Solar panel systems

Heritage practice note

Solar panel systems can be installed on most heritage buildings, helping to reduce energy costs and reliance on non-renewable energy sources.

This practice note provides guidance on solar panel system installation at properties listed on the State Heritage Register, under the *Heritage Act 1977*. The guidance in this practice note may also apply to local heritage items in NSW (subject to local council approval, where required).

Heritage NSW will refer to this practice note when assessing applications for approval. In specific circumstances solar energy system installation may be exempt. Check the Heritage NSW website for more information.

Heritage considerations

Sensitively locating, designing and installing solar panels can minimise both visual and physical impacts to heritage values. The following steps should be followed when installing solar panel systems on heritage buildings:

- Minimise impacts to heritage values by considering location.
- Minimise visual impacts through design.
- Minimise physical impacts during installation.
- Obtain approvals.

Owners and managers should note that compliance with this practice note is not a substitute for formal approval. All necessary heritage approvals should be obtained prior to undertaking works (see flowchart on page 5).

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Minimise impacts to heritage values by considering location

Apply the following criteria when choosing a location for your system.

Table 1 Minimise impacts to heritage values

Criteria	Considerations
Check heritage values	• Avoid impacts to heritage values of the building and landscape (including views to and from). • Avoid timber shingle and slate roofs.
Consider secondary locations	• Secondary structures may be of lesser heritage significance or less visually prominent. • Could be ancillary buildings, garages, carports or sheds. • A ground-mounted system may avoid impact to heritage fabric.
Avoid complex and/or small street facing roofs	• Avoid irregular panel configurations. • Avoid verandah/s and dormer roofs, and windows.
Set back from street and conceal where possible	• Set solar panels as far back on the building as possible so they are less visible from the street. • Set solar panels down within a valley roof or behind a parapet wall to avoid visibility.
Match scale	• Scale of solar panel systems should match the scale of the building. • Roof/surface integrated materials should match the existing or original roofing in all aspects, including size and colour.
Consider new technology	• Roof/surface integrated technology may be considered when the existing roof is at its end of life and needs replacement.

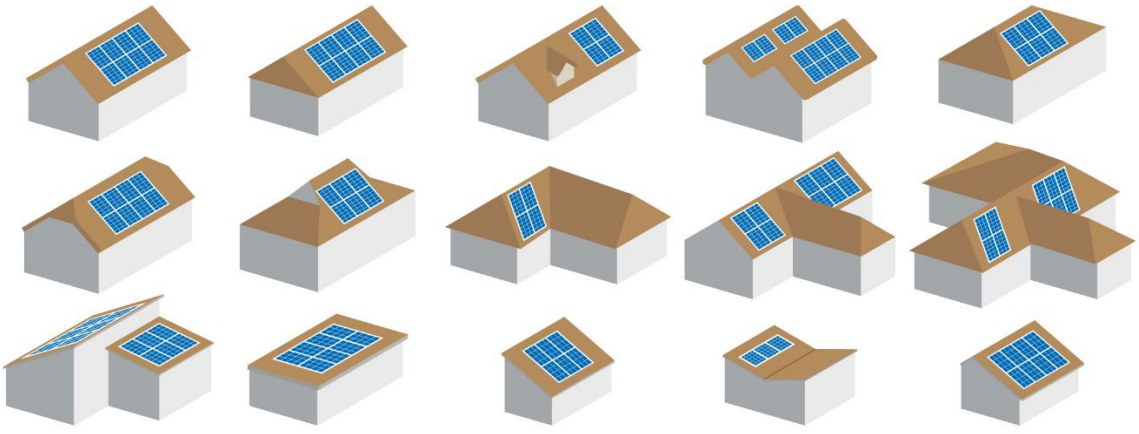


Figure 1 Suggested solar panel spacing and alignment

Minimise visual impacts through design

Apply the following criteria when designing your system.

Table 2 Minimise visual impacts

Criteria	Considerations
Panels mounted at the same angle as the roof plane and as close to the roof surface as feasible	• Flat roof installations may require a tilt frame to achieve a viable angle.
Roof form should remain intact and readily legible	• Roof elements such as chimneys, ventilators and parapets should not be impacted to accommodate solar panel systems.
Solar panels must not extend beyond the edge of the roof plane	• Solar panels should be offset evenly from the ridge, eaves and roof edge. • The minimum offset should be determined on a case-by-case basis determined by the scale of the roof.
Panels should be evenly spaced between roof features	• Features include chimneys, skylights and clerestory windows.
Panels should be arranged in neat rows and paired	• If there isn't sufficient space to maintain a paired layout, the system size should be reduced by a panel.
Select the least obtrusive colours	• Supporting framing is generally available in several colours, including black or natural silver. Select the least obtrusive colour to complement the roof covering and panels.
Screen ground-mounted systems	• Screening with landscape measures might be considered but should not overshadow the panels.

