

Western Sydney
International Airport

Review of Aviation Fuel Supply Options May 2023



Contents

Acknowledgement of Country	04
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02

Executive Summary	07
-------------------	----

03

Background	
3.1 Western Sydney International (Nancy-Bird Walton) Airport	09
3.2 Purpose of the review	10
3.3 Existing analysis	10
3.4 Legislative context	10
3.5 NSW Government engagement	11
3.6 Industry engagement	12

04

Review Context	
4.1 Fuel at WSI	15
4.2 Fuel supply resilience	16
4.3 Aviation fuel demand	17
4.4 Sustainability	18
4.5 Current fuel supply to Western Sydney	18

05

Observations	
5.1 WSA is not responsible for developing fuel infrastructure outside the WSI boundary	21
5.2 A holistic perspective on Western Sydney’s fuel needs reveals a fuel pipeline could be economically feasible earlier than 2034	21
5.3 There may be a financial case for WSI’s owner to invest in a pipeline or incentivise a pipeline investor	22
5.4 Broader socioeconomic and environmental benefits of a fuel pipeline to communities across Western Sydney and beyond could provide a case for government incentives that would also bring forward fuel pipeline feasibility	22
5.5 The risk relating to pipeline feasibility and delivery timing should be considered and managed	25
5.6 SAF will be an increasingly important component of WSI’s aviation fuel mix	25

06

Recommendations	
6.1 The NSW Government should prioritise the immediate facilitation of a pipeline corridor(s) from potential ports to WSI before the optimal routes are compromised by competing development activity	27
6.2 Governments should periodically formally consider whether the broader socioeconomic benefits of a fuel pipeline create a case to incentivise construction	27
6.3 Any fuel pipeline built to Western Sydney should be open access	27

07

Conclusion	29
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Acknowledgement of Country

We pay respect to people of the Dharug nation, whose Country includes the land on which we are building Western Sydney International Airport and the skies above.

We honour the strength and spirit of the Dharug people and pay respect to their Elders.

We acknowledge the rich, enduring cultures and continuing stories of the Dharug people and all Aboriginal and Torres Strait Islander countries across Australia.



Executive Summary

02

The construction and operation of an aviation fuel pipeline to supply Western Sydney International (Nancy-Bird Walton) Airport (WSI) will enhance the resilience, security, and diversity of supply of fuel to the airport. However, broader consideration of the fuel supply needs of the Western Sydney region against its significant growth may bring forward the commercial and economic feasibility of construction of a pipeline to serve the area.

Construction of a fuel pipeline to Western Sydney would also deliver social, environmental, and other economic benefits to communities across Western Sydney and beyond. These benefits could serve as a basis of incentivisation of a fuel pipeline by governments.

Supply of fuel to an airport's boundary is not the responsibility of an airport. The role of WSI in the design and development of the airport relates to fuel assets within the airport's boundary, which are being delivered under the first stage of WSI's construction.

Given the focus on enabling a strong sustainability drive for the aviation industry shared by the Australian Government, WSI and industry more broadly, it

is essential that the infrastructure is capable of incorporating Sustainable Aviation Fuel in the mix of aviation fuels it will deliver to the airport.

The report has three recommendations:

- the NSW Government should prioritise the immediate facilitation of a pipeline corridor(s) from potential ports to WSI before the optimal routes are compromised by competing development activity;
- Governments are best placed to determine the net economic, environmental, and social benefits to Western Sydney of an aviation fuel pipeline and the potential for these benefits to drive the incentivisation of pipeline construction. Periodic reviews should be done to quantify and consider these benefits; and
- any fuel line built to Western Sydney should be open access to facilitate strong competition and commercial outcomes.



Background

03

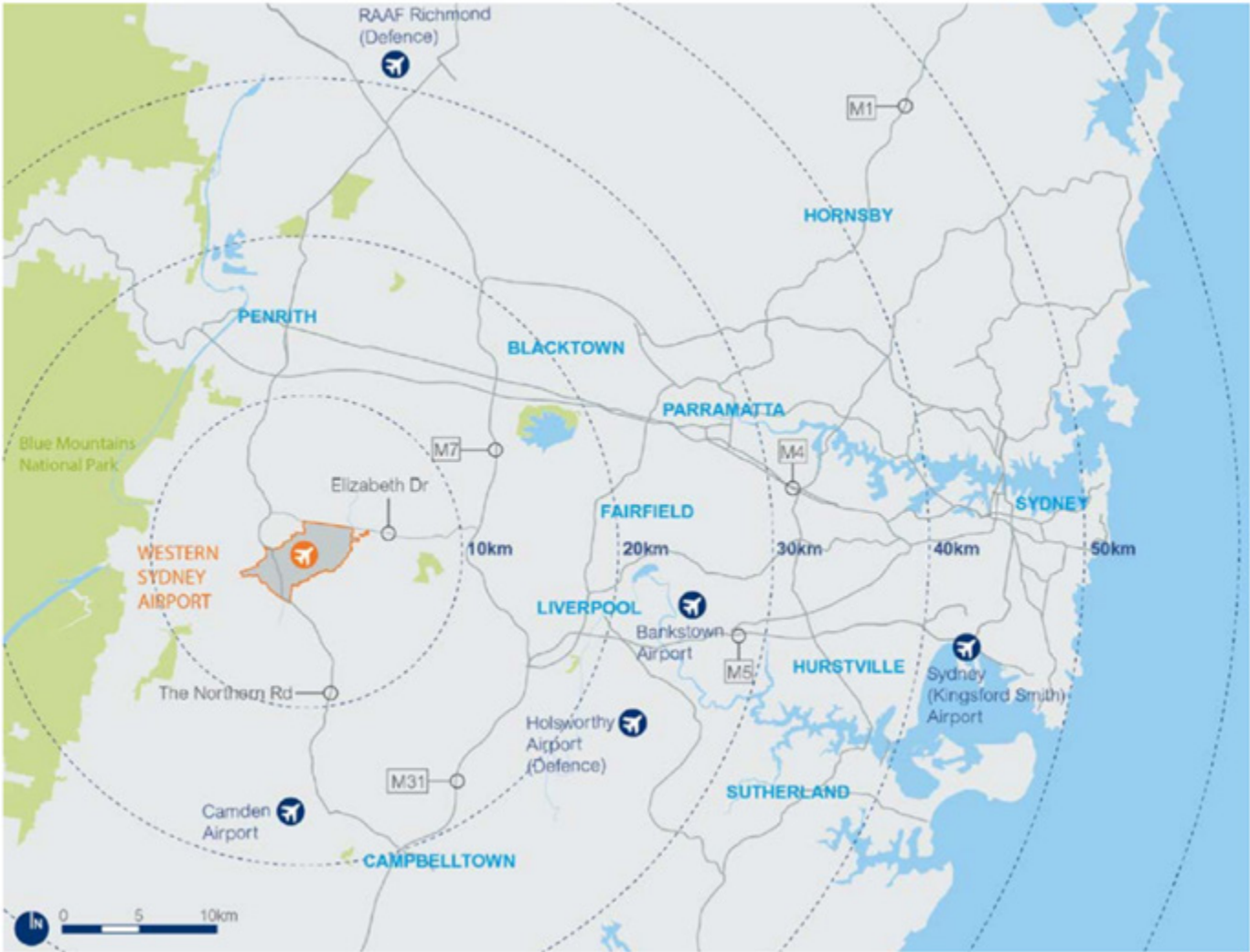
3.1 Western Sydney International (Nancy-Bird Walton) Airport

When it begins operation in late 2026, WSI will be Australia’s newest global gateway. With international and domestic passenger flights, as well as air cargo operations, Sydney’s new airport will focus on delivering an exciting and compelling new experience for its passenger, airline, and air cargo customers.

