



# Designing for enriched educational experiences.

Contact us to discuss your project needs:  
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Nearly 4 million\* students spend more time at school than anywhere else outside their own home.

So how do we design educational spaces that offer a healthy learning environment and are optimised to deliver great learning outcomes for students?

AWS believes healthy learning environments are critical for successful education, and window and door systems have a significant role to play in the construction of healthy buildings.

\* Excludes Tertiary Education

AWS has Australian designed, tested and manufactured window and door solutions to deliver optimal learning outcomes in educational facilities.

Contact us today to find the right products that comply with Department of Education Guidelines.

# 6 Core Elements for designing better education environments.

Designing healthy learning environments is critical for promoting successful educational outcomes. Choosing the right window and door solution plays a significant role in achieving this outcome.

There are 6 Core Elements which are directly impacted by the right window and door selection in your next project.

- Natural Light
- Comfort
- Noise
- Ventilation
- Accessibility
- Durability



# Natural Light

Independent studies have shown that natural light improves student's overall health and wellbeing and can also significantly improve academic performance through better concentration.

One study<sup>1</sup> of 2,387 students conducted by the Sorbonne University, concluded that academic performance can increase by up to 15% when students work in classrooms with larger windows due to the exposure to increased daylight, and a better view to the outside world.

Large windows, while facilitating large areas of natural light, must also be able to withstand varying weather conditions including wind and water penetration. The National Construction Code (NCC) also calls for energy ratings on all new builds. Thermally efficient framing systems combined with the right glass selection will ensure a light filled, energy efficient environment that is built to last.

## DID YOU KNOW?

The **704iD Internal Sliding Door** with recessed sill provides flexibility and versatility in separating or opening classrooms up, whilst allowing more natural light to pass through. A functional and more stylish alternative to a standard classroom partition.



# Comfort

Thermal comfort is a priority for educational projects as it can impact student's health, wellbeing, and academic performance. A study by Zeiler and Boxem<sup>2</sup> found that as temperature and humidity increase, students report greater physical discomfort and their levels of achievement and task performance deteriorate.

High classroom temperatures have also been associated with headaches, eye, ear, nose and

throat symptoms. Increased temperatures can increase humidity levels which promote mould growth, which in turn can lead to respiratory problems.

Conversely, if students are too cold, their discomfort leads to restlessness, irritability and becoming distracted. Improving thermal comfort is crucial to designing optimal student learning spaces.

Up to 40%<sup>3</sup> of a buildings internal heating and cooling can be lost through the windows and doors so choosing an energy efficient system that meets your design requirements is paramount. Thermally broken framing alone can reduce this energy loss by up to 33%. Combining with an optimised glazing solution and correct installation will ensure you have a comfortable learning environment year-round.

## DID YOU KNOW?

ThermalHEART™ is Australia's largest range of Australian made, thermally broken window and door suites delivering up to a 33% increase in energy efficiency compared to traditional aluminium frames. These high-performance systems insulate the interior and exterior sections of the frame, reducing the thermal conductivity often found in traditional aluminium windows and doors. ThermalHEART™ frames can accept a wide range of glazing options to maximise thermal comfort and energy performance.

# Noise

Learning environments are notoriously noisy, which can have negative effects on health, mood and learning. An acoustically optimised space encourages quality dialogue and minimal distraction from outside. It should allow students to work effectively together in groups, and when required, be adaptable for multi-use applications such as exams, private study or musical performances.

Traditional single glazed windows and doors provide minimal acoustic dampening. Optimised acoustic glazing includes double glazed laminate glass, with panels spaced apart according to the types of sound waves you are seeking to insulate. Vehicle traffic and playground noise will have different acoustic properties to a music room or metal work shop so will need a different framing and glazing configuration to meet your requirements.

## DID YOU KNOW?

AWS offer a range of innovative and purposely designed acoustic window and door systems to minimise noise transfer. High performance acoustics are achieved through consultation with acoustic engineers to assess the environment and determine the right glass selection to achieve the desired acoustic rating.



