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|  Hot water audit checklistVersion 3 |
| Auditors for the Solar Homes Program use this checklist when they conduct inspections of hot water installations and applicable supplementary services. It includes all questions they base their inspection on.  |

Note:

* This checklist is specific to the installation of hot water systems installed under the Solar Homes Program.
* This checklist comprises the questions for the audit of rebated hot water installations and as applicable supplementary services nominally performed within up to six months of the installation date – focusing on safety and standards.

## What do these ratings mean?

Auditors will apply one of these ratings to each question in the checklist:

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| **Unsafe** | This means there is a safety hazard which poses an imminent risk of damage to property or persons and that the system will be shut down. |
| **Needs Rectification** | This means the system does not meet key safety and quality clauses in the standards/guidelines for installation. The installation does not pose an imminent safety risk but may be at risk of becoming unsafe in the future. |
| **Improvements Identified (For Information)** | This means the system does not pose a safety risk but was found to not comply with all standards and guidelines. Improvements identified are provided as information and guidance for retailers and installers. |
| **Adequate** | This means no evidence of material non-compliance with standards or guidance was found and that the system was installed satisfactorily.  |

 **Information Only** This means that we are collecting data which may be of value.
Auditors will also document other details for information purposes only, i.e. no rating is applied to these items.

# Hot water audit checklist

| **Checklist item** | **Question** | **Applicable rating** | **Relevant standards /reference** |
| --- | --- | --- | --- |
| Cross Connection 1 | Are the cross-connection control and backflow protection provisions in accordance with the Standards? | UnsafeNeeds Rectification | Clause 3.2 - AS/NZS 3500:4:2021 Cross connection control and backflow prevention devices shall be installed in accordance with AS/NZS 3500:1.2021. AS/NZS3500.1:2021 cl 4.4.7 Heated water systems: the requirements of this section for backflow prevention devices apply equally to heated water supply systems and cold-water supply services. The Backflow prevention device used in heated water supply systems shall be suitable for the specific heated water installation. |
| Flow Rate 1 | Have the correct flow rates at outlets within a building been achieved? | Needs Rectification | AS/NZS 3500.4:2021 cl 1.10. & cl 10.3.2 |
| General Installation Requirements 3 | Do any storage tanks connected have overflow and safe tray provisions that comply? | Needs Rectification | AS/NZS 3500.4:2021 cl 2.6.1, 2.6.2, 5.4.3, 5.4.4, 5.4.5, 6.4.4, |
| General Installation Requirements 4 | Does the installation have the correct depth of cover? | UnsafeNeeds RectificationImprovements Identified | AS/ANS 3500.4: 2021 cl 4.10 |
| General Installation Requirements 5 | Have the manufacturer’s installation instructions been adhered to? | Needs RectificationImprovements Identified | Plumbing regulation’s part 3, 14. Manufacturer's instructions are not mandatory, but they must be considered. include Gas installation AS/NZS5601.1:2022 cl 6.2.2 |
| Material and Products 1 | Are the materials used fit for their intended purpose and where required appropriately authorised? | UnsafeNeeds RectificationImprovements Identified | AS/NZS 3500.4:2018 Section 2 and PCA Watermark requirements. AS/NZS 3500.1: 2021 App B.2 watermark certification PCA reference to AS/NZS 4020. |
| Pipework 1 | Does the installation have the minimum internal diameter pipe size? | Needs Rectification | AS/NZS 3500.4:2021 cl 1.7 to meet requirements of 1.8 & 1.9, 6.3.6 for Solar water Heaters. Cl 10.6.1.1 for recirculation systems. Cl 7.2.1 for thermosiphon only. |
| Pipework 2 | Does the installation have the correct pipework support? | UnsafeNeeds RectificationImprovements Identified | AS/NZS 3500.4:2021 Cl 4.5 |
