REVISED BOUNDARY FOR ONF 91 POUERUA VOLCANO IN PROPOSED FAR NORTH DISTRICT PLAN

Pouerua scoria cone and surrounding lava flows extending to the south to the shores of Lake Owhareiti (left) and Jacks Lake (right). Photo: Bruce Hayward

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View west across the northern shoreline of lava-flow-dammed Lake Owhareiti (centre) and artificially-formed Jacks Lake (far left). Photo: Bruce Hayward.

SUMMARY

I recommend removing Jacks Lake from the proposed ONF 91, with the revised boundary being the extent of the rocky lava flow toes that form the lake's northern shoreline. I recommend no substantial changes to the proposed boundary around the edge of the wetland vegetation that marks the average high-water extent of Lake Owhareiti today, although that boundary has been tweaked to make it more precise and similar to the boundary for the Area of Significance to Māori. My recommended modified boundaries are provided in this report and on a GIS layer.

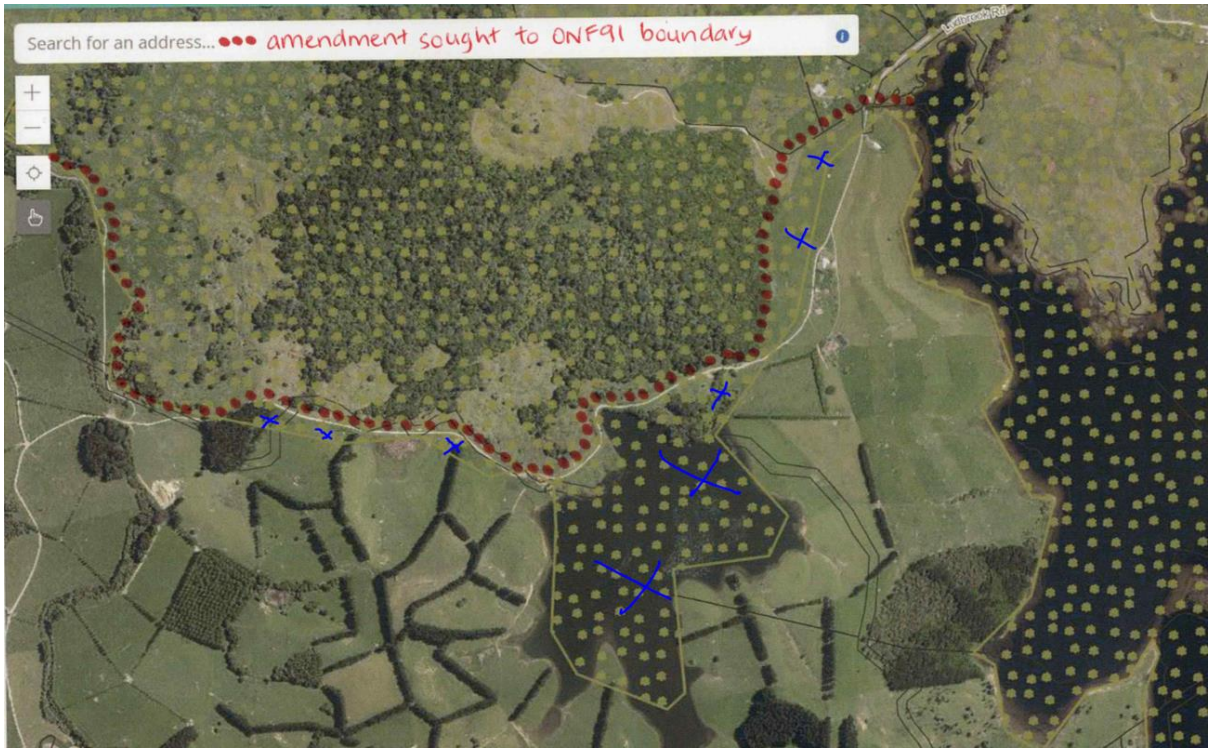
INTRODUCTION

In 2016, a map was prepared showing the recommended boundary for the Far North Proposed District Plan's ONF 91, Pouerua Volcano, lava flow field and two lava-flow dammed lakes. Mapping was undertaken using satellite photographs that showed the extent of landforms and rocky lava flow areas. The photographs showed that a smaller valley system to the west of Lake Owhareiti appeared to have been dammed by lava flows creating Jacks Lake which was included in ONF 91 of the proposed Far North District Plan.

