

Australian Government

Department of Infrastructure, Transport, Regional Development and Communications Bureau of Infrastructure, Transport and Regional Economics

National Freight Data Hub

A federated data sharing network

July 2021

Welcome to the National Freight Data Hub

Every Australian, everywhere, every day, relies on freight, and the freight task is growing. We need high quality, easily accessible data to make sure the freight sector is as efficient, safe, productive and resilient as possible.

The National Freight Data Hub, a **\$16.5 million commitment** from the Australian Government, will support data sharing and generation of insights to keep Australia moving. This will build on the <u>Hub's prototype website</u>, which demonstrates the value of improved freight data with new insights and datasets.

The development of the Hub has included workshops, webinars, and <u>two discussion papers</u> collating two years of stakeholder input to shape the design. Stakeholders have requested that the Hub start small with early wins and build up the foundations to meet the emerging needs of the freight industry. The Government is starting the development by investing in the establishment of the Hub and its foundational capabilities of open data, data exchange and standards, and leadership and innovation to support the delivery of freight.





Why we need a Hub

Freight data plays a key role to meet Australia's growing freight task and achieve a sector that is efficient, competitive, safe, sustainable, and innovative. But consultation with stakeholders has identified three problems with the current state of freight data in Australia that means the sector cannot reach its potential:



Data is not discoverable

We need governance and technical systems for data sharing — more open and secure data exchange.

Data is not comparable

We need agreed data standards so freight datasets can be combined and compared for a national picture.

Data does not exist

We need more freight data to be captured and digitised to provide more timely, complete and accurate information across the sector.

Meaning we cannot answer key questions about freight

- How is the network performing?
- What and how much freight is being moved?
- What routes are used to move freight?
- What is the extent of freight consignment delays?
- How do Australia's supply chain costs compare with international competitors?

The Hub's purposes and pillars

Stakeholder consultation has defined three high level purposes for the Hub, and three pillars the Hub needs to deliver to achieve these purposes:

PURPOSES

Strategic planning

More informed infrastructure and transport network investment, regulatory and other decisions.

Operations

Provide timely data and insights about freight system performance and bottlenecks.

Evaluation

Enable end-to-end performance evaluation of Australia's freight system.

Open data

Governments build trust by taking the first step themselves. Better and more timely access to government freight data will be delivered through the Hub.

PILLARS

Data exchange & standards

Information needs to be provided in an efficient and safe data sharing system. Using permission based rules, collaborating partners retain control of their data. Data standards enable data to be readily compared and gain more meaning.

Leadership & innovation

The Hub should simplify the freight data system; improve skills, capability and connections; and establish robust governance and standards to support innovation and participation.



Case study: Container data

Australia's trade performance impacts our productivity, living standards and quality of life. To improve trade performance, we need to be able to answer:

- Where is freight being moved?
- How is freight being moved?
- What and where are the physical and regulatory bottlenecks and barriers for the efficient and safe movement of freight?
- How well are Australia's freight transport networks performing?
- What and where are the opportunities for freight movements to be more efficient and safe?

The Waterline dataset from the <u>Bureau of Infrastructure and</u> <u>Transport Research Economics</u> (BITRE) is a bi-annual release of data from port operators, stevedores and port authorities, helping to answer these key questions on freight and freight movement. Container movements through ports are critical to our economy.

The data covers the five major container ports in Australia: Port of Brisbane, Port Botany, Port of Melbourne, Port Adelaide, and Port of Fremantle. The Waterline data is currently used by government and industry to benchmark port performance, including for the <u>ACCC Container Stevedoring</u> <u>Monitoring Report</u>.

Supporting future expansion, the Hub will work with data owners and custodians to collect, curate, harmonise, aggregate, and share more granular container data.



Inside the Hub's prototype website

The prototype website provides a snapshot of the freight data landscape, and an early demonstration of the value of improved data for the Australian freight and supply chain industry. Included in the website are:



Insights

Providing a visual context of national freight data through maps and graphs, these insights help identify trends, patterns and outliers from existing freight data sources. They are designed to answer key questions such as: "How is congestion impacting freight?", "Where are the most popular rest areas for heavy vehicles?" or "Where are roadworks and border restrictions being applied due to COVID-19?".



