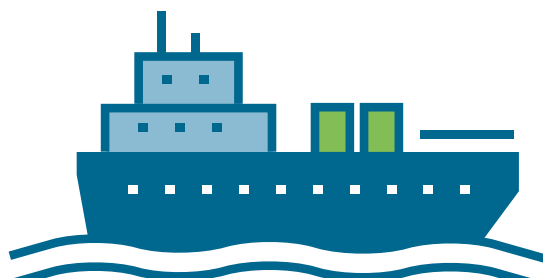


# DOWNSTREAM PETROLEUM



# MAINTAINING SUPPLY SECURITY AND RELIABILITY



## KEY MESSAGES

- Australia's longer-term fuel supply security and transport energy needs will be best met through market measures including:
  - open crude oil and fuels markets,
  - competitive, market determined prices,
  - clear investment and market signals,
  - clear, bipartisan and long term energy policies,
  - flexible and resilient supply chains,
  - efficient supply management,
  - diversity of crude oil and liquid fuel sources,
  - competitive and viable domestic refineries,
  - policy and competitive neutrality between transport fuels,
  - improved vehicle technologies, and
  - reliable, clean and high quality fuels acceptable to consumers.
- As these conditions generally exist now for liquid transport fuels, the imperative for governments is to maintain or further strengthen these market features.

## SUPPLY SECURITY

**Australian liquid fuels supply is highly secure, competitively priced and reliable because of:**

- established and effective integration into the rapidly growing Asian fuels market,
- a diversity of supply sources for crude oil and petroleum products, including domestic and imported sources,
- a flexible, resilient and reliable supply chain, including secure shipping routes and a significant volume of stock on the water owned by Australian companies,
- a domestic refining capability providing multiple supply options and the ability to convert domestic and imported crude oil into useable products,
- actual and planned import, storage and distribution infrastructure which is able to meet growth in fuel demand,
- a strong record of efficient and reliable supply and supply chain management by industry, and
- robust risk and emergency management by industry and government.

These market features have been confirmed in successive government and independent reviews of liquid fuel supply security over many years, and Australia's secure position is not expected to change in the coming years.

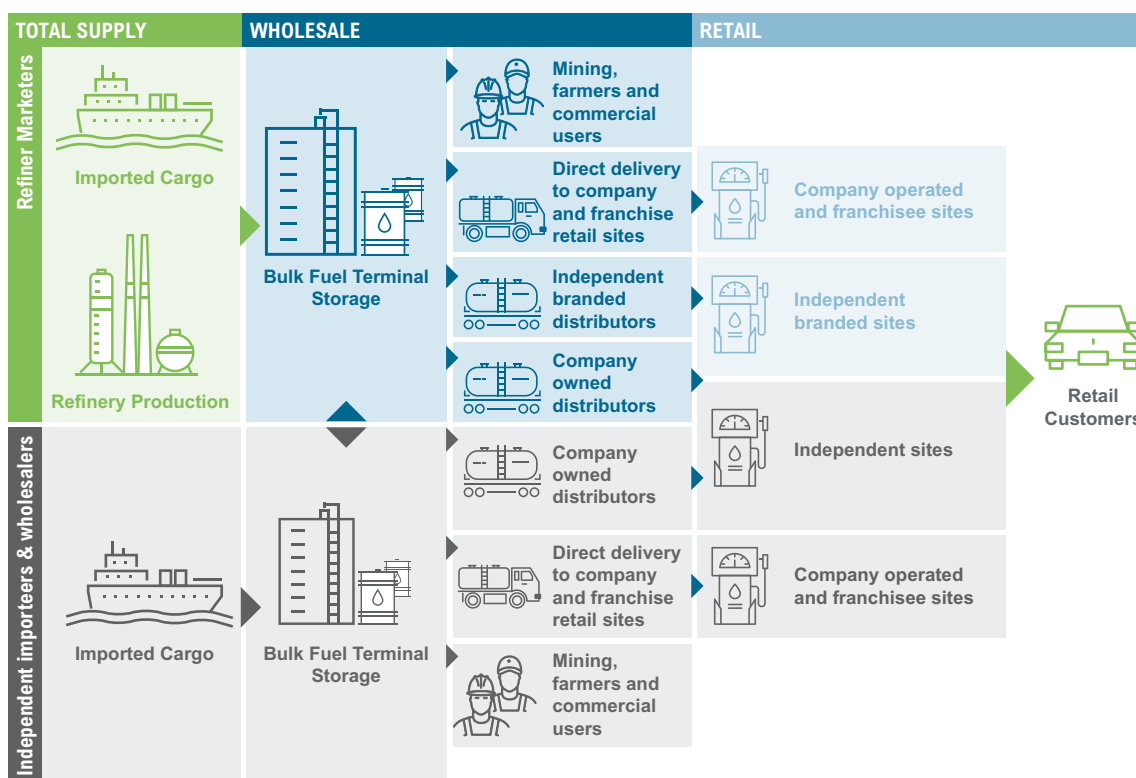
Australia will continue to be able to access crude oil to meet its refining needs as well as imported petroleum products for customers as long as we support efficient and open global markets and pay the prevailing international market price.

