

An aerial photograph of a suburban neighborhood. The image shows several houses with different roof colors (grey, brown, red, blue) and green lawns. A winding road runs through the center. A swimming pool is visible in one of the backyards. The overall scene is bright and clear.

see

CAPRAL residential windows and doors

Capral high performance aluminium windows and doors are one of the easiest ways to improve the comfort and energy efficiency of your home.

ing is believing

Capral is committed to making its products as energy efficient as possible. Capral's broad range of high performance windows provide optimal weather-sealing, functionality and aesthetics, and can help your home meet or exceed energy efficiency standards.

Using high performance Capral windows and doors is one of the easiest ways to improve the comfort and energy efficiency of your home. Knowing where to start and what to look for can be difficult. With this in mind Capral has produced this handbook, designed to arm you with all the information required to make informed decisions on how best to find windows and doors that suit your requirements and to maximise the energy efficiency of your home.



CONTENTS

seeing is believing
see our residential windows
see our residential doors
see and think smarter
passive design
smart windows
window energy
choose a member
types of glass
the part we play
a total solution
aluminium benefits
australian climate
energy efficient terms
see and be inspired
see our associations

see
our windows & doors

A modern child's bedroom with a vaulted ceiling and several skylights. A large, light-colored wooden wardrobe with three doors and black knobs is the central feature. To the left, a wooden bookshelf is filled with books. To the right, a wooden shelf holds a large orange and white clownfish plush toy, a pink toy car, and other small toys. A pink dollhouse and a blue toy car are on the floor near the shelf. A bed with a colorful floral patterned duvet and a red jacket is in the foreground. A small black bird figurine is mounted on the wall above the shelf. The floor is dark wood.

see our residential

Selection and placement of windows and doors is one of the most important decisions when designing your home. Installation of high performance Capral windows and doors is one of the easiest ways to improve the comfort and energy efficiency of your home all year round. And with Capral varied range of windows and doors you will be sure to find a solution perfect for your home.

Capral sliding windows have the benefit of easy operation while being timeless in design making them an economical window of choice.



sliding windows

IDEAL FOR HIGH TRAFFIC AREAS

Wide panels with no external projections make the sliding window ideal for high traffic areas whilst giving good air flow. Insect screening is included as a standard requirement.

A VARIETY OF OPTIONS

The majority of the sliding window range can be double glazed. Keyed locks and vent locks are also an option. The sliding window has various sized frames and can integrate with doors, awning and fixed windows with seamless transition.

ENHANCED CAPABILITIES

A wide range of structural and water performance options are also available to further enhance the sliding windows capabilities.



Capral Awning windows have the option to look either retro or modern due to their ability to have a splayed or a square looking sash.



awning windows

HIGH PERFORMANCE

Awning windows are high performing, from both a thermal and acoustic perspective due to a true full perimeter seal around the sash. Sashes can be single or double glazed and keyed locks are also available, as are cam handles.

PERFORMANCE OPTIONS

A wide range of structural and water performance options are also available to further enhance the awning windows capabilities.

SEAMLESS TRANSITION

The awning window has various sized frames and can integrate with doors, sliding windows, double hung and fixed windows with seamless transition. Most configurations can also be insect screened.



Capral double hung windows are clean in appearance and suitable for heritage or modern construction.



double hung windows

MULTIPLE FRAME SIZES

The double hung window is available in a number of frame sizes and can also be integrated into Commercial framing. Keyed locks are an available option as are easy to fit and remove insect screens.

