



# Response to the Aviation Green Paper

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Swinburne University of Technology

[swinburne.edu.au](https://www.swinburne.edu.au)

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# Executive Summary

Swinburne University of Technology strongly supports the Commonwealth Government's initiative to chart national aviation policy for the future and has a spectrum of capabilities to support policy development and implementation. Swinburne strongly urges the government to act now on key policy reforms as outlined below including:

- Fit-for-purpose regulatory reform that can adapt to advance in technology;
- Greater support to grow sovereign manufacturing capabilities; and,
- Innovative approach to retain and grow the aviation workforce;

As the aviation industry evolves and transitions to the clean economy we must embrace new technology, digital advancements, advanced manufacturing and Industry 4.0 in order to cement Australia's position as a global leader in the aerospace industry.

**A summary of Swinburne's recommendations to the Green Paper is as follows:**

- Establishment of a national Cooperative Research Centre (CRC) focused on Advanced Air Mobility (AAM) to bring together the government, industry and research to integrate innovation in all aspects of advanced air mobility – air vehicles, air operations and ground operations.
- Including alternative propulsion and fuels, autonomous and remotely piloted air vehicles, hypersonics as strategic technologies for the likely policy directions out to 2050.
- For Australia to remain competitive internationally and grow our domestic industry, a stronger focus on education, training and talent attraction is needed to address labour shortages. This must be a priority in the short term as we plan out to 2050.
- Stronger policy focus on disability access be prioritised and accelerated.
- Greater investment in regional and remote aviation infrastructure and operations to maintain connectivity, services, access and equity across Australia.
- Continuing investment in planned sovereign research, trials and commercialisation to grow the aviation sector.
- Australia's aviation sector implements initiatives to achieve national net zero goals.
- The establishment of national sustainable aviation fuels capability for domestic refinement.
- Greater funding for industry and universities to develop and commercialise technology towards net zero.
- Policy development in sustainability and viability of regional airports, especially those in remote areas supporting closed off communities focusing on new technology regeneration such as vertiports and resilient infrastructure.
- Increased investment in development, pilot and trial of emerging technologies, particularly Advanced Air Mobility to contribute to improved efficiency and amenity of general aviation operations.
- Swinburne agrees with the principle of fit-for-purpose agencies and regulations.
- That innovative policy and approaches be implemented to address workforce retention, retraining and attraction including workplace reform for shift workers and integration of a national operations network.

# Introduction

Swinburne University of Technology congratulates the Commonwealth Government on its timely initiative to produce an Aviation White Paper to provide policy guidance on aviation directions out to 2050, and Swinburne thanks the government for the publication of the Green Paper and the opportunity to comment.

Swinburne has been involved in Aviation for almost 30 years, and in recent times has increased both the scope and the depth of its research and teaching to include aviation, aerospace and space activities as strategic initiatives. In particular, its establishment in 2021 of industry-led research Hubs in Aerospace, Hydrogen and Medical Technologies all have direct relevance to key Green Paper issues in emerging aviation technologies, net zero, and disability access.

The primary focus of Swinburne's comments are on emerging aviation technologies, particularly those involving Advanced Air Mobility (AAM) with its use of zero emission, battery and hydrogen propulsion, runway-independent, vertical take-off and landing capabilities and autonomous operations.

These factors provide potential for AAM to provide disruptive aviation transportation particularly in regional and remote Australia, also allowing Australia to become a provider of AAM products and services based on existing aerospace and aviation research, manufacturing, operations and support capabilities.

Swinburne is already working to achieve these goals and its current activities are potential precursors to an active role in supporting DITRDCA in the finalisation of the White Paper and its implementation.

The structure of this Response is directed to those chapters of the Green Paper relating to areas of Swinburne expertise and experience. Each chapter response contains two elements: first, Swinburne's comments on the Green Paper content; second, an outline of Swinburne's ability to assist in the finalisation and implementation of the White Paper policies. The next section of this Response exclusively provides an overview of Swinburne's diverse aviation and aerospace capabilities relevant to our credentials and expertise in responding to the Green Paper.

## Swinburne strategic involvement in Aviation and Aerospace

Swinburne has aerospace, space and aviation as University Strategic Goals and has demonstrated an ability to integrate expertise from a wide spectrum of groups within the University. It has also been recognised for its ability to link researchers and industry in outcome-focused applied research.

