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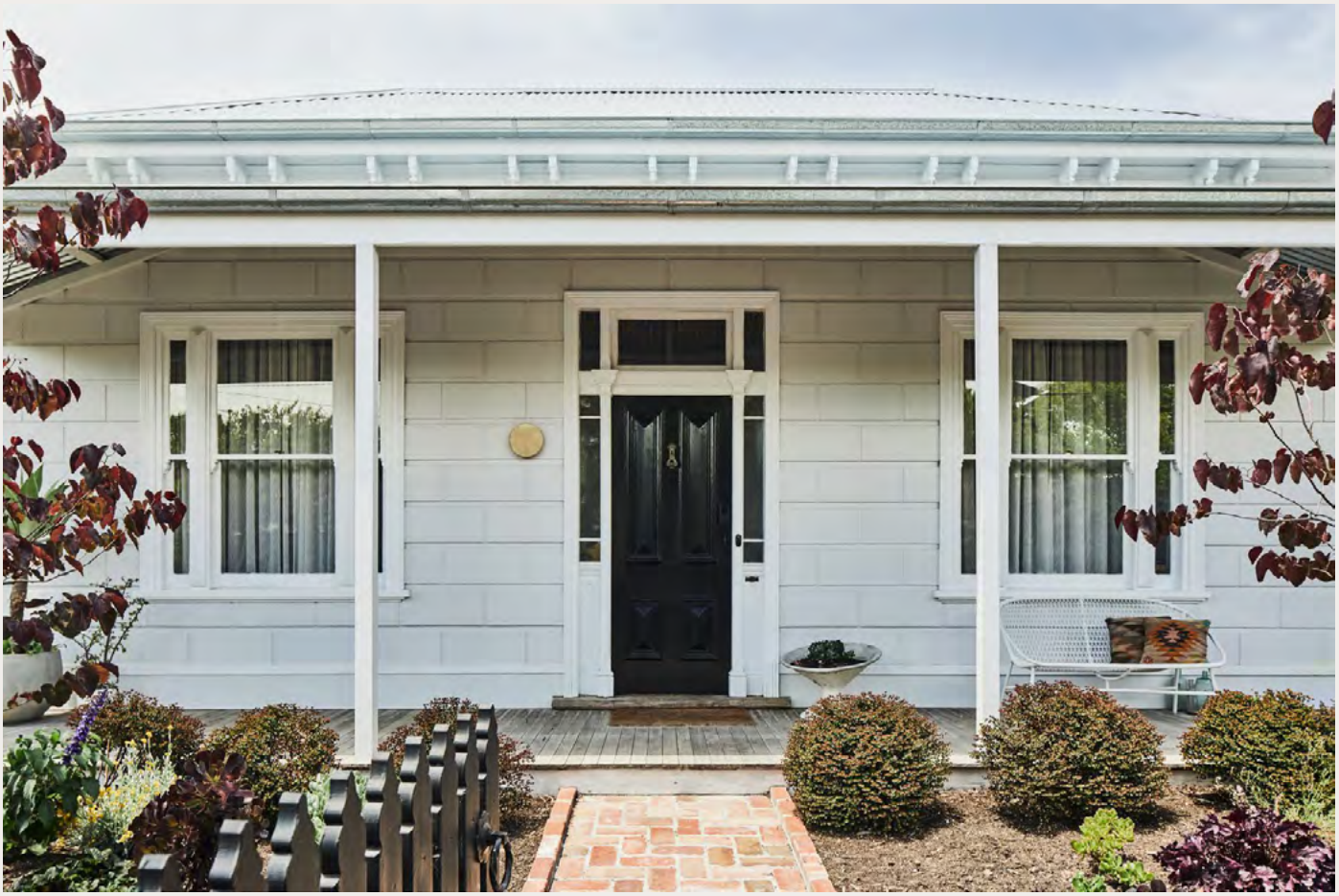
HANDLING HISTORY:
Opportunities and challenges for upgrading heritage homes

WORDS Leo Martin, Ruth Redden and Ian Travers



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Retaining and restoring homes covered by heritage listings or overlays, such as this house in Northcote, Victoria, renovated by Altereco Design, preserves the history and character of our built environment – and heritage requirements need not get in the way of significant sustainability upgrades. Image: Jade Cantwell

A heritage listing on your home prevents modern upgrades, including sustainability measures – right? Not always, writes this expert team.

