first large industrial investments of the new state and an early success for the industrialisation strategy that Chapter III of Part C examines.

The refinery boom of the 1960s and 1970s

Other companies followed within a few years. Mobil moved into refining in 1963 and opened its first refinery at Pioneer Road in Jurong in 1966, with a capacity of 18,000 barrels per day. Esso opened a refinery of 90,000 barrels per day on Pulau Ayer Chawan in 1970.[45] The dates given by different sources vary by a year. The *Oil & Gas Journal* placed the start-up of Mobil's Jurong refinery in 1967, built on swampland, while a refinery later operated by the Singapore Petroleum Company started up in 1973. In 1979 the Singapore Petroleum Company, BP and Caltex formed the Singapore Refining Company as a joint venture.[6] The Singapore Petroleum Company itself had been founded on 19 May 1969 as the Singapore Petroleum & Chemical Co.[7]

Doshi explains the boom as part of a worldwide change in the location of refineries. After 1945 the oil companies increasingly built refineries in consuming regions, because they were reluctant to place large assets in producing countries during a period of rising resource nationalism and because consuming governments valued supply security.[8] Singapore offered a third model. It was neither a producer nor, at first, a large consumer. It was a neutral, stable and well-located export platform from which the companies could supply the growing markets of East and Southeast Asia,

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Australia and the Indian subcontinent. The government reinforced the location with tax incentives for pioneer industries, which Chapter III of Part C describes, and with an open regime for crude imports and product exports.

By the mid-1990s Singapore had a total refining capacity of about 1.1 million barrels per day and was described as the third largest refining centre in the world. Mobil's refinery had grown to 250,000 barrels per day and that of the Singapore Refining Company to 225,000, while BP's small refinery of 28,000 barrels per day was due to close in 1995. The same report stressed the constraint that has accompanied the industry since its beginnings: expansion had to take place despite a lack of land.

Jurong Island and the integration of refining and chemicals

The answer to the land problem was reclamation. In 1991 the government appointed JTC as agent for a project that would join the islands off the south-western coast into a single site for refining and petrochemicals. Reclamation began in 1995. Jurong Island was officially opened on 14 October 2000, nine years before the reclamation was completed on 25 September 2009. The seven original islets, with a combined area of 991 hectares, had grown to more than 3,500 hectares.[9]

The project required a leap of faith from investors and government alike. Speaking at JTC's fiftieth anniversary in 2018, Prime Minister Lee Hsien Loong recalled that the harder task had been to persuade petrochemical companies to commit before reclamation was finished, since some of the land they were buying was still under water. He described Singapore as the third largest oil refining centre in the world and a major petrochemical centre, a notable achievement for a country without energy resources and with limited land.[10]

The economic logic of Jurong Island lies in integration. A refinery produces naphtha, liquefied petroleum gas and other streams that serve as feedstock for steam crackers, whose ethylene and propylene in turn feed plants for polymers and specialty chemicals. When these units stand side by side and share pipelines, jetties, utilities and storage, each benefits from lower costs and greater flexibility.

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ExxonMobil commissioned its Singapore Chemical Plant in 2001 and more than doubled its capacity with an expansion in 2013.[11] The Economic Development Board now counts more than S$60 billion invested by chemicals companies, 20 per cent of Singapore's manufacturing output and more than 27,000 workers in the energy and chemicals sector.[12]

Three refiners and their capacity

Three groups now operate the crude refineries of Singapore. ExxonMobil runs the former Mobil refinery at Jurong and the former Esso refinery on Jurong Island as a single complex, since the merger of Exxon and Mobil in 1999 brought all their Singapore facilities under one roof. The company states a combined nameplate capacity of about 592,000 barrels per day for the two sites.[13] The Singapore Refining Company on Jurong Island, owned in equal shares by Chevron and the Singapore Petroleum Company, has a capacity of about 285,000 barrels per day. PetroChina acquired the Singapore Petroleum Company from Keppel Corporation in 2009 and delisted it from the Singapore Exchange on 22 October of that year. The third refiner is the former Shell site on Pulau Bukom, examined in the next subsection, with a crude capacity of 237,000 barrels per day.