**Aerostructures Innovation Research Hub (AIR Hub):** Swinburne's AIR Hub is a recognised national leader in research into emerging aviation and aerospace technologies including Advanced Air Mobility, zero emission propulsion and future regional air operations. Industry-led, the AIR Hub works with national and international partners in research, industry and all levels of government delivering high technology readiness level (TRL), engineering translation research for real industry challenges.

**Department of Aviation:** A leader in aviation training for the past 28 years, Swinburne's Department of Aviation offers courses in flight operations, aviation management, human factors and aviation safety.

**Victorian Hydrogen Hub:** Led by Swinburne University of Technology in partnership with CSIRO and Germany's ARENA2036 factory, the Victorian Hydrogen Hub (VH2) brings together researchers, industry partners and business to drive the implementation of the hydrogen economy.

**MedTech Vic:** Medical Technology Victoria (MedTech Vic) works to support and connect individuals and organisations across the assistive and medical device sector, ensuring rapid clinical and technical, prototyping and manufacturing of new ideas. to co-create products and services that enhance lives.

**Vocational Training:** Swinburne provides vocational education and training (VET) courses with industry and community connections preparing graduates for a new world of work, providing them with both the technical and human skills required to be successful, and also an overlay of digital skills including either customised micro-credential packages or fully accredited qualifications for an industry-wide rollout.

**Factory of the Future:** Works with industry on the development of Industry 4.0 digital transformation strategy, and the state-of-the-art Factory of the Future facility here at Swinburne allows companies to learn digitalisation technologies and explore recent advances in automation of processes.

## Response to Chapter 2 – Likely Future Directions out to 2050

Swinburne through its AIR Hub maintains a continuing monitor on research, development and commercialisation of emerging and maturing commercial and defence aerospace technologies and aviation applications. This is essentially relevant to the Supply side and Sustainability drivers in the Green Paper. From that monitoring it agrees with the general directions to 2050 with the additional comments:

### Alternative Propulsion and Fuels

This may impact earlier than currently contemplated. While the introduction of hydrogen and battery electric propulsion into mainstream airliners is not expected until the mid-2030s (e.g. Airbus ZEROe), the pace is increasing in development of small (< 30 seat) airliners and conversion of existing airline and general aviation types, up to 30 seats, with projects already under way in Australia. Swinburne is already involved in some projects. The opportunity exists for a Team Australia approach to, development and incorporation of such technologies, value adding to Australia's new energy strategies, notably hydrogen.

### Autonomous and Remotely Piloted Air Vehicles

By 2050 it is anticipated that significant sectors of domestic and international aviation will either be remotely piloted or autonomous in operation. Already in limited (mainly VFR with drones) this is anticipated during the late 2020s and early 2030s to extend to larger air vehicles, commencing with non-passenger carrying types such as freight/logistics, environmental monitoring, and aspects of emergency services. With Australia already researching trusted autonomous systems this change will generate opportunities for research and commercialisation of trusted remote or autonomous flight operating systems and flight management systems. It will also impact on certification standards, air traffic control management and skills requirements.

### Artificial Intelligence

The application of artificial intelligence to, air vehicle, design development, manufacture and operations is already accelerating and to maintain a position on the supply side of aviation, Australia needs to adapt generic AI research to aerospace and aviation needs. This will lead to a need for new generation skills development.

### Supersonic Civil Aircraft

Progress on potential supersonic aircraft projects of supersonic flight over land has slowed recently with only one startup project remaining and delays to the NASA Lockheed Martin Quiet SST research. While Swinburne is maintaining a watching brief, it does not assess serious activity until into the 2030s.

### Hypersonic Vehicles

While much of the current activity is in military air vehicles, the rate of progress in potential dual-use technologies is accelerating, including Australian involvement in AUKUS Pillar II and the Hypersonix project startup. Counter-intuitively, civil applications of specialised hypersonic air vehicles may become Australian opportunities before supersonic projects.

### Sustainable Aviation Fuel (SAF)

Australia is positioned well to leverage the advantages of Sustainable Aviation Fuels, yet is trailing substantially behind Europe and US in our investment in critical up and downstream processing to produce SAF in country. A key driver to Australia's "catch-up" could be the Hydrogen economy and the use of hydrogen in SAF production.