A subsequent submission by land owner, Mr Alec Jack, clearly showed that Jacks Lake was created in the 1970s by construction of a dam across the natural outlet and this is supported by historic air photos. Mr Jack has also submitted that the level of Lake Owhareiti fluctuates up and down dependent on rainfall and has risen to higher levels in recent decades as a result of the use of explosives by a landowner near the outlet through the lava flows. Mr Jack's legal boundary was drawn when the lake was at a lower level and now underlies the lake most of the time.

MR JACK'S REQUESTS

1. <u>Remove Jacks Lake from proposed ONF</u> and move boundary as in map 1 (here) as Jack's Lake is man-made.



Map 1. Mr Jack's requested new boundary (dashed red line) north of Jacks Lake.

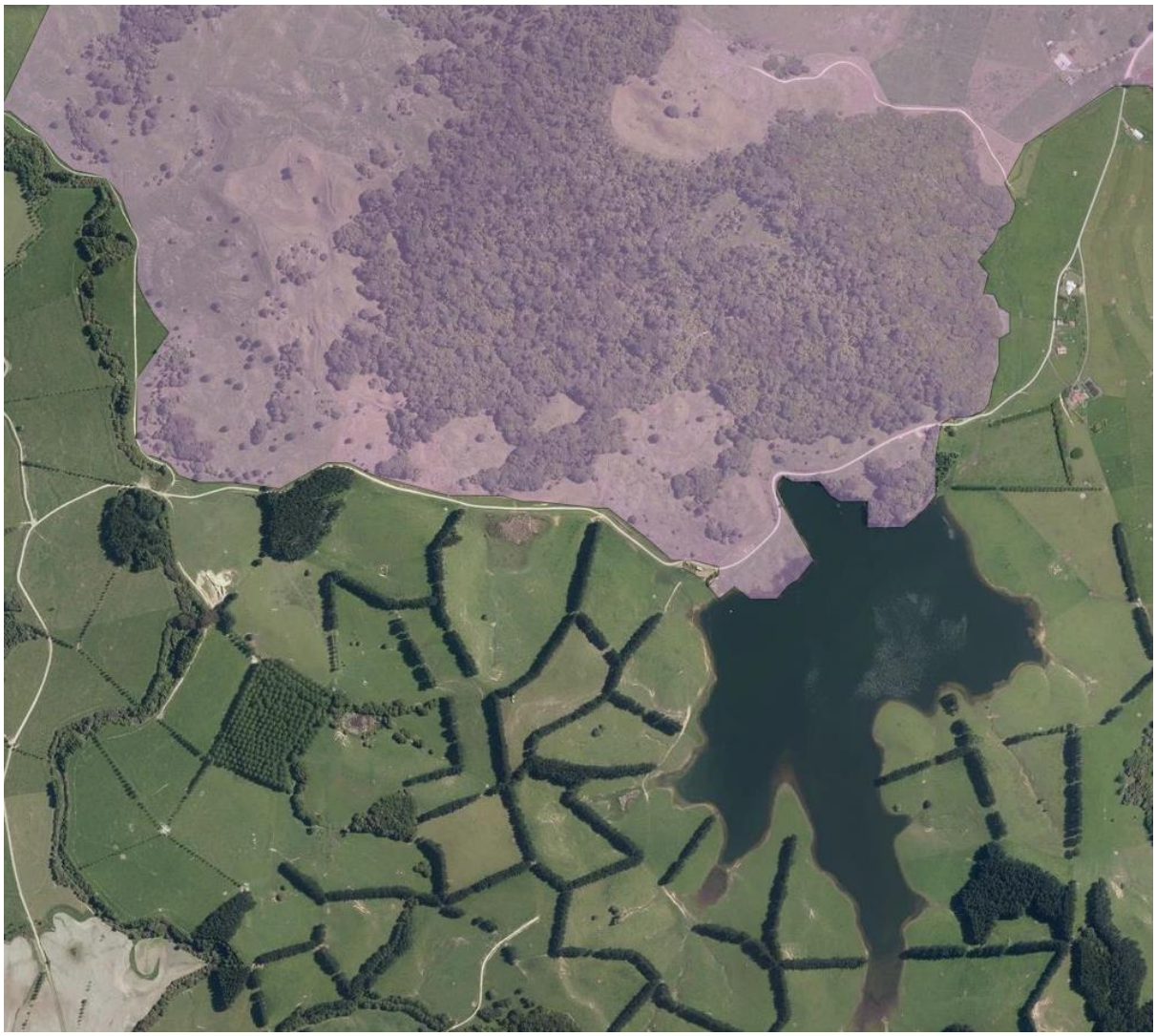
View northwest across Jacks Lake showing the indented northern shoreline (centre right) composed of rocky lava flow toes. Four further cones of the Kaikohe Volcanic Field (all proposed ONFs) are visible beyond. Photo: Bruce Hayward.