Published totals for the country therefore need careful reading. Many sources still cite a figure of about 1.5 million barrels per day, which reflects the period before Shell's reduction of capacity.[14] A study published by the Institute of Southeast Asian Studies in 2008 gave about 1.3 million barrels per day of refining, crude imports of 939,000 barrels per day and exports of finished products of 1,145,000 barrels per day.[15] Adding the company figures cited in this section gives a crude capacity of roughly 1.1 million barrels per day in 2026, before the expansion at Bukom described below. Press reports during the Hormuz crisis put the combined capacity of the three refineries at about 1.2 million barrels per day.[16] The difference matters for anyone who uses Singapore's refining capacity as an indicator of its weight in the region, since it has shrunk while the trading and pricing functions of the city have grown.

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Shell's exit and the new owners of Bukom

The most important change in the industry since the 1960s concerned its oldest site. On 10 November 2020 Shell announced that it would halve crude processing capacity at Pulau Bukom from 500,000 to 250,000 barrels per day and reduce the workforce of 1,300 by 500 jobs over three years.[17] The reduction formed part of the company's plan to become a net-zero emissions energy business by 2050. It reflected the pressure on export refineries in Asia, which faced new and larger refineries in China, India and the Middle East and a fall in demand during the pandemic.

On 8 May 2024 Shell announced the sale of its Singapore Energy and Chemicals Park to CAPGC, a joint venture of the Indonesian group Chandra Asri and the trading house Glencore. The assets included the refinery of 237,000 barrels per day and an ethylene cracker of 1.1 million tonnes a year on Pulau Bukom, together with chemical plants on more than 60 hectares on Jurong Island. Shell kept its regional marketing and trading hub in Singapore.[18] The sale was completed at the beginning of April 2025. The new operator, Aster Chemicals and Energy, took over the staff on site, while Shell signed agreements for the supply of crude oil and the offtake of products.[19]

The new owners intend to expand the site again. Aster bought a condensate splitter of 70,000 barrels per day from the Petrochemical Corporation of Singapore in 2025, which was expected to start in the second half of 2026 and to raise combined crude and condensate capacity from 237,000 to 307,000 barrels per day. Repairs to a single buoy mooring would allow very large crude carriers to discharge about two million barrels each.[20] The transaction shows how the ownership of Asian refining is shifting from the integrated Western majors to regional industrial groups and trading houses. For Glencore, a refinery on Bukom offers an outlet for crude from its global network and a source of products for its trading book. For Chandra Asri, the cracker supplies ethylene to its complex in Indonesia, which Chapter IV of Part I places in the wider context of Indonesian investment in Singapore.

The ownership of the other refineries has also come into play. In September 2025 the trade press reported that Vitol and Glencore were preparing formal bids for Chevron's 50 per cent stake in the Singapore Refining Company, although

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PetroChina held a right of first refusal over that stake.[21] Whatever the outcome, the trend points in one direction. Trading houses, whose Singapore activities Chapter V of this part describes, are acquiring physical assets in the city whose prices they help to form.