Swinburne has already provided future aviation strategic analysis to CASA and has the resources and database to provide informed advice, either systematically or ad hoc, particularly in the areas of:

- Advanced Air Mobility
- Regional and Remote operations
- Alternative propulsion
- Progress to Net Zero
- Aviation skills development

Swinburne makes the following recommendations in response to Chapter 2 – Likely Future Directions out to 2050:

- Including alternative propulsion and fuels, autonomous and remotely piloted air vehicles, hypersonics as strategic technologies for the likely policy directions out to 2050.
- For Australia to remain competitive internationally and grow our domestic industry focus on education, training and talent attraction to address labour shortages must be a priority in the short term as we plan out to 2050.

## Response to Chapter 3 – Airlines, Airports, Passengers, Disability Access

Swinburne's response to this chapter is limited to Section 3.3 Disability Access.

Swinburne is in agreement with the Green Paper key issues that people with disabilities face barriers to accessing travel and that air travel has unique safety and security requirements which pose challenges.

From preliminary research, Swinburne views the challenges as being particularly evident in smaller regional and remote airports and air operations, and that these challenges will increase if regional aviation operations continue to decline. Increased use of autonomous/robotic technologies and artificial intelligence are likely to provide improved access while being less labour intensive and more cost effective.

Swinburne recommends that the Commonwealth Government undertakes a review of disability access requirements and opportunities to improve disability access across the aviation sector.

Swinburne's primary initiative to support disability access is via Medical Technology Victoria (MedTechVic). MedTechVic works to support and connect individuals and organisations across the assistive and medical device sector in Victoria, ensuring rapid clinical and technical, prototyping and manufacturing of new ideas. Its goal is to bring together individuals with lived disability, their carers, allied health and clinical professionals, engineers, designers and industry to co-create products and services that enhance lives.

MedTechVic is currently launching a research program to identify and work to resolve aviation-related disability access issues. This will address both existing aviation operations and emerging technologies such as Advanced Air Mobility.

**Swinburne makes the following recommendations in response to Chapter 3 – Airlines, Airports, Passengers, Disability Access:**

- Stronger policy focus on disability access be prioritised and accelerated.

## **Response to Chapter 4 – Regional and Remote RPT Aviation Services**

Swinburne agrees with the key issues identified in the Aviation Green Paper for regional and remote air services. Smaller population centres in regional Australia are not commercially viable markets for regular passenger transport air services by commercial aircraft operators, resulting in a continuing decline in the number of operators, the number of routes and frequency of operations. Nor do they generate significant revenue for airports. They also need assistance in taking advantage of potential emerging aviation technologies.

Recognising these issues, Swinburne has been collaborating with research partners such as Federation University and Charles Darwin University and with regional/remote stakeholders including state, territory and local governments and the Regional Aviation Association with a particular emphasis on the potential benefits of operating advanced air mobility air vehicles in place of ageing, oversized current regional aircraft.

With funding from the Victorian Government, Swinburne's AIR Hub is working with industry partners and Latrobe City to use eVTOL uncrewed air vehicles as surrogates to undertake regional flight trials to gain and share an early understanding of the operational and regulatory opportunities and issues of regional AAM operations

This includes the contribution to net zero of utilising alternative propulsion sources including hydrogen. With funding from the DITRDCA Emerging Aviation Technology Fund, AIR Hub has converted an uncrewed air vehicle to hydrogen propulsion and is undertaking regional trials to optimise zero emission operations in Australian conditions.

In addition, Swinburne has been assessing the potential economic potential of regional industry involvement in the manufacture and supply of emerging technology air vehicles, ground infrastructure, operating services and skills development.

Supplemental comments re Regional and Remote non-RPT services are contained in the Response to Chapter 7 General Aviation.

**Swinburne makes the following recommendations in response to Chapter 4 – Regional and Remote RPT Aviation Services**

- Greater investment in regional and remote aviation infrastructure and operations to maintain connectivity, services, access and equity across Australia.

## Response to Chapter 5 – Maximising aviation’s contribution to net zero

Swinburne agrees with the guiding principle in the Aviation Green Paper that aviation must comprehensively identify and implement means to achieve its share of decarbonisation to reach national and international goals.