WSI will open with capacity for 10 million passengers per year and around 220,000 tonnes of air cargo a year. Designed for growth, WSI will be developed in stages, over decades and in line with demand to eventually become Sydney’s primary airport and one of the largest in Australia. Ultimately, the airport will have capacity for 82 million annual passengers and around 1.8 million tonnes of air cargo.

WSI is being developed on a 1,780-hectare site approximately 13 kilometres south of Penrith, 17 kilometres west of Liverpool and 47 kilometres west of the Sydney CBD. The airport will be connected with new and upgraded road and rail connections, including the new M12 motorway and the Sydney Metro – Western Sydney Airport rail service. Upgrades to major arterial roads connecting the airport, including The Northern Road and Bringelly Road, have already been delivered.

Figure 1: Western Sydney International Airport location and radial distances



Source: WSA EIS Introduction p.67 (2016)

3.2 Purpose of the review

Condition 28 (1) of the Western Sydney Airport - Airport Plan (Australian Government, 2021) ("the Airport Plan") requires WSI to:

"...within two years of the grant of an Airport Lease, and at least once every five years thereafter, prepare and publish a review of aviation fuel supply options comparing the social, economic and environmental costs, savings and benefits of fuel supplied to the airport by road with other alternatives including a fuel pipeline."

This review has been developed to meet that requirement. In undertaking the review, WSI acknowledges the Commonwealth's own initial report in response to Condition 28, which characterised itself as the baseline for further review.

3.3 Existing analysis

The *Western Sydney Airport Environmental Impact Statement* (Australian Government, 2016) for the first stage of the airport ("the EIS") primarily addresses the issue of a 24/7 international airport being built on a greenfield site in Western Sydney and its early, enabling development. In considering the supply of aviation fuel to WSI, the EIS briefly addresses the airport's eventual need for an aviation fuel pipeline.

The EIS notes that "the delivery and storage of fuel is also an important issue which will require further consideration and design. It is expected that the proposed airport would initially be serviced by B-double fuel tanker trucks. In 2030, the forecast fuel demand would require the mobilisation of approximately 43 B-doubles per day. If a dedicated fuel supply pipeline was not provided, the number of truck movements would need to increase in line with the growth in air traffic. The transport of fuel by trucks represents a potential safety hazard for other road users and adjacent facilities".¹

The EIS recommends that government authorities "undertake corridor protection for proposed future ... fuel pipelines, well in advance of their forecast need to ensure the growth of the airport is not constrained in the future".²

The EIS stated that jet fuel³ would initially be supplied by road tanker to the airport and this was "anticipated to be sourced from either the Clyde or Bankstown fuel terminals".⁴

The EIS implicitly recognises what is later supported by the Deloitte/Fueltrac, 2017 initial *Aviation Fuel Supply Corridor Options Report* ("the 2017 Report"). Commissioned by the Australian Government, the 2017 Report states that a pipeline built based on revenue from demand volumes alone is not a commercially viable proposition in the first stage of WSI's development.

The 2017 report forecasts that fuel demand from airlines using WSI would be sufficient for a fuel pipeline to become commercially viable by 2034 with at least 908ML annual aviation fuel demand. This is around 2.5ML per day at WSI in the mid-2030s, subject to airline demand fluctuations.

More recently, Transport for NSW (TfNSW) commissioned the *Western Sydney Strategic Fuel Pipeline Study* (NSW Government, KPMG, 2022), ("the 2022 TfNSW study"), which remains confidential due to the commercial nature of its findings, but it has been referenced throughout this review with permission from TfNSW. The 2022 TfNSW study recognised the risk of not identifying and facilitating corridor routes and continued to develop options for pipeline supply of fuel to Western Sydney.

The 2022 TfNSW study investigated the provision of pipelines for both aviation and automotive fuels to WSI, the developing Western Sydney Aerotropolis and the broader Western Sydney region.

3.4 Legislative context

WSI is being built and will operate under the Commonwealth legislative provisions of the Airports Act 1996, with reference to the Airport Plan.

The Commonwealth and NSW legislative requirements that would need to be considered in making any transition away from trucked delivery include:

Pipeline legislation:

- Pipelines Regulations 2013, NSW
- *Environmental Planning and Assessment Act 1979*, NSW (EP&A Act)
- *Pipelines Act 1967* No. 90, NSW (Pipelines Act)

Corridor legislation:

- *Land Acquisition (Just Terms Compensation) Act 1991*, NSW (Land Acquisition Act)
- NSW Transport and Infrastructure SEPP (Chapter 4, Major Infrastructure Corridors)

Relevant road transport legislation:

- *Dangerous Goods (Road and Rail Transport) Act 2008*, NSW
- Dangerous Goods (Road and Rail Transport) Regulation 2014, NSW
- *Heavy Vehicle (adoption of National Law) Act 2013* No 42, NSW
- Road Transport (Vehicle Registration) Regulation 2007, NSW
- Heavy Vehicle (Mass, Dimension and Loading) National Regulation 2013, NSW
- Australian Code for the Transport of Dangerous Goods by Road and Rail 2008, Commonwealth
- *Road and Rail Transport (Dangerous Goods) Act 2008* No 95, NSW
- Dangerous Goods (General) Regulation 1999, NSW
- Airports Environmental Protection Regulations 1997, Commonwealth

Storage of Dangerous Goods legislation:

- Aviation Transport Security Regulations 2005, Commonwealth
- National Code of Practice for the Storage and Handling of Workplace Dangerous Goods (General) Regulation 1999, NSW
- Airports Environmental Protection Regulations 1997, Commonwealth

Aviation Fuel Standards and Publications

- EI/JIG 1530 Standard: Quality Assurance Requirements for the Manufacture, Storage & Distribution of Aviation Fuels to Airports May 2019.

In providing a fuel pipeline, off-site activity would need to address the NSW statutory and planning framework, Part 5 of the EP&A Act, state environmental planning policies and local environmental plans, addressing:

- natural environment
- biodiversity
- air quality
- noise and vibration
- flooding
- soils, water quality and contamination
- fauna and flora
- heritage (Aboriginal and non-Aboriginal)
- landscape character and visual amenity
- waste and resources
- cumulative impacts; and
- operational and environmental management.

