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| Solar array self-assessment checklist |
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| **Site Name** |  |
| Health service |  |
| Address |  |
| NMI |  |
| Capacity (kWp) |  |
| Installer (contact details) |  |
| Installation key dates |  |
| * Commissioned |  |
| * Practical completion |  |
| * Defect liability |  |

This self- assessment checklist provides a summary of the documentation to be requested from the solar contractor and the items to be reviewed / checked before the end of the Defects Liability Period.

| **Self-Assessment Checklist** | | |
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| **Action** | **Requirements (Tick when complete)** | |
| Request and Review documentation from solar contractor | * Annual energy generation performance expected and guaranteed * A list of equipment supplied with model, description & serial numbers.   + Modules   + Inverters   + Framing and mounting details   + Meters * Construction documentation:   + Solar array layouts, indication the location of solar array, inverters and point of connections to switchboards and generators, if applicable, in relation to building.   + Single line diagrams (SLD) for all cabling and a basic connection diagram that includes the electrical ratings of the PV array, and the ratings of all overcurrent devices and switches as installed.   + Check that the as-built drawings provide the locations of DC isolators around PV array and that the real location match the as-built drawings. Note that it is good practice to provide a DC isolator location map(or as-built) at the roof access point or other nearby location.   + General arrangement of inverter mounting and associated cabling connection details   + Earthing (DC and AC)   + DC reticulation details, including connections, protections, DC penetrations locations and cable paths   + AC LV reticulation details   + Distribution boards’ modifications   + Metering and data provisions   + Labelling and identification   + Cable sizing, clearly illustrating cable type, cable length (or drawing showing cable reticulation), cable installation type, circuit breaker settings, load, voltage drop results, fault loop impedance results, etc   + Circuit breaker selection   + Fault level calculations and a list of actions to be taken in the event of an earth fault alarm – including any remote monitoring configuration. * Operation and Maintenance Manual including:   + The shutdown and isolation procedure for emergency and maintenance.   + A list of actions to be taken in the event of an earth fault alarm – including any remote monitoring configuration.   + Providing safety-in-design register, including actions taken to minimise identified risks   + Copies of all design calculations   + Maintenance procedure and timetable.   + Equipment manufacturer’s documentation and handbooks for all equipment supplied, including equipment warranties.   + Contact personnel for installation enquiries and system support.   + Details of any central protection, phase balancing or export control installed, including devices, wiring and settings   + Voltage rise calculations or measurements * Array frame engineering certificate for wind and mechanical loading. * Installer/designer’s declaration of compliance. | |
| Test results and certificates | * Commissioning test procedures, commissioning results and Certificate of Electrical Safety (CES): Note that the inspector will issue CES once the plant is considered electrically safe | |
| Visual check | * Visual inspection that the installation reflects the designed layout. Check for shading impact on solar array from roof elements (e.g. AC condensers) or nearby elements (e.g. other buildings, trees, etc.) * Check that solar PV system base connection details match that shown on the shop drawing (including number and type of clamp/fixing, number and type of rails per panels and general arrangement) * Make sure all modules are attached securely to their mounting brackets * Visually inspect the array for cracked modules, scratches, corrosion, damaged junction boxes, and loose wires * Verify modules are wired so that they can be removed without interrupting the grounded conductor * Check for labels on the modules. NEC® 2005, Article 690.51: "Modules shall be marked with identification of terminals or leads as to polarity, maximum over-current device rating for protection, and with rated: * open-circuit voltage, * operating voltage, * maximum permissible system voltage, * operating current, * short-circuit current, and * maximum power." * All PV cable, cable conduits, tray, ducts, covers etc are UV rated for purpose, and suitably supported. * Confirm that the installed system allows the roof to drain appropriately * Any rust/degradation/faults with the existing structural system or roof sheeting | |