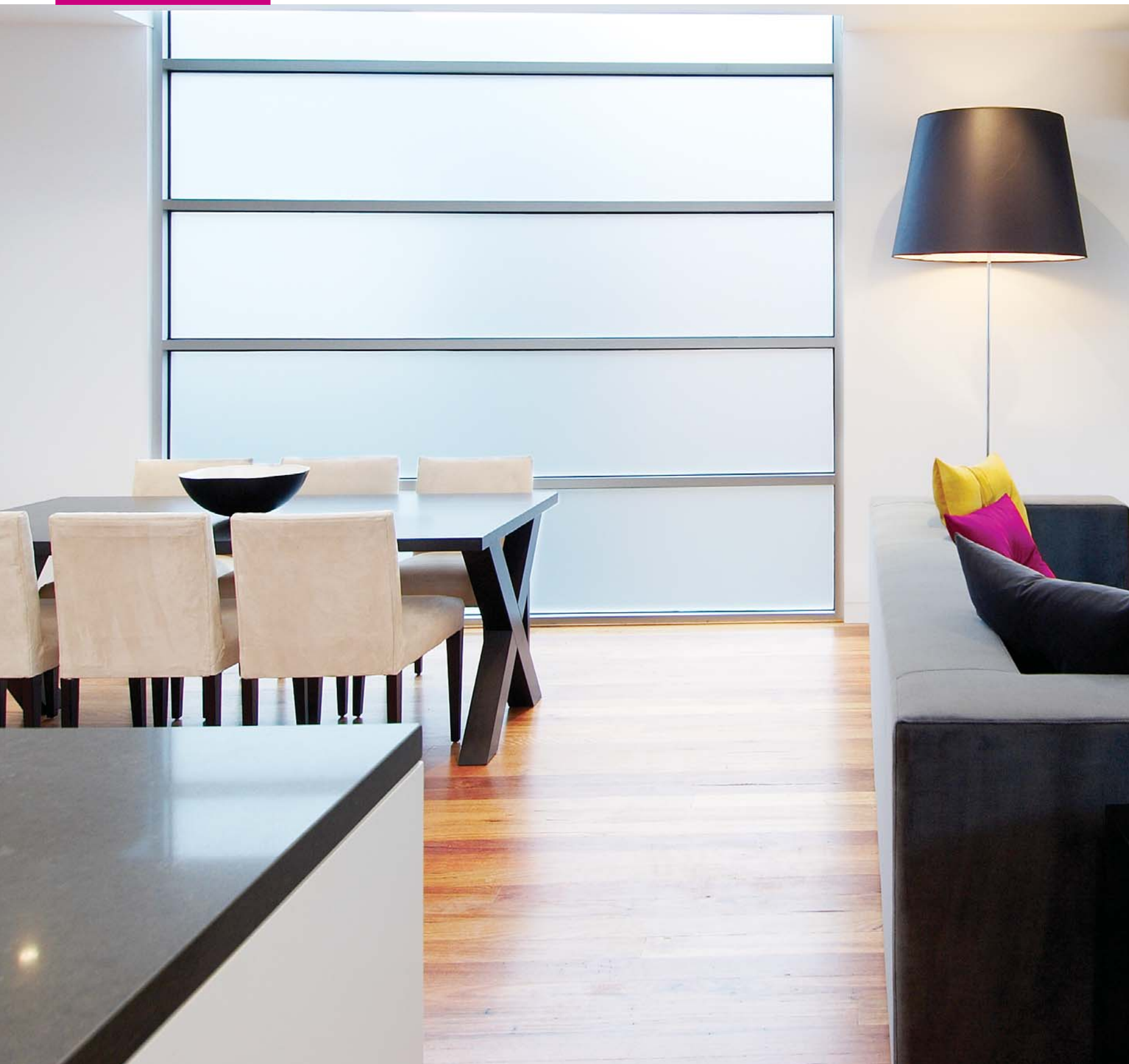
FOR ALL TYPES OF DESIGNS

The double hung window can be configured in multiple units and as it is sound in both structural and water performance it is suitable for all types of design.

THERMALLY EFFICIENT

As both top and bottom sashes are operational this design lends itself to excellent ventilation, while also having the ability to use performance glass making it a good all round thermally efficient window.





Capral's high performance fixed light windows offer enormous design flexibility for residential project.

fixed light windows

PERFORMANCE OPTIONS

A wide range of structural and water performance options are also available to further enhance the awning windows capabilities.

VERSATILE AND ADAPTABLE

The fixed light window framing system has set the standard for centre glazed framing for over two decades. With an aesthetically balanced look and the option of bevelled or square finishes, it is the most versatile and adaptable framing system in the range.

With a multitude of compatible window and door suites, it offers enormous design flexibility making this product ideal for residential projects that require a bold modern look and high levels of structural performance.



Take advantage of natural fresh breezes to cool your home with Capral's Louvre windows



louvre windows

OPTIMUM ENERGY EFFICIENCY

Stylish and versatile, louvre windows are ideal for cooling your home naturally. Positioned strategically throughout a home you can utilise natural cross airflows to cool interiors without the aid of air-conditioners. Control the direction and strength of air entering your home by adjusting the angle of the blades. They can also be left open in light rain or closed securely to prevent draughts in cooler weather.

SCREEN OPTIONS

For those with high exposure to insects, flyscreens can be fitted externally to deter pests entering your home.

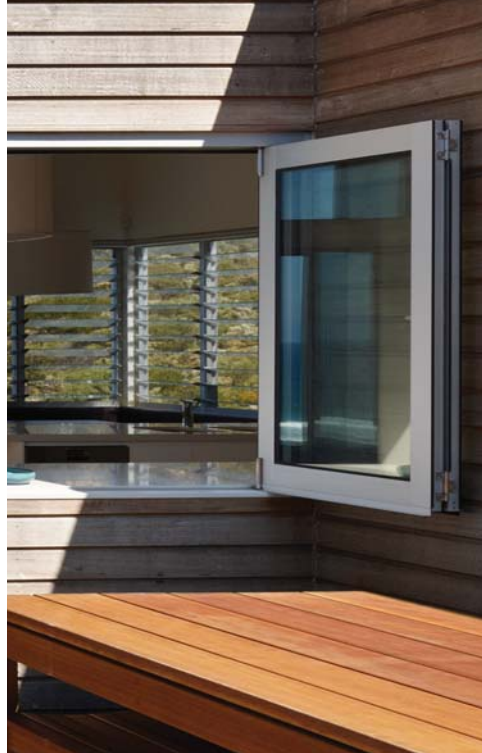
BREEZWAY

Capral louvres feature high quality Breezway Altair louvre galleries for ease of operation and improved sealing. The aesthetics are further enhanced by the unique aerofoil louvre blade or a range of other timber, glass or aluminium blade options.

A full range of matching sliding, folding awning and casement, sliding, hinged and folding doors are also available to further complement your design.



Capral's servery windows are perfect for entertaining, opening areas to the outdoors with little effort.



servery windows

PREMIUM QUALITY

The Capral range of servery windows have been designed to deliver a premium level of quality, performance and style in architectural aluminium design. The window system features high quality hinge and roller hardware with Capral's unique EMT™ (Effortless Motion Technology) guide system to ensure smooth and lightweight motion.

IMPROVED THERMAL PERFORMANCE

Optional double glazing is also available for improved thermal performance. Use of high quality seals and hardware also ensures the Capral servery window delivers a high level of weather sealing.

VERSATILITY

A full range of matching sliding, awning, double hung and casement windows, sliding, hinged and folding doors are also available to further complement your design.





Capral Sliding Doors are designed with versatility in mind and can be used in residential or apartment construction.

sliding doors

FLEXIBILITY IN DESIGN

Doors can be manufactured to specific requirements whether it be a 2 or 4 panel standard sliding door or 3 and 6 panel stacking door.

QUALITY AND SECURITY

High quality rollers allow ease of sliding for all panels and quality door locks will give you peace of mind in the security of your home. Sliding doors integrate with other windows in the Capral range as well as Commercial framing.

OPTIONAL EXTRAS

Sliding doors will also give you an option of either insect or security screens whichever your personal preference may be.

HIGH PERFORMANCE

Sliding doors are high performing from both a wind and water requirement and are available in many different configurations, including highlight and operable awning windows.

The Capral hinged door system is the ideal option for decks, balconies and entertainment areas, due to its wide opening access and ease of operation.



hinged french & entry doors

IMPROVED PERFORMANCE

Doors can be manufactured as either single or two leaf French door configurations. Performance glass and double glazing, combined with soft Santoprene seals can deliver an improved level of thermal and acoustic performance.

STYLE AND SECURITY

High quality lever handles and mortice locks add style and security to your application and can be keyed to match the rest of your home.

PEACE OF MIND

Naturally these doors can be insect or security screened for your comfort and peace of mind.



