The chronology of Waikato pā:
a spatio-temporal investigation of pā in the Middle Waikato Basin

A thesis

submitted in partial fulfilment of the requirements for the degree

of

Doctor of Philosophy in Earth Sciences

At

The University of Waikato

By

Rowan Tayler McBride

Vol.2

Appendices

THE UNIVERSITY OF
WAIKATO
Te Whare Wānanga o Waikato

2024

Table of Contents

Appendices

Appendix A. Site Record Forms (Archsite)

A.1 Lake Mangakaware 1 (S15/16)

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

ARCHSITE archaeological site recording scheme

Site Record Form

NZAA SITE NUMBER: S15/16

SITE TYPE: Pa - island/ swamp

SITE NAME(s):

DATE RECORDED:

SITE COORDINATES (NZTM) Easting: 1795195 **Northing:** 5799398 **Source:** On Screen

IMPERIAL SITE NUMBER: N65/28 **METRIC SITE NUMBER:** S15/16

Finding aids to the location of the site

Located at the tip of a point adjoining an inlet on the eastern shore of Lake Mangakaware, Te Rore / Paterangi.

Brief description

"Mangakaware 1" swamp pa occupying 0.2 ha defended by semicircular ditch and palisades. Excavated Bellwood/Peters, 1969.

Recorded features

Palisade posts, Ditch - defensive

Other sites associated with this site

S15/18, S15/361

SITE RECORD HISTORY	NZAA SITE NUMBER: S15/16

Site description

Updated: 27/07/2012 - NZTM E1795195 / N5799398 (On Screen). Orthophoto +/- 0m - coordinates from rectified aerial orthophoto. Recreation reserve, leased to farmer. Pasture, willows around fringe of lake. Ditch visible on Waikato Regional Council (Environment Waikato) Aerial Photographs 2002. Badly trampled by cattle 1997, some palisade posts surviving. Needs a management plan. It is possible that some of the drainage ditches showing on aerials in paddocks to the north and east of the site are pre-European. Updated by: Coster, John (NZAA Upgrade Project, 2008-2009).

Condition of the site

Statement of condition

Current land use:

Threats:

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD INVENTORY	NZAA SITE NUMBER: S15/16

Supporting documentation held in ArchSite

AD AM AE BD AA TD

SITE REFERENCE FORM

SITE NUMBER N 65 / 28

Map number N 65
Map name HAMILTON
Grid reference ~~734295~~ 732294

SITE TYPE LAKE SIDE PA

1. Aids to relocation of site Situated in Ohaupo Pirongia Road approximately 5 miles E273200 NS29400

2. State of site; possibility of damage or destruction Site is now in grass with water on two sides with a moat on the other two sides partly filled in.

3. Owner H.S.SILVESTER
Address PATERANGI OHAUPO
Attitude

Tenant
Address
Attitude

4. Name of site Not known but locally called ~~Mangakotukutuku~~. MANGAKAKAHI
Source of name Name of the lake on which the site is situated.

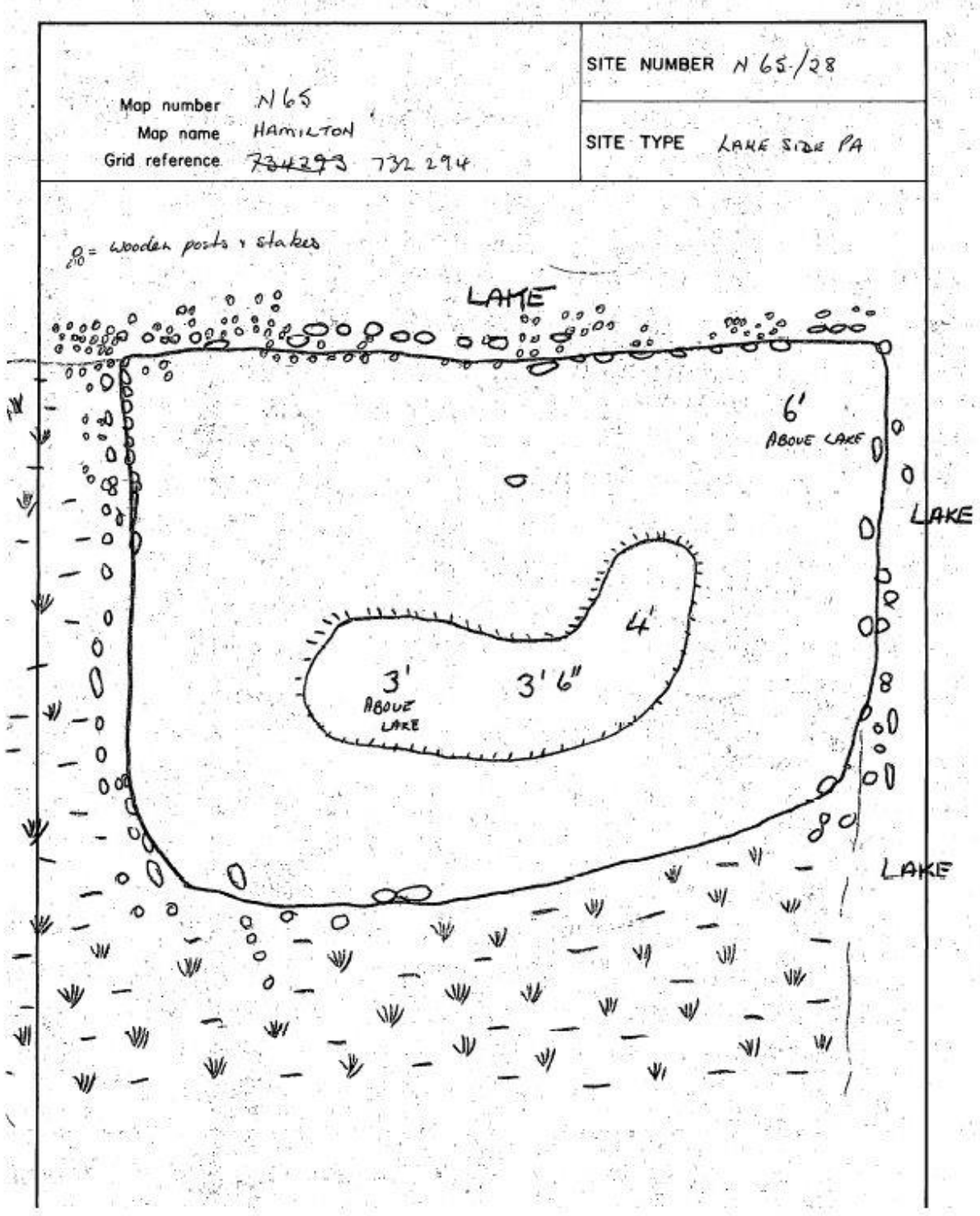
5. Date recorded March 1965 Details of investigation; methods and equipment used Measurements stepped out.

6. Aerial photograph numbers 2683/38-39 Site shows. ~~clearly~~/~~badly~~/~~not at all~~

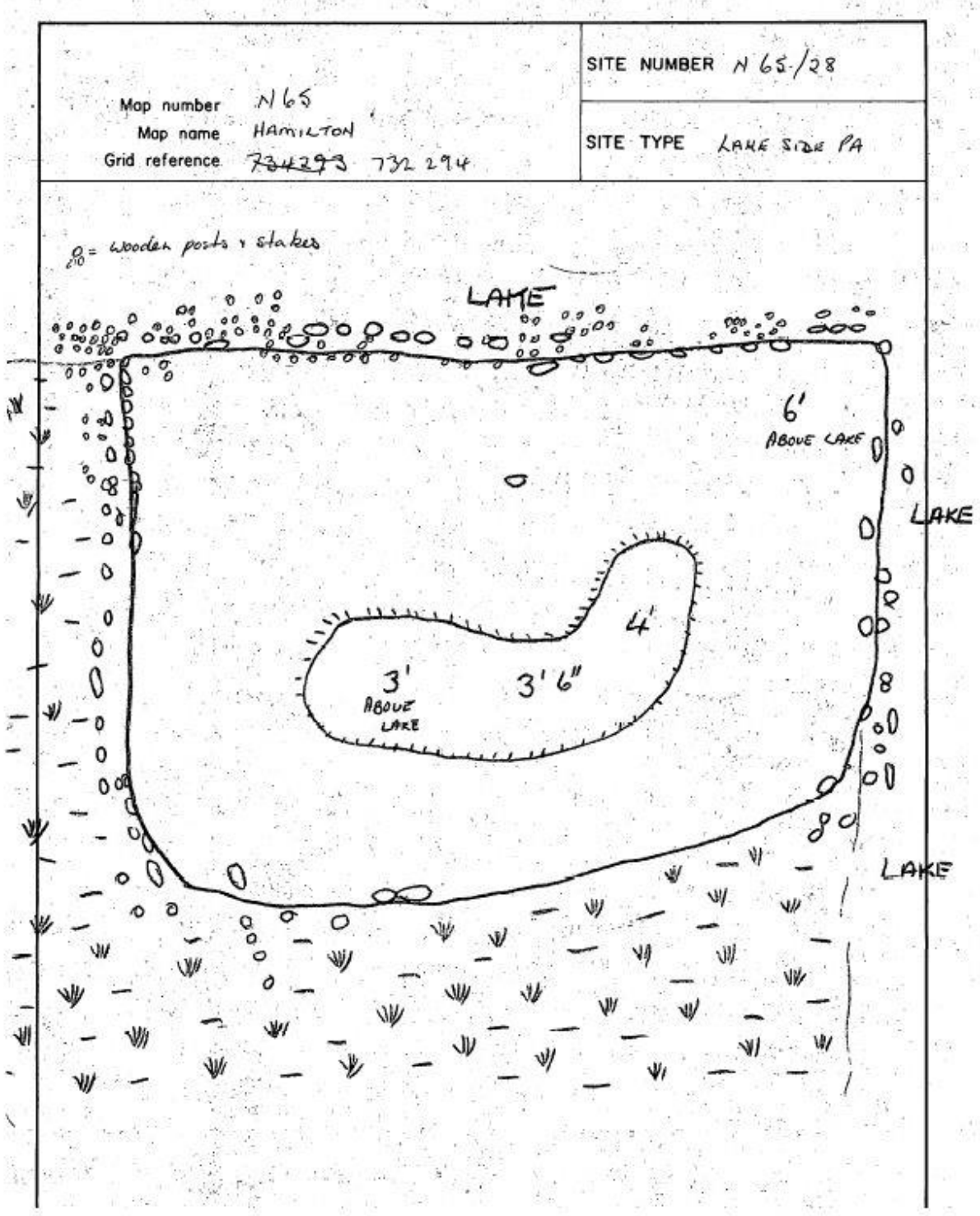
7. Reported by R.D.PICK.
Date Sept. 23rd 1967.

Filekeeper Jas James
Date 2.12.67

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION



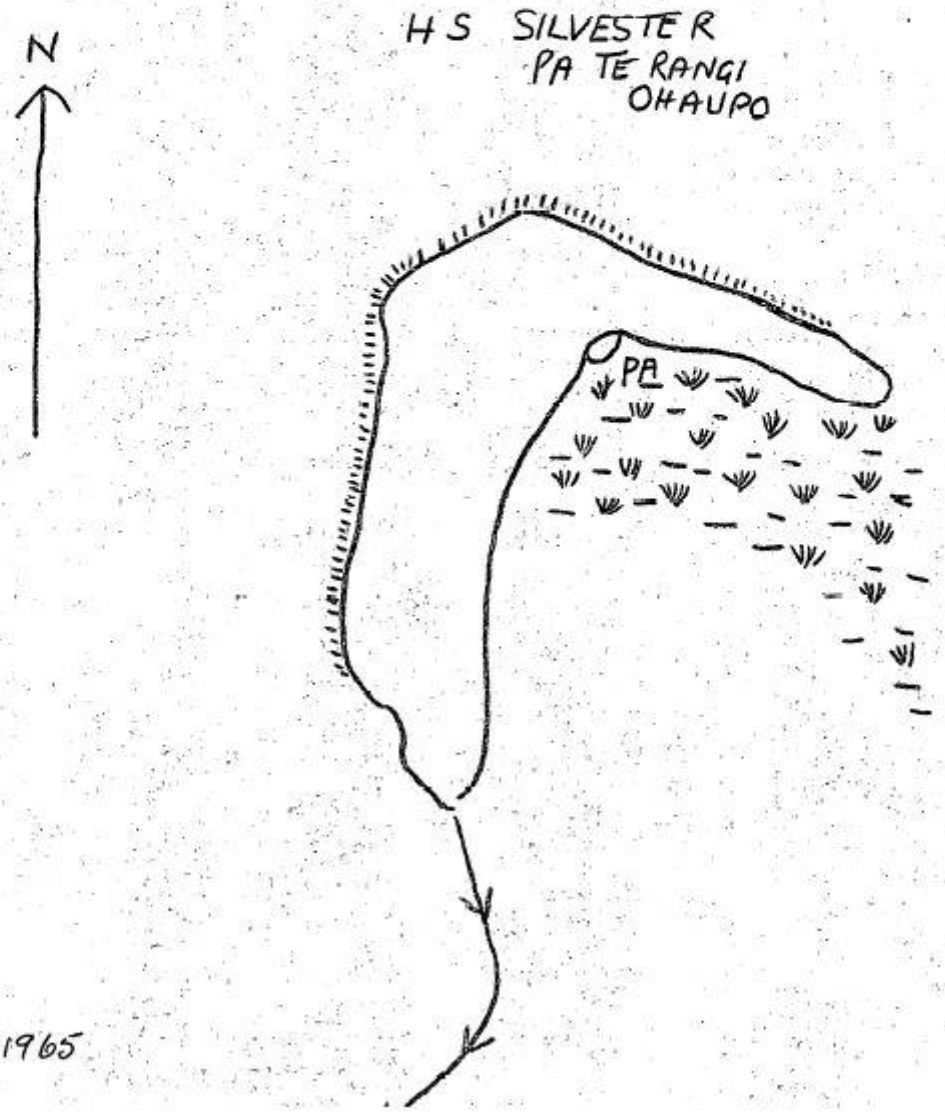
NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION



Map number N 65 Map name ~~MA~~ HAMILTON Grid reference ~~731293~~ 732 274	SITE NUMBER N 65/28 SITE TYPE LAKE SIDE PA

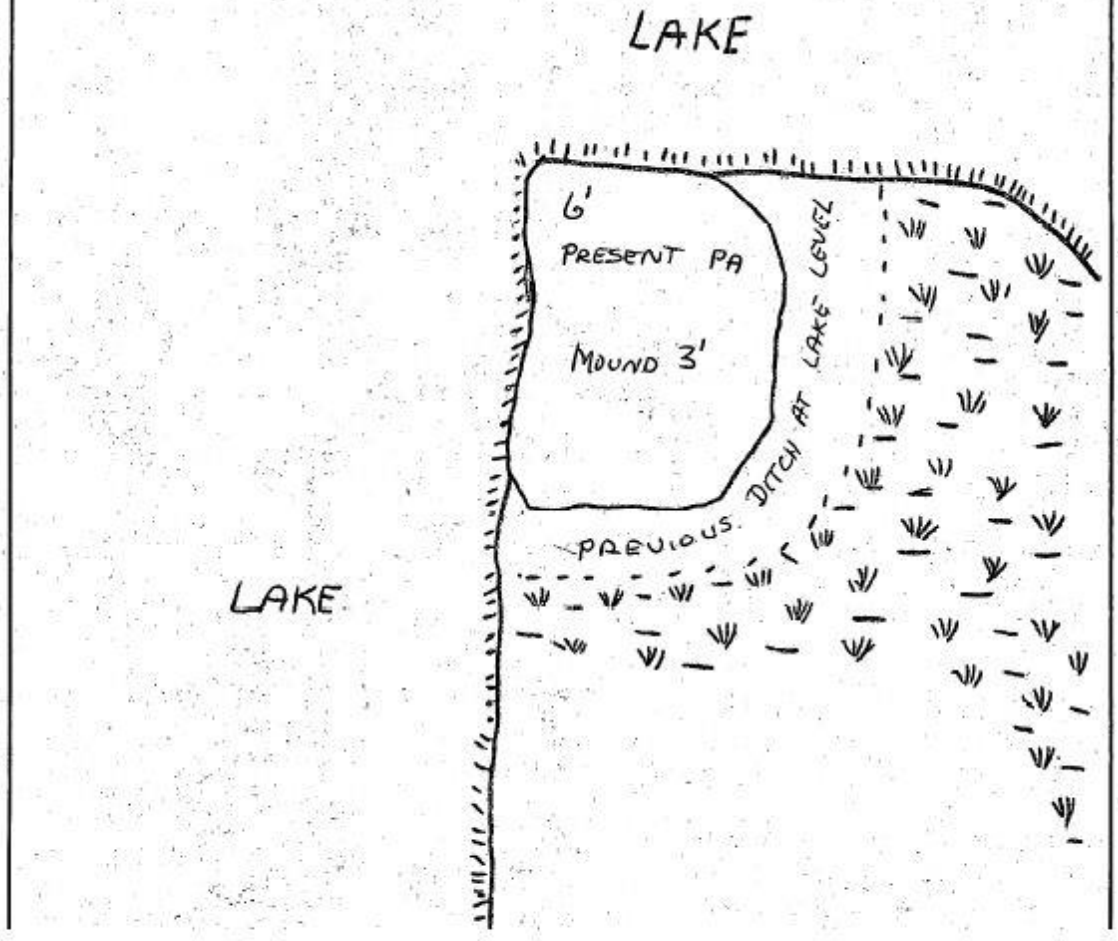
MANGA-KA-WHARE LAKE AND PA
PA TE RANGI DISTRICT.

H S SILVESTER
PA TE RANGI
OHAUPO



Map number N 65 Map name Grid reference ~~734293~~ 732 294	SITE NUMBER N/ 65/28 SITE TYPE LAKE SIDE, PA

MANGA-KA-W[illegible]ARE LAKE AND PA
SHOWING DITCH CONNECTING ANGLES OF THE LAKE

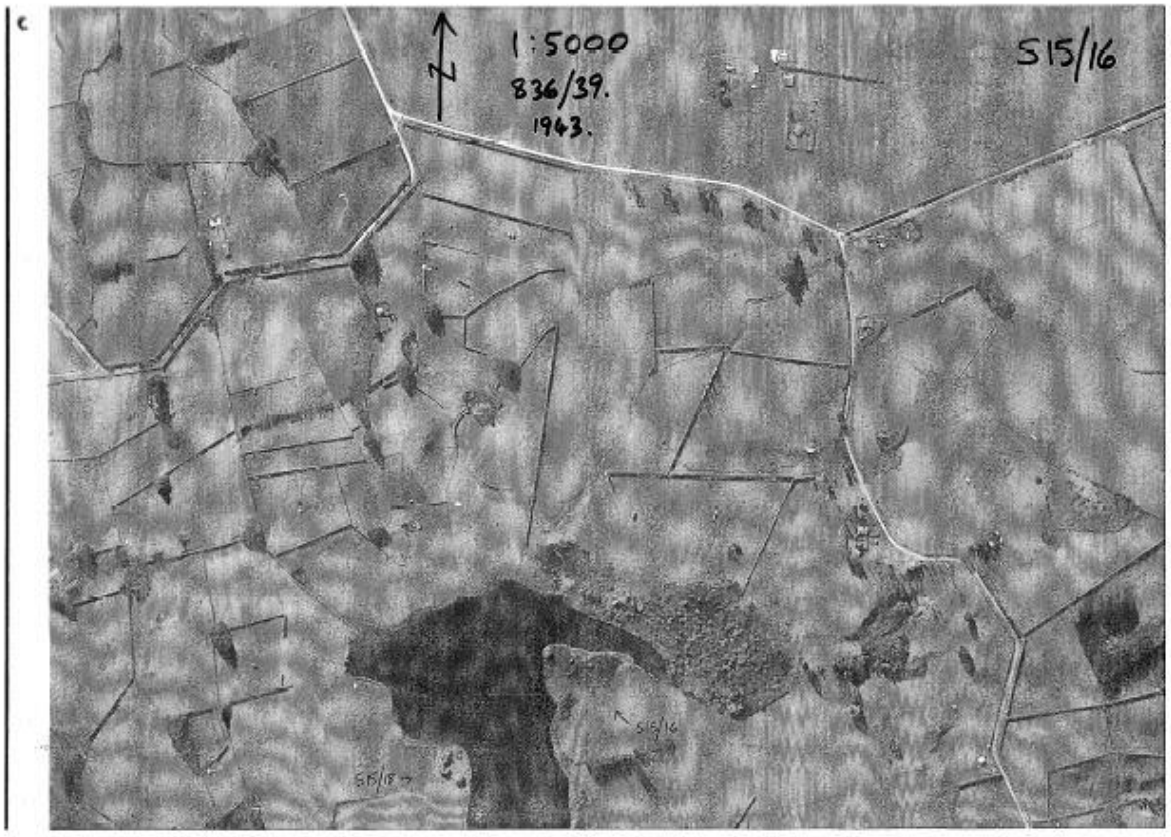


PHOTOGRAPHS AND SLIDES

SITE NUMBER
N65/28

GRID REFERENCE
732 294

NZHPT COLLECTION	CENTRAL FILE
	AR 3150 (W.A.M. 1980)


1:5000
836/39.
1943.
S15/16

C

N65/28

N Z ARCHAEOLOGICAL ASSOCIATION
RE-VISIT / ADDITIONAL INFORMATION

DATE	Nov 04	SITE NO	S15/16
REVISED G.R.	--	NAME	--

Note that site record S15/361 has been established for the artificial swamp mound pah immediately to the east of S15/16.

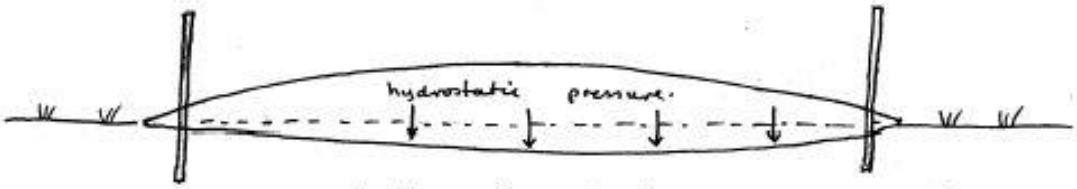
Site record S15/360 has been established for the wooden items cached on the lake bed.