| * Check that PV array are installed straight with clamps lined up * Check that strain reliefs/cable clamps are properly installed on all cables and cords by pulling on cables to verify (NEC® 2005, Article 300.4, and Article 400.10). * Mounting rails trimmed neatly close to end of panel array with end caps (or no sharp burrs) * Check underneath array for neat cable management (no cable hanging down on roof and UV rated cable ties/ cable clips used). * Check top of PV panels have clear solar access and no conduit (or other services) running over the top. | **🗷 BAD: This end clamp is not flush and is installed incorrectly.**  **🗹 GOOD: Clamp perpendicular to edge of panel as per installation manual.**  **🗹 GOOD: Stainless steel cable ties used at regular intervals with UV rated plastic cable ties. Plastic cannot be used as primary support.**      **🗹 GOOD: Clamps lined up with PV cell lines & flush**    **🗹 GOOD: Mechanical protection of cables on roof**    **🗷 BAD: Left side roof penetration installed incorrect location**    **🗹 GOOD: DC isolator mounted on end of rail** |
| * Check the provision of Mechanical protection of cables on roof. * Check that all wiring and conduit is appropriately rated, neat, and well supported. * Make sure that all grounded conductors are white and equipment grounding conductors are green or bare (NEC® 2005, Article 200.6(A)). | **🗹 GOOD: Anti-corrosion treatment applied for any cuts made during install**  **🗹 GOOD: Weather station comms installed in weather proof box** |
| * DC isolators mounted to racking rails (and not solar panel frames) and installed with metal covers for UV protection. * Labelled with identifications to match layouts/ drawings. * Verify that all DC isolators are accessible. |  |
| * Check earthing wire connections have been correctly terminated and finished with anti-corrosion paint where required. * Check earthing washers installed flush under required PV panels and clamps, as per as-built drawings. * Check earthing joiners installed between mounting rails and that earthing continuity is maintained at both top and bottom rails | **🗹 GOOD: Earthing connections on both top and bottom rails with anti-corrosion applied**    **🗷 BAD: This earthing washer (between rail and bottom of PV panel frame) is not flush** |
| * Roof penetration(s) under array match shop drawings - both location and detail * Roof penetration(s) sealed | **🗹 GOOD: Sealing of roof penetrations** |
| * Walkway layout matches the structural shop drawings. i.e. the number and arrangement is as per the design. | **🗹 GOOD: Walkway install**    **🗹 GOOD: Joiners installed between rails (to maintain earthing continuity)** |
| * Check that the interlock between the backup diesel generators and PV has been adequately implemented, when applicable | **🗹 GOOD: Labelling** |
| Labelling | * MSB PV labelling is complete to required local regulations and Australian Standards | **🗹 GOOD: Labelling** |
| * Check for shutdown procedure labelling and warning signs on inverters, isolators and in switchboard. * Confirm that Installer has undertaken the safety shutdown procedure and tested with facility management / system owner. | **🗹 GOOD: Labelling** |
| Check the inverters | * Verify with operational readings on inverter screens to demonstrate the array is operational. * Test operation of switchgear by following shutdown procedure ~~on~~ for inverter, and then re-start system |  |
| * System owner provided with full system manual, serial numbers, warranty certificates for all equipment | **🗹 GOOD: Labelling and correct operation**  **🗹 GOOD: Serial numbers on equipment** |
| Electrician check | * Check array/ string output voltage & current, voltage drop * Open each combiner box and test open circuit voltage on each series string to verify correct voltage and polarity. Recheck torque values on all DC terminals and compare against Torque values as per manufacturer’s installation instructions. * Confirm fuses, measure string voltages, etc (need V, A in measurement units) * Confirm that Switchgear and connecting cabling suitably rated and protected to installation conditions | |

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| **Date of assessment** |  |
| Health service representative | |
| Completed by: |  |
| Title: |  |
| Signature: |  |
| Other (if appropriate and amend as necessary) | |
| Completed by: |  |
| Title: |  |
| Signature |  |