

# Research Report

Kondinin Group

SEPTEMBER 2019 No. 116 [www.farmingahead.com.au](http://www.farmingahead.com.au)



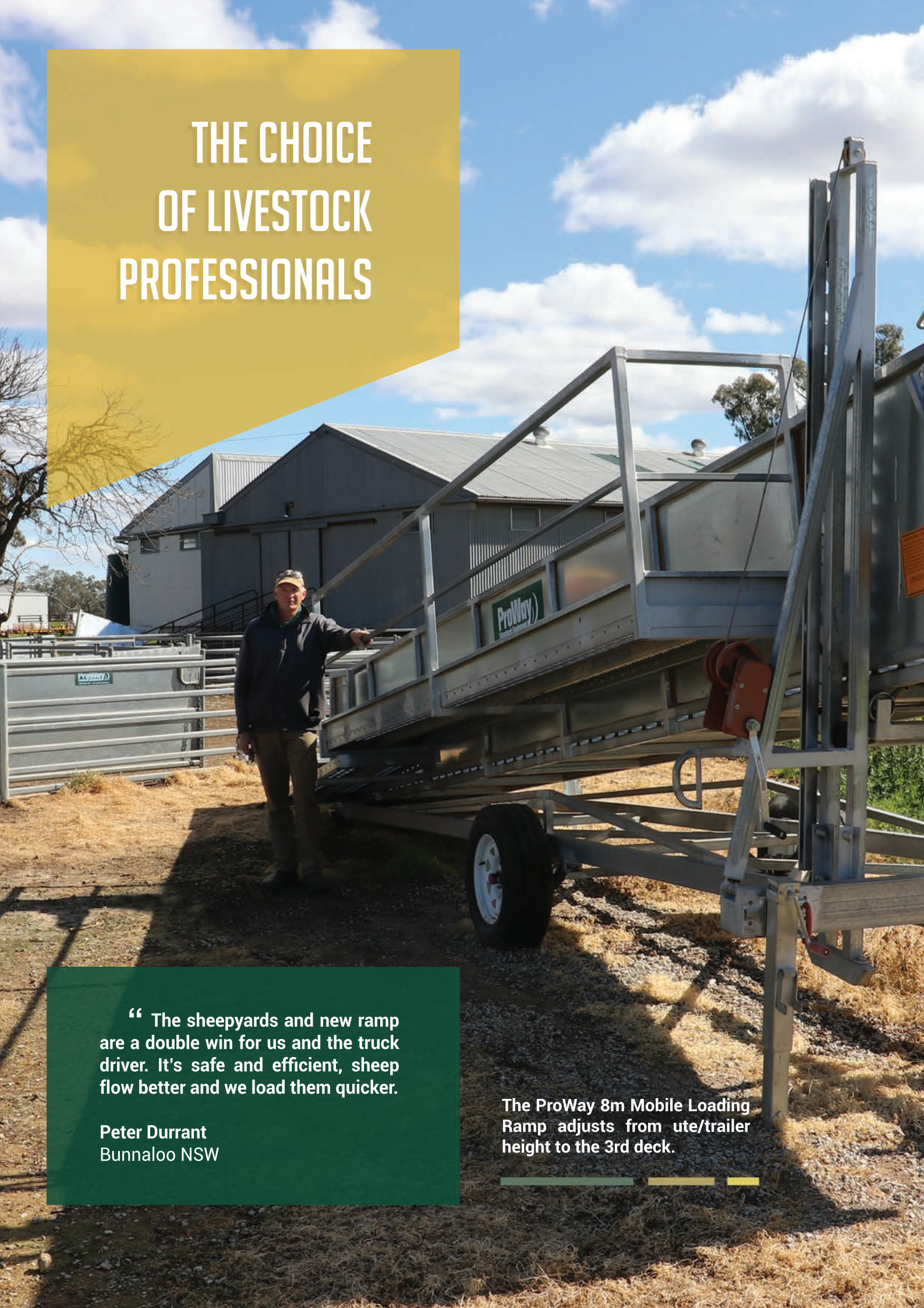
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## SHEEP INFRASTRUCTURE

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**New digs:** A new or renovated set of yards can dramatically reduce stress on sheep and people but careful planning is required. Photo: Mark Saunders



# Think long-term for sheep yard and shed investment

A new set of yards or shed is a sound investment for any livestock property. In this *Research Report*, the Kondinin Group research team of **Mark Saunders**, **Ben White** and **Josh Giumelli** has compiled a range of Case Studies to pass on growers' experiences and ideas with various levels of improvements, from simple renovations to completely new builds.

**T**he heart of any sheep grazing enterprise is made up of its yards and woolshed. But the heart can beat quite differently on many properties, especially where facilities have been untouched for decades.

Poorly maintained and run-down yards and wool sheds represent an injury risk to livestock and employees and can add to stress levels which is not productive for sheep or the people who have to handle them.

Working with stock in the yards or shed should not be a frustration and if done correctly, can lead to savings in terms of labour efficiency and more productive animals. The less time sheep spend in the yards or in the shed, the better.

And in times of labour availability challenges, a work place needs to be attractive. A common thread among stock owners who have invested in new yards, sheds or renovations is they would not expect staff to work in conditions the owners wouldn't.

Compiling this report has provided the authors with a good level of confidence that

producers are indeed biting the bullet and having a close look at infrastructure. This feeling is backed by the fact that virtually every sheep yard and handler manufacturer contacted for this report agrees there has been a substantial up turn in facility improvement in the past five or so years, driven primarily by attractive prices for sheep, lambs and wool (and the fact sheep numbers nationally are at a historically low level).

While the time might be right to outlay some cash on sheep handling infrastructure, investing in a new set of yards or woolshed or renovating requires careful planning. It is recommended to work closely with a supplier and spend time developing a plan that suits current and future needs. Also visit different set ups to see what is working in different areas.

The average sheep producer can get their hands on a pretty decent set of brand new yards, installed for about the price of a farm ute. For this type of relatively small outlay, the benefits can be substantial.

A good example is the adoption of sheep handlers and auto drafters. Not

only do the handlers make working with sheep physically easier, growers can then incorporate other management aspects such as data collection and management.

If looking to invest in a handler or auto drafter (which may be \$15,000-\$30,000), make sure the yards can provide adequate stock flow.

There is no point lashing out on new gear like an auto drafter and thinking that will solve problems with an existing set of run down or poorly-designed yards.

The move towards electronic identification (eID) in sheep is well and truly on the march and is also driving farms to have a look at how sheep are handled. Aside from providing traceability, eID can remove a lot of guesswork from sheep management when combined with body weights, fleece weights, condition scoring and the like.