FILED BY Owen Wilkes
PDC Kawhia

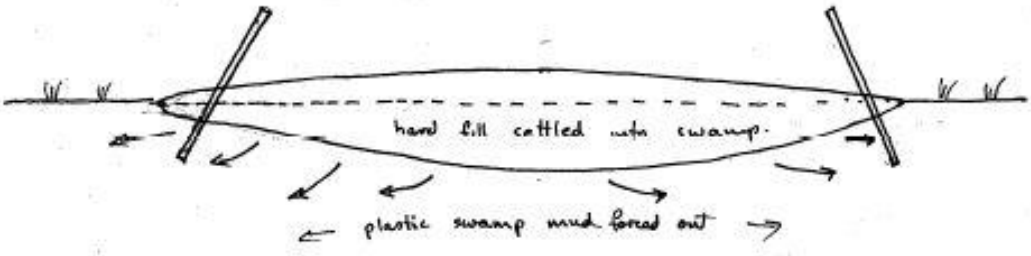
FILEKEEPER OW Dec 04

S15/16

Mechanism accounting for inward-inclined palisade posts.



pa at time of construction



pa at time of archaeological recording.

OW. May 03.

S15/16

CHALLIS, Aidan (CPD,HO)

From: WILKES, Owen [SCIENCE,HAM]
To: CHALLIS, Aidan (CPD,HO)
Cc: RITCHIE, Neville [SCI,HAM]
Subject: Lake Mangakawhare
Date: Friday, 29 August 1997 03:55PM

Gidday,

I am not sure how much of a hurry you are in, but since I will be away all next week I thought I would dash off a quickie now.

I went & had a look at Mangakaware this morning. Took lots of photos, but they won't be processed until tomorrow.

The short answers to yr queries are that the palisade remnants are basically stuffed and that nothing is being/has been done to preserve them.

Neither site has any protection whatsoever from farm stock. Both sites are on dairy farms.

S15/18
^^^^^^

Farmed by John & Margaret Krippner, who were there when the Bellwood excavations were underway. They are locally regarded as authorities in local history, they have fond memories of these excavations and excavators, and were very friendly & helpful.

The raised area of the pa is in good firm pasture and probably is not suffering too badly. The surface of the mound is hummocky but whether from original features or from settling of the bellwood excavations I was unable to tell. There was one rabbit burrow.

The lake margin of the site is mostly a tangle of dead (poisoned?) willow, or else is a mess of woody flotsam cast up on a peat beach well chopped up by cattle. A small jetty has been built out into the lake, approximately at the position of Bellwood's offshore ?storehouse?. No sign of the datum posts shown on Bellwood plans.

The ditch or moat is just a swampy depression, well pugged by cattle.

There are no signs of any exposed palisades anywhere.

According to the Krippners all wood exposed in the Bellwood excavations was covered with plastic before the excavations were filled in. They believe cattle have long since destroyed any palisades, originally by rubbing on them.

The quarry from which the pa fill was originally obtained is a series of very gentle hollows. The Krippners have been break feeding on that paddock this winter, so that the quarries are a well-pugged up mess.

S15/16
^^^^^^

Farmed by Howard Bridson, who seems a reasonable sort of chap, although I didn't visit him on this occasion. (His house is built on the Pico Pico fortifications against the British invasion of 1864., S15/62)

This site has considerably more elevation on it than S15/18, with steeper banks down to the lake edge, so that it has suffered worse from cattle trampling.

The pa mound again is in good solid pasture. It is all humpy & hollowy, with the humps and hollows bigger than at S15/18. Again, I presume this humpiness is from excavations settling? There is an area of about a couple of metres which appears to have fossicked recently.

The lake perimeter is partly in willows and partly clear,

The willowy part is of gentle declivity, and appears to be relatively undisturbed, except by willow roots. Scattered around in the tangle of dead & alive willow there are a few (5-10) bits of timber sticking up about 60 cm or so which presumably are palisade remnants, although none of them would be any thicker than a modern fencepost. I presume this reduction in diameter could be due to progressive decay from the outside in. But some of them appear to have been split from a larger log, & I suspect they might be fence battens from the early Friesan/Jersey period of Waikato culture.

The clear bit of lake edge is steeper, and has crumbled and slumped from cattle activity, exposing intense

black, presumably charcoally peat, with bits of ovenstones. There are numerous much larger smooth waterworn cobbles or larger lumps of stones as well - fernroot pounding anvils, paving stones or whatever. Here there are 6-10 probable palisade posts in a similar state to those amongst the willows, standing in a few inches of water. They do, however do look a bit more like palisade posts to me than do the other ones.

The moat is no more than a heavily pugged strip of swamp, not s sign of any palisade post along it. A few fragments of ?freshwater mussel?.

Management plan
^^^^^^^^^^^^^^^

There is no evidence in the field that this plan has been implemented in any way. There has been no fencing, no planting. The paper road remains just that, and is the most difficult way of all of getting to the lake edge. There was an aluminium boat with an outboard motor attached pulled up beside the jetty when I was there. I saw shotgun shells trampled in the mud. On the lake & around it are black swans, pukeko & plastic bottles.

Derby West who wrote the plan no longer works at Waipa DC. I phoned up the DC this morning but both guys who might have been able to help me were out. (Their names are on a bit of paper at home, sorry). Waipa DC is 07 871 7133 if you want to try them. In general they are one of the better DCs round here on historic site matters.

My suggestions
^^^^^^^^^^^^^^

Both sites seem pretty stuffed to me, and I don't think there is much that can be done. I think we should just be thankful that they were excavated when they were, rather than lament the fact that they cannot be preserved for ever. What little remains of exposed, visible palisade posts is totally unimpressive, lost amongst the willow, devoid of all aesthetic or nostalgic appeal.

The mounds which are now really all that constitute the sites look to be fairly indestructible. It would be nice to get cattle off them, but there is no great hurry. I don't think a few year's more grazing will cause much more harm than has already been done. The present pasture probably protects them better than would reverted scrub etc. If they were fenced off there would be the problem of maintaining the sward & preventing reversion to the awful willow/blackberry sedge - type scrub that you get here

Anything else you want to know? All the best.....


S15/62
S15/10

S15/16.

Photographer unknown. 1960s vintage

X

MANGAKAWARE PA

L.& S. N.65 REF:733293 S15/16

July 27th.1968

The Pa is situated on slightly elevated ground on the south side of Lake Mangakaware.
It is roughly ovoid in shape and is about 80 yds.by 50 yds in extent.
The slightly undulating ground is peaty and the highest point is about 5 feet above the present lake level.

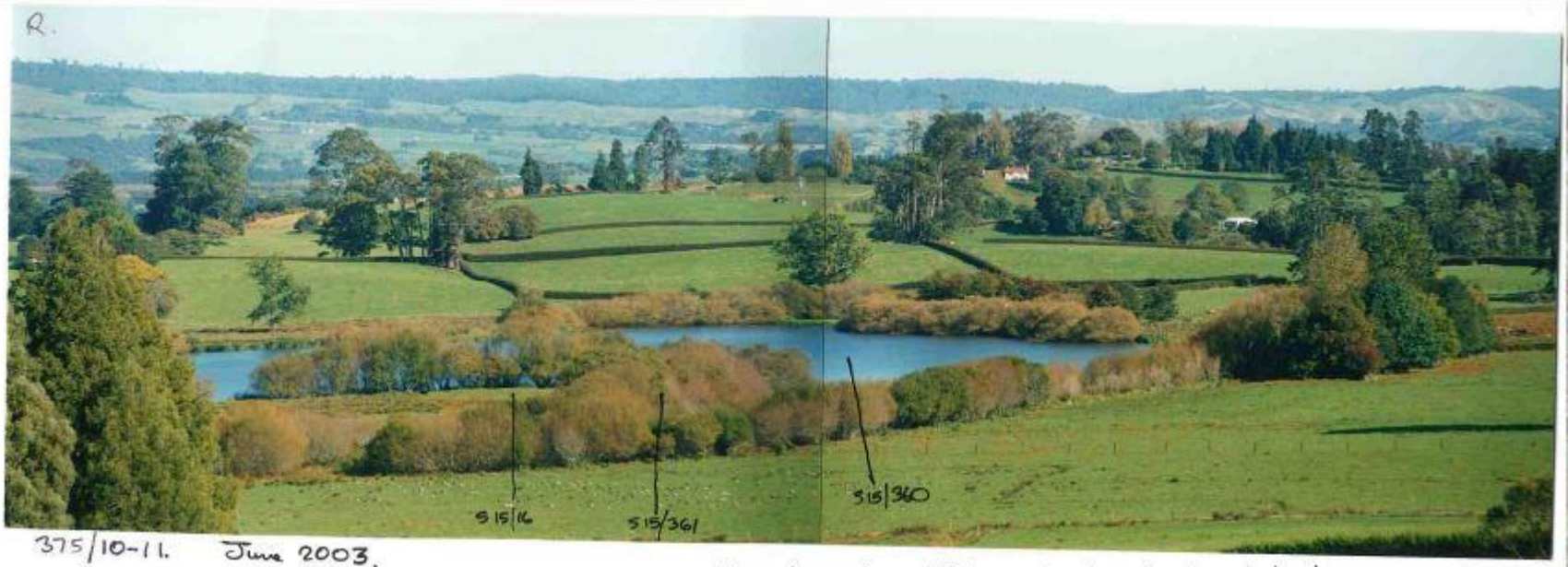
The Pa is bounded on the north and east by Lake Mangakaware and on the west and south by swampy land with rushes and stumps.
Lowering of the water level in the area by European drainage may have made this swamp to subside somewhat thus revealing the remains of a flooded forest.
On the other hand the peat does not appear to be very deep and the rotted tree stumps may be the remains of trees felled to provide palisades for the defences of the Pa.
Within the Pa boundaries the numerous stumps showing are mostly the remains of man-erected posts but a few are undoubtedly rotted tree stumps. Only excavation will determine which are which.
Of the stumps which are obviously palisade posts some are totara but most are of kahikatea.
There appears to have been double palisading on the north-east, east and southern boundaries but only single lines elsewhere.
Excavations will probably reveal double lines where only single ones are now visible because at these points the Pa is more vulnerable to attack from the landward sides.
A large rata log is lying across the palisade line on the south side and this is a puzzling factor.
If it was lying in swampy ground below ground level in Maori times it would have been no impediment to the erection of the defences as it appears at present.
On the other hand if it was above ground when the defences were built it is curious that it was not removed from the palisade line.
Rata is a splendid fuel and a duel purpose could have served by removing the obstruction from the palisade line and at the same time providing firewood for cooking. Possibly it was a growing tree in Maori times and thus no impediment to the erection of the defences.
The willows in the area of the Pa can only date from European times and it is possible that those along the lake frontage are concealing more of the defence works.
What appears to be a small jetty on the lake front is undoubtedly a maimai erected by some duckshooter who has used a coil of barbed wire as flooring.
There are a number of small boulders and pebbles lying on the surface of the Pa and these are probably cooking stones.
They are mostly of greywacke and andesite with water-warn forms so were probably obtained from streams and rivers draining Mt.Pirongia.

S15/16.

"MA.I NGS/28."
Dec. 1976.

8.7.71 —>

<— "Mangakawaru I + III"
n.d. but presumably well before the Spreigers photo was taken.



375/10-11. June 2003.

View toward WNW. S15/361 hidden behind willow (NB that S15/361 was formerly lumped with S15/16. S15/360 has been assigned to the lake bed cache of artifacts described by Bellwood in his monograph on S15/18.

S15/16

S15/16

1023/27.

1023/26

1023/28.

R

S15/16

150/3

View toward east showing palisade posts (?) or piles of "canoe landing"

150/2

C

S15/16

149/E Aug 97

View toward north showing main area of pa behind the "moat" (outlined by rushes)

150/

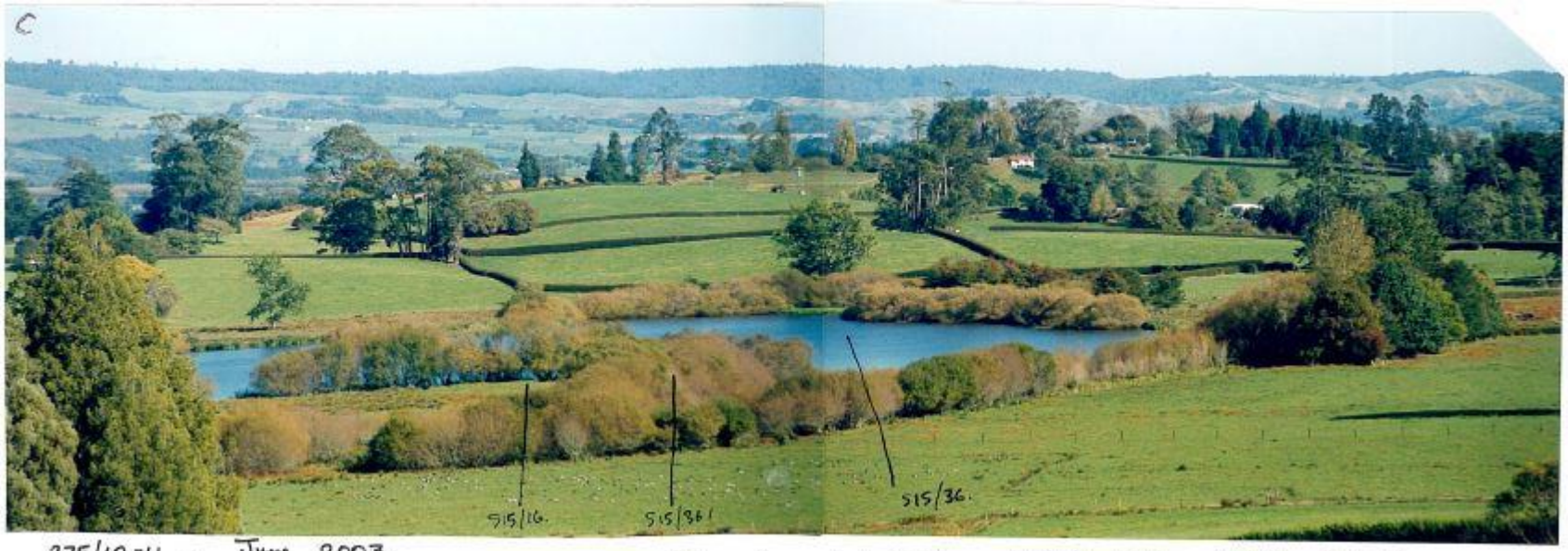
View toward northeast. [Photos taken from same point, arrowed tree indicates join-up of photos.]

R.

S15/16.

150/4

View south along moat. No palisade posts visible.



375/10-11 . June 2003.

View toward WNW. 515/361 hidden behind willows
(NB that 515/361 was formerly lumped with 515/16.
515/360 has been assigned to the lake bed cache
of artifacts described by Bellwood in his monograph
on 515/18

515/16

A.2 Lake Mangakaware 2 (S15/18)

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

ARCHSITE archaeological site recording scheme

Site Record Form

NZAA SITE NUMBER: S15/18

SITE TYPE: Pa - island/ swamp

SITE NAME(s):

DATE RECORDED:

SITE COORDINATES (NZTM) Easting: 1795000 **Northing:** 5799215 **Source:** On Screen

IMPERIAL SITE NUMBER: N65/35 **METRIC SITE NUMBER:** S15/18

Finding aids to the location of the site

Located at the tip of a promontory halfway down western shore of Lake Mangakaware, Te Rore / Paterangi.

Brief description

"Mangakaware 2" swamp pa occupying 0.2 ha defended by semicircular ditch and palisades. About half of site excavated by Bellwood, 1968-70. Houses and other structures, ovens, artefacts, seeds etc. recovered.

Recorded features

Artefact, House floor/ site, Oven (intact), Palisade posts, Ditch - defensive

Other sites associated with this site

S15/16, S15/361

SITE RECORD HISTORY	NZAA SITE NUMBER: S15/18

Site description

Updated: 27/07/2012 - NZTM E1795000 / N5799215 (On Screen). Orthophoto +/- 0m - coordinates from rectified aerial orthophoto. Recreation reserve, leased to farmer. Pasture, willows around fringe of lake. Mound faintly visible on Waikato Regional Council (Environment Waikato) Aerial Photographs 2002. Badly trampled by cattle 1997, no palisade posts surviving. Needs a management plan. Updated by: Coster, John (NZAA Upgrade Project, 2008-2009).

Condition of the site

Statement of condition

Current land use:

Threats:

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD INVENTORY	NZAA SITE NUMBER: S15/18

Supporting documentation held in ArchSite

AD AJ AH AA AAID

SITE REFERENCE FORM

SITE NUMBER N66/35

Map number N 65 (~~1965~~)
Map name Hamilton
Grid reference ~~730291~~ 729.292

SITE TYPE Swamp Pa

1. Aids to relocation of site On west shore of Lake Mangakaware through the property of Mr J. A. Krippner. E272900 N529200

This is Bellwood's Mangakaware 2 (MA 2) site. See published references.

2. State of site; possibility of damage or destruction The site is in excellent condition being one of the few swamp pa undiscovered in this area and so undisturbed. The surface is ~~humiky~~ uneven with large tree stumps. Tenant has no plans to disturb the site in any way.

3. Owner Pirongia Domain Board.
Address
Attitude

Tenant Mr J. A. Krippner,
Address Anderson's Rd, Te Rore.
Attitude Very Good.

4. Name of site Mangakaware No. ~~1~~ 2
Source of name Gorbey

5. Date recorded
Summer 1966-67
2 - 5 - 68.

Details of investigation; methods and equipment used
Two flights over the lake - monochrome, colour and colour infrared photos.
Pace and compass sketch map.
(map to follow when Mr Gorbey's Thesis is finished ?)

6. Aerial photograph numbers 2683/ 37 - 39

Site shows: clearly/~~badly/not at all~~

7. Reported by Ken Gorbey
Date 2 - 5 - 68

Filekeeper J. James
Date 6.5.68

PHOTOGRAPHS AND SLIDES

SITE NUMBER
N65/35

GRID REFERENCE
729 292

NZHPT COLLECTION	CENTRAL FILE
	AR 3152 (W.A.M. 1980) AR 3258 (W.A.M. enlargement from 1943 air photo)

S15/18

WILKES, Owen [SCIENCE,HAM]

To: CHALLIS, Aidan (CPD,HO)
Cc: ritchie
Subject: Lake Mangakawhare

29 August 1997

Gidday,

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The lake margin of the site is mostly a tangle of dead (poisoned?) willow, or else is a mess of woody flotsam cast up on a peat beach well chopped up by cattle. A small jetty has been built out into the lake, approximately at the position of Bellwood's offshore ?storehouse?. No sign of the datum posts shown on Bellwood plans.

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S15/16

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The pa mound again is in good solid pasture. It is all humpy & hollowy, with the humps and hollows bigger than at S15/18. Again, I presume this humpiness is from excavations settling? There is an area of about a couple of metres which appears to have fossicked recently.

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Page 1

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Management plan

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My suggestions

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Anything else you want to know? All the best.....

C

N65/35

N Z ARCHAEOLOGICAL ASSOCIATION
==========
RE-VISIT / ADDITIONAL INFORMATION
==========

DATE	Dec 04	SITE NO	S15/18
REVISED G.R.	--	NAME	--

A separate site record number, viz S15/362, has been assigned to the quarry pits from which the spoil was taken to build the mound of S15/18.

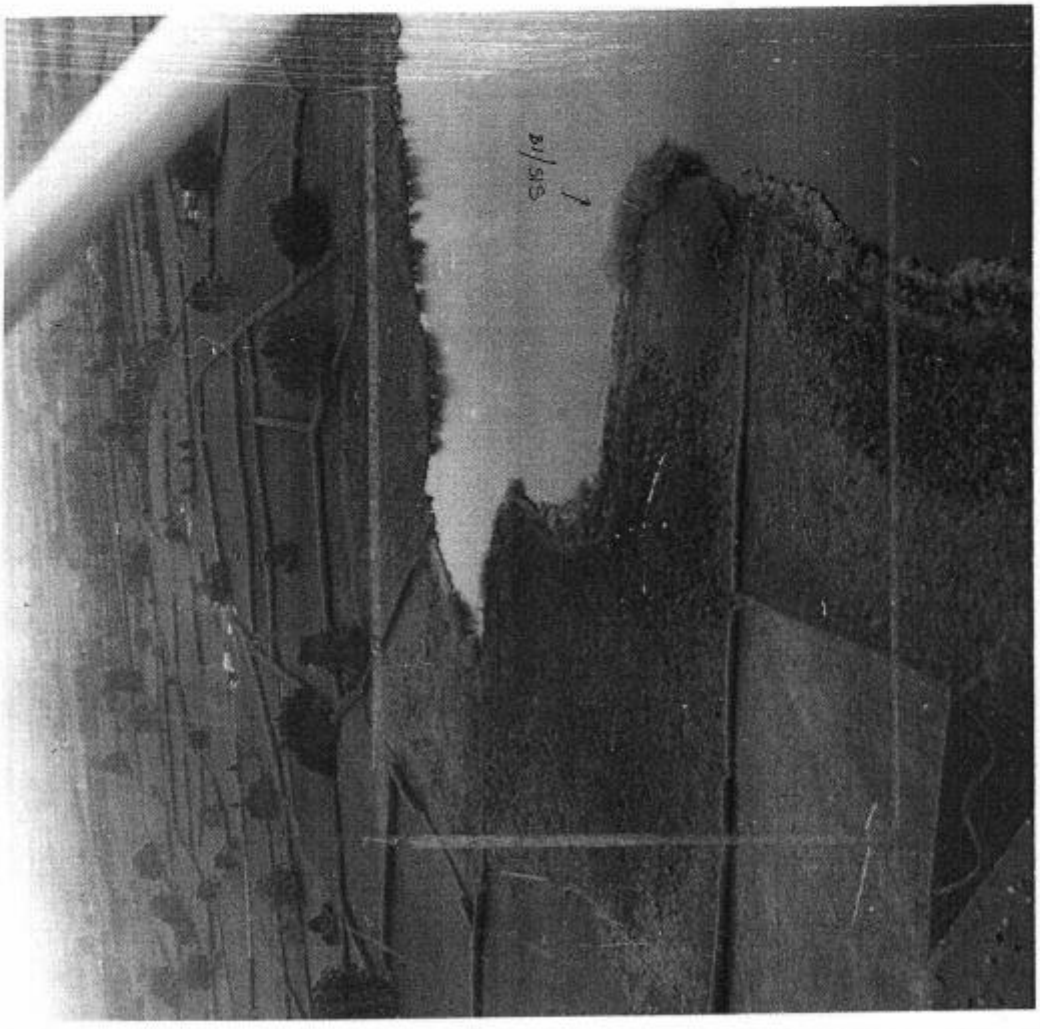
FILED BY Owen Wilkes
PDC Kawhia

FILEKEEPER OW. Dec 04

S15/18

Waiuku

Photographer unknown. 1960s.