# Ventilation

Poor indoor air quality can not only seriously inhibit students' concentration and overall performance but can also lead to increased absenteeism due to illness. Adequate ventilation is therefore imperative for healthy classroom design to help students flourish.

A significant body of research provides compelling evidence to support the findings that student performance improvements as high as 15%<sup>4</sup> can be achieved with increased ventilation rates.

Whilst operable windows are an obvious means to allowing fresh air into classrooms, research conducted in 2015 by Massey University tells us that manually operated classroom windows are rarely opened.

Therefore, identifying passive ventilation systems that allow the transfer of fresh air into and out of the classroom, without compromising building security and weather performance will add a significant improvement to the quality of air and impact on student learning.

## DID YOU KNOW?

AWS offer a unique and market leading solution to this challenge in the form of the AWS Trickle Vent. This integrated trickle ventilation system delivers passive ventilation of natural air into and out of the building without external power or manual intervention. This system is ideal for infrequently used spaces and those requiring continuous air cleansing.

The Ventus™ louvre gallery is another option allowing passive airflow. It minimises the requirements for air conditioning or heating and maximises natural ventilation in educational spaces to improve the health and well-being of students.

# Accessibility

Accessibility is a key design consideration to ensure all students have the opportunity to participate and learn.

Providing accessibility and mobility assistance throughout the learning environment encourages students to become more independent, offering better opportunities for learning and socialising.

Reducing physical barriers such as elevated door sills, stairs and dexterity limiting utilities such as door handles will provide students with easier social inclusion, increased mobility and often better motivation in the learning environment.

While reducing doors sills is a key design consideration for wheelchair access, weather and energy performance must also be maintained. Flush or ramped thresholds provide disability compliant access, but consideration must also be given to water drainage solutions for external sills.

## **DID YOU KNOW?**

The **704iD Internal Sliding Door** with recessed sill reduces physical barriers and improves accessibility for all students in a safe environment.

## **DID YOU KNOW?**

Flush, ramped or zero thresholds provide disability compliant solutions for learning environments. AWS offers a wide range of sliding and hinged door systems which comply with the Australian Standard 1428.1 for disability access and meet the requirements of the Disability Discrimination Act (1992) for accessibility.

**AWS FlowTHRU™** is Australia's only fully tested, integrated threshold drainage solution for AWS windows and doors. We also offer a range of hardware solutions for dexterity limited users which meet Australia's Liveable Housing Standards.

# Durability



Windows and doors that are specified for learning environment applications need to have high durability. They need to last many years with little maintenance required. Aluminium possesses a high strength to weight ratio together with being highly durable and corrosion resistant.

Hardware needs to be commercial quality and able to withstand heavy usage. It also needs to be easily replaced if unforeseen failures occur. The long-term benefits of stainless steel make it a preferred option for hardware in high traffic areas.

## **DID YOU KNOW?**

AWS offer a range of fully tested, commercial grade systems designed to meet the high traffic, and use frequency which is typical in education facilities. Project specific care and maintenance guides and a national fabricator network ensure the long-term maintenance of AWS systems is hassle free.

# Recommended Systems



**SERIES 424**  
Double Glazed CentreGLAZE™ 102mm Framing



**SERIES 626**  
Double Glazed FrontGLAZE™ 150mm Framing



**SERIES 852S**  
Commerical ThermalHEART™  
Thermally Broken Sliding Door



**SERIES 411**  
ViewMASTER™ Top Hung Bi-Fold Door

## Other Systems Available

**SERIES 704**  
SlideMASTER™ Sliding Door

**SERIES 400/50**  
Single Glazed CentreGLAZE™ 102mm Framing with Commercial Door

**SERIES 704iD**  
SlideMASTER™ Internal Sliding Door

**SERIES 424/52**  
Double Glazed CentreGLAZE™ 102mm Framing with Commercial Door

[VIEW ON WEB](#)

**SERIES 852H**  
ThermalHEART™ Commercial Hinged Door

TOP LEFT > Architect: Munns Sly Moore Architects & Williams Boag Architects. Photography: Geoff Comfort.