Capral's Bi-fold Doors
open up the full
potential of outside
living by bringing the
outside in.



Bi-folding doors

IDEAL FOR ENTERTAINING

Panels can be stack out of the way to one or both sides making it ideal for entertainment areas and maximising panoramic views.

PERFORMANCE GLASS

Performance glass and double glazing, combined with soft Santoprene seals can deliver an improved level of thermal and acoustic performance.

RESILIENT

Door panels can go up to 3 metres in height and are suitable for areas with high wind and water requirements.

SECURITY AND STYLE

High quality lever handles and mortice locks add style and security to your application and can be keyed to match the rest of your home.



Simple things like orientating your home to take advantage of available sunlight and selecting energy efficient windows and doors can make a real difference.

Passive Design is the term given to the design of homes that have little, if any, need for artificial cooling and heating. Through the use of clever design principles the home takes advantage of the natural climate to maintain thermal comfort. Passive design principles can be applied throughout Australia's different climate zones.

see and think smarter

Simple things like orientating your home to take advantage of available sunlight and selecting energy efficient windows and doors can make a real difference.



passive design

LET YOUR HOUSE DO THE WORK

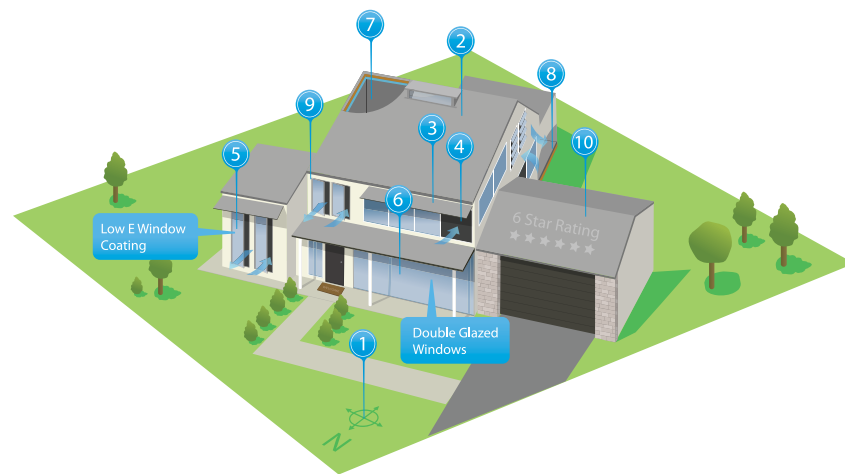
Passive Design is the term given to the design of homes that have little, if any, need for artificial cooling and heating. Through the use of clever design principles the home takes advantage of the natural climate to maintain thermal comfort. Passive design principles can be applied throughout Australia's different climate zones.

A home with a Passive Design provides a more comfortable living environment and results in decreased energy costs to heat and cool due to improved energy efficiency. In doing so this helps the environment through decreasing greenhouse gas emissions related to artificial heating and cooling.



best checked

LET YOUR HOUSE DO THE WORK



PASSIVE DESIGN CHECKLIST

The following checklist provides a sound starting point for considering how best to maximise the energy efficiency of your home by utilising passive design principles.

1. The main living areas are oriented north to maximise winter sun and minimise summer sun.
2. Rooms are zoned or grouped and divided as needed for economical heating and cooling.
3. Eaves or other shading devices have been incorporated to provide shading from summer sun and allow winter sun to enter.
4. Windows and doors are located to get good natural cross ventilation and to ventilate bathrooms and wet areas.
5. Windows are located appropriately and glass selections made that provide natural daylight and winter sun penetration, while avoiding summer overheating.
6. Windows have been utilised to improve energy efficiency, by making use of the large range of high performance energy efficient glazing products available.
7. Maximum insulation has been provided in the roof, walls and floor.
8. There is appropriately designed thermal mass internally to moderate indoor air temperatures.
9. Draughts and air leakages have been adequately sealed.
10. The star rating of the home is more than the minimum 5 star required.



smart windows



THERMAL MASS

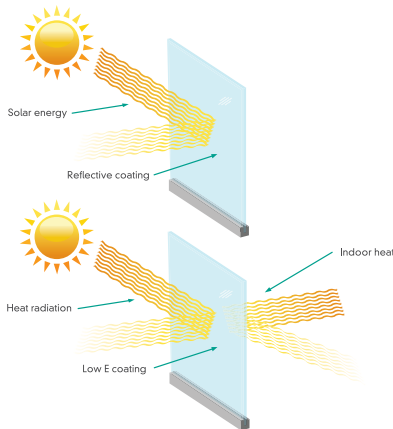
Thermal mass describes the ability of building materials to store heat. Thermal mass is used to store heat from the sun during the day and re-release it when required. Adding thermal mass helps reduce extreme temperatures within the home, making the average temperature more moderate all year-round.

Consequently, occupant comfort levels are increased and energy costs are reduced. Heavyweight building materials store a lot of heat so are said to have high thermal mass, whereas lightweight materials do not store much heat and therefore have low thermal mass. As a rule of thumb, the greater the daily temperature range, the more thermal mass required.

WINDOWS AND GLAZING

Windows and glazing are a critical element of passive design as up to 49% of heat loss and 87% of heat gain occurs through windows with 3mm single glazing. Passive Design takes advantage of this by keeping winter heat indoors and excluding excessive summer heat from entering the building. Appropriate placement of windows and doors is another important consideration; as well as minimising reliance on artificial heating and cooling, windows aid ventilation and importantly, a healthy living environment.

Single glazed high performance glass can stop up to 40% of solar heat gain while Low E double glazing can stop up to 77% of solar heat gain, which equates to a financial saving of approximately 40% off your energy bill to heat and cool. Specifying high performance glazing for your home can add as little as 1% to the total building cost.





ORIENTATION

Optimal positioning of a home on its site can have a significant impact on its thermal performance. During winter the most sunlight enters a home through north facing windows and doors.

If your site doesn’t permit or alternatively you are renovating an existing home and unable to optimise the orientation, energy efficient windows and doors will prevent heat gain and heat loss and help ensure your home is thermally efficient.