X

N Z ARCHAEOLOGICAL ASSOCIATION
SITE RE-VISIT / ADDITIONAL INFO

DATE	2005	SITE NUM	S15/18
REVISED GRID REF	-	NAME	--

—

284 black & white photos of the excavations, wooden artifacts, the divers in action, the hinakis etc. Well documented & quite fascinating, Preparation for photography a bit careless. (willow leaves all over place etc)

Also 220 colour slides, good.

All filed in University of Auckland Anthropology Department photo collection

REPORTED BY	Owen Wilkes PDC Kawhia	FILEKEEPER	

149/33-4. ↑
Aug 1997.
O.W.

View toward northeast from top of gatepost. Site lies beyond the water trough.

149/31-2. →

View toward southwest from same gatepost, showing quarry hollows in hill.

S15/18.

S15/18

149/36

← View north along shore of site, from jetty

View northeast from 'moat' showing slightly hummocky surface of site ↓

149/35

C

S15/18.

NGS/35

145/5.

Viewed from S15/62.

A.3 Lake Mangakaware 3 (S15/361)

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

ARCHSITE archaeological site recording scheme

Site Record Form

NZAA SITE NUMBER: S15/361

SITE TYPE: Pa - island/ swamp

SITE NAME(s):

DATE RECORDED:

SITE COORDINATES (NZTM) Easting: 1795280 **Northing:** 5799392 **Source:** On Screen

IMPERIAL SITE NUMBER: **METRIC SITE NUMBER:** S15/361

Finding aids to the location of the site

Mangakaware. Pa similar to and immediately east of S15/16.

Brief description

Swamp pa.

Recorded features

Unclassified

Other sites associated with this site

S15/16

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD HISTORY	NZAA SITE NUMBER: S15/361

Site description

Updated: 10/08/2012 - NZTM E1795280 / N5799392 (On Screen). Faintly visible on Waikato Regional Council (Environment Waikato) Aerial Photographs 2002. Pasture, badly trampled by cattle, no palisades surviving. Updated by: Coster, John (NZAA Upgrade Project, 2008-2009).

Condition of the site

Statement of condition

Current land use:

Threats:

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD INVENTORY	NZAA SITE NUMBER: S15/361

Supporting documentation held in ArchSite

c

N Z ARCHAEOLOGICAL ASSOCIATION
SITE RECORD FORM (Metric)

MAP NO	S 15	SITE NO	361
MAP NAME	Te Awamutu	VISIT DATE	Aug 1997
EDITION	1	SITE TYPE	Swamp pah
GRID REF	055 610 2705500 6361000	NAME	? N65

1. LOCATION — Lake Mangakaware
On the eastern arm of the lake, immediately east of swamp pah S15/16.

2. STATE OF SITE — Poor. Being trampled by cattle right down to the lake edge. All standing palisades have now disappeared.

3. DESCRIPTION — Artificial-island swamp pah

This pah has been ignored by archaeologists. Excavations were carried out in 1968-70 at the adjacent pah S15/16 and at the pah on the opposite side of the lake, S15/18, but no effort has been made to map or otherwise investigate this pah, which appears from air photos to be quite distinct from its neighbour and slightly larger. It has been previously lumped in with the S15/16 site record, but it seems worth separate recoding, if only to stress that the Lake Mangakaware site assemblage is richer and more important than is implied by everything being lumped into 2 site records.

4. OWNER	Bridson	TENANT MANAGER	? ?

5. INFO SOURCE — Brief visit. Documentation filed with S15/16 & 18.

PHOTOS: — See S15/16.

6. REPORTED BY — Owen Wilkes, PDC Kawhia — FILEKEEPER — OW Feb 2005

RECOMMEND'N — Urgently needs proper field inspection and protection against cattle damage..

7. NZ REGISTER

[H/A]	Type	[E/S]	Condition, future danger
[ ]	Local envmt	[N/S]	Local body
[A/F]	Land clasfn		

A.4 Lake Mangahia (S15/14)

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

ARCHSITE archaeological site recording scheme

Site Record Form

NZAA SITE NUMBER: S15/14

SITE TYPE: Pa

SITE NAME(s): Mangahia

DATE RECORDED:

SITE COORDINATES (NZTM) Easting: 1795870 **Northing:** 5805061 **Source:** CINZAS

IMPERIAL SITE NUMBER: N65/24 **METRIC SITE NUMBER:** S15/14

Finding aids to the location of the site

Brief description

PA

Recorded features

Other sites associated with this site

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD HISTORY	NZAA SITE NUMBER: S15/14
Site description **Condition of the site** **Statement of condition** **Current land use:** **Threats:**	

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD INVENTORY	NZAA SITE NUMBER: S15/14

Supporting documentation held in ArchSite

AD AM AE BD AA ID

SITE REFERENCE FORM

SITE NUMBER N 65/ 24

Map number N 65
Map name Hamilton
Grid reference ~~730 857~~ 737 356

SITE TYPE Pa

1. Aids to relocation of site South of lake Maungahie, north of the Ngahinepouri road through the Rukuhia Swamp. E273700 N535600

2. State of site; possibility of damage or destruction Site is in grass. Many post can be seen. Maori canoe is laying on the lake bottom near this site.

3. Owner L.A.Ryburn
Address Ngahinepouri
Attitude friendly

Tenant
Address
Attitude

4. Name of site
Source of name

5. Date recorded November 1964 Details of investigation; methods and equipment used
Visited and recorded by Mr. D.Pick.

6. Aerial photograph numbers 2172 / 17 & 18 Site shows: clearly/~~badly~~/~~not at all~~

7. Reported by Hans G.Pos
Date 16-1-1965

Filekeeper
Hans G. Pos
Date 16-1-1965

PHOTOGRAPHS AND SLIDES

SITE NUMBER
N65/24

GRID REFERENCE
737356

NZHPT COLLECTION	CENTRAL FILE
	AR 3147 (W.A.M. 1980) AR 3257 (W.A.M. enlargement from 1943 air photo)

C

NGS/24

N Z ARCHAEOLOGICAL ASSOCIATION
RE-VISIT / ADDITIONAL INFORMATION

DATE May 03 SITE NO S15/14
REVISED G.R. 061 667 NAME ?

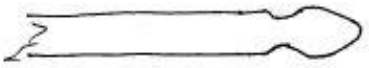
As described by Boubee & Dymock, 1978:

> Mangahia pa is situated on a 24 ha lake, its area being about 1000 sq m with the mound standing about 2 m above the 1961 water level. This mound is about 200 m from the low hills that surround the lake and had very heavy fortifications. The palisades on the lakeside are 1.5 m apart and in a single row, but on the swamp (land) side they are 10 cm apart in three rows with 6 m between the outer and inner rows, The outer rows all lead inwards. In 1958 there were at least 20 palisades still standing up to 3 m high. Others, equally tall had rotted off at waterlevel and fallen into the mud which preserved them perfectly. The stumps are still in position with about 30-70 cm out of the mud and up to 1.5 m deep in the mud. The fallen palisades and deeply driven butts, on removal and cleaning, still show the adze marks The palisades were too tall and big to be driven in by the usual hand maul, but were probably driven in by attaching a cross bar pole to the palisade and several men pulling down on the ends of the cross bar and later lifting the position of the crossbar until the palisade was firmly and deeply driven.
>
> The midden deposits of ash, charcoal and ovenstones vary from 30 to 60 cm in depth. There are also the usual shell deposits found in all these lakeside pa. Unfortunately the lake level has fallen, a causeway built out to the island and the fallen palisades removed in a clearing up campaign. There is a canoe lying in the deep lake waters.

The source of the above information is not given, but it sounds like they talked to a landowner, and perhaps had access to some field notes of the late Doug Pick

An undated letter from Doug Pick (president of the Waikato Museum Archaeological Society c 1965-70 to Hans Pos (NZAA filekeeper 1960-66) includes the following:

> Duffy Roach and Mr Lovell and his blond daughter (a teacher who goes to take a position at Diocesan) all went to the Mangahia pa mound we photographed a long line of palisades which I prepared by cutting down willows to let light in. We dug 3 up, beauties, 6 foot to 12 feet we cleaned them and took many snaps from different angles to light up the adze dubbings One palisade had a club foot



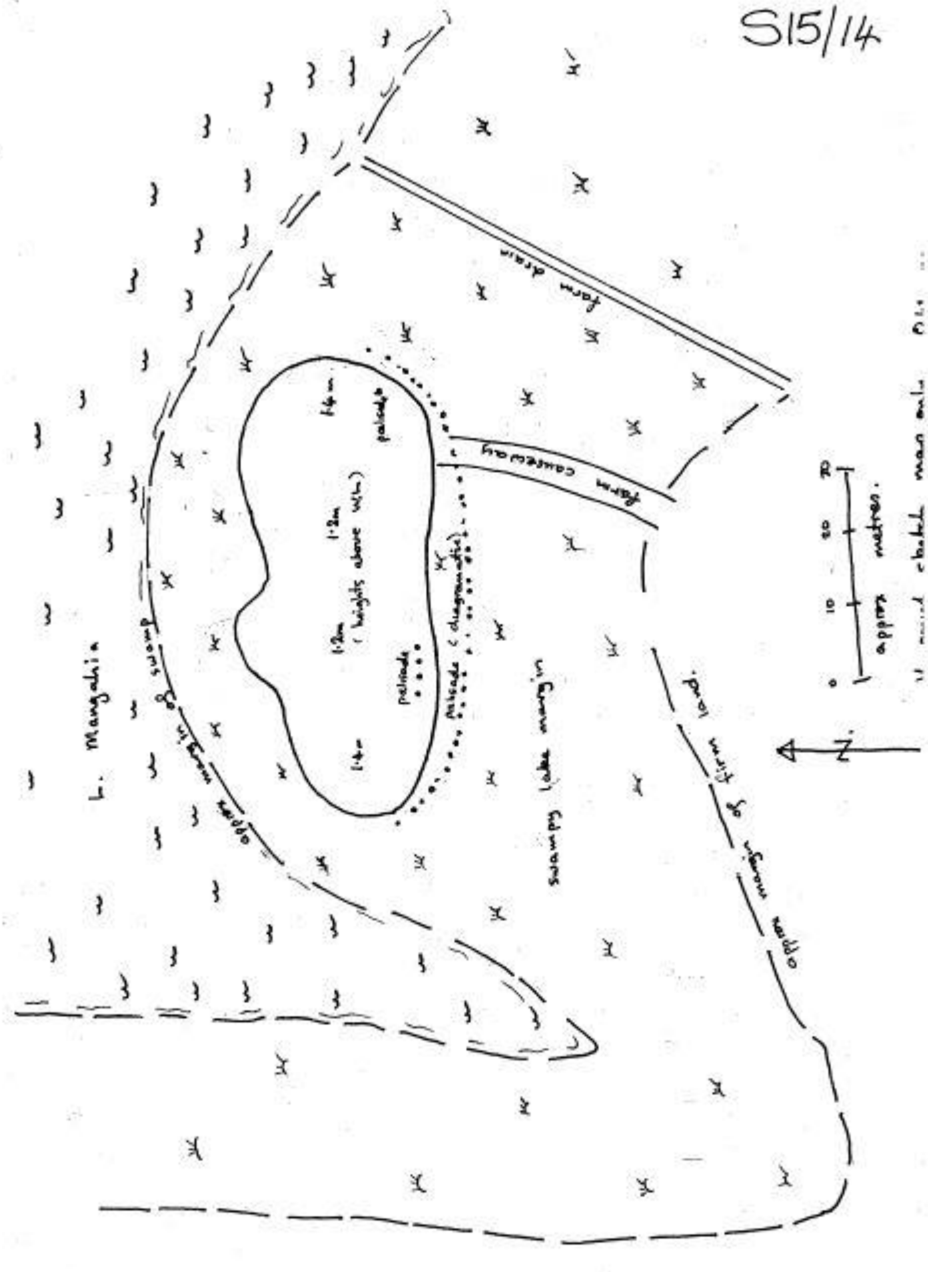
so

> I took post hole tests - the usual midden material 2 to 3 ft 6 in deep I will go back later as the water level is falling.

In an undated typescript on "Ngaroto Island pa" Doug Pick wrote that the Mangahia pa was one third of an acre, and had "lines of totara palisade butts, over 80 of them".

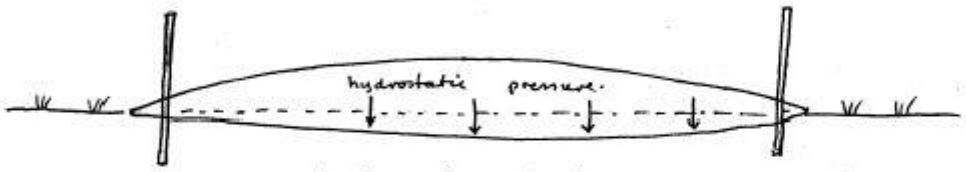
The pah shows on 1943 aerial photographs [834/42] but would not be recognisable without prior knowledge that it was a pah. There are good colour and b&w aerial oblique photos by Kees Sprengers from 1980.

There are two photos from December 1976 showing stumps of palisades.

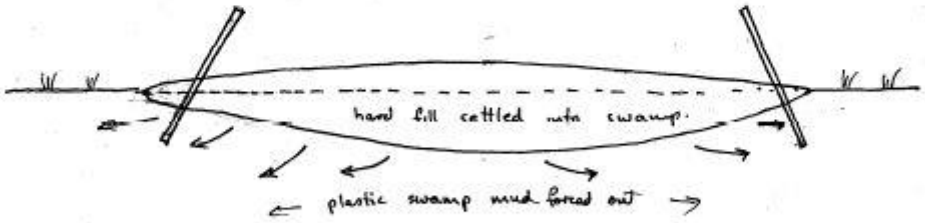

S15/14
farm drain
farm causeway
palisade
swampy (lake margin)
approx metres

S15/14

Mechanism accounting for inward-inclined palisade posts.



pa at time of construction

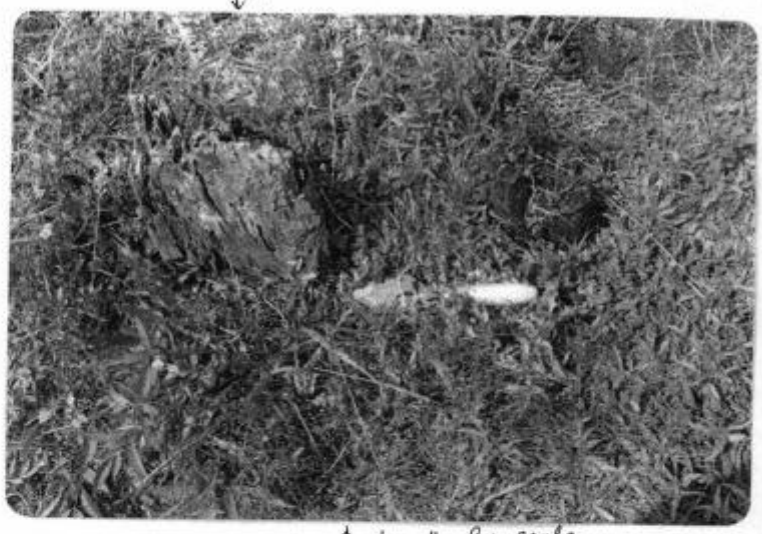


pa at time of archaeological recording.

OW. May 03.

S15/14

stump



trowel for scale

December 1976. Photographer unknown.

The attached plan is based on a sketch plan by Doug Pick, undated, modified according to the aerial obliques.

As with some other artificial island-in-swamp pahs the palisade posts are described as leaning inwards at 45 degrees. In my opinion the posts would originally have been vertical, but probably at depth mud is flowing outwards from the pah because of the hydrostatic pressure created by the built up mound. Since the posts are held firmly at ground level by the hard fill of the mound , the flow at depth with time would produce the observed tilt. See attached figure.

FILED BY Owen Wilkes
PDC Kawhia1

FILEKEEPER

35/2.

View toward southeast from Gillard Rd

A.5 Taraheke Pā (S14/22)

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

ARCHSITE archaeological site recording scheme

Site Record Form

NZAA SITE NUMBER: S15/22

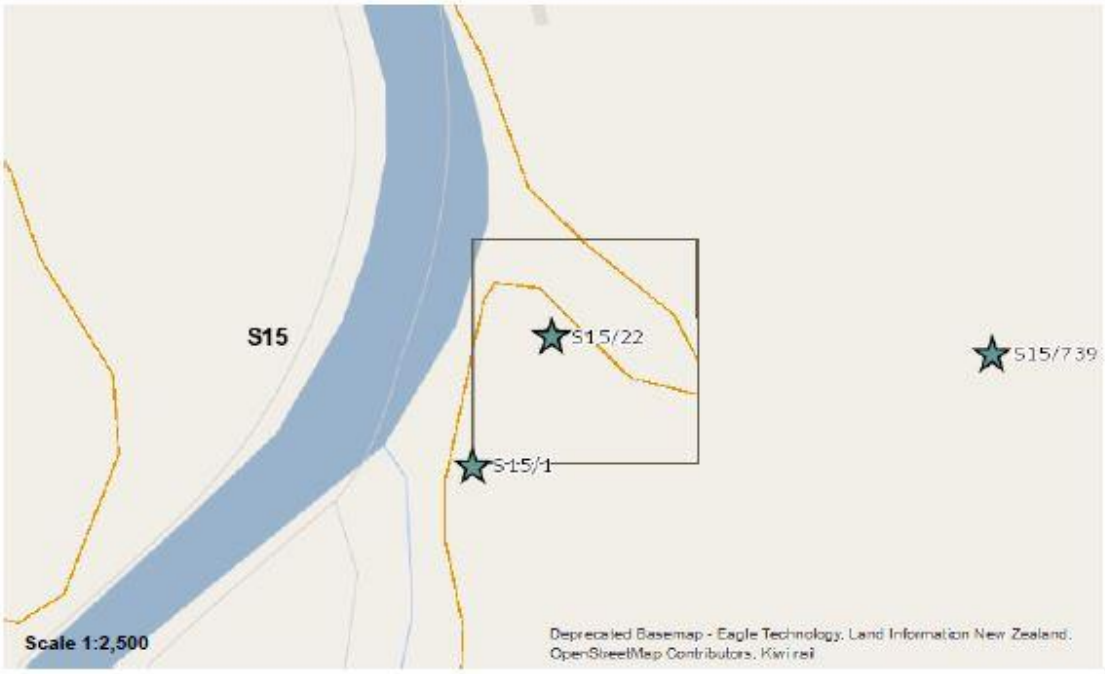
SITE TYPE: Pa

SITE NAME(s):

DATE RECORDED:

SITE COORDINATES (NZTM) Easting: 1791105 **Northing:** 5804711 **Source:** CINZAS

IMPERIAL SITE NUMBER: N65/42 **METRIC SITE NUMBER:** S15/22



Finding aids to the location of the site

Ngahinapouri. 75m below the confluence of Mangahia Stream with the Waipa River. Access through farm via Old School Road from Reid Road.

Brief description

Small spur end pa with one or two transverse ditches and several pits

Recorded features

Bank (earth), Ditch - transverse, Pit - raised rim

Other sites associated with this site

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD HISTORY	NZAA SITE NUMBER: S15/22

Site description

Condition of the site

Ditches visible on Environment Waikato 2002 aerial photos. Pasture on top of spur. Pines around sides. Past stock trampling. Probably cultivated in the past.

Statement of condition

Current land use:

Threats:

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD INVENTORY	NZAA SITE NUMBER: S15/22

Supporting documentation held in ArchSite

AD AK AE BB AA ID 65

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD FORM

Map number N65
Map name HAMILTON
Map edition 3rd ed.
Grid Reference ~~685351~~ 685352

SITE NUMBER N65/42

SITE NAME: MAORI OTHER Findlayson's

SITE TYPE Pa

1. Aids to relocation of site E268500. N535200
On east bank of the Waipa River. Showed to us by Mr. Findlayson.

2. State of site; possibility of damage or destruction
Grassed, trampled by stock, eroded at the sides.

3. Description of site *(NOTE: This section is to be completed ONLY if no separate Site Description Form is to be be prepared.)*

Suggested by Findlayson that this Pa was a lookout for surveillance of river traffic by those Maori living at Pirongia.

4. Owner I.H. Findlayson
Address Old School Rd.

Tenant/Manager
Address

Attitude CO-operative.

Attitude

5. Methods and equipment used Sketch drawn without aid of instruments for measurement.
Photographs taken: ~~Yes~~/No (Describe on Photograph Record Form)
Date recorded 14/11/74

6. Aerial photograph or mosaic No. 2173/12 & 13 Site shows: Clearly/~~badly/not at all~~ XXXXXXXXX

7. Reported by
Address

Filekeeper K.C. Gobey.