The data collection hardware is getting much better too, with many high quality stick and panel tag readers, scales, and scale heads (control monitors) readily available. Some of these use WIFI to reduce the need for cables and wires in the yards. **FA**



# Yard buyer's checklist

## ✓ PLANNING AND DESIGN

New builds or renovations need to be well planned. If possible, consider the terrain and soil type which can help with drainage and consequently less dust and/or mud. Take time with the planning and design phase. It is crucial. Also think about prevailing winds and location of the yards with respect to north, south, east and west.

Be accurate too. Some manufacturers include design and fit out using theodolites and laser equipment to ensure easy fitment of panels and gates.

## ✓ THINK LONG TERM

A good set of yards should last for decades as should the benefits from using the yards. Considering the throughput of sheep over say, 40 years, the initial outlay may be very little per head over that time frame.

## ✓ ALLOW FOR EXPANSION

If budget is constrained, consider a staged approach which may include adding shelter or a handler with eID capabilities at some point in the future.

## ✓ MATERIALS

Unfortunately steel is not steel and it pays to ask manufacturers about section thickness of rails and the methods to prevent corrosion such as hot dip galvanising. Curved rails appear to be a must have in modern yards,

whether it's an oval-shaped rail or round pipe. Also consider the use of solid panels, wider rails (such as a K-rail) in areas where stock pressure may require a more visual and physical barrier. Pay close attention to the quality of weldments and joints.

## ✓ CURVES

The bugle design is still a mainstay in sheep yard design and works well as a method of starting the feed of sheep to lead up races and husbandry raceways.

## ✓ RACES

Race design will depend largely on the type of sheep being run through the yards. 600-700mm seems to be a popular choice of race width and dual raceways, especially as lead-up races to handlers and drafters are popular.

## ✓ UNDER COVER

Becoming more popular but may be relative to the amount of time spent in the yards.

## ✓ LATCHES AND CATCHES

There are many options when it comes to gate latches and catches in preference to a length of chain. Spring-loaded catches work well but be aware they can be a dust and moisture trap if the opening is upwards or not under cover. Several manufacturers offer 'slam shut' variants. Personal Access gates are a great idea to reduce the need to climb

over fences and don't be afraid to use a length of rubber tubing on drafting gates to minimise noise and shock to the hand when manual drafting.

## ✓ POWER, WATER AND AIR

Utilities are important in the yards, especially if located a distance from other infrastructure. Remote areas may be better suited to running a diesel generator.

## ✓ CONCRETE

Raceways, drafting areas and other high traffic areas should be concreted, allowing extra for the stock person to walk next to the raceway on the concrete. Also consider the need for feet to fit close to fences and panels in a method similar to a kick board in the kitchen.

## ✓ LOADING RAMPS

Often the forgotten part of the puzzle but maybe one of the most important when it comes to selling livestock. An industry standard is being worked on for loading ramps but look for a structure that will fit the requirements of the trucks to be filled.

## ✓ INSTALLATION

Don't let a substantial investment be ruined by poor installation. Ask about contractors used to install the yards or see if you can track down previous work. **FA**



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**Stand and deliver:** Hilton Barrett's new shearing shed has six stands and is not raised board. Photos: Mark Saunders

# New build is the Hilton of shearing sheds

A brand-new six-stand shearing shed located just outside of Dubbo in New South Wales is focused on shearer, wool handler and sheep comfort. Gone is the raised board, while instant gas hot water, evaporative air conditioning and plastic pen flooring are in, reports **Mark Saunders**.

**T**he new wool shed, owned by shearing contractor Hilton Barrett, is an imposing piece of infrastructure – measuring 24m x 26m and almost 2m off the ground.

But size isn't everything when it comes to efficient shearing facilities and wool harvesting and Barrett thoroughly consulted industry to come up with the finished design.

Extensive research, involving some of Australia's and New Zealand's best shearers has gone into the build, resulting in a facility that Barrett hopes will be a benchmark for modern working conditions.

Australian Wool Innovation (AWI) funded the research while Barrett paid for the shed and the fit out.

Barrett believes by providing shearers, classers and shed hands with good working conditions, labour will be retained in the industry.

"Despite the common belief that shearing is struggling as a vocation, I believe the shearers are around. We just have to work harder to keep them," Barrett said.

"A good shearer can make about \$100,000 a year but there is plenty of scope for improvement when it comes to their workplace."

It's no surprise then, Barrett's shed is full

of creature comforts (for the two-legged and four-legged varieties).

Two industrial-sized evaporative air conditioners will provide some defence against stifling heat and there is a dedicated kitchen, as well as hot water, chairs, tables, sinks, toilets and showers all within the confines of the shed.

The shed has a capacity of about 1400 sheep (weight 55kg) with penning

provided underneath, as well as at the rear of the catching pens and outside the rear of the shed.

Plastic grate style flooring is used extensively in the forcing pens while the catching pens use more traditional timber battens but the incline is a quite steep 1:10 gradient, resulting in the rear of the catching pen being about 30cm higher than the front. ▶



Catching pen with floor inclined.





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**Chad Taylor,  
Wellington NSW**



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and what wouldn't!" **Murk and Kate Schoen, Corowa NSW**



**Mark Taylor, Kojonup WA**

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This shed is full of new thinking when it comes to shearing.



Catching pen doors have changed as well, being lighter and shorter, to avoid the shearers hips and elbows contacting the top of the doors on exit.

The catching pens are also front-filling (from the front side).

The six-stand shed is a modular design and close attention has also been paid to the layout of the board in relation to where the sheep is shorn.

Barrett said it's different to the popular

'saw tooth' design as the new layout provides more room for the shearer (not being so close to the catching pen doors) which in turn means less movement required by the shearer (twisting and turning) to shear the sheep and get the sheep to the exit chute.

The chutes are also bigger than standard, being 800mm by 800mm and made of galvanised steel with a vibration-reduced bench space on top of the chute.

Barrett said a flat floor design was chosen to help with wool handling.

"This was due to OH&S concerns and also as the 'rousties believe they can get much better access to the fleece on a flat board. That means it is much easier to skirt off stained wool from the leg area, for example."

The board design also allows for shearing plants to be relatively easily moved on the overhead beam and there are two emergency stop buttons located on either side of the board.

Lighting in the shed is from overhead units but no lights are located behind the board.

Simple swing out panels in the walls provide additional light in the forcing pens area as well as air flow and a large section of laser light has been installed in the shed's upper rear wall.

Sheep enter the shed via a wide concrete ramp which has a walkway running along its length.

AWI has made the plans for the shed available in the hope the design catches on.

Barrett said about 300 people attended an open day a month or so ago and he has shown the shed to a few contract shearers since then as well.

AWI's Henry Ridge said the new design focuses on wool quality, safety, welfare of sheep and staff and stock flow.

"Industry has worked hard to arrive at this design which has structural integrity built into it," Ridge said.

