



Fig 1. full height boar fence

Introduction

Feral wild boar are now established in some parts of the British Isles and landowners may have to consider how to manage them. This guide describes how fencing may be used to either prevent captive boar from escape, or feral boar from gaining access to areas where they would be unwelcome. Please note that the guide is based on the best available information, many of the fencing specifications mentioned have not been extensively tested in the UK. This guide is one of a series on the subject of wild boar.

Uses of fencing

Examples of situations where specialised fencing might be used are:

- ◆ preventing the escape of farmed or captive boar, including sites where they may be used for conservation management.
- ◆ preventing boar from crossing runways, roads, railways or other thoroughfares.
- ◆ preventing male boar from contact with outdoor domestic/rare breed pigs.

Fig 2. fence protecting campsite



- ◆ reducing the chances of boar predation on poultry or the young of domestic livestock.
- ◆ preventing breaches of stock, rabbit, deer, game rearing & release pen fences.
- ◆ preventing damage to, or spoilage of, grass, arable and horticultural crops.
- ◆ protecting sensitive conservation sites, habitats or species.
- ◆ preventing disruption to amenity sites, schools, and gardens.

Specialised fencing can be very expensive to erect and maintain. An assessment as to whether a fence is appropriate will depend on the cost, the consequences of boar gaining access to an area where they could cause problems, the likelihood of them doing so and alternative measures for dealing with the problem.

Keepers of wild boar have to take into account the requirements of the Local Authority for licensed keeping of boar under the Dangerous Wild Animals Act, see Legislation guide).

For feral boar exclusion, other methods such as culling can make fencing more effective by reducing pressure on fences, and should always be considered at the same time.

Fence design and specifications

(see Tables 1 and 2)

Boar are large, strong, and adept at breaching many standard fencing designs. Fences designed specifically to completely block access by wild boar e.g. on a boar farm, have to be considerably stronger than normal fencing and may have different design features. However, the effectiveness of any fence depends not just on the specification but also on the “pressure” that the fence is likely to be under, in other words how much an animal wants or needs to get to the other side. For wild boar some circumstances that could increase pressure on a fence are:

- ◆ the presence of oestrus female domestic pigs
- ◆ the presence of a desirable food source/hunger
- ◆ a requirement for cover for farrowing
- ◆ a desire to escape



Fig 3. post broken by boar

- ◆ the blocking of frequently used boar routes by a new fence

In some circumstances where fence pressure is low, ordinary or modified stock fences may be adequate e.g. a fence designed to simply to divert feral boar that otherwise have access to adequate food and cover.

Planning the specification of **any** new fence in the countryside may need to consider the current presence or future spread of boar.

The following suggestions for fencing specifications for wild boar are based on the best information available and have not been extensively field tested. Fencing designs for wild boar are the subject of ongoing research.

Although it does not include fencing specifically for wild boar, the Forestry Commission Technical Guide, *Forest Fencing*¹, gives general guidance on fencing techniques for preventing the passage of wild mammals and should be regarded as essential companion reading. See Tables 1 and 2 for detailed specifications.

All fences

Fences designed specifically for boar need to be strong. Upgrades of existing fences and almost all new fences should seek to utilise:-

- a. High tensile [HT] netting - preferably using locked joint mesh [where the verticals are also



Fig 4. snout wire – note how boar have been able to move the barbs, this wire is too thin

HT] - and spring steel or high tensile line wire at the base. Various suitable specifications are available from manufacturers. (Note: Mild steel mesh and line wire can relatively easily be stretched and deformed and thus is poor at resisting penetration when challenged by boar. Traditional hinge-joint mesh verticals can be forced sideways allowing boar through– even the HT version has mild steel vertical wires).

The badger fence specification of 8cm between verticals has been used in boar farms. If one-piece mesh is too cumbersome to handle 2 narrower rolls can be used but only if joined by lashing rods.

- b. woodwork of one size larger diameter than is used for light stock fences with stakes at 3-5m intervals instead of the 10m typical for forest fencing.
- c. barbed staples and spring steel or HT line wires and HT barbed wire joined to the mesh by lashing rods, not clips.
- d. electric offset wires. These are an essential addition to strong mesh in boar farms and

Fig 6. pushing under deer fence



Fig 5. pushing under stock fence

outdoor pig farms, and advisable if practicable elsewhere.