Notes

1. National Heritage Board, Roots.sg, "Shell in Singapore": M. Samuel & Co. chose Singapore in the early 1890s as a base for importing and distributing Russian kerosene; Syme & Co. appointed to build and manage a petroleum tank depot on Pulau Bukom; Shell Transport and Trading created in 1897; merger with Royal Dutch Petroleum Company in 1907. ↩
2. Tilak Doshi, "The Singapore Refiners", in *Houston of Asia: The Singapore Petroleum Industry*, Singapore, Institute of Southeast Asian Studies, 1989, pp. 81–124 (abstract, Cambridge Core, accessed November 2026): "three bulk storage tanks for kerosene were built in Pulau Bukom in 1892"; from 1892 to 1960 "Singapore served as the storage, transshipment, and distribution centre for the Far East". ↩
3. National Heritage Board, Roots.sg, "Shell in Singapore": in December 1959 Shell announced plans for a refinery on Pulau Bukom, already a major oil storage, blending, packing and bunkering centre; Finance Minister Goh Keng Swee opened "Singapore's first oil refinery" on 26 July 1961 at a cost of $30 million; about 5,000 people lived on Bukom in the early 1960s, most of them Shell employees and their families. ↩
4. ExxonMobil, "Our operations" (corporate.exxonmobil.com/locations/singapore/our-operations, accessed November 2026): "Mobil built its refinery in Jurong (Pioneer Road) in 1966"; "Esso started up at Pulau Ayer Chawan (now part of Jurong Island) in 1970". ↩
5. ExxonMobil, "Key milestones in ExxonMobil Singapore's history": Mobil moved into refining in 1963; first refinery with "18,000 barrel-per-day (bpd) capacity"; Esso refinery of 90,000 bpd. ↩

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6. "Technology: Two of Singapore's refiners expand despite lack of land", *Oil & Gas Journal*, 14 August 1995: Mobil's Jurong refinery started up in 1967 on swampland; the refinery later run by the Singapore Petroleum Co. started up in 1973; Singapore Refining Co. formed in 1979 as a joint venture of SPC, BP and Caltex; total Singapore capacity of 1.1 million b/d, "the world's third largest concentrated refining center"; SRC 225,000 b/d; Mobil 250,000 b/cd; BP refinery of 28,000 b/d to close in the second half of 1995. ↩

7. Wikipedia, "Singapore Petroleum Company" (accessed November 2026): founded in 1969 "as the Singapore Petroleum & Chemical Co. Pte Ltd" (infobox: 19 May 1969); half owner with Chevron of the "285,000 barrels per day" Singapore Refining Company plant; "In 2009, SPC was acquired by China's PetroChina from Keppel Corporation"; "delisted from the Singapore Exchange on 22 October 2009". ↩

8. Tilak Doshi, "The Singapore Refiners", in *Houston of Asia*, 1989, pp. 81–124 (abstract, Cambridge Core, accessed November 2026): world refining capacity "expanded by 6.5 per cent in 1940-60 and 7.2 per cent in 1960-73"; "New refineries were increasingly built in consuming as opposed to producing areas", because multinationals sought to "avoid placing major capital assets in the less developed countries" and governments of consuming countries supported domestic refining "for reasons of national security". ↩

9. Wikipedia, "Jurong Island" (accessed November 2026): JTC appointed in 1991 as "the agent of the Jurong Island project"; seven islets of "991 hectares"; reclamation began in 1995 and was completed on 25 September 2009, giving a land area of over 3,500 hectares; officially opened on 14 October 2000; Jurong Rock Caverns construction began on 8 February 2007, officially opened on 2 September 2014, Phase 1 capacity about 1.47 million cubic metres. ↩

10. Prime Minister's Office, "PM Lee Hsien Loong at the JTC 50th Anniversary Dinner", 2018, pmo.gov.sg: persuading petrochemical companies to commit before reclamation was finished, when some of the land was still underwater; Singapore described as the third-largest oil refining centre in the world; Jurong Rock Caverns free about 60 hectares of land, enough for six petrochemical plants. ↩

