

Figure 35. Typical problems on a grazed site, with suggested solutions (in **bold**).

as noted elsewhere. The sides of paddocks could radiate out from the central ring fence around the high point.

Permanent, well-sited fences which allow sheep through, but not cattle are the best. This can be achieved by removing or not installing the bottom wires of a fence. Because they are temporary and of generally light construction, electric fences should also be considered for use where a site needs to be grazed for short periods only.

Coastal lands can be a particular problem for grazing, where privately owned land abuts against beach and dunelands. Cattle may have access to the dunelands from the adjacent farms, even though the dunes may be Crown property. Middens are common in dunelands and these areas are seldom fenced.

### **Roads and fences**

Sites are especially at risk when creating access roads or fence lines. Before bulldozing roads or fence lines, landowners or managers should check first for the existence of pits, pa or other archaeological sites, and call in an archaeologist where there is doubt. It should be possible in most instances to design roads and fence lines that do not impact on sites. Any modification or damage that is necessary to a site to establish a satisfactory line should be the subject of an authority from the Historic Places Trust.

New roads or improvements including gateways, water tanks and water troughs should not be placed on archaeological sites. Where damage to a site exists already, this area may be used as a fence line or for stock access.

Fencing can damage archaeological sites. Fencing should not run through sites, nor should gates be placed on sites. Check for sites, especially pits, before bulldozing to create smooth fence lines.

Use special techniques (such as extra-long battens or sections of wooden planks) to securely fence depressions such as pits. Plan fences so resulting paddocks set aside archaeological sites, to allow effective management of set stocking.

### ***Ploughing and disking in hill country***

The first ploughing or border dyking of an archaeological site will do immense damage and completely destroy shallow features. In the past it may have been preceded by deliberate levelling of earthworks or uprooting of foundations. Such damage is relatively unusual today and would normally be controlled by the need for an authority under the Historic Places Act 1993 and, perhaps, under the district plan. Areas with sites that might still be vulnerable to ploughing or other destructive activities include isolated coastal terraces and flat ground around river mouths; also, high country terrace land where there are nineteenth- and twentieth-century sites such as gold mining races, dams, etc.

Subsequent ploughing probably does less damage, provided it is no deeper than the first. However, the issue of subsequent ploughing involves more than the depth of penetration of the plough. Repeated ploughing increasingly disperses archaeological materials and, on sloping ground, tends to displace soil downslope so that new soil layers are penetrated with each ploughing.

In some hill country where 'hard grasses' establish, bulldozers pulling large sets of disks are sometimes used to rehabilitate pasture. This is particularly destructive of sites such as pits which lie on mid slopes or ridges. The same applies as for ploughing new ground.

Sites should not be newly ploughed—or old ploughed areas given a deep ploughing—without an authority from the Historic Places Trust under the Historic Places Act 1993. However, on flat or near-flat land, a site that has been ploughed may be ploughed again to the same depth. On previously ploughed sites, renewed ploughing may still turn up archaeological evidence and artefacts.

A margin of 5 metres or more of unploughed land should be left around archaeological sites when the surrounding land is being ploughed. Fencing sites off makes accidental ploughing impossible.

### ***Plantation trees on farmland***

Trees should not be planted on archaeological sites. The removal of plantation trees already on a site may be left to the planned cropping period, but precautions to protect the site need to be carried out as detailed elsewhere in these guidelines. Sites should not be planted in native trees.

### 3.2.2 Case study 3—Pa in warm temperate pasture

#### *Wider setting*

This pa site is in production pasture. The district receives good rainfall, and has warm winters and naturally fertile, but friable volcanic soils. The wider ecological setting includes gorse and pampas grass with no native regeneration underneath in nearby gullies. The nearest native forest is some 5 km away. There is some poorly managed farm forestry (*Pinus radiata*) nearby with pine seed blown from this onto the site. The district plan has a general clause supporting the protection of significant sites and some assistance is available for fencing.