TOP RIGHT > Architect: MGS Architects. Photography: Glenn Hester.

BOTTOM LEFT > Architect: WMK Architecture.

BOTTOM RIGHT > Architect: Jackson Teece Architecture. Photography: Simon Hughes Photography.

# Projects

## South Metropolitan TAFE



Not long ago, you could be forgiven for being unaware of the TAFE campus in Murdoc WA. It was, after all, a fairly non-descript facility, resolutely overshadowed by its near neighbour, Murdoc University. Enter the architects at Armstrong Parkin who have transformed South Metropolitan TAFE into a show-stopping building that has the whole precinct talking.

## Gungahlin College



The face of Australian education is changing. Across the country, many students and teachers spend their days in badly designed classrooms, with little access to daylight, and minimal indoor air quality. But when Gungahlin College, a \$72.7 million college in Canberra's north, opened its doors in February 2011, a new benchmark in green schools was set.

## WSU

Macarthur Clinical School



Resurrected from its previous location in a stuffy hospital basement, Western Sydney University's Clinical School now stands proudly at the gateway of the university precinct. The new multi-storey space combines a striking façade with glorious expanses of glass to connect students, staff and visitors with the great outdoors while providing a state-of-the-art educational environment.

## CSU Thurgoona

Learning Commons Building



Located on the University's Thurgoona campus, the site houses the campus library and a 24-hour learning hub, and demonstrates how major public facilities can reflect modern lifestyles yet have minimal impact on the local environment.

## Emmanuel College



You know you're doing something right when the kids give your new school building a nickname. Affectionately known as The Minecraft Building, the Neville Bonner AO Centre at Emmanuel College on the Gold Coast is the brainchild of HHH Architects.

## Caloundra Christian School



Designed to provide the flexibility to remove physical boundaries between learning areas when required to enhance a collaborative learning environment. Large windows ensures an abundance of natural light and a connection between spaces.

TOP LEFT > Architect: Armstrong Parkin Architects. Photography: SRH.