Swinburne is already working actively to assist in achieving this goal through its AIR Hub working primarily on aviation air vehicles, propulsion and aerostructures and its Victorian Hydrogen Hub (JV with CSIRO). AIR Hub is working with partners, particularly startups and SMEs, on design of battery electric and hydrogen powered air vehicles, including undertaking flight trials of Australia’s first hydrogen powered eVTOL UAS (see Response to Chapter 4). The Victorian Hydrogen Hub is working primarily on ground infrastructure for generation, transportation and storage of hydrogen for aircraft propulsion and airport ground equipment.

**Swinburne’s future contributions to achieving net zero aviation goals include:**

**eVTOL air vehicle development:** Swinburne is already flying an eVTOL UAS supported by an EATP Grant and is proposing to meet the goal of EATP Rd 2 by undertaking in conjunction with Charles Darwin University long range flights of a hydrogen eVTOL into remote Northern Territory indigenous communities. Early flight trials indicate sensitivity to hot and humid environments. An indirect net zero benefit of eVTOL air vehicles operating into towns and communities without airports will be the replacement of significantly emitting road transport.

**Aerostructures development and manufacturing:** As a contribution to aerospace decarbonisation, AIR Hub is working with industry partners on approaches to aircraft design, testing and manufacture which will reduce the energy demands of these activities and also reduce the in-service energy demands for maintenance. It is also planning to work collaboratively with industry partners on end-of-service life approaches to dismantling, reliving, repurposing and recycling aircraft materials and equipment.

**Low and zero emission propulsion:** In addition to the initiatives involving eVTOL air vehicles, Swinburne’s AIR Hub is working with industry partners on the development of battery electric and hydrogen propulsion conversion of currently used general aviation and regional airline aircraft

**Airport and Vertiport Infrastructure:** The Victorian Hydrogen Hub is continuing its initiatives including mobile hydrogen storage and refuelling systems and with CSIRO and international partner is working on innovative modes of hydrogen storage to increase flight distances for hydrogen powered aircraft.

**Swinburne makes the following recommendations in response to Chapter 5 – Maximising aviation’s contribution to net zero:**

- Continuing investment of planned sovereign research, trials and commercialisation in country to grow the industry.
- Australia’s aviation sector implements initiatives to achieve national net zero goals.
- Swinburne recommends the establishment of national sustainable aviation fuels capability for domestic refinement.

- Swinburne strongly recommends greater funding for industry and universities to develop and commercialise technology towards net zero.

## Response to Chapter 6 – Airport Development

While Swinburne AIR Hub and Hydrogen Hub research has potential for application to existing airports, both urban and regional, the primary focus of this response is on the development of ground infrastructure for Advanced Air Mobility air vehicles. The introduction of these into the Australian air transportation system provides potential for low-cost facilities suitable for towns and communities which do not have traditional airports.

A secondary response will deal with noise from new technology such as AAM eVTOL air vehicles.

Recent terminology from CASA is now separating AAM Vertiports into two categories:

**Vertihub:** a vertiport with infrastructure for maintenance, repair, fuelling, and parking spaces for storage of VCA.

**Vertistop:** a vertiport intended for take-off and landing to drop off or pick up passengers or cargo, but where there are no facilities for fuelling, defueling, scheduled maintenance, scheduled repairs, or storage of aircraft.

It is anticipated that in regional and remote operations, Vertihubs will be primarily sited in larger towns, particularly those with regional airline connections to capital cities or at the primary bases of AAM operators. Vertistops are expected to be typical of smaller communities.

Swinburne's AIR Hub, supported by Hydrogen Hub and industry partners has been working with stakeholders to define the numerous criteria for location and development of vertiports in regional and remote environments. In addition to location and community considerations, this includes consideration of infrastructure for safety and security, passenger and freight handling, air communications, refuelling/recharging, line maintenance and aircraft parking.

### Noise from AAM Air Vehicles

Swinburne recognises the importance of aircraft, noise. While no noise measurements have yet been taken from AAM air vehicles in Australia, preliminary results from testing undertaken in the USA by NASA using a Joby eVTOL, typical of the category indicate noise levels well below helicopters and fixed wing aircraft of comparable size.

NASA engineers confirmed the acoustic profile of the aircraft during take-off and landing was below 65 dBA at a distance of 330 ft (100 m) from the flight path. Landing configuration was the loudest of the profiles, still weighing in below 65 dBA at 330 ft (100 m), a distance consistent with typical community proximity to the aircraft, according to NASA. A 65 dBA sound level is consistent with that of a normal conversation or a bustling business office.