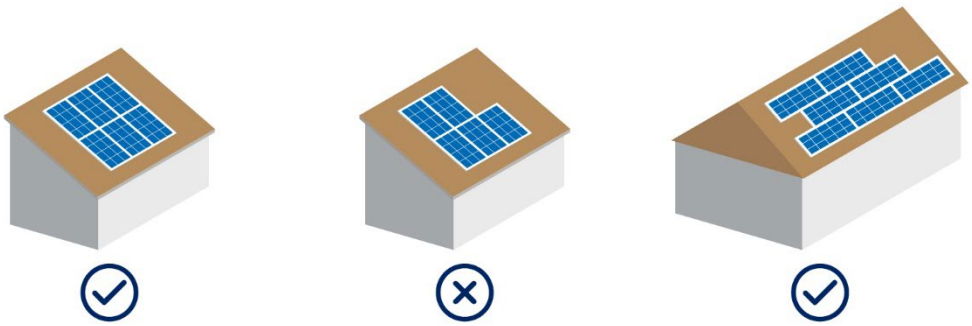


Figure 2 Correct placement of solar panels

Minimise physical impacts during installation

Apply the following criteria when installing your system.

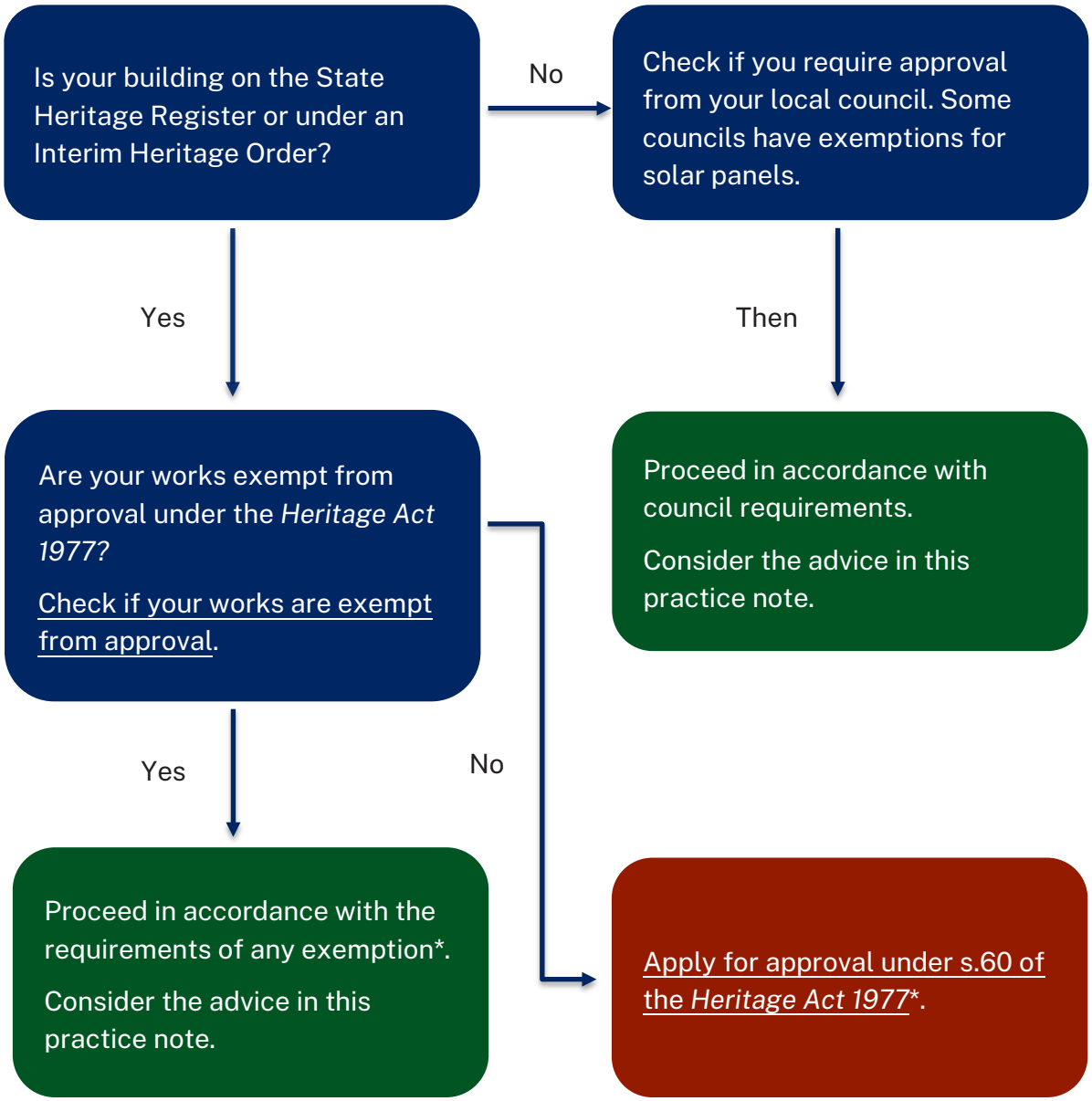
Table 3 Minimise physical impacts

Criteria	Consideration
Confirm good existing roof condition	• Roofs should be weathertight and accessible. This is to allow installation and ongoing maintenance such as cleaning, which is important in maintaining optimum efficiency of solar panels. • Check the structural capacity of the existing roof. The existing roof should be sufficient to take the weight of the new equipment. If structural strengthening is required, this should be confined to internal structural augmentation and supported by an engineer with experience working with heritage buildings.
Ensure replacement roofing material is available	• Should any be accidentally damaged during installation.
Prevent water damage	• Care and attention to detail is needed to ensure that the framing installation is waterproof to avoid water ingress to the roof space and building. Requirements will vary by roofing material.
Check compatibility of roofing materials	• Compatibility of all roofing materials and new equipment needs to be checked to avoid galvanic corrosion, which can lead to accelerated deterioration of fabric.
Trim mounting frames and ensure cabling containment is neat and discreet	• Mounting frames should be trimmed of any excess and finish at the panels and clips. New cabling containment for the connections between the solar panels and inverters should be neat and discreet.
Fixing points should be minimised	• Equipment must be positioned to avoid impacting or covering building elements such as windows or decorative elements.

Obtain approvals

Use this flowchart to check if your system requires approval.

For a text version of this flowchart, please see Appendix A.



*Approval from your local council may also be required.

Checklist

This checklist may be used by owners, managers and/or contractors when installing solar panel systems on heritage buildings.

Table 4 Checklist of considerations when installing solar panel systems on heritage buildings

Check	Consideration
☐	Will your solar panel system be optimised to meet site energy demand requirements? *When determining location balance heritage and solar access considerations.*
☐	Have you considered locating the solar panel system on an outbuilding, secondary structure, or mounting on the system on the ground?
☐	Will your panels be mounted at the same angle as the roof plane? *Tilt frames on flat roofs should be set back from the edge of the roof and ideally concealed from view by a parapet wall or similar.*
☐	Will the main roof form remain intact and be readily legible?
☐	Will the panels be arranged in neat rows and paired? *If there isn't sufficient space to maintain a paired layout the system size should be reduced by a panel.*
☐	Will the support framing be the least obtrusive colour to complement the roof covering and panels?
☐	Is the existing roof covering in good condition, weathertight and accessible to allow installation and ongoing maintenance?
☐	Is replacement roofing material readily available? *Material may be accidentally damaged during installation.*
☐	Is the structural capacity of the roof sufficient to take the weight of the new equipment? *If structural strengthening is required, this should be confined to internal structural augmentation and supported by an engineer with experience working with heritage buildings.*