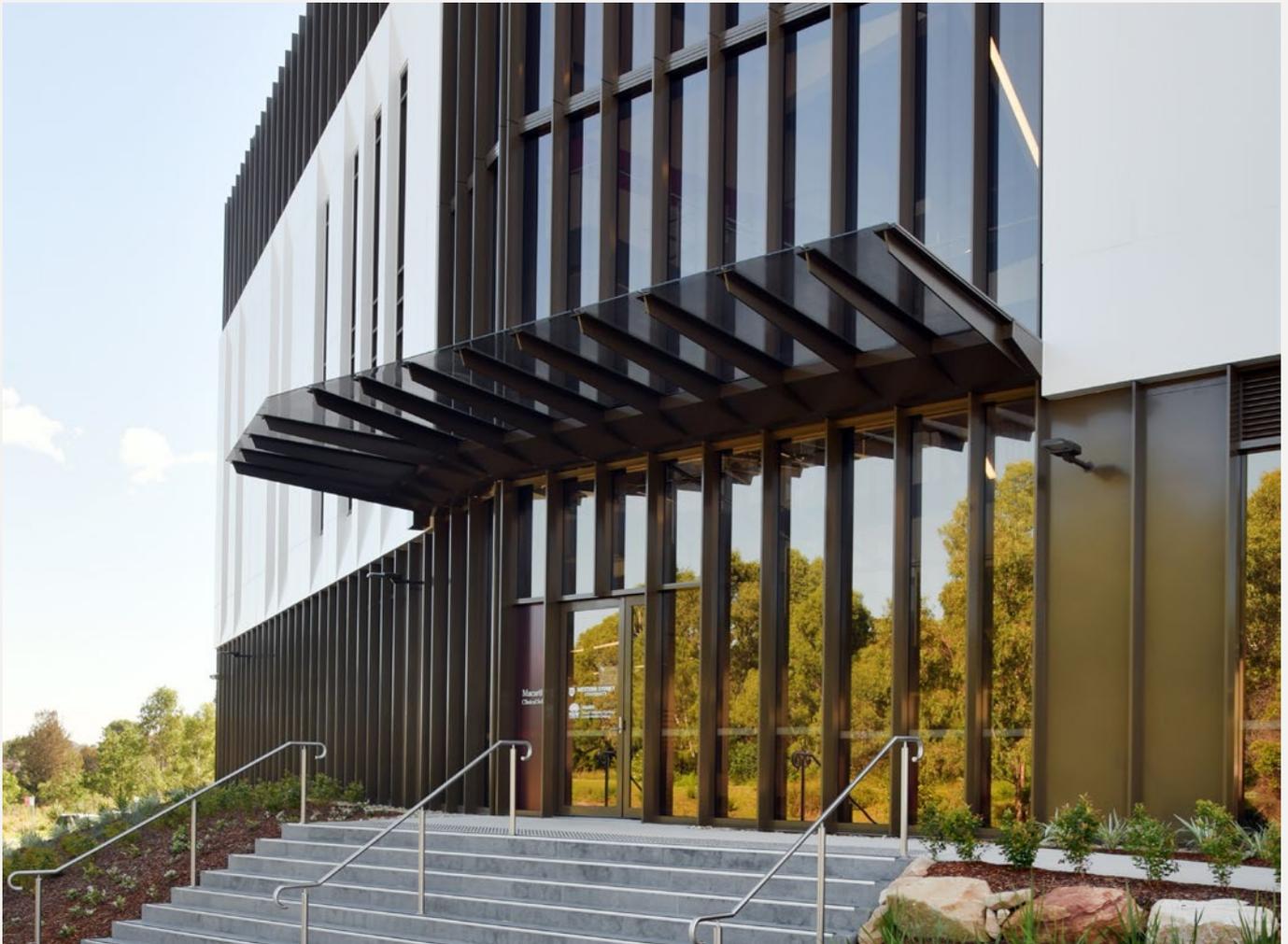
TOP MIDDLE > Architect: Munns Sly Moore Architects & Williams Boag Architects. Photography: Geoff Comfort.

TOP RIGHT > Architect: Chris Aucott, Architectus. Photographer: Marcus Clinton.

BOTTOM LEFT > Architect: JWP (Jovaras Westland Partnership).

BOTTOM MIDDLE > Architect: HHH Architects. Photography: Scott Shirley.

BOTTOM RIGHT > Architect: McLellan Bush Architects. Builder: Evansbuilt. Windows: Lifestyle Windows. Photographer: Jason Smith Photography.



Architect: Chris Aucott, Architectus. Photographer: Marcus Clinton.

## Section J

As a response to global climate trends, the demand on energy efficiency in buildings is ever increasing. As a result, the National Construction Code (NCC) issued an update in 2019 under Section J. A number of factors and substantial changes were introduced around how building energy usage is modelled.

Firstly, and perhaps most significantly, the usage patterns of a building serve as a key driver in determining its energy use. Buildings that are predominantly day-time usage, such as schools, shopping centres, offices and most retail and commercial spaces, use energy very differently to buildings which are predominantly night-time or mixed usage, such as multiple dwellings (Class 2 common areas), hospitals, and short-term accommodation.

Modelling indicates that the primary driver behind energy consumption (from a heating, cooling and lighting perspective) in buildings which have a higher proportion of day-time usage is passive solar heat gain. It stands to reason therefore that, especially in warmer climate zones, lower SHGC's will be specified in these instances, and therefore the use of solar control glass types is likely to become more predominant.

Another notable change in the methodologies of the new Section J, is that the former provisions for walls (J1) and for glazing (J2) have been combined into Part J1 with target requirements specified for the 'total façade'.

The construction of walls and glazing are a major contributing factor in the overall thermal performance of the building and,

consequently, window systems are now considered as an integral part of the total façade. The window to wall ratio, or total glazed area as a fraction of the façade, becomes a key metric in determining the overall performance of the façade.

