Mangawhai Historic Wharf Resource Consent Application
Appendix 8:

Assessment of Environmental Effects
Minor Coastal Activity

Historic Mangawhai Wharf Re-establishment

Mangawhai Harbour Restoration Society

Historic Wharf Photo Courtesy of Dave Smith and Family

Prepared by
LaBonté Coastal Consultants Limited
On behalf of
Mangawhai Harbour Restoration Society, Inc.

16 March 2018

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Review February 2020

Introduction

This report has been prepared for the Mangawhai Historical Wharf Trust (MHWT). The Trust was established in 2018 to promote, re-establish and operate a public wharf based on the design of the original historic wharf at Moir Street, Mangawhai for the benefit of the public and, in particular, the Mangawhai Community.

The purpose of this report is to assess the likely impact of the wharf development and its operations on the Environmental Effects for a Minor Coastal Activity. It was prepared by André LaBonté of LaBonté Coastal Consultants Limited (LCCL).[1] André LaBonté is an expert on coastal and biological processes with over 27 years of experience associated specifically with Mangawhai Harbour. Relevant qualifications and experience include degrees in Ocean Engineering and Biological Sciences.

The report was prepared in March 2018 and reviewed in February 2020. It was prepared on the basis of consideration of 27 years' experience associated with multiple projects involved with biological and coastal processes fieldwork in Mangawhai Harbour.

Summary of Findings

The shoreline, benthic substrate, existing coastal structures, and potential effects associated with the proposed wharf on coastal processes and biota were evaluated during sites visits. In addition, public access, noise and visual effects were assessed.

The effects associated with the parameters assessed in the report were found to be no more than minor. The benthic biological assessment relied on a 2002 assessment by Poynter and Associates. NRC considered that report to be dated so a new assessment was undertaken by Bioresearches. The Bioresearches report confirms the LCCL report's original assessment.

Based on the assessment of the above parameters, it is the opinion of André LaBonté that the effects associated with the proposed Wharf reconstruction will be no more than minor.

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1 André LaBonté is an experienced Ocean Engineer/Biologist specialising in coastal processes with over 50 years of experience. He designed the Mangawhai Harbour Restoration and Maintenance Plan, was responsible for obtaining the resource consents associated with that ongoing activity, and continues to oversee implementation of that long-term restoration plan. He has designed, monitored and overseen implementation of the Mangawhai Harbour mangrove removal project. He has extensive experience in New Zealand and the US involving beach and shoreline restoration activity.

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Proposal

The Mangawhai Harbour Restoration Society, with the support of multiple community organisations, proposes to construct a new wharf based on the design of the historic Mangawhai Harbour Wharf at the historic location using modern materials and meeting current design and safety standards. The wharf will extend approximately 101 metres into the Coastal Marine Area from its shore terminus. The width will be 3 metres along the first 90 metres and expand to 12 metres for the last approximate 11 metres forming a T section. A 12 m by 4 m floating concrete pontoon with a 14 metre gangway will extend 12 metres to the south to allow access from the water. Pilings (42) with a diameter (SED) of 300 mm will be driven at 4.5 metre intervals from the shore terminus to the T section. Approximately 20 piles will support the T section and 4 PE sleeved steel piles of 610 mm diameter will position the floating pontoon. Please refer to Drawings by Total Marine furnished in a separate report.

Site Details

The site is the previous location of the historic Mangawhai Wharf which was removed in the 1950s. There is a designated boat ramp adjacent to the proposed location (Photo 1). There are remnant cut-off pilings from the historic wharf and historic channel training groynes which will remain in place and be marked at either end for navigational and safety purposes (Photo 2). LaBonte Coastal Consultants Ltd (LCCL) recommends that in consultation with mana whenua, consideration be given to removing existing debris (oysters and rock rubble) that will likely be adjacent to the new structure (Photo 3). These have the potential to create a hazard to navigation and safety concerns associated with shoreline and in-water recreation activities.

Photo 1: Existing boat launching area

Photo 2: Historic channel training groynes & remnant cut-off piles

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Photo 3: Rock rubble, historic pile (left) and existing salt marsh north of boat launching area

Benthic and Shoreline Description

The benthic substrate is hard pan (Photo 5) covered by a thin (0 to 50 mm) layer of sand, shell, rock rubble, Pacific oysters, broken pottery and glass. There is a small area of salt marsh on either side of the designated boat ramp (Photos 3 & 4). These areas will be roped off to assist in avoidance of disturbance by contractors during construction activity.