#### *Site description and condition*

The site consists of a ring-ditched platform which has been levelled on one side and a road-cut up onto the platform. The site occupies a hill crest. The sides of the site are steep and there are open rua (cave-like pits) on the platform. The site is grazed by dairy cows. There is extensive erosion of banks, with the banks also undercut for shelter. Two fence lines run through the site and intersect at a gate on the platform of the pa. On the pa platform there are some large pine trees—stock shelter under them, creating erosion patches. Some gorse is growing in patches on the steep banks.

The total area of the site is about 1 hectare. A boundary fence runs close by the edge of the site, but otherwise it is simply one part of a large paddock about 5 hectares in area.

#### *Identification of management issues*

- Sheep would be the best animal for grazing but are not available on this property nor in the district
- There is a need to reduce erosion of banks; also banks are being undercut for shelter
- If left ungrazed, the grassland will revert to gorse and pampas grass, and become a source of weeds elsewhere on the farm and in the district
- There is a need to re-arrange inappropriately placed fences which are concentrating stock on the platform
- There is no water in the paddock so cows are only let in over winter and spring; hence there is severe site damage

#### *Management options*

- A landowner could make long-term income by fencing off the site and planting it in pine trees. This is not a suitable option because of damage the tree roots will do, damage caused to the site by the eventual harvesting of the trees, and the risk of damage from wind-throw in an isolated small plantation on an exposed ridge or hill.
- Special precautions could be taken to ensure the site is conserved while allowing the area to serve a low-intensity use in the overall

management of the farm. Fencing off an appropriate area with minimal stocking would maintain a moderate-height grass cover and good conservation of the site. Some repair or accelerated grassing of erosion spots would be desirable.

- The precise area of the site could be fenced off to allow it to revert to tall pasture grasses, native grasses, and weeds with no further action. The small area of land concerned would minimise loss of productive land and would require no further inputs other than the fencing. There would almost certainly be a weed problem and many pine seedlings would establish on the site.
- The area could be fenced off with revegetation using an appropriate shrubland cover, and with the intent of allowing native forest to develop in the long term. Any native plant cover would have to be deliberately planted as seedlings.

### ***Management objective***

The site is to be conserved while ensuring some return from the land and minimising maintenance costs.

### ***Recommendations/guidelines***

Allow the area to serve a low-intensity use in the overall management of the farm. Fence area of site and allow a minimum of stocking to keep grass at a moderate height and to control weeds.

### **Stock management and fencing**

- Seek assistance and advice from the district council or other sources, cost any changes, and apply to the district council for a grant
- An attempt should be made to find hardy wethers, stocking at a density of no more than 6 s.u. per ha
- Maintain minimal stocking with yearlings or with sheep within the fenced area
- Maintain a moderate height grass cover (6-10 cm) at all times and good conservation of the surface of the site
- Remove fence lines through the site and the gateway. Fence to create a single paddock for the site; the new fence should be a minimum of 20 m from the recognisable surface features of the pa. This will allow simpler management of stock on the site itself and prevent the stock wandering up and down fence lines causing erosion
- If a 1-hectare paddock is created, six wethers or two yearling cows would be sufficient stock
- Since the site occupies a hill crest, it should be fenced either within the smallest possible area which encloses the site, or within a fence pattern that allows a division into dry or north-facing aspects and wetter south-facing aspects
- Where there is erosion, fence it out or find some other means of preventing erosion or excluding stock
- Away from the site, but within its fenced area, fence in some trees or tree-plantings or provide shelter in some other form

### **Stock water**

- Water outlets should be positioned by the new fence and its use minimised by appropriate stocking
- In periods of abnormally low rainfall, yearlings should be kept out of the paddock, but wethers may be kept there
- Big drinkers like cattle and dairy cows should not be allowed into the paddock in any season

### **Shelter**

- At some point, preferably when the fences are being installed, the trees should be felled. Care should be taken to ensure that the stock have other adequate shelter from sun and cold winds within the new paddock.
- Trees that are away from the site could be retained if they are providing shelter, or the paddock fencing arrangement could be designed to incorporate trees or other sources of shelter such as a gully head.
- An artificial shelter could be installed for the sheep, or a small protected planting could be fenced out from stock and eventually made available to provide shelter. If properly designed, the yearlings or sheep will shelter there, rather than on the pa.