View to the southeast of artificial Jacks Lake with its northern shoreline (foreground) composed of lava flow toes from Pouerua Volcano. Photo: Bruce Hayward.

Recommendation: Accept Mr Jack's request to remove Jacks Lake and remap the ONF boundary as per maps 2-3 (here). My recommended new boundary outlines the extent of the rocky lava flows and is only slightly different from that suggested by Mr Jack, mainly by inclusion of the two lava flow toes that form the small points on the northern shore of Jacks Lake.

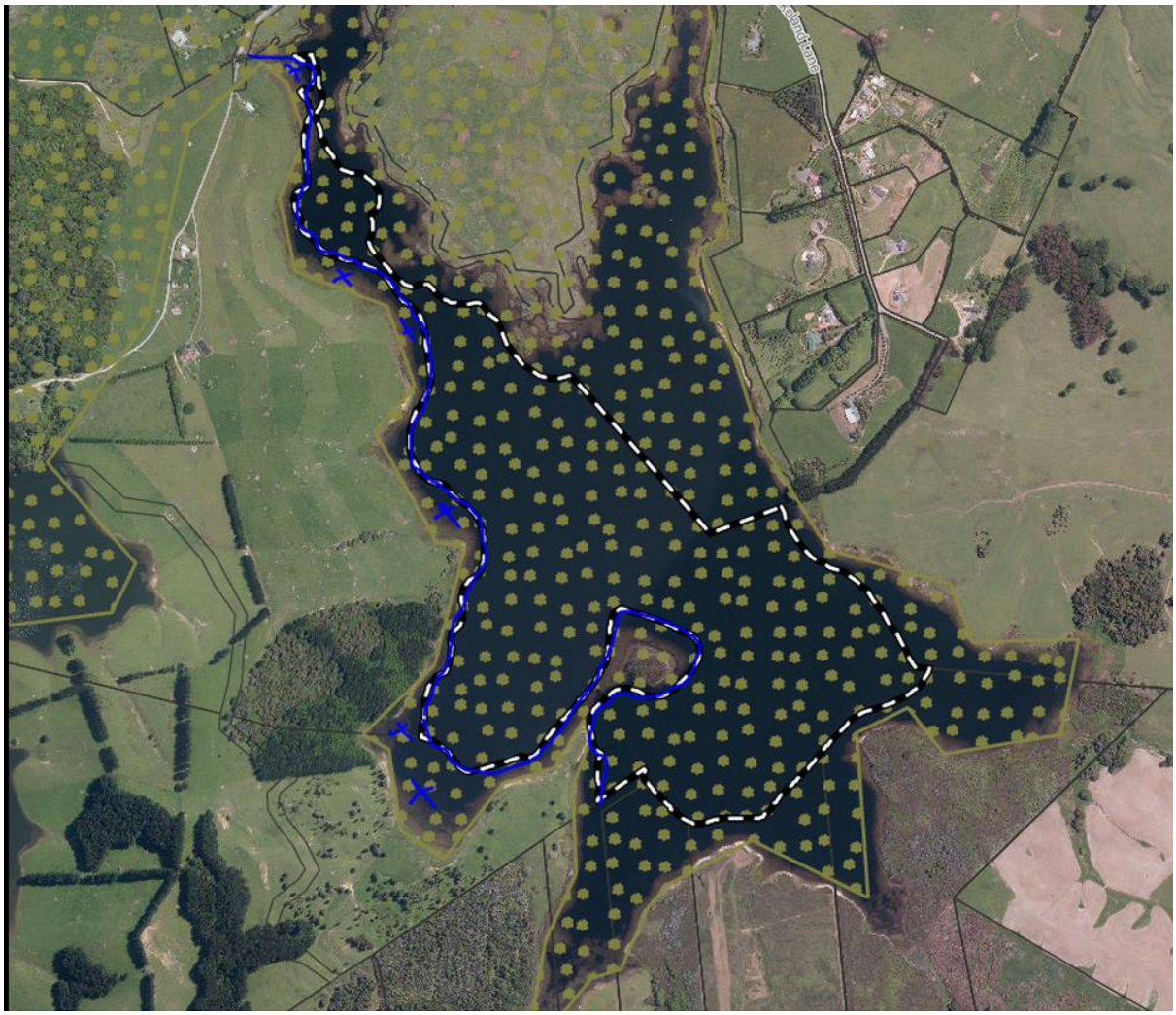
View east over the indented northern shoreline of Jacks Lake showing the rocky lava flow toes forming points. The recommended adjusted boundary of ONF 91 is shown in white. Photo Bruce Hayward.