Minor variations in high tensile netting specification [e.g. aperture size] should not materially affect fence performance

Specifications for fences to keep boar in

General specifications for a perimeter fence for boar farmers to retain farmed wild boar are provided in Table 1. The trench for burying the bottom of fences can be dug using a chain trencher or narrow bucket backhoe. Trenching requires straining posts and stakes that are at least 0.5 metre longer than for fences without trenches.

Specifications for keeping feral boar out

Specifications for fences designed to keep boar out are detailed in Table 2.

Upgrades of existing fencing

Many existing fences may need upgrading if boar are, or are likely to be, present.

Fig 7. pushing under rabbit fence





Existing fences may range from a top quality boar farm perimeter fence in need of maintenance to completely inadequate fencing requiring partial or complete replacement.

Sections a. to d. below describe how boar can breach a fence and some potential methods for preventing them from doing so.

a. Lifting up

Boar can lift the base of the mesh [and sometimes stakes] of rabbit, stock or deer fence, or stretch the netting to create a gap. A 100mm gap under a existing fence may be enough to encourage entry. The following may help to prevent lifting:-

- ◆ The addition of a single 'snout wire' using high tensile twin stranded barbed wire joined to the base of the mesh by lashing rods. An additional, lower wire will be needed at ground level if the mesh is as little as 100mm above the ground.
- ◆ If the original stakes are at 10m intervals, insert 1 or 2 extra short stakes between them. Angle the new stakes over the bottom mesh wire to prevent lifting.
- ◆ Add an electrified wire c. 30cm from the fence and 20-30cm above ground level.

b. Treading down

Stock fencing which uses hinge-joint mesh can easily be bent down by boar. Either:

- ◆ Join a strained high tensile top line wire to the top net wire using lashing rods at 2 metre intervals. Extra stakes and barbed staples may

(top left) Fig 8. boar hole in stock fence and (above) Fig 9. rabbit fence trodden down by boar
be needed. A separate top electrified wire is advisable.

OR

- ◆ Raise the height of the fence with an extra width of narrow stock net, e.g. HT5/53/22. New long stakes e.g. 2.4m may be required.

c. Jumping over

A 1.5 metre height should be considered the minimum to prevent boar from jumping a fence. Either:

- ◆ Raise the height of the fence with an extra width of narrow stock net, e.g. HT5/53/22, with a HT top line wire and lashing rods at 1m intervals. New long stakes e.g. 2.4m may be required or,
- ◆ if the stakes are sufficiently long, add extra line wires using high tensile or twin stranded barbed wire set above the fence to increase the height. If there are deer in the area they are likely to become entangled in such a fence and it may not be appropriate or,

(left) Fig 10. boar "creep" under fence on a ditch (right) Fig 11. internal boar farm fence with offset electric wire at base



- ◆ Try installing an electrified offset wire and electrified top wire.
- d. Pushing through
 - ◆ Hexagonal rabbit netting and temporary plastic deer netting are not strong enough to stop boar tearing it or ripping it from the stakes. Mild steel stock net can be deformed to gain entry.
 - ◆ Adding one or two [braided or HT] offset electric fence wires may reduce the chances of boar penetrating the fence, however, this may not stop a boar from jumping over.
 - ◆ Two lengths of twin stranded HT barbed wire may help prevent boar entering but may not prevent tearing of the net.
 - ◆ Alternatively use an extra coating fence of HT 'stock net' specification [together with a barbed snout wire at the base].



Fig 12. ditch piped under fence

Electrified Fences

- ◆ Domestic pigs on farms can be retained by 2 strand wire electric fences after they have learnt to avoid the shock. Similar fences, perhaps with additional line wires can be considered for internal fences within boar farms though usually in conjunction with wire stock net.
- ◆ Feral wild boar will be unfamiliar with electric fencing and may pass through it when running. They may also jump over or through (receiving no shock when in the air). Even 6 strand fencing may be penetrated if under pressure.
- ◆ The use of electrified plastic mesh fencing (e.g. sheep or poultry net) is likely to lead to serious entanglements if boar decide to challenge it.

It is recommended that for permanent boar fences electric line wires passing through offset insulators are used and only in conjunction with steel mesh.