### **Pasture and grass cover**

Generally, only sheep should be obtained and retained for this particular site. If their numbers are kept low, there will be spring surpluses of grass which will go to seed and produce a cover of coarse grass. Young cattle, yearlings and heifers, but not fully grown cattle, could be let in only on occasions when the grasses have become too coarse for the sheep. In periods of long drought (which is not expected in this district), the sheep could be taken from the paddock and grazed on better pasture within the farm. Some repair or accelerated grassing of erosion spots will be desirable at that time in anticipation of better rainfall.

The option of tall grass cover should be explored. If stock are removed, grasses will grow rank for a number of years, but will eventually stabilise in a cover of perennial ryegrass, cocksfoot, some weedy exotic grasses such as brome, and native grasses such as meadow rice grass (*patiti*, *Microlaena stipoides*). The possibility of accidental fire needs to be considered since this sort of rank cover can become a fire risk. If the ground surface is broken (e.g. by pugging), the neighbourhood weeds, especially woody legumes, will take hold. Gorse and wattle, in particular, will rapidly establish. They can be controlled by occasional grazing, but are likely eventually to take hold unless full stocking is re-instituted. With little or no grazing, the woody legumes will need to be spot-sprayed or pulled by hand.

Some encroachment of benign weeds such as hard or ring fern, bracken fern, inkweed, and thistles might be tolerated in areas to be given light grazing.

### **Condition of archaeological features**

It will be worth making a record of the archaeological features and the land manager should inspect the place for active erosion at least twice a year in winter and late summer. There may be assistance available from the Department of Conservation, Historic Places Trust or the district council to carry out these tasks. Any particular problems with erosion should be addressed. Some minimal restoration may be necessary.

### **3.2.3 Case study 4—Midden in eroding foredunes**

#### ***Wider setting***

Dunelands are the products of high winds and coastal forces, and are intrinsically unstable. Fore-dune areas are subject to extreme conditions including excessive summer drying, shifting sand with little or no organic matter, and exposure to salt and sand-laden winds. Establishment of satisfactory vegetative stabilising is therefore difficult. In this case, the foredunes are active while inland the dunes have long been stabilised with marram grass and subsequently by pine trees or kikuyu grass.

It will be worthwhile in most cases to evaluate whether the overall setting and land management in the vicinity of the site will allow for long-term success and management of any surface treatment devoted to stabilisation. The advancing face of blowouts move through an area, and will break up existing vegetative cover. Isolated blowouts in farmland and forest lands will be worth concentrating on, as will areas in back dunes. Where there is shrubland and some soil formation on back-dune areas, concentrated effort may be more worthwhile.

Middens could be found in any of three zones: extreme coastal margin near high tide (pingao present), silvery sand grass zone, and open areas of shifting sand.

#### ***Site description and condition***

The middens are widespread scatters of shell and oven stone over the slopes of the dunes. Some of these are downslope from caps of in situ middens which are protecting the crests of the dune. The middens are on slopes of 15-20 degrees and inland from a point about 10 m above h.w.m. Marram grass is forming clumps in places in association with silvery sand grass, but the overall aspect is that of a duneland with occasional patches of light vegetation depending on disturbance by wind and propagation from stolons.

#### ***Identification of management issues***

- Recreational vehicle drivers are using steep slopes and the crests of ridges to gain thrills. Cattle from the farmland further inland have access to the foredunes because there is no fencing. Rabbits are present.
- Sites are generally exposed wind-blown sand surfaces, with little or very open vegetation. Minimal preparation is necessary for sowing.