LAYOUT

Areas that are used for relatively short periods of time such as bathrooms, laundries and garages are best positioned on the west to provide a buffer against the extreme summer heat. To ensure you enjoy the maximum benefits of solar heat, position rooms that generally require heating, such as living areas, on the north side of the house.

INSULATION

Whether it be the roof, walls, doors or windows, it is imperative that premium insulation is achieved and that all gaps are filled to keep wanted air in and unwanted air out. High performance windows and doors provide superior insulation when combined with other insulation materials.

This reduces the amount of artificial heating and cooling needed to maintain thermal comfort, which in turn means smaller heating and cooling units and decreased running costs.

VENTILATION

Well placed windows and doors can capture cooling breezes for optimal ventilation. Trees and other external objects can be used to direct breezes through the home. Some window types, such as casement windows and louvres, are particularly useful in controlling breezes for maximum benefit.

SHADING

Preventing summer sun from directly hitting windows is one of the most effective ways to reduce summer heat from negatively impacting on thermal performance. Shading can be achieved through appropriately sized and positioned eaves or by other means such as verandas, trees and outdoor blinds.

As the winter sun enters at a lower angle than summer sun, by using effective shading you can guard the same areas from heat gain in summer.



window energy

WINDOW ENERGY RATING SCHEME

The Window Energy Rating Scheme (WERS) is managed by the Australian Window Association. It provides a system for rating and comparing the energy performance of windows and doors against one another, in a similar fashion to the rating system commonly used for white goods.

To participate in WERS, window fabricators must obtain energy ratings for their products from a rating organisation accredited by the Australian Fenestration Rating Council (AFRC) and rated windows must meet all relevant standards.

In order to determine window performance data, WERS uses a window's U Value and Solar Heat Gain

Coefficient. In simple terms, the U Value is a measure of the rate of heat transfer through a window. The lower the U Value, the better level of insulation the window provides.

The Solar Heat Gain Coefficient is a measure of how much solar radiation passes through the window. In cooler climates, windows and doors which transmit a greater amount of solar radiation can help to provide 'free' solar heating. To find out more about these items, please turn to section titled "The part we play."

HOW DO STAR RATINGS WORK?

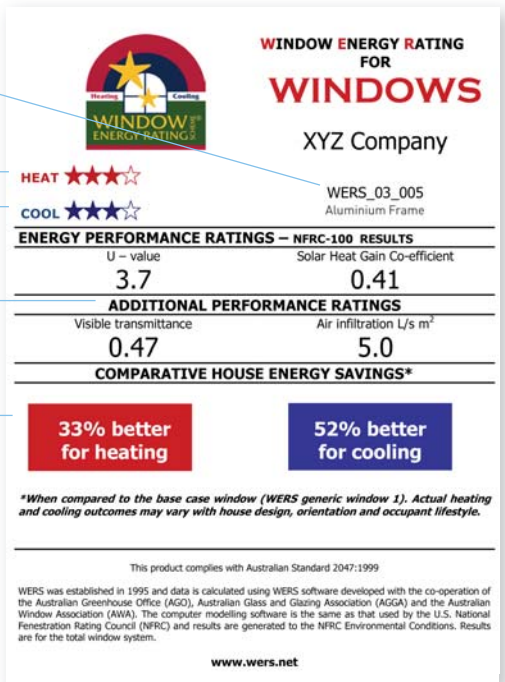
Star ratings rank the window against alternative products using a ten star scale, based on 17 'generic' window types. The generic windows range from very low performance to very high performance for heating and cooling, and apply to the whole window – glass and frame combined.

A low star rating indicates a window is a relatively poor performer, while at the other end of the scale, ten stars indicates the perfect theoretical window. In reality, the highest performing windows available in Australia fall generally between 6 and 7 stars for heating and between 4 and 5 for cooling. Capral is proud to confirm that it has a number of window options in these ranges. Information on star ratings can be found at the WERS website: www.wers.net

WERS CERTIFICATE TYPES

Each individual WERS rated product has its own WERS certificate. WERS certificates include information that can help you select the best windows and doors for your home. As well as the product's star rating for heating and cooling, certificates feature a brief product description, performance rating data and the potential heating and cooling improvements when compared to a single glazed window.

- Product Description
Including window frames and glazing materials.
- Heating Band
Where windows are required to keep warmth in.
- Cooling Band
Where windows are required to keep heat out.
- Product Data
Specifies additional energy performance ratings.
- Indicative Percentage Reductions
In a home's heating and cooling needs compared to a clear single glazed aluminium framed window.





THE AUSTRALIAN WINDOWS ASSOCIATION

There are many important things to consider when purchasing windows for your new home or renovation. It is crucial that consumers know what exactly there is to know about windows and the window industry.

This is where the Australian Window Association (AWA) comes in. The AWA is made up of over 500 window manufacturers and industry suppliers throughout Australia. Members have their products tested to Australian Standard AS2047. You can be confident that products by an AWA member are made to withstand Australian conditions.

The aims of the AWA are:-

- To promote and advance the awareness of windows as a major architectural component in building design.
- To establish and self-regulate benchmark standards throughout Australia. To facilitate the education and marketing of these standards throughout the industry and wider community.
- To provide a national voice when representing the industry in discussion and negotiations with government, local authorities, business and trade associations and organisations, and private sector.
- To promote and encourage ethical conduct and sound business practice in the industry.

Keep in mind all Australian Window Association members' products are tested and independently third party accredited to ensure compliance to Australian Standards.



[choose a member](#)

choose a member

WHY CHOOSE AN AWA MEMBER?

AWA Members are committed to a more professional industry and are informed of industry changes both technical and regulatory, to ensure compliance and up to date business practices.

There are many reasons to choose an AWA member when purchasing your window and door products.

- Members manufacture window and door products in compliance with all relevant Australian Standards.
- Members verify their window's design performance using a NATA accredited testing laboratory and label their windows to the required 'wind pressure' and 'water penetration' requirements of AS 2087. NATA (National Association of Testing Authorities) conducts periodic assessments of testing laboratories to ensure competency in accordance with AS ISO/IEC 17025 requirements..
- Members guarantee their windows against faulty workmanship and materials for a period of seven years (subject to correct installation and product maintenance).