Gates

Gates in fences can be an obvious weak point. The standard '5 bar gate' is not sufficiently high to exclude boar without the use of electrified stand off wires or additional wire mesh. Welded mesh or steel panel gates with steel frames are recommended on boar farms, electrified wires buried under gateways should be double insulated. Side opening gates should have strong hinges with the top pintle either facing down, or drilled and pinned to prevent the gate from being lifted up. Very strong buried gate cills of at least 150 x 150mm with barbed wire attached underground will discourage boar from undermining a gate.

A reliable method for maintaining badger gates through rabbit fences in the presence of boar has not yet been developed. If the fence is strengthened against boar the use of a metal frame firmly bolted to a sunken welded mesh panel may be appropriate. Hinged, hanging "boar gates" are occasionally used in Europe to prevent fence damage by allowing access by boar, but have not been formally tested against fallow and muntjac deer - both of which could gain access by the same route.

Ditches and drains

Boar can be deterred from opening up fences which cross small water courses (which are one of the typical weak points) by the use of locked joint mesh or welded mesh e.g. light concrete reinforcement mesh. This should be well buried below the ditch floor level with concrete or plastic pipework of c. 30cm diameter and 1 m long set through it and the area backfilled.

Further Information

¹ Trout, R.C. and Pepper, H.W. (2006) *Forest Fencing*. Forestry Commission Technical Guide.

² Pepper, H.W., Holland, M. & Trout, R. C. (2006) *Wildlife Fencing Design*. CIRIA London. pp 60.

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See Specification tables below:

Table 1. Suggested specifications for new and upgrade fencing to keep wild boar IN

	1. New buried perimeter fence. Boar farm, wildlife park etc.	2. New perimeter fence where ground cannot be trenched. Woodland boar farm, wildlife park etc	3. Total replacement of Electric strand fence e.g. Pig farm converting 2 strand electric fence to boar fence.	4. Upgrade to existing stock fence. e.g. Existing livestock farm or wildlife park converting to boar
Mesh Note: Single width net is more secure, 2 pieces are easier to handle but MUST use lashing rods to join. See also *	2.5mm diameter wire, locked joint HT 17/190/15 [or 17/190/8 badger fence] Alternatively use lock joint lower section & hinge joint above.	17/190/8 hinge joint badger fence lapped on ground 17/190/15 alternative.	There is no suitable alternative electric fence for wild boar. Use mesh as in 1 or 2.	Existing hinge joint fence is usable if it is 0.8 - 0.9m high; max mesh 200 x 200mm square. If existing is locked joint HT, add HT 8/80/15 or 8/80/22 on top. Mild steel mesh must be replaced. If replacing entire fence - use either a single width locked joint HT or 2 narrow widths as in 1 & 2
Woodwork	Stakes of minimum 2.3m, 10cm diam. required at 3m. intervals. 1.9m OK for internal fences	As 1	As 1	Use short stakes driven at angle [over bottom mesh & line wire] to reduce inter-stake distance to 3m.
Fence minimum finished height	1.5m minimum – 1.8m preferred*.	As 1	As 1	As 1
Bury depth Trenching by chain trencher preferred	0.3m – 0.4m **** [vertical or curved towards boar]	Minimum lap 0.4m and pegged down at outer edge by 0.75m notched stakes (at 3m interval & driven at an angle)	As 1 or 2	0.3m – 0.5m if not using electric fence outriggers****. Buried metal sheet [e.g. corrugated iron] or welded mesh could be used as an alternative
Line wire: 2.65 mm diameter SpS or 2.5HT	Yes at top	Essential at ground line along bend.	As 1 or 2	Yes at top. Extra line may be needed to reach minimum fence height
Barbed at bottom ** 2.0mm twin HT	Preferable at ground level	Essential at lapped edge	As 1	As 1
Barbed at top 2.0mm twin Ht	If required to reach correct height	As 1	As 1	As 1
Fixings	Barbed staples. Lashing rods to join line or barbed wires to mesh or mesh to mesh @ 1.5m intervals. Essential where 2 widths are joined	As 1	As 1	As 1
Electric . Mains energiser preferred. Used in conjunction with wire mesh fence.	Single offset wire through offset insulators preferred. e.g. HT 2.0mm	Essential. 2 of 2.0mm HT wires.	As 1 or 2	1-3 Offset HT 2.0mm as outriggers
Electric wire position	40cm height offset @ 30-40cm from fence	@ 10cm & 40cm height offset 30-40cm from fence	AS 1 or 2	@ 100 & 400mm height set 30-40cm from fence. 3rd at 700mm if original is a rabbit fence.