"It really highlights what efficiencies can be gained through clever and practical design."

Barrett said the shed cost about \$108,000 and the fit out was about \$180,000.

"If you look at that as a 70-year investment, it comes out at about three bales of wool per year."

"The shed's design is freely available to woolgrowers and industry and it is hoped it can be adopted and even improved upon," Ridge said.

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Loading ramp.



Plastic flooring in forcing pens.

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The range has accreditation through the NLIS, which should give peace of mind to the sheep and goat producers in Australia that not only does the product meet performance criteria required by the market but also exhibits the quality and retention characteristics of the brand.

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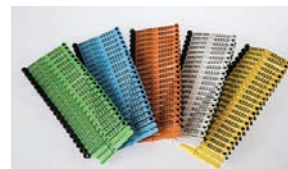
“We have used other multi-shot taggers before and have found the TagFaster to be the best we have used. It was easy to load and the action of the tagger easy to close. We used the applicator in a sheep cradle tagging lambs and found it was easy to manipulate and tag in the cradle and didn’t get in the way of the machinery when tagging.

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# Digby Stretch

Location: Kojonup, WA Build: Atlex yards

**D**igby Stretch reports that considerable planning and earthworks were required to pull these yards together.

Like many other yards, there is always more work to be done, but there is already plenty that has been completed.

Digby said that around 1.5m depth of soil had to be moved to provide a level site with a grade then applied to ensure runoff.

Yard builders, Atlex, advised the investment in earthworks was essential in getting a good final result. After earthworks were completed, the planning phase began with no less than seven design iterations developed prior to the final plans being signed-off. Design constraints included the position of existing infrastructure in the form of sheds, water storage and truck access.

The yards were a long time coming according to Digby, who says that they would have saved a lot of frustration if built 20 years ago, if only for ample cash flow from the sheep enterprise to justify the expenditure. The benefit of waiting until in a position to do things properly was that corners were not cut and the end result works as expected.

There is still some earthworks to be done on the slope above the new yards with an outer holding yard planned for a future build. In the interim, a set of portable yards are in place where the permanent outer yards will go to test the layout and sheep flow. Digby

says considerations for the outer holding yards include road train access.

The shearing shed roof-line will eventually be extended to cover the yards and a quality mobile loading ramp will also be integrated.

Digby uses a Combi Clamp handler as part of the combination with the drafting race and solid-wall lead-up and is happy with the simplicity and ease of use of the handler.

The dual drenching race has guillotine gates midway and at the front which can be raised and lowered using a cable wires running from the rear of the race.

When working on his own, Digby will fill both races, run a dog up and with the mid-way guillotine gate raised, and start drenching from the back. When arriving at the middle, there is usually a gap, so Digby drops the mid-way gate to keep the race tight and continues on up one race and then back down the other, repeating the process and then using the pull handles at the back of the race to release.

Race width is standard Atlex design and the elevated race option with toe recess has been included. This feature cost an additional \$1500, but Digby says it is worth the investment to save the operator's back. He notes that if contemplating a similar design, be sure the recess is high enough so steel cap boots don't scuff.

The races have a set of drafting gates at the end if needed, for example, for drafting after back-lining shorn sheep.



Guillotine gates midway and end of race.



Compacted concrete gravel base mix for easy cleaning.





Toe recess on race.



Drafting race and handler feed race gates.

A smooth race top rail ensures the drench hose doesn't catch on one side, but a gate installed on the other side to accommodate a set of scales means the hose catches on top of poles. This gate will be removed in future.

A separate handling and drafting race with adjustable-width v-profile walls for singular animal presentation spurs off the bugle-horn lead into the main race.

The aim of the handling race is for simple one person operation. This means the Combi Clamp operator can be standing at centre of bugle curve and keep sheep rolling in without having to walk too far to fill the feed race.

Pregnancy scanning and work with the sheep handler is done off the end of this race as gates can be easily removed or positioned to provide a solid wall feeder race. Part of design brief was that the yards had to handle woolly sheep at same time as shorn sheep and also to allow crutching and lamb marking at same time.

A gravel cement bind has been used over the whole yards with the yards being gridded up into 1.5 x 2m blocks and a bag of concrete dropped in each block, spread out then rotary hoed in to 100-150mm of gravel on top of a clay substrate. A vibrating compactor was then used and then the mixed compacted finish was kept wet for two days.

The surface finish is flat and firm making it easy to clean using a loader bucket with a piece of 100x50mm timber on the bucket edge to prevent accidental damage.

Digby says the sheep come in from the side which works really well and that the two bugle, horn-shaped lead pens tend to draw sheep in together. But he laments not working in someone else's Atlex yards for a day. He says he would have put twice as



Horseshoe raised board shearing shed.

many personnel access (PA) gates in but will retro fit more of them in future. PA gates also have integrated dog flaps.

Some 360 gate hinges fitted reportedly work well. Digby says that given a gate is not much more expensive than a panel, if debating putting a panel or gate in, go for the latter. The gate can be replaced with a panel if not used or relocated to another part of the yards.

Digby has altered the hinge position on outer yard gates so a triangle can be formed to feed into the two bugles. He says this design works much better than straight section of fence. He adds that the diamond yards are fantastic, with two in the design, they are great for pulling out one or two sheep from a mob if needed. They are also used for lamb marking with the marking cradle mounted there and plans for a false floor platform that can be dropped in on pallet forks.

From a construction perspective, post location was laid out by the yard builders using a theodolite with post holes marked with a roofing nail. Holes were bored 350-400mm wide and 650 deep so these yards will be there for many years to come.

The shearing shed at the Stretch operation is also impressive, with a raised board and five stands in a horseshoe shape. The skirting table sits in the middle and is only a couple of steps away for the roustabouts to get to.

The entrance to the shed from the yards was upgraded to a large sliding door which can be choked down if needed.

Catching pens have a sloping floor and overhead gear has been recently upgraded to Heiniger EVO portable shearing plants so they can be easily shifted between sheds onto common wall brackets.

Power for the press hangs from a door track rail making it easy to shift but also keeping it out of the way.

FA





# Tim Zadow

**Location:** Kojonup, WA **Build:** Clipex and Midland portable/relocatable

**K**ojonup-based Tim Zadow has two sets of yards, a portable set from Midland stockyards and a set being currently installed using panels from Clipex.

The Clipex panels are being used in combination with an established set of yards, utilising the existing covered race, while the outer yards have been expanded with the heavy-duty panels and beefy posts for temporary placement to evaluate and experiment with the configuration and sheep flow.

Originally Tim was only going to replace one fence, but ended up knocking most of the outer yards down. The pens have been made larger in comparison to the old timber yards and gates in the middle of fence

sections have been removed aiming to get more flexibility into the design with the inclusion of a diamond yard between pens to provide sheep flow options.