- Members conduct business with honesty and integrity, upholding the right to a fair return for goods and services supplied.
- Members support the window industry's association because it is committed to:-
 - Raising Standards
 - Improving benefits to home owners
 - Protecting the rights of consumers.

By using an AWA member when purchasing your window and door products, you significantly reduce the risk of purchasing the incorrect product for your application.

The AWA provides window and door specific industry training to members lifting the level of competency within the industry. AWA members have access to the latest changes in regulation and industry standards and ensure their products are compliant.

A high performance, long lasting window and door combines high performance glass, a quality frame and long lasting weather resistant seals.



types of glass

COATINGS

A range of coatings can be applied to glass to further enhance its properties. Low E coatings (also known as spectrally selective coatings) lower the amount of heat flow through windows and doors, by reflecting radiation rather than absorbing it. A Low E coating can reflect unwanted heat in summer while retaining heat and preventing it from radiating out in winter. Reflective coatings involve the application of a metallic film to one side of the glass in order to significantly increase the amount of reflected visible and infra red heat.

TINTED GLASS

Tinted glass reduces outside glare, minimising fading to furnishings by UV rays and decreasing solar heat gain. Green, grey, bronze and blue are the most common tints, as they do not significantly alter the colour of the views through the window.

DOUBLE GLAZING

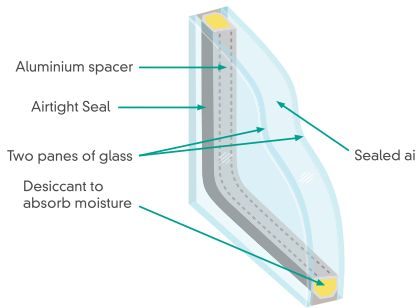
Double glazed units (also known as Insulated Glass Units or IGUs) comprise two or more panes of glass, separated by an air (or gas) filled cavity that is completely sealed. IGUs provide thermal insulation and improved acoustic performance while also significantly improving a building's energy efficiency. A combination of IGUs and performance glazing can prevent up to 50% of heat loss in winter and 87% of heat gain in summer compared to standard 3mm single glazed windows.

CHOOSING THE RIGHT GLASS

Accounting for up to 90% of the thermal performance of windows and doors, glass is the most influential factor in determining window and door energy efficiency. Not all glass products are created equal and it's vital to select the appropriate glass for your specific purpose.

From self cleaning glass to glass that turns from transparent to opaque with the flick of a switch, today's technology is so advanced the possibilities are endless.

Decorative glass, whereby an image is encapsulated between two sheets of glass, means you can even choose to incorporate patterns or photos into your home's design if you so desire. Glass is more than a building material; it offers endless aesthetic and practical benefits. Hopefully it will be part of your home for a long time so it is important to select glass that will meet your design and thermal performance requirements.



The components of an Insulated Glass Unit.



Capral is proud to offer an extensive range of Australian made windows and door systems designed and tested to provide sustainable, energy efficient solutions.



the part we play

VENTILATION

Capral aluminium windows and doors offer a great way to naturally ventilate your home. Different styles of windows and doors offer a range of ventilation options. Maximum ventilation is achieved through windows with wide openings such as Capral's range of sliding windows, while other styles such as louvre or casement windows, give you greater control over the direction and strength of air entering your home. Doors that offer wide openings such as Capral's folding or stacking doors offer unobstructed airflow between inside and outside environments.

REDUCED HEAT TRANSFER

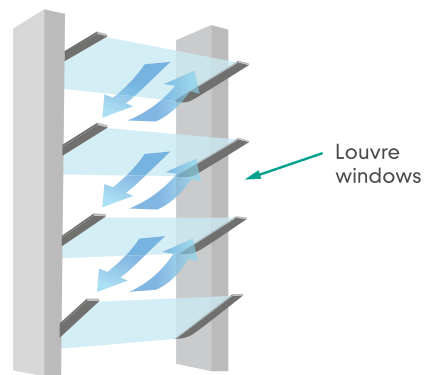
By reducing heat transfer through windows and doors, you will enjoy a more energy efficient home. Many homes are using 60% more energy to heat and cool than might otherwise be necessary. Energy transfer through a window generally travels through

the glass and frame. However, given that up to 90% of a window's area is made up of glazing, glass selection is the most critical component in minimising heat transfer. Well-designed aluminium windows and doors with good glazing achieve high thermal efficiency at a much lower cost.

ADDITIONAL BENEFITS

There are many additional benefits to be derived from clever use of Capral high performance windows and doors including:

- Reduced reliance on orientation, meaning greater design freedom;
- Decreased environmental impact and reduced greenhouse gas emissions;
- Enhanced thermal comfort of up to 5°C warmer in winter and 10°C cooler in summer;
- Improved wellbeing through increased exposure to natural daylight;
- A substantial reduction in condensation with the installation of double glazing;
- Improved acoustic performance;
- Reduced fading of furniture and fittings due to decreased UV ray transmittance;
- Integration of indoor and outdoor areas, perfect for entertaining.



the part we play



a total solution

It is important to think of a window as more than a pane of glass; rather it is the glass, frame, seals and hardware combined.



HIGH PERFORMANCE FRAME

As well as visually complementing the glass, a frame should be durable and low maintenance. Capral aluminium frames are popular in contemporary architecture as they require little maintenance, are long lasting, don't warp, swell or crack over time and can be coated in a range of different finishes and colours.

QUALITY SEALS

Long-lasting seals that offer exceptional resistance to all weather conditions are vital to keep air from inadvertently entering or escaping through gaps in the window. High quality seals will ensure the window acts as an effective insulator.

HIGH PERFORMANCE GLASS

Selecting the wrong glass to put in a frame, or similarly, placing high performance glass in an inferior frame, will have a negative effect on the thermal performance of your entire home.

Selecting a window and door that combines high performance glass with a quality frame and long-lasting weather resistant seals will result in a high performance window and door, designed to provide a high level of insulation and to keep heat in or out depending on your requirements.

EXPERT ADVICE

Much like a medical professional prescribes a remedy, when selecting windows you should consult a design professional to help determine the best window and door and glazing solution for your specific needs.

