



NEW ZEALAND  
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## ARCHAEOLOGY IN NEW ZEALAND



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WAIHI OBSIDIAN

Phil Moore  
N.Z. Geological Survey  
Lower Hutt

John Coster  
Department of Conservation  
Auckland

The presence of detrital obsidian in the Waihi area was first reported by Ward (1973), who described it as "red-brown with grey and black bands". However, during a brief visit by PRM and Bruce McFadgen in December 1978, abundant pebbles and cobbles of grey-black obsidian were found in Waimata Stream; only minor red-brown material was seen. Extensive sampling of obsidian deposits in the Waimata valley was carried out by the writers in December 1986 and January 1987.

Although the name Waimata (wai = water, mata = obsidian or chert) indicates the obsidian was known to early inhabitants of the area, so far no obsidian artefacts have been positively identified with a Waihi source by using chemical characterisation methods. One of the main aims of our study, therefore, was to find some evidence for the prehistoric exploitation of these deposits by examining flake assemblages from nearby archaeological sites. This also provided an important test of the use of physical characteristics in sourcing studies (Moore 1988).

Description of deposits

All of the known obsidian deposits are in the Waimata valley, about 8 km south of Waihi (Fig. 1). No obsidian has been seen in the Tamaki or Waitengaue streams further south, or in the Athenree Forest to the east.

Most of the obsidian is found as pebbles and cobbles in the two main branches of Waimata Stream (WI-1, 2, 3, 5) and is alluvial in origin. However, some material is probably colluvial (WI-6, 9) and the obsidian at WI-8 is in situ. Black, very glassy dacite is also common, particularly in the true left branch of Waimata Stream. This rock type outcrops at WI-4.

The deposits are described in more detail in Table 1.

Physical characteristics

Much of the obsidian from the Waimata valley has a

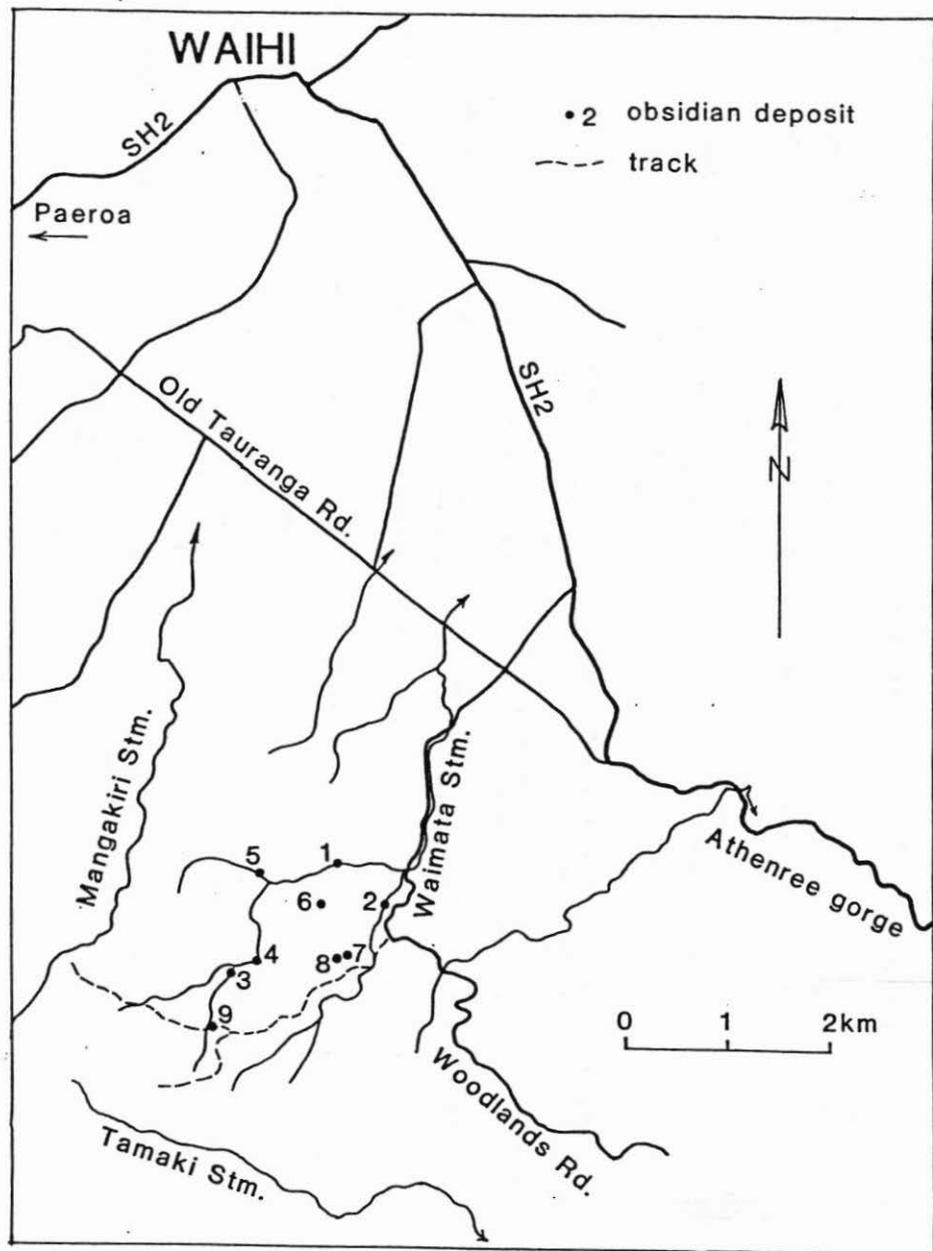


Figure 1. Location of the Waihi obsidian deposits.

