KAURI DAM SITES IN THE WAITAKERE RANGES
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SUMMARY

Ninety-six kauri dams (both driving and holding) are recorded from the Waitakere Ranges and their northern extension, south-east of Helensville. The first driving dams in New Zealand were built in the Henderson Valley in the early 1850’s and were closely followed by dams in the Swanson and Karamatura Valleys.

Dams were built in the following valleys:
1850’s: Henderson, Swanson, Karamatura.
1860’s: Kakamatua, Marama, Whatipu.
1870’s: Pararaha, Huia.
1880’s: Company, Opal Pools, Tikokopu, Wharauroa, Waikoukou.
1890’s: Karamatura, Whatipu.
1900’s: Marama, Karekare.
1910’s: Piha, Marawhara, Anawhata.
1920’s: Wainamu, Mokoroa.

Eighty of these dams were built by members of only four families – the McLeods, Gibbons, Bryans and Barrs.

The only known earth driving dams in New Zealand are also recorded.

INTRODUCTION

Most trampers and many casual day trippers in the Waitakere Ranges must have pondered over the ruins of kauri dams in the Piha and Anawhata Streams and tried to visualise their original structure and use. Few will have realised that these dams, numbering nearly one hundred in and around the Waitakere Hills, played, for close on a century, an important role in the timber milling industry in this area.

Built across streams, these driving dams (Fig. 1) ponded the water which was released in one flood (Fig. 2) to carry logs, mostly kauri, downstream to holding dams or booms where they were collected before being milled. Descriptions of construction methods and actual drives are given in Reed and Simpson whereas the specific design and operation of the various kinds of driving and holding dams in the Waitakere Ranges are presented in Diamond and Hayward.

The area covered in this paper includes the entire Waitakere Ranges and their northern extension to Helensville (Fig. 3). The general history of these two areas are given by Diamond and Sheffield. The dam sites recorded have been noted over many years of tramping by one of us (J.T.D.) and during a geological

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Fig. 1. Downstream view of a typical kauri driving dam awaiting tripping. The lake behind is full as water is flowing through a spillway above the gate.

Fig. 2. A surge of water passes through the gate of a low kauri driving dam soon after it has been tripped. The flood of water was used to drive logs downstream out of the rugged bush areas.
Fig. 3. Location of area studied (stippled). Kauri dams were used to drive logs from this area to the Kaipara, Waitemata and Manukau Harbours, and the West Coast.

mapping survey by the other (B.W.H.). Almost every stream or tributary large enough for a dam has been traversed. No dam in the area still remains in perfect condition and very few have gate planks still hanging (Fig. 4). Most dam sites now consist only of cills, parts of the flume floor (Fig. 5) and rotting wings. Many of the older dam sites can now be recognised only by the recesses and holes cut in the solid stream bed for footings to support the cills and backlegs.
Fig. 4. The overgrown and derelict state of a kauri dam in the Wainamu Stream (1974). This dam (83) was built in the 1920's and still has the gate planks handing from the main stringer. It is an example of one of the best preserved dams in the Waitakere Hills.

Fig. 5. The remains of a dam (51) in the Company Stream (1975), built in the 1880's. Parts of the flume floor and three of the four original cills remain. Part of the face of the dam can be seen attached below the front cill (right).
The exact location of the dam sites and their present condition will be placed on file with the Auckland Institute and Museum Library.

EASTERN SLOPES OF THE WAITAKERE HILLS (Fig. 6)
From 1841 timber was taken from the lower eastern slopes of the Waitakere Hills around the upper reaches of the Waitemata Harbour; firstly along the banks of the Henderson and Whau Streams and later (from 1845) by Thomas Canty from the Oratia Stream. As the more accessible bush was cut out, the pit-sawyers moved further inland into more rugged country making the removal of the kauri logs by bullock teams more difficult so bush contractors looked for easier means of transport. Thus it was that about 1852 the first timber driving dam was built in the hills. In fact the first reuseable driving dams built in New Zealand appear to have been those built on the Henderson Stream by John McLeod for Thomas Henderson.

