

Cost-effective and multipurpose

self-mustering enclosures for stock



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Information contained in this publication is provided as general advice only. For application to specific circumstances, professional advice should be sought.

The contents of this publication do not purport to represent the position of the Murray-Darling Basin Commission. They are presented solely to stimulate discussion for improved management of the Basin's natural resources.

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Summary

Graziers all over Australia spend a lot of time and money on mustering stock each year. This cost is increasing as they now muster a wider range of stock more often. Self-mustering at water points is an alternative method of mustering. It can reduce the time, costs and stress of mustering, and the yards can be used for other purposes.

Self-mustering enclosures consist of hinge-joint yards that enclose permanent water points, such as troughs and ground tanks. Each yard is equipped with one or more types of entry and exit gates and has been designed to handle cattle, sheep and goats, thus increasing its effectiveness and efficiency.

The advantages of using self-mustering enclosures are numerous. They allow graziers to muster many types of animals, thus spreading the cost of the enclosures over several different musters. Other benefits include reducing stress to stock and workers, improving management practices, reducing chemical application and creating safer working conditions. The enclosures are also used to hold stock in paddocks during crutching, lamb marking and blowfly treatment.

This publication provides detailed plans and material lists on how to build a self-mustering enclosure. It also sets out the steps required for operating an enclosure, including how to train and muster stock.

Introduction

Mustering using various combinations of motorbikes, horses, vehicles, planes or ultra-lights is a common and regular feature of grazing properties throughout Australia. Most properties muster four times a year, which costs a lot of time and money.

Many properties have now diversified and run cattle, sheep and goats. These properties also tend to have a large number of smaller paddocks and regularly move stock around according to pasture type and productivity. As a result, total mustering time and cost is increasing, with extra musters for different animals.

The cost of mustering is generally high, with final costs dependent on stocking density, ruggedness of the terrain, thickness of vegetation, experience of the operators, and availability of capital equipment. Typical average mustering costs per head appear to be \$6 to \$7 for cattle, \$2 to \$5 for goats, and \$0.50 for sheep.

An individual property, say with 5000 sheep, 150 cattle and 500 feral goats, is likely to spend around \$4700 to muster all of these animals. If stock are mustered four times a year, then the annual costs would be \$18 800.

Mustering costs, however, are not fixed. Machinery, fuel, labour and maintenance costs are continually increasing, making mustering a prime target for improving efficiencies. Self-mustering, using water point enclosures, is one way of achieving this.

The costs of self-mustering also vary, depending on the materials and labour used in construction, the frequency of use, and the number of animals mustered. A study by the Meat Research Corporation and DPI found that self-mustering cattle saved \$3000 on wages alone during each muster. This could translate into an annual saving of \$12 000 in wages, with over-all savings being even higher because of the lower costs of operating and maintaining equipment.

In south-west Queensland, a Department of Natural Resources study of goat mustering found that the cost of using self-mustering enclosures was around \$0.60 per goat captured, which is around \$1.40 less than the cost of mustering goats with bikes and aircraft. A similar study in western New South Wales by NSW Agriculture estimated that self-mustering goats was about \$1 per head cheaper than mustering with bikes and fixed wing aircraft.

There is money to be saved through increased mustering efficiency and self-mustering enclosures provide an opportunity to achieve this.

What is self-mustering?

Self-mustering is a more cost-effective, multipurpose and safe method of mustering and handling stock than other methods.

- It is cost-effective because it reduces the total cost of mustering by reducing labour costs, time and effort.
- It is multipurpose because it can be used to muster sheep, cattle and feral goats. It also provides yards for lamb marking, mulesing, jetting, drenching and drafting.
- It is safe because it decreases stress to stock associated with traditional mustering, reduces stress on workers, and lowers the incidence of mustering accidents.

Self-mustering is based on the principle of confining animals in a yard around a reliable source of water. It depends on four main elements:

1. Target animals are dependent on water.
2. There are no alternative sources of water available.
3. Infrastructure is compatible with target animals.
4. Target animals are familiar with the system (i.e. adequate training is provided).

David Ware

Lorne Downs, Augathella

I wouldn't be without self-mustering enclosures on my property.

I have been using self-mustering enclosures equipped with holding paddocks and exit and entry spear gates for 10 to 12 years. Before this my family had enclosures with only one spear gate used for both entry and exit. I believe that it is imperative that all enclosures have both an exit and entry spear gate as it creates less confusion for calf training and improves mustering success. I have also found that, with cattle, the exit and entry spear gates should be located at opposite ends of the enclosure. If they are close together, bulls standing at the exit gate at mustering time will prevent other bulls from entering.

I have been using self-mustering enclosures for some time now and I have found what works best for me.

Holding paddocks, I believe, are a must. I am able to leave the holding paddocks empty all year to grass up. While mustering, I can put the mustered cattle into the holding paddock until the whole mob has been mustered. Also, I don't muster cattle when there are calves in the paddock. I have noticed that the cows don't take their calves into the enclosures at a small age. However, the calves are usually big enough to enter the enclosures by the time they are ready for branding. We also intend to put in a laneway that will link all the enclosures. By doing this we hope to shorten the mustering time even more.

What's in it for me?

Several benefits can be gained from the use of self-mustering enclosures.

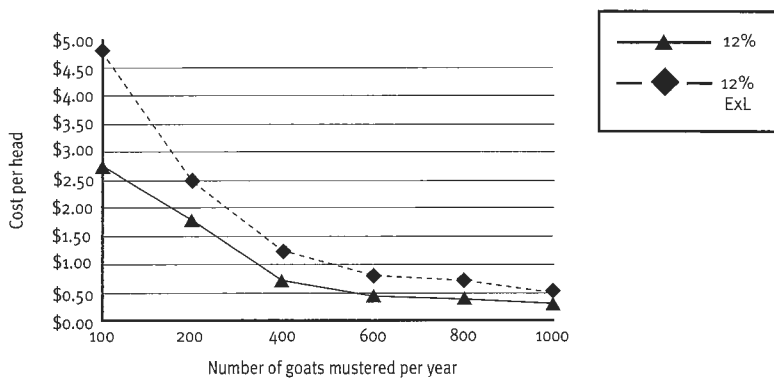
Save money and time

One of the biggest advantages of installing a self-mustering enclosure is the savings compared to traditional mustering. A study by NSW Agriculture found that it cost less to handle goats using the self-mustering method compared to the traditional method. Similarly, self-mustering enclosures reduced the mustering costs of cattle from \$35 to \$40 per animal yarded to \$4 to \$5 and cut mustering time from six to three weeks.

Further work on feral goat management in south-west Queensland found that the cost of mustering goats using traditional methods averaged \$1.90 per head, but ranged from \$0.40 to \$7.40 for individual musters, due to the difference in numbers of goats caught each time.

With self-mustering, the total costs are similar during the first year while the capital costs of building the enclosures are paid off. The figure below shows the capital cost per head of goats mustered, including interest rates, during the first year of operation. When 200 goats are mustered during the first year, the capital cost per head is \$2.50 including labour, and \$1.75 excluding labour. This falls to \$0.50 and \$0.30 respectively when 1000 goats are mustered during the first year. If the enclosures were used for mustering sheep and cattle, the capital costs per head would be reduced yet again.