The industry has well established and reliable access to crude oil and petroleum product supplies from across the region and beyond. Current and forecast excess supply in the region supports this ready availability of product suitable for Australian needs.

Australia's market based approach has delivered secure, reliable and competitive liquid fuel supplies which meet the operational requirements of consumers and major fuel users.

A continuation of this market-based approach, complemented by a stable policy and investment environment, will encourage the ongoing significant investment needed in supply infrastructure to meet growing fuel demand in Australia.

## THE FUELS SUPPLY CHAIN



## SUPPLY RELIABILITY

Australia is well serviced by a reliable and diverse supply chain that delivers a high level of reliability by global standards.

The supply chain includes crude oil and petroleum product shipments into and around Australia, refinery throughput, bulk fuel storage tanks, extensive terminal and distribution networks, thousands of retail outlets, and substantial fuel storage facilities of major fuel users.

There are strong business pressures on refiners and fuel suppliers to maintain resilient and efficient supply chains, since this is essential to minimise costs, and to maintain or increase sales through a reputation for reliable supply.

To maximise the benefits of increased shipping volumes to Australia, new import and storage facilities have been built over recent years and more are under construction or planned. This infrastructure, including the conversion of some refineries to major import and storage terminals, has been independently assessed as being able to meet Australia's future fuel supply needs.

Independent analysis has also confirmed current industry stockholdings and their management reflect a sound commercial assessment of likely operating conditions and disruption risks. Commercial stockholdings are keeping pace with increases in fuel demand and a changing product mix and planned terminal and storage capacity takes account of expected growth in fuel demand.

Any requirement to increase stockholding levels beyond commercial levels would place significant additional costs on the supply system that, unless funded by government or customers requiring stockholdings, would be passed on to consumers.

### Managing supply disruptions

Unplanned events can create fuel supply challenges at short notice including unplanned refinery disruptions, breakdowns in key supply infrastructure or pipelines, delays in ship arrivals, natural disasters, and customer demand exceeding contracted supply requirements.

Large and unanticipated surges in demand by major fuel users will always present a particular supply challenge for Australian fuel suppliers. For example, there can be intense demand spikes at short notice such as a result of crop harvesting following rain or from military activities, which can also vary across fuel types and geographical areas. The record grain harvests in late 2016 is a recent example, where actual diesel demand from major fuel customers in some States exceeded forecast/contracted demand by up to 80%.

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### THE IMPACT OF SUPPLY DISRUPTIONS IS RARELY FELT BY CONSUMERS, AS REFINERS AND MAJOR FUEL SUPPLIERS ARE ADEPT AT MANAGING THESE ISSUES AS PART OF NORMAL OPERATIONS

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**Rapid and comprehensive industry response strategies are in place to address or replace any lost supply, including:**

- numerous 'in-refinery' technical options,
- utilising alternative supply infrastructure and supply and distribution routes,
- sourcing supplies from other Australian refiners and fuel wholesalers,
- sourcing supplies from international sources and from the spot market,
- equitably allocating bulk fuel to customers, and
- drawing down industry stockholdings.

While current industry response strategies are highly effective, these can be further enhanced by the more widespread adoption of active supply management and business continuity planning by major fuel users supporting the economy in Australia. Major fuel users are best placed to make decisions about their need for liquid fuels, and the way they use those fuels to meet their own operational requirements.

Guidance on business continuity planning and actions that fuel users can take to manage the impacts of a reduction of fuel supply is provided by the National Oil Supplies Emergency Committee (NOSEC).

**In addition to business continuity planning, actions can also be taken by major fuel users to address any unacceptable business risks arising from a fuel supply shortage, including:**

- investing in their own extra stockholdings and storage capacity,
- improving fuel supply management (either on their own or through their fuel supplier), and
- changing business operations to avoid or minimise the impact of any fuel supply disruption.

AIP member companies encourage the active management of fuel supply and stocks with their customers, particularly where supply chains can be lengthy in regional and remote areas with limited supply options.

Australia has robust emergency response plans for managing a national liquid fuel emergency, which reflect Australian market characteristics, utilise proven market and commercial response mechanisms, and adopt international approaches that will be effective in our operating environment.