The Chinese-fabricated, heavy-duty Clipex panels appear relatively solid with some variation in weld quality between the 40mm SHS legs and the 60x30mm oval rail. Tim isn't convinced about the ease of use of the gate chain latches which appear to be on the thick side for strength but fiddly to use. Installation was around two days and overall, Tim is happy with the \$12,000 investment which included all panels, gates and temporary posts. If he was to replace all of the outer yards, the cost would be around the same again but significantly less than other permanent yard options he looked at.



Midland drafting race.



Midland portable yards.



Midland panels.





Clipex panels.



Old yards meets new Clipex.

There are some left-over panels which Tim will use to incorporate the Clipex handler off the main race. As a side note, Tim reports that while the handler works well, it needs to be set to accommodate sheep at a specific size, meaning a mixed flock needs to be drafted on size first.

Tim reports that he can draft 650 sheep without having to move anything. The drafting gates work well and the rubber-coated magnetic latches hold the drafting gates in position and operate quietly thanks to the nylon gate hinge bushes.

Moving a few kilometres away to his second set of yards, Tim says the panel lengths and construction does vary. While both are Chinese-made, the Clipex heavy duty panels are 3.2m long, the second set of yards are portable Midland panels are 2.2m and have a bigger top rail but the Clipex panel frames have a heavier wall.

Tim says the galvanised sheeting on the bugle fence has shined up over time with use, meaning sheep can see a reflection and sometimes baulk.

Overall quality of build is about as same for both the Midland and the Clipex. The gate latches on the Midland yards go over the top of the gate frame and the gate itself, making the latches prone to jumping open if hit hard.

Tim says that he finds the drafting gates a bit short and the main race on the Midland yards a bit too skinny. While it is fine for lambs, he cannot get in the race with the ewes and has to bend over from outside if they pull their heads down.

Panels are easily removed to install the handler and lamb-marking cradle. Tim says that adaptability is very handy. For example, the drenching race isn't used while using handler, so can get by with the smaller yards.

Tim says the Midlands portable yards cost him around \$12,000 in 2017.

FA



Clipex drafting gates.



Clipex diamond.





# Hamish Thorn

**Location:** Kojonup shire, WA **Build:** Aussie Stockyards

Located near Kojonup, WA, Hamish Thorn has recently installed a set of Aussie Stockyards. With other sets of more expensive Atlex and Commander Ag-Quip yards, Hamish says this set needed to be built prudently but maintain similar functionality.

Featuring a K-Rail style endless rolled coil profile construction onto 75mm SHS Duragal posts, the yards Hamish has built tie in with the shearing shed on the property.

An outer set of watered holding yards has been built using second-hand conveyor-belted and treated pine posts which Hamish used a Bobcat to tension. It is a system the Thorns have used in their other yards and report that the arrangement works well,

particularly for crutching where sheep can be let out on to water after they are crutched.

These outer yards also have wide entrance gates and a feeder race which spurs off from the front of the main work race, for the transportable Proway bulk handler. The Proway bulk handler is also used in the other three sets of yards on other farms, but this is the first set built since owning it so a specific race to suit it could be allowed for.

The loading ramp utilises the natural ground fall with the cutting held in place using some pre-cast concrete panels.

In total the yards including the outer yards easily hold 1200 large crossbred ewes.



360 degree hinge.



Loading ramp utilises the site slope.



Main work race.





75mm SHS posts and K-rail style panelling.



Aussie Stockyards gates.

The steel yard design was built up from a standard Aussie set of plans listed at \$28,000 with modifications and additions made to this base plan. Total investment once completed was around \$45,000 excluding the outer yards.

Hamish says that with the yards still being new, he had noticed a few sharp edges which should round down with time and use. Being new and with a shiny finish, some sheep have baulked coming into the adjustable-V drafting race.

Faith in the design was established after pushing an initial mob into the outer yards, from there they continued and wandered all the way in.

Gate latches are relatively simple and work well although there has been one or two snapped chain retainer bolts. Hamish says

that a pen of 100kg crossbred ewes can hit the gates pretty hard and it isn't uncommon to damage latches, with the same thing happening on the more expensive yards also.

Hamish says the Aussie yards could do with a few more one-way PA gates like those on the Atlex yards. Although he hastens to add that the spring-style Atlex PA gates need a latch for operations like lamb marking where the sprung but non-latched PA gate could be accidentally bumped open from the entry side.

The diamond yards incorporated can also be found in Atlex and Commander Ag-Quip yards owned by the Thorns. Hamish reports that they are essential and to any design and in addition to providing a few more options when drafting, they get used extensively for lamb marking.



Integrated diamond.



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# Kerin Poll Merino stud

**Location:** Yeoval, NSW **Build:** Proway yards and drafter and CombiClamp handler

A passion for data collection and low stress, efficient stock handling has seen the Kerin family at Yeoval in New South Wales make a substantial investment in sheep yards.

The Kerins run a sheep and cattle enterprise which includes the Kerin Poll Merino stud.

At a cost of about \$260,000, including earthworks, the new undercover sheep yards represent tremendous value according to Nigel Kerin.

“Our focus is on labour efficiency and you have to have a great place to work in,” Nigel said.

“I don’t consider the yards as that expensive and if you take the approach ‘I can’t afford them now’ more than likely in 10 years you still won’t have them. You have to just bite the bullet.

“I reckon if I put a yard levee of 20 cents a head on the sheep every time they come through the yards, the new build would be paid for in seven years.”

Built by Proway, the yards are located under a large, clear span shed. Included in the build are large external holding pens which flank two sides of the shed.

Capacity is about 3500 sheep and another priority in the build was the ability to make data collection easy.



Joe Kerin in his new yards.

Nigel said pretty much every time sheep are in the yards, data is recorded, whether it be weight, fleece measurements or scanning for pregnancy status or muscle and fat.

“We want those tasks to be carried out with as less stress as possible which means can be in and out of the yards quickly and back on feed.”

Coming up with the final design was deliberately a slow process which Nigel said took about six months.

“You just can’t rush the design process,” Nigel said.

The design features curved, bugle fence panels at one end of the shed which can direct sheep into one of two handlers (a





Personal Access gate.



Top rail gate latch.

Proway AutoDrafter and Combi Clamp), a traditional drafting race, or into a long dual race where animal husbandry such as drenching can be performed.

The fence panels on the 'top end' of the yards (the bugle end) are solid while the rest of the yards use a round pipe fence design with six rails per panel.

High traffic areas are concreted as is a large, open central space which can be used a pen or for storage.

Sheep handlers are fed using dual lead-up races which are adjustable for width.

Nigel said it only takes about a minute to adjust the dual-race width and keeping sheep up to the handlers was a key to efficient overall operation.