Map 2. Recommended revised southern boundary of ONF 91 Pouerua.



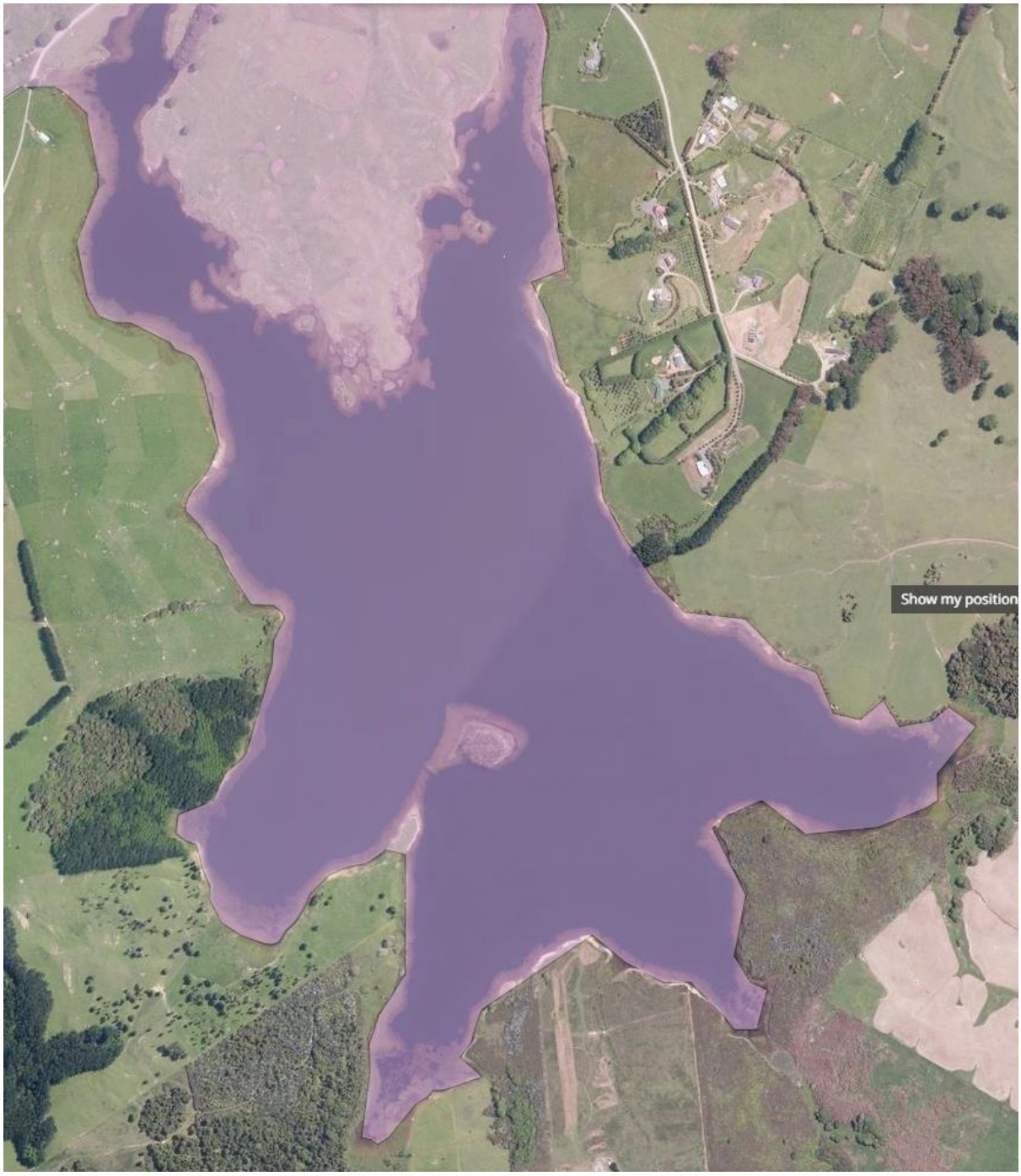
Map 3. Proposed revised boundary for ONF 91 at north end of Jacks Lake.