Projects

Showcasing work already underway to collect more and better data, and enable industry to collaborate among themselves or with government on initiatives.



Data catalogue

The Hub provides open access to the first curated, searchable Australian freight data catalogue covering road, rail, sea and rail. It is drawn from existing catalogues including BITRE freight data, <u>data.gov.au</u>, state and territory data, and includes a new release of Australian Border Force customs data on imports and exports.

The prototype website can be viewed at <u>datahub.infrastructure.gov.au</u>.



Case study: Freight data exchange pilots

<u>This work</u> investigates and develops methods and systems to enable freight consignment to be shared, in real-time, across supply chain partners and with government. It aims to better inform transport operations, infrastructure planning and freight policy.

This work was funded as part of the commitment under the National Freight and Supply Chain Strategy to support better freight location and performance data. Freight Data Exchange projects with industry will create standards needed to track goods and demonstrate the use cases for sharing data in different supply chains. The projects will support real-time industry access to freight data.

In 2019-20, initial pilot projects were implemented to investigate, develop and demonstrate the capability for supply chain partners to share freight consignment information in real time, and assess the feasibility of aggregating freight consignment information to help inform infrastructure planning and policy priorities.

Three concurrent freight data exchange pilots were undertaken in 2019-20, and two key lessons were learnt:

- There are multiple data standards and information systems in use across freight and logistics and associated industries, and it can be difficult to match freight consignment records
- 2. Freight consignment data can be aggregated to provide strategic-level information that informs infrastructure planning, network operations and freight policy.

Follow up pilots are taking place during 2021-22 to continue advancing opportunities using real-time freight data. The project outcomes will be published on the National Freight Data Hub website.



Why does freight data matter?

The freight system is the backbone of Australia's economy and living standards. Each year, approximately four billion tonnes of non-bulk goods are delivered across Australia's freight network.¹The Australian freight industry accounts for 8.6 per cent of total Gross Domestic Product (\$162.9 billion per annum at March 2020).² Freight is also a significant employer, contributing almost 1.4 million Australian jobs or 10.4 per cent of total employment.³

The freight sector is a critical enabler for the economy, facilitating the movement of goods that many sectors rely on:



Road freight touches all parts of the economy, but in particular:

- Construction: Crude materials used comprise around 30 per cent of total road freight tonnages;
- Food and beverages: Comprise around 19 per cent of total road freight tonnages; and
- Manufactured goods and machinery: Accounted for around 17 per cent of total road freight tonnages.

Australian rail freight services support a range of major export commodities, including:

- Mining: Iron ore and coal comprise approximately 80 per cent of all rail freight movements in Australia (in tonnekilometre terms); and
- Agriculture: Grains, sugar, fertilisers and other bulk products account for a further 8 per cent of rail freight.



Coastal shipping services commodities and markets, including:

- Dry and liquid bulk materials: These make up over 75 per cent of domestic coastal shipping (by tonne kilometres), with over 40 per cent attributed to bauxite and alumina; and
- Minerals: Iron ore and coal account for over 10 per cent of coastal shipping.



Air freight is carried in the cargo holds of passenger aircraft and by a small fleet of dedicated aircraft:

- Air freight is dominated by high-value, timecritical low-density freight, such as mail, newspapers and pharmaceuticals.
- Air freight represents less than 0.1 per cent of Australian merchandise trade by volume, but over 20 per cent by value.

The overall freight task in Australia is expected to grow up to 35 per cent between 2018 and 2040, bringing the total volume to approximately 1,000 billion tonne kilometres across road, rail, coastal and air freight.⁴ As highlighted in the Australian Government's Public Data Policy, "Australia's capacity to remain competitive in the digital economy is contingent upon its ability to harness the value of data. Data volumes are growing exponentially — particularly in the transport sector — and so too is the potential value of this data."⁵ Publishing, linking, and sharing data creates opportunities for growth and increased efficiency.