Nigel's son Joe spends many hours working with the sheep in the yards and he said careful consideration needs to be given to the yard design and the handlers.

"There is no point trying to fit a new handler into an old or poorly designed set of yards. The yards should be set up to feed the handlers," Joe said.

Joe also mentioned that when starting from scratch, slope, drainage, lighting, power requires and outloading are also very important considerations.

For the Kerin's yards, a large diesel generator is located under cover which sits on an elevated stand next to an air compressor.

The generator is quiet when running and Joe said when sheep are in the yard, it is impossible to hear the generator running.

Smaller but equally important details are personal access gates which are spring loaded to reduce the need to climb over fences.



Diesel generator and air compressor.

A cable along the length of the dual race for husbandry allows the exit gates to be opened regardless of where the person is along the race.

The manual drafting gates have reasonably high hoop handles and rubber covering the leading edges to minimise noise.

Nigel and Joe are also big fans of the Proway spring-loaded gate latches, located on the top rail of gates. External gates have chain back as well for added security.

Next to the Combi Clamp handler is a large, flat screen TV which displays pedigree and other sheep data.

The Kerins said being under cover also helps with planning key management

tasks such as pregnancy and muscle and fat scanning.

"Those specialist contractors are booked months in advance so being under cover removes the risk of putting them off due to rain," Nigel said.

Joe said he is able to perform most tasks on his own in the yards with a dog to help keep sheep up to the handler lead up races.

Flipper style hock bars have been modified slightly to reduce noise and anti-backing flaps are used in the adjustable width lead-up races.

Lighting is from LEDs throughout the shed and a footbath has been built as a precaution.

Joe said the single lane, wide loading ramp has been a great asset as well.

FA





# Scott Thompson

**Location:** Broomehill, WA **Build:** Atlex yards

**S**cott Thompson, based in the Great Southern region of Western Australia, has been continually adapting improvements on his yards which are built on the site of his old yards.

Connected to a network of laneways feeding on to the outer yards, Scott has invested in Atlex yards to meld to his existing sheep infrastructure.

While his livestock operation has reduced significantly over the years from 13,000 head to less than a quarter of that, Scott also has a second set of Atlex yards about 15km away on another property.

The main yards has an outer lane so sheep off-shears can be run outside straight through to laneways and their paddocks without threading them through the yards

which may be holding sheep ready to go into the shed.

The design also incorporates two diamond yards while the adjustable drafting v-race and gates can be configured for a three-way draft.

Scott says that the gap between the drafting gates was initially too big so an extension bar was added to improve the ability of the drafter to baulk a sheep if needed.

Scott says that with a smaller flock, there are yards in the complex which now don't get used as much and these tend to fill up with weeds which need to be managed.

The yards also include some 360-degree hinges but in most cases these are not really needed.



Atlex drafting race and gates.



Main work race with midway tipping gate.



Variable gradients give good drainage but can be tricky to build.





Secondary yards: utilising old gates.



Secondary yards: Covered main work race.



Secondary yards: Adjustable V drafting race.

Because the site is on a variable gradient of about 1 in 40m, post-hole layouts were marked by the builder using measuring tapes. Holes were dug and the yards were then bolted together with posts standing in the holes.

With everything in position but loosely bolted, sections were adjusted and levelled along with the posts. Once adjusted, the posts were then concreted in position and the bolts tightened.

The yard flow means sheep run up into shearing shed or turn to run down into either the drafting race or the covered pre-existing work race which also has a loading ramp at one end.

The covered main work race has mid-race gate, which Scott says is well used. He reports that the slightly raised race is good for drenching with two operators and while it is covered, it can still get a bit hot with the wall on the western side blocking the late sun but limiting airflow.

Sheep can be turned out of the race down into an Electrodip jetter, or, run out to the outer yards from the end of the race. Scott reports that if he could alter this downward slope, he would, as the sheep tend to jump which can be dangerous for the operator.

Scott says his second set of yards was built later than the first and were laid out using high accuracy GPS. A \$7000 saving was made by using pre-existing gates from the old Wake and Beacham yards which have timber boards on a steel frame.

Scott says that while they didn't fit perfectly, the saving was significant and minor shortcomings as a result of re-using the gates could be lived-with. The single race is not raised and tends to be too wide meaning sheep regularly turn in the race.

Big modifications have been made inside the main shearing shed. The original across-the-board 5-stand was relocated and changed to a centre-board at right angles to original.

One stand is at 90-degrees to the rest of the board and four out of the five stands are regularly used. Scott says the changes took a lot of planning, and even then, they originally thought another stand could be



Shearing shed pens.



Reconfigured five stand.

included, but when builder came, it just didn't work out. Scott says the builder was an ex-farmer who was happy to wield the chainsaw, but equally happy to utilise second-hand materials to save on costs.

In addition to the substantial changes made to the board, catching pens have been heavily modified with back-pen

swinging guillotine gates used to even up the pens at cut-out. Scott reports the revised layout works really well and the addition of guillotine gates would also be handy between the main catching pens.

Flooring used is orange tongue Aquatite particle board which Scott has painted with a sealer.

FA





# Melchiorre Farms

**Location:** Narrogin, WA **Build:** Commander Ag-Quip modular shearing shed

The first thing that is apparent when looking at Robert and Jason Melchiorre's new shearing shed is that nothing has been left unconsidered or unfinished.

Kondinin Group engineers agreed that the Jarrah shearing and wool handling floors on the six-stand raised board configuration are neater and in many cases of a higher standard of finish than many timber home floors.

Robert says the original design was to be a horseshoe shape with front-fill pens, but shearers convinced him that for the width of the shed, the layout would get too cluttered.

The raised board sits over a gap underneath with concrete falling away to the ground floor to accommodate the count-out yards. While this works well, Robert and Jason reckon the next shed they build will have additional earthworks and a retaining wall underneath the board to give the count-out pens more height and room for penning woolly sheep.

While the front section of the shed has concrete flooring, Robert and Jason said the Jarrah was better for the roustabout to walk on all day.

On each side of the catching pens, a sectional panel drops into holes in the floor creating two wide races which can be filled of left empty to give the roustabouts easy and quick access to the back of the shed for penning-up. The races can be used for drenching on a wet day and guillotine gates are fitted at the front with colour coded

handles pulling wire rope to raise the gates to empty the race. Sheep then weave their way back through catching pens and outside the shed.

Thanks to the shed level being a little too high, the floor of the entire rear pens, including the catching pen is sloped towards the board. This encourages sheep to face away from the board for easy catching and an easier drag onto the board.

The pen floor is all slatted jarrah fixed with stainless steel bugle heads. Bearers sit on the galvanised steel shed frame and support poles, all of which has been tarred to prevent corrosion.