The Performance Requirements in NCC 2019 have been largely re-defined, with specific, measurable objectives introduced to cap total energy usage for conditioned spaces to within prescribed limits depending on the building classification. **AGWA TECHNICAL FACT SHEET: NCC 2019 - SECTION J**

# speckel.

The screenshot displays the 'Specify AWS' software interface. On the left, the 'Materials' section lists 'Architectural Window Systems Designer 729' and 'Viridian ThermoTech™ - Green (U-value 2.5 / SHGC - 0.4)'. Below this, the 'Module' and 'Shading' sections are visible. A 'Concept' section shows a 'Glazing Wall Ratio' slider set at 42% and a 'Wall Total R-value' slider set at 1.49 m².K/W. In the center, a diagram of a window elevation is shown with a height of 2100 and a width of 900. On the right, the 'Results' section shows a 'Code' status of 'Passed' and three performance metrics: 'Wall-glazing U-value' at 1.83 (with a maximum of 2), 'Solar Admittance' at 0.13 (with a maximum of 0.13), and 'Wall Total R-value' at 1.49 (with a minimum of 1). A 'Download Report' button is located at the bottom right of the results section.

## Speckel for AWS

To assist specifiers with identifying compatible products which meet the demands of Section J, Speckel for AWS has been developed. Speckel for AWS is a performance based tool to quickly and easily identify the right product and glazing solution to meet the increasingly stringent energy requirements for new building design in compliance with Section J 2019, Volume 1.

With such a large range, Speckel for AWS simplifies the range of products suitable for your project and provides alternative solutions you may not have been previously aware of.

With the hard work done, simply select your AWS framing solution and preferred glazing options, set your proposed wall structure R Value and define your Window to Wall Ratio. Speckel for AWS will help you ensure the AWS system you have selected will enable Section J compliance to or provide feedback on changes you might need to make. No more arduous and challenging energy compliance calculations.

Access *Speckel for AWS* from [specifyaws.com.au](http://specifyaws.com.au)

# Support

In order to assist you in the specification process we offer a variety of technical tools, including:

- Extensive technical literature
- Specification manuals
- 2D and 3D CAD files
- Animated product illustrations
- Largest collections of WERS rated window and door systems including popular glass and frame combinations
- An experienced team of experts to help you achieve the best possible glazing options for your building project

# Options

With Australia's largest range of custom window and door systems, you will find everything you need to meet your design, style and performance requirements.

Specialising in:

- Big bold panels to maximise natural light, create more space and enrich the learning experience
- Thermally broken windows and doors to improve student comfort
- Acoustically rated windows and doors to improve tranquillity in learning spaces
- BAL40 tested windows and doors to improve safety and security of educational institutions