Given the above, and as identified in the EIS Hazard and Risk Review, the delivery of a fuel pipeline to Western Sydney is subject to several NSW Government regulatory obligations. The storage and handling of dangerous goods is coordinated across several agencies, including the NSW Environment Protection Authority (EPA), and with authorisation for a pipeline by the NSW Department of Trade and Investment (Resources and Energy) under the provisions of the Pipelines Act.⁵

3.5 NSW Government engagement

The movement of fuel by road in NSW is primarily considered freight transportation, with TfNSW the relevant NSW Government agency responsible for road access for such heavy vehicles. In accordance with Condition 26 of the Airport Plan, TfNSW is entrusted with the responsibility for the development of a fuel transportation corridor(s) for a pipeline to supply aviation fuel to WSI.

WSI engages with TfNSW regularly on aviation fuel supply options, seeking to ensure timely availability of a pipeline corridor for an industry proponent before pipeline route options are limited by development activity. Without a pipeline alternative, jet fuel will continue to be transported by heavy vehicle to WSI.

¹ Ibid Volume 4 Appendix H – Hazard and Risk, page 4.

² Ibid Volume 4 Appendix N – Planning and Land Use, page 2.

³ Aviation fuel is the general term used to describe fuel used in aircraft of all sizes. Aviation fuel includes aviation gasoline (Avgas) and aviation turbine fuel (Jet A1). WSI's aviation fuel requirements will be for jet fuel (Jet A1), and therefore this report focuses on the supply of jet fuel to WSI.

⁴ EIS, Volume 1, Chapter 5, page 182.

⁵ EIS, Volume 4, Appendix H Hazard and Risk Review (RA2), page 20.

3.6 Industry engagement

In April 2023, WSI commenced a process for interested parties to submit a proposal to operate and maintain the WSI fuel storage facility. WSI also called for expressions of interest from the fuel industry to design, construct and operate one or more fuel pipeline(s) from an existing fuel terminal to the WSI facility. The pipeline(s) would be along an indicative pipeline corridor route identified by TfNSW.

The development of fuel pipelines outside airport boundaries is not the responsibility of airports, neither is it within the stage 1 scope of the airport being delivered by WSI. The EOI was conducted by WSI to support and inform TfNSW's process to facilitate the use by an industry proponent of the fuel pipeline corridor(s).

The key question for the private sector is around the optimal timing for construction.

While the EOI process is ongoing and the results are commercial-in-confidence, industry interest may generate sufficient contestability to incentivise a party to construct a suitable open access aviation fuel pipeline.

The key question for the private sector is around the optimal timing for construction. Given the capital investment required to build new pipeline infrastructure, industry may be disinclined to take volume risk until WSI opens.



Review Context

04

4.1 Fuel at WSI

The stage one development of WSI will meet the requirements of the Airport Plan that relate to WSI jet fuel supply, including:

- 24-hour airport operation;
- on-site storage that can hold three days' worth of jet fuel;
- transportation of jet fuel by road until demand justifies investment in a dedicated jet fuel pipeline;
- a fuel farm near the north-western boundary of the airport off Anton Road, with up to four fuel tanks, protection bunds and buffers, and a purpose-built piping system to a network of airside hydrants;
- jet fuel deliveries to the WSI fuel farm from the primary access point on Anton Road via Adams Road; and
- a minimum of two, and up to five, B-double tankers can be unloaded at any one time at the airport's fuel farm.

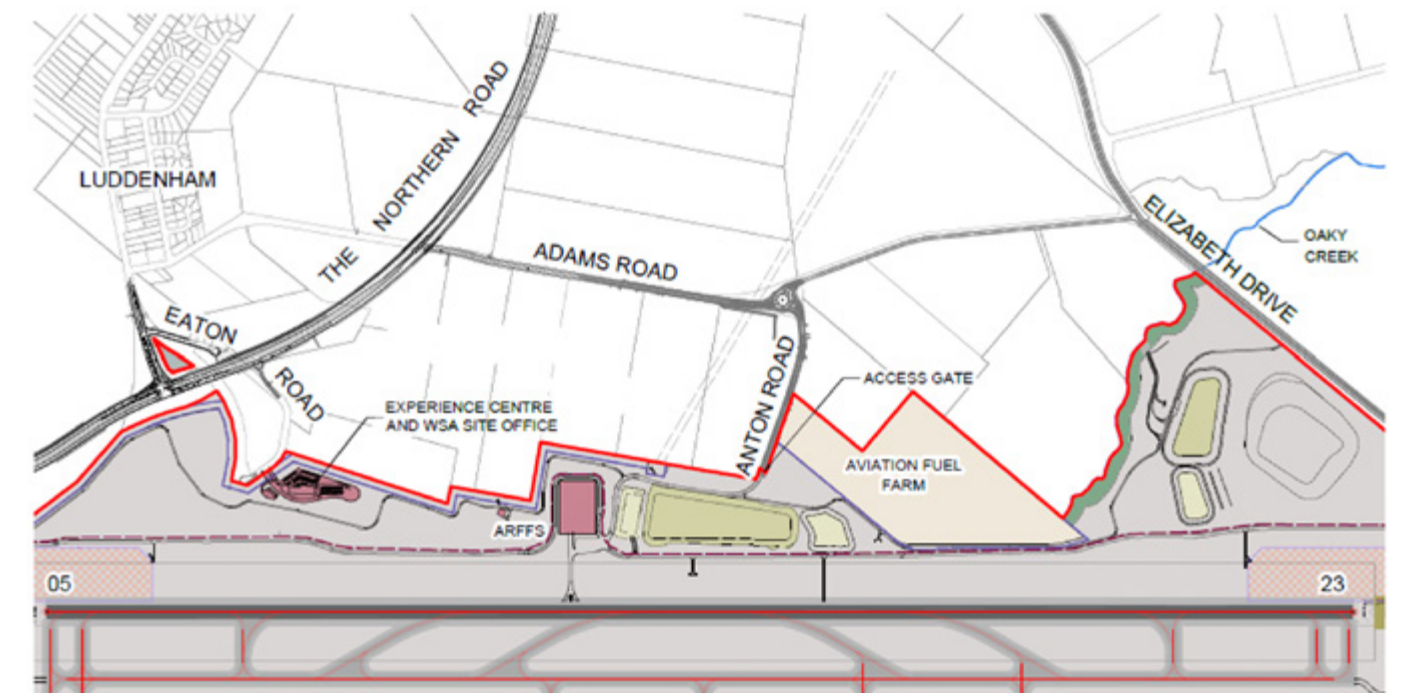
As part of the Terminal and Speciality Works contract being delivered by Multiplex, construction of WSI's fuel farm includes:

- Truck Gantry, with associated bays for:
 - bridger unloading;

- fueller loading;
- Hydrant Dispenser and Tanker Calibration/ Test Rig;
- unfiltered fuel export;
- slops removal; and
- bridger discharge.
- fuel pump shelter;
- bulk storage tanks;
- product recovery and slops tanks;
- tank transfer and recirculation system;
- hydrant supply/return/flush systems;
- electrical and instrumentation control systems;
- fire protection and associated infrastructure;
- air compressor building; and
- administration buildings and parking.