While every effort is made by industry to ensure continuing reliable supply, NOSEC and the International Energy Agency (IEA) have established management plans that would help ensure a coordinated response to any supply emergency at a national or international level.

**ACCORDING TO THE IEA, AUSTRALIA IS WELL SERVED BY AN INDUSTRY WHICH OPERATES A RESILIENT AND DIVERSIFIED SUPPLY CHAIN, SUPPORTED BY A REGIME OF POLICY AND REGULATORY EMERGENCY MEASURES, REGULAR IN-DEPTH VULNERABILITY ASSESSMENTS, AND INTERNATIONAL ADVOCACY OF OPEN GLOBAL MARKETS**

**Emergency Supply Management**

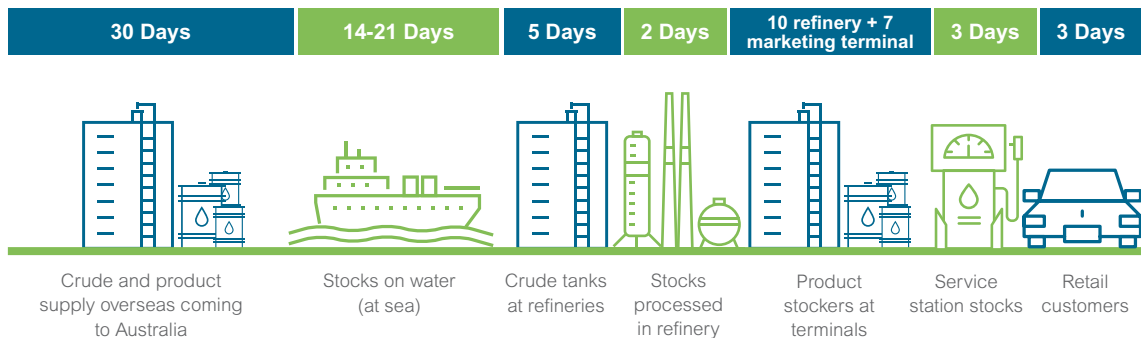
Industry and governments recognise the potential impacts of a severe national shortage of fuel supplies to business, consumers and communities.

The Australian Government has also announced, as part of its IEA Compliance Plan, that it will purchase 400 kilo tonnes of oil tickets in 2018-19 and 2019-20 to enable Australia to contribute to an IEA collective action if needed. Tickets are used by some IEA members to supplement in-country stocks to meet their IEA obligations.

**SUPPLY CHAIN**

**Stocks as days consumption cover**

*Average number of days*





## SUPPLY FLEXIBILITY

The complex network of shipping routes to and around Australia are secure and highly flexible. There are ships with crude oil or petroleum products constantly on the water along each supply route, with cargo discharges sequenced every few days in major Australian ports.

With the key demand centres in the southeast of the country, most imported cargoes travel a considerable period of their voyages along the Australian coast and within Australian waters.