Date

Date 28.8.75

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE DESCRIPTION FORM

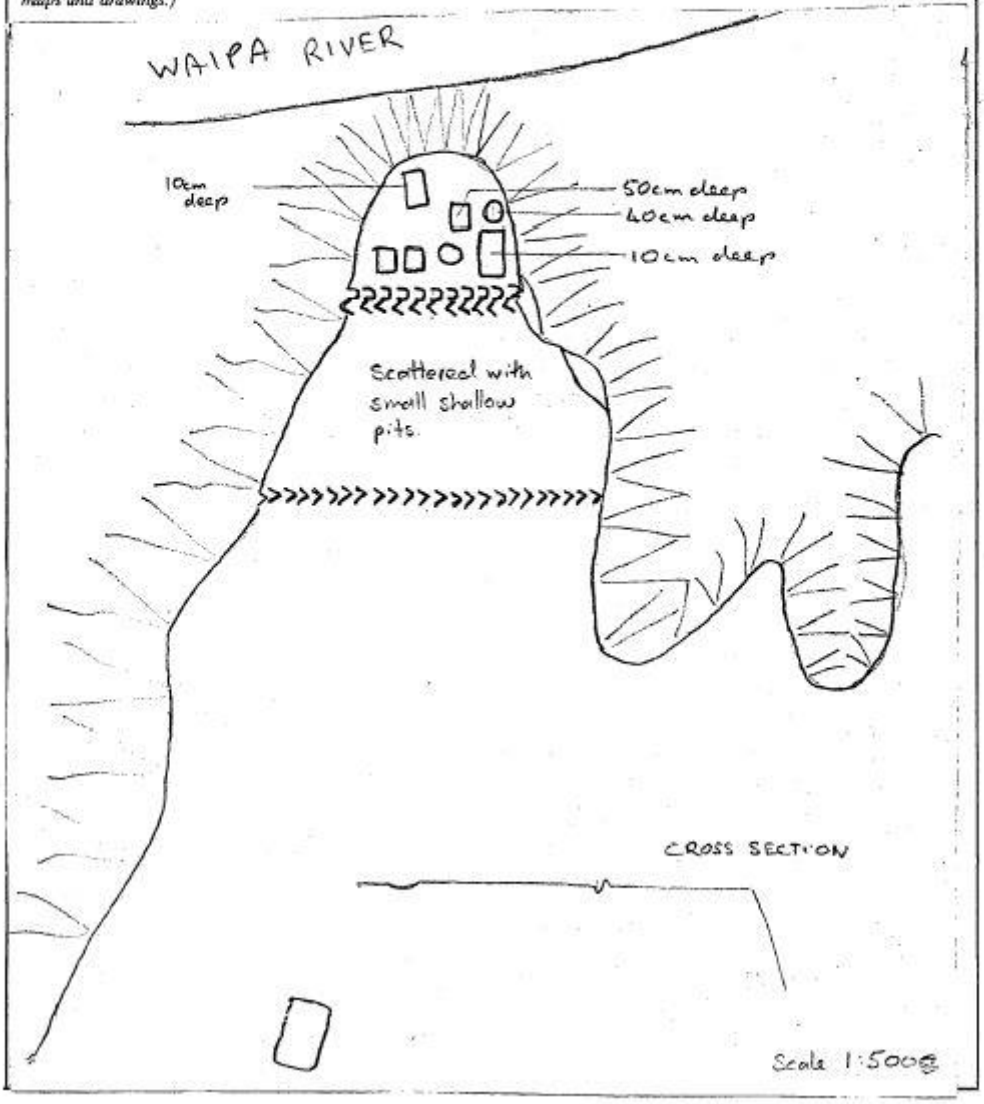
Map Number N65
Map Name HAMILTON
Map Edition 3rd
Grid Reference 685351

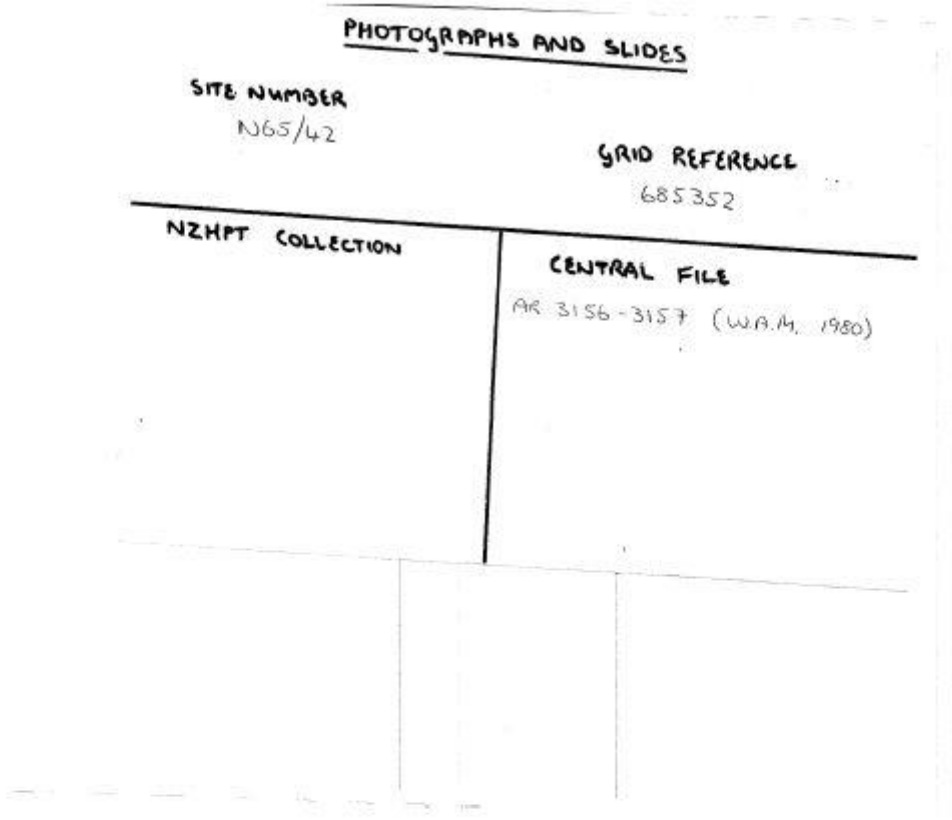
SITE NUMBER B5 N65/42

SITE NAME: MAORI / OTHER Findlayson's

SITE TYPE Pa

(This form may be used for recording any descriptive information or other supplementary information on the site, or for maps and drawings.)





PHOTOGRAPHS AND SLIDES

SITE NUMBER
N65/42

GRID REFERENCE
685352

NZHPT COLLECTION	CENTRAL FILE
	AR 3156-3157 (W.A.M. 1980)

A.6 Te Uapata Pā (S14/20)

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

ARCHSITE archaeological site recording scheme

Site Record Form

NZAA SITE NUMBER: S15/20

SITE TYPE: Pa

SITE NAME(s):

DATE RECORDED:

SITE COORDINATES (NZTM) Easting: 1794589 **Northing:** 5791456 **Source:** CINZAS

IMPERIAL SITE NUMBER: N65/40 **METRIC SITE NUMBER:** S15/20

Finding aids to the location of the site

Brief description

PA

Recorded features

Other sites associated with this site

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD HISTORY	NZAA SITE NUMBER: S15/20
Site description **Condition of the site** **Statement of condition** **Current land use:** **Threats:**	

A.7 Lake Rotokauri (S14/5)

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

ARCHSITE archaeological site recording scheme

Site Record Form

NZAA SITE NUMBER: S14/5

SITE TYPE: Pa

SITE NAME(s):

DATE RECORDED:

SITE COORDINATES (NZTM) Easting: 1793709 **Northing:** 5818582 **Source:** On Screen

IMPERIAL SITE NUMBER: N56/5 **METRIC SITE NUMBER:** S14/5

Finding aids to the location of the site

On a small peninsular jutting out from the north-east side of Lake Rotokauri, c.200m north of the cut drain from Exelby Rd.

Brief description

Originally recorded as a swamp mound pa, surrounded by pallisading.

Recorded features

Unclassified

Other sites associated with this site

SITE RECORD HISTORY	NZAA SITE NUMBER: S14/5

Site description

Updated 03/08/2018 (other), submitted by siankeith
Grid reference (E1793709 / N5818582)

The site was not revisited in 2018, however desk-top research at DoC and the Waikato Museum identified that investigations were undertaken in 1973-74 by the Waikato Museum Archaeological Society, but these have not been published. Doug Pick wrote a paper published in NZ Archaeology (1968). It indicates that a survey of the site was undertaken, perhaps with some limited sub-surface testing.

The DoC file provides detail on the location of the pa, and previous site visits by archaeologists from the 1960s. One note by Doug Pick is of interest stating the following:
When I first saw the site it was covered with blackberry and willow, there was an outer row of palisade butts across the neck and some on the lake side. Many stakes stood in the water, out about 10 to 20 yards suggesting eel weirs or canoe harbour. The most important features were the totara stakes and posts that stood in all angles within the perimeter, few were upright, most were at angles suggesting braces or stays, there were (sic) no apparent order of their lay out, most were 3' to 5' above the soggy ground and all of totara. The whole arrangement suggested to me a platform pa… in 1966 I took Janet Davidson to see the site but some vandal had cut down every palisade. There were two small canoes, one was removed by Lyn Peart, the other partly buried by persons unknown.
A note on the paper file from Cathryn Barr (dated to 1993) states that the landowner, Mr Barris, mentioned: ..when his grandfather brought (sic) the land in 1860 much of the area at the north end of the lake was in kauri. When he ploughed the area (local Maori) from the settlement across the lake (in the direction of Fullerton Road), came across and camped in the area which is now recorded as a pa. They put the palisades in around the site about this time – between the 1870s and 1890 to protect the camp from a group in Taupiri. (Local Maori) camped at the site and dug for gum following Mr Barris' great grandfather. The 'moat' which resulted in creating the island was also created by Mr Barris' grandfather with his tractor, at the request of (local Maori) who were using the camping area….Re the canoes – one of these was a dugout (Mr Barris has photos) one which was presented to the family for use on the lake.
Miss Barr mentions that the reliability of this information is "questionable".

A note from Owen Wilkes details a conversation in 1998 with Caroline Barris. She stated that her grandfather – Exelby – was the first farmer in the area and that he set aside the S14/5 site as an overnight camp for Maori and dug a moat for them for the protection of women and children.

The paper file and artefacts held at the Waikato Museum were examined. The Waikato Museum file contains the field notes and scaled drawings from two seasons of investigations (1973 and 1974). The site is described as a swamp mound pa, located on a swampy, willow and blackberry covered peninsula located on in the north east corner of Lake Rotokauri . The site was recorded as containing approximately 80 palisades and 80 stakes, and the mound approximately 4ft above water level, approximately 1/6th of an acre, and covered in charcoal soil deposits.
A large number of artefacts and samples were recovered from the site including stone adzes, pounders, obsidian, pumice and wooden objects. As far as the records state, this site was not dated by modern dating techniques, however it is clear from the material viewed that the pa site has its origins the pre-European period.

Originally recorded as a swamp mound pa. The mound was surrounded by pallisading. According to local knowledge the site was associated with a party of Maori gum diggers who defended their camp due to an altercation with another group of Maori (NZAA Upgrade Project; P. Latham, 2007).

Condition of the site

Updated 03/08/2018 (other), submitted by siankeith

Current condition is not known

The site was searched for, but not found. Landuse included swamp. According to local knowledge, the site had been drained and the pallisading had been demolished (NZAA Upgrade Project; P. Latham, 2007).

Statement of condition

Current land use:

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD INVENTORY	NZAA SITE NUMBER: S14/5

Supporting documentation held in ArchSite

AD AJ AE BB AA AD

SITE REFERENCE FORM

SITE NUMBER N56/5

Map number N56 3rd Ed.
Map name Ngaruawahia
Grid reference 709 504 E2709000 N5550000

SITE TYPE Swamp mound pa.

1. Aids to relocation of site On swampy, willow and blackberry covered peninsula in north-west corner of Lake Rotokauri. Go down tanker road towards Gordon Clark's cowshed and turn right onto farm race that roughly parallels the western lake edge. Go left through the first gate over a small concrete bridge that spans a large drain and follow drain to lakes edge. Site lies on a peninsula north of where this drain comes out. Best to walk over the swamp rather than try to beat through scrub.

2. State of site; possibility of damage or destruction Little likelihood of damage. Drop in lake level could result in deterioration of palisades etc. Pick records:- 80 palisades and 80 stakes approx on water side of mound - Mound 4ft above water level - area approx $\frac{1}{6}$th acre - mound covered with 12" - 18" of charcoal soil deposits - also mentions legend that pa abandoned when chief drowned in lake - no source. Further comment:- much what appears to be, fallen timber in swamp margin and many light palisade posts on lake edge surrounding three sides of mound. Fourth, landward, side protected by very heavy palisading, some still standing quite high. This is certainly a mound and not the result of wooden platform built on piles as ~~Tenant~~ ~~Address~~ suggested. Well preserved. Needs detailed mapping.

3. Owner Mr Gordon Clark,
Address Exelby Rd
Rotokauri, R.D.9, Hamilton.
Attitude Helpful

Attitude

4. Name of site Rotokauri swamp mound.
Source of name From name of lake.

5. Date recorded
1.10.1966
24.7.1971

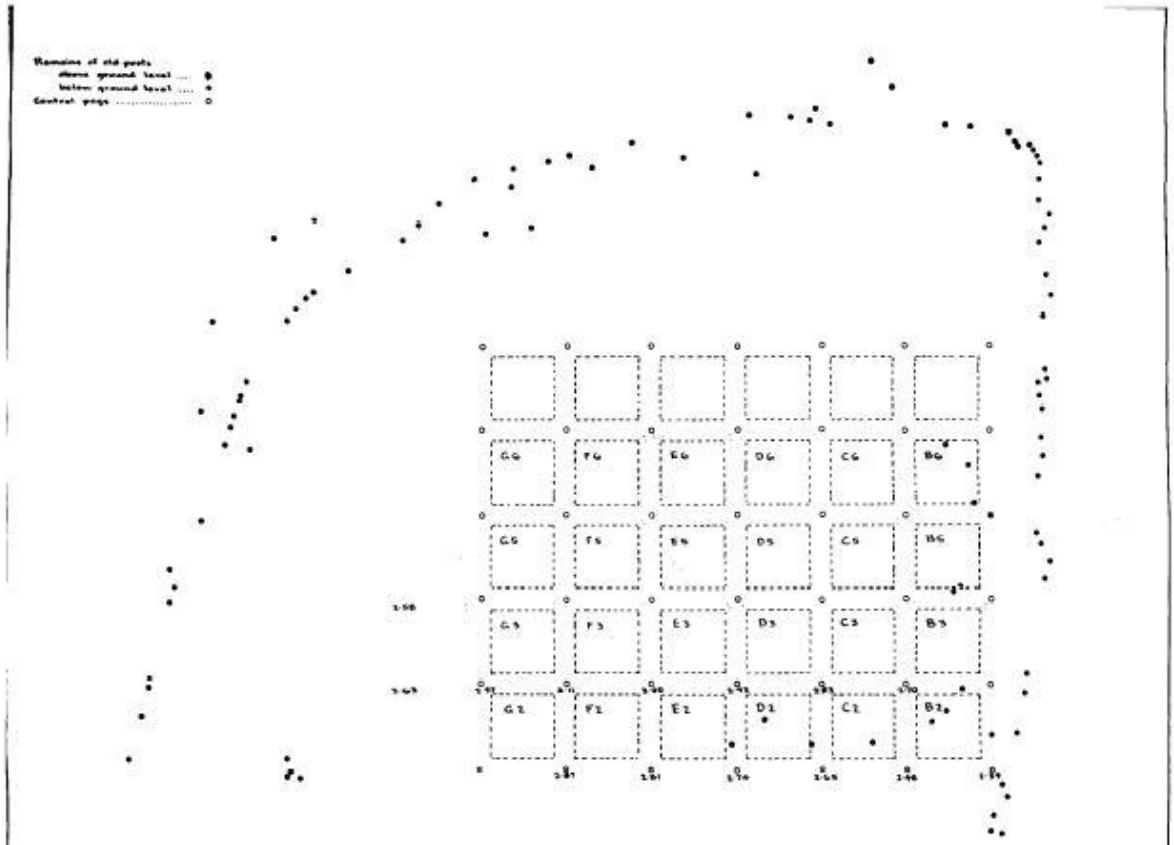
Details of investigation; methods and equipment used
Visited by Doug Pick
Visited by Ken Gorbey

6. Aerial photograph numbers 3280/16-17

Site shows: ~~clearly/partly~~/not at all scrub covered

7. Reported by
1.4.1967 R.D. Pick, Rukuhia.
Further visit and comment on original records by Ken Gorbey, Waikato Museum
Date 4.8.1971

Filekeeper
2.12.67 Fay James
Ken Gorbey
Date 9-8-1971



WAIKATO MUSEUM ARCHAEOLOGICAL SOCIETY

ROTOKAURI PA SITE — PLAN - SCALE 1:1000

Neil C. Laurie, Regd. Surveyor. Feb. 1973.

PHOTOGRAPHS AND SLIDES

SITE NUMBER
N56/5
(ROTOKAURI SWAMP PA)

GRID REFERENCE
709504

NZHPT COLLECTION	CENTRAL FILE
	AR 3097 - 3098 (WAM. 1980)

Walton, Tony

From: John Coster [Coster@xtra.co.nz]
Sent: Wednesday, 18 April 2007 9:47 a.m.
To: Neville Ritchie; twalton@doc.govt.nz
Subject: FW: Rotokauri S14/5 (N56/5) inter alia

For the files
J

-----Original Message-----
From: Ken Gorbey [mailto:ken.gorbey@paradise.net.nz]
Sent: Monday, 2 April 2007 10:43
To: 'John Coster'
Subject: RE: Rotokauri S14/5 (N56/5) inter alia

Morning John

Yes – it's all true. I first visited the site as an extension of the Shawcross / Bellwood work at Ngaroto and Maungakawhare. Doug Pick would have been in the mix. He was wandering the countryside taking palisades out of the ground with tractors. The site was covered by willow and we eventually cut and poisoned the trees on the site. Neil and Dave Rosenberg tended to lead on this – I was at the stage of becoming a museum person rather than archaeologist. A rather small test excavation did happen at Rotokauri with Neil as site leader and my memory is that notes and plans were produced and should be in the Waikato Museum files somewhere. We might even have taken some timbers that were lying about out but that memory is confused with the work we did in Wiremu Thompson territory above the hills out of Cambridge.

Kapuni – records of locations attach to the sheet aerials (a vast book of them) that should be held somewhere in NZHPT.

Regards

Ken

From: John Coster [mailto:Coster@xtra.co.nz]
Sent: Friday, 30 March 2007 3:43 p.m.
To: ken.gorbey@paradise.net.nz
Subject: Rotokauri S14/5 (N56/5) inter alia

Ken,

I am upgrading records of archaeological sites in the Waikato Region. In 1971, which I realise is a long time ago, you visited the Rotokauri swamp pa, west of Te Rapa, possibly with Doug Pick, and compiled a site record for it. In 1973, Neil Laurie compiled a map of the site, apparently with an excavation in mind. I can find no record of such an excavation. Does it ring a bell with you?

I have also been looking at site record forms from your Kapuni Gas Pipeline survey. The relocation details are sparse. Do you recall if any detailed maps or aerial photos were compiled which showed the location of the sites recorded?

With thanks in anticipation,
John

John Coster
Principal Contractor, Waikato Region
NZAA Site Recording Scheme Upgrade Project

P O Box 9133

18/04/2007

Greerton
TAURANGA 3142

Phone: 07-5433-229
Mobile:0274-760-817
E-mail:Coster@xtra.co.nz

Tollfree call centre: (0800) 556 900

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No virus found in this outgoing message.
Checked by AVG Free Edition.
Version: 7.5.446 / Virus Database: 268.18.22/739 - Release Date: 29/03/2007 13:36

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No virus found in this incoming message.
Checked by AVG Free Edition.
Version: 7.5.446 / Virus Database: 269.3.0/758 - Release Date: 12/04/2007 11:52

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No virus found in this outgoing message.
Checked by AVG Free Edition.
Version: 7.5.446 / Virus Database: 269.3.0/763 - Release Date: 16/04/2007 17:33

18/04/2007

NZAA Upgrade Project Phil Latham, 2007 NZAA METRIC SITE S14/5

Appendix B. Radiocarbon Measurements

B.1 Wiggle-Match Dating ^{14}C Samples

Table B.1.1. A composite list of all ^{14}C samples for WMD (D_Sequence) purposes.

Wk Number	Sample ID	Site ID	Age BP	Age Err Plus
52101	1_MA1P53 (1-5)	Lake Mangakaware 1	413	22
52858	2_MA1P53 (10-14)	Lake Mangakaware 1	440	20
52357	3_MA1P53 (33-38)	Lake Mangakaware 1	334	21
52102	4_MA1P53 (70-74)	Lake Mangakaware 1	195	21
52859	5_MA1P53 (90-93)	Lake Mangakaware 1	172	21
52358	6_MA1P53 (106-111)	Lake Mangakaware 1	253	21
52860	7_MA1P53 (133-137)	Lake Mangakaware 1	236	21
52103	8_MA1P53 (148-152)	Lake Mangakaware 1	277	21
52104	9_MA1P57 (1-5)	Lake Mangakaware 1	398	22
52355	10_MA1P57 (15-19)	Lake Mangakaware 1	274	21
52105	11_MA1P57 (47-50)	Lake Mangakaware 1	254	21
52356	12_MA1P57 (68-72)	Lake Mangakaware 1	229	21
52106	13_MA1P57 (93-100)	Lake Mangakaware 1	254	22
52737	14_MA1P190 (1-5)	Lake Mangakaware 1	245	22
52738	15_MA1P190 (11-15)	Lake Mangakaware 1	233	22

52739	16_MA1P190 (26-30)	Lake Mangakaware 1	223	21
52740	17_MA1P190 (41-45)	Lake Mangakaware 1	264	23
52741	18_MA1P190 (51-54)	Lake Mangakaware 1	190	22
52742	19_MA1P192 (1-5)	Lake Mangakaware 1	201	22
52743	20_MA1P192 (6-10)	Lake Mangakaware 1	159	21
52744	21_MA1P192 (11-15)	Lake Mangakaware 1	151	23
52745	22_MA1P192 (19-23)	Lake Mangakaware 1	203	27
52746	23_MA1P204 (30-34)	Lake Mangakaware 1	293	21
52747	24_MA1P204 (40-44)	Lake Mangakaware 1	260	21
52748	25_MA1P204 (71-75)	Lake Mangakaware 1	210	24
52749	26_MA1P204 (86-90)	Lake Mangakaware 1	173	23
52750	27_MA1P204 (96-99)	Lake Mangakaware 1	162	21
52751	28_MA1P208 (1-5)	Lake Mangakaware 1	259	21
52752	29_MA1P208 (17-21)	Lake Mangakaware 1	216	26
52753	30_MA1P208 (36-40)	Lake Mangakaware 1	230	21
52754	31_MA1P208 (51-55)	Lake Mangakaware 1	210	24
52755	32_MA1P208 (69-73)	Lake Mangakaware 1	169	22
52098	33_MA2P14 (1-5)	Lake Mangakaware 2	202	21
52359	34_MA2P14 (17-21)	Lake Mangakaware 2	161	21
52099	35_MA2P14 (41-45)	Lake Mangakaware 2	240	21
52360	36_MA2P14 (70-74)	Lake Mangakaware 2	269	21
52100	37_MA2P14 (77-81)	Lake Mangakaware 2	217	21
52107	38_MA2P15 (1-5)	Lake Mangakaware 2	231	22
52361	39_MA2P15 (12-16)	Lake Mangakaware 2	177	22
52108	40_MA2P15 (27-31)	Lake Mangakaware 2	211	21
52362	41_MA2P15 (46-50)	Lake Mangakaware 2	255	21
52109	42_MA2P15 (57-61)	Lake Mangakaware 2	212	21
52229	43_MA2P149 (1-5)	Lake Mangakaware 2	261	21
52230	44_MA2P149 (13-16)	Lake Mangakaware 2	246	21
52231	45_MA2P149 (27-29)	Lake Mangakaware 2	267	21
52232	46_MA2P149 (37-41)	Lake Mangakaware 2	301	22
52233	47_MA2P149 (47-51)	Lake Mangakaware 2	226	21
52234	48_MA2P154 (1-5)	Lake Mangakaware 2	264	21
52235	49_MA2P154 (15-19)	Lake Mangakaware 2	230	21
52236	50_MA2P154 (29-33)	Lake Mangakaware 2	234	22
52237	51_MA2P154 (44-48)	Lake Mangakaware 2	267	22
52238	52_MA2P154 (59-63)	Lake Mangakaware 2	219	22
52239	53_MA2P152 (1-5)	Lake Mangakaware 2	221	22
52240	54_MA2P152 (12-16)	Lake Mangakaware 2	234	22
52241	55_MA2P152 (26-30)	Lake Mangakaware 2	273	23
52242	56_MA2P152 (47-51)	Lake Mangakaware 2	250	21
52243	57_MA2P152 (69-73)	Lake Mangakaware 2	222	22
52244	59_MA2P153 (1-5)	Lake Mangakaware 2	241	24
52245	60_MA2P153 (15-19)	Lake Mangakaware 2	259	22