Table 2. Suggested fence options to help keep feral boar OUT

	1. New fence, highest spec e.g. Pig farmers needing to keep boar out where there is very high pressure from male feral boar	2. New fence, other e.g. Protecting livestock/poultry Includes replacement of mild steel mesh fence	3. Upgrade existing deer fence Made from rectangular HT mesh e.g. 8/80/15	4. Upgrade existing rabbit fence Note: will not stop boar jumping over and probably not penetration	5. Upgrade other boundaries e.g. for grassland, crops, horticulture, conservation areas	6. Upgrade pheasant pens and temporary enclosures e.g. Gamekeeping pen or temporary deer netting made from HT plastic or hexagonal wire mesh
Mesh details NB similar products from various manufacturers	Preferably one piece HT 17/190/15, 2.5mm diam, max 200mmx200mm mesh, locked joint. 17/190/8 hinge joint is a lesser option	Min HT15/156/15 or 15/156/22, 2.5mm diam, max 200mm x 200mm mesh. Preferably locked joint	Existing HT deer net fence 1.5m or higher is adequate. If lower than 1.5m, add HT 5/53/15 to top	Consider stock net addition cover to existing hexagonal wire rabbit mesh.	Depends on boar pressure/ crop value. HT 0.9-1m hinge joint mesh should be considered a minimum	Probably impractical to change mesh specs. Add electrified wires (preferred) or barbed wire, if possible
Minimum height	1.5m may not work, 1.8m preferred***	1.5m	1.5m	0.9m [1.5 m. if combined rabbit & deer fence]	1.2m, preferably 1.5m if adjacent to woodland	As original
Bury depth	0.2-0.3m **OR electric wires present if not buried	Preferably as 1. but often not buried	As original	As original	As original	As original
Tensioned line wire at base and top	2.65 SS or 2.5HT at base even with lock joint; critical at top with hinge joint.	SS or 2.5HT critical.	SS or 2.5HT critical with hinge joint.	2.65 SS or 2.5HT	Check present or add 2.65 SS or 2.5HT	Check present or add 2.65 SS or 2.5HT
Barbed wire at foot	HT twin wire well strained @ 50mm from ground max on boar side or attached to mesh at base	As 1	As 1	Add @ 5, 40 & 60cm from ground on boar side	As 1	Add @ 5, 40 & 60cm from ground on boar side if no electric fence
Barbed at top NB not in recreational areas	1 or 2 Twin HT lashed to top strand or @ 15cm above mesh	As 1	Twin HT lashed to top strand and or 10cm above for stock fence only	Twin HT lashed to top strand and or 10cm above [rabbit fence only]	ADD Twin HT lashed 15cm and 30cm above top	As original
Fixings	Stakes @ 3m. Barbed staples; Lashing rods @ 1.5m intervals join line wires to mesh or mesh to mesh	As 1	As 1 Use short stakes driven at angle to reduce inter-stake distance at ground level	As 1 & 3	As 1 & 3	As 1 & 3
HT Electrified wires NB needs vegetation control	Essential: Offset HT on outside	Temporary during critical period.	As 1	As 2	As 2	As 2
Position of electrified wires	20cm and 40cm height @ 30cm from fence outside. Additional option on top also	As 1	3 strands as minimum. Height 20cm, 40cm &, 75cm fence through offset insulators outside mesh fence.	As 3	As 3 Additional option on top also	As 3

* according to site unevenness and presence of tree roots.

** NB. tensioning barbed wire beside an existing mesh is made easier by temporary placing short round stakes near each stake to reduce snagging.

*** boar have been seen to clear 1.2m and attempt 1.5 m when invading pig pens.

**** use 0.2 minimum at dips in ground /old wheel tracks/ditches etc.

***** rarely appropriate for rabbit fencing without electric wires and increasing height.