☐	Will installation to the roof covering use the minimum number of fixing points required? *Reuse fixing points where possible.*
☐	Will framing installation retain waterproofing and avoid water ingress to the roof space and building? *Requirements will vary by roofing material.*
☐	Will all mounting frames be trimmed of any excess and finished at the panels and clips?

Check	Consideration
☐	Will all new inverters, batteries, additional electrical boxes and associated wiring and conduit be neat and discreet, and the number of fixing points minimised? *Equipment must be sensitively positioned to avoid impacting building features or decorative elements. The location and design should be confirmed prior to installation.*
☐	Will all new elements be able to be later removed? *All new elements should be reversible.*
☐	Will the installation avoid archaeology and relics? *If not, you may need approval*.*
☐	Is your solar panel system installation exempt under the Heritage Act Standard Exemptions? *If not, you may need a heritage approval*.*
☐	Do you require any other types of approval? *Check your local council's requirements.*

*Check the Heritage NSW website for more information.

Further information

Sustainable heritage building guide: Improving the environmental performance of heritage buildings in NSW

The Sustainable heritage building guide provides detailed guidance for owners and managers of heritage buildings on how to transition their buildings towards net zero. The guide outlines environmental and energy performance strategies that are sensitive to heritage significance. It includes accessible information on building maintenance and management, upgrading building services and fabrics as well as commonly used renewable energy technologies.

Standard exemption under the *Heritage Act 1977*

Certain activities and work are exempt from approval under the *Heritage Act 1977* for items listed on the State Heritage Register. These activities or work are known as 'standard exemptions'. They must have little to no impact on the item's heritage significance and support its ongoing management. Standard exemptions are made under the *Heritage Act 1977* and published in the NSW Government Gazette.

Appendix A

Flowchart – Path 1

Is your building on the State Heritage Register or under an Interim Heritage Order?

If yes.

Are your works exempt from approval under the *Heritage Act 1977*?

Check if your works are exempt from approval.

If yes.

Proceed in accordance with the requirements of any exemption*.

Consider the advice in this practice note.

*Approval from your local council may also be required.

Flowchart – Path 2

Is your building on the State Heritage Register or under an Interim Heritage Order?

If no.

Check if you require approval from your local council. Some councils have exemptions for solar panels.

Then.

Proceed in accordance with council requirements.

Consider the advice in this practice note.

Flowchart – Path 3

Is your building on the State Heritage Register or under an Interim Heritage Order?

If yes.

Are your works exempt from approval under the *Heritage Act 1977*?

Check if your works are exempt from approval.

If no.

Apply for approval under s.60 of the *Heritage Act 1977*.*

*Approval from your local council may also be required.

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