Subject to confirmation, this indicates that introduction of AAM will reduce potential community noise.

Swinburne has the experience and expertise to contribute to various aspects of Vertiport policy development, regulations and implementation.

**Vertihubs:** Swinburne's AIR Hub with partners will continue to research location, specification and infrastructure of larger Vertihubs, including at Latrobe Regional Airport under the

Victorian Government funded Regional AAM Surrogate Trials. In addition to location and specification, this will include consideration of the integration of AAM facilities into an existing regional airport. .

**Vertistops:** Swinburne's AIR Hub is teamed with Charles Darwin University to investigate infrastructure and operations of Vertistops in remote NT indigenous communities, including proposed long duration flights under proposed EATP Round 2 Grant.

**Refuelling and Recharging:** Working with CDU and regional airline and charter operators, AIR Hub and Hydrogen Hub propose to Continue its EATP Hydrogen to the Skies project will include identification of options for the provision of hydrogen for propulsion at regional locations, providing this to CASA and other stakeholders:

**Prototype Vertiport:** Air Hub has been in dialogue with Latrobe City and industry partners about prototyping a vertiport at Latrobe regional Airport to gain knowledge about operating issues including such factors as high power electrical requirements for fast battery recharging.

**Swinburne makes the following recommendations in response to Chapter 6 – Airport Development:**

- Policy development in sustainability and viability of regional airports, especially those in remote areas supporting closed off communities focusing on new technology regeneration such as vertiports and resilient infrastructure.
- Increased investment in development, pilot and trial of emerging technologies, particularly Advanced Air Mobility to contribute to improved efficiency and amenity of general aviation operations.

## Response to Chapter 7 – General Aviation

As stated in the Green Paper, GA is a diverse sector that plays a variety of important roles in aviation including servicing regional communities, delivering education and health services, regional freight and transport, tourism, recreation, agricultural mustering and spraying, instructional flying, sport and pleasure flying, and emergency services.

Swinburne's comments in reference to General Aviation are limited to those sectors in which it has expertise and experience including RPT and charter servicing of regional communities, delivering education and health services, regional freight and transport, instructional flying and emergency services. In these areas, Swinburne agrees with the Green Paper regarding potential for emerging technologies, particularly AAM to contribute to the efficiency and amenity of aviation operations.

In addition, Swinburne is working with industry on the conversion of existing GA aircraft to battery electric and hydrogen propulsion.

These GA activities are common or complementary to the activities Swinburne has listed in Section 4 Regional RPT Operations.

Swinburne, particularly its AIR Hub, is working with industry partners on AAM for passenger, freight, aeromedical and emergency roles. The activity includes digitised design, automated manufacturing, test and trials, air operations and air traffic management.

Swinburne has already committed in principle to the sharing of the outcomes of these activities with CASA and other relevant government policy, certification, regulatory and operating entities.

## Response to Chapter 8 – fit-for-purpose agencies and regulations

Swinburne's responses to this chapter relate primarily to the development of certification standards, regulations and other approvals as they apply to emerging aviation technologies, particularly AAM.

While agreeing with the fit-for-purpose principle, in Advanced Air Mobility, it is Swinburne's view that much research and development is still required to assure safe, efficient and economic operating of AAM. Because Australia's initial application of AAM is expected to be in regional and remote environments, this requires development of standards and processes for lower density operating in mainly uncontrolled airspace, something less considered internationally where the primary focus has been on urban operations.

As outlined in responses to other chapters, Swinburne with industry and government partners have been undertaking tests and trials which will continue to provide data on air operating procedures, air traffic management, environmental impacts and community responses.

It will continue to share these outcomes with relevant stakeholders, including recommendations for further research and trials to support AAM introduction to Australian regions and remote communities.

**Swinburne makes the following recommendations in response to Chapter 8 – fit-for-purpose agencies and regulations:**

- Swinburne agrees with the principle of fit-for-purpose agencies and regulations however it needs to be is agile to evolve with new and evolving technologies.

## Response to Chapter 9 – Emerging Aviation Technologies

Emerging Aviation Technologies is the area of the Green Paper for which Swinburne's recent and current initiatives provide strong alignment with the views expressed in the Aviation Green Paper.