- There are no regional council or DOC staff servicing the remote coast on a routine basis. Any valuable materials such as fencing are stolen.

### ***Management options***

- Leave the area alone and monitor/recover archaeological information as it is revealed by erosion
- Archaeologically excavate in situ deposits to mitigate long-term loss of the site
- Isolate areas or patches of midden that are top priority for treatment and attempt to plant using simple methods of an effective sand-consolidating vegetative cover such as marram grass, silvery sand grass and pingao. Such revegetation should tie in with the present vegetation continuum (from h.w.m. inland)
- Experimental use of sand fences
- Exclude vehicles and stock and then deal with other issues such as revegetation
- Exclude vehicles and stock and then leave alone and monitor to see what natural vegetation processes take place
- Deliberate burial of some key sites using a sacrificial layer of sand

### ***Management objective***

Attempt to plant site area and immediate environs using simple methods of effective sand-consolidating vegetative cover.

### ***Recommendations/guidelines***

- Do not attempt to revegetate small areas (less than 100 m<sup>2</sup>) in isolation—to be effective, larger areas need to be revegetated.
- Pingao and silvery sand grass are the only species that have been evaluated which are adapted to these zones. However, both marram and pingao require constant physical disturbance to propagate themselves. Generally, pingao should be preferred as the primary coloniser, with silvery sand grass (*spinifex*) to be established as a secondary coloniser. Once these have become established, kikuyu may arrive naturally in areas of high fertility.
- Recommendations are not made for sites exposed to the less extreme back dune climate, although some of the species evaluated in Woods' (1999) trial programme are likely to be successful in those areas.
- Where silvery sand grass is the dominant species, an attempt can be made to stabilise the site.

Consideration should be given to site selection in light of the pattern of wind direction, undercutting, and current dune formation. Often, middens form a hard cap which has lasted for some time and protected the dune, or part of the original dune beneath. If, at the head of a steep scarp, the midden is in a structurally unstable position, it may not be worth the effort. Alternatively, the planting could be done so as to stabilise the slopes leading to the site while at the same time allowing

for replenishment of sand. Consideration should be given to use of sand fences to concentrate the accumulation of sand at sensitive areas.

### ***Fencing and pest management***

Temporary fences would be useful to exclude stock and all-terrain vehicles, but this is unlikely to be practical. The fences will be stolen or destroyed in many areas. Northland Conservancy have been trialling cheap fences using two strands of electric fence tape but without the electrical charge. Very large areas can be fenced. The tape is cut at intervals and re-knotted, which reduces the risk of the tape being stolen and improves its visibility. Likewise, the standards can be reduced in value.

Monitor and repair fences at intervals. After a time, and a period of repairs, both cattle and the 4WD public have come to accept these fences.

Plant damage from rabbits and cattle were noted in the unfenced trial areas in Northland. Rabbit control may be warranted in some districts. Damage to the seed by birds is unlikely to be a problem.

Outside the protected area, it is necessary to explain the protective measures and to find other areas that are more suited to recreational use of 4WDs.

### ***Silvery sand grass***

**Seed collection**—Silvery sand grass (*Spinifex sericeus*) seed should be collected in late January and early February, preferably from plants in the same locality to where the seed is to be sown. Only the female heads should be collected, as male flowers do not produce seed (see Bergin & Kimberley 1999). In some regions, the seed may be infertile so it is worthwhile checking that female and male plants are well interspersed with each other, and that the seed germs are not suffering from floral smut.

**Establishment**—Sowing of unthreshed seed should occur well after autumn rains commence (e.g. from April to September). Prolonged post-harvest seed dormancy does not seem to be a problem, and further seed treatment is unnecessary. For ease of planting, seed heads should be broken up, but full threshing is not needed. Conditions at sowing need to be wet enough to ensure that sand is not likely to dry and become prone to wind erosion before seedlings germinate and establish.