52246	61_MA2P153 (25-29)	Lake Mangakaware 2	261	21
52247	62_MA2P153 (36-40)	Lake Mangakaware 2	273	22
52248	63_MA2P153 (48-52)	Lake Mangakaware 2	206	22
52249	64_MA2P161 (1-5)	Lake Mangakaware 2	307	23
52250	65_MA2P161 (20-24)	Lake Mangakaware 2	213	21
52251	66_MA2P161 (39-43)	Lake Mangakaware 2	198	22
52252	67_MA2P161 (58-62)	Lake Mangakaware 2	158	22
52253	68_MA2P161 (80-84)	Lake Mangakaware 2	225	22
52363	69_TARP132 (1-5)	Taraheke Pā	468	21
52364	70_TARP132 (15-19)	Taraheke Pā	475	26
52365	71_TARP132 (31-35)	Taraheke Pā	410	21
52366	72_TARP132 (50-54)	Taraheke Pā	0	0
52367	73_TARP132 (69-73)	Taraheke Pā	375	21
52368	74_TARP131 (1-5)	Taraheke Pā	625	23
52862	75_TARP131 (17-21)	Taraheke Pā	617	25
52369	76_TARP131 (41-45)	Taraheke Pā	551	23
52863	77_TARP131 (59-64)	Taraheke Pā	459	22
52370	78_TARP131 (83-87)	Taraheke Pā	439	21
52371	79_TARP131 (119-122)	Taraheke Pā	356	22
52864	80_TARP131 (143-148)	Taraheke Pā	412	21
52372	81_TARP131 (163-165)	Taraheke Pā	318	22
52865	82_TEUP244 (1-5)	Te Uapata Pā	214	21
52866	83_TEUP244 (21-25)	Te Uapata Pā	207	21
52867	84_TEUP244 (36-40)	Te Uapata Pā	267	21
52868	85_TEUP244 (49-53)	Te Uapata Pā	233	21
52869	86_TEUP244 (61-65)	Te Uapata Pā	165	22
52870	87_TEUP219 (6-10)	Te Uapata Pā	413	21
52871	88_TEUP219 (25-29)	Te Uapata Pā	408	21
52872	89_TEUP219 (70-74)	Te Uapata Pā	198	23
52873	90_TEUP219 (104-108)	Te Uapata Pā	185	21
52874	91_TEUP219 (117-121)	Te Uapata Pā	216	21
52875	92_TEUP219 (130-134)	Te Uapata Pā	236	21
52876	93_TEUP219 (148-152)	Te Uapata Pā	211	22
52877	94_TEUP234 (6-10)	Te Uapata Pā	405	21
52878	95_TEUP234 (21-25)	Te Uapata Pā	402	22
52879	96_TEUP234 (100-104)	Te Uapata Pā	217	20
52880	97_TEUP234 (115-119)	Te Uapata Pā	213	21
52881	98_TEUP234 (131-135)	Te Uapata Pā	259	21
52882	99_TEUP234 (140-144)	Te Uapata Pā	244	20
52883	100_TEUP234 (150-154)	Te Uapata Pā	288	20
52884	101_TEUP234 (156-160)	Te Uapata Pā	226	22
53329	102_MGAP313 (31-35)	Lake Mangahia	412	20
53330	103_MGAP313 (50-54)	Lake Mangahia	410	24
53331	104_MGAP313 (68-72)	Lake Mangahia	375	20

53332	105_MGAP313 (87-91)	Lake Mangahia	372	19
53333	106_MGAP313 (105-109)	Lake Mangahia	384	20
53334	107_MGAP316 (1-6)	Lake Mangahia	410	21
53335	108_MGAP316 (30-33)	Lake Mangahia	420	20
53336	109_MGAP316 (79-83)	Lake Mangahia	177	21
53337	110_MGAP316 (96-99)	Lake Mangahia	172	21
53338	111_MGAP316 (135-139)	Lake Mangahia	225	20
53339	112_MGAP316 (158-162)	Lake Mangahia	266	20
53340	113_MGAP316 (173-181)	Lake Mangahia	195	20
53341	114_MGAP281 (8-12)	Lake Mangahia	134	21
53342	115_MGAP281 (24-28)	Lake Mangahia	247	20
53343	116_MGAP281 (41-45)	Lake Mangahia	229	24
53344	117_MGAP281 (60-64)	Lake Mangahia	217	23
53345	118_MGAP281 (71-75)	Lake Mangahia	246	21
53346	119_MGAP320 (7-11)	Lake Mangahia	200	21
53347	120_MGAP320 (18-22)	Lake Mangahia	201	22
53348	121_MGAP320 (28-32)	Lake Mangahia	228	21
53349	122_MGAP320 (42-46)	Lake Mangahia	249	22
53350	123_MGAP320 (56-60)	Lake Mangahia	193	22
53351	124_MGAP311 (1-5)	Lake Mangahia	358	21
53352	125_MGAP311 (46-50)	Lake Mangahia	414	21
53353	126_MGAP311 (91-95)	Lake Mangahia	393	21
53354	127_MGAP311 (126-130)	Lake Mangahia	292	21
53355	128_MGAP311 (171-175)	Lake Mangahia	163	20
53356	129_MGAP311 (216-220)	Lake Mangahia	226	21
53357	130_MGAP311 (249-253)	Lake Mangahia	226	21
54121	131_ROTP353 (20-24)	Lake Rotokauri	427	26
54122	132_ROTP353 (31-35)	Lake Rotokauri	429	24
54123	133_ROTP353 (43-47)	Lake Rotokauri	405	25
54124	134_ROTP353 (56-60)	Lake Rotokauri	372	24
54125	135_ROTP353 (68-72)	Lake Rotokauri	396	26
54126	136_ROTP354 (5-9)	Lake Rotokauri	962	24
54127	137_ROTP354 (19-23)	Lake Rotokauri	914	24
54128	138_ROTP354 (38-42)	Lake Rotokauri	916	24
54129	139_ROTP354 (48-52)	Lake Rotokauri	927	24
54130	140_ROTP354 (66-70)	Lake Rotokauri	894	25

Appendix C. Site OxCal Codes: Charcoal (^{14}C) Samples

C.1 Lake Mangakaware 2

```
Plot(MA2)
 {
```

```
 Curve("SHCal20", "shcal20.14c");
 Outlier_Model("Charcoal", Exp (1,-10,0), U(0,3), t);
 Phase(MA2_Bellwood_1968_14C_Samples)
 {
  Sequence(Wood_Samples)
  {
   Boundary("Start 1");
   Phase("Phase_1")
   {
    R_Date("NZ1121", 428, 84)
    {
     Outlier("Charcoal", 1);
    };
    R_Date("NZ1679", 382, 57)
    {
     Outlier("Charcoal", 1);
    };
   };
   Boundary("End 1");
   Boundary("Start 2");
   Phase("Phase_2")
   {
    R_Date("NZ1125", 286, 83)
    {
     Outlier("Charcoal", 1);
    };
    R_Date("NZ1678", 221, 46)
    {
     Outlier("Charcoal", 1);
    };
   };
   Boundary("End 2");
   Span("Occupation_Span");
  };
 };
};
```

C.2 Te Upata Pā

```
Plot(TEU)
 {
  Curve("SHCal20", "shcal20.14C");
  Outlier_Model("General", T(5), U(0,4), "t");
  Sequence("TEU")
  {
   Boundary("Start 1");
   Phase("TEU_Charcoal_Samples")
   {
    R_Date("Wk46313", 226, 16)
    {
     Outlier("General", 0.5);
    };
    R_Date("Wk46315", 200, 16)
    {
     Outlier("General", 0.5);
```

```
   };
   R_Date("Wk46316", 189, 16)
   {
    Outlier("General", 0.5);
   };
   R_Date("Wk46314", 153, 17)
   {
    Outlier("General", 0.5);
   };
   R_Date("Wk46880", 203, 18)
   {
    Outlier("General", 0.5);
   };
   R_Date("Wk46881", 433, 18)
   {
    Outlier("General", 0.5);
   };
   R_Date("Wk46882", 244, 1)
   {
    Outlier("General", 0.5);
   };
   R_Date("Wk46883", 265, 17)
   {
    Outlier("General", 0.5);
   };
   Span("Span TEU");
  };
  Boundary("End 1");
 };
};
```

Appendix D. OxCal D_Sequence Code

D.1 Lake Mangakaware 1 (MA1)

D.1.1 MA1P53 (Original Model)

D.1.1.1 D_Sequence (SSimple)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot()
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  Outlier_Model("SSimple",N(0,2),0,"s");
  D_Sequence(Wigglematch_MA1P53)
  {
```

```
 R_Date("1_MA1P53 (1-5)",413,22)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(9);
 R_Date("2_MA1P53 (10-14)",440,20)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(23.5);
 R_Date("3_MA1P53 (33-38)",334,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(36.5);
 R_Date("4_MA1P53 (70-74)",195,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(19.5);
 R_Date("5_MA1P53 (90-93)",172,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(17);
 R_Date("6_MA1P53 (106-111)",253,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(26.5);
 R_Date("7_MA1P53 (133-137)",236,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(15);
 R_Date("8_MA1P53 (148-152)",227,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(2.5);
 Date ("Felling_Date_MA1P53");
 };
 Axis(calBP(750), calBP(0));
};
```

D.1.1.2 D_Sequence (RScaled)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot()
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  Outlier_Model("RScaled", T(5), U(0,4), r);
  D_Sequence(Wigglematch_MA1P53)
  {
   R_Date("1_MA1P53 (1-5)",413,22)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(9);
   R_Date("2_MA1P53 (10-14)",440,20)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(23.5);
   R_Date("3_MA1P53 (33-38)",334,21)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(36.5);
   R_Date("4_MA1P53 (70-74)",195,21)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(19.5);
   R_Date("5_MA1P53 (90-93)",172,21)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(17);
   R_Date("6_MA1P53 (106-111)",253,21)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(26.5);
   R_Date("7_MA1P53 (133-137)",236,21)
   {
    Outlier("RScaled", 0.05);
```

```
  color="black";
 };
 Gap(15);
 R_Date("8_MA1P53 (148-152)",227,21)
 {
  Outlier("RScaled", 0.05);
  color="black";
 };
 Gap(2.5);
 Date ("Felling_Date_MA1P53");
};
Axis(calBP(750), calBP(0));
};
```

D.1.1.3 D_Sequence (Agreement Indices)

```
Options()
{
 Resolution=1;
 kIterations=3000;
};
Plot()
{
 Curve("SHCal20", "shcal20.14C")
 {
  color="red";
 };
 D_Sequence(Wigglematch_MA1P53)
 {
  R_Date("1_MA1P53 (1-5)",413,22)
  {
   color="black";
  };
  Gap(9);
  R_Date("2_MA1P53 (10-14)",440,20)
  {
   color="black";
  };
  Gap(23.5);
  R_Date("3_MA1P53 (33-38)",334,21)
  {
   color="black";
  };
  Gap(36.5);
  R_Date("4_MA1P53 (70-74)",195,21)
  {
   color="black";
  };
  Gap(19.5);
  R_Date("5_MA1P53 (90-93)",172,21)
  {
   color="black";
  };
  Gap(17);
  R_Date("6_MA1P53 (106-111)",253,21)
```

```
  {
   color="black";
  };
  Gap(26.5);
  R_Date("7_MA1P53 (133-137)",236,21)
  {
   color="black";
  };
  Gap(15);
  R_Date("8_MA1P53 (148-152)",227,21)
  {
   color="black";
  };
  Gap(2.5);
  Date ("Felling_Date_MA1P53");
 };
 Axis(calBP(750), calBP(0));
};
```

D.1.2 MA1P53 (6_MA1P53 (106-111) Removed)

D.1.2.1 D_Sequence (SSimple)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot()
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  Outlier_Model("SSimple", N(0,2), 0, s);
  D_Sequence(Wigglematch_MA1P53)
  {
   R_Date("1_MA1P53 (1-5)",413,22)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(9);
   R_Date("2_MA1P53 (10-14)",440,20)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(23.5);
   R_Date("3_MA1P53 (33-38)",334,21)
   {
    Outlier("SSimple", 0.05);
    color="black";
```

```
  };
  Gap(36.5);
  R_Date("4_MA1P53 (70-74)",195,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(19.5);
  R_Date("5_MA1P53 (90-93)",172,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(43.5);
  R_Date("7_MA1P53 (133-137)",236,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(15);
  R_Date("8_MA1P53 (148-152)",227,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(2.5);
  Date ("Felling_Date_MA1P53");
 };
 Axis(calBP(750), calBP(0));
};
```

D.1.2.2 D_Sequence (RScaled)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot()
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  Outlier_Model("RScaled", T(5), U(0,4), r);
  D_Sequence(Wigglematch_MA1P53)
  {
   R_Date("1_MA1P53 (1-5)",413,22)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(9);
   R_Date("2_MA1P53 (10-14)",440,20)
   {
```

```
  Outlier("RScaled", 0.05);
  color="black";
 };
 Gap(23.5);
 R_Date("3_MA1P53 (33-38)",334,21)
 {
  Outlier("RScaled", 0.05);
  color="black";
 };
 Gap(36.5);
 R_Date("4_MA1P53 (70-74)",195,21)
 {
  Outlier("RScaled", 0.05);
  color="black";
 };
 Gap(19.5);
 R_Date("5_MA1P53 (90-93)",172,21)
 {
  Outlier("RScaled", 0.05);
  color="black";
 };
 Gap(43.5);
 R_Date("7_MA1P53 (133-137)",236,21)
 {
  Outlier("RScaled", 0.05);
  color="black";
 };
 Gap(15);
 R_Date("8_MA1P53 (148-152)",227,21)
 {
  Outlier("RScaled", 0.05);
  color="black";
 };
 Gap(2.5);
 Date ("Felling_Date_MA1P53");
};
Axis(calBP(750), calBP(0));
};
```

D.1.2.3 D_Sequence (Agreement Indices)

```
Options()
{
 Resolution=1;
 kIterations=3000;
};
Plot()
{
 Curve("SHCal20", "shcal20.14C")
 {
  color="red";
 };
 D_Sequence(Wigglematch_MA1P53)
 {
  R_Date("1_MA1P53 (1-5)",413,22)
```

```
 {
  color="black";
 };
 Gap(9);
 R_Date("2_MA1P53 (10-14)",440,20)
 {
  color="black";
 };
 Gap(23.5);
 R_Date("3_MA1P53 (33-38)",334,21)
 {
  color="black";
 };
 Gap(36.5);
 R_Date("4_MA1P53 (70-74)",195,21)
 {
  color="black";
 };
 Gap(19.5);
 R_Date("5_MA1P53 (90-93)",172,21)
 {
  color="black";
 };
 Gap(43.5);
 R_Date("7_MA1P53 (133-137)",236,21)
 {
  color="black";
 };
 Gap(15);
 R_Date("8_MA1P53 (148-152)",227,21)
 {
  color="black";
 };
 Gap(2.5);
 Date ("Terminal_Tree_Ring_MA1P53");
 };
 Axis(calBP(750), calBP(0));
};
```

D.1.3 MA1P57

D.1.3.1 D_Sequence (SSimple)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("MA1_AreaA_MA1P57")
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
```

```
 Outlier_Model("SSimple", N(0,2), 0, s);
 D_Sequence(Wigglematch_MA1P57)
 {
  R_Date("9_MA1P57 (1-5)",398,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(14);
  R_Date("10_MA1P57 (15-19)",274,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(31.5);
  R_Date("11_MA1P57 (47-50)",254,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(21.5);
  R_Date("12_MA1P57 (68-72)",229,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(26.5);
  R_Date("13_MA1P57 (93-100)",254,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(10);
  Date ("FellingDate_MA1P57");
 };
 Axis(calBP(750), calBP(0));
};
```

D.1.3.2 D_Sequence (RScaled)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("MA1_AreaA_MA1P57")
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  Outlier_Model("RScaled", T(5), U(0,4), r);
  D_Sequence(Wigglematch_MA1P57)
  {
   R_Date("9_MA1P57 (1-5)",398,22)
```

```
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(14);
  R_Date("10_MA1P57 (15-19)",274,21)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(31.5);
  R_Date("11_MA1P57 (47-50)",254,21)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(21.5);
  R_Date("12_MA1P57 (68-72)",229,21)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(26.5);
  R_Date("13_MA1P57 (93-100)",254,22)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(10);
  Date ("FellingDate_MA1P57");
 };
 Axis(calBP(750), calBP(0));
};
```

D.1.3.3 D_Sequence (Agreement Indices)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("MA1_AreaA_MA1P57")
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  D_Sequence(Wigglematch_MA1P57)
  {
   R_Date("9_MA1P57 (1-5)",398,22)
   {
    color="black";
   };
   Gap(14);
   R_Date("10_MA1P57 (15-19)",274,21)
```

```
  {
   color="black";
  };
  Gap(31.5);
  R_Date("11_MA1P57 (47-50)",254,21)
  {
   color="black";
  };
  Gap(21.5);
  R_Date("12_MA1P57 (68-72)",229,21)
  {
   color="black";
  };
  Gap(26.5);
  R_Date("13_MA1P57 (93-100)",254,22)
  {
   color="black";
  };
  Gap(10);
  Date ("FellingDate_MA1P57");
 };
 Axis(calBP(750), calBP(0));
};
```

D.1.4 MA1P190

D.1.4.1 D_Sequence (SSimple)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot()
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  Outlier_Model("SSimple", N(0,2), 0, s);
  D_Sequence(Wigglematch_MA1P190)
  {
   R_Date("14_MA1P190 (1-5)",245,22)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(10);
   R_Date("15_MA1P190 (11-15)",233,22)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(15);
```

```
  R_Date("16_MA1P190 (26-30)",223,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(15);
  R_Date("17_MA1P190 (41-45)",264,23)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(9.5);
  R_Date("18_MA1P190 (51-54)",190,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(2);
  Date ("Felling_Date_MA1P190");
 };
 Axis(calBP(750), calBP(0));
};
```

D.1.4.2 D_Sequence (RScaled)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot()
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  Outlier_Model("Rscaled", T(5), U(0,4), r);
  D_Sequence(Wigglematch_MA1P190)
  {
   R_Date("14_MA1P190 (1-5)",245,22)
   {
    Outlier("Rscaled", 0.05);
    color="black";
   };
   Gap(10);
   R_Date("15_MA1P190 (11-15)",233,22)
   {
    Outlier("Rscaled", 0.05);
    color="black";
   };
   Gap(15);
   R_Date("16_MA1P190 (26-30)",223,21)
   {
    Outlier("Rscaled", 0.05);
```

```
  color="black";
 };
 Gap(15);
 R_Date("17_MA1P190 (41-45)",264,23)
 {
  Outlier("Rscaled", 0.05);
  color="black";
 };
 Gap(9.5);
 R_Date("18_MA1P190 (51-54)",190,22)
 {
  Outlier("Rscaled", 0.05);
  color="black";
 };
 Gap(2);
 Date ("Felling_Date_MA1P190");
};
Axis(calBP(750), calBP(0));
};
```

D.1.4.3 D_Sequence (Agreement Indices)

```
Options()
{
 Resolution=1;
 kIterations=3000;
};
Plot()
{
 Curve("SHCal20", "shcal20.14C")
 {
  color="red";
 };
 D_Sequence(Wigglematch_MA1P190)
 {
  R_Date("14_MA1P190 (1-5)",245,22)
  {
   color="black";
  };
  Gap(10);
  R_Date("15_MA1P190 (11-15)",233,22)
  {
   color="black";
  };
  Gap(15);
  R_Date("16_MA1P190 (26-30)",223,21)
  {
   color="black";
  };
  Gap(15);
  R_Date("17_MA1P190 (41-45)",264,23)
  {
   color="black";
  };
```

```
  Gap(9.5);
  R_Date("18_MA1P190 (51-54)",190,22)
  {
   color="black";
  };
  Gap(2);
  Date ("Felling_Date_MA1P190");
 };
 Axis(calBP(750), calBP(0));
};
```

D.1.5 MA1P192

D.1.5.1 D_Sequence (SSimple)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot()
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  Outlier_Model("SSimple", N(0,2), 0, s);
  Sequence()
  {
   Boundary("start");
   D_Sequence(Wigglematch_MA1P192)
   {
    R_Date("19_MA1P192 (1-5)",201,22)
    {
     Outlier("SSimple", 0.05);
     color="black";
    };
    Gap(5);
    R_Date("20_MA1P192 (6-10)",159,21)
    {
     Outlier("SSimple", 0.05);
     color="black";
    };
    Gap(5);
    R_Date("21_MA1P192 (11-15)",151,23)
    {
     Outlier("SSimple", 0.05);
     color="black";
    };
    Gap(8);
    R_Date("22_MA1P192 (19-23)",203,27)
    {
     Outlier("SSimple", 0.05);
     color="black";
```

```
  };
  Gap(2.5);
  Date ("Felling_Date_MA1P192");
 };
 Before("Battle of Ōrākau")
 {
  C_Date("Battle of Ōrākau", 1864, 1);
 };
 Boundary("end");
};
};
```