TABLE 1. Description of obsidian deposits, Waimata Valley, Waihi

<u>Locality</u>	<u>Grid ref.</u>	<u>Location</u>	<u>Description</u>	<u>Nature of deposit</u>
WI-1	T13/620117	True left branch, Waimata Stream	Common pebbles, cobbles of black to olive grey obsidian all along stream	Alluvial
WI-2	T13/626113	True right branch, Waimata Stream	Common pebbles, cobbles olive black to light olive grey obsidian in stream bed; minor red-brown	Alluvial
WI-3	T13/611107	Small tributary, true left branch Waimata Stream	Few cobbles of grey to black obsidian	Alluvial
WI-4	T13/613108	10 m high waterfall on sharp bend, true left branch Waimata Stream	Massive, very glassy dacite forming waterfall	In situ
WI-5	T13/615116	Major northern tributary, true left branch Waimata Stream	Few pieces black and dark grey obsidian	Alluvial
WI-6	T13/620113	Farm track, adjacent to small creek (almost dry)	Abundant small pieces in clay	Alluvial/colluvial
WI-7	T13/623109	Farm track crossing small stream (south side)	Abundant large pieces grey-black obsidian up to 20 cm diameter	Alluvial/colluvial
WI-8	T13/622108	Old bulldozed track, north side of stream	Abundant pieces (up to 20 cm diameter) along track for c. 150 m, and exposed in bank (in situ)	In situ
WI-9	T13/610102	Old logging track 20 m east of small stream, c.200 m west of fenceline	Abundant pieces up to 10 cm diameter on track. Also common pieces (up to 20 cm diameter) in stream	Alluvial/colluvial

relatively smooth water-worn cortex, although some is pitted or striated on exterior surfaces. Freshly broken samples generally have a perfect conchoidal fracture, and are mostly dark olive grey, olive black, or greyish olive-green in colour (Rock Colour Chart). Black and medium dark to dark grey varieties are less common, and some red-brown obsidian is found in the true right branch of Waimata Stream. Material from WI-5 is typically dark grey or black. Lustre ranges from vitreous to sub-vitreous, although some dark grey obsidian is distinctly waxy and resembles grey chert.

Colour banding, consisting of an alternation of dark olive grey and black layers, is a distinctive feature of Waihi obsidian. The layers are commonly irregular or "wispy" and complexly folded (flow-folded). Some samples also contain dark grey bands with a waxy lustre. Overall, flow-banding ranges from weak to strong (as defined in Moore 1988).

In transmitted light Waihi obsidian is mostly pale greyish olive to olive grey in colour - more greyish and milky green than either Mayor Island or Waiare/Pungaere (Kaeo) material. Some black obsidian is dark rusty brown in transmitted light. Translucency ranges from moderate to poor (Moore 1988), and some dark grey and black varieties are virtually opaque.

Spherulites are generally rare in Waihi obsidian. These are medium to dark grey in colour and mostly 1-3 mm in diameter, but range up to 8 mm across. Crystal inclusions are common (i.e. 5-6/cm<sup>2</sup>) only in obsidian from WI-5, and are typically 0.5-1 mm in diameter. Maximum size of inclusions is about 3 mm.

In most cases obsidian from the Waimata valley can probably be distinguished among a collection of flakes (archaeological assemblage) on the basis of its physical characteristics. The predominantly olive grey to olive black colour is particularly distinctive, as is the "wispy" colour banding and moderate to poor translucency. Waihi is also the only known source of olive green obsidian apart from Mayor Island.

Colour in transmitted light (olive grey) is different from that of both Mayor Island and Waiare/Pungaere, and the rusty brown tint is evident only in black obsidian from Whangamata and Waihi. Spherulites and crystal inclusions are much less common than in other Coromandel Peninsula deposits and obsidian from the Central Volcanic Region.

#### Evidence of exploitation

There are no known working floors in the vicinity of obsidian deposits in Waimata valley which would provide direct

evidence of their exploitation in prehistoric times. However, use of the Waimata deposits has recently been demonstrated in a study of flake assemblages from the Raupa and Waiwhau sites near Paeroa, about 20 km to the northwest (Moore unpublished data). Comparison with representative samples indicates that about 2% of obsidian flakes at Raupa and Waiwhau were derived from Waihi deposits, although the dominant source (> 90% of flakes) was Mayor Island.

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#### References

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