The remains of five driving dams can still be seen in the headwater tributaries of the Henderson Stream (Fig. 6) and indicate that accessible kauri was milled by Henderson in all four tributaries. The dams were all built at altitudes of only 80 — 150m, near the foot of the steepest parts of the streams where the waters cascade down from the high Scenic Drive ridge above. Unlike many of the later dams in the Waitakeres further west, they were constructed well below the headwaters, where there was a considerable flow of water all year round. The upper dam on the Parekura Stream (5) was only a small one, possibly an auxiliary storage dam to supplement the higher dam (4), 400m downstream. The Henderson Valley logs were driven downstream to a holding dam (6), which also served as a waterhead to drive a water-wheel that powered machinery in Henderson’s Mill on the bank alongside. These dams were used until mid 1860’s when this mill, near the end of Ratanui St, Henderson closed down.

Meanwhile, over the ridge to the north, William Swanson and his bush contractors were milling the bush. Shortly after the construction of Henderson’s dams, he too built driving dams, two of which have been located (Fig. 6). Both are on true left tributaries of the Swanson Stream and could indicate that Swanson had milling rights for only this side of the upper valley. The logs were driven downstream and contained by a holding dam (9) at the head of the Huruhuru tidal estuary and then floated in rafts to Auckland for milling.

In the mid 1880’s E.P. Gibbons operated a mill near Swanson township and had a tramway (the remains of which can still be seen near the end of Tram Valley Rd) running up the true right side of the valley. The bush was milled on the opposite side of the valley headwaters from that worked by Swanson thirty years earlier.

No dam sites have been found on any other streams that drain the eastern side of the Waitakere Hills and from reading old reports it seems unlikely that anybody other than Henderson and Swanson used dams in this area.

SOUTH-EASTERN WAITAKERE HILLS (Fig. 7)
From the late 1830’s through to the early 1850’s trees were pitsawn in many bays along the northern shores of the Manukau Harbour. The most notable venture was the ill-fated “Manukau Steam Sawmill Co”, the first large
Fig. 6. Map of the Eastern Waitakere Hills showing kauri dam and mill locations and former tramways.
steam sawmill in New Zealand which was established at Mill Bay in 1842, but forced to close a year later because of financial difficulties.

Pit sawing stations established in the mid 1840's in the lower Nihotupu Valley continued to operate in the area for over 40 years. This area is more gentle than most of the Waitakere Hills and did not require dams to drive the logs out, as bullocks could be used. The kauri bush of the upper Nihotupu Valley however, was left for many years because the falls and gorge in the vicinity of the present Nihotupu Reservoir were too rugged to drive logs through without excessive damage and log-jams. It was not until 1895, when the more accessible bush of the Waitakere was cut out that Mander and Bradley turned to milling the vast stands in the flat basin of the upper Nihotupu Stream. They built a mill on the site of the present Nihotupu Auxiliary Reservoir with a small earth holding dam beside (10). To transport the timber to Auckland, they constructed an incredible tramway up over the Scenic Drive ridge and down nearly 300m in 1.5 km to the Henderson Valley and then by road to the railway (p.119) (Fig. 6). Milling ceased just before the turn of the century.

Over the ridge, to the west of the lower Nihotupu Valley lies the Kakamatua Valley. Mathew Roe obtained cutting rights in the eighteen sixties and began by pitsawing the kauri in the lower reaches of the valley. In the early 1860's he built a sawmill on a flat at the mouth of the Kakamatua Stream and as he moved further inland for kauri, he built dams to drive the logs down to the mill. The remnants of four of these dams still remain. Three were built on the main stream so that logs from the headwaters must have passed through three gates before finally being caught behind a low earth and wood holding dam (15) beside the mill.3

The driving dam (14) on a tributary of the Kakamatua was built in a narrow high-sided valley, only 50m downstream from a 30m high single-drop waterfall. Logs were possibly hauled by bullock teams down the ridges and then slid into the lake behind the dam or into the stream below.