High performance aluminium windows can easily achieve heating and cooling improvements of more than 60% over conventional systems and rivalling more expensive alternatives, such as thermally broken aluminium, timber and uPVC.

a total solution

High performance aluminium windows are able to meet or exceed energy efficiency standards.



aluminium benefits

THERMAL PERFORMANCE

High performance aluminium windows are able to meet or exceed energy efficiency standards. Aluminium windows and doors can easily achieve improvements in heat gain and heat loss through windows by 60% rivalling more expensive timber and uPVC equivalents.

REDUCES CARBON FOOTPRINT

In the case of an average gas heated home in Melbourne, the use of aluminium double glazed windows delivers CO2 equivalent savings of almost three times that required to produce the aluminium frames, just within the first year.

Over the life of the building, energy savings outweigh the initial energy input by well over 100 times. For homes with electrical heating, or cooling for homes in hot climates, savings run into multiples of close to 300 times.

DURABILITY AND LOW MAINTENANCE

The corrosion resistant qualities of aluminium provide a low maintenance frame and is resistant to weathering under a range of harsh environmental conditions. Unlike many other materials, it will not swell, crack, split or warp over time; ensuring an extended product life.

Aluminium can be left in its finished condition. For additional protection or decorative finishes, aluminium can be anodised or painted.

AFFORDABILITY

Aluminium frames can be significantly less expensive than other framing options, providing a strong yet economical window and door solution, while also achieving excellent energy outcomes.





THE ALUMINIUM ADVANTAGE

- ✓ Meets or exceeds energy standards when combined with energy efficient glass.
- ✓ Low maintenance and durable; won't swell, crack, split or warp.
- ✓ Reduced carbon footprint with energy savings outweighing initial energy input by over 100 times.
- ✓ Corrosion resistant qualities and resistant to weathering under a range of harsh environmental conditions.
- ✓ Economical framing solutions that can be less expensive than other framing options.
- ✓ Strong and durable providing a range of long lasting design options.
- ✓ Environmentally sustainable material with one of the highest recycling rate of any metal.
- ✓ Attractive alternative timber look can be achieved.
- ✓ Range of coloured finishes available to match your home's decor.
- ✓ Significant performance improvements provide a short payback period.

DESIGN FLEXIBILITY

The inherent strength and flexibility for aluminium to be manufactured to exacting specifications means you are limited only by your imagination. With an endless array of systems, finishes and glass options, aluminium offers a vast range of possibilities from the economical to most elaborate systems while also delivering excellent thermal performance.

RECYCLABILITY

Aluminium has one of the highest recycling rates of any metal and is an environmentally sustainable material. Recycling of aluminium requires only five percent of the initial energy consumed to create it. This inherent property differentiates from other framing materials reinforcing its sustainable credentials.

SHORT PAYBACK PERIOD

Payback periods on high performance aluminium windows are typically far shorter than for other alternatives which offer only marginally improved performance at a far higher price. Such options can take several decades to deliver a payback.





australian climate

Australia's climate is getting warmer and we now use more energy to cool than heat our homes. Energy efficient windows and doors can save up to 60% of your energy costs.

AUSTRALIA'S CLIMATE

In Europe, frequent extreme cold periods and unpredictable heat waves can make for living conditions that are uncomfortable at times. However Australia is lucky to have relatively moderate climate conditions. While some areas do experience extreme heat, these areas are largely unpopulated, and extreme cold is rare throughout the continent.

The lack of extreme weather conditions means that it is relatively easy for homes to achieve very good energy outcomes. Homeowners do not need to part with excessive amounts of money for elaborate window and door systems to improve the energy efficiency of their home. High performance aluminium windows and doors can easily provide the desired thermal performance benefits at a reasonable cost.



MIXED CLIMATES

In a mixed climate the goal is to stop heat from entering the home during summer and from escaping during winter. In these climates, windows which offer a good compromise between U Value and Solar Heat Gain are required. Alternatively, use of various glasses on certain elevations can help achieve the right balance. Southern Western Australia, parts of New South Wales and South Australia, and northern Victoria generally fall within this category.

CLIMATE CHANGE

While climate change is often referred to as an abstract far-off phenomenon the fact is we are already experiencing the effects of a changing climate. Australian average temperatures have increased by 0.9°C since 1950, while the frequency of hot days and nights has increased and the frequency of cold days and nights has declined.

Regardless of what climate zone you live in, the same basic Passive Design principles apply. Through careful selection of windows and doors you can gain maximum control over your home's thermal performance and reduce reliance on artificial cooling and heating. Australians are now using more energy to cool than heat; artificial cooling systems generally consume more energy than heating systems and are expensive to install and operate.

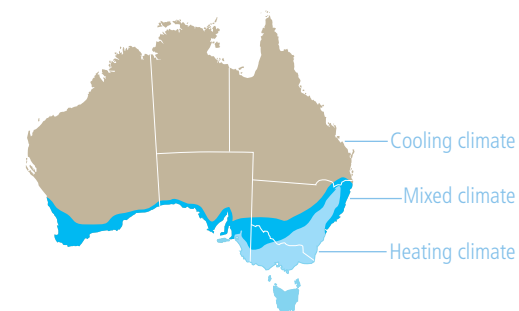
COOLING CLIMATES

In cooling climates, the primary goal is to keep unwanted heat from entering the home and to reduce the size of the artificial cooling system to minimise ongoing operating costs. The best results are obtained from windows and doors that limit solar heat gain.

This can be achieved by using tinted or coated glass types. Good insulation is also important, particularly if the home is air conditioned. In these situations double glazing can deliver significant benefits and also provide further improvement in solar heat gain coefficient.

HEATING CLIMATES

In heating climates the aim is to retain heat and to maximise the penetration of solar energy in winter. Selecting windows that insulate efficiently, ensures unwanted heat loss is minimised. Windows with a low U Value and high SHGC indicate effective insulation properties and are preferable in cool climates. Double glazed windows with spectrally selective or Low E glass coating provide excellent energy outcomes. Areas with a cool climate include Tasmania, Southern Victoria and some parts of New South Wales and South Australia.



