

SHEARING SHED DESIGN PROJECT & FAQ's:



PROJECT BACKGROUND:

The project was established in the first instance due to growing feedback from shed staff (end users) that many new sheds have been built around the country and there is often something not quite right in the design; be it door height, slippery floors, chute size, chute recess, etc. The aim of this project was to provide some opinions from leading wool harvesting professionals on what they perceive as 'best practice' design features. In the end this project went a step further in addressing critical design elements impacting OH&S, efficiency and/or productivity.

The project was centred near Dubbo as that is where the project proposal came from Hilton Barrett (Arrow Park), however broader opinions and views were sought through the establishment of the core working group of shearers, wool classers, wool handlers and woolgrowers.

To ensure broader input a national survey was conducted, where respondents rated the level of impact of different in-shed design features with respect to safety, welfare, efficiency and wool quality. The survey was followed by a tour of six different sheds by the working group to evaluate specific design features and then design, prototype and test, firstly as a one stand unit, then three stands before developing the engineering drawings for a full six-stand shed.



Figure 1: One of the prototype designs trialled and evaluated by the working group

Three of the more important features in the design which the working group evaluated and redesigned are; firstly, the drag path, allowing for a straight drag from the middle of the catching pen to the shearing position. Secondly the down tube mounted angle and positioning, allowing for it to be moved forward and back from the chute to cater for different shearers, so that when finished, ideally the sheep's front legs will fall into the chute. Finally, the chutes location, positioned at the finishing position of shorn sheep while minimising the size of manoeuvres required to get there and the wider chute, allowing for ample access.

A number of resources have been developed through the project, for further information go to www.wool.com/sheddesign. This includes the Floor Plan - 'Arrow Park' Shearing Shed, the engineered Six Stand Shearing Shed, Technical Drawings and a project overview video which runs through the process behind the project.

In addition to this project, to provide a range of resources AWI is profiling other shearing sheds with different designs, of which some have a raised board. Where these other sheds have features addressing safety, efficiency, welfare and productivity they will be highlighted.



Figure 2: Key features; down tube position and the ability to move left and right from the chute towards the pen, chute location and width, sloped and front fill catching pen.

Frequently Asked Questions (FAQ's):

Q. How does the design work with a raised board (why wasn't a raised board used)?

Over the course of this project it was found raised verses flat boards was often a feature of indifference or preference. More importantly, it ranked consistently low against other design features with an 'all of shed' approach considering safety, welfare, efficiency and wool quality all together.

Opinions still do differ; and they can differ between individuals and across different roles in-shed. For example, from a wool preparation and quality point of view, some prefer cross bred wool on flat some on raised, similarly, some prefer Merino's on flat and some on raised boards. The same is said between individuals from a wool efficiency point of view.

While all these aspects were discussed, considered and evaluated as part of the project, the bottom line in terms of build came down to the decision of the owner of 'Arrow Park', Hilton Barrett, who ultimately paid for the construction. There is however no reason why this design could not incorporate a raised board if wanted.

Below are some of the key opinions raised through the research in relation to the board. It is often not a matter of right and wrong, but a balancing act of many criteria for those who are building a shed, personal preference and experiences will influence their decision.

For example, some specifics raised when considering the board included:

- Raised boards have advantages for wool preparation as wool handlers do not have to handle or pick up off the ground each time they prepare or retrieve a fleece. Though flat boards mean that wool handlers have to kneel down each time to pick up the fleece, quality wool preparation and wool handler wellbeing can still be addressed through in-shed training and bending the knees.
- Raised boards potentially increase safety concerns with shearers working at raised heights. Handrails can mitigate this issue; however, they present an obstacle between wool handlers and shearers. For example, when a shearer is having trouble restraining a sheep (especially when large sheep and rams are being shorn), wool handlers can't easily get onto the board to assist the shearer or similarly pull the cord (which can be mitigated by stop buttons under the board).
- Some wool handlers expressed reservations in handling wool on raised boards, as their upper body and head are working at the height of a moving animal and handpiece. Additionally, raised boards had differing pros and cons for people of different heights, often taller people end up with bruised thighs and sore lower backs from bending at the hip to get harder to reach wool at the back of the board. Wool handling paddles can mitigate this; however, that can be seen as an additional task to do and manage.