In 1854, nearly a decade before Mathew Roe's mill was built, the Gibbons family established two sawmills at the Huia and Karamatura Streams. One, on a flat near the mouth of the Huia Stream, had an earth dam behind it (24) to provide the head of water to drive a waterwheel. No driving dams appear to have been used during this early period of milling in the large Huia Valley. The logs were hauled along specially constructed bullock roads, often following a widened stream valley and thence to the mill. One report4 suggests that a tramway was in use up the valley but the statement is ambiguous and probably was likening a wide bullock road to the "tramways" of Europe. During this early phase, the kauri over much of the lower Huia Valley was cut.

Later, in the 1870's and early 1880's the kauri of the upper Huia Valley succumbed to the bushman's saws. Eight dam-sites have been found on the network of streams that drain this, the southern part of the heart of the Waitakere Hills. These dams were built by Cornelius Bryan for Thomas Gibbons. Many were built high on the headwater tributaries where water flow is no more than a trickle in summer months. One such dam (21) on Hazel Creek was built at an altitude approaching 400m, the highest dam site in the Waitakere Hills. The largest dam in the valley (22), built on the site that later was chosen for the
Fig. 7. Dam and mill sites in the southern Waitakere Hills. Lakes shown on the Huia Stream are water reservoirs built after the days of milling.
Upper Huia Reservoir Dam, must have reconcentrated the logs and waters from the six dams above and given the added impetus required to carry them through the narrow, steep gorge below. No dam site is known on the main Huia Stream between this dam and the wooden pile booms built at the mouth to prevent the logs being carried out to sea (Fig. 7). A dam on one branch of Christies Creek (23) may have acted as a booster to assist the passage of logs over these 5 – 6 kms of winding stream course. It is also quite possible that one or more additional dams existed in the middle reaches of the Huia Stream to assist these long drives and that now all traces are removed, or that the logs were not driven the full distance and may have been pulled out and hauled by bullocks down to the booms, along the roads of the earlier milling period.

The second mill opened by the Gibbons in Huia Bay in 1854 was the Niagara Sawmill at the mouth of the Karamatura Stream. The mill was built just back from the beach. Its waterwheel was driven by water brought along a flume from a large earth holding dam (27) built some 200m upstream. This flume was also used to float small logs to the mill.

The logs cut in the Karamatura Valley were driven to the holding dam by the water of three dams (25,26,28). Dam 25 on a high tributary of the Karamatura, was a low vertical dam similar to an English flashlock. When its gate was raised, a small number of logs were released to be floated down to the lake behind a low earth dam (26). The earth dam was built from rock and earth removed from a 6m wide, 40m long open cut, made through the adjacent low ridge that separated the tributary from the gorge of the main stream. The logs were floated through this cut and shot over a 100m drop into the main stream. The third driving dam (28) was sited at the top of the cascades and falls in the main stream and would have assisted in carrying the logs from the tributary to the holding dam.

In the early 1860's the Gibbons shifted their cutting operations over the ridge into the headwaters of the Marama Stream. Here they built two earth driving dams (32,33) and an earth holding dam (31). The logs that collected behind the holding dam were hauled by bullocks to the beach and floated around to the Niagara Mill.

The Gibbons had an ample supply of cheap labour during the 1850's to 1870's as they provided work for deserters from the navy and army. With these workers they built earth dams, timber chutes and widened many of the stream beds.

Both the Karamatura and Marama Streams experienced second periods of cutting and driving. The Manukau Timber Company built a mill in the bay south of the mouth of the Karamatura Stream about 1892, and obtained logs from the Karamatura Headwaters. They built a wooden dam (30) on the high tributary up a hill and another one at the bottom of the gorge (29). Presumably the Gibbons' earth dam (26) was already breached, for they erected a low wooden dam across the front of the river, and a weir and a wooden dam built well above it (29).