The heritage listing process, through which places – in practice, mostly buildings – are included on statutory registers to protect their heritage values, is often seen as a barrier to progressive development, including to achieving greater sustainability for these places. But we are keen to assert that this is not the case. In fact, the two goals of heritage preservation and sustainability

are highly complementary, since the best way to preserve a heritage place is to ensure continued viability and use, and physical sustainability is key to this objective.

In this article, we will explain how heritage listing does not need to be an obstruction to achieving greater sustainability for a building, and provide some practical examples that owners or managers of heritage places can explore.

THE CHALLENGE

In March this year, the Intergovernmental Panel on Climate Change (IPCC) finalised its latest Synthesis Report. It paints an alarming picture of the future, but also makes the point that when it comes to addressing climate change, "feasible, effective, and low-cost options for mitigation and adaptation are already available, with differences across systems and regions."

In Australia, the commercial building sector is responsible for 10 per cent of total carbon emissions, and residential buildings are responsible for an additional 12 per cent. Clearly, improving the environmental performance of buildings can have a significant impact on the country's carbon footprint, and federal, state and local governments have implemented a variety of schemes designed to encourage and/or subsidise building owners to improve energy efficiency.

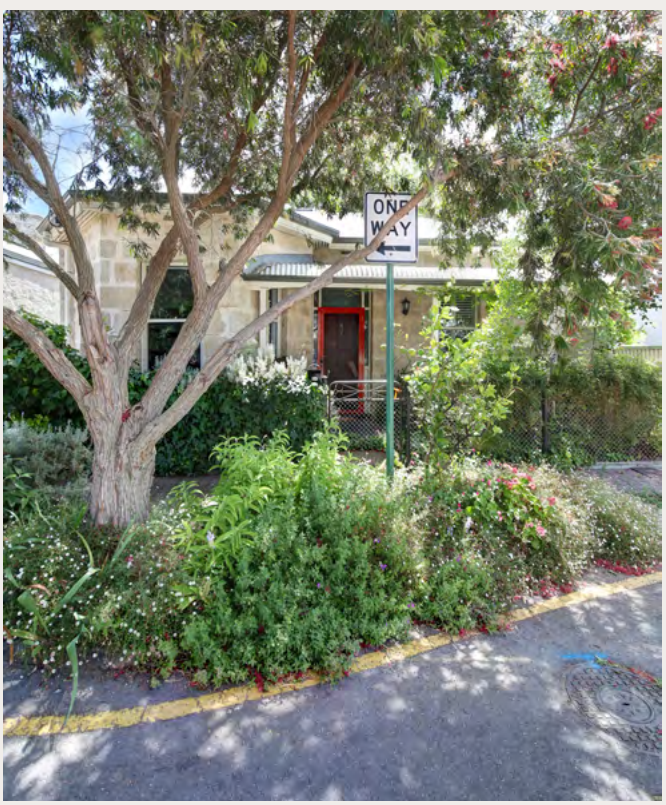
While these programs have often been successful, there are sensitivities when it comes to heritage homes. Both regulators and owners can be nervous about the impact of altering heritage buildings to improve environmental performance, and at heritage consultancy Extent Heritage we are frequently asked (by both local government and building owners) to provide advice on how best to facilitate the installation of energy-saving measures while minimising the impact on the significance of a heritage place. So how do we balance the need to protect our natural environment with the preservation of our cultural heritage, as expressed through our built environment?

EMBODIED ENERGY

Perhaps the most fundamental sustainability benefit of existing structures, which of course includes heritage-listed places, is that they are already built. Carl Elefante, former president of the American Institute of Architects, expressed what is thankfully an increasingly widely-held understanding when he said "the greenest building is the one that already exists".

When considering whether and how to update a building, it's important to bear in mind that the building itself is the product of significant energy use – the energy that was involved in making the materials, bringing them to site and constructing the fabric (collectively known as embodied energy). No matter how well a new building performs environmentally, if an old dwelling has been demolished to build it, then the loss of all the embodied energy from the original dwelling represents a significant environmental setback. It is almost always more efficient in the short and medium term (and often the longer term too) to improve the environmental performance of an existing building than to construct a new one.

If a new building does need to be constructed, then reusing



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Mark and Trish restored their heritage-listed stone cottage in Adelaide and added a modest extension, achieving a 7.3-Star energy rating for the finished house. The sash windows in the front facade were not able to be replaced due to the heritage requirements, but they were fully refurbished. For the full story, see p22. Image: Shane Harris, Arch Imagery

recycled building fabric is not only a great way to create a building with texture and character; it is also an efficient way to minimise building waste.