WERS (Window Energy Rating Scheme) Climate Classes

Before embarking on the important selection of your windows and doors it may be useful to become familiar with a few commonly used energy efficient terms.



energy efficient terms

Double Glazed Units or Insulated Glass Units (IGUs)
IGUs provide thermal insulation and improved acoustic performance. Consisting of two panes of glass, separated by an air or gas filled cavity, an IGU is described in terms of the thickness of the outer pane in millimetres, followed by the cavity width and finally the thickness of the internal pane; e.g 4/12/4. Generally, a 12mm to 15mm cavity width provides optimum performance.

Infiltration

Heat loss and heat gain can occur through leaks in the window or door assembly. Good seals and quality workmanship minimise this.

Laminated Glass

Panes are assembled from two sheets of glass with an adhesive interlayer. Laminated glass when broken will not shatter or splinter leading to greater safety and security. Laminated glass eliminates nearly 99% of harmful UV rays, reducing fading to floors and furniture. A specialised interlayer in laminated glass can further reduce Solar Heat Gain Coefficient.

Reflective Coating

A metallic coating is applied to one side of the glass in order to significantly increase the amount of reflected visible and infra red heat.

Low E Glass

A thin coating that is applied to the glass surface to enable it to reflect short wave (direct solar) heat or long wave (re-radiated/reflected) heat.

Orientation

The direction a home faces can affect how much energy is used heat and cool. Ideally a home should be oriented north-south to prevent the sun's rays from penetrating in summer, while still allowing for solar warming in winter. It is impractical for many homes to achieve optimal orientation; however, high performance windows can help achieve a high level of control over a home's thermal performance.

Passive Cooling

Passive cooling encourages cooling breezes and air movement in summer as an inexpensive way of cooling your home. Passive cooling is best achieved through: orientation to cooling breezes, increased natural ventilation, a light coloured roof and wall finishes, and appropriate windows and glazing to minimise heat gain.

Passive Solar Heating

Passive solar heating aims to keep the summer sun out while still allowing the winter sun in. As well as using orientation and shading, passive solar heating is best achieved through effective insulation, draught sealing and high performance glazing. Window frames and the type of glazing used play a big part in passive solar heating.

Shading

Shading a home can improve comfort and increase energy efficiency. It is important to install effective shading devices to block summer sun from the north while still allowing the lower angled winter sun in.

Solar Control Glass

Glass that reduces heat gain derived from direct solar radiation. This may be achieved via interlayers, body tints, reflective coating or Low E coatings.

Solar Heat Gain Coefficient (SHGC)

SHGC is a measure of the amount of solar radiation transmitted through a window and released into the home as heat. The lower a window's SHGC, the less solar heat it transmits; a low SHGC is vital for warm or hot climates.

Toned / Tinted

Usually green, grey, bronze or blue, toned or tinted glass can shade internal areas and reduce the amount of heat entering through the window. This will keep the building cooler and reduce glare and UV rays.

U Value

U Value measures the rate of heat flow through a window, due to temperature difference between the indoor and outdoor environment, taking into account the effect of the frame, glass, seal and any spacers. Heat is lost and gained through a window by the combined effects of conduction, convection and radiation. The lower the U Value, the higher the energy efficiency of the window or door.

Visible transmittance (VT)

VT is a numeric measure of how much visible light is transferred through the window. The higher the VT, the more daylight that is openly transmitted.





see and be inspired

When architects are looking for a flexible, robust system that helps maximise light, makes the most of a view or simply provide a stunning access point to a house, they know they can turn to Capral.

Whether double or single glazed, sliding or hinged, Capral has a great looking solution that will meet the most exacting standards and has the endurance and performance to match.

The following pages showcase how Capral plays an integral part in a range of stunning designs.

acute angle

PROJECT DETAILS

ARCHITECT: Nettle Architects
ENGINEER: Wayne Spencer
PHOTOGRAPHER: Shannon McGrath
PRODUCTS: Capral AGS Aluminium Framing
Capral AGS 900 Sliding Door
FINISH: Clear Anodised

acute angle



PROJECT SUMMARY

Architect Wendy Nettle successfully executes the merging of contemporary with elements of an earlier vintage in an ambitious renovation and addition makeover to a house located in the inner eastern suburbs of Melbourne.

An echoed theme of freshness and connection flowing through the entire house brings it into the twenty-first century. The geometric ceiling floating above Capral AGS Aluminium Framing is one of the many features of the project. This allows for winter sunlight to flood the room and provides a bright outlook in summer, while minimising solar gain and thermal mass in the polished concrete floor.

Almost every room in the front of the house has a prospect to the rear of the house – some have a view all the way through to the external decks and verandahs. To assist with the subtle transition from old to new, doorways have been made higher, with a new a full-height Capral AGS 900 Sliding Door.

This project has been created as a series of linking buildings with materials, textures and colours that amplify the house's visual continuity.



PROJECT DETAILS

ARCHITECT: Hayne Wadley Architects
BUILDER: GK and KM Trease Builders
ENGINEER: David Jones
PHOTOGRAPHER: John Gollings
PRODUCTS: Capral AGS 400 Narrowline Framing System
Capral AGS 889 Sliding Door
FINISH: Charcoal Powdercoating

cape escape



cape escape

PROJECT SUMMARY

Optimal positioning of a home on its site can have Cape Liptrap, in south-east Gippsland offers a sense of isolation enjoyed by the owners of this fairly modest 250 square metre house. They were mindful of creating their house to ensure protection from elements such as the southerly and westerly winds from Bass Strait. As a result the house turns its back to the south.

In contrast to this southern elevation, the entire northern face of the house features floor-to-ceiling Capral AGS 400 Narrowline windows, combined with the large deck and broad timber staircase. This loosely takes the form of a grandstand, and not surprisingly the architects from Hayne Wadley were keen to ensure all the “seats” were premier

While the house turns its back to visitors, the entrance at the building’s centre provides a glimpse of the majestic view beyond and separates primary living area and kitchen from sleeping quarters.

This was done to tease out the view. Not far into the home, the entire view is fully revealed in the open-plan kitchen and living area. With expansive glazing, the eleven-metre-long volume takes it all in as one breathtaking view by using Capral AGS 889 Sliding Doors.