Thomas and Bill Barr obtained the cutting rights to remove the remaining kauri in the Marama headwaters, soon after the turn of the century. They
Fig. 8. Dam and mill sites and former tramways in the south-western Waitakere Hills.
renewed the flumes and gates of Gibbons’ two earth driving dams, built two new wooden dams (34,35) and used these to drive the logs to the beach.

SOUTH—WESTERN WAITAKERE HILLS (Fig. 8)

The dams in the Whatipu Stream were built during two periods. The first began in 1867 when Nicholas Gibbons constructed a timber mill and large earth holding dam (36) in the lower Whatipu Valley. Remains of this site can still be recognised as those of the mill shown in Blomfield’s painting (1880).³ Three of the dam sites in the upper Whatipu were probably used during this first period of milling, 1867 – 1887 (37,38,39).

The second period of milling around the turn of the century was by Bob Gordon and removed the trees from the highest tributaries in the Whatipu. The remains of four dams have been found (41,42,43,44) and these were used to drive the logs to a holding dam (40) above the gorge. From here they were hauled up a ridge to the Whatipu road and taken out.

In the early 1870’s, soon after the Gibbons established themselves in the Whatipu, William Foote built a mill near the mouth of the Pararaha Stream. An earth holding dam (45) was constructed across the stream above and the remains of three driving dams testify to activities up the valley. In 1881 the Pararaha mill was burnt down leaving parts of the valley uncut. The logs in the upper Pararaha were later removed by Odlins using haulers etc. in the 1930’s.

The sawn timber from both Gibbons’ Whatipu mill and Foote’s Pararaha mill were transported by railway to the Whatipu wharf, on the inside of Paratutai (Fig. 8) and thence by cutter to Onehunga or further afield.

After the fire at Pararaha in 1881, the mill machinery was shifted north to Company and Opal Pools Streams, Karekare, and the tramway extended still further around the rugged west coast (Fig. 8). A mill was built on the flat at the mouth of these streams by Guthrie and Larnack, who had previously taken over the running of the Whatipu and Pararaha mills in 1878. A low earth holding dam (49) was built above the mill and three driving dams have been found up each of the two streams. The mill closed in 1886 and once again the machinery shifted, this time to the mill at Karamatura already mentioned.

WEST AND NORTH WAITAKERE HILLS (Fig. 9)

Milling activities lapsed in the western Waitakere Hills following the closure of the Company Stream mill in 1886. The tramline to Whatipu wharf, removed in the 1890’s, was partly relaid when milling recommenced in 1907 in the Karekare Stream. Messrs Stokes and Downer had a mill on the flat at the foot of the Karekare Road hill with a small holding dam (56) above. Two driving dams were used to transport the logs downstream.

When the Karekare bush was worked out, about 1910, the mill was moved north and erected on the flat by the junction of the Piha and Glen Esk Streams. A low holding dam was built across the Piha Stream (59) with five driving dams above. Six dam sites occur on the Glen Esk Stream. One, (64), at the top of the Glen Esk Falls was originally built as a driving dam. After the first drive in which most of the logs were lost through damage sustained in their passage over the falls, this dam was converted into a holding dam. The logs were hauled out of
Fig. 9. Dam and mill sites and former tramways in the north and west Waitakere Hills.
the lake behind it, over a ridge and into a small tributary downstream. A driving
dam (65) was constructed on this tributary and filled with water, first by
siphoning and later by a water race around the ridge from the holding dam.

The sawn timber from the Piha mill was hauled up a long tramway over
the South Piha ridge and down to Karekare. From here it was transported on the
rebuilt tramway to Whatipu wharf.

The Government took over milling operations in 1912 and about 1916
when the Piha bush was almost milled out, they began cutting further north.
One driving dam (71) was used to bring logs out of the Marawhara Stream and a
further eight dams were used in the Anawhata Stream from 1916 – 21. The
lowest of the Anawhata dams (72) was used as a holding dam, behind which all
logs from the drives accumulated. The logs were hauled on a tramway over
the ridge to the south, down to North Piha, along behind the beach and up to the
Piha mill.

