Protection Fences

Introduction

Protection fencing is designed to permanently exclude livestock and create environmental protection areas for bush blocks, streambanks and lake or estuary margins. Studies in the Bay of Plenty have shown that such areas around watercourses (sometimes called riparian retirements) are effective buffers for intercepting runoff of sediment, nitrogen and phosphorus (see ***Sustainable Options*** LM02 Riparian Protection). Environmental protection areas also offer the opportunity to plant trees and shrubs for productive or aesthetic purposes, which help to intercept runoff and stabilise soils against erosion.

Layout

Selecting a good line for protection fences is necessary for the following reasons:

- *Function*
  The fence line should fulfil the objective of the protecting the area. Watercourse protection for example requires a streambank margin of around 10 m to act as buffer zone and maintain a canopy of native vegetation. Adjoining features such as wetlands or gully heads should be included within the fenceline.

- *Durability*
  The fenceline should be chosen for stability, allowing ease of construction and maintenance. Fencelines placed across short slopes adjacent to watercourses are usually in the flood way and are vulnerable to damage. More stable fencelines will be found along adjacent terraces or ridges.

- *Effectiveness*
  Protection fences must remain stock proof, and fencelines should be selected to avoid potential stock problems such as sharp dips or bordering confined raceways.

- *Other Issues*
  Protection fencelines should also be located to minimise line preparation earthworks which themselves may create erosion problems. Meanwhile setting up new fencelines offers the opportunity to improve farm subdivision.

Fence Type

Protection fences differ from conventional farm fences in the following ways.

- There is always vegetation (feed) on one side of the fence which creates constant stock pressure on posts and wires.
- It is not always possible to locate retirement fences on a good line.
- Protection fences tend to be a lower maintenance priority for many landowners.

Protection fences therefore require a high standard of materials and construction if they are to be effective, durable and trouble free.

Specifications overleaf represent the standard design for protection fencing eligible for Environment Bay of Plenty grants and have been developed through hard won experience. Building a fence is a skilled job, and the use of an experienced fencer is strongly advised.

Strainers and Angles

Strainer and angle assemblies are the foundation of any fenceline. Well-built assemblies sited on stable ground will give a considerable period of service and will reduce maintenance requirements. In protection fencelines with frequent angles, a tie-off strainer is recommended every 200 m.

Strainers, angles and stays should all be roundwood. Half round posts should not be used for angles, and wire tiebacks should not be used to stay angles. All stayed assemblies should be morticed at the point of stay attachment to the post, midway between ground level and the top of the post. Stays should be set on a block just below ground level, using a minimum length of 900 mm of half round post (150 mm face, H4) for the block. All stayed assemblies should be suitably footed to resist lifting, with H4 treated Radiata pine.

Wires

High tensile 2.5 mm diameter galvanised steel is suitable for line wire in most situations. Where there is sulphur or salt in the atmosphere, 3.15 mm HT extra heavy galvanised is preferred, although 4 mm MS galvanised is also suitable.

Stainless steel foot wires (3.15 mm) are also recommended in these situations.

Materials Specification for Protection Fencing		
Item	**Size**	**Material/Treatment**
Posts No.1/No.2 ½ Round	1.8 m, 150 mm width of flat	Radiata pine/H4
Strainers – No. 2 Round	2.4 m, 180 mm small end diameter (SED)	Radiata pine/H5
Angles – No 3 Round	2.1 m, 160 mm SED	Radiata pine/H5
Stays – No 2 Round	2.4 m, 90 mm SED	Radiata pine/H4
Battens	1.1 m, 50 x 50 mm	Radiata pine/H3
Post Staples	50 mm, barbed	4 mm mild steel/galvanised (Hot dipped)
Batten Staples	30 mm, barbed	3.15 mm mild steel/galvanised (Hot dipped)
Line Wires	2.5 mm diameter (3.15 mm)	High tensile/galvanised (Extra heavy galvanised)
Foot Wires	4.0 mm diameter (3.15 mm)	Mild steel/galvanised (Stainless steel)
NB: Specifications in brackets for use where there is high corrosion risk		

The bottom wire should be placed 80 mm above ground level and, above that, wires placed at the following intervals – 100, 100, 100, 110, 120, 135, 150 and 165 mm. The top wire should be approximately 50mm below the top of posts. Wire joins should be made with crimp sleeves, figure eight knots or reef knots. Double loop knots should not be used. Wire tension prior to battening should be between 140 kg and 170 kg.

Posts and Battens

Posts and battens should be placed on the stock exclusion side of the fenceline, with post tops at least 1110 mm above ground level. Battens should be placed at one metre intervals approximately and posts at four metre intervals, or closer if necessary to maintain a bottom wire height of 80 mm. Posts sited in dips should be footed.

Wood preservative treatments are corrosive to staples and wire, and it is recommended that posts be laid out on site three to four weeks before fence construction to allow some weathering.

Hot dipped galvanised staples will resist this corrosion and give longer life. Batten staples should be hammered in until the wire embeds slightly in the wood. Do not use mechanical stapling devices.

Electric Fencing

Under heavy grazing pressure by large animals, and especially where a protection fence has not been located on a good line, the addition of an out-rigged hot wire is recommended. Electric fences are not generally desirable for protection applications, and require more attention than post and batten fences. They depend on a constant power supply to be effective and can fail through a single broken connection.
All electric fences require high voltage to be stock proof, and this is reduced by current leaking through poor insulation and vegetation contact.

Gates

Unless access is required through the environmental protection area, gates are not necessary in a protection fence. Some access is desirable however, in case stray stock have to be mustered out or machine access is required. For this purpose a gate opening at a convenient point can be railed with four or five planks of 50 x 150 mm timber. These should be secured onto posts with four millimetre wire and staples and can be removed if necessary to allow emergency access.

Environment Bay of Plenty
REGIONAL COUNCIL

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