**THE AVERAGE TIME PETROLEUM PRODUCTS ARE ON THE WATER IS AROUND 12 DAYS, VARYING BETWEEN 6 AND 23 DAYS**

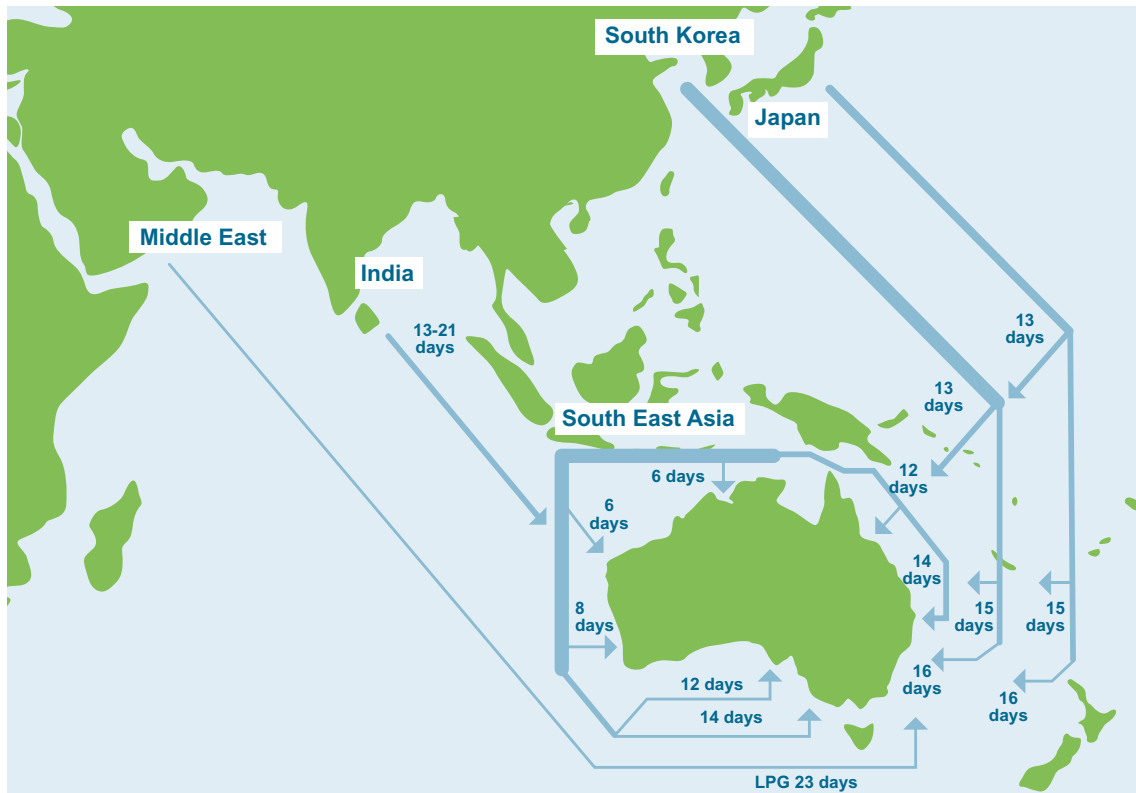
Shorter voyage times reflect both closer supply locations in the Asia-Pacific region and direct importing into northern Australia.

The bulk of crude oil demand is from the south-east of Australia.

Petroleum product stocks in ships on the water and the ready availability of petroleum tankers have proven to be very valuable for responding in a flexible and timely way to unplanned supply disruptions at particular locations in Australia.

In the event of an Australian supply disruption, petroleum product cargoes at sea can be redirected by Australian companies to Australian ports to help manage the disruption. Ship discharges can be planned to ensure land-based stockholdings can be fully utilised to provide a buffer against supply disruptions and to minimise the severity of disruptions. This buffer provides time for major fuel suppliers to make decisions about how best to respond to any disruption.

## AUSTRALIA'S MAJOR IMPORT SHIPPING ROUTES: Petroleum products





## SUPPLY AVAILABILITY

Independent and government reviews have concluded that “supply from overseas suppliers of refined petroleum products is considered extremely reliable” and “an increasing number of refineries in Asia are capable of supplying Australian-specification products”.

The ‘geopolitical risks’ of sourcing crude oil and petroleum products from foreign countries are sometimes claimed as vulnerabilities in Australia’s liquid fuel supply chain. However, international events that impact on crude oil and petroleum product markets will generally be felt by all countries, so Australia is unlikely to be placed at a supply or competitive disadvantage. Further, past instances of geopolitical instability, civil unrest and war have had a relatively small impact on global crude oil flows and have not had an impact on the reliability of supplies to Australia. Supply diversity clearly plays a key role in managing and mitigating such risks to Australia.

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**AUSTRALIA’S ACCESS TO DIVERSE SUPPLY SOURCES AND WELL ESTABLISHED AND FLEXIBLE INTERNATIONAL AND DOMESTIC SUPPLY NETWORKS SUGGESTS THAT ANY FUTURE DISRUPTION RISKS ARE UNLIKELY TO COMPROMISE AUSTRALIA’S ACCESS TO THE PHYSICAL SUPPLY OF LIQUID FUELS**

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## STOCK ON WATER: a critical part of the Australian supply chain

Over the last decade, the growing volume and frequency of petroleum products imported into Australia have increased and contributed to domestic supply reliability.

The growing and changing demand for particular liquid fuels, coupled with the closure of a number of Australian refineries, has driven the increase in petroleum product imports. As a result, Australia now has a significant proportion of petroleum stock on the water from various source locations, particularly from Asia.

About 14-21 days of Australian supply is typically on the water at any time, with a large proportion of this stock in Australian waters. This is some 30 per cent of all stock owned by AIP member companies.

In addition, a similar proportion of stock designated for import to Australia is yet to be loaded for transit here. For AIP member companies, an import cargo requirement is generally locked-in over the period 30-60 days prior to arrival in Australia. In this period, this means that a cargo commitment is established, contracting arrangements have been finalised and the cargo is nominated in the supply plan for these companies (ie. it is considered firm or designated supply to Australia).