Once the enclosure is paid off, the maintenance and operating costs of mustering averages around \$0.60 per head.



Costs per head for self-mustering goats when paying off the capital costs of enclosures during the first year of operation and incurring a 12 per cent interest rate (ExL = excluding labour costs). (from Thompson *et al.*, 1999)

Reduce stress on stock

The use of self-mustering enclosures reduces exhaustion and heat stress in stock, cuts down on long walks, and minimises extended disruption to feeding patterns, mismothering of lambs and water deprivation.

Improve management practices

The enclosures, as well as additional facilities, allow lamb marking, mulesing, jetting, drenching, drafting or other relevant husbandry practices to be carried out in the paddock.

Reduce chemical application

By regularly being able to achieve clean musters, all sheep can be treated for lice control, thus eradicating lice and possible re-infestation in the paddock.

Muster feral goats

The use of hinge-joint fencing in the construction of enclosures enables the mustering of feral goats.

Create safe working conditions

The enclosures reduce stress on workers and can lower the incidence of mustering accidents.

Increase property value

Enclosures are a property improvement and an asset that increases property value.

Rest pastures

Self-mustering enclosures can be used to close off water points when resting paddocks, encouraging kangaroos and wallabies to move elsewhere in dry times. This makes it easier and cheaper to rest paddocks from grazing to allow for seed production and to avoid over-grazing of grasses in dry times.

Exclude stock from dry dams

As dams dry up and become muddy, both the swing gates and spear gates can be locked to exclude stock from the water points.



A self-mustering enclosure

Don Collins

Auburnvale, Charleville

I have been using self-mustering enclosures for four years and there are now five enclosures on my property. I mainly use them for mustering about two to three times a year, depending on the rainfall at the time. On Auburnvale we use the enclosures mainly for mustering sheep, but we also have some cattle. On average we would muster about 2000 sheep at one time, an average of 400 head of stock per enclosure. My opinion on self-mustering enclosures is that they are effective. They do take time to check, which is usually once or twice a day when mustering, but really that is about it.

The rest of the time the enclosures work for you.

I am able to muster my five paddocks using the enclosures in about four to five days, or if it is hot it may only take one day. If I were to muster using traditional methods, however, it would take me about five days to muster each paddock and then I still might not have mustered them all. So it is definitely a benefit for us.

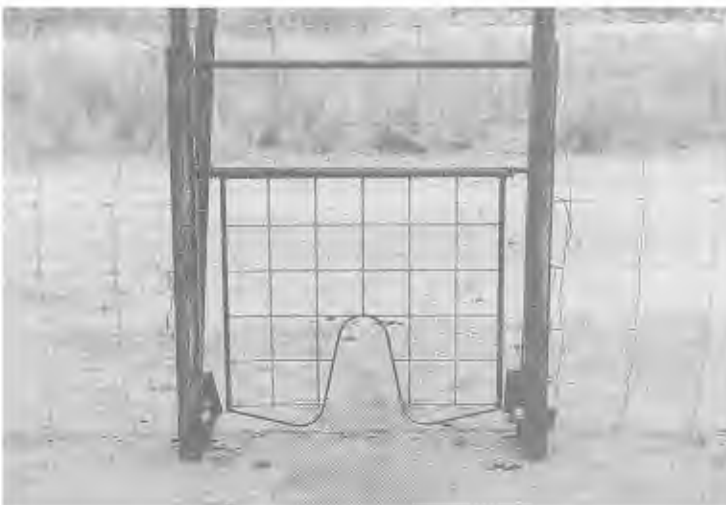
How do they work?

Self-mustering enclosures consist of yards erected around permanent artificial water points such as troughs and dams. The animals pass through spear gates to access the water. One spear gate provides the entry point for stock and the other the exit. To muster sheep, cattle and goats the exit spear gate is closed off to prevent animals from leaving the yard. Mustering normally takes about two to four days to complete.

Swing gates are also installed in the fence and are used by goats and kangaroos to access water. The swing gates have a nosepiece, which allows goats and kangaroos to push against the gate and walk in under it. These access points are important to reduce the damage kangaroos may cause to fences. When mustering goats, the swing gates can be adjusted to swing inwards only, allowing goats to enter the enclosure, but preventing them from leaving.



Exit (left) and entry (right) spear gates



Swing gate

How do I train my stock?

To ensure the self-mustering enclosures will work, all animals need to be trained to use the spear gates and swing gates. It is important to allow two to three weeks to train the animals before mustering. This is essential because many of the problems experienced with self-mustering enclosures are a result of inadequate training.

Training must be done each time a large number of untrained stock is introduced into the paddock. New stock or goats entering the paddock will learn to use the gates by following the example of the trained animals. Stock that are trained at a young age (i.e. weaners) usually learn quickly and are easier to muster. As goats are able to use the spear gates and the swing gates, it is important that they are trained to use both.

The following training procedure is recommended.

Spear gates

Step 1

- Remove all spear arms from the spear gates.
- Encourage animals to walk through the spear gate frames by closing the conventional gate (located between the exit and entry spear gates). Continue this until all animals are freely accessing water through the frames.



Step 2

- Place the spear arms in reverse position by inserting the right-hand spear arms in the left-hand spear mounts and vice versa. This leaves a 450 mm gap between spears, allowing ample room for stock to pass back and forth.
- Leave the spear arms in this position until it is apparent that stock are freely accessing the spear gates. Check regularly for any problems.



Spear arms in reverse position

Step 3

- Gradually reverse the spears (top spear arms only) by returning the right-hand spear to the right spear arm mount and vice versa.
- Leave in this position until it is apparent that animals are regularly using the spear gates. Repeat this for the second top set of spear arms.
- Continue to reverse the spear arms until all spear arms are in their correct spear mounts.

Swing gates

Step 1

- Initially all swing gates should be raised up on the steel pickets three or four holes from the ground and pinned in this position. Leave gates in this position until it is apparent that animals are regularly using them.



Swing gate raised on steel pickets for training

Step 2

- Lower the gates, one hole at a time, to ground level over a two-week period. (Leaving the gates in a raised position permanently may encourage sheep to use these access points, which is undesirable.)

Kevin Hooker *Rylstone, Charleville*

Self-mustering enclosures are fantastic.

I have been using enclosures for about two years, at least two to three times a year, maybe more, depending on the number of goats.

I use my five enclosures for almost everything—for cows, sheep and goats.

Using all the enclosures I can often muster about 1000 sheep at a time and often up to 3000 goats. To me, self-mustering enclosures are a tremendous improvement on traditional mustering. They reduce labour and the maintenance and fuel costs associated with motorbikes.

The enclosures, however, do have some drawbacks. Surface water can be a problem and at these times a traditional muster is needed. Some stock are often reluctant to use the enclosures at mustering time and hang around the edge, but they are easy to round up.

Training is essential for new stock.

I have also found that sheep need more time to get used to the enclosures than cattle and goats. When sheep are trained correctly the enclosures work and there are few hassles.

How do I muster my stock?