D.1.5.2 D_Sequence (RScaled)

```
Options()
 {
 Resolution=1;
 kIterations=3000;
 };
 Plot()
 {
 Curve("SHCal20", "shcal20.14C")
 {
  color="red";
 };
 Outlier_Model("RScaled", T(5), U(0,4), r);
 Sequence()
 {
  Boundary("start");
  D_Sequence(Wigglematch_MA1P192)
  {
   R_Date("19_MA1P192 (1-5)",201,22)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(5);
   R_Date("20_MA1P192 (6-10)",159,21)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(5);
   R_Date("21_MA1P192 (11-15)",151,23)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(8);
   R_Date("22_MA1P192 (19-23)",203,27)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(2.5);
```

```
   Date ("Felling_Date_MA1P192");
  };
  Before("Battle of Ōrākau")
  {
   C_Date("Battle of Ōrākau", 1864, 1);
  };
  Boundary("end");
 };
};
```

D.1.5.3 D_Sequence (Agreement Indices)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot()
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  Sequence()
  {
   Boundary("start");
   D_Sequence(Wigglematch_MA1P192)
   {
    R_Date("19_MA1P192 (1-5)",201,22)
    {
     color="black";
    };
    Gap(5);
    R_Date("20_MA1P192 (6-10)",159,21)
    {
     color="black";
    };
    Gap(5);
    R_Date("21_MA1P192 (11-15)",151,23)
    {
     color="black";
    };
    Gap(8);
    R_Date("22_MA1P192 (19-23)",203,27)
    {
     color="black";
    };
    Gap(2.5);
    Date ("Felling_Date_MA1P192");
   };
   Before("Battle of Ōrākau")
   {
    C_Date("Battle of Ōrākau", 1864, 1);
   };
```

```
  Boundary("end");
 };
};
```

D.1.6 MA1P204

D.1.6.1 D_Sequence (SSimple)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("MA1_AreaB_MA1P204")
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  Outlier_Model("SSimple", N(0,2), 0, s);
  D_Sequence("Wigglematch_MA1P204")
  {
   R_Date("23_MA1P204 (30-34)",293,21)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(10);
   R_Date("24_MA1P204 (40-44)",260,21)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(31);
   R_Date("25_MA1P204 (71-75)",210,24)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(15);
   R_Date("26_MA1P204 (86-90)",173,23)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(9.5);
   R_Date("27_MA1P204 (96-99)",162,21)
   {
    Outlier("SSimple", 0.05);
```

```
  color="black";
 };
 Gap(2);
 Date ("Felling_Date_MA1P204");
};
Axis(calBP(750), calBP(0));
};
```

D.1.6.2 D_Sequence (RScaled)

```
Options()
{
 Resolution=1;
 kIterations=3000;
};
Plot("MA1_AreaB_MA1P204")
{
 Curve("SHCal20", "shcal20.14C")
 {
  color="red";
 };
 Outlier_Model("RScaled", T(5), U(0,4), r);
 D_Sequence("Wigglematch_MA1P204")
 {
  R_Date("23_MA1P204 (30-34)",293,21)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(10);
  R_Date("24_MA1P204 (40-44)",260,21)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(31);
  R_Date("25_MA1P204 (71-75)",210,24)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(15);
  R_Date("26_MA1P204 (86-90)",173,23)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(9.5);
  R_Date("27_MA1P204 (96-99)",162,21)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(2);
```

```
  Date ("Felling_Date_MA1P204");
 };
 Axis(calBP(750), calBP(0));
};
```

D.1.6.3 D_Sequence (Agreement Indices)

```
Options()
 {
 Resolution=1;
 kIterations=3000;
 };
 Plot("MA1_AreaB_MA1P204")
 {
 Curve("SHCal20", "shcal20.14C")
 {
  color="red";
 };
 D_Sequence("Wigglematch_MA1P204")
 {
  R_Date("23_MA1P204 (30-34)",293,21)
  {
   color="black";
  };
  Gap(10);
  R_Date("24_MA1P204 (40-44)",260,21)
  {
   color="black";
  };
  Gap(31);
  R_Date("25_MA1P204 (71-75)",210,24)
  {
   color="black";
  };
  Gap(15);
  R_Date("26_MA1P204 (86-90)",173,23)
  {
   color="black";
  };
  Gap(9.5);
  R_Date("27_MA1P204 (96-99)",162,21)
  {
   color="black";
  };
  Gap(2);
  Date ("Felling_Date_MA1P204");
 };
 Axis(calBP(750), calBP(0));
};
```

D.1.7 MA1P208

D.1.7.1 D_Sequence (SSimple)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot()
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  Outlier_Model("SSimple", N(0,2), 0, s);
  D_Sequence(Wigglematch_MA1P208)
  {
   R_Date("28_MA1P208 (1-5)",259,21)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(16);
   R_Date("29_MA1P208 (17-21)",216,26)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(19);
   R_Date("30_MA1P208 (36-40)",230,21)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(15);
   R_Date("31_MA1P208 (51-55)",210,24)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(18);
   R_Date("32_MA1P208 (69-73)",169,22)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(2.5);
   Date ("Felling_Date_MA1P208");
  };
  Axis(calBP(750), calBP(0));
 };
```

D.1.7.2 D_Sequence (RScaled)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot()
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  Outlier_Model("RScaled", T(5), U(0,4), r);
  D_Sequence(Wigglematch_MA1P208)
  {
   R_Date("28_MA1P208 (1-5)",259,21)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(16);
   R_Date("29_MA1P208 (17-21)",216,26)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(19);
   R_Date("30_MA1P208 (36-40)",230,21)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(15);
   R_Date("31_MA1P208 (51-55)",210,24)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(18);
   R_Date("32_MA1P208 (69-73)",169,22)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(2.5);
   Date ("Felling_Date_MA1P208");
  };
  Axis(calBP(750), calBP(0));
 };
```

D.1.7.3 D_Sequence (Agreement Indices)

```
Options()
```

```
{
 Resolution=1;
 kIterations=3000;
};
Plot()
{
 Curve("SHCal20", "shcal20.14C")
 {
  color="red";
 };
 D_Sequence(Wigglematch_MA1P208)
 {
  R_Date("28_MA1P208 (1-5)",259,21)
  {
   color="black";
  };
  Gap(16);
  R_Date("29_MA1P208 (17-21)",216,26)
  {
   color="black";
  };
  Gap(19);
  R_Date("30_MA1P208 (36-40)",230,21)
  {
   color="black";
  };
  Gap(15);
  R_Date("31_MA1P208 (51-55)",210,24)
  {
   color="black";
  };
  Gap(18);
  R_Date("32_MA1P208 (69-73)",169,22)
  {
   color="black";
  };
  Gap(2.5);
  Date ("Felling_Date_MA1P208");
 };
 Axis(calBP(750), calBP(0));
};
```

D.2 Lake Mangakaware 2 (MA2)

D.2.1 MA2P14

D.2.1.1 D_Sequence (SSimple)

```
Options()
 {
  kIterations=3000;
 };
 Plot()
 {
```

```
 Curve("SHCal20", "shcal20.14C")
 {
  color="red";
 };
 Outlier_Model("SSimple", N(0,2), 0, s);
 D_Sequence(Wigglematch_MA2P14)
 {
  R_Date("33_MA2P14 (1-5)",202,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(16);
  R_Date("34_MA2P14 (17-21)",161,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(24);
  R_Date("35_MA2P14 (41-45)",240,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(29);
  R_Date("36_MA2P14 (70-74)",269,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(7);
  R_Date("37_MA2P14 (77-81)",217,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(2.5);
  Date ("Felling_Date_MA2P14");
 };
 Axis(calBP(750), calBP(0));
};
```

D.2.1.2 D_Sequence (RScaled)

```
Options()
 {
  kIterations=3000;
 };
 Plot()
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  Outlier_Model("RScaled", T(5), U(0,4), T);
```

```
 D_Sequence(Wigglematch_MA2P14)
 {
  R_Date("33_MA2P14 (1-5)",202,21)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(16);
  R_Date("34_MA2P14 (17-21)",161,21)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(24);
  R_Date("35_MA2P14 (41-45)",240,21)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(29);
  R_Date("36_MA2P14 (70-74)",269,21)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(7);
  R_Date("37_MA2P14 (77-81)",217,21)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(2.5);
  Date ("Felling_Date_MA2P14");
 };
 Axis(calBP(750), calBP(0));
};
```

D.2.1.3 D_Sequence (Agreement Indices)

```
Options()
 {
  kIterations=3000;
 };
 Plot()
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  D_Sequence(Wigglematch_MA2P14)
  {
   R_Date("33_MA2P14 (1-5)",202,21)
   {
    color="black";
   };
```

```
  Gap(16);
  R_Date("34_MA2P14 (17-21)",161,21)
  {
   color="black";
  };
  Gap(24);
  R_Date("35_MA2P14 (41-45)",240,21)
  {
   color="black";
  };
  Gap(29);
  R_Date("36_MA2P14 (70-74)",269,21)
  {
   color="black";
  };
  Gap(7);
  R_Date("37_MA2P14 (77-81)",217,21)
  {
   color="black";
  };
  Gap(2.5);
  Date ("Felling_Date_MA2P14");
 };
 Axis(calBP(750), calBP(0));
};
```

D.2.2 MA2P15

D.2.2.1 D_Sequence (SSimple)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("MA2P15")
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  Outlier_Model("SSimple", N(0,2), 0, s);
  D_Sequence(Wigglematch_MA2P15)
  {
   R_Date("38_MA2P15 (1-5)",231,22)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(11);
   R_Date("39_MA2P15 (12-16)",177,22)
   {
    Outlier("SSimple", 0.05);
    color="black";
```

```
  };
  Gap(15);
  R_Date("40_MA2P15 (27-31))",211,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(19);
  R_Date("41_MA2P15 (46-50)",255,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(11);
  R_Date("42_MA2P15 (57-61)",212,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(2.5);
  Date ("Felling_Date_MA2P15");
 };
 Axis(calBP(750), calBP(0));
};
```

D.2.2.2 D_Sequence (RScaled)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("MA2P15")
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  Outlier_Model("RScaled", T(5), U(0,4), r);
  D_Sequence(Wigglematch_MA2P15)
  {
   R_Date("38_MA2P15 (1-5)",231,22)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(11);
   R_Date("39_MA2P15 (12-16)",177,22)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(15);
   R_Date("40_MA2P15 (27-31))",211,21)
   {
```

```
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(19);
  R_Date("41_MA2P15 (46-50)",255,21)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(11);
  R_Date("42_MA2P15 (57-61)",212,21)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(2.5);
  Date ("Felling_Date_MA2P15");
 };
 Axis(calBP(750), calBP(0));
};
```

D.2.2.3 D_Sequence (Agreement Indices)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("MA2P15")
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  D_Sequence(Wigglematch_MA2P15)
  {
   R_Date("38_MA2P15 (1-5)",231,22)
   {
    color="black";
   };
   Gap(11);
   R_Date("39_MA2P15 (12-16)",177,22)
   {
    color="black";
   };
   Gap(15);
   R_Date("40_MA2P15 (27-31))",211,21)
   {
    color="black";
   };
   Gap(19);
   R_Date("41_MA2P15 (46-50)",255,21)
   {
    color="black";
   };
```

```
  Gap(11);
  R_Date("42_MA2P15 (57-61)",212,21)
  {
   color="black";
  };
  Gap(2.5);
  Date ("Felling_Date_MA2P15");
 };
 Axis(calBP(750), calBP(0));
};
```

D.2.3 MA2P149

D.2.3.1 D_Sequence (SSimple)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("MA2P149")
 {
  Curve("SHCal20","shcal20.14C")
  {
   color="red";
  };
  Outlier_Model("SSimple", N(0,2), 0, s);
  D_Sequence(Wigglematch_MA2P149)
  {
   R_Date("43_MA2P149 (1-5)",261,21)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(11.5);
   R_Date("44_MA2P149 (13-16)",246,21)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(13.5);
   R_Date("45_MA2P149 (27-29)",267,21)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(11);
   R_Date("46_MA2P149 (37-41)",301,22)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(10);
   R_Date("47_MA2P149 (47-51)",226,21)
   {
```

```
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(2.5);
  Date("Terminal_Tree_Ring_MA2P149");
 };
 Axis(calBP(750), calBP(0));
};
```

D.2.3.2 D_Sequence (RScaled)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("MA2P149")
 {
  Curve("SHCal20","shcal20.14C")
  {
   color="red";
  };
  Outlier_Model("RScaled", T(5), U(0,4), r);
  D_Sequence(Wigglematch_MA2P149)
  {
   R_Date("43_MA2P149 (1-5)",261,21)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(11.5);
   R_Date("44_MA2P149 (13-16)",246,21)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(13.5);
   R_Date("45_MA2P149 (27-29)",267,21)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(11);
   R_Date("46_MA2P149 (37-41)",301,22)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(10);
   R_Date("47_MA2P149 (47-51)",226,21)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
```

```
  Gap(2.5);
  Date("Felling_Date_MA2P149");
 };
 Axis(calBP(750), calBP(0));
};
```

D.2.3.3 D_Sequence (Agreement Indices)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("MA2P149")
 {
  Curve("SHCal20","shcal20.14C")
  {
   color="red";
  };
  D_Sequence(Wigglematch_MA2P149)
  {
   R_Date("43_MA2P149 (1-5)",261,21)
   {
    color="black";
   };
   Gap(11.5);
   R_Date("44_MA2P149 (13-16)",246,21)
   {
    color="black";
   };
   Gap(13.5);
   R_Date("45_MA2P149 (27-29)",267,21)
   {
    color="black";
   };
   Gap(11);
   R_Date("46_MA2P149 (37-41)",301,22)
   {
    color="black";
   };
   Gap(10);
   R_Date("47_MA2P149 (47-51)",226,21)
   {
    color="black";
   };
   Gap(2.5);
   Date("Felling_Date_MA2P149");
  };
  Axis(calBP(750), calBP(0));
 };
```

D.2.4 MA2P152

D.2.4.1 D_Sequence (SSimple)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("MA2P152")
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  Outlier_Model("SSimple", N(0,2), 0, s);
  D_Sequence(Wigglematch_MA2P152)
  {
   R_Date("53_MA2P152 (1-5)",221,22)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(11);
   R_Date("54_MA2P152 (12-16)",234,22)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(14);
   R_Date("55_MA2P152 (26-30)",273,23)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(21);
   R_Date("56_MA2P152 (47-51)",250,21)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(22);
   R_Date("57_MA2P152 (69-73)",222,22)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(2.5);
   Date("Felling_Date_MA2P152");
  };
  Axis(calBP(750), calBP(0));
 };
```

D.2.4.2 D_Sequence (RScaled)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("MA2P152")
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  Outlier_Model("RScaled",T(5),U(0,4),"r");
  D_Sequence(Wigglematch_MA2P152)
  {
   R_Date("53_MA2P152 (1-5)",221,22)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(11);
   R_Date("54_MA2P152 (12-16)",234,22)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(14);
   R_Date("55_MA2P152 (26-30)",273,23)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(21);
   R_Date("56_MA2P152 (47-51)",250,21)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(22);
   R_Date("57_MA2P152 (69-73)",222,22)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(2.5);
   Date("Felling_Date_MA2P152");
  };
  Axis(calBP(750), calBP(0));
 };
```

D.2.4.3 D_Sequence (Agreement Indices)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
```

```
};
Plot("MA2P152")
{
 Curve("SHCal20", "shcal20.14C")
 {
  color="red";
 };
 D_Sequence(Wigglematch_MA2P152)
 {
  R_Date("53_MA2P152 (1-5)",221,22)
  {
   color="black";
  };
  Gap(11);
  R_Date("54_MA2P152 (12-16)",234,22)
  {
   color="black";
  };
  Gap(14);
  R_Date("55_MA2P152 (26-30)",273,23)
  {
   color="black";
  };
  Gap(21);
  R_Date("56_MA2P152 (47-51)",250,21)
  {
   color="black";
  };
  Gap(22);
  R_Date("57_MA2P152 (69-73)",222,22)
  {
   color="black";
  };
  Gap(2.5);
  Date("Felling_Date_MA2P152");
 };
 Axis(calBP(750), calBP(0));
};
```

D.2.5 MA2P153

D.2.5.1 D_Sequence (SSimple)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("MA2P153")
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  Outlier_Model("SSimple", N(0,2), 0, s);
```

```
 D_Sequence(Wigglematch_MA2P153)
 {
  R_Date("59_MA2P153 (1-5)",241,24)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(14);
  R_Date("60_MA2P153 (15-19)",259,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(10);
  R_Date("61_MA2P153 (25-29)",261,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(11);
  R_Date("62_MA2P153 (36-40)",273,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(12);
  R_Date("63_MA2P153 (48-52)",206,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(2.5);
  Date("Felling_Date_MA2P153");
 };
 Axis(calBP(750), calBP(0));
};
```

D.2.5.2 D_Sequence (RScaled)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("MA2P153")
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  Outlier_Model("RScaled", T(5), U(0,4), r);
  D_Sequence(Wigglematch_MA2P153)
  {
   R_Date("59_MA2P153 (1-5)",241,24)
   {
```

```
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(14);
  R_Date("60_MA2P153 (15-19)",259,22)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(10);
  R_Date("61_MA2P153 (25-29)",261,21)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(11);
  R_Date("62_MA2P153 (36-40)",273,22)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(12);
  R_Date("63_MA2P153 (48-52)",206,22)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(2.5);
  Date("Felling_Date_MA2P153");
 };
 Axis(calBP(750), calBP(0));
};
```

D.2.5.3 D_Sequence (Agreement Indices)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("MA2P153")
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  D_Sequence(Wigglematch_MA2P153)
  {
   R_Date("59_MA2P153 (1-5)",241,24)
   {
    color="black";
   };
   Gap(14);
   R_Date("60_MA2P153 (15-19)",259,22)
   {
```

```
  color="black";
  };
  Gap(10);
  R_Date("61_MA2P153 (25-29)",261,21)
  {
   color="black";
  };
  Gap(11);
  R_Date("62_MA2P153 (36-40)",273,22)
  {
   color="black";
  };
  Gap(12);
  R_Date("63_MA2P153 (48-52)",206,22)
  {
   color="black";
  };
  Gap(2.5);
  Date("Felling_Date_MA2P153");
 };
 Axis(calBP(750), calBP(0));
};
```

D.2.6 MA2P154

D.2.6.1 D_Sequence (SSimple)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("MA2P154")
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  Outlier_Model("SSimple", N(0,2), 0, s);
  D_Sequence(Wigglematch_MA2P154)
  {
   R_Date("48_MA2P154 (1-5)",264,21)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(14);
   R_Date("49_MA2P154 (15-19)",230,21)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(14);
   R_Date("50_MA2P154 (29-33)",234,22)
   {
```

```
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(15);
  R_Date("51_MA2P154 (44-48)",267,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(15);
  R_Date("52_MA2P154 (59-63)",219,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(2.5);
  Date("Felling_Date_MA2P154");
 };
 Axis(calBP(750), calBP(0));
};
```

D.2.6.2 D_Sequence (RScaled)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("MA2P154")
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  Outlier_Model("RScaled", T(5), U(0,4), r);
  D_Sequence(Wigglematch_MA2P154)
  {
   R_Date("48_MA2P154 (1-5)",264,21)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(14);
   R_Date("49_MA2P154 (15-19)",230,21)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(14);
   R_Date("50_MA2P154 (29-33)",234,22)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(15);
```

```
  R_Date("51_MA2P154 (44-48)",267,22)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(15);
  R_Date("52_MA2P154 (59-63)",219,22)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(2.5);
  Date("Felling_Date_MA2P154");
 };
 Axis(calBP(750), calBP(0));
};
```

D.2.6.3 D_Sequence (Agreement Indices)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("MA2P154")
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  D_Sequence(Wigglematch_MA2P154)
  {
   R_Date("48_MA2P154 (1-5)",264,21)
   {
    color="black";
   };
   Gap(14);
   R_Date("49_MA2P154 (15-19)",230,21)
   {
    color="black";
   };
   Gap(14);
   R_Date("50_MA2P154 (29-33)",234,22)
   {
    color="black";
   };
   Gap(15);
   R_Date("51_MA2P154 (44-48)",267,22)
   {
    color="black";
   };
   Gap(15);
   R_Date("52_MA2P154 (59-63)",219,22)
   {
    color="black";
```

```
  };
  Gap(2.5);
  Date("Felling_Date_MA2P154");
 };
 Axis(calBP(750), calBP(0));
};
```

D.2.7 MA2P161

D.2.7.1 D_Sequence (SSimple)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("MA2P161")
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  Outlier_Model("SSimple", N(0,2), 0, s);
  D_Sequence(Wigglematch_MA2P161)
  {
   R_Date("64_MA2P161 (1-5)",307,23)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(19);
   R_Date("65_MA2P161 (20-24)",213,21)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(19);
   R_Date("66_MA2P161 (39-43)",198,22)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(19);
   R_Date("67_MA2P161 (58-62)",158,22)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(22);
   R_Date("68_MA2P161 (80-84)",225,22)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
```

```
  Gap(2.5);
  Date ("Felling_Date_MA2P161");
 };
 Axis(calBP(750), calBP(0));
};
```

D.2.7.2 D_Sequence (RScaled)

```
Options()
 {
 Resolution=1;
 kIterations=3000;
 };
 Plot("MA2P161")
 {
 Curve("SHCal20", "shcal20.14C")
 {
  color="red";
 };
 Outlier_Model("RScaled", T(5), U(0,4), r);
 D_Sequence(Wigglematch_MA2P161)
 {
  R_Date("64_MA2P161 (1-5)",307,23)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(19);
  R_Date("65_MA2P161 (20-24)",213,21)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(19);
  R_Date("66_MA2P161 (39-43)",198,22)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(19);
  R_Date("67_MA2P161 (58-62)",158,22)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(22);
  R_Date("68_MA2P161 (80-84)",225,22)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(2.5);
  Date ("Felling_Date_MA2P161");
 };
```

```
 Axis(calBP(750), calBP(0));
};
```

D.2.7.3 D_Sequence (Agreement Indices)

```
Options()
{
 Resolution=1;
 kIterations=3000;
};
Plot("MA2P161")
{
 Curve("SHCal20", "shcal20.14C")
 {
  color="red";
 };
 D_Sequence(Wigglematch_MA2P161)
 {
  R_Date("64_MA2P161 (1-5)",307,23)
  {
   color="black";
  };
  Gap(19);
  R_Date("65_MA2P161 (20-24)",213,21)
  {
   color="black";
  };
  Gap(19);
  R_Date("66_MA2P161 (39-43)",198,22)
  {
   color="black";
  };
  Gap(19);
  R_Date("67_MA2P161 (58-62)",158,22)
  {
   color="black";
  };
  Gap(22);
  R_Date("68_MA2P161 (80-84)",225,22)
  {
   color="black";
  };
  Gap(2.5);
  Date ("Felling_Date_MA2P161");
 };
 Axis(calBP(750), calBP(0));
};
```