Photo 4: Salt Marsh on south side of existing boat launching area

Photo 5: Exposed hard pan

There are no shellfish beds in the vicinity of the proposed structure. An investigation and report by Poynter and Associates in 2003 (See Attachment, Section 3) revealed no significant shellfish populations in the area of the proposed wharf. A copy of this report is included. As indicated in the Poynter report, the population density and size of shellfish increases with distance down river from the proposed wharf.

As described in the Poynter report, there are juvenile cockle beds in the main channel downstream from the proposed area of activity. Construction of the wharf is approximately 200 metres outside of juvenile cockle beds. Therefore, the effects of associated wharf construction activity within the CMA are expected to be no more than minor.

Site Map

Photo 6: Google Earth Image showing proposed wharf with proximity to nearest large coastal structure

Existing Coastal Structures

Approximately 100 metres to the north of the proposed wharf is a consented stairway (Photos 7 & 8).

Photo 7: Consented step structure approximately 100 m north of proposed wharf.

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Photo 8: Consented step structure located approximately 100 metres north of proposed wharf. Note foot of steps are bedded into concrete pad which is positioned on hard pan.

Photo 9: Existing step structure located approximately 250 metres north of proposed wharf

Photo 10: Series of existing hard shore protection structures, small jetties and access ways located approximately 100 to 500 metres southwest of proposed wharf

Coastal Effects Assessment

The use of heavy machinery in the CMA to place pilings and aid with construction of the proposed wharf has the potential to crush benthic organisms in the vicinity of the work area. The work area is adjacent to a designated boat ramp where vehicles presently enter the CMA to launch and retrieve vessels. The Poynter report documents the limited density of benthic marine organisms in this area. There are sufficient benthic organisms outside the area of impact to permit recolonisation following completion of construction activity.

The thin veneer of sediment covering the hard pan does not support a significant density or diversity of marine organisms. As a result, the effects associated with construction activity on the sparse populations of benthic organisms is considered to be no more than minor.

The use of heavy machinery during low tide periods when the shoreline is exposed will limit turbidity effects associated with disturbance of the benthic substrate. Previous activity in this area involving the use of heavy machinery (tracked moxy, 20 tonne excavator, grounded barge and transport trucks) did not result in any events which exceeded consented turbidity thresholds during the removal of approximately 17 ha of mangroves. Consequently, the disturbance of benthic sediment resulting from pile driving activities in this area will be significantly less than that associated with mangrove removal activity in the same area. Therefore, turbidity effects are considered to be no more than minor.

Coastal Processes Assessment

The shallow water depth and hard pan benthic substrate beneath the footprint of the proposed wharf limits current velocity and wave height at this location. When combined with pile separation of 4.5 metres, the footprint of the wharf is not expected to cause significant turbulence that would result in increased erosion of adjacent shorelines or affect existing structures shown above in Photos 7 to 10.

Access to and along the CMA

Pedestrian access along the shoreline will be provided for high water access by crossing over the proposed wharf. At low water, pedestrian access will either be along the high-water access location or beneath the deck of the wharf and between the pilings spaced at 4.5 metres.

Access to the designated boat launching ramp will not be obstructed by the proposed wharf. The pontoon structure will provide temporary berthing of vessels during launch and retrieval activities.

Coastal Birds

At the 2018 Mangawhai Gala Day, The Mangawhai Historic Wharf Trust presented information and gave the opportunity for feedback. Three individuals, out of 179people providing feedback, expressed concern regarding the effects of the wharf on fairy tern feeding grounds. One of those was concerned that the proposed wharf would be too near the 12ha sand island from which mangroves had been removed and on which fairy terns were now believed to be feeding. A fourth individual verbally indicated concern that the wharf would interfere with fairy tern breeding. Some of these individuals expressed concern that more people recreating in the upper end of the middle harbour area (attracted to use of the wharf) would disturb birds.

Fairy tern and other coastal birds are known to breed on the sand spit. The sand spit is over 3km from the site of the proposed wharf. Therefore, the effects of placing the wharf at this location are considered to be no more than minor with regard to fairy tern breeding activity.

In relation to the area of open water and exposed tidal flats in the Harbour over which the fairy tern and other coastal birds feed, the footprint of the wharf is insignificant. Therefore, the effects of placing the wharf at the proposed location are considered to be no more than minor.