The upgrade of The Northern Road by TfNSW has enabled early fuel distribution by road. The fuel farm will be connected by Adams Road and Anton Road, which have been upgraded by WSI to accommodate the B-double traffic required for fuel delivery before a fuel pipeline is built.

Figure 2: Upgraded fuel farm access from The Northern Road



The fuel farm has been designed to meet WSI's long term aviation fuel storage and distribution requirements. It will tie in with the underground hydrant supply piping system reticulated to aircraft stands.

Even with the underground supply from fuel farm to hydrants, some fuel may still need to be trucked on-site from the fuel farm to the walk out gates and remote stands at the terminal. This would be undertaken in smaller refueller vehicles direct to smaller aircraft, such as turboprops. Procedures for these operations are yet to be defined and the exact delivery route in and around the airport may need to be confirmed with external transport authorities.

WSI strongly supports an open access fuel pipeline supply. Open access creates a level playing field by allowing fuel suppliers to throughput monopoly infrastructure under a common access pricing regime.

The Productivity Commission in considering competition in markets to supply aviation fuel advises:

- "...open access will be an important feature of any new agreement. Including open access in lease agreements is a positive development in markets to supply jet fuel as it could allow third parties to gain access to the supply chain and increase competition...
- ensuring the JUHI [Joint Hydrant User Installation⁷] at Western Sydney Airport operates on an open access basis, including after any future privatisation, would avoid competition problems associated with limited access JUHI infrastructure when the airport commences operation; and

- the jet fuel supply chain is critical for aviation operations and requires sufficient capacity to minimise fuel disruptions".⁷

A JUHI model, which involves fuel storage, transfer and piped distribution to aircraft stand facilities being jointly owned with fuel suppliers, is not being adopted at WSI. Outside the development of the fuel farm and reticulation, WSI will employ an asset-light approach for on-airport fuel storage and into-plane refuelling, with the responsibility for operation and maintenance of the fuel infrastructure transferred to an organisation with this specific capability.

It would be difficult to impose obligations of open access on existing infrastructure, thereby providing competitive pricing to all airlines, as existing asset capacity could already be contractually committed. However, WSI could establish open access arrangements at the outset, an approach that could be extended to off-site infrastructure, including a pipeline, at least for part of the route.

In selecting the appropriate party to operate and maintain the fuel farm and provide on-airport into-plane fuelling services, WSI will need to determine whether there is a material difference in the service being provided by an independent operator or a participant in the upstream or downstream market. A key distinguishing factor will be the ability of the party to allow open access to all industry participants.

4.2 Fuel supply resilience

WSI's infrastructure development and concept of operations for aviation fuel will embrace multiple fuel supply modes from multiple

seaboard terminals. This will strengthen the resilience of the jet fuel supply chain and minimise the security risk of disrupted supply.

The fuel farm at WSI is being designed and built to accept aviation fuel by both road and pipeline. Supply by both modes, in addition to a diversity in import points, provides supply chain resilience where unexpected interruptions occur, such as the 2017 fuel supply disruption impact on Auckland International Airport.

Resilience may also be increased by additional storage facilities and may be considered by the NSW Government as a necessary component of the supply chain outside the airport's boundary. The benefits of such measures would need to be weighed against additional handling fees and increases to the per-litre cost to airlines.

4.3 Aviation fuel demand

The region is among the fastest growing in Australia in terms of population and, WSI will be the catalyst for significant socioeconomic growth in Western Sydney over coming decades to support this. Ensuring an efficient and secure fuel supply to WSI and Western Sydney will be a key enabler of this growth.

The forecast demand for aviation fuel required at WSI between 2021 and 2050 is estimated to be around 34 billion litres.

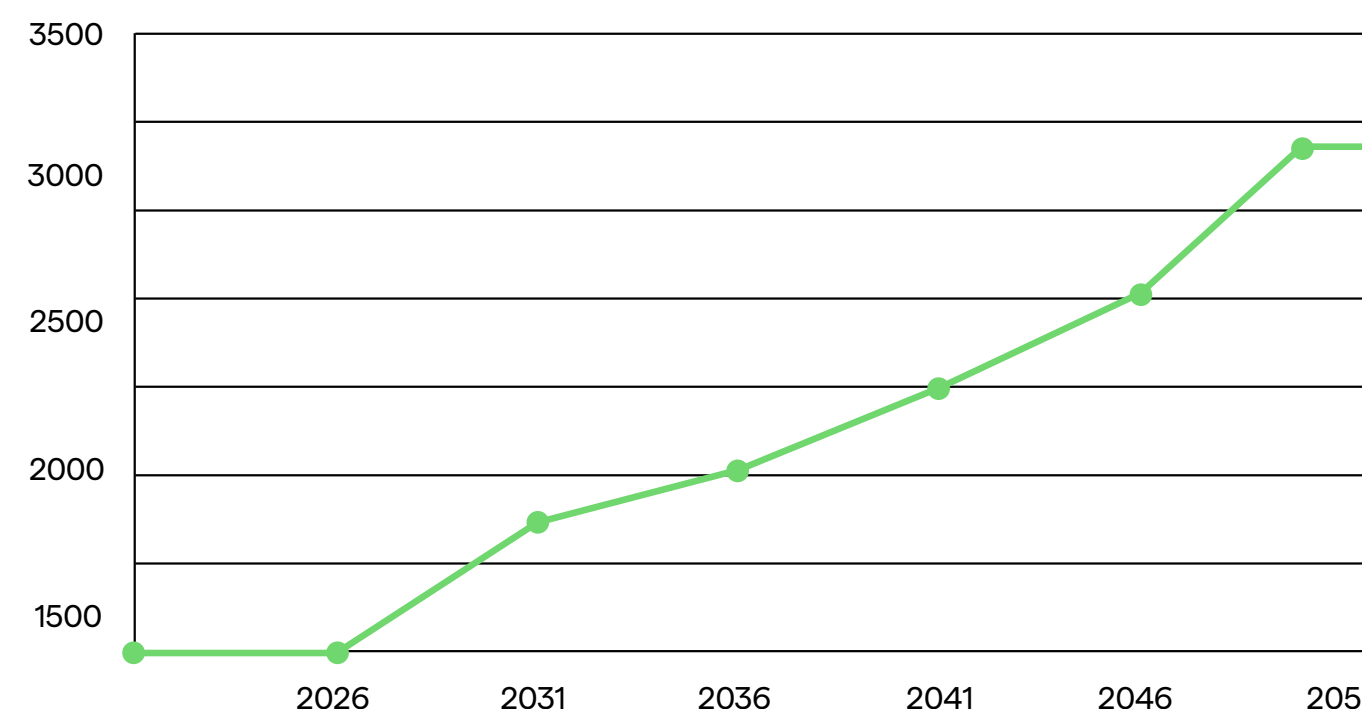
Based on industry evidence and TfNSW research, it appears unlikely that alternatives to liquid aviation fuel will be commercial for larger aircraft within the next 30 to 40 years. For aircraft exceeding 100 seats, the Air Transport Action Group (ATAG) study anticipates liquid fuels will remain the only large commercial aviation fuel for the next 30 years or more.