# Peace of Mind

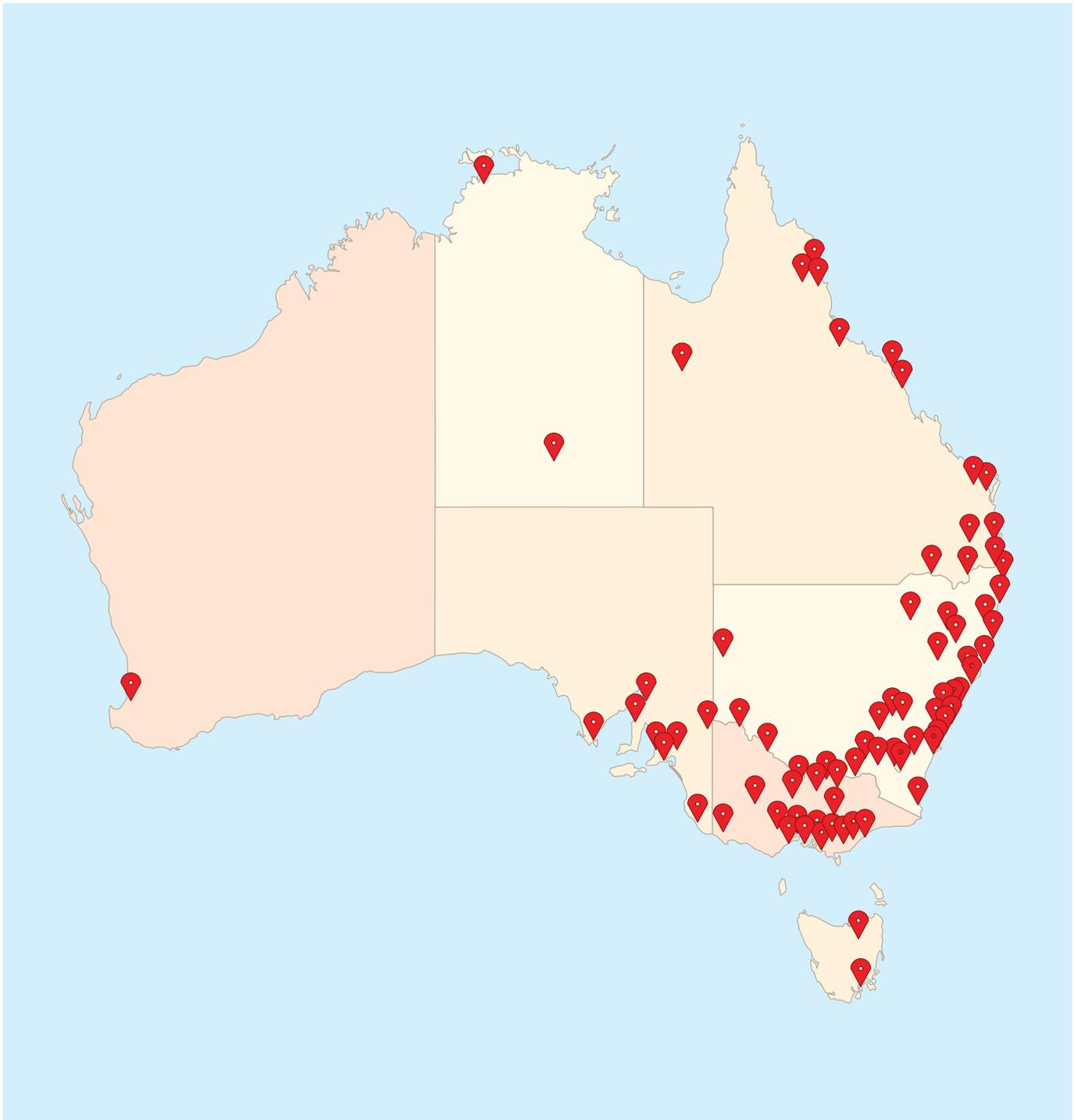
The AWS window and door testing laboratory is fully accredited and has one of the largest pressure booths in the industry. Weather conditions can be simulated through manipulation of air and water spray flow, and remote monitoring of air leakage and deflection of windows and doors is also possible. This laboratory ensures all AWS window and door systems can be tested and researched to ensure compliance with building codes and relevant industry standards.

Including:

- AS2047
- BAL-40 zones under AS3959-2009
- AWS SAFE4KIDS™ products have been tested to comply with the requirements set out by the BCA for operable windows in elevated applications.
- Cyclone regions C & D under BCA and AS1170-2002.
- AWS window and door systems Assessed by the National Acoustic Laboratories for the abatement of airborne sound transmission.

**AWS – trusted by thousands of architects across Australia.**

# Australia Wide Network



We have the largest network of independent window manufacturers in Australia — more than 200!

Whether you are specifying a local project or one further afield, AWS has Australia's largest network of independent window and door fabricators. We are also 100% Australian designed and manufactured, delivering consistent supply and ongoing support for your build now and into the future.

Vantage, Elevate and ThermalHEART fabricators are located in metropolitan and regional areas throughout NSW and the ACT.

**[specifyaws.com.au](https://specifyaws.com.au)**