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NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION NEWSLETTER



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THE ARCHAEOLOGICAL SURVEY OF THE KAPUNI PIPELINE

B. G. McFadgen

Pipeline Salvage Archaeology differs from the River Basin type of salvage archaeology at Tongariro in that the construction works are strung out in a narrow strip over a long distance, and operations take place at a rapid pace.

From the start, the Ministry of Works were aware of the possibility of conflict between the Kapuni Pipeline route and the existence of "...scenic reserves, wildlife reserves, and other areas of public interest..." (including archaeological sites)¹ and they expressed a willingness "...to avoid them if it (could) be done within reasonable economic and physical limits."²

An approach by the Ministry of Works to the New Zealand Archaeological Association in August 1967 asking for information regarding archaeological sites likely to be affected by the Pipeline led to the Archaeological Association requesting the Ministry of Works through the New Zealand Historic Places Trust that they employ their own salvage archaeologist. The Archaeological Association, while willing to co-operate with the Ministry of Works, felt that, since many of its regional filekeepers were amateurs, they would be unable to spend the time required to provide the detailed information needed by the Ministry of Works, and that this could best be supplied if Government aid were forthcoming to enable an individual to work full-time on the project.³

The Historic Places Trust, equally convinced of the need for a salvage archaeologist, passed a motion on 17 August 1967 that:

"The Minister of Works be invited to grant \$9,000 to the Trust to employ an archaeologist for 18 months in connection with the Kapuni Pipeline project, to:

- (1) Examine all aspects of preliminary planning;
- (2) Confer with the Central and Regional Filekeepers of the N.Z.A.A. regarding all areas affected by the proposed pipeline;
- (3) Accompany survey parties along the easement recommending minor deviations to avoid important field monuments, etc.;

- (4) Locate by detailed field reconnaissance all archaeological and historical remains threatened with destruction;
- (5) After evaluation of these sites initiate a salvage programme closely co-ordinated with construction activities so that a maximum amount of archaeological work may be accomplished in each area of the project."⁴

The Minister of Works approved a grant of \$4,000 to the Historic Places Trust for the purposes of employing a trained archaeologist to undertake salvage archaeology which they envisaged as:

"...keep(ing) up with actual pipeline construction and mak(ing) continuous archaeological inspections. In addition he would be required to assume full responsibilities associated with the finds such as taking charge of the artefacts, record(ing) sites for future study, and making arrangements with local Maoris and others regarding reinterments."⁵

As a result of the grant from the Ministry of Works, Mr Ken Gorbey was appointed Salvage Archaeologist for the Kapuni Pipeline project in April 1968.

Pipeline construction is carried out by self-contained teams of men and equipment called "spreads". Each spread is assigned a section of the pipeline, and is responsible for clearing the right-of-way, opening the trench, laying the pipe, and backfilling. There were two spreads operating on the Kapuni project.

The major damage to archaeological sites occurs when the right-of-way is first cleared, and when the trench is excavated. Where pipeline salvage archaeology in the United States is undertaken:

"on a typical project, the construction area receives two careful examinations: the first is scheduled to precede the right-of-way clearing; the second follows the excavation of the ditch and is completed before the pipe is lowered in the ditch and covered... the usual procedure is to assign a two-man team of archaeologists to each spread... When a site is encountered, its exact position is noted... If the site is in the right-of-way an estimate is prepared of the man-days of labour and equipment needed for its efficient salvage... Usually the salvage excavations are authorised, but occasionally a large or more important site is encountered where it may be more economical to modify the line and avoid the site."

(Wendorf, 1966: 54)

On the Kapuni project the procedure was similar, except that salvage excavation was not encouraged, and only one archaeologist was employed. He was to be responsible for over 400 miles of pipeline, in situations where the spreads might be separated by as much as 200 miles. The trench was only 20 inches wide and 4 feet deep, but it ran within a right-of-way up to 60 feet wide. The average speed of construction was estimated to be about two miles per day.⁶ To be responsible for salvaging archaeological remains under such conditions was no mean task for one archaeologist to undertake.

There were two phases of fieldwork; site survey and excavation. The site survey of the pipeline route was carried out from mid-April 1968 until mid-July 1968, and was followed by the excavation of Pukearuhe Pa (N.99/49) in North Taranaki between August and November 1968, and a pa site at Mokau (N.91/3) at the end of January 1969.

Stage I of the survey (Gorbey, 1969) involved viewing aerial photographs and interviewing the survey staff responsible for laying out the pipeline route on the ground, in order to gain some idea of sites likely to be encountered. Also from aerial photographs, topographic features likely to have associated remains without visible features, were noted.

Stage II involved consulting the New Zealand Archaeological Association files to locate sites which had already been recorded on or near to the pipeline route.

Stage III was a traverse of the pipeline route to check the sites previously noted and to locate any other sites which might exist.

Sites likely to be affected by pipeline construction were marked on the air photographs of the pipeline route. These were at a scale of 1:12000 and were provided by the Ministry of Works. Later, sites were transferred to the N.Z.M.S. 1 topographic sheets, and a site record form was filled out. Copies of the form were then sent to the Historic Places Trust and the Archaeological Association.

During the survey, 16 sites were found which lay either wholly or partially within the 60-foot right-of-way, and which were, therefore, endangered by the construction works. The affected sites included one group of slit trenches, two terrace sites, one midden, three pa, two redoubts, six groups of pits, and an occupation area (Gorbey, 1969). Of these, two groups of pits were partially excavated by Buist of Hawera (N.129/152, 238), part of one pa site was excavated by Mr Gorbey (N.99/49), and a pa site at Mokau was excavated by Mr Bruce McFadgen

(N.91/3). In addition to this, the Ministry of Works fenced one of the redoubts (Inman's Redoubt) and took care to avoid it.

