

## Graded Pack Tracks: an Unappreciated Historic Resource

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*Two papers highlight categories of cultural resources frequently overlooked in the cultural heritage management process. The first deals with graded pack tracks while the second briefly comments on bush tramways. The author trained as a civil engineer, has spent the last nine years in heritage management and currently is with the Department of Conservation, in Wellington.*

The purpose of this paper is to draw attention to an unrecognised but significant and extensive historic resource. Graded pack tracks are tracks built especially for horse traffic. The word 'graded' indicates the tracks are deliberately built to a limited grade specification. Two distinctive features of these tracks are their generous width and consistent gentle gradients.

This paper is the result of field inspections of 22 graded pack tracks throughout New Zealand since 1971. Nine of the tracks were actually traversed on horseback to provide a greater understanding of their original function. The paper outlines some philosophies on the management of working horses that underlie track design, and describes some of the distinctive construction systems used. It also identifies the mechanisms of deterioration acting on these tracks which have modified them from as-built condition to what is seen today. Finally it suggests a model for the identification, recording, evaluation, and assessment of historic tracks.

### HISTORIC SETTING

Pack tracks were built to provide overland communication to a standard between a walking track and a road. They were a more valuable transport asset than a walking track because they permitted a greater flow of commerce. Over a pack track you could ride horses, lead trains of packhorses, drive mobs of stock, and sledge heavy machinery. However, because pack tracks were too narrow to accommodate wheeled vehicles, they were not as useful as a road. Most were built in remote and rugged areas where the higher cost of a road could not be justified.

Pack tracks were a significant component of the horse era transportation system. They were constructed through every district of New Zealand and formed an extensive network probably totalling several thousand kilometres. The era of their construction dates from the 1840s through to about 1920. They were built for prospecting, mining, droving, farming, tourism, and general communications. They were financed by central government departments, local government boards and private industries.

Over a century their use as horse tracks has steadily declined as a result of changes in economics and technology. Commercial viability of the areas they served often decreased. Defeated farmers walked away from marginal country. Mineral prospectors lost their optimism. Alternative roads were opened, and the advantages of motor transport over horses steadily grew. Air access to remote areas was developed through airstrips, airdrops and later helicopters.

The fate of the pack tracks today is varied. As prosperity increased some of the busiest pack tracks were upgraded to roads and destroyed in the process (e.g., the Karamea-Seddonville pack track). Others saw little use and became overgrown and forgotten (e.g., Cascade pack track). However, some pack tracks remain in use as foot tracks and include some of New Zealand's best known tramping and walking tracks: the Milford, Copeland, Whangapeka, Heaphy and Abel Tasman. These high-quality foot tracks traverse some of New Zealand's finest scenery and are international tourist attractions. However, the historical origins of even these well known pack tracks is not widely appreciated and they remain an unrecognised historical resource.

### DESIGN PHILOSOPHY

The design of pack tracks relates directly to providing efficient passage for teams of packhorses. Horses are not a machine, they are proud and temperamental animals, and the design of pack tracks reflects their nature. Horses do not make good pets, and horses working in the back country certainly are never treated that way. Horses and those who work them usually develop a relationship which at best is a mutual respect. In order to maintain control, a human must project strong character traits to horses: courage, confidence, good judgement and authority.

Horses are prone to totally lose control when they panic. If this happens in difficult terrain, the result can be death to horse and packman. Therefore one objective when working horses is to maintain a minimum stress level by working at a steady pace and having as few changes of pace as possible. This is even more important when working groups of horses. Complex group dynamics come into play and must be controlled.

Maintaining low stress is essential to the safe operation of a pack team. All the horses are roped together and must perform as a co-ordinated group. For this reason excessively steep grades are avoided on 'graded' tracks and the same gradient is maintained consistently over long distances even through rugged terrain. Going down steep hills can be more demanding on horses than going up. The team is able to plod along such tracks at a steady pace and slip into a relaxed mental state of low awareness similar to human daydreaming. For example, the maximum grade on the Heaphy Track is 1 in 16. Speeds between two and six kilometres per hour can be maintained depending on the grade. Some thirty kilometres a day is good going for a pack team on easy country.

The commitment to maintaining a steady grade is responsible for other distinctive characteristics of pack

tracks. In crossing small side creeks a stone bench is built up to provide an even bottomed ford. This avoids forcing the animals to drop down a steep bank, struggle for a footing amongst random boulders, and then climb out a steep bank on the other side. Such a disordered crossing is most disruptive to horses roped together. A related distinctive alignment feature is the way most pack tracks meander in and out of the side gullies while maintaining the steady grade. Another spectacular feature resulting from the commitment to steady grade is the use of zig zags to climb steep faces in tight locations.

Pack tracks were also built to width specifications set down in contracts. The most common is six feet wide (1.83 metres). This gives sufficient clearance from vegetation and side-cuts for a loaded pack saddle, allowing for the width of the load and sway of the animals. An even surface finish on the track is also essential to maintaining steady progress.