The start of operations at WSI in late 2026 will create a step change in aviation fuel demand. Growth is expected to accelerate rapidly over time with jet fuel demand exceeding 2.5 billion litres per annum by 2050.

Figure 3 illustrates WSI's fuel demand forecasts based on annual passenger and air cargo movements and covers a demand period from 2026 to 2050.

The fuel farm has been designed to meet WSI's long term aviation fuel storage and distribution requirements.

Figure 3: Anticipated jet fuel demand for WSI



Source: Western Sydney Strategic Fuel Pipeline Study (NSW Government, KPMG, 2022) based on forecasts of WSI activity



⁷ Economic Regulation of Airports, Report no. 92, Productivity Commission 2019, pages 37-38.

4.4 Sustainability

The WSI operational sustainability strategy is in development and will provide a clear approach to how the airport will meet community and customer expectations around strong performance across the Environmental, Social and Governance (ESG) spectrum, including in terms of carbon outcomes. An interim roadmap for sustainability considerations relevant to the airport's construction, with early consideration of some operational sustainability concepts, targets which include:

- improvements for future generations;
- reducing resource use;
- planning for the future; and
- meeting stakeholder expectations.

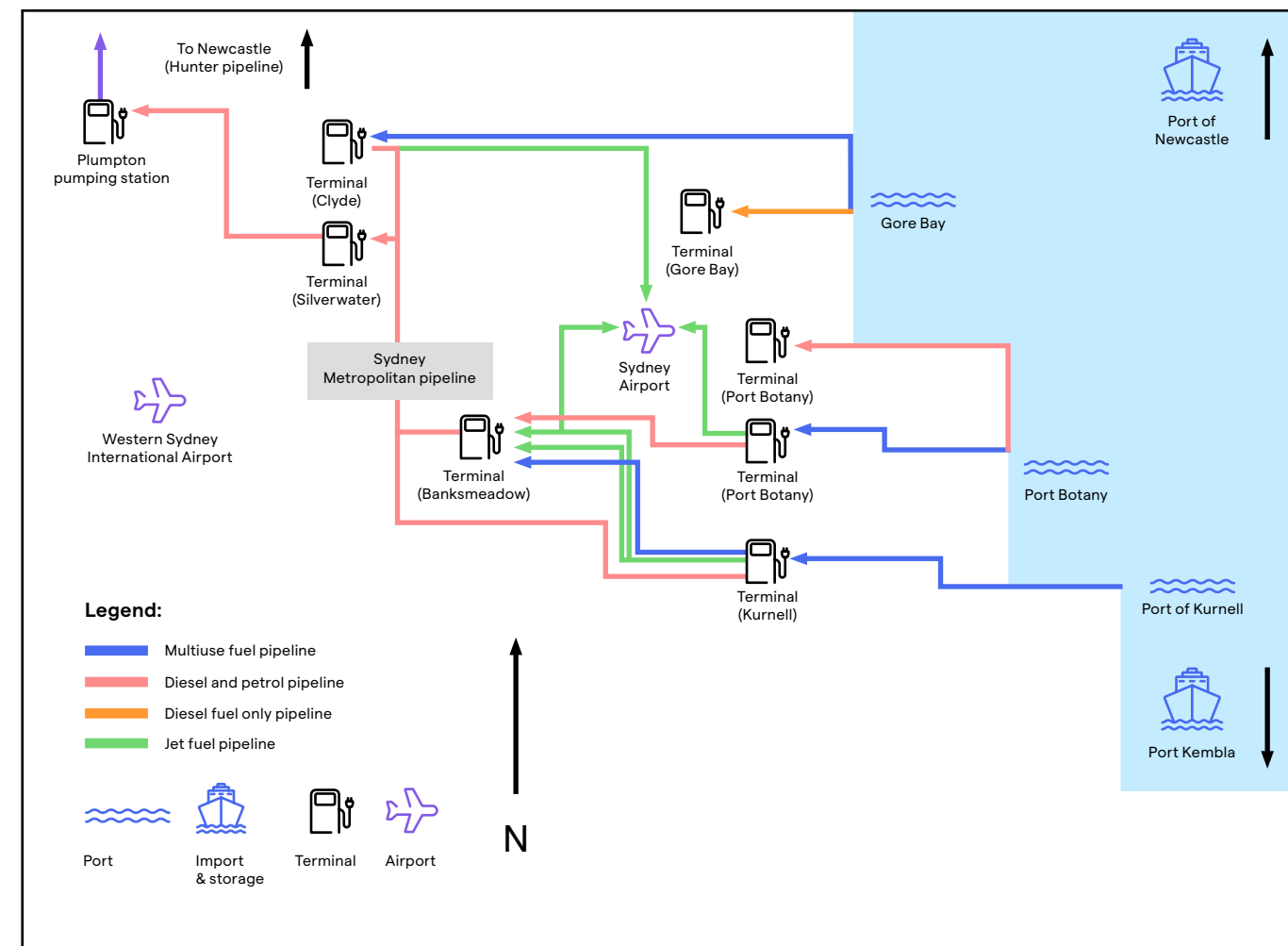
An important environmental and sustainability consideration at WSI will be the minimisation of emissions of ozone precursors. For aviation fuel supply, this means 'using underground fuel hydrant systems and/or vapour recovery systems for refuelling and fuel storage'⁸

Through the aviation sector's drive to de-carbonise, Sustainable Aviation Fuel (SAF) is likely to evolve as an available drop-in fuel to be added into the aviation fuel mix used by WSI's airline customers.

4.5 Current fuel supply to Western Sydney

To understand the future fuel demand in WSI and Western Sydney, it is helpful to be familiar with Sydney's existing fuel infrastructure network and supply chains.

Figure 4: Sydney's existing fuel supply chains



The existing fuel infrastructure in Sydney is not located in areas to support future fuel demand at WSI and in the Western Sydney region. Fuel distribution to Western Sydney is currently primarily via heavy vehicles along Sydney's Road network and will continue as such without intervention.

Greater Sydney's existing fuel pipeline network runs predominantly north-west from origins at Port Botany, Port of Kurnell, and Gore Bay to Sydney Kingsford Smith Airport (KSA) and to automotive fuel storage and distribution hubs in Parramatta/Clyde and Silverwater. Some automotive fuels are distributed directly via road from storage terminals at Port Botany. Without extending this network, the most likely sources of fuels in Western Sydney are:

- Kurnell stored aviation fuel trucked to WSI; and
- existing fuel distribution terminals at Parramatta/Clyde, Silverwater and at Port Botany.