The Asian and Australian liquid fuels markets are dominated by term supply contracts to ensure known, secure and reliable supply, and these contracts ensure cargoes are delivered as planned. Consequently, as part of these normal commercial transactions, Australian companies have an ownership interest over the majority of stock on the water.

This stock is securely intended only for the Australian market in contrast to the European market where cargoes may be directed to any number of countries.

**Major changes to voyages once a ship with an Australian cargo leaves an Asian port are very rare, because this is constrained by:**

- expensive increases in freight rates for redirection of ships to another country,
- limited opportunities for short term (or spot market) trading in the regional market,
- different product specifications across the region,
- some local market participants only operate in Australia, and
- restrictions in commercial contracts.

The significant volume and wide distribution of cargoes of crude oil and petroleum products on the water serves as floating storage which provides a diverse and flexible source of supply. It also provides an efficient and cost effective logistical and storage solution, which is now fundamental to managing ongoing reliable supply of liquid fuels to Australian markets and customers.

The highest level of fuel supply flexibility and reliability is achieved when stock on water can be readily diverted between Australian locations on an as needs basis.

## SHIPPING SECURITY ASSESSMENTS

Relying on shipping for petroleum imports to Australia does not increase security risks, and shipping lanes and activity are not easily disrupted.

Most countries are reliant on movements of petroleum (crude and product) within and between countries, and particularly so for Australia - in both an export and import sense.

Security of shipping cargoes is a key focus of the global supply chain and regional supply. This includes for substantial exports of Australian commodities to Asia (eg. oil, coal, LNG, iron ore).

The market would adjust to any threats or impacts to major shipping lanes.

For example, ship owners would:

- deploy vessels to areas that the market will look to for alternative supply
- continue to operate near any threats (eg. vessels operating in risky areas have the option of recovering war risk insurance premiums from the Charterer)
- consider or take alternatives to major (most efficient) shipping routes, simply meaning increased voyage time.

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### INDEPENDENT ASSESSMENTS HAVE CONCLUDED THAT SHIPPING LANES TO AUSTRALIA ARE HIGHLY FLEXIBLE AND THEREBY SECURE, INCLUDING UNDERPINNED BY MILITARY PRESENCE IN THE REGION

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For Australia, there are options on many of the shipping routes into the country should there be issues on a particular route. For example, while the Malacca Strait (in the Indonesian archipelago) handles a significant proportion of shipments to Australia, efficient and established alternative routes are available if Malacca were to be threatened. Such alternatives routes (or any others) would simply be at a slightly higher cost due to the additional sailing time required.





Given the diversity and flexibility of Australia's crude oil and products supply routes, and the thousands of ship movements each year through major shipping routes, the industry does not see that threats such as a terrorist attack on a shipping route would have any material impact on Australian fuel supply.

However, while the security of sea lanes from piracy and military action is not seen as a critical risk by market experts, it is a risk that must be managed through international cooperation.

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**INTERNATIONAL COOPERATION TO REDUCE THE RISK OF PIRACY HAS INCREASED IN SOUTH EAST ASIA AND THE SECURITY OF THE STRAIT OF HORMUZ IS CLOSELY MONITORED**

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There are monitoring and regional cooperation agreements amongst Asian nations to combat acts of piracy or terrorism against ships operating in Asia.

Previous acts of piracy against crude oil tankers in the region have had no material impact on the regional oil market, as there was no ongoing disruption to the shipping lane or to market, trading and freight activity.

The 'Case Study' provides 'real time' snapshots of the volume and diversity of vessels carrying petroleum products, crude oil, gas and petrochemicals. This includes snapshots of vessels in Australian waters, the Asia-Pacific region, the Singapore trading hub and the Indian Ocean.



# CASE STUDY:

## THE VOLUME AND DIVERSITY OF PETROLEUM SHIPPING

Crude oil and petroleum products flow freely between different regional markets.

These maps are a real time snap shot of petroleum ships on water at a point in time.



- There are a wide range of established and alternative cargo transit routes through SE Asia.
- There are most efficient (shortest) transit routes between countries, but ships can and do easily change course to avoid poor weather and high seas or a potential problem area.
- Singapore is an important trading hub for the Asian region and Australia, and there are multiple fuel suppliers and loading points in Singapore (it would be highly unlikely for the whole hub to be disrupted).
- At any time, around 30-40% of total petroleum stock owned by Australian companies is on ships in Asia-Pacific waters coming only to Australia and a similar proportion of stock designated for import to Australia is yet to be loaded for transit here.



- Each month, around 90 cargoes of petroleum products (70) and crude oil (20) are imported into Australia - 3 ships each day.
- For these petroleum vessels, there are multiple import 'entry points' into Australia.



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