The rear pens also feature diamond pens, as seen in yards which make for a quick and simple even-up of the catching pens. Gates both lift and slide for added flexibility if the pens are tightly packed.

The shed features two large doors on either side with the primary function being to assist sheep flow into the shed.

Being able to see out the other side makes a big difference according to Robert who says the sheep see the opening and want to run up the ramp and through the shed, but are then directed into the pens.

Bat-wing side windows allow light to flood in and provide airflow while any shortage of light is addressed by the high-bay LED lighting which floods the board with clean bright light.

Shearers have a hook for their kit bag, a clamp for their towel as well as a work shelf all accessible from behind the double



Adaptable sliding gates make tight penning easier.



Robert can insert races on both sides of the pens.





Lever actuated count-out doors.



saloon doors to the catching pen. This is in an effort to keep as much material away from the board as possible to avoid wool contamination.

A unique feature of the count-out pens is a large lever inside the shed that can operate all six pen doors at once using some clever geometry and design skills. The doors are blank to prevent light from coming up from under the shed through the grating which can potentially baulk sheep when filling the shed. Some of the doors slide sideways and others roll back at the same time. Kondinin Group engineers were thoroughly impressed. The count-out doors are all 1.2m wide to allow a Dingo digger access for cleanout.

Robert took his plans to Commander Ag-Quip and including diamonds, race, guillotine gates and says the outlay was worth the investment.

Overall, the shed has three large sliding doors at the front. In hindsight, Robert says the rolling frame could have been extended so all doors can slide out to the side of the shed for full opening. But even with two thirds of the opening available, there is plenty of light and access.

Feeding into the shed, Aussie Stockyards built the external yards using a K-rail style rolled coil steel profile and heavy galvanised steel posts.

With one shed now completed, Robert and Jason are now building another new shed at another farm.

With the pad poured, the shed is about to be built and the fit-out will start in 2020.

Robert says a horseshoe design is planned for the new shed with front side fill to the catching pens so a wider shed was needed to accommodate the design. Robert says he is thinking of incorporating an alley-way up centre of pens so roustabouts don't have as far to walk.

FA



Rear pens.



Wide opening triple sliding doors.





# Ricky Mott

**Location:** Dumbleyung, WA **Build:** Aussie Stockyards

**R**icky Mott hails from Dumbleyung in Western Australia and installed a set of Aussie Stockyards in 2016 featuring K-rail style panelling with a combination of 75mm SHS inner yard posts and 65mm NB round outer posts.

Starting from the ground up, Ricky said the yard surface was packed with a concrete

mix, allowing some levelling of the surface and incorporating a consistent grade away from the yards to improve drainage.

The K-rail style profile panelling was rolled on site and with some modifications planned for another set of yards, Ricky wisely arranged for the installers to cut a stack of 10m lengths of the rolled profile for use in the other yards.



K-line style panelling.



A PA gate between the drafting and work race makes solo sheep work easier.



Covered race.



While the race itself is covered, future plans are to construct a full cover with a lean-to coming off the existing shearing shed.

The race is built a bit wider than most, but Ricky stands about 201cm or 6' 7" in the old measure, so being a bigger bloke, the race dimensions suits him.

Ricky also uses a Combi Clamp handler and does most of his sheep-work solo making the race slightly redundant. The Combi Clamp is positioned to minimise walking distance to push sheep up into the lead race. A dog at the rear forcing pen ensures sheep focus and ample pen pressure to maintain an even feed.

Ricky also plans to install sets of vertical roller wheels on the entrance to the V-race, drafting race and at the end of bugle to assist sheep flow in without woolly sheep being caught up on the panel edging at transitions.

Including the two large holding pens, Ricky can get 2000 head in yards at a squeeze. Although it is much easier to move them around with 1500 yarded.

Back-lining off-shears is conducted up the race.

While a ground-based loading ramp pen is installed and truck loading ramps used, a permanent loading ramp is planned.

Ricky says that the sheep flow in a consistent way, both in and through the yards which seems to help for successive penning. Drafting gates work well and are solidly constructed with ample length dimensions.



Ricky is looking to install vertical rollers on wall transitions like this to improve the flow of woolly sheep.

While they are already substantial and there is room underneath shed, Ricky says there is always a need for more space with a growing flock, so he plans to build another holding pen around the back and replace all the outer yard weldmesh with K-line style panelling.

The design of the yards came together walking around other yards and incorporating features that were appealing. Ricky suggests that when it comes to cost, the expense is long forgotten once sheep



Drafting race and gates.

start flowing through and that the investment needs to be thought of over the long term.

The only improvements Ricky would make is to beef up the latch chain gauge and add more PA gates with as many as one into every pen the ultimate desire.

Ricky reports the design also sees sheep flowing well into the shearing shed.

Total material cost was around \$20,000 with a similar cost put down to construction labour a further \$5,000 paid to the local shire who assisted with earthworks. **FA**



Bugle horn race lead.





# Geoff Lowe

**Location:** Goroke, Vic **Build:** Arrowquip yards

**A**re-build of a 40-year-old set of yards had been on the cards for Goroke crop and sheep producer Geoff Lowe for a few years.

Geoff runs 1200 Merino ewes on the family property, Elmbank, and joins about 400 of them to Border Leicester rams for first cross ewe production.

The Merinos are about 19.5 microns and Geoff turns off about 750 prime lambs per year using contracts and the saleyards. Prime lambs are turned off with the aim of making heavier, export weights.

Geoff said after battling in the old yards, he decided to bite the bullet and invest in a new set, which were manufactured and installed by ArrowQuip earlier this year.

The yards are a relatively simple design, using an outer curved, bugle shape to feed a central drafting race and dual-lane race for animal husbandry.

Most of the new yards use fencing panels which are made of six curved-edged rails. The rails are closer together towards the ground and further apart near the top.

The high traffic areas of the central drafting race and dual-race are concreted with extra width for a person to walk alongside on the concrete base.



Central drafting race.

Geoff said for an investment of around \$55,000 (\$33,000 for the yards and \$22,000 for the install), the yards have been well worth it.

“We’ve gone from the old yards which

had mesh and corrugated iron and the difference is huge,” he said.

“It’s a lot easier on the sheep and the operator, and aspects such as OH&S can’t be ignored these days.





Six rail fence panels with oval-shaped rails.

“We have just finished shearing and weaning lambs and drafting was so much easier. There were no injuries to sheep and the flow is much better. We have had the Merino lambs through the shed three times now and they run through no problems.”

The ArrowQuip yards were built on the same site as the old yards and feed the shearing shed via a curved section to the

existing shed ramp. Future considerations for the yards include putting the main traffic areas under cover.

“Cover would be great as we crutch in March and it can still be quite hot then and it’s obviously also much easier on the stock and stockmen if they can stay dry.”