IMPROVED OPERATIONAL PERFORMANCE AND HERITAGE BUILDINGS

It should be noted that not all heritage places are subject to the same level of planning controls. The vast number of places that have heritage protections are protected at a local level and managed by local government – these are the focus of this article. Undertaking works to a building included on a state heritage register is more complex, and advice should be sought from the relevant state body or a qualified heritage professional before proceeding.

Generally, local heritage listings do not regulate the management of a building's interior, so internal changes will likely not require a planning permit. These sorts of changes are the cheapest and usually the easiest way to improve operational performance. They include:

- *Insulating with hygroscopic materials* (those that absorb moisture from the air and dry out again). Insulation can be inserted into the roof cavity, within walls or under the floor. There are a variety of products available, and if installed properly, insulation can significantly improve environmental performance.
- *Opening windows.* How often have you seen a historic window painted shut and made inoperable? Unjam those windows, including the one above your entry door, and let the fresh air in!
- *Installing balloons in chimneys.* While chimneys can help to draw hot air out of a space using the thermal stack effect (the passive movement of air due to thermodynamics), in winter they can also introduce unwanted cold air. During the winter, close off the chimney with a chimney damper or inflatable chimney balloon.
- *Draughtproofing windows, doors and floors.* Again, an easy and very practical step to take. Even small gaps can have a dramatic impact on thermal efficiency, and plugging them is a cheap and easy way to improve the performance of a building. Even historic sash windows can have new seals attached or rebated to them – thankfully timber is a forgiving material for this kind of alteration.
- *Dressing your windows.* Adding blinds (consider honeycomb blinds) or good old fashioned (or fashionably contemporary) curtains with pelmets, and potentially adding a low-e film to the glass, can all assist in reducing heat loss in winter.
- *Partitioning internal spaces.* This is a more complex solution, but particularly in larger buildings – for example, former warehouses or churches – partitioning to create smaller spaces to heat and cool can work well to reduce energy consumption.
- *Switching from gas to electric.* Disconnecting from gas and running your house on electricity that is either 100 per cent GreenPower or generated on site via a solar PV system will have a major impact on reducing emissions, as will installing heat pumps and other efficient electrical appliances.

While changes to the exterior of heritage-listed buildings are more challenging and will likely require a permit, there are still opportunities to meaningfully improve their performance without impacting on a site's significance. Maintaining the heritage significance of a place does not usually require it to be 'frozen in time' – in other words, kept exactly as it is. The listing will usually identify key aspects of the place that need to be respected, but change can be accommodated in other areas. For example, a particular listing may highlight the form of the facade and roofline, but the individual windows and doors could be less significant, in which case considered amendments to those elements could occur. Recognising this, changes to a building that may be possible include:

- *The addition of solar panels to less-sensitive areas.* We would usually encourage solar panels to be installed on more recent building fabric, for example on a new addition rather than onto the historic part of the building, and/or to be concealed from public view. If that's not possible, then some contemporary solar panels mimic historic materials, and that may be an acceptable alternative.
- *The installation of external shutters, screens, blinds or awnings.* These shade features can help to reduce unwanted heat gain in summer, although this intervention needs to be done sensitively and may not be an acceptable option for windows that are visible from the public realm.

Council planners and their heritage officers are increasingly conscious of the need to achieve greater sustainability in the built environment, and asking their advice will help to achieve the best all-round outcome.

LANDSCAPING

Landscaping is rarely seen as a way of improving environmental performance, but in fact, changes to landscaping can help mitigate unwanted heat loss and gain and even help preserve the structure as well as improving the appearance of a building. Some options include:

- *'Soft scaping'.* This involves removing hard surfaces from around the base of a building, helping to reduce water pooling at sensitive locations such as the base of brick walls and timber studs and therefore reducing the risk of rising damp. It also has the added environmental benefit of reducing stormwater runoff into the drainage system.
- *Planting for shade.* Select plants that can provide shade to exposed windows and walls. At Extent Heritage we often suggest the use of pergolas and planting as an unobtrusive way to

provide shade. Historical information in heritage listings can be of use, since early planting schemes were often made with greater consideration of local climatic conditions.