**Longer term management**—A light rate of nitrogen as urea (50 kg urea per ha) should be applied 6–8 weeks after seedlings have emerged. Nitrogen application should not be made during drier conditions. Nitrogen application may also be warranted in areas where resident silvery sand grass is to be encouraged. Resulting increased stolon and rhizome growth from resident plants may assist site coverage.

### ***Pingao***

Pingao tends to enjoy repeated disturbance and its ability to survive in competition with other plants depends on this disturbance. It is quite common to see pingao established on foredunes subject to wind and

storm waves, but driven out by other plants such as marram grass on more stable sand surfaces nearby. Its use for stabilising archaeological sites in sand dune areas is not recommended. Planting from nursery stock is not recommended for archaeological site stabilisation because too much disturbance is caused to the midden.

### ***Marram/yellow lupin***

Marram is not a New Zealand native, but it persists longer in stabilised dunes. Marram requires less physical disturbance than pingao to maintain a stable cover and to propagate itself. It should therefore be preferred as a dune stabilising plant. Marram is often used as an initial stabilising cover and, when stable, planted in yellow lupin. This will form soils which will soon allow planting of adaptable native plants such as poroporo. In commercial forestry, a sacrificial zone of pine trees can be planted as close as 150 m from the h.w.m. However, these trees should not be planted on archaeological sites. It will be possible to establish native shrublands in lupin cover (e.g. poroporo, *Solanum laciniatum*). If long term physical stability and soil development is assured, then other native shrubs and coastal trees such as kanuka or akeake may be planted or become established naturally.

## 3.3 SITES MANAGED IN PLANTATION FOREST

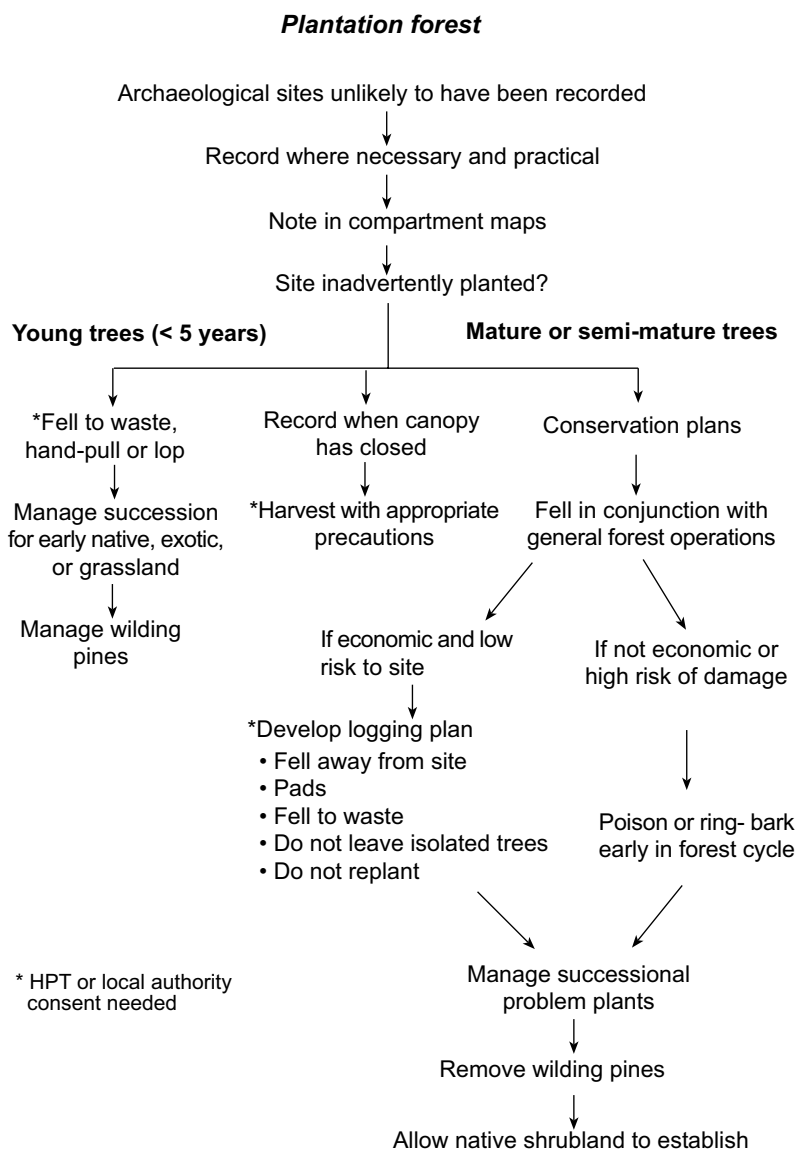
Plantation forests, with limited or no public visiting, are often established in areas where there has been past human settlement and where nature conservation values have been heavily modified by that settlement. Both the forest establishment phase (which reached a peak in the 1970s and 1980s) and forest operations such as fire control and harvest need consideration. Establishment and operations such as harvest are widely spaced (a minimum of 30 years), so records need to be kept and new staff (managers, field supervisors and contractors) need to appraise themselves of sites