A handler may also be added at some point but for the time being, the stock



Dual race for husbandry.

agent’s portable scales set are used.

“I think a good quality handler will go nicely at the end of the drafting race,” Geoff said.

Build time for the yards was one week and Geoff believes the yards are a sound 50-year investment.

“You have to look at them as a long-term benefit,” he said. **FA**



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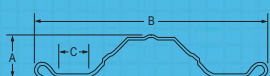
## K Rail and

## K Rail Plus



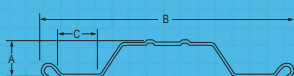
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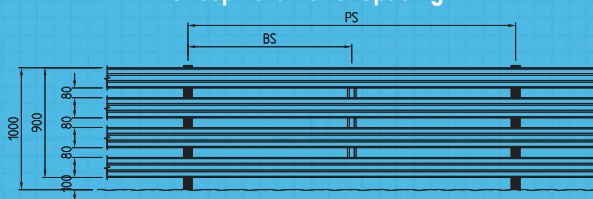
A=32mm B=160mm (nominal)  
C=22mm

### Kotzur K Rail Plus Section



A=32mm B=230mm (nominal)  
C=36mm

### Sheep Yard Panel Spacing



Dimension “PS” (maximum post spacing) – 2.4m (forcing area), 3.6m (holding area)

Dimension “BS” (maximum batton spacing) – 1.2m (forcing area), 1.5m (holding area)

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# Barry and Jarrad West

**Location:** Kulin, WA **Build:** Commander Ag-Quip yards.

**F**or an investment of \$49,000 including GST in 2017, Barry West and his son Jarrad have an impressive and substantial set of sheep yards.

Kondinin Group engineers report solid construction and well finished weldments.

The cost of the yards was kept down with Barry and Jarrad assisting with as much of the siteworks and installation as possible.

The new yards were built to replace an older set of existing yards, which were

panel a style construction. The old yards were salvaged and will be used to shore-up a larger outer yard.

With the old design seeing sheep feed in well, the exact same entrance configuration was carefully replicated with the new yards.

The Wests mate 1600 ewes, with plans to expand this to 2000. Wethers are retained and around 180 rams are breed on farm.

A Vicon handler owned by a generous neighbour is occasionally used and can



Main work and drafting races.



Bugle horn forcing pen.





Main race.



Commander Ag-Quip gate construction.

be mounted at the end of race if needed. For this configuration, the handler can be brought in through the larger of two diamond yards in the design. One of the diamonds is a regular size, the other is larger with bigger gates allowing the handler and vehicle access.

The single drenching race is relatively long. Jarrad says he plans to cut the top rail off and lower it a little on one side to accommodate shorter stature operators.

Jarrad says his only regret is not installing the toe-under step-up along with a higher race, other than that the yards make sheep work enjoyable and efficient. He adds that with as many sheep husbandry operations incorporated at shearing time as possible, having confidence in a sound set of yards is essential.



**FA** Drafting race and gates.

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Dual working races with mid-way tumble gates.

# Dion Woolford

Location: Buckleboo, SA Build: Atlex

**K**ondinin Group researchers stumbled across this set of yards on one of the Woolford family farms at Buckleboo SA.

Built onto the rear of a historic mud-brick shearing shed, the yards extend back to hold around 1500 ewes. The main dual work races and around 5m either side of them are covered to provide shelter for the operators. This includes the spur drafting race and adjustable V-race which is also used to feed the BreedELITE autodrafter. To save the occasional lively jumping jumbuck from temptation, Dion has made a removable panel for the top of the adjustable V-race.

A chain-supported power supply hangs from the awning roof keeping it out of the way but still accessible for the powered scale head indicator

Dion says the dual Atlex races were narrowed a little for their operation and feed well with the removable mid-way tumble guillotine gates ensuring the race is kept tightly packed. The end release gates are the same design and Dion says the vertical bars prevent damage to sheep legs in the race. While Dion has not had any issues, a Kondinin Group member reported the pin on the hinge arrangement on these gates had failed a couple of times and was difficult to replace.

The yards are littered with PA gates and Dion reports that at least one of their dogs has figured out how to use the integrated dog-flap.

Overall Dion reports that the yards work well, with a separate back lining race for ewes off-shears and a network of outer yards that provide flexibility at shearing time. **FA**



Mid-race tumble gates.



Anti-jump bars for the drafting race.



Work race exit and outer backlining race.



180-degree PA gate with dog flap.



# Mt Elephant Station

**Location:** Derrinallum, Vic **Build:** Norton Livestock Handling Solutions yards refit, Te Pari and Combi Clamp handlers

Sheep flow and use of technology are the main drivers behind the ongoing renovation of an undercover set of sheep yards at Mt Elephant Station, Derrinallum, Victoria.

The existing yards were home-built more than 10 years ago but the property's new corporate owners are focussing on ease of use, and the ability to maximise the benefits of technology.

"About 11,000 composite ewes are run on the property and the existing yards struggle to cope with that capacity," livestock overseer Oliver Vidor said.

"We have just installed a new TePari H4 sheep handler to complement an existing Combi Clamp handler and we have engaged Norton Handling Solutions to help out with some yard renovations to improve flow.

"There may be 40,000-60,000 head go through the yards every year, so flow is very important for us."

Oliver said many tyres were kicked before deciding on a redesigned bugle shape for the yards which feeds the sheep to a single-lane drafting race and gates which in turn feeds a lead-up race to the sheep handler.

The handler was a key consideration in the yard design.

"It's pretty rare we have sheep in the yards and are not doing some form of assessment, which involves individual animal handling," Oliver said.

"We also do a lot of supplementary feeding of sheep, so accurate weighing is a big help to management. Electronic ID is also becoming more important."

The TePari unit has only recently been delivered and the trailer-mounted, four-way draft is easily jacked up and moved, according to Oliver.

"We decided on the trailer unit which was another \$7500 but it is very easy to jack up and move. And it's very sturdy. Having the three components – the pre-catch, clamp and draft section – all bolted together on a solid frame is very solid."

A few alterations have been made to the handler, including raising the height of the hock bars on the pre-catching section of the TePari and fitting a slightly "see-through" door on the pre-catch.

"We have found hock bars a great addition, especially in the lead up race to the handlers but the height is very important. The spring-loaded Norton bars are excellent



and they mount via a U-bolt so are relatively easy to adjust for height if needed."

Oliver estimates about \$45,000 has been spent on the yards to date, including the TePari handler, which has been money well spent.

"Norton will be replacing the fencing from the start of the double gates at the bugle and filled in panel sections, installing

a new lead-up race/draft assembly, and tip-swing and man gates also.