The effects associated with the increased use of the proposed wharf area are considered to be no more than minor in relation to the existing use of the area by the Mangawhai Tavern patrons and those who use the designated boat launching ramp adjacent to the Tavern and proposed wharf.

Noise and Visual Effects

Additional use of the CMA in this immediate area may result in additional noise. However, considering the proximity to the historic Mangawhai Pub, the possible effects associated with any increase in noise are expected to be no more than minor.

The landscape and visual effects associated with the proposed Wharf structure and proposed lighting are being addressed in a separate report.

Consultation with Iwi and other Potentially Affected Parties

Consultation has been undertaken and is addressed in a separate report.

Attachment

MANGAWHAI HARBOUR DREDGING FEASIBILITY

PRELIMINARY ECOLOGICAL REPORT

Prepared For: Labonte Coastal Consultants

By: Poynter & Associates Environmental Ltd

January 2003

Table of Contents

1. INTRODUCTION

The following report has been prepared for Labonte Coastal Consultants Ltd. It provides a preliminary assessment of the potential marine ecological effects of a project which envisages dredging the main channel in the mid reaches of the Mangawhai harbour to improve small boat access. The project is at a concept feasibility stage.

2. WORK UNDERTAKEN

Two days of survey work have been undertaken to date.

21 November 2002

An initial survey was carried out on 21/11/02. Low water was about 3:16 pm. The main intent of that survey was to identify any notable seabed ecological features in the channel more or less between the Insley St Bridge in the mid harbour and the uppermost extent of the previous dredging project at the harbour entrance. The latter project was to close the breach and re-establish the harbour outlet at Mangawhai Heads. Using SCUBA, the channel was drift dived on the ebb tide. Faunal and textural features on the seabed were noted. Also, intertidal zones were briefly inspected and the assistance of a local resident in locating the main intertidal pipi bed used by locals, is kindly noted in this regard.

02 December 2002

A further day of more detailed field work was undertaken on the 02/12/02. Low water was at about 12:18pm. On that occasion the following work was carried out:

- Quantitative estimates of shellfish abundance on the intertidal shore at the old wharf site, marked as site W on Figure 1.

- Physical inspection on foot of the shore and shallow tidal channel between site W and the Insley St Bridge and the shores adjacent to the Moirs Point Youth Camp.

- Using SCUBA on the flood tide a drift dive was carried out in the lower section of the harbour that was previously dredged as part of the channel restoration work. This was carried out to determine what the seabed was like (both physically and ecologically) in a section of the harbour which had previously been dredged.

3. RESULTS / FINDINGS

3.1 CHANNEL

Starting from the upper (Insley St) end of the harbour, the channel can be divided into four relatively discrete zones. These zones are identified as follows:

(i) Zone A: Insley St to Hotel (site W)
(ii) Zone B: Site W to Moirs Point channel confluence
(iii) Zone C: Moirs Point to Tern Point boat ramp
(iv) Zone D: Lower harbour 'mobile sand'.

The particular features of each of these zones, and where appropriate any constraints to a dredging project, are identified below.

3.1.1 Zone A: Insley St to Site W

Here the channel is shallow, being not more than 0.5m deep at low water. The channel meanders from the eastern to the western shore down the harbour and becomes somewhat braided along parts of its course. The channel sediments are predominantly sandy and the channel fauna appears to be sparse and is not notable in this zone. No formal sampling was carried out in this zone. Small cockles (*Austrovenus stutchburyi*) appear in low abundance as do small pipi (*Paphies australis*) towards the northern end of the zone. Wedge shells (*Tellina liliana*) are more common. There should be no particular ecological constraints on dredging the existing channel through this section of the harbour.

3.1.2 Zone B: Site W to Moirs Point Channel Confluence.

This zone has a well defined channel of about 0.75 to 1.0m depth at low water. Channel sediments are predominantly sands. Two 'transects' were surveyed at about 100m spacing as shown in Figure 1. Five random quantitative seabed samples were collected at each site; thus 10 in total. Each sample was of 0.1m^2 to a depth of about 15cm. Samples were collected by a diver operated sampler. At this stage of the investigations the focus has been on the presence of bivalve shellfish. Samples were sieved in situ through a 4mm mesh. Other fauna were recorded incidentally. All shellfish data is presented in Attachment 1. This data is summarised as follows:

Cockles

- Mean density of 25.3/sample (std error 6.8, N = 10)

- An equivalent mean density of 253/m^2
- Maximum density 76/sample or 760/m^2
- Population size distribution of:

Size Class (mm)	%
< 10	6.3
11 – 15	10.7
16 – 20	23.7
21 – 25	30.4
26 – 30	21.3
31 - 35	7.5

Pipi

- Mean density of 10.5/sample (std error 3.9, N=10)
- An equivalent mean density of 105/m^2
- Maximum density of 33/sample (or 330/m^2)
- Population size distribution of:

Size Class (mm)	%
<10	0
11 – 20	16.2
21 – 30	21.9
31 – 40	9.5
41 – 50	16.2
51 – 60	21.9
61 – 70	14.3
> 71	0

Other Bivalves

Wedge shells had a mean abundance in this zone of 4.5/sample.

Summary

The data suggests that in this stretch of the channel there is a mixed population of edible shellfish. Cockles dominate and have about twice the density of pipis. Both species occur in relatively good abundance and each population contains a size (=age) structure which indicates good representation from small to large individuals. This is indicative of a stable population. Cockles become less abundant and pipi more abundant down the channel. Shellfish abundance appears to be substantially greater than in Zone A. Dredging in this zone would need to be the subject of a thorough ecological assessment.

3.1.3 Zone C : Moirs Point to Tern Point Boat Ramp.

This stretch of the channel is similarly well defined and has a depth of about 1.5–2.0m at low water. Three 'transects' were quantitatively surveyed at the approximate locations shown in Figure 1. The sampling method was as previously described. Data for these sites is summarised as follows:

Cockles:

- Mean density of 7.6/sample (std error 12.55, N =15)
- An equivalent mean density of 76/m^2.
- Maximum density 28/sample or 280/m^2
- Population size distribution of:

Size Class (mm)	%
< 10	7.9
11 – 15	14
16 – 20	25.4
21 – 25	26.3
36 – 30	20.2
31 - 35	6.1

Pipi

- Mean density of 48.3/sample (std error 7.2, N =15)
- An equivalent mean density of 483/m^2
- Maximum density of 90/sample or 900/m^2
- Population size distribution of:

Size Class (mm)	%
< 10	< 1
11 – 20	4.6
21 – 30	16.5
31 – 40-	23.0
41 – 50	28.5
51 – 60	21.4
61 – 70	5.4
>71	< 1

Other Bivalves

Few other bivalves were noted other than several wedge shells.

Summary

These data suggest that this stretch of channel also contains a mixed population of edible shellfish. Pipi dominate. Cockles continue to be present but appear in low abundance. Mean cockle density is significantly less than for Zone B (25.3 cf 7.7/sample). The pipi within this zone comprise a very substantial bed which is a significant ecological feature of the Mangawhai harbour. Mean densities are significantly greater than further up the harbour in Zone B (48.3 cf 10.5/sample) Furthermore, diving observations suggest that the above statistics may underestimate the densities of the bed in some portions of the channel. The size distribution information reflects a population which is stable both in demographic and physical terms. Living pipi appear to armour the channel bed against scour from the strong tidal flows that occur. Dredging is unlikely to be acceptable in this zone.

The influence of this bed on the physical stability of these mid harbour reaches is likely to be an important factor to take into account in relation to any dredging proposal.

3.1.4 Zone D: Lower Harbour Mobile Sand.

This lower portion of the harbour had previously been dredged as part of the Mangawhai Harbour restoration project. It was inspected by two SCUBA divers on a rising tide. Observations were that the seabed is physically uniform being clean, unconsolidated sand with small sand waves and some larger wave form in places. The little fauna that was observed indicated that sand dollars (*Fellaster zelandiae*) were the dominant invertebrate. Some very large crabs (*Ovalipes punctatus*) were observed as was a very high abundance of the small fish *Limnichthys* . These fish (common name ‘sand diver’) are common in such habitat. Towards its southern section which approached the toe of the pipi bed described above, a high density of juvenile pipi were observed. Although these tiny pipi were in the same clean, mobile sand which prevails throughout this lower area, they were not visually obvious in the bulk of this zone to the north (i.e. toward the harbour entrance) and they appear to be concentrated near the parent bed.