The Inquiry into National Freight and Supply Chain Priorities outlined the critical role for freight data to secure Australia's freight productivity into the future:

"Businesses and governments will need to embrace new thinking and adopt new technologies to capture the opportunities and meet the challenges of the growing freight task...

...data should inform the need for capital expenditure and maintenance, regulatory and governance reform, and measuring progress, including implementation of the National Strategy."

To support the future of freight, data access is a key contributor to productivity growth. Collecting and collating freight supply chain data on indicators of operational efficiency is also critical to measure performance and productivity.⁷

- 3 PwC Analysis, Australian Logistics Council (2014), The Economic Significance of the Australian Logistics Industry
- 4 BITRE (2019), Australian Aggregate Freight Forecasts 2019 update

- 6 DITRDC (2018), Inquiry into National Freight and Supply Chain Priorities, page 3.
- 7 iMOVE (2019), Freight Data Requirements Study, page 33.

¹ DITRDC (2019), Delivering on Freight

² PwC Analysis, Australian Logistics Council (2014), The Economic Significance of the Australian Logistics Industry

⁵ Australian Government (2015), Australian Government Public Data Policy Statement



Case study: Customs data

Customs data is valuable for understanding import and export commodities passing through Australia's ports, and airports, and is collected by the Australian Border Force. The National Freight Data Hub prototype website has visualised detailed customs data from the Australian Border Force, provided by the Australian Bureau of Statistics which undertakes data processing for confidentiality reasons.

More detailed data will assist both governments and industry in prioritising infrastructure investments, as well as targeting regulation and policy changes to support efficient port and airport operations.

Container ports perform domestic origin and destination supply chain studies to improve internal modelling and grow their operations. This customs data will streamline and remove duplication in the data collection and preparation effort that goes into this modelling, and reduce the cost of performing these studies. It will also inform timing of, and increased certainty for, investment decisions.

The project will also support access to the data by the general public.

The Hub will need to work closely with stakeholders in government and industry to understand the confidentiality responsibilities and limitations of the data while aiming to improve the data available for decision makers.



Next steps

Over the next four years the Hub will be developed as a centralised platform for national freight data, providing access to data from the prototype website and other freight data projects. This will enable freight data creators, owners and users to more easily and securely access and share freight data to solve real business problems.

The Hub aims to:

- standardise freight data;
- show when and where roadworks are occurring in Australian roads;
- visualise when and where congestion happens and how it affects freight traffic;
- document which commodities move through our customs and where they go to;
- track road condition, road spending, and heavy vehicle use to show what road service drivers get for government spending;
- track volume and value of rail freight to show where investment is needed; and
- showcase data from further government freight data pilot projects.

These data projects delve into the specific needs across the freight and supply chain and pose potential solutions. They in turn feed into the program of work for developing the Hub. Some projects build on existing work and others will be added as data.

Case study: National location registry



The BITRE is working with <u>GS1 Australia</u> to progress an electronic 'address book' of freight locations. This includes precise locations of loading docks as well as locations of freight sources such as mines, agriculture and construction sites. Opening hours, dimension limits, a point of contact, safety requirements and facilities details willalso be available in the registry.

The National Location Registry will build on GS1 Australia's existing Locatenet directory for the health sector. There is currently no service that provides reliable and accurate location data across the freight industry.

Access to up to date, accurate and consistent information about physical locations provide benefits to freight operators including understanding:

- The effective management of trading or operating hours for peak periods;
- Any safety constraints at a site;
- Where driver amenities are available;
- Weight/height restrictions;
- Details regarding dedicated truck entry points; and
- Other site requirements, including use of hard hats.

Industry participants include Woolworths, Coles, Nestle, PepsiCo, Sanitarium, Toll, and Finemores Transport. The National Location Registry will be established in mid 2021, and some aggregate information is expected to be shared publicly on the Hub.



The Hub is open for collaboration

The <u>Department of Infrastructure, Transport, Regional Development and Communications</u> is continuing to update and expand the Hub's prototype website to support users, and to inform the implementation of the National Freight Data Hub.

To support this development and to help us understand stakeholder priorities, please contact us at <u>freightdatahub@infrastructure.gov.au</u> with feedback, comments, and suggestions.