Unfortunately, authorities within the Ministry of Works responsible for pipeline construction were unconvinced as to the relevance of their financial aid to salvage excavation and were reluctant to support it. This led to some difficulty over the excavation of Pukearuhe pa. Mr Gorbey originally intended to use trained labour from the Auckland University Archaeological Society during the August vacation. However, the difficulties over financial arrangements were not resolved until after the August vacation, by which time it was too late to employ student labour. As a result, an excavation which could have been completed in a few weeks, took three months. The difficulties were partly resolved by the Historic Places Trust agreeing to accept partial financial responsibility for the excavation. This appeared to satisfy the pipeline authorities provided the construction work was visited regularly.

The problem of financial support for salvage excavation was not resolved at the time of the Mokau excavation, and this, too, was only possible by the Historic Places Trust's agreement to meet part of the excavation costs.

The archaeological survey of the Kapuni pipeline route is unlikely to be a unique occurrence. Similar surveys are likely to be required should, for example, oil be found in New Zealand and pipelines built. Roads, highways and railways are other examples of long narrow construction works likely to result in archaeological salvage programmes with conditions and problems similar to those encountered on the Kapuni project.

In retrospect, there are three aspects of the Kapuni survey which could benefit from some discussion before similar surveys are undertaken. The first concerns the role of salvage excavation as a complementary activity to site location, and following the trench excavator.

The attitude to salvage archaeology of the authorities within the Ministry of Works responsible for pipeline construction has already been mentioned. It is not difficult to understand their insistence for the archaeologist to be on hand to arrange re-interments of burials should they be uncovered, to keep pipeline construction moving smoothly, but insofar as the recovery of artefacts is concerned, to merely take charge of them is archaeologically unsatisfactory.

The destruction of archaeological sites caused by earthmoving equipment is so great that archaeological data gathered after the event is only a very small proportion of that which existed before the site was destroyed. An archaeologist following a trench digger or a bulldozer might pick up an adze, or be able to draw the profiles left in the sides of the trench, but he has lost any knowledge of the house-floors or store-pits which might also have existed. To retrieve this additional information, a site must be examined before the heavy machinery moves in. Only then can the artefacts which survive be placed into their context within the site as a whole.

It is not intended to under-estimate the importance of an archaeologist being on hand when material is uncovered during the trench excavation, but because finance for salvage excavation is limited, it is essential to spend to the best advantage that which is available. In the long run, more and better data is collected by excavating the sites first than could be collected by only following the pipeline machinery.

The second point concerns the methods used during salvage excavations. Salvage archaeology differs from normal archaeology in that excavations are not carried out to answer a problem, but to recover the maximum amount of information, in the most efficient way, within the time and funds available. It was realised on the Kapuni project that more archaeological data would be destroyed than could possibly be saved, and it was necessary to decide which data were likely to be the most important, and attempt to save as much of this as possible. As a result, two pits and two pits were eventually excavated. However, looking back, I feel that a more adventurous approach to the excavations would have yielded more data from a larger selection of sites than was ultimately recovered. The problem of how to recover this information has been stated in general terms:

"Where there are... (large) ... amounts of archaeological materials threatened with destruction, and only a small fraction of this material can be saved, ... (is it) ... better to work with meticulous care and with standard techniques, or to seek some reasonable compromise between precision and speed so that a larger sample is preserved, perhaps at the expense of some small detail."

(Wendorf, 1966: 79)

Excavation using power equipment is standard practice in the United States and most of the sites on the Kapuni Pipeline were amenable to excavation using some form of heavy earthmoving equipment. Some

detail would undoubtedly have been lost but, where the choice is between inadequate or no data, surely inadequate data about the midden, pa, redoubts, pits, and terraces which have since been destroyed, would be preferable to the complete absence of data which we now have.

The point to be made here is that there have been developed in the United States techniques of excavation specifically oriented to salvage archaeology, "...the goal (of which) is efficiency; to recover the most data for the investment in time and funds". (Wendorf, 1966: 78) Many of these techniques could be investigated and, where suitable, applied to New Zealand conditions.

The final point concerns the Archaeological Association site recording scheme. The scheme, insofar as it exists, provides an admirable list of sites, with plans, and their approximate locations for a number of separate areas of New Zealand. The scheme is by no means uniform in its coverage of the country. The Kapuni Pipeline, for example, was covered for less than 1/3rd of its route. It takes time to survey a site and produce an adequate plan of its features, time which could better be spent excavating. If the intention to carry out construction work was made known to the Archaeological Association well before it was due to begin, some attempt could be made, possibly through local societies, to cover the route or area of a proposed construction work, to map and record sites. Information so obtained would be invaluable to a salvage archaeologist.

This paper is not meant to be a criticism of the work which was done during the Kapuni Pipeline survey, but to suggest points which could be considered before the next salvage programme is undertaken. The Kapuni survey was one of the first of its kind in New Zealand and, because of this, could not help but suffer teething troubles. The two factors which stand out most clearly, however, are the early awareness of the Ministry of Works to the possibility of damage to archaeological sites, and their subsequent willingness, along with the New Zealand Historic Places Trust, to provide finance to reduce the amount of information eventually destroyed.

I would like to thank the New Zealand Historic Places Trust for allowing me to read and quote material from files relating to the Archaeological Survey of the Kapuni Pipeline.

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