3.2 INTERTIDAL

3.2.1 General.

Intertidal zones were inspected in a number of locations. This involved walking over representative areas and turning over 'sods' of seabed to visually inspect the fauna. Some limited quantitative sampling was carried out in the vicinity of the boat ramp adjacent the hotel; the area marked W in Figure 1. The intertidal areas are extensive and comprised of clean relatively firm sands. Cockles appeared to be ubiquitous. Pipi appear to have a limited distribution in the intertidal. One significant bed was located with the assistance of a local resident. However at this point in time intertidal sampling has been limited and there may be other localised beds of intertidal pipi.

3.2.2 Site W

Quantitative sampling was carried out in the vicinity of a remnant rock groyne. Ten core samples were collected (133cm^2 down 13cm depth). The data indicates the following:

- Mean density of cockle of 15.4/sample (std error 4.9, N=10)
- An equivalent mean density of 1155/m^2
- Maximum density of 42/sample or 3150/m^2
- Population size distribution of:

Size Class (mm)	%
< 10	20.1
11 - 15	30.5
16 - 20	32
21 - 25	16.9
26 - 30	1.3

Summary

The data shows the majority of cockles to be small and less than what would normally be regarded as a threshold for edible size (25mm). This data is likely to be fairly representative of cockles on the tidal flats in this middle part of the harbour.

4. DISCUSSION

The field survey carried out indicates the following:

(i) The mid to lower harbour is dominated by clean sands containing relatively little silt.

(ii) There are extensive shellfish through the mid to lower harbour. Cockles dominate the intertidal flats and appear ubiquitous. Pipi appear to occur patchily, on the intertidal flats but include at least one area where shellfish reach a large size and can be readily harvested by local people.

(iii) The channel environments range from ecologically relatively barren (e.g. mobile sands of the lower channel) to ecologically very rich. The bivalve shellfish resource and in particular the pipi in the channel extending from the northern end of Zone B and throughout Zone C is a major ecological feature.

4.1 CONSTRAINTS TO A DREDGING PROGRAMME

Zone A

The ecological values in this part of the channel appear low relative to the other areas. A capital dredging proposal in this zone is unlikely to cause significant or irreversible long term adverse impacts. It would nonetheless still have to be justified by a strong case for demand although hydraulic effects and physical stability would likely be the dominant issues of concern.

Zone B

By virtue of the lower abundance of shellfish in Zone B, resource consent applications for a capital dredging may have some chance of success, although this is by no means certain. In terms of the volume of dredged material, such proposals may be of a limited extent because the controlling depth would be governed by the depth of the channel through Zone C and that depth is not much greater then Zone B.

Nonetheless the shellfish resource in Zone B is not insignificant and any such proposal would still need to be sheeted back to a strong case for demand. Ongoing channel stability, maintenance dredging requirements and ecological recovery would be important issues.

Zone C

Dredging within the channel within zone C would impact part of a major pipi bed. Short term adverse impacts would be significant due to the loss of a large biomass of pipi. Long term adverse impacts both on the physical stability of the channel and the integrity of the overall shellfish bed are problematic. Restoration of ecological values would very much depend on recolonisation of a new seabed by pipi and this too is uncertain.

Any proposal to undertake capital dredging through this section of the harbour would have to be justified by a very strong demand. Such a demand would have to be expressed as an outcome which was of at least regional if not national strategic importance or as being critical to the stability of the harbour ecosystem. Such a demand does not appear to exist in this instance and therefore resource consent applications for such a proposal would be most unlikely to succeed.

Zone W

Dredging of, or within the vicinity of the Zone W intertidal area is unlikely to cause significant adverse ecological effects. Justification and demand would still be important issues. However there are many examples of dredging in similar locations to create small boat channels and marina basins which have been successfully negotiated through the Resource Management Act 1991.

4.1.1 Disposal of Dredged Material

The disposal of dredged material is an important consideration for any dredging programme. In the case of Mangawhai harbour most of the intertidal areas contain beds of bivalve shell fish and undoubtedly also a rich invertebrate fauna. Generally invertebrate communities are most diverse and abundant in the mid to low shore. Notwithstanding this, provided that dredged material (which is likely to be clean sands and shell with a low silt content) were to be relocated to the upper shore areas, ecological impacts should be localised and not of overriding significance. Choice of disposal Zones would still have to be the subject of careful study to ensure that any important shellfish beds were not adversely affected and where possible adverse effects were avoided or mitigated.

5.0 RECOMMENDATIONS

(i) The demand for any dredging is clearly identified and assessed before consideration is given to further ecological investigations.