It is important to evaluate any proposed planting land, even small woodlots, for the probability of archaeological sites being present. An assessment of known records of sites by a consulting archaeologist should be able to determine the probability of new ones. This may require surveys of areas proposed for afforestation not only before any land management is undertaken, but also by the end of the planting season. Land clearance and planting will reveal many sites that could not have been detected beforehand. Figure 36 shows a decision-making process for archaeological site management in a plantation forest or where plantation forestry is planned.

### ***Land evaluation***

- Is there a good survey of the area mapped at a scale of about 1:10 000 suitable for forestry and detailed records of archaeological site location and extent?

Figure 36. Archaeological site management process in a plantation forest.



- Forest managers should insist on careful detailed evaluation, by an archaeologist, of sites before land purchase or re-planting. Statutory provisions should be followed and their implications for the management of the sites reviewed.
- The archaeologist should describe sites and record site location and extent on forest management records/maps.
- There should be re-evaluation and reassessment of the condition and significance of sites before each planting and harvest phase.
- The forestry company should have detailed management objectives for the land area of the sites. Although pa are often ideal hauler sites or landing stages, they cannot be used as such.
- The effect of leaving archaeological sites open or in shrubland cover in the overall management of the forest must be assessed. The shrubland is most at risk from fire and of being used as a trail in a fire emergency.

### **3.3.1 Planting around protected sites**

Sites to be protected should not be planted. Where trees have had to be felled off a site which should have been protected, it should not be re-planted. The area of the sites should be defined on the ground by the archaeologist. The area of disturbance due to roots will not extend much beyond the drip line of any particular tree. However, the desirable set back or planting perimeter around sites can and should vary, but as a guide should be a minimum of 10 m horizontally or 20 m slope distance outside the site itself. Otherwise, distance from the site will depend on slope (flat ground requires less distance), whether vehicle access is required past or around the site, and on the way in which trees will be felled at harvest. Room for forest operations should be left around the site if it is in a position which will create difficulties for forest management, and specifically allow for eventual felling and hauling. It is not always easy to construct roads or firebreaks around a site on a steep-sided ridge.

Trees planted on the perimeter of an open area will come to lean over the area, so that often they will only be able to be felled into it. Some methods are available to deal with the problem of felling trees in this situation (see section 2.5.1). In the larger area of a forest harvest, operations will commence by felling into open space. The logging face will eventually move in towards the open area of an archaeological site, and allow trees to be felled away from it.