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11. ExxonMobil, "Our operations" (corporate.exxonmobil.com/locations/singapore/our-operations, accessed November 2026): the Singapore Chemical Plant was "first commissioned in 2001" and "further expanded to more than double its capacity in 2013"; refinery "fully integrated" with the chemical plant; "combined nameplate capacity of about 592,000 barrels per day". ↩
12. Economic Development Board, "Energy and Chemicals" (edb.gov.sg, accessed November 2026): S$60 billion or more invested by global chemicals companies; 20 per cent of Singapore's manufacturing output; more than 27,000 skilled workers; Singapore's SAF requirement of at least 1 per cent from 2026, rising to 3–5 per cent by 2030; Neste's Tuas facility with capacity of up to one million tonnes of SAF a year. ↩
13. Merger of Exxon and Mobil completed on 30 November 1999; split of capacity between the Jurong refinery (more than 300,000 b/d) and the Jurong Island refinery (more than 290,000 b/d) as given on the ExxonMobil milestones page. ↩
14. Wikipedia, "Oil industry in Singapore" (accessed November 2026): "total crude oil refining capacity of 1.5 million barrels per day (bbl/d)", citing the International Trade Administration. ↩
15. Ong Eng Tong, "Energy Trading and Singapore's Role as a Hub", in Sudhir T. Devare (ed.), *A New Energy Frontier: The Bay of Bengal Region*, Singapore, ISEAS, 2008, pp. 128–138 (abstract, Cambridge Core, accessed November 2026): "the third largest refining centre in the world after Houston and Rotterdam"; the refineries "serve as a swing refinery", including for countries "whose product shortfalls arise out of refinery outage"; refining of "1,300,000 barrels per day", imports of "939,000 barrels per day" and exports of "1,145,000 barrels per day of finished product"; "large cargoes of oil are received from Europe and the Middle East" and "stored and reshipped in smaller lots". ↩
16. "Australia, Singapore leaders pledge closer energy ties to tackle global supply shock", *The Standard* (Hong Kong, Reuters), 10 April 2026: Singapore has three refineries with a combined capacity of about 1.2 million barrels per day. ↩

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17. "Shell Singapore to cut 500 jobs in next three years as it downsizes Pulau Bukom operations", *The Star* (Malaysia), 11 November 2020: announcement of Tuesday, 10 November 2020; crude capacity reduced from 500,000 to 250,000 barrels a day; Bukom workforce of 1,300 to fall to 1,100 by the end of 2021 and to 800 two years later; Shell's aim to become a net-zero emissions energy business by 2050 or sooner. ↩

18. "Shell sells Singapore assets on Pulau Bukom and Jurong Island after strategic review", *Asia News Network*, 9 May 2024: sale announced on 8 May 2024 to CAPGC, a joint venture of Chandra Asri Capital and Glencore; assets include a 237,000 barrels-per-day refinery and a 1.1 million tonnes-a-year ethylene cracker on Pulau Bukom and plants on more than 60 hectares on Jurong Island; strategic review in 2023; Shell retains its regional marketing and trading hub in Singapore. ↩

19. "Shell completes Singapore refinery sale to Chandra Asri-Glencore JV", *Hydrocarbon Processing*, 1 April 2025: Shell "has completed the sale"; the new venture Aster Chemicals and Energy Pte Ltd; on-site staff stay with the venture; crude supply and products offtake agreements take effect on completion; Glencore bought crude for May and June arrival, including from Canada and Kazakhstan. ↩

20. "Aster eyes completion of Singapore refinery and berth works in H2 2026", *Baird Maritime* (Reuters), 5 February 2026: 70,000 bpd condensate splitter bought in 2025 from Petrochemical Corporation of Singapore, start expected in H2 2026; combined capacity to rise to 307,000 bpd from 237,000 bpd; single buoy mooring repairs to allow VLCCs to discharge about two million barrels; 4.3 million cubic metres of storage designed for a 500,000 bpd refinery; carbon tax rising to S$45 from S$25; Chandra Asri completed purchase of Esso's Singapore retail stations in January 2026. ↩

21. "Vitol and Glencore to make formal bids for Chevron's Singapore refinery stake", *Hydrocarbon Processing* (Reuters), 17 September 2025: "Chevron's 50% stake in Singapore's second-largest refinery"; final binding bids due in October; "PetroChina has first right of refusal to purchase Chevron's share"; the whole refinery valued at roughly US$1 billion. ↩

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