Unlike trophy beach houses that bring the suburbs to the coast, this house represents a change in lifestyle and provides relaxation with not a singular view, but a panoramic one.



rear windows

PROJECT DETAILS

ARCHITECT: David Vernon Architects

BUILDER: David Vernon with
Steenluis Brothers Builders

ENGINEER: Meyer Consulting Group

PHOTOGRAPHER: Derek Swalwell

PRODUCTS: Capral AGS 400 Narrowline Framing System

Capral AGS Louvre Window

Capral AGS 900 Sliding Door

FINISH: Terraco Black Powdercoated

rear windows

PROJECT SUMMARY

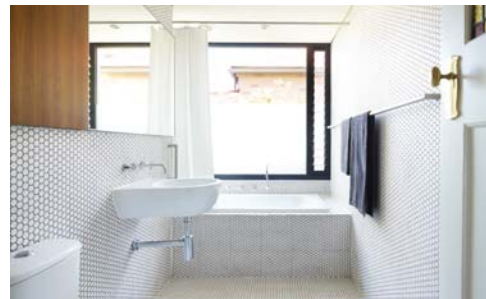
Architect David Vernon volunteered his own residence in St Kilda East, Melbourne, to create his ideal urban oasis driven by an attraction to fresh air and sunlight. David wanted to brighten gloomy bedrooms and transform one living space into three.

The new living room is a simple box-like structure characterised by two external, staggered plywood panel walls with oversized Capral AGS 900 Sliding Doors that face northward into the new living space – a courtyard.



He designed the living room with passive, energy efficient features, including solid insulation, Capral AGS Double Glazed Framing System, unpolished clear-sealed concrete flooring and slab heating. The kitchen faces directly into the courtyard through a second Capral AGS 900 Sliding Door.

This harmonises the surrounding features and combined with a palette of natural colours and textures, the smooth lime green wall is a focal point of the home.



paradise drive

PROJECT DETAILS

ARCHITECT: Steve Hatzellis

BUILDER: Vleugel+

PHOTOGRAPHER: David Yeow

PRODUCTS: Capral AGS 419 Flushline Framing System

Capral AGS 200 Hinged Door

Capral Artisan EMT Folding Door

FINISH: Interpon Ultriva Anodic Stellar Bronze



PROJECT SUMMARY

This residence is located on an impressive beachside site - one and a half hours south of Melbourne. Adjacent to St Andrews Beach and the Mornington Peninsula national park, the location features ocean views and preserved coastal vegetation.

paradise drive

The peninsula house is a response to very particular site conditions and client requirements. Environmental, planning, topographical, visual and climatic site conditions were mapped, analysed and integrated into a set of design constraints that responded to these dynamic conditions.

The house is organised as a 3D spiral, foreshortening a conventional linear arrangement and creating both internalised as well expansive views, allowing privacy, visual adjacency and a protected outdoor space typical of courtyard house typologies.

Views to the site delineate a set of controlled perspective lines that define the orientation and form ramping volumes. Capral Framing Systems including AGS 419 Flushline to help frame the views, Capral AGS 200 Hinged Doors as an access point to the expansive outdoor deck platform and Capral Artisan Folding Doors to bring the outside in.



PROJECT DETAILS

ARCHITECT: Andrew Simpson
BUILDER: GK & MK Trease Builders
ENGINEER: Adams Consulting Engineers
PHOTOGRAPHER: Christine Francis
PRODUCTS: Capral AGS 419 Flushline Framing System
Capral AGS 200 Hinged Door
Capral AGS 889 Sliding Door
FINISH: Powdercoated with Dulux Duratec

scape house



scape house

PROJECT SUMMARY

This beach house at Cape Liptrap is both compact and modest, as it only takes up a floor space of 130 square metres. Architect Andrew Simpson largely contributed to the project's success, as it punches above its weight class visually and conforms to the client's sensible budget.

The view from the hall is all sea and sky, with an endless view of the Bass Strait horizon. The opportunities of the site inevitably led to lengthy discussions about views, and the most efficient way to engage with and frame them from the interior. The resolution of this was that there is no demand on a single point of view within the house, despite the site offering more than 180-degree vistas stretching from Wilsons Promontory to the cape. Instead, the access to the view is controlled



via strategically placed Capral AGS 419 Flushline Framing Systems which provide a series of focused and framed views in different directions.

The bedrooms perfectly frame the peaks of Wilsons Promontory, while the living room and other end of the house frames the cape's lighthouse with Capral AGS 200 Hinged Doors and AGS 889 Sliding Doors. The location is dramatic to say the least and in the architect's words, "there is nothing separating the house and Bass Strait".



family connections

PROJECT DETAILS

ARCHITECT: Steve Domoney Architects

BUILDER: Richard Barned

ENGINEER: Brown Consulting

PHOTOGRAPHER: Derek Swalwell

PRODUCTS: Capral AGS 419 Flushline Framing System

FINISH: Clear Anodised



family connections



On each level visual connections are encouraged by the extensive glazing around the courtyard, as well as the inclusion of handrails, part of the roof, and a water feature with a reflection pond at ground level.

The kitchen has a pivotal role in the interior spaces of this lavished family house – a focal place for family meals whilst also providing clear views throughout the eastern side of the house. Large sections of recycled timber provide support for the inclined glazing that connects the lobby and interior court, and frames for the enormous sliding glass doors. Steve's calm and comfortable character is reflected in his architecture, as the home owners say it took about two days to settle in!

PROJECT SUMMARY

Steve Domoney Architecture took on the challenge of designing a home for clients with children. This project came with a clear vision of a spacious family home, contemporary in line and warm in tone.

The dining room has Capral AGS windows opening at exterior ground level to a fernery, while high-level Capral AGS 419 Flushline Framing System beyond the kitchen provides views to distant trees in the south-east. The formal lounge opens to a generous decking and garden behind. The strong walls to the perimeter of the site provide a sense of security and privacy, while the glazing, judiciously used, has provided a sense of expansion.





see our associations





www.capral.com.au

CAPRAL

Capral Limited • ABN 78 004 213 692 • 1300 366 517