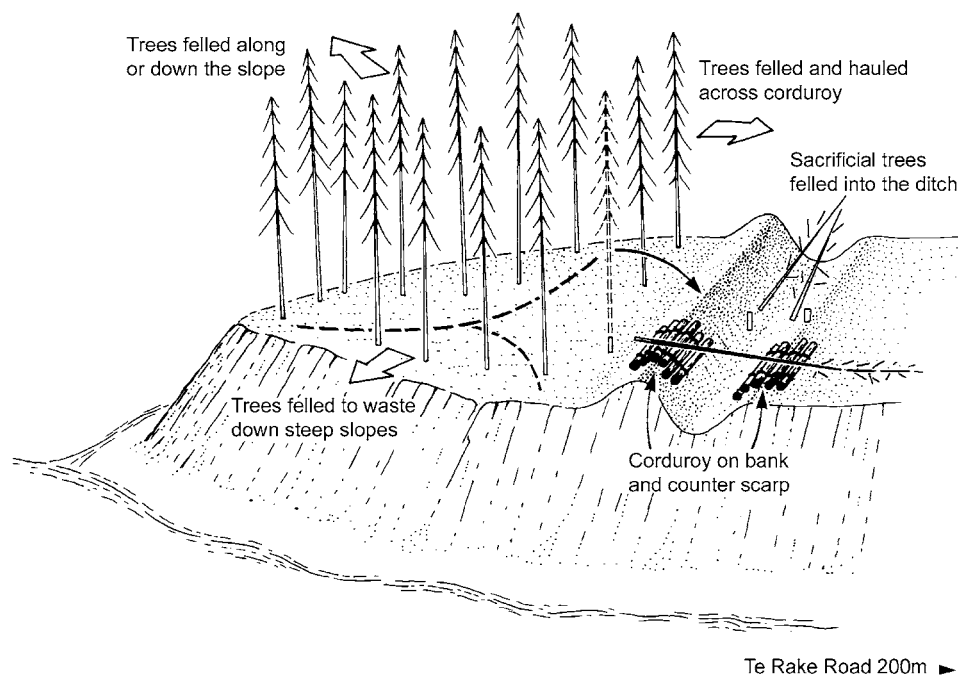
Fire precautions and operations pose particular risks for sites. Where the site is kept open there is a risk that the open area will be used for fire control operations, especially in emergencies.

### **3.3.2 Harvesting precautions**

Before harvest, the archaeologist should visit and re-mark the sites with posts, tape, or spray as necessary, if the site is not already permanently marked. The logging contractor should discuss felling and other harvest procedures on site with the archaeologist. The archaeologist should present the protection of sites as an objective and discuss felling down to the detail of individual trees with the contractor, seeking the advice and co-operation of the contractor as to what is practicable and safe. The contractor should brief the archaeologist on any danger anticipated or to be avoided.

Figure 37 illustrates precautions that can be taken where a site has inadvertently been planted and is coming to harvest. In some cases, trees may need to be felled to waste. It may not be possible to haul them or it may be that, in the interests of site protection, they are best felled into ground from which they cannot be recovered (e.g. over a cliff). In other instances where both archaeological and wood values are high, helicopter removal of fallen trees may be needed. It is essential not to leave trees to stand on archaeological sites. Any slash from forestry operations should be moved as little as possible, but cut finely so that it is on the ground and rots quickly.

Figure 37. Suggested harvesting sequence for a typical pa site that has been inadvertently planted.



At the time of felling, the person at the stump must be aware of the whereabouts of any archaeologist present in a monitoring role. The onus is on the archaeologist working in a harvest situation to be aware of specific site safety rules and occupational safety and health guidelines. Extra cost may be incurred and felling subsidies may be necessary. District plans may allow for such assistance. Authorities for felling will be needed from the Historic Places Trust. Some companies have best management practices for these activities and these will be reinforced by the conditions contained in the authority.

If sites have been planted in an earlier rotation, it is essential that they be felled at the same time or soon after the rest of the forest. This is not only more cost-efficient, but also removes the risk of windthrow of newly exposed trees left in isolated patches (Fig. 38). Following harvest, blocks that have large numbers of sites or perceived risk of large numbers of sites should stay unplanted. Sites and likely management precautions that will be needed will need to be re-evaluated.