As illustrated in Figure 5, both these road-based supply chains would rely on trucks as the main means of transport. It should be noted that given the inability of fuel trucks to travel through road tunnels, tankers travelling to WSI would have to avoid any sections of motorway involving a tunnel. The route to WSI would see an increase in tanker truck volumes and accompanying increase in congestion as the airport grows over coming decades.

Figure 6 illustrates a future fuel supply chain connecting WSI (and possibly a new Western Sydney automotive fuel distribution hub closer to WSI). This type of supply chain would improve efficiency and resilience while reducing liquid fuel movements and traffic in general on the road network.

Figure 5: Road-based supply chain (without a pipeline)

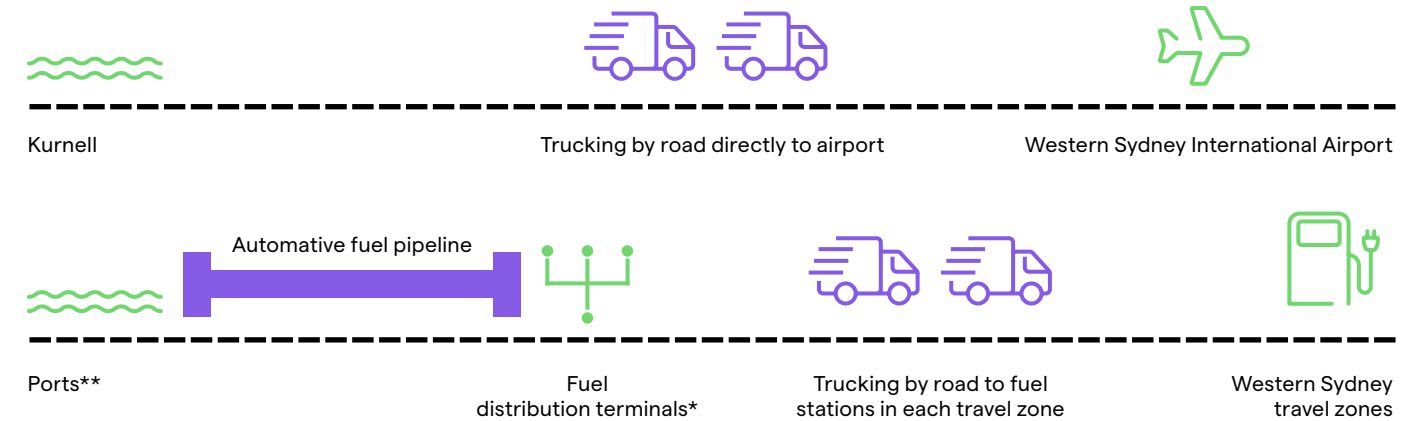
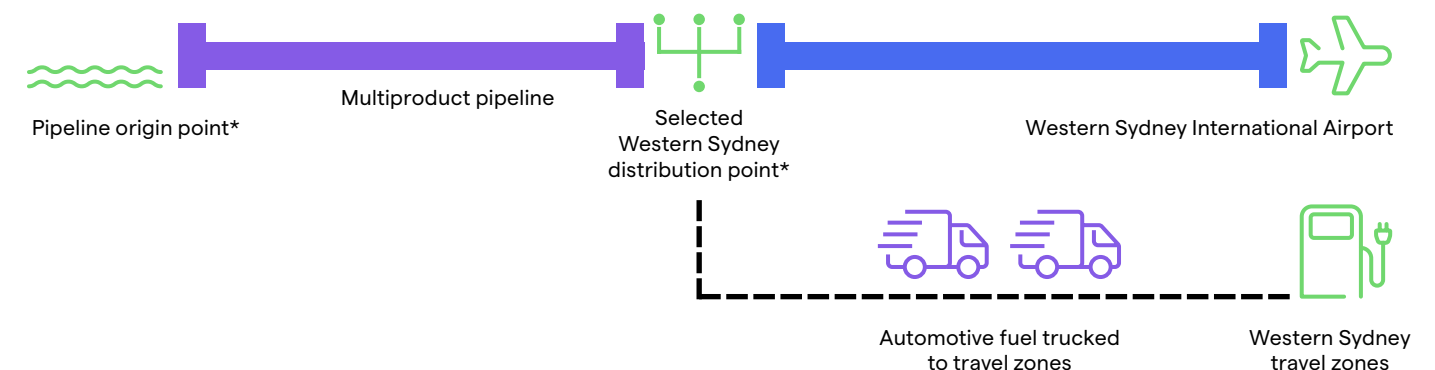


Figure 6: Future fuel supply chain (with a pipeline)



⁸ EIS, Vol 4 Appendix F1 – Local Air Quality, page 79.

Observations

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5.1 WSI is not responsible for developing fuel infrastructure outside the airport boundary.

The scope of the stage one development of WSI as defined in the Airport Plan, clearly states the requirements relating to aviation fuel supply, being the storage, reticulation, and delivery infrastructure within the airport’s boundary. Further, the Airport Plan refers to the infrastructure having to be capable of accepting fuel by truck or pipeline.

The existing legislative framework defining and supporting the first stage of WSI makes clear that the airport itself is not responsible for delivery of a fuel pipeline.