While some milling of the bush northwards of Anawhata had been carried
out, it was not until about 1918 that timber millers concentrated on this area. In
the Wainamu Stream from about 1921 to 1925, six driving dams were used. The
logs were driven down and collected in Lake Wainamu; from here they were
taken by tramway to the Bethells Swamp and hauled by launch to its head
where once again they were taken by tramway all the way to Waitakere Station.

Logs cut in the Mokoroa Valley from 1922 to 1927 were driven into the
Bethells Swamp by three driving dams and thence via launch tow and tramway
to Waitakere Station.

SOUTH EAST HELENSVILLE (Fig. 10)

Sometime after building dams for Henderson in the eastern Waitakere
Hills, John McLeod together with his brother Isaac established timber mills on
the Kaipara River at what is now the township of Helensville.

The ten dams found in the area studied were built between 1882 and 1892
by Robert McLeod for his brothers James and Andrew, all nephews of John
McLeod. The logs were driven down the Wharauora, Tikokopu and Waikoukou
Streams to the Kaipara River and then floated and polled down this wide
waterway to booms above the railway bridge. From here the logs were towed as
rafts down to booms beside the mill (Fig. 10) run initially by the Helensville
Timber Company and later, after a takeover in 1888, by the Kauri Timber
Company. Although some timber went by train to Auckland, the majority was
transported by sailing ships out through the Kaipara Harbour to Australia or
other New Zealand ports.

DISCUSSION

The Karamatura, Marama and Whatipu Streams provided the most
interesting area for research for there we located a variety of dams including the
only earth driving dams in New Zealand, recorded here for the first time. Other
features were the unusual and ingenious methods which the Gibbons used to
overcome obstacles in the form of waterfalls, cascades and boulder obstructions
in the streams, systems to help prevent damage to logs in transit as well as a
water-race which, while supplying water to drive an overshot water wheel, also
Fig. 10. Dam sites in the south-west Helensville area.
carried logs from the Karamatura holding dam to the mill. The cutting operations of the Gibbons' family in these three valleys were continuous rather than three separate ventures. They began in the 1850's by cutting the bush up the Karamatura Valley and the high tributary on the southern side of the Karamatura Stream then progressed over the low ridge into the watershed of the Marama Stream where a further set of dams had to be built. Their cutting operations continued their southward advance into a high tributary of the Marama on the northern slopes of Mt Donald McLean and eventually over the ridge into the headwaters of the Whatipu Stream. At this point the Gibbons decided on a major move and shifted the mill to the Whatipu Valley and constructed a whole new system of dams.

Not all timber trees in a watershed were cut at the same time, as the owner of a block of land was not compelled to grant timber cutting rights to a miller even if his neighbours did so. This is one reason why the bush in the Waitakere Hills was cut over in two or even three stages, e.g. Initial cutting in the Huia watershed was made between 1854 and the late 1860's, the second cutting between about 1870 and 1885 and finally from about 1900 logs and trees left from previous cuttings were brought out.

Although numerous men were involved in building a dam, one man was usually in charge and attributed with having built the structure. All but a few of the dam builders in the Waitakere Ranges are known and several families are prominent. John McLeod built the earliest dams in the Henderson Valley and his nephew Robert McLeod built the dams in the area south-east of Helensville, thirty-five years later. Father and son dam builders included Cornelius Bryan Senior and Junior, who built dams of a distinctive style in the upper Huia Valley, Company and Opal Pools Streams and the second period in the Karamatura Stream during the 1870's, 1880's and 1890's. Another father and son team, Thomas and Bill Barr, built the dams in the second period in the Marama Stream and those in the Karekare Stream in the 1900's.

The large Gibbons' family were involved with all aspects of the timber trade in the Waitakere Ranges for seventy years. They built the dams for the first period of milling in the Karamatura, Marama and Whatipu Streams and a descendant, Ebeneza Gibbons built twenty-eight of the twenty-nine dams used in the area after 1910.
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