2. <u>Remap the ONF boundary along the west side of Lake Owhareiti</u> to correspond with the legal boundary of his property as mapped before the significant rise in lake level in the mid-20th century (Map 4).



Map 4. Aerial image showing Mr Jack's requested ONF 91 boundary revision (blue line) based on his legal boundary compared with the proposed boundary (yellow-green line) based on present extent of wetland vegetation around the lake margin.

Public view of northwest arm of Lake Owhareiti from Ludbrook Rd. Photo: Bruce Hayward.



Map 5, Slightly adjusted boundary of proposed ONF 91 Pouerua along west side of Lake Owhareiti.

Discussion: ONF 91 celebrates the outstanding natural features of Pouerua scoria cone, its surrounding lava flow fields and the lava-dammed Lake Owhareiti. Lake Owhareiti as it is today, is definitely still a lava-dammed lake, albeit fluctuating up to a higher level than it did prior to the mid-20th century. In the many thousands of years since Pouerua Volcano erupted the size of Lake Owhareiti will not have been stable. Initially there may not have been any lake with the catchment water passing straight through the fractured and porous lava flows that had dammed the valley. Over time, these underground pathways would have progressively become clogged by debris being carried in by the stream waters and inevitably the water level would have risen. It would seem that the recent rise in maximum water level was a result of human actions but the lake still retains its value as one of the two largest and best examples in Northland of a lake dammed behind a barrier of lava flows. Over time it can be expected that the maximum water level will continue to rise as a result of clogging of the subterranean pathways and the maximum size of the lake will continue to slowly expand.

Thus, in my opinion, it is the lake as it is today, dammed by lava flows, that is an integral part of the ONF and not just that part which existed in the mid-20th century or the size it was when humans first arrived or when the forest was first cleared from around it. Protecting the margin of the lake is important to retaining the appearance of naturalness. I acknowledge that the water level and consequent extent of the lake fluctuate and therefore the impossibility of mapping the precise margins of the lake. The vegetation around the lake, however, reflects the amount of time various parts are under water over time and it is the gradational change from dominantly wetland vegetation to farmland that best expresses the average maximum height and it is this approximate boundary that I have now more precisely tried to use as the slightly modified western boundary of the lava-dammed Lake Owhareiti. There will be times when the lake level exceeds this average and for periods of time the lake may flood parts of the adjacent pasture but this is to be expected with most lakes.

Recommendation: In my opinion the proposed boundary of ONF 91 along the west side of Lake Owhareiti as it is expressed today by the extent of marginal wetland vegetation is the most appropriate to protect the lava-dammed lake landform values. I have slightly modified the boundary to more precisely match that boundary, rather than using the simpler series of straight lines previously used. This has had the effect of slightly reducing the size of the proposed ONF in this vicinity. The modified boundary now more closely matches the boundary of the Area of Significance to Māori for the lake.

Recommended slightly modified location of ONF 91 Pouerua boundary (white line) adjacent to the end of Ludbrook Rd. Photo: Bruce Hayward.

Slightly modified entry for ONF 91 Pouerua (Pakaraka Mountain) scoria cone, lava flow field and lava-dammed Lake Owhareiti.

Name	Cat	Significance statement	Brief description	Location	I	V	Ref
Pouerua (Pakaraka Mountain) scoria cone, lava flow field and lava-dammed lakes	V	A prominent, well-preserved scoria cone clearly visible from SH1. Deeply breached crater. Cone surrounded by the best-preserved lava flow field in Northland and rare rafted scoria mounds and tumuli. Includes lava-flow dammed Lake Owhareiti.	A scoria cone, 750 m in diameter, which stands 135 m high, 275 m ASL and has a 100 m deep summit crater breached to the SW. Rafting of part of the cone has resulted in debris mounds below the SW side of the cone. Stoney rises, 1-10 m high, are distributed over much of the field and W of the cone sub-circular mounds 0.5 to 1.5 m high and 2 m in diameter, called tumuli, are abundant. Rafted scoria mounds to the E of the centre reach 18 m high. The longest flow, 4 km long flowed to the NE. The lava field covers an area of 13.5 square km. The largest pa and stone fields prehistoric site remaining in New Zealand. Includes Lake Owhareiti.	2 km SW of Pakaraka, extending from Hwy 1 across Ludbrook Rd to Lake Owhareiti.	B	2	H18, S12