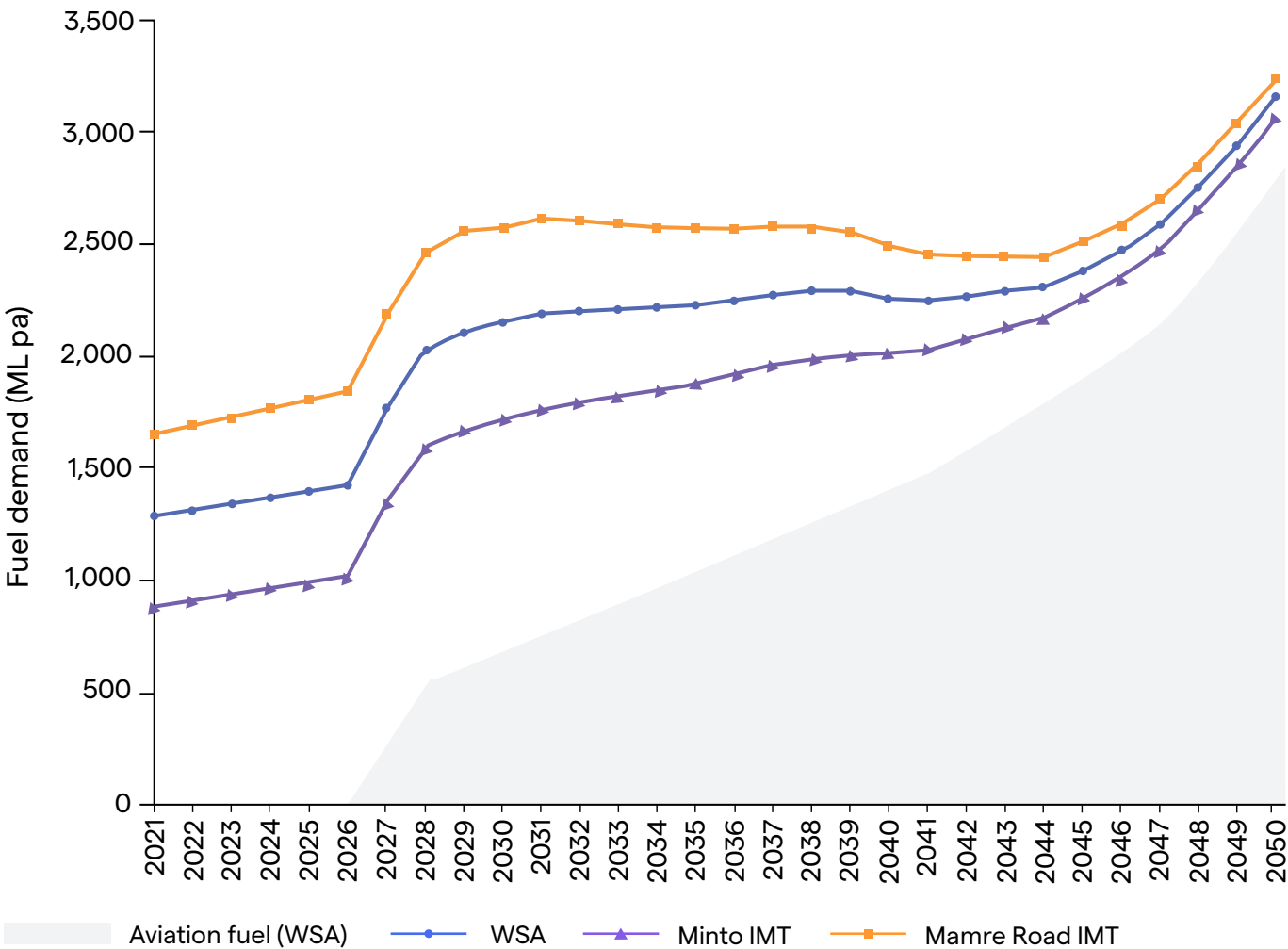
5.2 A holistic perspective on Western Sydney’s fuel needs reveals a fuel pipeline could be economically feasible earlier than 2034

The 2017 report addressed aviation fuel only and determined that the demand is likely to reach the threshold level to support a pipeline by 2034.

However, the 2022 TfNSW study looked at the region’s fuel needs more broadly, modelling the forecast fuel demands for both aviation and automotive fuels for WSI, the Aerotropolis and the Western Sydney growth areas. The outcome of the modelling determined that a multiproduct pipeline could become viable earlier than 2034.

Additionally, if all industry participants could access the multi-product pipeline model under agreed technical processes and procedures to maintain aviation fuel quality, as published in the latest EI/JIG 1530 standard and other relevant JIG standards and publications, then it is possible this may accelerate the economic viability of the fuel pipeline to WSI.

Figure 7: Forecast fuel demand in Western Sydney by catchments (2021-2050)



Source: Western Sydney Strategic Fuel Pipeline Study (NSW Government, KPMG, 2022)

5.3 There may be a financial case for WSI's owner to invest in a pipeline or incentivise a pipeline investor

In general terms, fuel delivery by truck is financially less efficient than pipeline delivery and will likely have an inflationary effect on the cost of fuel at WSI.

Domestic airlines operating short haul flights from WSI are likely to engage in fuel tankering, uplifting higher volumes at the airport with the lowest aviation fuel price. Given the probable inflationary impact of fuel being delivered by truck to WSI on opening, this practice would reduce the demand for fuel at the airport.

Similarly, to maximise long-term growth in international demand, the fuel price at WSI will need to be competitive with other major east coast airports.

Proactive action will demonstrate that WSI's owners are committed to achieving the airport's growth potential and to minimising volume risk that may disincentivise prospective pipeline investors.

Simply, lower than forecast volumes may lead to higher fuel prices which either acts as a disincentive for international airlines to use WSI or increases international ticket prices thereby placing airport growth projections at risk.

The 2034 feasibility timeline predicted in the 2017 report could also be brought forward by government incentives for a pipeline investor. The basis for an incentive approach would likely be related to the social and economic benefits of removing trucks from the roads.

Domestic airlines operating short haul flights from WSI are likely to engage in fuel tankering, uplifting higher volumes at the airport with the lowest aviation fuel price.



WSI's owner could enhance the asset's long-term value to future investors by investing itself in an aviation fuel supply pipeline or incentive a potential investor.

5.4 Broader socioeconomic and environmental benefits of a fuel pipeline to communities across Western Sydney and beyond could provide a case for government incentives that would also bring forward fuel pipeline feasibility

The development of WSI is creating high-quality employment opportunities and investment attraction that will stimulate positive economic outcomes for the region. These benefits will accelerate when the airport is operational.

Considering forecast jet and automotive fuel demand to 2050 in the broader context of significant growth expected in Western Sydney, the 2022 TfNSW study anticipates the possible benefits of fuel delivery by pipeline include:

- lower costs of fuel distribution by enabling the efficient transfer of fuels closer to intended markets;
- improved road safety;
- reduced road congestion;
- reduced environmental impacts of fuel supply and distribution operations;
- improved capacity for fuels distribution and storage; and
- additional capacity for sovereign strategic fuel storage.

Applying its Economic Parameter Values (TfNSW, 2020)⁹, this means:

- up to \$5 million of reduced annual vehicle operating costs; and
- up to \$1 million of reduced maintenance costs.

An additional consideration relates to the environmental benefits of a fuel pipeline. TfNSW has noted that three emission externalities are relevant to transporting fuel by road – air pollution, greenhouse gas emissions, and noise.

While the aviation fuel truck deliveries will be a small fraction of the traffic on Sydney's roads and will make negligible difference to the air quality in the area, the 2022 TfNSW study estimates up to 145,600 tonnes of reduced carbon emissions every year by removing 50 trucks per day from Sydney's Road network.



⁹ <https://www.transport.nsw.gov.au/principles-and-guidelines-economic-appraisal-of-transport-investments-and-initiatives>

5.5 The risk relating to pipeline feasibility and delivery timing should be considered and managed

Pipeline development feasibility based solely on anticipating what proportion of flights will require refuelling and the likely fuel volume required by each is insufficient. Further modelling will be needed as the airport grows and demand becomes clearer. However, if a pipeline is only to be built when it is expected to provide an acceptable rate of return on investment, it is likely there will be a gap between the feasibility point date and an operating pipeline.

The risk for the airport operator may be that pipeline capability is required sooner rather than later, thereby undermining the operator's commerciality. Readiness to pipe fuel as the feasibility point becomes clear and imminent will be assisted by:

- access to identified corridors;
- timely approvals mechanisms;
- open access to the infrastructure for all fuel suppliers; and
- diversity of supply to ensure a reliable supply of jet fuel to WSI.