Once training is completed, stock and other animals will access the water regularly. Stock are now ready for self-mustering.

The most effective use of self-mustering enclosures is to train animals to use spear gates and then leave the spears in place, so that it becomes part of their routine to enter and leave the water point through the spear gates.

The mustering procedure is again different for spear gates and swing gates.

Spear gates

The distance between spear arms is important when mustering sheep, cattle or goats. Goats push through the spear gates with their heads, whereas sheep tend to use their shoulders. Goats are also thinner than sheep, and may squeeze through narrow openings. Therefore the width between the spear arms must be wider for sheep than for goats.

The distance between the spear arms can be widened to accommodate sheep by using a collar. The suggested width between spear arms for goats is about 20 mm, whereas for sheep 150 mm should be allowed.



Collar fitted to sheep spear arm



Spear gate set for trapping sheep and cattle

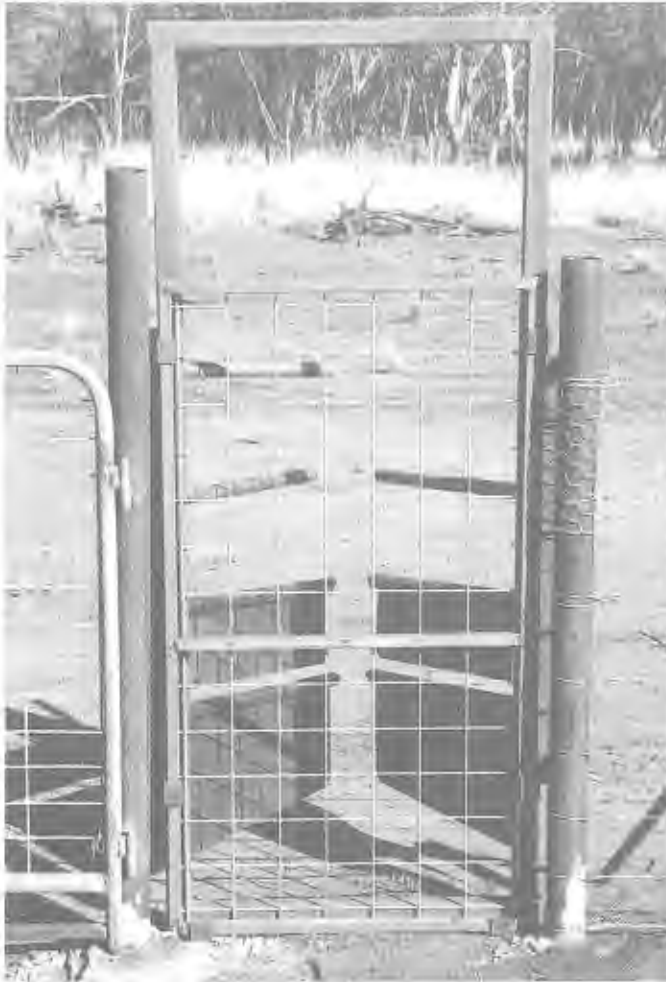


Spear gate set for trapping goats

A slide gate should be incorporated into the spear gate design to close off the exit and entry gates. The slide can also be used to target a particular species of stock for self-mustering. For example, the slide gate can be locked to halfway on the exit gate to allow sheep and goats to exit but retain cattle in the enclosure.



Slide gate set to release goats but trap cattle



Slide gate used for closing off the exit gate

Step 1

- All spear arms should be in place and animals freely accessing water.
- The entry gate remains open for the mustering period and the slide gate closes off the exit gate.
- The time taken for mustering should only be long enough to muster the target animals, which is about two to three days or maybe a few days longer for shy or cagey animals.

Step 2

- Mustered animals are moved off to holding paddocks to avoid unnecessary feed deprivation.
- Swing gates should be kept unlocked throughout the muster (unless mustering for goats) to allow other animals to access the water.

Swing gates

Step 1

When trapping goats, all swing gates should be set by locking the outside plates in a horizontal position so animals can enter the managed water point but cannot exit. In this instance, all goats and livestock, and some kangaroos entering the managed water point, will be retained. Any macropods (kangaroos or wallabies) still in the enclosure the next morning should be released (see note below).

Step 2

On completion of mustering, all swing gates should be returned to the unlocked position and the exit spear gate opened to allow animals to freely enter and exit the enclosure.

Note: *The Queensland Nature Conservation (macropod harvesting) Plan 1994* states that it is illegal to trap kangaroos or wallabies for the purposes of harvesting or culling.

Care must be taken to ensure that if kangaroos or wallabies are retained in enclosures, they are released as soon as possible. These animals are highly susceptible to capture myopathy (muscle waste disease) caused by stress, and can die within 48 hours.

One method for preventing the confinement of kangaroos and wallabies within the enclosures is to close off the swing gates from dusk to dawn to prevent entry. If this is not possible, kangaroos should be released from the enclosures before daylight to minimise stress.

Maximising the system

To get more out of your self-mustering system and to avoid any potential disadvantages or limitations it is important to consider the following points.

Costs

- The initial cost of building the fence and gates is significant, however, it depends largely on the size of the enclosure, the quality of materials, and the labour required. The cost of constructing enclosures varies between \$2000 and \$5000, but this can be paid for in the first year by the trapping and sale of around 200 feral goats (Thompson *et al.* 1999).
- Maintenance and repair costs average 2–3 per cent of the total costs per year. Building the enclosures correctly in the first place keeps repair and maintenance costs down and saves money in the long-term.
- The cost of self-mustering enclosures can be further reduced by building them yourself. If you are able to muster different animals (cattle, sheep and goats) using the enclosures, the total cost is reduced by spreading it over these animals.
- Bulk orders can mean significant savings on materials. If a few properties want to set up self-mustering enclosures, bulk orders of hinge-joints, posts and gates can produce big savings.

Wet weather

- Self-mustering enclosures are less successful in wet weather when animals can obtain sufficient moisture from green grass and surface water. However, some properties have been able to use enclosures in wet weather.
- Feed supplements in the enclosures will attract animals during wet weather.

Bore drains

- Self-mustering enclosures are often harder to implement on properties with bore drains that provide alternative sources of water.

- Consider taking part in the Great Artesian Basin Sustainability Initiative. Once the piped bore system is in place, water can be piped to certain areas of the property and released into troughs. This reduces the availability of excess water and makes self-mustering more feasible. Constructing self-mustering enclosures around the new troughs can further increase the benefits gained from piping bores.

Time and labour

- Some time and effort is needed to initially train the animals to use enclosures and to ensure they are working adequately.
- After the initial training, new stock learn to use the enclosures from others in the paddock. Training would only need to be repeated if there were no trained stock in the paddock to teach the new ones.

Permanent natural waterways

- Natural waterways such as rivers and creeks provide alternative sources of water for stock and divert them away from the self-mustering enclosures.
- One way to overcome this is to fence off water courses to prevent stock using these areas. Support is available through Landcare and Greening Australia for fencing off and conserving natural watercourses.