**Aerostructures Innovation Research Hub:** formed in 2021 this has rapidly become recognised as a leading aerospace research entity with strong industry links, undertaking research into aviation aerostructures and comprehensive aspects of Advanced Air Mobility.

**Advanced Air Mobility Cooperative Research Centre:** A current initiative to lead a bid for a national Round 35 Cooperative Research Centre to provide proactive research into the introduction of AAM operations into Australia with maximised sovereign content.

Swinburne strongly agrees with the Green Paper position that emerging aviation technology is expected to transform the aviation sector, and while Swinburne agrees that the timing and pace of deployment are not certain, its close monitoring of Australian and international initiatives have provided realistic bands of timescale which it has shared with partners to plan research priorities.

It also agrees with the Green Paper that the latest developments in aircraft technology, particularly drones and AAM, have the potential to provide opportunities for Australia to become a leader in the sector, unlocking significant productivity benefits while contributing to a reduction in carbon emissions

and potentially reducing infrastructure costs through intermodal shifts. Swinburne has led a series of research initiatives to promote these goals, including research into AAM performance, surrogate eVTOL trials to gain understandings of future AAM mission profiles and issues, zero emission technology integration and testing, air operations, air traffic management, advanced manufacturing and sustainability.

It also agrees that it is essential the government policy and industry support settings are targeted to encourage emerging aviation technology adoption in Australia so as to exploit the opportunities rapid technological change present for Australian jobs and growth, but also manage safety, security and community concerns. Swinburne is already working with all three levels of government to achieve this goal.

Swinburne is well advanced in assembling a nationwide collaboration of researchers, industry, governments and representative associations to bid for a Round 25 CRC which would commence multi-phase strategic research and commercialisation in an integrated approach to maximising AAM benefits to Australia both in terms of future operations, particularly regional and remote, and by developing AAM products and services for Australian and Asia-Pacific applications.

The CRC would have three principal Programs:

- Air Vehicles
- Air Operations
- Ground Operations

It would have the following themes:

- Digitisation
- Test and evaluation

It would have the following enablers:

- Building on existing airframe capabilities
- Alternative Propulsion
- Sovereignisation

Preliminary discussions with certification and regulatory authorities have been positive, recognising the AAM CRC as providing a vehicle of collaborative research and trials to test future regulatory and certification approaches.

**Swinburne makes the following recommendations in response to Chapter 9 – Emerging Aviation Technologies**

- Establishment of a national Cooperative Research Centre (CRC) focused on AAM to bring together the government, industry and research to integrate innovation in all aspects of advanced air mobility – air vehicles, air operations and ground operations.

## Response to Chapter 10 – Future industry workforce

Swinburne agrees with the perspective of the Aviation Green Paper and industry respondent that the Australian aviation sector is struggling to attract a range of personnel, that new skills will be required

to produce, operate and maintain new aviation technology and fuels, and that innovative approaches need to be developed to training and reskilling.

As a significant provider of university and vocational education and training, Swinburne is already involved in Aviation training including pilot training via its Aviation department and is actively planning new skilling initiative ins areas such as Advanced Air Mobility.

Swinburne Edge is implementing new approaches to skilling including use of advanced skilling modes to deliver micro-credentials.

### **Swinburne's continuing and potential contribution to Workforce Skilling**

The Swinburne strategic focus for future education and training is to attract and prepare students for careers in an industry utilising emerging technologies including digitisation, automation, and artificial intelligence with an emphasis on customer needs and environmental sustainability.

Swinburne can bring synergy to the development of education and training approaches which combines the expertise and resources of :

- AIR Hub in emerging aviation technologies
- Department of Aviation in delivering aviation courses
- Swinburne Edge in new approaches to skilling
- Vocational training including links with other vocational entities

Swinburne is also developing innovative approaches to attract students to future aviation-oriented careers, including offering free UAS remote pilot training to RPAS standard to all Swinburne students regardless of discipline.

**Swinburne makes the following recommendations in response to Chapter 10 – Future industry workforce:**

- That innovative policy and approaches be implemented to address workforce retention, retraining and attraction including workplace reform for shift workers and integration of a national operations network.

## Contacts

Swinburne University of Technology would welcome the opportunity for dialogue to amplify and clarify this response and can provide additional information and subject experts on any of the areas of expertise identified in this response.

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