D.3 Lake Mangahia (MGA)

D.3.1 MGAP281

D.3.1.1 D_Sequence (SSimple)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("MGAP281")
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  Outlier_Model("SSimple", N(0,2), 0, s);
  D_Sequence(Wigglematch_MGAP281)
  {
   R_Date("114_MGAP281 (8-12)",134,21)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(16);
   R_Date("115_MGAP281 (24-28)",247,20)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(17);
   R_Date("116_MGAP281 (41-45)",229,24)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(19);
   R_Date("117_MGAP281 (60-64)",217,23)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(11);
   R_Date("118_MGAP281 (71-75)",246,21)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(2.5);
   Date ("Felling_Date_MGAP281");
  };
  Axis(calBP(750), calBP(0));
 };
```

D.3.1.2 D_Sequence (RScaled)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("MGAP281")
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  Outlier_Model("RScaled", T(5), U(0,4), r);
  D_Sequence(Wigglematch_MGAP281)
  {
   R_Date("114_MGAP281 (8-12)",134,21)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(16);
   R_Date("115_MGAP281 (24-28)",247,20)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(17);
   R_Date("116_MGAP281 (41-45)",229,24)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(19);
   R_Date("117_MGAP281 (60-64)",217,23)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(11);
   R_Date("118_MGAP281 (71-75)",246,21)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(2.5);
   Date ("Felling_Date_MGAP281");
  };
  Axis(calBP(750), calBP(0));
 };
```

D.3.1.3 D_Sequence (Agreement Indices)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
```

```
};
Plot("MGAP281")
{
 Curve("SHCal20", "shcal20.14C")
 {
  color="red";
 };
 D_Sequence(Wigglematch_MGAP281)
 {
  R_Date("114_MGAP281 (8-12)",134,21)
  {
   color="black";
  };
  Gap(16);
  R_Date("115_MGAP281 (24-28)",247,20)
  {
   color="black";
  };
  Gap(17);
  R_Date("116_MGAP281 (41-45)",229,24)
  {
   color="black";
  };
  Gap(19);
  R_Date("117_MGAP281 (60-64)",217,23)
  {
   color="black";
  };
  Gap(11);
  R_Date("118_MGAP281 (71-75)",246,21)
  {
   color="black";
  };
  Gap(2.5);
  Date ("Felling_Date_MGAP281");
 };
 Axis(calBP(750), calBP(0));
};
```

D.3.2 MGAP311

D.3.2.1 D_Sequence (SSimple)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("MGAP311")
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  Outlier_Model("SSimple", N(0,2), 0, s);
```

```
 D_Sequence(Wigglematch_MGAP311)
 {
  R_Date("124_MGAP311(1-5)",358,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(45);
  R_Date("125_MGAP311(46-50)",414,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(45);
  R_Date("126_MGAP311(91-95)",393,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(35);
  R_Date("127_MGAP311 (126-130)",292,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(45);
  R_Date("128_MGAP311 (171-175)",163,20)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(45);
  R_Date("129_MGAP311 (216-220)",226,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(33);
  R_Date("130_MGAP311 (249-253)",226,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(2.5);
  Date ("Felling_Date_MGAP311");
 };
 Axis(calBP(750), calBP(0));
};
```

D.3.2.2 D_Sequence (RScaled)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
```

```
};
Plot("MGAP311")
{
 Curve("SHCal20", "shcal20.14C")
 {
  color="red";
 };
 Outlier_Model("RScaled", T(5), U(0,4), r);
 D_Sequence(Wigglematch_MGAP311)
 {
  R_Date("124_MGAP311(1-5)",358,21)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(45);
  R_Date("125_MGAP311(46-50)",414,21)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(45);
  R_Date("126_MGAP311(91-95)",393,21)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(35);
  R_Date("127_MGAP311 (126-130)",292,21)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(45);
  R_Date("128_MGAP311 (171-175)",163,20)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(45);
  R_Date("129_MGAP311 (216-220)",226,21)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(33);
  R_Date("130_MGAP311 (249-253)",226,21)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(2.5);
  Date ("Felling_Date_MGAP311");
 };
 Axis(calBP(750), calBP(0));
```

```
};
```

D.3.2.3 D_Sequence (Agreement Indices)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("MGAP311")
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  D_Sequence(Wigglematch_MGAP311)
  {
   R_Date("124_MGAP311(1-5)",358,21)
   {
    color="black";
   };
   Gap(45);
   R_Date("125_MGAP311(46-50)",414,21)
   {
    color="black";
   };
   Gap(45);
   R_Date("126_MGAP311(91-95)",393,21)
   {
    color="black";
   };
   Gap(35);
   R_Date("127_MGAP311 (126-130)",292,21)
   {
    color="black";
   };
   Gap(45);
   R_Date("128_MGAP311 (171-175)",163,20)
   {
    color="black";
   };
   Gap(45);
   R_Date("129_MGAP311 (216-220)",226,21)
   {
    color="black";
   };
   Gap(33);
   R_Date("130_MGAP311 (249-253)",226,21)
   {
    color="black";
   };
   Gap(2.5);
   Date ("Felling_Date_MGAP311");
  };
  Axis(calBP(750), calBP(0));
```

};

D.3.3 MGAP313

D.3.3.1 D_Sequence (SSimple)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("MGAP313")
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  Outlier_Model("SSimple", N(0,2), 0, s);
  D_Sequence(Wigglematch_MGAP313)
  {
   R_Date("102_MGAP313 (31-35)",412,20)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(19);
   R_Date("103_MGAP313 (50-54)",410,24)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(18);
   R_Date("104_MGAP313 (68-72)",375,20)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(19);
   R_Date("105_MGAP313 (87-91)",372,19)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(18);
   R_Date("106_MGAP313 (105-109)",384,20)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(2.5);
   Date ("Felling_Date_MGAP313");
  };
  Axis(calBP(750), calBP(0));
 };
```

D.3.3.2 D_Sequence (RScaled)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("MGAP313")
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  Outlier_Model("RScaled", T(5), U(0,4), r);
  D_Sequence(Wigglematch_MGAP313)
  {
   R_Date("102_MGAP313 (31-35)",412,20)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(19);
   R_Date("103_MGAP313 (50-54)",410,24)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(18);
   R_Date("104_MGAP313 (68-72)",375,20)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(19);
   R_Date("105_MGAP313 (87-91)",372,19)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(18);
   R_Date("106_MGAP313 (105-109)",384,20)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(2.5);
   Date ("Felling_Date_MGAP313");
  };
  Axis(calBP(750), calBP(0));
 };
```

D.3.3.3 D_Sequence (Agreement Indices)

```
Options()
 {
```

```
 Resolution=1;
 kIterations=3000;
};
Plot("MGAP313")
{
 Curve("SHCal20", "shcal20.14C")
 {
  color="red";
 };
 D_Sequence(Wigglematch_MGAP313)
 {
  R_Date("102_MGAP313 (31-35)",412,20)
  {
   color="black";
  };
  Gap(19);
  R_Date("103_MGAP313 (50-54)",410,24)
  {
   color="black";
  };
  Gap(18);
  R_Date("104_MGAP313 (68-72)",375,20)
  {
   color="black";
  };
  Gap(19);
  R_Date("105_MGAP313 (87-91)",372,19)
  {
   color="black";
  };
  Gap(18);
  R_Date("106_MGAP313 (105-109)",384,20)
  {
   color="black";
  };
  Gap(2.5);
  Date ("Felling_Date_MGAP313");
 };
 Axis(calBP(750), calBP(0));
};
```

D.3.4 MGAP316

D.3.4.1 D_Sequence (SSimple)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("MGAP316")
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
```

```
 };
 Outlier_Model("SSimple", N(0,2), 0, s);
 D_Sequence(Wigglematch_MGAP316)
 {
  R_Date("107_MGAP316(1-6)",410,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(28);
  R_Date("108_MGAP316(30-33)",420,20)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(49.5);
  R_Date("109_MGAP316(79-83)",177,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(16.5);
  R_Date("110_MGAP316 (96-99)",172,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(39.5);
  R_Date("111_MGAP316 (135-139)",225,20)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(23);
  R_Date("112_MGAP316 (158-162)",266,20)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(17);
  R_Date("113_MGAP316 (173-181)",195,20)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(4.5);
  Date ("Felling_Date_MGAP316");
 };
 Axis(calBP(750), calBP(0));
};
```

D.3.4.2 D_Sequence (RScaled)

```
Options()
 {
```

```
 Resolution=1;
 kIterations=3000;
};
Plot("MGAP316")
{
 Curve("SHCal20", "shcal20.14C")
 {
  color="red";
 };
 Outlier_Model("RScaled", T(5), U(0,4), r);
 D_Sequence(Wigglematch_MGAP316)
 {
  R_Date("107_MGAP316(1-6)",410,21)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(28);
  R_Date("108_MGAP316(30-33)",420,20)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(49.5);
  R_Date("109_MGAP316(79-83)",177,21)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(16.5);
  R_Date("110_MGAP316 (96-99)",172,21)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(39.5);
  R_Date("111_MGAP316 (135-139)",225,20)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(23);
  R_Date("112_MGAP316 (158-162)",266,20)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(17);
  R_Date("113_MGAP316 (173-181)",195,20)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(4.5);
  Date ("Felling_Date_MGAP316");
```

```
 };
 Axis(calBP(750), calBP(0));
};
```

D.3.4.3 D_Sequence (Agreement Indices)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("MGAP316")
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  D_Sequence(Wigglematch_MGAP316)
  {
   R_Date("107_MGAP316(1-6)",410,21)
   {
    color="black";
   };
   Gap(28);
   R_Date("108_MGAP316(30-33)",420,20)
   {
    color="black";
   };
   Gap(49.5);
   R_Date("109_MGAP316(79-83)",177,21)
   {
    color="black";
   };
   Gap(16.5);
   R_Date("110_MGAP316 (96-99)",172,21)
   {
    color="black";
   };
   Gap(39.5);
   R_Date("111_MGAP316 (135-139)",225,20)
   {
    color="black";
   };
   Gap(23);
   R_Date("112_MGAP316 (158-162)",266,20)
   {
    color="black";
   };
   Gap(17);
   R_Date("113_MGAP316 (173-181)",195,20)
   {
    color="black";
   };
```

```
  Gap(4.5);
  Date ("Felling_Date_MGAP316");
 };
 Axis(calBP(750), calBP(0));
};
```

D.3.5 MGAP320

D.3.5.1 D_Sequence (SSimple)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("MGAP320")
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  Outlier_Model("SSimple", N(0,2), 0, s);
  D_Sequence(Wigglematch_MGAP320)
  {
   R_Date("119_MGAP320 (7-11)",200,21)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(11);
   R_Date("120_MGAP320 (18-22)",201,22)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(10);
   R_Date("121_MGAP320 (28-32)",228,21)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(14);
   R_Date("122_MGAP320 (42-46)",249,22)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(14);
   R_Date("123_MGAP320 (56-60)",193,22)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(2.5);
   Date ("Felling_Date_MGAP320");
  };
```

```
 Axis(calBP(750), calBP(0));
};
```

D.3.5.2 D_Sequence (RScaled)

```
Options()
{
 Resolution=1;
 kIterations=3000;
};
Plot("MGAP320")
{
 Curve("SHCal20", "shcal20.14C")
 {
  color="red";
 };
 Outlier_Model("RScaled", T(5), U(0,4), r);
 D_Sequence(Wigglematch_MGAP320)
 {
  R_Date("119_MGAP320 (7-11)",200,21)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(11);
  R_Date("120_MGAP320 (18-22)",201,22)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(10);
  R_Date("121_MGAP320 (28-32)",228,21)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(14);
  R_Date("122_MGAP320 (42-46)",249,22)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(14);
  R_Date("123_MGAP320 (56-60)",193,22)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(2.5);
  Date ("Felling_Date_MGAP320");
 };
 Axis(calBP(750), calBP(0));
};
```

D.3.5.3 D_Sequence (Agreement Indices)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("MGAP320")
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  D_Sequence(Wigglematch_MGAP320)
  {
   R_Date("119_MGAP320 (7-11)",200,21)
   {
    color="black";
   };
   Gap(11);
   R_Date("120_MGAP320 (18-22)",201,22)
   {
    color="black";
   };
   Gap(10);
   R_Date("121_MGAP320 (28-32)",228,21)
   {
    color="black";
   };
   Gap(14);
   R_Date("122_MGAP320 (42-46)",249,22)
   {
    color="black";
   };
   Gap(14);
   R_Date("123_MGAP320 (56-60)",193,22)
   {
    color="black";
   };
   Gap(2.5);
   Date ("Felling_Date_MGAP320");
  };
  Axis(calBP(750), calBP(0));
 };
```

D.4 Taraheke Pā (TAR)

D.4.1 TARP131

D.4.1.1 D_Sequence (SSimple)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot()
 {
  Curve("SHCal20", "shcal20.14c")
  {
   color="red";
  };
  Outlier_Model("SSimple", N(0,2), 0, s);
  D_Sequence("Wigglematch_TARP131")
  {
   R_Date("74_TARP131 (1-5)",625,23)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(16);
   R_Date("75_TARP131 (17-21)",617,25)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(24);
   R_Date("76_TARP131 (41-45)",551,23)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(18.5);
   R_Date("77_TARP131 (59-64)",459,22)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(23.5);
   R_Date("78_TARP131 (83-87)",439,21)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(35.5);
   R_Date("79_TARP131 (119-122)",356,22)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(25);
   R_Date("80_TARP131 (143-148)",412,21)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
```

```
  Gap(18.5);
  R_Date("81_TARP131 (163-165)",318,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(1.5);
  Date ("Felling_Date_TARP131");
 };
 Axis(calBP(750), calBP(0));
};
```

D.4.1.2 D_Sequence (RScaled)

```
Options()
 {
 Resolution=1;
 kIterations=3000;
 };
 Plot()
 {
 Curve("SHCal20", "shcal20.14c")
 {
  color="red";
 };
 Outlier_Model("RScaled", T(5), U(0,4), r);
 D_Sequence("Wigglematch_TARP131")
 {
  R_Date("74_TARP131 (1-5)",625,23)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(16);
  R_Date("75_TARP131 (17-21)",617,25)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(24);
  R_Date("76_TARP131 (41-45)",551,23)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(18.5);
  R_Date("77_TARP131 (59-64)",459,22)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(23.5);
  R_Date("78_TARP131 (83-87)",439,21)
  {
   Outlier("RScaled", 0.05);
```

```
  color="black";
 };
 Gap(35.5);
 R_Date("79_TARP131 (119-122)",356,22)
 {
  Outlier("RScaled", 0.05);
  color="black";
 };
 Gap(25);
 R_Date("80_TARP131 (143-148)",412,21)
 {
  Outlier("RScaled", 0.05);
  color="black";
 };
 Gap(18.5);
 R_Date("81_TARP131 (163-165)",318,22)
 {
  Outlier("RScaled", 0.05);
  color="black";
 };
 Gap(1.5);
 Date ("Felling_Date_TARP131");
};
Axis(calBP(750), calBP(0));
};
```

D.4.1.3 D_Sequence (Agreement Indices)

```
Options()
{
 Resolution=1;
 kIterations=3000;
};
Plot()
{
 Curve("SHCal20", "shcal20.14c")
 {
  color="red";
 };
 D_Sequence("Wigglematch_TARP131")
 {
  R_Date("74_TARP131 (1-5)",625,23)
  {
   color="black";
  };
  Gap(16);
  R_Date("75_TARP131 (17-21)",617,25)
  {
   color="black";
  };
  Gap(24);
  R_Date("76_TARP131 (41-45)",551,23)
  {
   color="black";
  };
```

```
  Gap(18.5);
  R_Date("77_TARP131 (59-64)",459,22)
  {
   color="black";
  };
  Gap(23.5);
  R_Date("78_TARP131 (83-87)",439,21)
  {
   color="black";
  };
  Gap(35.5);
  R_Date("79_TARP131 (119-122)",356,22)
  {
   color="black";
  };
  Gap(25);
  R_Date("80_TARP131 (143-148)",412,21)
  {
   color="black";
  };
  Gap(18.5);
  R_Date("81_TARP131 (163-165)",318,22)
  {
   color="black";
  };
  Gap(1.5);
  Date ("Felling_Date_TARP131");
 };
 Axis(calBP(750), calBP(0));
};
```

D.4.2 TARP132

D.4.2.1 D_Sequence (SSimple)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("TARP132")
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  Outlier_Model("SSimple", N(0,2), 0, s);
  D_Sequence(Wigglematch_TARP131)
  {
   R_Date("69_TARP132 (1-5)",468,21)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(14);
```

```
  R_Date("70_TARP132 (15-19)",475,26)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(16);
  R_Date("71_TARP132 (31-35)",410,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(38);
  R_Date("73_TARP132 (69-73)",375,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(2.5);
  Date ("Felling_Date_TARP132");
 };
 Axis(calBP(750), calBP(0));
};
```

D.4.2.2 D_Sequence (RScaled)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("TARP132")
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  Outlier_Model("RScaled", T(5), U(0,4), r);
  D_Sequence(Wigglematch_TARP131)
  {
   R_Date("69_TARP132 (1-5)",468,21)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(14);
   R_Date("70_TARP132 (15-19)",475,26)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(16);
   R_Date("71_TARP132 (31-35)",410,21)
   {
    Outlier("RScaled", 0.05);
    color="black";
```

```
  };
  Gap(38);
  R_Date("73_TARP132 (69-73)",375,21)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(2.5);
  Date ("Felling_Date_TARP132");
 };
 Axis(calBP(750), calBP(0));
};
```

D.4.2.3 D_Sequence (Agreement Indices)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("TARP132")
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  D_Sequence(Wigglematch_TARP131)
  {
   R_Date("69_TARP132 (1-5)",468,21)
   {
    color="black";
   };
   Gap(14);
   R_Date("70_TARP132 (15-19)",475,26)
   {
    color="black";
   };
   Gap(16);
   R_Date("71_TARP132 (31-35)",410,21)
   {
    color="black";
   };
   Gap(38);
   R_Date("73_TARP132 (69-73)",375,21)
   {
    color="black";
   };
   Gap(2.5);
   Date ("Felling_Date_TARP132");
  };
  Axis(calBP(750), calBP(0));
 };
```

D.5 Te Uapata Pā (TEU)

D.5.1 TEUP219 (Original Model)

D.5.1.1 D_Sequence (SSimple)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("TEUP219")
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  Outlier_Model("SSimple", N(0,2), 0, s);
  D_Sequence(Wigglematch_TEUP219)
  {
   R_Date("87_TEUP219 (6-10)",413,21)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(19);
   R_Date("88_TEUP219 (25-29)",408,21)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(45);
   R_Date("89_TEUP219 (70-74)",198,23)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(34);
   R_Date("90_TEUP219 (104-108)",185,21)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(13);
   R_Date("91_TEUP219 (117-121)",216,21)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(13);
   R_Date("92_TEUP219 (130-134)",236,21)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
```

```
  Gap(18);
  R_Date("93_TEUP219 (148-152)",211,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(16.5);
  Date ("Felling_Date_TEUP219");
 };
 Axis(calBP(750), calBP(0));
};
```

D.5.1.2 D_Sequence (RScaled)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("TEUP219")
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  Outlier_Model("RScaled", T(5), U(0,4), r);
  D_Sequence(Wigglematch_TEUP219)
  {
   R_Date("87_TEUP219 (6-10)",413,21)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(19);
   R_Date("88_TEUP219 (25-29)",408,21)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(45);
   R_Date("89_TEUP219 (70-74)",198,23)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(34);
   R_Date("90_TEUP219 (104-108)",185,21)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(13);
   R_Date("91_TEUP219 (117-121)",216,21)
   {
```

```
  Outlier("RScaled", 0.05);
  color="black";
 };
 Gap(13);
 R_Date("92_TEUP219 (130-134)",236,21)
 {
  Outlier("RScaled", 0.05);
  color="black";
 };
 Gap(18);
 R_Date("93_TEUP219 (148-152)",211,22)
 {
  Outlier("RScaled", 0.05);
  color="black";
 };
 Gap(16.5);
 Date ("Felling_Date_TEUP219");
};
Axis(calBP(750), calBP(0));
};
```

D.5.1.3 D_Sequence (Agreement Indices)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("TEUP219")
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  D_Sequence(Wigglematch_TEUP219)
  {
   R_Date("87_TEUP219 (6-10)",413,21)
   {
    color="black";
   };
   Gap(19);
   R_Date("88_TEUP219 (25-29)",408,21)
   {
    color="black";
   };
   Gap(45);
   R_Date("89_TEUP219 (70-74)",198,23)
   {
    color="black";
   };
   Gap(34);
   R_Date("90_TEUP219 (104-108)",185,21)
   {
    color="black";
```

```
  };
  Gap(13);
  R_Date("91_TEUP219 (117-121)",216,21)
  {
   color="black";
  };
  Gap(13);
  R_Date("92_TEUP219 (130-134)",236,21)
  {
   color="black";
  };
  Gap(18);
  R_Date("93_TEUP219 (148-152)",211,22)
  {
   color="black";
  };
  Gap(16.5);
  Date ("Felling_Date_TEUP219");
 };
 Axis(calBP(750), calBP(0));
};
```

D.5.2 TEUP219 (Five ^{14}C Samples Included)

D.5.2.1 D_Sequence (SSimple)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("TEUP219")
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  Outlier_Model("SSimple", N(0,2), 0, s);
  D_Sequence(Wigglematch_TEUP219)
  {
   R_Date("89_TEUP219 (70-74)",198,23)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(34);
   R_Date("90_TEUP219 (104-108)",185,21)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(13);
   R_Date("91_TEUP219 (117-121)",216,21)
   {
    Outlier("SSimple", 0.05);
```

```
  color="black";
 };
 Gap(13);
 R_Date("92_TEUP219 (130-134)",236,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(18);
 R_Date("93_TEUP219 (148-152)",211,22)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(16.5);
 Date ("Felling_Date_TEUP219");
};
Axis(calBP(750), calBP(0));
};
```