Regular monitoring

- Self-mustering enclosures require regular monitoring to ensure that access to water has not been interrupted and that the enclosures are functioning correctly.
- Impediments to access can be avoided by ensuring that stock are adequately trained. Well-designed, strongly built and properly maintained equipment will increase the life of enclosures and reduce the need for monitoring. Trained kangaroos and goats will also decrease the damage to fences.
- Kangaroos and other non-target animals need to be released daily.

Dusty entrances

- Dusty entrances can develop as stock use only one or two paths into the enclosures, leading to contamination of wool.
- This can be reduced by covering the soil surface at the entrances with coarse sand or gravel. Dusty entrances can also be minimised by locating the entrance and exit gates on hard ground.

Michael Flynn

Valera Vale, Charleville

The greatest benefit we derived from self-mustering enclosures was from educating the cattle so they couldn't easily leave the water points when people approached.

After setting up enclosures on many of our water points we found that we usually didn't have to set the spear gates because the cattle became used to camping in the enclosures around the water points, and became accustomed to people moving through them. The cattle were quieter, more educated and easier to handle during musters.

A common and sometimes valid argument against the use of enclosures is that it denies the producer the opportunity to block up and educate the cattle. This is a particular problem if enclosures are combined with narrow laneways or portable yards, which can further reduce the chance to block the stock and educate them. This problem can be overcome by making the most of every opportunity to work with cattle by carrying out normal husbandry practices of handling and blocking up. We feel by doing this we have made positive educational outcomes from the use of enclosures.

Sometimes the standard gates are too small and narrow to accommodate larger cattle, especially the bulls commonly found in this [Charleville] district. Before enclosures are built the size of the largest individuals in the herd (particularly the mature bulls) should be assessed against the gate width, as all the cattle in the paddock will have to access water through this gateway.

Making enclosures more effective

The following points can all contribute to making self-mustering enclosures for stock more effective.

- Build a holding paddock onto the enclosure. This will eliminate the need to hand-feed stock or remove them from the enclosure daily. It will also make it easier to operate the enclosure.
- Avoid sharp corners in enclosure construction. Kangaroos and goats seem to damage fences the most in these areas of the enclosure.
- Place gates where animals normally approach and leave water. If possible animals should be able to see the water from the gate as they enter.
- Locate enclosures where goats cannot climb trees, logs, soil banks or fence stays to escape. This can be prevented by using steel stays, box strainer assemblies, or by building the stays on the outside of the fence.
- Be mindful of where shadows fall, especially shadows from windmills. The shadow of a moving fan falling across a gate may baulk stock and make training difficult.
- Incorporate shade into enclosures where possible. Animals seem more comfortable and less stressed when there is tree and shrub cover within the enclosure.
- Goats tend to go under fences rather than over them. The bottom wire of the fence should be as close to the ground as possible. Barbwire along the bottom can help prevent goats escaping.
- Goats should be removed from the enclosures each day. If they are left in the enclosure for an extended time, they will work out ways in which to escape. Holding paddocks can be used in these circumstances.
- Enclosures built on soft ground (such as soft tank banks or loose sandy areas) are difficult to maintain as fence posts are easily pulled out, soil erodes from stock traffic, and kangaroos dig holes under the fence.
- Overflows from tanks or bores should be piped back down the borehole or contained well within the enclosure. Overflow water near the edge of the enclosure, or outside, will cause livestock to hang around the enclosure, but not enter.
- Licks alone can be used to lure stock into enclosures.
- The main stress to animals is overcrowding and it may also prevent shy animals from entering the yards. Mustered animals must be checked once or twice daily and non-target animals should be released after every visit.

- At an extra cost, permanent races could be included in the enclosures. This saves the time and effort of carrying portable loading/drafting races.
- Kangaroos often try to jump the fences and sometimes get their feet caught in the top wire. To prevent this, foot netting can be put around the top of the fence.
- Reinforce the fence either side of the gate with weldmesh. This seems to be the spot in the fence that stock, especially feral goats, will hit and break.

Phil and Fran Brownhall

Ryandale, Cunnamulla

We have been using self-mustering enclosures for eight to nine years and use them at least four to five times a year for mustering sheep and cattle. We use a 'Spring Hill' spear gate. It has a timber frame with steel posts suspended by chains. At present we have enclosures in two paddocks, however, we hope to install more.

As well as mustering, the enclosures are used as holding yards and for mothering ewes and lambs.

Normally we are able to muster most of our stock by setting the enclosures the day before and we usually round up the stragglers using traditional mustering methods. If we were to leave the enclosures for a day or two longer, we would possibly get the stragglers inside, depending on variables such as the weather and the availability of water outside the enclosure.

We have found that we are able to muster most of the cattle fairly quickly and it decreases labour costs. Sheep take longer to muster.

Checking the enclosures can take time, but it seems a lot less stressful than traditional mustering. One of the biggest problems we found using the enclosures was when there was excess water in the paddocks. At these times the enclosures are unsuccessful and we muster the traditional way, but they are still useful as holding facilities overnight. Proper holding paddocks would complement the practice of self-mustering.

Materials

Listed below are the recommended materials for making spear gates and swing gates yourself. The cost of fencing materials will depend on the type of materials used and the size of the enclosure. However, we recommend a 1.15 m high hinged-joint with 15 cm spacing is used for the fencing. This will stop goats damaging fences and escaping from enclosures.

Abbreviations

FMS	flat mild steel
SHS	square hollow section (light wall)
RMS	round mild steel
NB	nominal bore (black pipe)
Light wall	1.6 mm wall

Spear gates (for cattle/goats/sheep)(x2) Frames, spears and sheep collars

Material	Amount required	Purpose
50 x 50 mm SHS	10.6 m	Frame
90 x 6 mm FMS	4.2 m	Backing plate for spear mounts
50 NB heavy walled black pipe (5.54 mm seamless wall)	2.9 m	Spear mounts Spacers for sheep spear
25 NB black pipe	7.5 m	4 sets of cattle spears
40 NB heavy walled black pipe (4 mm wall)	4.8 m	Spears
20 mm RMS	1.6 m	Stops for spears
25 x 25 mm SHS	5.0 m	Sheep spears
Black sheet metal 16 gauge	1.2 x 1.2 m	Sheep and goat spears
4 mm chain	1 m (12 links per collar)	Sheep collars to adjust spacing
25 x 3 mm FMS	260 mm	Sheep collars

Note: Before buying the seamless pipe, test that the 40 mm NB black pipe fits into the 50 mm NB black pipe, allowing for free movement.