"There is really no excuse for any extra stress in the yards these days. Aspects like workplace OH&S are also very important as is minimal stress for stock and the reduced risk of injury. What's been done to date in the yards is worth about 500 lambs, so in the long-term, that is not a great deal." **FA**



# A brief word on handlers

Sheep handlers have come to the fore in recent years in line with increased returns for sheep, lambs and wool. The introduction of electronic identification has also provided some impetus for producers to monitor and hence manage their flocks more effectively. Kondinin Group tested several sheep handlers not quite two years ago (*Farming Ahead Research Report 093*) and while another round of testing will be held in the next 12 months, *Farming Ahead* thought it would be relevant to have a quick update of the handlers inspected in 2017.



## CLIPLEX CONTRACTOR

The Clipex Contractor is an automated automated handler which can clamp sheep, side tip and draft three ways.

Sensors which are used to open and close the entry door to the clamp are above the clamp, fitted in a large steel frame which swivels over the clamp when in use.

Once clamped in the Clipex, sheep can be tipped on their side, with the tipping action towards the operator. Front and rear panels on the top of the clamp can be open

and shut to provide access to the head and rear of the sheep. This makes wiggling and dagging possible as well as some hoof work and further crutching if required.

Clipex has recently added the ability to pregnancy scan with the Contractor and has introduced an “off side” variant where the operator works from the opposite side to the current design.

**Price:** \$29,997 incl GST  
**More details:** [www.clipex.com.au](http://www.clipex.com.au)



## COMBI CLAMP

The Combi Clamp is now available through Landmark dealerships and is a “no power required” handler which uses the weight of the operator and some clever geometry to action the clamping mechanism.

In the 2017 Kondinin Group testing, the Combi Clamp recorded the fastest sheep throughput for drenching.

The modular unit comprises the main squeeze clamp, lead-up race and an optional three-way drafter. The squeeze clamp is actuated by the weight of the operator on a foot panel, meaning the Combi Clamp requires no air or power to use.

Catering for left or right-handed

operators, the unit has adjustments for either configuration.

The squeeze mechanism can be adjusted to accommodate different sized animals in two ways; for larger adjustments, shifting the hinging point into one of the three sets of hinge hole positions under the handler to shift the actuated side of the clamp module, or for smaller adjustments, lifting and shifting the stationary wall on the operator side into one of three pairs of positions spaced at 25mm increments.

**Price:** \$8756 incl GST with three-way draft (delivered eastern states)  
**More details:** [www.combiclamp.co.nz](http://www.combiclamp.co.nz)



## GALLAGHER CRUTCH AND DAG

Kondinin Group found the Gallagher Crutch and Dag a relatively simple and robust handling platform which is available in either manual or automatic catch versions.

Unlike other handlers tested, the Crutch and Dag has a top clamping action, which hinges the clamp from the top, forming a V-shape. This works well and prevents any chance of the sheep sitting down as the clamp is actuated.

A pneumatic entry shut-off gate meters the flow of animals into the clamp. The automatic catch version uses a single electronic eye mounted above the animal, which is adjustable back and forth to fine-tune catching for different size animals.

The entry shut-off gate is triggered simultaneously as the animal is captured, and opened as the clamp is released.

The clamp is fast-acting thanks to the rear-mounted pneumatic cylinder, and all surfaces are lined with rubber matting, aiding capture.

The floor, including the lead-in and exit ramps are also rubber-lined, aiding grip and reducing noise.

The Crutch and Dag is simple to operate and controls are straightforward, consisting of buttons to manually catch and release, and to tip the clamp.

**Price:** \$18,000 incl GST  
**More details:** [www.gallagher.com.au](http://www.gallagher.com.au)



## PEAK HILL

The Peak Hill Handler features a clamp and rotate mechanism where compressed air and the floor plate actuated valve are used to detect the animal as it walks into the one of the two cradles, before clamping the animal and closing the rear door. This allows the operator to rotate it when ready. The two cradles counterbalance and while one sheep is held in the clamped position, the other can be worked on before rotation. The sheep is released and the process can then be repeated.

Air requirement is 550-620kPa and 226 litres per minute (80-90psi and eight CFM). The rotation is air assisted with adjustable force and speed and requires the operator to unlock the rotation with a top handle and initiate the rotation.

Releasing a sheep in the cradle in the reclined position is possible by using a foot to actuate the release.

The Peak Hill Handler is the only handler we tested which inverts sheep, presenting their bellies to the operator and permitting procedures including ultrasound pregnancy testing.

Peak Hill's range includes the Immobilizer sheep worker, jetting machine, mobile plunge dip, laparoscopic AI cradles with air operated loading and upright ShearEzy, specialised portable leadup systems.

Peak Hill says it is currently working on another version of the Handler.

**Price:** \$13,090 incl GST

**More details:** [www.peakhillindustries.com.au](http://www.peakhillindustries.com.au)



## TE PARI HD4

Te Pari has recently released its latest handler – the HD4 – which has four-way draft capabilities. Kondinin Group tested a HD3 and TePari has made a few other changes to the HD4.

The four-way draft is achieved by basically turning one of the front access gates into a drafting gate.

Other improvements have been made to the control panel/dashboard which now has rotary switches and there are foot controls as well as a hand-held remote control that allows the operator to manage the draft,

clamp and release and side tilt functions.

The auto gate which shuts the sheep off in the lead up race now is available as a steel bar design but a solid panel can be fitted if needed. There's also an additional electronic eye located in the lead up race to function a backing hook in behind the sheep and the new scale head – the T30 Indicator – is a touch screen with WIFI capabilities.

**Price:** Te Pari HD4 starts at \$24,500 incl GST. The trailer option is an extra \$7250 incl GST.

**More details:** [www.tepari.com](http://www.tepari.com)



## HECTON

Hecton is another 'clamp and tip over' style handler, made in New Zealand.

Hecton makes the Sheep Handler and Stock Handler and the Stock Handler does not tip the sheep over. The Hecton Sheep Handler is made specifically for crutching and foot

paring and allows the operator plenty of access to the sheep.

The clamp is made in two sections; a steel frame with two rubber belts; and a fibreglass panel which the sheep lies on once clamped and tipped over.

The clamping action is a manual

mechanism which the operator works by hand. When the sheep is in position, the clamp is pulled towards the operator.

The range is handled by Rich River Rural, Echuca, Victoria

**More details:** [www.richriverrural.com.au](http://www.richriverrural.com.au)

## SHEEP INFRASTRUCTURE SUPPLIERS LIST

### Arrowquip

[www.arrowquip.com.au](http://www.arrowquip.com.au)

### Atlex

[www.atlex.com.au](http://www.atlex.com.au)

### Aussie Stockyards

Ph 08 9861 2231

### Commander-Ag Quip

[www.commanderagquip.com.au](http://www.commanderagquip.com.au)

### Cyclone

[www.cycloneproducts.com.au](http://www.cycloneproducts.com.au)

### Clipex

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