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## SOLAR SYSTEMS - WHAT'S THE CATCH?

The trend to collect solar energy is here to stay - but there's a catch.

To offer homeowners the best roof performance, we must understand how solar systems and trusses relate.

There are two main types of solar systems: Solar Power Systems (SPS) and Solar Hot Water Systems (SHWS).

Both systems include lightweight collector panels that pose only a minor challenge to the trusses beneath.

The main difference between SPS & SHWS is the tank SHWS have for storing hot water.

This water tank can be located either on the ground or on top of the trusses, in which case there is a significant additional load.

Both loads must be considered when designing trusses.

To that end, any reputable truss design software has the tools and ability to apply these loads.

### Guide to the Building Designer

A SHWS tank should never be located on the overhang but should be located near the ridge (above and close to the panels).

The underlying trusses should preferably be spaced no more than 600mm apart.

Information about the tank's location, orientation, dimensions, capacity and filled weight must be given to the truss designer and never assumed.

Even when there is no SHWS, it is a good idea to ask the homeowner if provision should be made for installing one in future so that savings in the long run could be achieved by installing roof trusses to account for it.

This should then be conveyed on the plans.

### Guide to the Truss Fabricator

If the orientation of a tank is not shown on the plans, it is unwise to make an assumption as it could run either parallel or perpendicular to the pitch of the roof.

If the tank does not run next to the ridge line but sits on a sloping frame, it is best to seek engineering advice.

The design location of the SHWS and



■ Just mount it askew and put the tank in vertical and she'll be fine, right? Wrong!



■ Typical installation of a SHWS and tank.

water tank should be marked on the layout for the installer to follow.

Stickers or other markings on the top chord indicating the position where the tank is to be mounted should also be made on the trusses.

When trusses are produced in the factory, make sure they are stacked in the right sequence & orientation to reflect the order in which they will be individually lifted on site so that the truss installer does not have to lay them aside or spin the trusses around.

### Guide to the Builder and Installer

Only the trusses labelled to support the SHWS must be installed in that location.

Do not assume that the delivered trusses have been stacked in the right order and orientation but check the markings before laying them on the walls.

Although each truss has been designed to carry an equal share of the tank weight, the actual mounting may not distribute the weight evenly.

We therefore recommend attaching an underpurlin to the top chords of the trusses directly below the water tank to spread any unequal loading.

The SHWS installer should also check the fabricator's truss layout for the final location before mounting the unit in case there have been any revisions made since the architectural plans were drawn.

### FINAL WORD

**When solar systems are retrofitted on an existing roof, an engineer should be consulted to investigate the impact this additional weight has on the trusses, walls and foundations.**

Always play it safe. Do not make assumptions or ignore drawings. A roof system is like a jigsaw puzzle that only works when every piece is fitted in its right place and way around.