The routes of pack tracks are selected to avoid crossing large rivers. Such crossings would require the teams to ford, as bridges were usually beyond the budget. Forging main rivers has three disadvantages for horse teams: it disrupts the team, causing stress; it softens the hooves and makes loss of shoes more likely because of the unsure rocky footing; and, progress is halted in times of flood, delaying deliveries and reducing utilisation of the team. To avoid these disadvantages, pack tracks normally follow one side of a main river valley with their characteristic winding in and out of side gullies to maintain a steady grade.

A journey on the longer pack tracks took several days without disruption. Snow or flooding encountered on the journey might add considerable delay. On some tracks huts were built at strategic locations. These might provide accommodation for travellers or the track man. There might be a yard for horses or even a grassed clearing for grazing.

## TRACK FEATURES

In recording pack tracks in the field the following features should be noted:

**Bench** (side-cut): This is the most common track feature in steep country.

**Block cutting:** These are comparatively rare, and are normally only used to enable a track to traverse around features such as the end of a spur.

**Fill** (embankment): These provide a good base across swampy ground. The fill may come from an adjoining bench or block cut, or from borrow pits beside the route.

**Corduoy** (or fascines): Timber or brush used as a cheaper alternative to a fill across swampy ground in bush country.

**Benched ford:** This is the type of ford commonly used to cross small side creeks and is built up using rocks.

**Zig Zag:** Used to maintain a medium grade on the track while climbing a steep face in a restricted location.

**Steps:** Used to avoid slipping on a very steep grade. Not common because steep grades were avoided.

**Bridge:** Not a common feature and little information is available on horse bridges at present.

**Tunnel:** Another uncommon feature.

**Ford:** Track routes were selected to avoid crossing main rivers. Where it was unavoidable, an unformed ford was used.

**Hut:** For accommodation of packmen.

**Fenced Yard or Grassed Clearing:** For accommodating the horses.

## TRACK DETERIORATION

The pack tracks seen today have had destructive forces of nature acting on them since the day they were built. Many are in areas that are geologically unstable, have high rainfall and temperature extremes. Maintenance helps offset these forces, but in most cases it has been minimal or non-existent. It is necessary to understand the natural forces of deterioration acting on these tracks in order to relate what is seen today to what was actually constructed.

The principal mechanisms are:

**Degradation:** Small-scale but long-term localised movement of earth under the action of wind, water, frost heave, traffic and gravity.

**Scouring:** Medium-scale movement of earth by strong water currents.

**Slipping:** Large-scale movement of whole blocks of earth caused by ground water or undercutting.

### The Heaphy Track

The Heaphy Track is located in the north-west corner of the South Island. Today it is the main walking track in the North West Nelson Forest Park. The journey from Collingwood to Karamea takes most people four days. It features a variety of beautiful scenery including a highlands section across the Goulard Downs, a magnificent river valley section in the Heaphy River with giant *rata* and *nikau* palms growing in a sculptured limestone landscape, and a 'Club-Med' coastal section with surf and sandy beaches. It began life as a pack track.

The Heaphy Track was originally called the 'Collingwood Mokihinui Road'. It was planned to link up with an existing pack track from Mokihinui to Karamea. There were three reasons for building it: to open up the country for grazing; to provide communication with Karamea; and, to foster prospecting for gold, coal and other minerals.

It was surveyed in 1886 by J.B. Saxton to an alignment suitable for a cart road. However to reduce costs it was initially built as a pack track. The construction specification was four feet wide and with a maximum gradient of 1 in 16. These plans exist to this day.

Tenders for the construction of the first section were called in 1886. It was financed jointly by central government and the Mines Department with 900 pounds, and the Public Works Department with 1000 pounds. Thereafter it was built in sections by contract. The Heaphy Mouth was reached in 1893. Construction cost estimates in 1905 were 50 pounds a mile. After this little more work was done on the coastal section until 1919 when the Kohaihai Bluffs section was built. Maintenance was sporadic and funded by local government. Use was low and it was kept open partly politically to encourage upgrading to a road. The last maintenance man was laid off in 1928. It then languished until the Forest Service resumed maintenance in the 1970s.<sup>1</sup>

### MANAGEMENT IMPLICATIONS FOR EACH TRACK

**Inventory:** What is the history of this track? How reliable is this information? What was its original extent? What changes have occurred? What original features remain?

**Assessment:** What is the historic significance of this track, especially for the area it passes through? What are the key historic features? Should it be listed on the database as a historic track? Should it be classified as a historic place?<sup>2</sup>

**Conservation:** Tracks of great historic significance should be maintained in a manner that retains the historic integrity of the track, especially key original features. Target key original features on a maintenance programme. Repair and construct in a style that follows the original. Follow ICOMOS conservation principles set out in the New Zealand Charter.

**Interpretation:** Track history can be interpreted in brochures, on Park Maps, in huts and even on site. The important thing is that the information is correct, balanced in its presentation and has no significant gaps.

## NOTES

1. Barne, J.H. 1986 *History of the Heaphy Track*, New Zealand Forestry Service, Nelson.
2. Hill, A. 1990 'Bring back the Packhorse Trails', *History Today* 40.