Slide gates

Material	Amount required
25 x 25 mm SHS	11 m
90 x 6 mm FMS	400 mm
20 mm RMS	850 mm
25 x 12 mm FMS	250 mm
40 x 40 x 6 mm angle iron	700 mm
8 mm RMS	700 mm
4 mm chain	1 m
6 mm 'R' clips	4
mesh (100 x 100 mm WH554)	1.4 m x 1.5 m

Swing gates (for goats and kangaroos)

Frame and flap

Material	Amount required
50 x 50 mm SHS	880 mm x 2
16 mm RMS	700 mm
12 mm RMS	700 mm
12 mm black pipe	575 mm
12 mm black pipe	56 mm x 2
8 mm RMS	500 mm x 2
8 mm RMS	900 mm
12 mm flat washers	2
mesh (100 x 100 mm WH554)	500 x 500 mm square

Locking plate

Material	Amount required
50 x 6 mm FMS	150 mm x 4
90 x 12 mm hexagonal head bolts	2
12 mm nuts	2
12 mm spring washers	2

Design plans

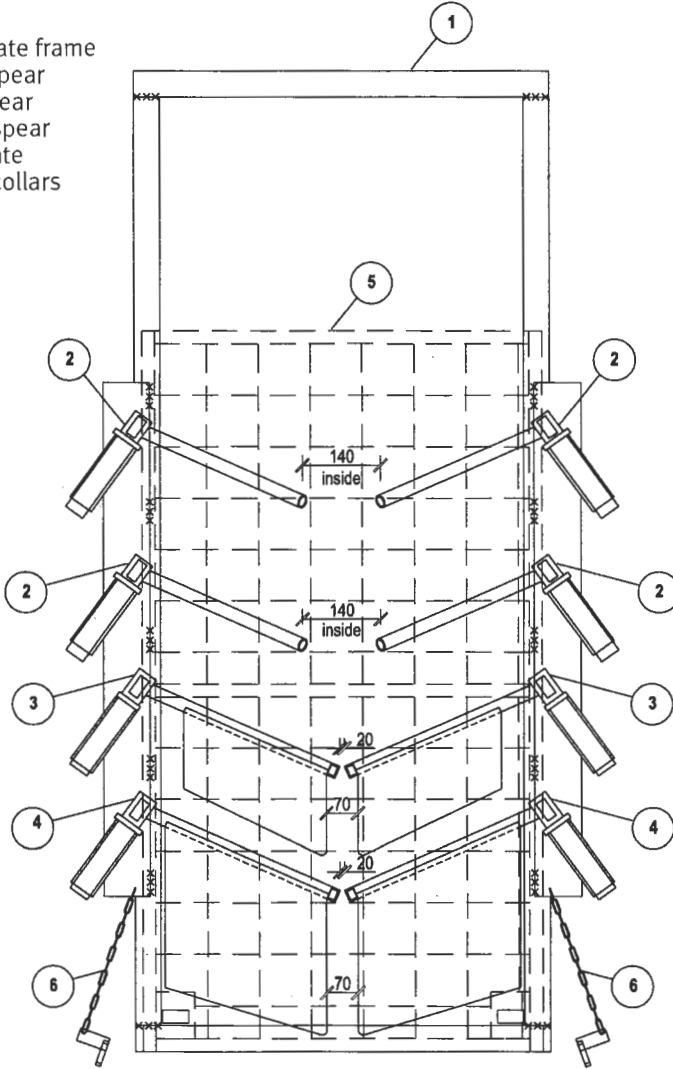
Following are professional design plans for making spear gates (entry and exit) and swing gates.

Spear gates (for cattle/goats/sheep)

Note: All components should be coated with red oxide primer prior to assembly except the spear arm shafts.

Key

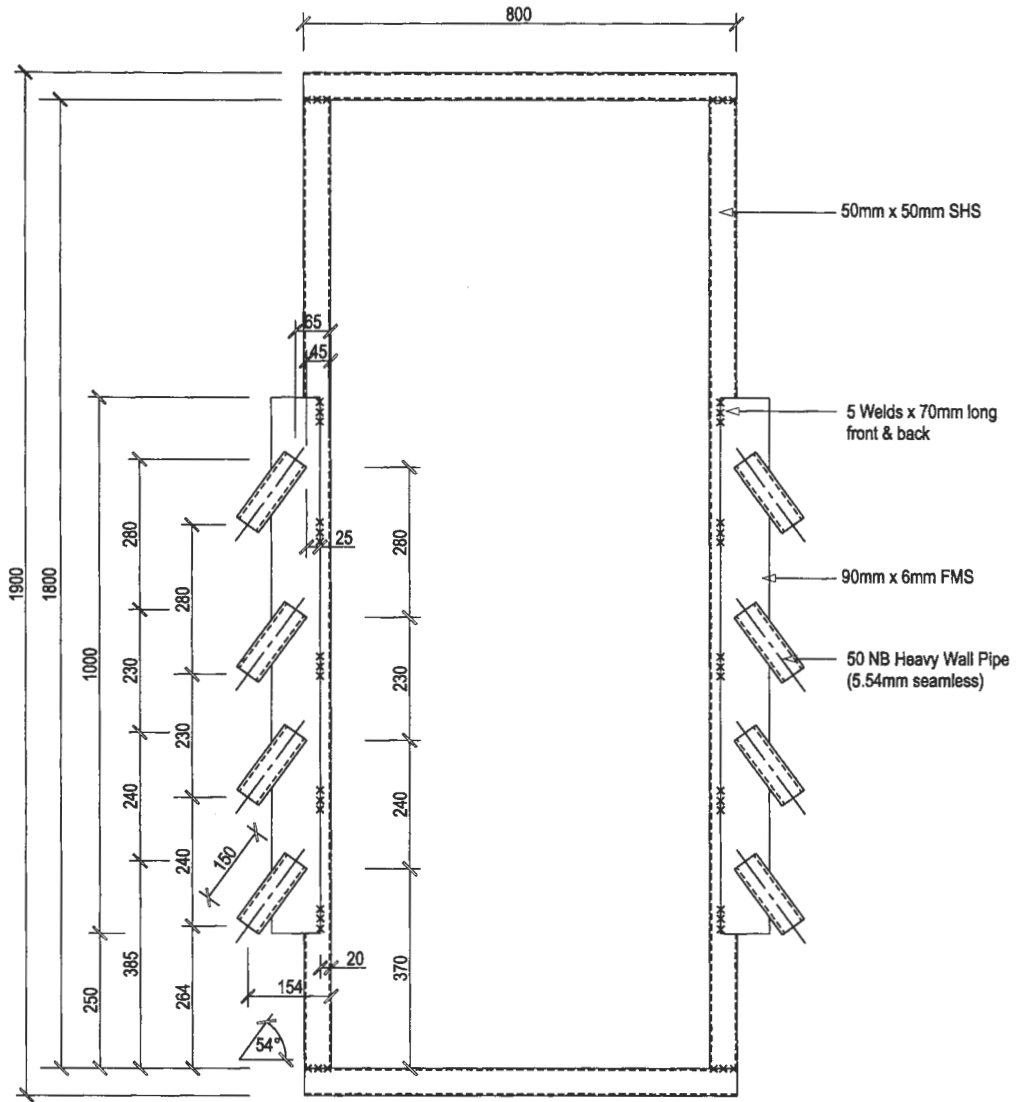
- 1. Spear gate frame
- 2. Cattle spear
- 3. Goat spear
- 4. Sheep spear
- 5. Slide gate
- 6. Sheep collars



Note:
Provide red oxide primer to all components.