| Pipework 3 | Where penetrating concrete has the pipe work been protected? | Needs Rectification | AS/NZS 3500.4:2021 cl 4.6.1.2, 4.6.1.3 , 4.6.4 |
| Pressure Requirements 1 | Has the static pressure at outlets within a building been maintained at or below the maximum 500 kPa? | Needs Rectification | AS/NZS 3500.4:2021 Cl 10.4.1 (note this only applies to circulating systems). |
| Protection against Freezing 1 | Has the pipe work been insulated and/or heat traps provided for heat retention as required?  | UnsafeNeeds Rectification | AS/NZS 3500.4:2021 Cl 4.11.5 (where applicable), 8.2.1 & section 8 |
| Protection against Freezing 2 | Does the installation have frost protection where required?  | Needs Rectification | AS/NZS 3500.4:2021 cl6.5.2.2 & AS 2712. Also, Cl 4.11 for freezing when applicable. |
| Protection against Leakage 1 | Are there any leaks in the installation? | Needs Rectification | AS/NZS 3500.4:2021 Cl 9.3 and 9.4 |
| Proximity 1 | Does the installation comply with the proximity to other services?  | UnsafeNeeds Rectification | AS/NZS 3500.4:2021 Cl 4.3 |
| Roof Mounting 1 | Is the roof deflection significant or are there any concerns about adequate roof strength?  | Unsafe | AS/NZS 3500.4:2021 Cl 6.3.3 |
| Roof Mounting 2 | Do the fixing of the solar collectors and tank installation appear to be secure? | UnsafeNeeds Rectification | AS/NZS 3500.4:2021 Cl 6.3.13 |
| Solar Collector 1 | Are the solar collectors likely to be shaded between 9am to 3pm?  | Needs Rectification | AS/NZS 3500.4:2021 Cl 6.3.2, 6.5.1.1 & Appendix H (informative) |
| Solar Collector 2 | Do the solar collectors face between 30° east and 60° west of magnetic north? | Needs Rectification | Plumbing Regulations 2018 Schedule 2 - Division 7 Regulation 9 (1) (a). Question should read "between 30 degrees east and 60 degrees west of magnetic north". |
| Solar Collector 3 | Is the collector inclination between 15° and 55° to the horizontal?  | Needs Rectification | Plumbing Regulations 2018 Schedule 2 - Division 7 Regulation 9 (1) (b). Question should read "35 degrees plus or minus 20 degrees to horizontal." i.e., between 15 degree and 55 degree to the horizontal. |
| System Specification 1 | Does the manufacturer of the HW system match the SV data as provided?  | Information Only |  |
| System Specification 2 | Does the model number of the HW system match the SV data as provided?  | Information Only |  |
| System Specification 3 | Does the serial number of the HW tank match the SV data as provided?  | Information Only |  |
| System Specification 4 | Do the serial numbers of the HW collectors match the SV data as provided?  | Information Only |  |
| System Specification 5 | Was the homeowner given information about the suitability of the water heater relevant to your premises and hot water needs?  | Information Only  |  |
| Valves 1 | Does the temperature pressure relief (TPR) valve terminate in a safe manner?  | UnsafeNeeds Rectification | AS/NZS 3500.4:2021 Cl 6.3.10 ,6.3.11 & AS/NZS 3500.4:2021 Cl 5.11 |
| Valves 2 | Do all the valves, cisterns, taps and temperature pressure relief valves perform?  | UnsafeNeeds Rectification | AS/NZS 3500.4:2021 Cl 9.3 & 9.4 |
| Valves 3 | Does the temperature-pressure-relief (TPR) valve termination point comply?  | UnsafeNeeds Rectification | AS/NZS 3500.4:2021 Cl 5.11 |
| Valves 4 | Does the installation have isolating valves where required?  | UnsafeNeeds Rectification | AS/NZS 3500.4:2021 Table 5.9.1 (A), Cl 5.9 ,5.9.4, 10.10( recirculating systems ) |
| Water Temperature 1 | Does the system comply with the minimum storage temperature of 60°C?  | Needs Rectification | AS/NZS 3500.4:2021 Cl 1.11.2 (a) and 1.11.2(b). Could also refer to AS 3498 Cl 7.1 j. |
| Water Temperature 2 | Does the maximum delivery temperature comply with the requirements? | UnsafeNeeds Rectification | AS 3498:2018 Cl 7.1 and 7.2, PCA NCC volume 3 2022, part B2 B2D5 |
| Decommissioning 1 | If the decommissioned product is left on site, is it disabled so that it cannot be used again?  | Improvements Identified |  |
| Other | Other auditor concerns and/or comments relating to the installation. Full details to be provided in commentary.  | Information Only Improvements Identified Needs Rectification Unsafe |  |