(ii) In any event no dredging proposal is considered for the area more or less identified as Zone C in this report.

(iii) In the event that an analysis of the benefits strongly supports dredging in Zones A, B or W as identified in this report and any associated disposal of dredged material to intertidal zones, then detailed investigations are carried out in potentially affected areas.

Attachment 1: Survey Data

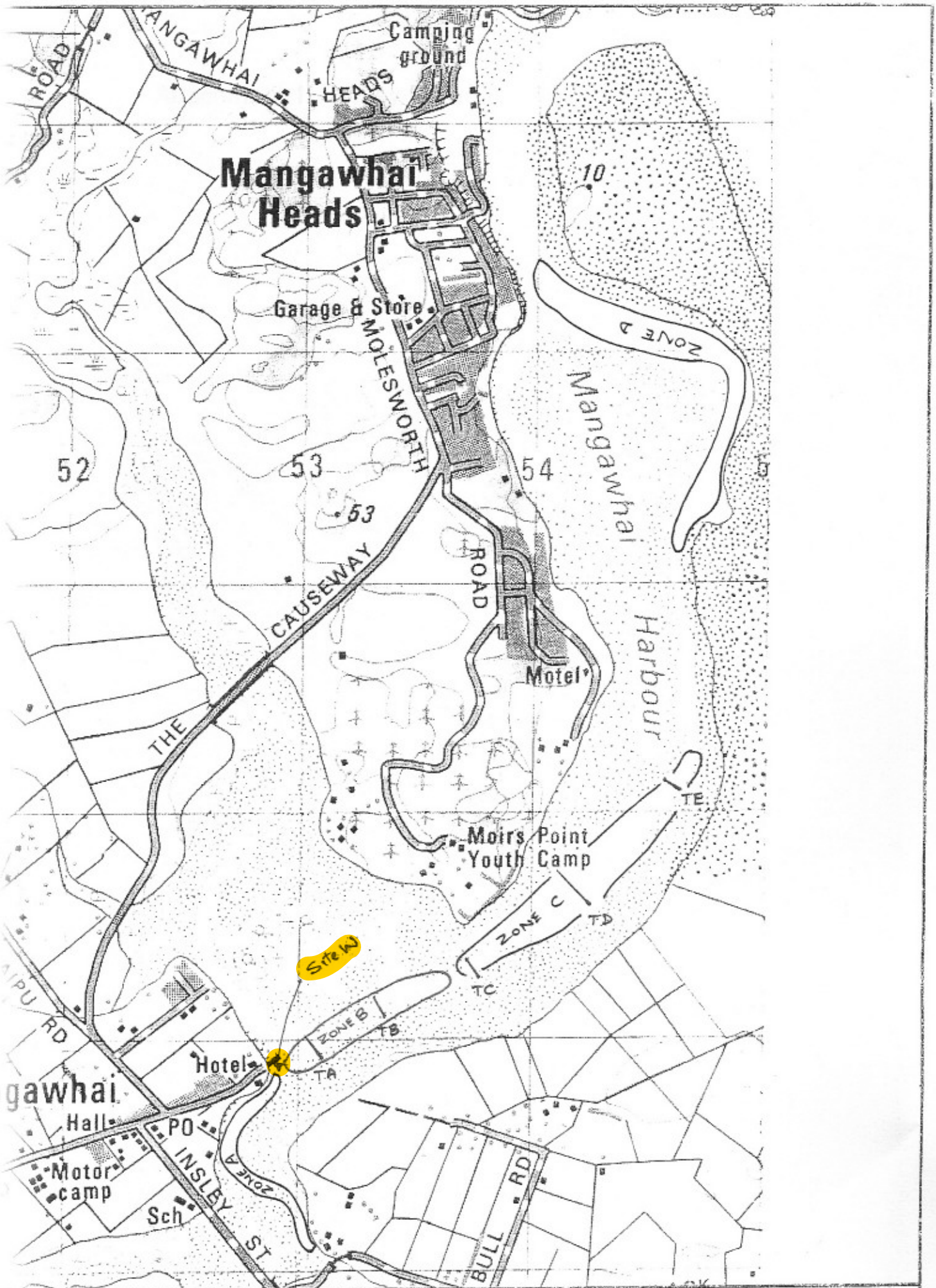

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FIGURE 1

Scale = 1 : 15000