IT'S NOT ALL ABOUT PHYSICAL CHANGES

If for some reason you feel like you can't make any changes to the physical fabric of your place, there is still a lot you can do to improve your environmental footprint at home. Lifestyle changes can result in significant positive environmental impact, and since these require no physical works at all, they can be implemented just as easily at a heritage place. These might include:

- *Signing up to GreenPower.* If you can't install your own renewable energy system, then why not rely on someone else's? All the environmental benefit with none of the hassle!
- *Auditing your appliances.* Go electric and convert to energy-efficient appliances to reduce energy use and costs.
- *Ensuring water saving measures are in place.* Water-efficient showerheads, dishwashers and washing machines save not only water, but the energy used to heat it. This may require some replacement of historic fixtures, but these are unlikely to be subject to heritage control in locally-listed places.
- *Reducing waste.* Use less and ensure that what is used can be recycled.
- *Planting and growing your own food.* This is fun, tasty and sustainable (and, in a heritage house, more than likely continuing where previous occupiers left off).

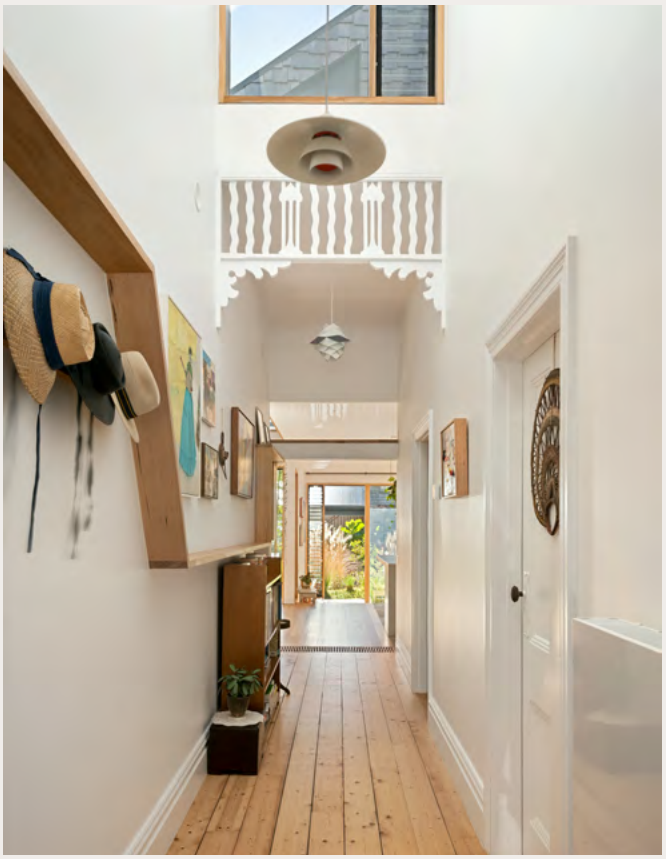
CONCLUSION

There are many ways in which a heritage building can be sensitively retrofitted or otherwise made more sustainable. A significant improvement in environmental performance can be obtained through internal changes – the installation of insulation, sealing of gaps, addition of curtains and the like. External changes, while likely to require a permit, are also possible and if they are sensitively designed and located can avoid impacting on the heritage significance of a place.

While old buildings may be less operationally efficient than new buildings, retrofitting a historic building is generally more environmentally sustainable because it harnesses embodied energy already spent. If retention is not an option, then remember to try to use recycled materials to help reduce waste where possible.

Finally, don't forget about other ways to improve the sustainability of your home. Simple changes to the way in which we consume energy and resources can have a very big impact!

Ultimately, the retention and sensitive retrofitting of heritage buildings can play a major role in helping us to manage the threat of climate change and are among the "feasible, effective, and low-cost options" identified in the IPCC's report.



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Zen Architects completed a deep renovation of this Victorian-era Melbourne home, with instructions from the client to preserve the heritage character of the place as much as possible. The existing building fabric was retained and upgraded for greatly improved operational performance and liveability, achieving an energy rating over 6 Stars despite retaining the original single-glazed heritage windows. New additions were added to the rear of the site. Image: Emma Cross Photographer

ABOUT THE AUTHORS

Dr Leo Martin is National Technical Lead (Heritage Places) and Ian Travers is CEO at Extent Heritage, one of Australia's largest specialist heritage consultancies, with offices in Melbourne, Sydney, Brisbane and Hobart. Ruth Redden is an independent architect and heritage consultant specialising in the conservation, management, repair and adaptive reuse of historic places.

FURTHER READING

A great resource for practical tips on improving the operational performance of historic buildings is the *Old House Eco Handbook* (Hunt and Suhr, 2019).