# Electrical

| **Checklist item** | **Question** | **Applicable rating** | **Relevant standards/reference** |
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| Earthing 1 | Have all exposed conductive parts of the HW been provided with an appropriately sized bonding conductor that is connected to the electrical installations earthing system | Needs Rectification | AS/NZS 3000: 2018- 5.4.1.1 |
| Connections 1 | Is there evidence of loose connections in the HW cables and connections with signs of heat?  | Needs Rectification  | AS/NZS 3000:2018 3.7.2 |
| Connections 2 | Is there evidence of loose connections in the HW cables and connections with no signs of heat?  | Needs Rectification | AS/NZS 3000:2018 3.7.2 |
| Wiring 2 | Has all electrical equipment & wiring been installed according to all applicable standards and additional manufacturers requirements? | Needs Rectification | AS/NZS 3000 |
| Elec 1  | Has the HW electrical components, wiring system and circuit protection been installed to manufacturer’s instructions? | Needs Rectification | AS/NZS 3000: 2018 Wiring Rules Clauses 2.1.2 (f), 3.1.2(g) and 4.1.2(e)  |
| Elec 2 | Has basic protection been provided from access to live parts of the HW installation? | Unsafe | Section 43(1) of the ESA 1998Defect code 112002 |
| Elec 3 | If a new HW final sub-circuit has been installed, is it adequately mechanically protected and supported if it is likely to be disturbed? | Needs Rectification | AS/NZS 3000:2018 Wiring Rules Clause 3.9.3.3.2  |
| Elec 4 | Has basic protection been provided from access to live parts of the switchboard? | Unsafe | AS/NZS 3000:2018 Wiring Rules Clause 2.10.3.1 Defect code 212186 |
| Elec 5 | Has an over current protection device been installed at the origin of HW final sub-circuit to protect it from over current? | Needs Rectification | AS/NZS 3000:2018 Wiring Rules Clause 2.5.1.3. |
| Elec 6 | Is the HW final sub-circuit protected by a residual current device rated at no more than 30mA? | Needs Rectification | AS/NZS 3000: 2018 Wiring Rules Clause 2.6.3.2.2 |
| Elec 7 | Do all switched poles of the residual current device protecting the HW final sub-circuit operate to disconnect the final sub-circuit? | Needs Rectification | AS/NZS 3000:2018 Wiring Rules Clause 8.3.10  |
| Elec 8 | If a new HW final sub-circuit has been installed has the neutral conductor of the final sub-circuit been marked or arranged to identify its corresponding active conductor? | Needs Rectification | AS/NZS 3000:2018 Wiring Rules Clause 2.10.5.4  |
| Elec 9 | If a new HW final sub-circuit has been installed has the neutral conductor of the final sub-circuit been provided with a separate terminal at the switchboard? | Needs Rectification | AS/NZS 3000:2018 Wiring Rules Clause 2.10.4.3 (d) (ii) |
| Elec 10  | If required has a current limiting device of the correct current rating been installed at the main switchboard to protect the consumer mains from overload? | Needs Rectification | AS/NZS 3000: 2018 Wiring Rules Clause 2.5.1.2 (b) Note 5 and 2.5.3.1 |
| Elec 11  | If a new HW final sub-circuit has been installed, has it been suitably installed where it enters the switchboard? | Needs Rectification | AS/NZS 3000:2018 Wiring Rules Clause 3.10.3.5 - 3.10.3.6  |
| Elec 12  | If a new HW final sub-circuit has been installed has the switchboard been sealed to prevent the spread of fire (If required) where the final sub-circuit enters the switchboard? | Needs Rectification | AS/NZS 3000:2018 Wiring Rules Clause 2.10.7 |