Appendix 2 (section A2.3) provides a specimen work plan for tree felling and removal.

### ***Archaeological site management for forestry companies***

- Companies should adopt and internalise archaeological site management procedures.
- Trees should not be planted on archaeological sites.
- Ensure roading, firebreaking and fire control operations do not impact on the site.
- Harvest and fire control plans should cover identification and protection of sites.

Figure 38. On this forest block in Nelson, archaeological sites have been left in tall trees. These patches of forest will be subject to wind-throw, creating more damage than would harvesting the trees. These trees were subsequently felled.



- Sites that are in newly planted or re-planted areas, or in areas that have been harvested and left unplanted, will be open to invasion by wilding pines.
- Weed control requires an annual visit and removal of small wildings in the first 5 years and 5-yearly inspections and management after that.
- Site management can be done in conjunction with other operations.

Bulldozers or any heavy-wheeled or tracked machinery should not be allowed on archaeological sites. Hydraulic diggers may be walked through a site, unless soils are especially friable, but this should be done with caution and with a minimum of turning. Some tracked machines, especially mechanical harvesting machines such as hydraulic excavator-based grapples, which have a fairly long reach, offer a way to remove trees from sites with minimal impact. The trees will have been hand-felled on to each other in a sequence and the grapple will remove them more or less in reverse sequence. Feller-bunchers control the butt of a tree and the speed of fall of the upper parts. Although not used on steeper slopes (above 15-20 degrees), it is possible to walk these machines into a site and to control the harmful effects of logging. Light slash may be laid on the trackways to be used by such vehicles. The use of such machinery in particular cases needs to be planned with consultation between archaeologist and forest manager, and will be subject to authorities under the relevant authority provisions of the Historic Places Act 1993.

Winching to control the line-of-fall of trees onto a mat of previously felled branches or placed corduroy may be needed (see section 2.5.1 on problem trees). Hauler tracks or the routes of cable logging should not pass through sites. Motorised carriages on the hauler lines may be a useful asset for clearing low ridges with sites on them.

Archaeological sites that have been inadvertently planted, and identified some years later, may be harvested (with special precautions to protect

Figure 39. On the pa Hinamoki II, some Douglas firs were poisoned about 20 years ago. The poisoning was intended to be progressive and in the event not all of the trees were poisoned. The trees to the left and in the distance will have to be felled away from the site. Poison at this stage is not practicable because the live trees are scheduled for harvesting and poisoned trees in their midst would create a hazard for the logging gangs.



the site) at the same time as the wider harvesting programme. If identified in time, it should be possible to poison young trees that have been inadvertently planted well before (more than 10 years before) harvest. Figure 39 shows an example of poisoned trees on a pa in the Whirinaki valley.

### **3.3.3 Ongoing forest management for protected sites**

Archaeological sites left unplanted within a plantation forest will always be vulnerable to vehicle traffic, either routinely or in emergencies such as fire. In the course of the final winter inspection or survey of a planted area, obvious ridge access ways should have a minimum of one or two white posts 1.2 m above ground at the 20 m perimeter mark. The post may have identifying details for the site on it, such as a tag saying that it is an archaeological site and giving the site number or compartment plan details. Although ground marking is not particularly effective (it can be obscured by low vegetation and may not be noticed by a bulldozer driver), it is a useful adjunct to marking on forest planning/compartment maps.

Firebreaks and roads should have been planned and constructed to avoid archaeological sites in the winter planting season or before. If this work is not done by then, sites will be at risk not only from ad hoc fire-breaks, if a clearance fire gets out of control, but also from roading constructed just prior to harvest.

Compartment plans or stand records should have the archaeological sites and their extent and identification marked on them in draft by the archaeologist and in 'published' form by the company draftsman. Planting boundaries around the site may be defined by differential G.P.S. and plotted directly into forest planning/compartment maps. The site should have the same prominence as other management details and it should be a permanent record held and available for all day-to-day and longer-term