Spear gate assembled
Front view
Scale 1:10

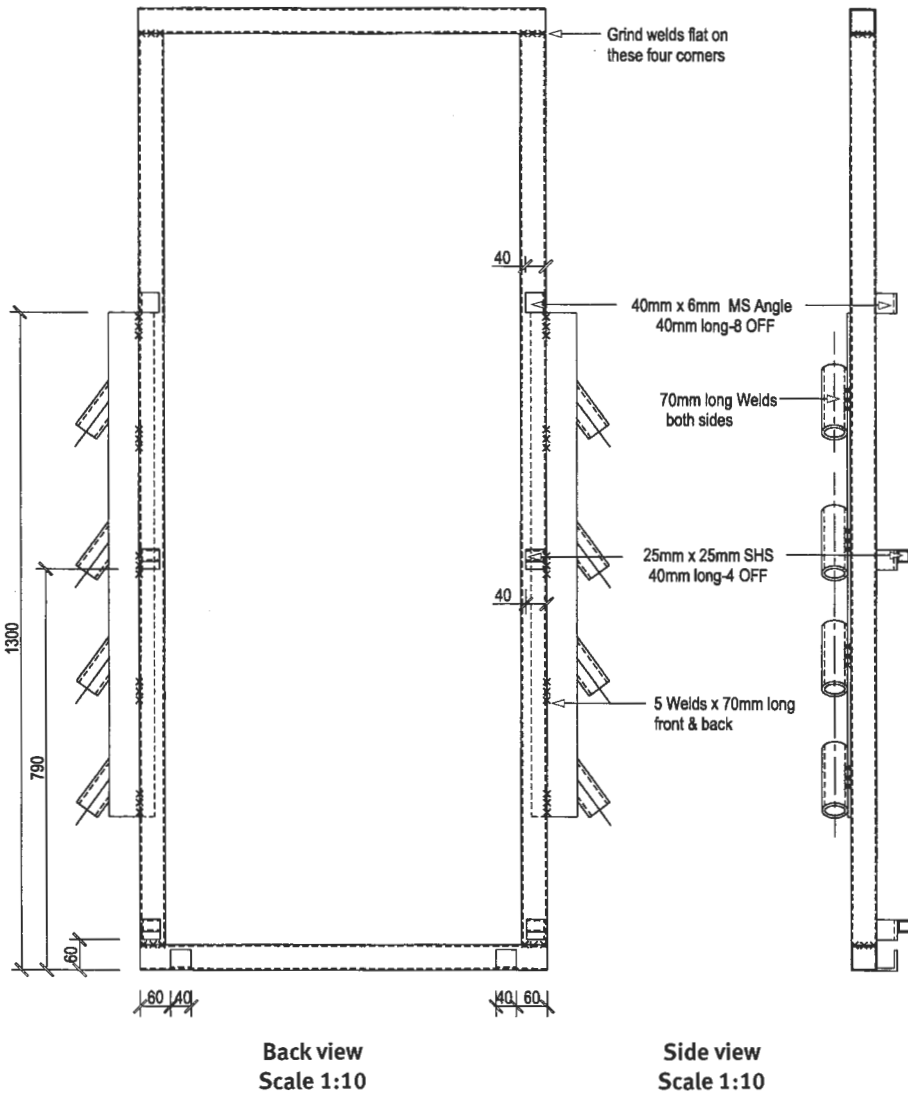
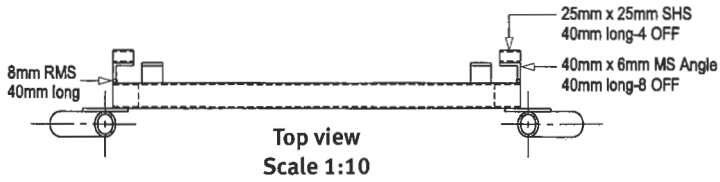
1. Spear gate frame



Front view
Scale 1:10

Notes:

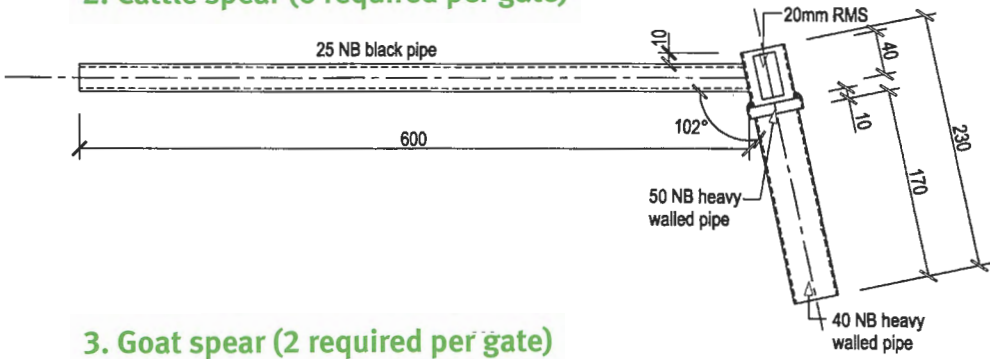
1. All welds to be minimum 5CFW or approved equal.
2. Grind all welds flat on frame.



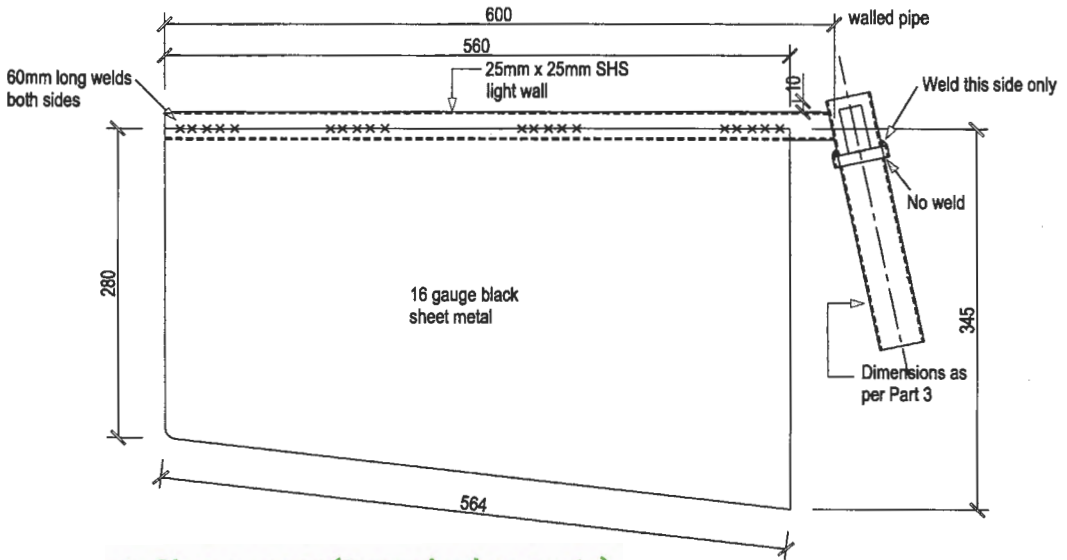
Notes:

1. All welds to be minimum 5CFW or approved equal.
2. Grind all welds flat on frame.

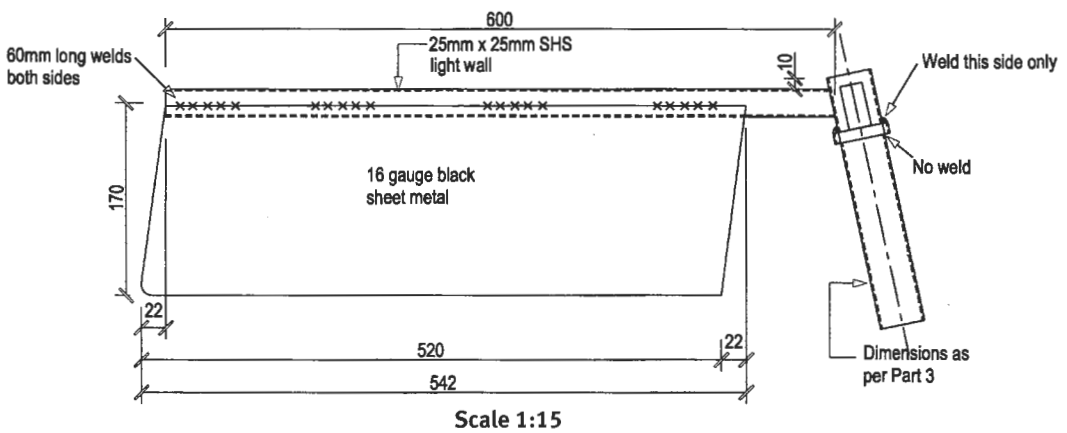
2. Cattle spear (6 required per gate)



3. Goat spear (2 required per gate)

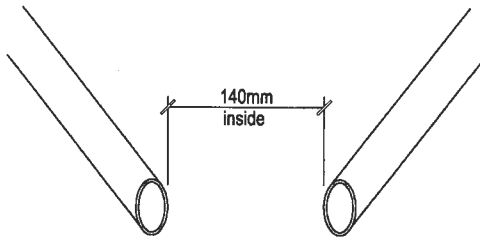


4. Sheep spear (2 required per gate)

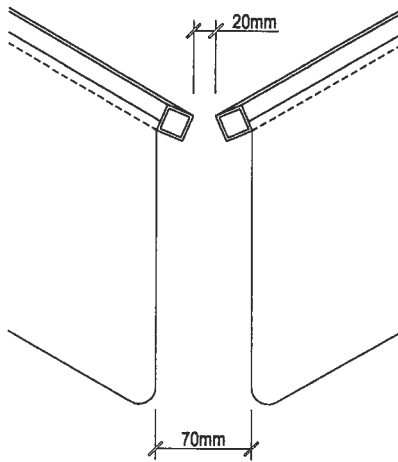


Note:
All welds to be minimum 5CFW or approved equal.

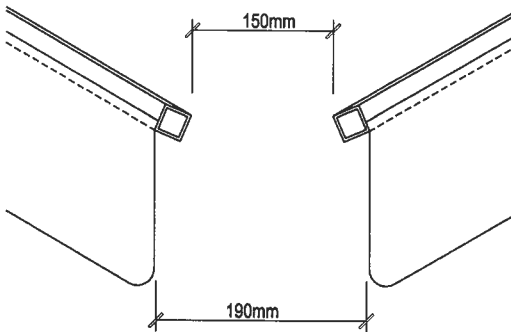
Spear spacings



cattle spear spacings

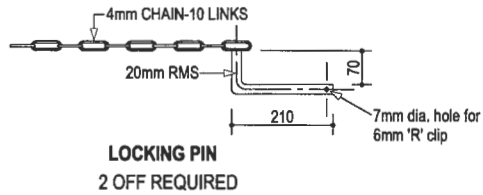


goat spear spacings

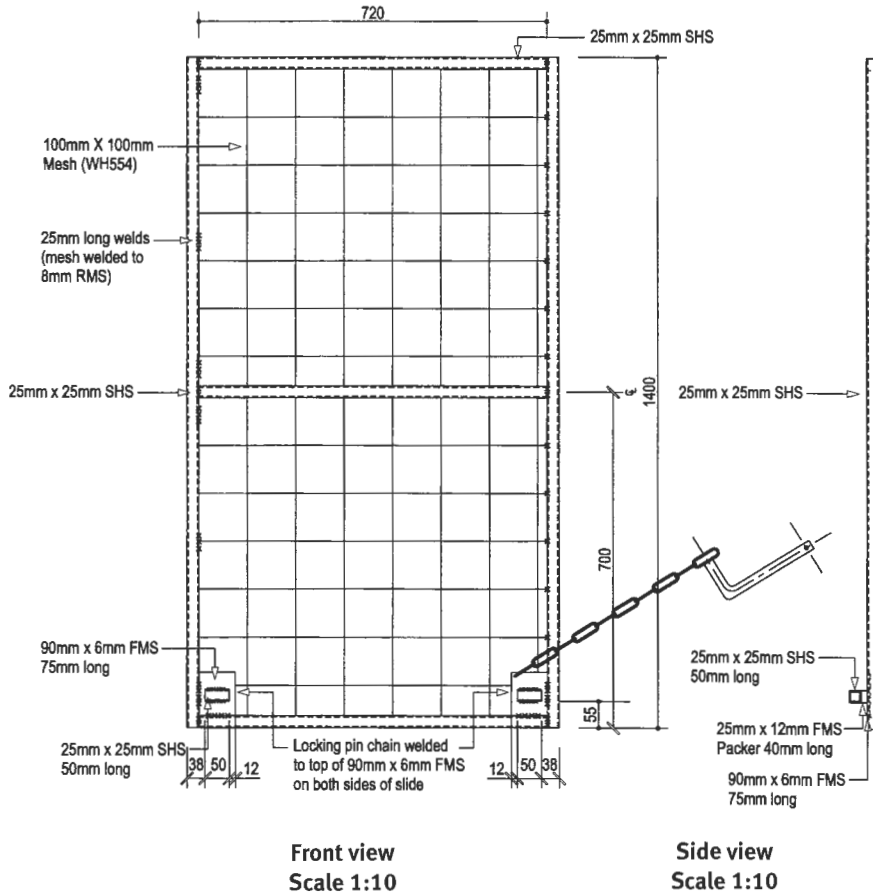


**sheep spear spacings
(with the collar in place)**

Locking pin (2 required)



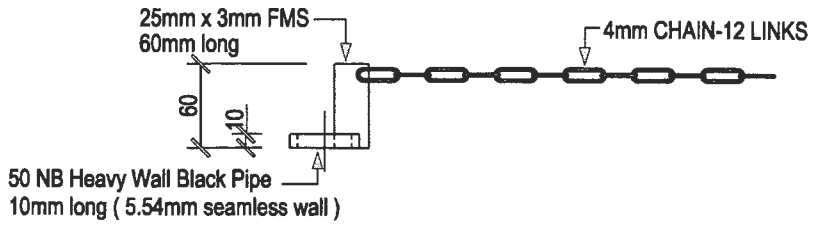
5. Slide gate



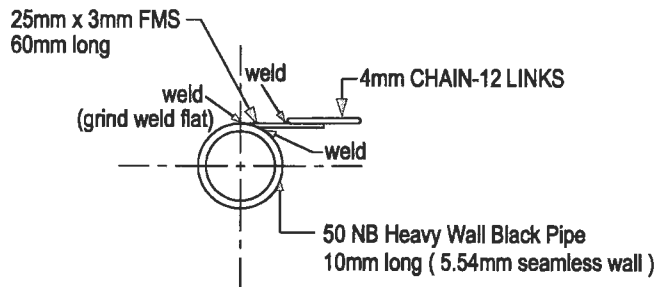
Notes:

1. All welds to be minimum 5CFW or approved equal.
2. Grind all welds flat on frame.

6. Sheep collars (2 right hand and 2 left hand required per gate)



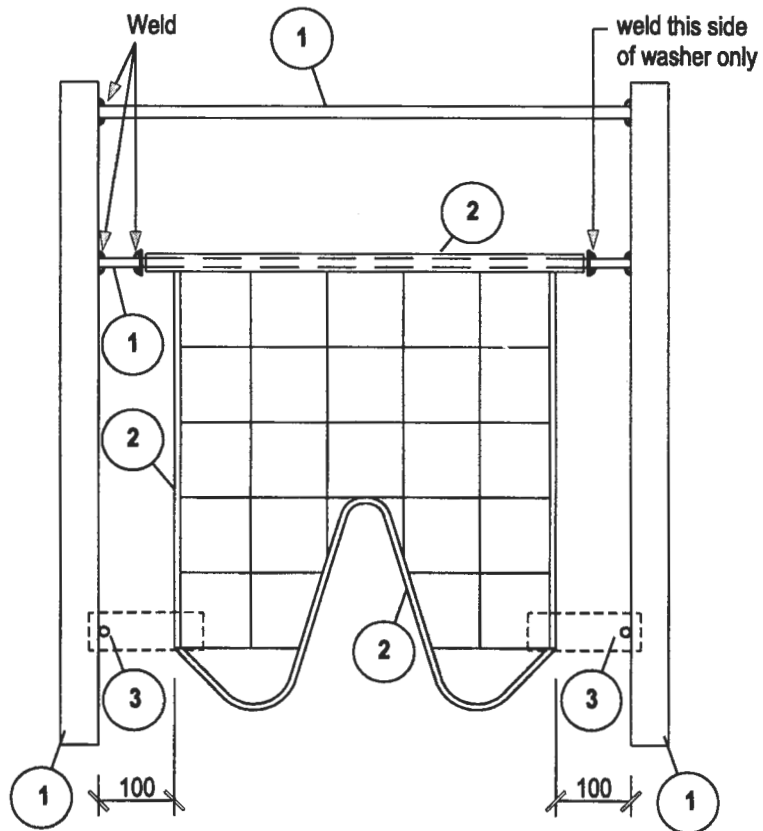
Side view
Scale 1:20



Top view
Scale 1:20

Note:
All welds to be minimum 5CFW or approved equal.

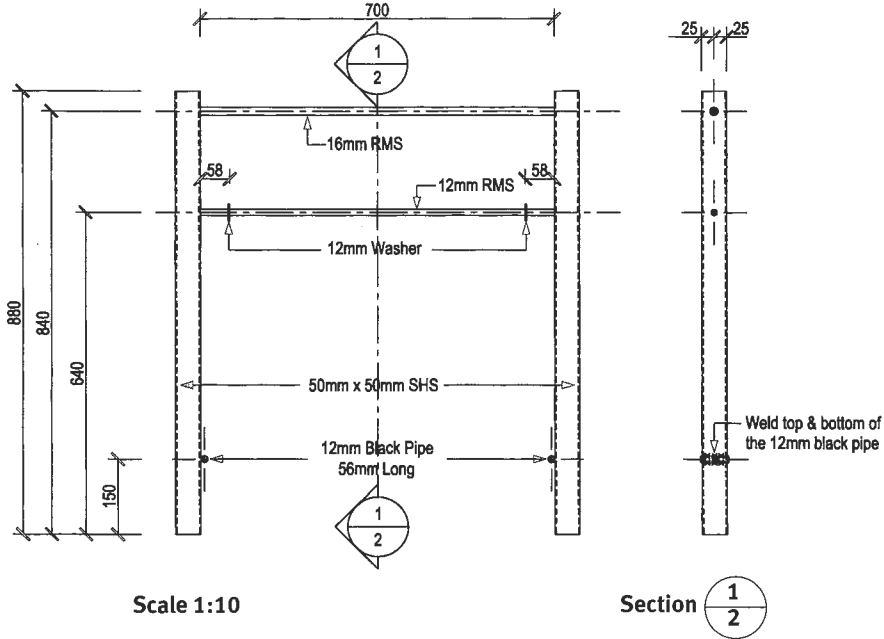
Swing gates (for goats and kangaroos)



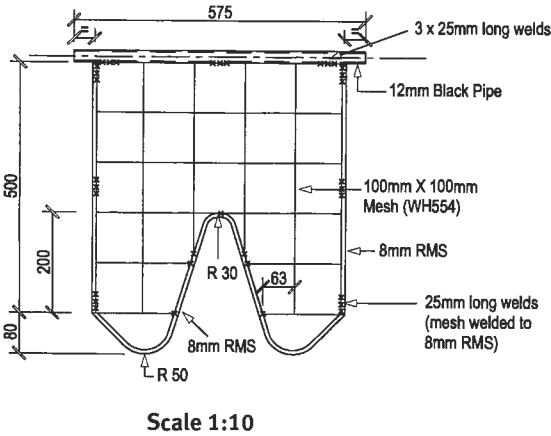
Swing gate assembled
Front view
Scale 1:10

Note:
All components should be coated with red oxide primer prior to assembly.

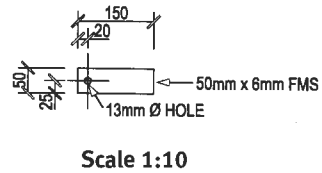
1. Swing gate frame (1 required)



2. Swing gate flap (1



3. Locking plate (4 required per gate)



Notes:

1. All welds to be minimum 5CFW or approved equal.
2. Grind all welds flat on frame.

Further reading

- Cheffins, R., 1989, *Cattle Trapping and Self-mustering*, Department of Primary Industries, Brisbane.
- Thompson, J., Riethmuller, J., Kelly, D., Boyd-Law, S. & Miller, E., 1999, *Feral Goat Management in South-West Queensland*, Department of Natural Resources Queensland, Brisbane.
- Casburn, G., Hacker, R. & Brill, T., 1999, *Final Report–Evaluation of Cooperative Feral Goat Harvesting/Control Techniques*, NSW Agriculture, Orange.
- Middleton, C., *Self-mustering to Improve Property Income and Management*, Department of Primary Industries, Queensland and Meat Research Corporation, Brisbane.
- O’Dempsey, N., 1993, *Sheep Self-mustering–Muster in Your Sleep*, Department of Primary Industries, Queensland, Brisbane.
- Pearce, D., Elliott, G. & Rouda, R., 1998, *Total Grazing Management–Results and Observations from the Pimbee Station Trial*, Department of Primary Industries, Queensland, Brisbane.

Cost-effective and multipurpose self-mustering enclosures for stock is a hands-on tool that provides graziers with all the information needed to build and operate a successful self-mustering enclosure.

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