| Elec 13 | If a new HW final sub-circuit has been installed has double insulation of the final sub-circuit been maintained where it enters the switchboard, if not installed in a wiring enclosure? | Needs Rectification | AS/NZS 3000:2018 Wiring Rules Clause 3.10.1.2 |
| Elec 14  | Is the HW protective device marked on or adjacent to the switchboard to identify the final sub-circuit it protects? | Needs Rectification | AS/NZS 3000:2018 Wiring Rules Clause 2.10.5.2 |
| Elec 15  | Is the resistance of the HW final sub-circuit protective earthing conductor low enough to permit the passage of current necessary to operate the over current protective device in the required time? | Needs Rectification | AS/NZS 3000:2018 Wiring Rules Clause 8.3.5.1 Table 8.2  |
| Elec 16 | Is the insulation resistance between all live conductors of the HW final subcircuit and the installation earthing system no less than 1 MEG OHM? | Needs Rectification | AS/NZS 3000:2018 Wiring Rules Clause 8.3.6.1  |
| Elec 17 | Are all circuits connected to the corresponding terminals of the electrical equipment? | Unsafe | AS/NZS 3000:2018 Wiring Rules Clause 8.3.7.1 Defect code 212938 |
| Elec 18 | Have all conductors been connected in a manner that provides reliability, electrical continuity, and appropriate level of insulation, mechanical strength and no undue mechanical stress on any connection? | Needs Rectification | ASNZS 3000:2018 Wiring rules Clause 3.7.1 |
| Elec 19 | If required has a lockable isolating switch been installed adjacent to, but not on the HW itself? | Needs Rectification | AS/NZS 3000: 2018 AMDT 2 Clause 4.19  |
| Elec 20 | Does all electrical equipment installed have the characteristics appropriate to the conditions to which it is installed? | Needs Rectification | AS/NZS 3000:2018 Wiring Rules Clause 4.1.3 |
| Elec 21 | Confirm that the electrical installation for the HW as presented is consistent with the details in the Certificate of Electrical Safety (COES)? | Improvements identified | Section 44(3) of the ESA 1998 Defect code 111009 |
| Elec 22 | Does the installation match the information provided on the CoES? | Improvements identified | Section 44(3) of the ESA 1998 Defect code 111009 |
| Elec 23 | Has the HW socket outlet been installed in a manner that is subject to undue mechanical stress or damage in normal service?For plug in installation: 1. Without the use of a power board or double adapter
2. Without needing to be extended, altered or strain put on the connection.
3. Not subject to mechanical damage
 | Needs Rectification | AS/NZS 3000:2018 Wiring Rules Clause 4.4.2.2 |

Solar Victoria periodically reviews this checklist. If you would like us to consider your feedback on an audit item, please email us: quality.assurance@team.solar.vic.gov.au

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Current revision: Version 3

# Useful links

For more information about the audit process: [solar.vic.gov.au/audits](https://www.solar.vic.gov.au/audits)

Australian Competition and Consumer Commission: [accc.gov.au](https://www.accc.gov.au/)

Australian and New Zealand Standards: [standards.org.au](http://www.standards.org.au/)

Electrical Regulator Authorities Council: [erac.gov.au](http://www.erac.gov.au/)

Electrical Equipment Safety System: [eess.gov.au](http://www.eess.gov.au/)

Energy Safe Victoria: [esv.vic.gov.au](http://www.esv.vic.gov.au/)

Product recall list: [productsafety.gov.au/recalls](http://www.productsafety.gov.au/recalls)

Victorian Building Authority: [vba.vic.gov.au](https://www.vba.vic.gov.au/)

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