Q. Why one rectangle wool table and not two round tables?

So far, the 'Arrow Park' shearing shed has only required the use of one rectangle table, the board has been designed wide enough to allow for a second rectangle table to be put in if required.

A lot of feedback has generally identified rectangle tables for most situations are the preferred design, however both have their advantages and disadvantages which should be considered.

Circular tables are designed for one-man operation. Advantages of round tables are that handlers do not have to walk around the tables, fleeces can be thrown from any direction, often height adjustable to suit and one handler can operate two tables. Comparatively though they require a change in fleece throwing technique, larger tables may be required for larger fleeces and rolled fleeces cannot be held at one end.

Rectangle tables typically require two handlers and allow for fleeces to be fully spread, given the longer length of the table and still have space for a rolled fleece at one end. As this table has corners, the crutch, legs and neck will land in the same position, for two handlers this is effective as they both know where one another has started, typically at the crutch and move around to the neck this helps to ensure that all wool that should be skirted is not missed.

Q. How does the design suit smaller or larger sheds (less or more stands)?

The internal fit out has been designed to be repeatable, with the catching, fill, laneway pens and board layout being the same for each stand. The individual stand profiled on the back page of the Floor Plan - 'Arrow Park' Shearing Shed can be duplicated to the desired number of stands be it two, four or six. By keeping the design repeatable it allows for the continued logical pen sizes, where the catching and fill pen will hold for your average shearer enough sheep for one run and the laneway pen behind it another run, totalling over 70 head.

The maximum number of stands with this design has not been tested, the further the curvature of the board goes it will eventually become impractical and close the circle, cutting itself off. It is hoped that industry can pick up this design, its core principles and improve upon or adapt it into other designs if desired.

Q. Can left hand shearers be catered for?

Yes, left hand shearers can be catered for, when looking at the Floor Plan - 'Arrow Park' Shearing Shed, a left handed stand would be best added as an addition to the existing catching pen first from the left. An additional catching pen door and chute added to the adjacent corner to where it is currently located would allow for the same drag path and chute angles for a left hander.

Q. Why are the pen doors low and does it create any issues filling up?

The pen doors are low for multiple reasons, however the main reason being that it is low enough to avoid impact with shearers elbows (becomes a larger problem with heavy or steel doors). Apart from the impact, it causes shearers to bend and use their bottom to take the first impact when dragging out sheep. By doing so the back angles created exert an additional stress load through their back. The door height has not been an issue when filling the catching pen, this is due to it being a front fill pen. To avoid this for shearers in other sheds, if a catching pen is back filled, a third 'barn style' door could be added above dual lower doors, with it held open whilst shearing and shut to assist when back filling a catching pen.

Key features of the 'Arrow Park' shearing shed catching pen doors:

- High enough to baulk sheep, low enough to avoid contact with shearer's elbows
- Dual catching pen doors, light weight timber to reduce noise and impact
- Double action swing for ease of entry and exit
- Gap below doors to stop feet getting wedged (sheep and people)
- Rounded corners
- Right hand chute door is clear of impact with the handpiece and releases before the sheep and shearer reach the shearing position



Figure 3: Key features; straight drag from the middle of the pen to the shearing station and the pen doors clear of impact below the shearer's elbows.

Q. What would be done differently looking back?

Hilton Barrett has said there are a few things that he would do differently looking back on the build. Firstly, tongue and groove timber would go further than the board area and would go right through to the wool handling area with it, the wool handling area currently has plywood flooring. The shed currently has two emergency stop buttons at each end of the board, Hilton would have preferred if he had put one at each stand. Finally, there are a few things that could have been done to slow the sheep at the bottom of the chute, either a tapered finish narrowing the chute towards the bottom to provide support to stay upright and or a horizontal finish to the end of the chute.