In March 2022, having entered into local supply agreements for flights out of the UK and USA, Qantas announced “setting a target of 10 per cent SAF in fuel uptake by 2030, and approximately 60 per cent by 2050”

5.6 SAF will be an increasingly important component of WSI's aviation fuel mix

In March 2022, having entered into local supply agreements for flights out of the UK and USA, Qantas announced “setting a target of 10 per cent SAF in fuel uptake by 2030, and approximately 60 per cent by 2050... produced from certified bio feedstock, including used cooking oil, sugar cane, forestry residues, animal tallow and other waste products,”¹⁰..

Provision for SAF for airlines by road and pipeline will be incorporated into the fuel farm at WSI. Initially, it is envisaged that SAF and SAF blends will be supplied by road to WSI. However, as demand for SAF increases, it is probable that blended supply is undertaken by pipeline.

If not by pipeline, SAF could be delivered to WSI by ‘green’ hydrogen-powered fuel trucks. Hydrogen (or H2) fuel cells for commercial vehicles will become more cost competitive over time with fuel cell powered heavy commercial vehicles making up 53% of the fleet by 2038. The expectation is that both SAF and H2 could be manufactured and distributed locally in a decarbonised supply chain.

In this environment, intermodal terminals with fuel storage and relay pumping to supply the Western Sydney catchment with fuel also appear as a strong option.

Within a similar timeframe, hydrogen-combustion as a viable technology powering hybrid aviation with hydrogen fuel cells, such as the Airbus ZEROe concepts, may be possible.¹¹

The establishment of SAF in Australia is a priority for the Australian Government, which is in the process of completing an aviation white paper that is expected to establish a group like the Jet Zero Council seen in the UK or the Council for Sustainable Aviation Fuels in Canada.¹²

¹⁰ www.qantasnewsroom.com.au/media-releases/qantas-zeros-in-on-emissions-with-interim-target

¹¹ Media release *Airbus joins forces with New Zealand's hydrogen ecosystem partners*, Airbus, 10 February 2023

¹² Source: media release *Australian Jet Zero-style Council prepares for take off*, Minister for Infrastructure, Transport, Regional Development and Local Government, Catherine King, 28 February 2023.

Recommendations

06

6.1 The NSW Government should prioritise the immediate facilitation of a pipeline corridor(s) from potential ports to WSI before the optimal routes are compromised by competing development activity

The Infrastructure NSW State Infrastructure Strategy 2018-2038 recommends that NSW plans and protects the corridors and precincts necessary for future transport, freight, logistics, energy and communications facilities, and infrastructure in the Western Parkland City. This approach aligns with the Infrastructure Australia 2016 recommendation to “ensure a route for the pipeline is available when required.”¹³

To assist it in its role, TfNSW has undertaken a review of pipeline route options, narrowing route options to three: from the north and south and from Port Botany. An underwritten, early public build would deliver community and operational benefits as a national asset, adding to WSI’s value with increased reliability, capacity, resilience, and competitiveness.

In addition to addressing the Pipelines Act, EP&A Act and Pipelines Regulations 2013, NSW would secure a pipeline corridor with its gazettal. Property acquisition would be governed by the Land Acquisition Act.

The NSW government has partnered with WSI to seek an EOI for potential fuel supply companies to instal an open access fuel pipeline(s), predominantly using existing transport corridors.

6.2 Governments should periodically formally consider whether the broader socioeconomic benefits of a fuel pipeline create a case to incentivise construction

Recognising the socioeconomic and environmental benefits to Western Sydney and the wider region, this may encourage government incentivising investment in a fuel pipeline. While a pipeline may not reach commercial feasibility for the private sector until the mid-2030s, early public expenditure on infrastructure extending an existing fuel pipeline would deliver not only community benefits – simply, fuel trucks off roads – but also increased resilience and reliability to the operation of WSI as a national asset.

Governments are in the best position to determine the net economic, environmental, and social benefits to Western Sydney and Sydney more broadly of a fuel pipeline. It is recommended that governments establish a periodic review framework to quantify these benefits to inform consideration of construction incentives.

6.3 Any fuel pipeline built to Western Sydney should be open access

To maximise pipeline use by all industry participants, the pipeline will need to be connected to and accessible by all fuel terminals in the Sydney basin at a fair and reasonable price under a non-discriminatory pricing arrangement. The Productivity Commission, in considering competition in markets to supply aviation fuel, referred to this type of access as “open access”¹⁴.

While parts of the current fuel pipeline network in Sydney could be characterised as open access, other parts could be regarded as restricted access on the basis that access is limited to owners and their supply partners. The most efficient pipeline system to supply WSI in the long term would be open access from port to airport. This represents a challenge that is likely to require a multistage procurement initiative and industry negotiation.



¹³ <https://www.infrastructureaustralia.gov.au/map/corridor-preservation-western-sydney-airport-fuel-pipeline>

¹⁴ <https://www.pc.gov.au/inquiries/completed/airports-2019/report>, pp 266-287

Conclusion

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The 2017 report found a pipeline to WSI would potentially be economical by 2034 with a demand reaching 2.5ML per day, subject to airline demand fluctuations. Until then, and in line with the Airport Plan for WSI, fuel will be delivered to the airport's fuel farm by truck.

While the number of fuel trucks needed to serve the airport will be low compared to the number of heavy vehicles on the road, particularly in the airport's initial operating years, there will be some environmental, congestion and other impacts experienced by communities.

Considering the feasibility of building a fuel pipeline based solely on the commerciality of supply to WSI is too narrow. It fails to recognise a pipeline's benefits to the airport's long-term value, and the increasing non-aviation fuel needs of the growing region. It also overlooks the broader socioeconomic and environmental benefits of taking trucks off the road that are delivering fuel to the airport and to distribution points across Western Sydney region.

Initial engagement with the market indicates industry interest in being part of Western Sydney's fuel pipeline solution. Leveraging the contestability this interest creates, while considering the case for governments to incentivise the construction of the fuel pipeline could bring the feasibility forward.


There is also the possibility for the airport's owners to incentivise or fund the construction of the pipeline, recognising the commercial disadvantage applied to WSI by the delivery of aviation fuel by truck. This is a disadvantage that will become more significant as the airport's aviation activity increases. Eliminating this disadvantage would enhance the long-term value of the asset.


Irrespective of when a fuel pipeline is constructed, who delivers it and the financing approach, it is important that it be delivered under open access arrangement to optimise competition and commercial outcomes. Increasing focus on aviation's sustainability by the Australian Government, WSI and the industry more broadly also dictates that the pipeline must be capable of delivering the increasing volumes of SAF that will enable improved environmental outcomes in coming decades.


Given the growth of WSI and the Western Sydney region, construction of a fuel pipeline is inevitable. A gateway enabler is the engagement with industry for facilitating the use of one or more corridors between fuel ports and distribution centres to Sydney's west by the NSW Government. This action is being carried out now with urgency and priority.




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