D.5.2.2 D_Sequence (RScaled)

```
Options()
{
 Resolution=1;
 kIterations=3000;
};
Plot("TEUP219")
{
 Curve("SHCal20", "shcal20.14C")
 {
  color="red";
 };
 Outlier_Model("RScaled", T(5), U(0,4), r);
 D_Sequence(Wigglematch_TEUP219)
 {
  R_Date("89_TEUP219 (70-74)",198,23)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(34);
  R_Date("90_TEUP219 (104-108)",185,21)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(13);
  R_Date("91_TEUP219 (117-121)",216,21)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(13);
  R_Date("92_TEUP219 (130-134)",236,21)
```

```
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(18);
  R_Date("93_TEUP219 (148-152)",211,22)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(16.5);
  Date ("Felling_Date_TEUP219");
 };
 Axis(calBP(750), calBP(0));
};
```

D.5.2.3 D_Sequence (Agreement Indices)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("TEUP219")
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  D_Sequence(Wigglematch_TEUP219)
  {
   R_Date("89_TEUP219 (70-74)",198,23)
   {
    color="black";
   };
   Gap(34);
   R_Date("90_TEUP219 (104-108)",185,21)
   {
    color="black";
   };
   Gap(13);
   R_Date("91_TEUP219 (117-121)",216,21)
   {
    color="black";
   };
   Gap(13);
   R_Date("92_TEUP219 (130-134)",236,21)
   {
    color="black";
   };
   Gap(18);
   R_Date("93_TEUP219 (148-152)",211,22)
   {
    color="black";
   };
```

```
  Gap(16.5);
  Date ("Felling_Date_TEUP219");
 };
 Axis(calBP(750), calBP(0));
};
```

D.5.3 TEUP234 (Original Model)

D.5.3.1 D_Sequence (SSimple)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("TEUP234")
 {
  Curve("SHCal20","shcal20.14C")
  {
   color="red";
  };
  Outlier_Model("SSimple", N(0,2), 0, s);
  D_Sequence(Wigglematch_TEUP234)
  {
   R_Date("94_TEUP234 (6-10)",405,21)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(15);
   R_Date("95_TEUP234 (21-25)",402,22)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(79);
   R_Date("96_TEUP234 (100-104)",217,20)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(15);
   R_Date("97_TEUP234 (115-119)",213,21)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(16);
   R_Date("98_TEUP234 (131-135)",259,21)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(9);
   R_Date("99_TEUP234 (140-144)",244,20)
```

```
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(10);
  R_Date("100_TEUP234 (150-154)",288,20)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(6);
  R_Date("101_TEUP234 (156-160)",226,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(13.5);
  Date ("Felling_Date_TEUP234");
 };
 Axis(calBP(750), calBP(0));
};
```

D.5.3.2 D_Sequence (RScaled)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("TEUP234")
 {
  Curve("SHCal20","shcal20.14C")
  {
   color="red";
  };
  Outlier_Model("RScaled", T(5), U(0,4), r);
  D_Sequence(Wigglematch_TEUP234)
  {
   R_Date("94_TEUP234 (6-10)",405,21)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(15);
   R_Date("95_TEUP234 (21-25)",402,22)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(79);
   R_Date("96_TEUP234 (100-104)",217,20)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
```

```
  Gap(15);
  R_Date("97_TEUP234 (115-119)",213,21)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(16);
  R_Date("98_TEUP234 (131-135)",259,21)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(9);
  R_Date("99_TEUP234 (140-144)",244,20)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(10);
  R_Date("100_TEUP234 (150-154)",288,20)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(6);
  R_Date("101_TEUP234 (156-160)",226,22)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(13.5);
  Date ("Felling_Date_TEUP234");
 };
 Axis(calBP(750), calBP(0));
};
```

D.5.3.3 D_Sequence (Agreement Indices)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("TEUP234")
 {
  Curve("SHCal20","shcal20.14C")
  {
   color="red";
  };
  D_Sequence(Wigglematch_TEUP234)
  {
   R_Date("94_TEUP234 (6-10)",405,21)
   {
    color="black";
   };
```

```
  Gap(15);
  R_Date("95_TEUP234 (21-25)",402,22)
  {
   color="black";
  };
  Gap(79);
  R_Date("96_TEUP234 (100-104)",217,20)
  {
   color="black";
  };
  Gap(15);
  R_Date("97_TEUP234 (115-119)",213,21)
  {
   color="black";
  };
  Gap(16);
  R_Date("98_TEUP234 (131-135)",259,21)
  {
   color="black";
  };
  Gap(9);
  R_Date("99_TEUP234 (140-144)",244,20)
  {
   color="black";
  };
  Gap(10);
  R_Date("100_TEUP234 (150-154)",288,20)
  {
   color="black";
  };
  Gap(6);
  R_Date("101_TEUP234 (156-160)",226,22)
  {
   color="black";
  };
  Gap(13.5);
  Date ("Felling_Date_TEUP234");
 };
 Axis(calBP(750), calBP(0));
};
```

D.5.4 TEUP234 (Five ^{14}C Samples Included)

D.5.4.1 D_Sequence (SSimple)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("TEUP234")
 {
  Curve("SHCal20","shcal20.14C")
  {
   color="red";
```

```
 };
 Outlier_Model("SSimple", N(0,2), 0, s);
 D_Sequence(Wigglematch_TEUP234)
 {
  R_Date("96_TEUP234 (100-104)",217,20)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(15);
  R_Date("97_TEUP234 (115-119)",213,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(16);
  R_Date("98_TEUP234 (131-135)",259,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(9);
  R_Date("99_TEUP234 (140-144)",244,20)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(10);
  R_Date("100_TEUP234 (150-154)",288,20)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(6);
  R_Date("101_TEUP234 (156-160)",226,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(13.5);
  Date ("Felling_Date_TEUP234");
 };
 Axis(calBP(750), calBP(0));
};
```

D.5.4.2 D_Sequence (RScaled)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("TEUP234")
 {
  Curve("SHCal20","shcal20.14C")
```

```
 {
  color="red";
 };
 Outlier_Model("RScaled", T(5), U(0,4), r);
 D_Sequence(Wigglematch_TEUP234)
 {
  R_Date("96_TEUP234 (100-104)",217,20)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(15);
  R_Date("97_TEUP234 (115-119)",213,21)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(16);
  R_Date("98_TEUP234 (131-135)",259,21)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(9);
  R_Date("99_TEUP234 (140-144)",244,20)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(10);
  R_Date("100_TEUP234 (150-154)",288,20)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(6);
  R_Date("101_TEUP234 (156-160)",226,22)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(13.5);
  Date ("Felling_Date_TEUP234");
 };
 Axis(calBP(750), calBP(0));
};
```

D.5.4.3 D_Sequence (Agreement Indices)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("TEUP234")
```

```
{
 Curve("SHCal20","shcal20.14C")
 {
  color="red";
 };
 D_Sequence(Wigglematch_TEUP234)
 {
  R_Date("96_TEUP234 (100-104)",217,20)
  {
   color="black";
  };
  Gap(15);
  R_Date("97_TEUP234 (115-119)",213,21)
  {
   color="black";
  };
  Gap(16);
  R_Date("98_TEUP234 (131-135)",259,21)
  {
   color="black";
  };
  Gap(9);
  R_Date("99_TEUP234 (140-144)",244,20)
  {
   color="black";
  };
  Gap(10);
  R_Date("100_TEUP234 (150-154)",288,20)
  {
   color="black";
  };
  Gap(6);
  R_Date("101_TEUP234 (156-160)",226,22)
  {
   color="black";
  };
  Gap(13.5);
  Date ("Felling_Date_TEUP234");
 };
 Axis(calBP(750), calBP(0));
};
```

D.5.5 TEUP244

D.5.5.1 D_Sequence (SSimple)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("TEUP244")
 {
  Curve("SHCal20","shcal20.14C")
```

```
 {
  color="red";
 };
 Outlier_Model("SSimple", N(0,2), 0, s);
 D_Sequence(Wigglematch_TEUP244)
 {
  R_Date("82_TEUP244 (1-5)",214,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(20);
  R_Date("83_TEUP244 (21-25)",207,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(15);
  R_Date("84_TEUP244 (36-40)",267,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(13);
  R_Date("85_TEUP244 (49-53)",233,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(12);
  R_Date("86_TEUP244 (61-65)",165,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(2.5);
  Date ("Felling_Date_TEUP244");
 };
 Axis(calBP(750), calBP(0));
};
```

D.5.5.2 D_Sequence (RScaled)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("TEUP244")
 {
  Curve("SHCal20","shcal20.14C")
  {
   color="red";
  };
  Outlier_Model("RScaled", T(5), U(0,4), r);
```

```
 D_Sequence(Wigglematch_TEUP244)
 {
  R_Date("82_TEUP244 (1-5)",214,21)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(20);
  R_Date("83_TEUP244 (21-25)",207,21)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(15);
  R_Date("84_TEUP244 (36-40)",267,21)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(13);
  R_Date("85_TEUP244 (49-53)",233,21)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(12);
  R_Date("86_TEUP244 (61-65)",165,22)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(2.5);
  Date ("Felling_Date_TEUP244");
 };
 Axis(calBP(750), calBP(0));
};
```

D.5.5.3 D_Sequence (Agreement Indices)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("TEUP244")
 {
  Curve("SHCal20","shcal20.14C")
  {
   color="red";
  };
  D_Sequence(Wigglematch_TEUP244)
  {
   R_Date("82_TEUP244 (1-5)",214,21)
   {
    color="black";
```

```
  };
  Gap(20);
  R_Date("83_TEUP244 (21-25)",207,21)
  {
   color="black";
  };
  Gap(15);
  R_Date("84_TEUP244 (36-40)",267,21)
  {
   color="black";
  };
  Gap(13);
  R_Date("85_TEUP244 (49-53)",233,21)
  {
   color="black";
  };
  Gap(12);
  R_Date("86_TEUP244 (61-65)",165,22)
  {
   color="black";
  };
  Gap(2.5);
  Date ("Felling_Date_TEUP244");
 };
 Axis(calBP(750), calBP(0));
};
```

D.6 Lake Rotokauri (ROT)

D.6.1 ROTP353

D.6.1.1 D_Sequence (SSimple)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot()
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  Outlier_Model("SSimple", N(0,2), 0, s);
  D_Sequence(Wigglematch_ROTP353)
  {
   R_Date("131_ROTP353 (20-24)",427,26)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(11);
   R_Date("132_ROTP353 (31-35)",429,24)
   {
```

```
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(12);
 R_Date("133_ROTP353 (43-47)",405,25)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(13);
 R_Date("134_ROTP353 (56-60)",372,24)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(12);
 R_Date("135_ROTP353 (68-72)",396,26)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(2.5);
 Date ("Felling_Date_ROTP353");
};
Axis(calBP(750), calBP(0));
};
```

D.6.1.2 D_Sequence (RScaled)

```
Options()
{
 Resolution=1;
 kIterations=3000;
};
Plot()
{
 Curve("SHCal20", "shcal20.14C")
 {
  color="red";
 };
 Outlier_Model("RScaled", T(5), U(0,4), r);
 D_Sequence(Wigglematch_ROTP353)
 {
  R_Date("131_ROTP353 (20-24)",427,26)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(11);
  R_Date("132_ROTP353 (31-35)",429,24)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(12);
```

```
  R_Date("133_ROTP353 (43-47)",405,25)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(13);
  R_Date("134_ROTP353 (56-60)",372,24)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(12);
  R_Date("135_ROTP353 (68-72)",396,26)
  {
   Outlier("RScaled", 0.05);
   color="black";
  };
  Gap(2.5);
  Date ("Felling_Date_ROTP353");
 };
 Axis(calBP(750), calBP(0));
};
```

D.6.1.3 D_Sequence (Agreement Indices)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot()
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  D_Sequence(Wigglematch_ROTP353)
  {
   R_Date("131_ROTP353 (20-24)",427,26)
   {
    color="black";
   };
   Gap(11);
   R_Date("132_ROTP353 (31-35)",429,24)
   {
    color="black";
   };
   Gap(12);
   R_Date("133_ROTP353 (43-47)",405,25)
   {
    color="black";
   };
   Gap(13);
   R_Date("134_ROTP353 (56-60)",372,24)
   {
```

```
  color="black";
 };
 Gap(12);
 R_Date("135_ROTP353 (68-72)",396,26)
 {
  color="black";
 };
 Gap(2.5);
 Date ("Felling_Date_ROTP353");
};
Axis(calBP(750), calBP(0));
};
```

D.6.2 ROTP354

D.6.2.1 D_Sequence (SSimple)

```
Options()
{
 Resolution=1;
 kIterations=3000;
};
Plot()
{
 Curve("SHCal20", "shcal20.14C")
 {
  color="red";
 };
 Outlier_Model("SSimple", N(0,2), 0, s);
 D_Sequence(Wigglematch_ROTP354)
 {
  R_Date("136_ROTP354 (5-9)",962,24)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(14);
  R_Date("137_ROTP354 (19-23)",914,24)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(19);
  R_Date("138_ROTP354 (38-42)",916,24)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(10);
  R_Date("139_ROTP354 (48-52)",927,24)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(18);
```

```
  R_Date("140_ROTP354 (66-70)",894,25)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(2.5);
  Date ("Felling_Date_ROTP354");
 };
 Axis(calBP(750), calBP(0));
};
```

D.6.2.2 D_Sequence (RScaled)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot()
 {
  Curve("SHCal20", "shcal20.14C")
  {
   color="red";
  };
  Outlier_Model("RScaled", T(5), U(0,4), r);
  D_Sequence(Wigglematch_ROTP354)
  {
   R_Date("136_ROTP354 (5-9)",962,24)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(14);
   R_Date("137_ROTP354 (19-23)",914,24)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(19);
   R_Date("138_ROTP354 (38-42)",916,24)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(10);
   R_Date("139_ROTP354 (48-52)",927,24)
   {
    Outlier("RScaled", 0.05);
    color="black";
   };
   Gap(18);
   R_Date("140_ROTP354 (66-70)",894,25)
   {
    Outlier("RScaled", 0.05);
    color="black";
```

```
  };
  Gap(2.5);
  Date ("Felling_Date_ROTP354");
 };
 Axis(calBP(750), calBP(0));
};
```

D.6.2.3 D_Sequence (Agreement Indices)

```
Options()
 {
 Resolution=1;
 kIterations=3000;
 };
 Plot()
 {
 Curve("SHCal20", "shcal20.14C")
 {
  color="red";
 };
 D_Sequence(Wigglematch_ROTP354)
 {
  R_Date("136_ROTP354 (5-9)",962,24)
  {
   color="black";
  };
  Gap(14);
  R_Date("137_ROTP354 (19-23)",914,24)
  {
   color="black";
  };
  Gap(19);
  R_Date("138_ROTP354 (38-42)",916,24)
  {
   color="black";
  };
  Gap(10);
  R_Date("139_ROTP354 (48-52)",927,24)
  {
   color="black";
  };
  Gap(18);
  R_Date("140_ROTP354 (66-70)",894,25)
  {
   color="black";
  };
  Gap(2.5);
  Date ("Felling_Date_ROTP354");
 };
 Axis(calBP(750), calBP(0));
};
```

Appendix E. OxCal Local-Scale Code

E.1 Lake Mangakaware 1 (MA1)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot()
 {
  Curve("SHCal20", "shcal20.14c")
  {
   color="red";
  };
  Outlier_Model("SSimple", N(0,2), 0, s);
  Sequence("MA1_Site_Model")
  {
   Boundary("Start 1");
   Phase("Phase I")
   {
    D_Sequence("MA1P204")
    {
     R_Date("23_MA1P204 (30-34)",293,21)
     {
      Outlier("SSimple", 0.05);
      color="black";
     };
     Gap(10);
     R_Date("24_MA1P204 (40-44)",260,21)
     {
      Outlier("SSimple", 0.05);
      color="black";
     };
     Gap(31);
     R_Date("25_MA1P204 (71-75)",210,24)
     {
      Outlier("SSimple", 0.05);
      color="black";
     };
     Gap(15);
     R_Date("26_MA1P204 (86-90)",173,23)
     {
      Outlier("SSimple", 0.05);
      color="black";
     };
     Gap(9.5);
     R_Date("27_MA1P204 (96-99)",162,21)
     {
      Outlier("SSimple", 0.05);
      color="black";
     };
     Gap(2);
     Date ("Felling_Date_MA1P204");
    };
    Date("MDate_PhaseI");
```

```
};
Boundary("End 1");
Interval("Interval_1");
Boundary("Start 2");
Phase("Phase II")
{
 D_Sequence("MA1P53")
 {
  R_Date("1_MA1P53 (1-5)",413,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(9);
  R_Date("2_MA1P53 (10-14)",440,20)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(23.5);
  R_Date("3_MA1P53 (33-38)",334,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(36.5);
  R_Date("4_MA1P53 (70-74)",195,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(19.5);
  R_Date("5_MA1P53 (90-93)",172,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(43.5);
  R_Date("7_MA1P53 (133-137)",236,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(15);
  R_Date("8_MA1P53 (148-152)",227,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(2.5);
  Date ("Felling_Date_MA1P53");
 };
 Date("MDate_PhaseII");
};
Boundary("End 2");
```

```
Interval("Interval_2");
Boundary("Start 3");
Phase("Phase III")
{
 D_Sequence("MA1P190")
 {
  R_Date("14_MA1P190 (1-5)",245,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(10);
  R_Date("15_MA1P190 (11-15)",233,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(15);
  R_Date("16_MA1P190 (26-30)",223,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(15);
  R_Date("17_MA1P190 (41-45)",264,23)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(9.5);
  R_Date("18_MA1P190 (51-54)",190,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(2);
  Date ("Felling_Date_MA1P190");
 };
 Date("MDate_PhaseIII");
};
Boundary("End 3");
Interval("Interval 3");
Boundary("Start 4");
Phase("Phase IV")
{
 D_Sequence("MA1P208")
 {
  R_Date("28_MA1P208 (1-5)",259,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(16);
  R_Date("29_MA1P208 (17-21)",216,26)
  {
```

```
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(19);
   R_Date("30_MA1P208 (36-40)",230,21)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(15);
   R_Date("31_MA1P208 (51-55)",210,24)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(18);
   R_Date("32_MA1P208 (69-73)",169,22)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(2.5);
   Date ("Felling_Date_MA1P208");
  };
  Date("MDate_PhaseIV");
 };
 Boundary("End 4");
 Span("MA1_Span");
 Difference("Diff_I_II", "MDate_PhaseI", "MDate_PhaseII");
 Difference("Diff_II_III", "MDate_PhaseII", "MDate_PhaseIII");
 Difference("Diff_III_IV", "MDate_PhaseIII", "MDate_PhaseIV");
 };
};
```

E.2 Lake Mangakaware 2 (MA2)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot()
 {
  Curve("SHCal20", "shcal20.14c")
  {
   color="red";
  };
  Outlier_Model("SSimple", N(0,2), 0, s);
  Sequence("MA2_Sequence_Model")
  {
   Boundary("Start 1");
   Phase("Phase_I")
   {
    D_Sequence("MA2P161")
    {
```

```
 R_Date("64_MA2P161 (1-5)",307,23)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(19);
 R_Date("65_MA2P161 (20-24)",213,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(19);
 R_Date("66_MA2P161 (39-43)",198,22)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(19);
 R_Date("67_MA2P161 (58-62)",158,22)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(22);
 R_Date("68_MA2P161 (80-84)",225,22)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(2.5);
 Date ("Felling_Date_MA2P161");
};
Date("MDate_Phase_I");
};
Boundary("End 1");
Interval("Interval_1");
Boundary("Start 2");
Phase("Phase_II")
{
 D_Sequence("MA2P15")
 {
  R_Date("38_MA2P15 (1-5)",231,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(11);
  R_Date("39_MA2P15 (12-16)",177,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(15);
  R_Date("40_MA2P15 (27-31))",211,21)
  {
```

```
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(19);
R_Date("41_MA2P15 (46-50)",255,21)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(11);
R_Date("42_MA2P15 (57-61)",212,21)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(2.5);
Date ("Felling_Date_MA2P15");
};
D_Sequence("MA2P152")
{
R_Date("53_MA2P152 (1-5)",221,22)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(11);
R_Date("54_MA2P152 (12-16)",234,22)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(14);
R_Date("55_MA2P152 (26-30)",273,23)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(21);
R_Date("56_MA2P152 (47-51)",250,21)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(22);
R_Date("57_MA2P152 (69-73)",222,22)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(2.5);
Date("Felling_Date_MA2P152");
};
D_Sequence("MA2P153")
{
R_Date("59_MA2P153 (1-5)",241,24)
```

```
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(14);
R_Date("60_MA2P153 (15-19)",259,22)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(10);
R_Date("61_MA2P153 (25-29)",261,21)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(11);
R_Date("62_MA2P153 (36-40)",273,22)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(12);
R_Date("63_MA2P153 (48-52)",206,22)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(2.5);
Date("Felling_Date_MA2P153");
};
D_Sequence("MA2P154")
{
 R_Date("48_MA2P154 (1-5)",264,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(14);
 R_Date("49_MA2P154 (15-19)",230,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(14);
 R_Date("50_MA2P154 (29-33)",234,22)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(15);
 R_Date("51_MA2P154 (44-48)",267,22)
 {
  Outlier("SSimple", 0.05);
  color="black";
```

```
    };
    Gap(15);
    R_Date("52_MA2P154 (59-63)",219,22)
    {
     Outlier("SSimple", 0.05);
     color="black";
    };
    Gap(2.5);
    Date("Felling_Date_MA2P154");
   };
   Date("MDate_Phase_II");
  };
  Boundary("End 2");
  Difference("Diff_PhaseI_PhaseII", "MDate_Phase_I", "MDate_Phase_II");
  Span("MA2_Span");
 };
};
```

E.3 Lake Mangahia (MGA)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot()
 {
  Curve("SHCal20", "shcal20.14c")
  {
   color="red";
  };
  Outlier_Model("SSimple", N(0,2), 0, s);
  Sequence("MGA_Sequence_Model")
  {
   Boundary("Start 1");
   Phase("Phase_I")
   {
    D_Sequence("MGAP313")
    {
     R_Date("102_MGAP313 (31-35)",412,20)
     {
      Outlier("SSimple", 0.05);
      color="black";
     };
     Gap(19);
     R_Date("103_MGAP313 (50-54)",410,24)
     {
      Outlier("SSimple", 0.05);
      color="black";
     };
     Gap(18);
     R_Date("104_MGAP313 (68-72)",375,20)
     {
      Outlier("SSimple", 0.05);
      color="black";
```

```
 };
 Gap(19);
 R_Date("105_MGAP313 (87-91)",372,19)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(18);
 R_Date("106_MGAP313 (105-109)",384,20)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(2.5);
 Date ("Felling_Date_MGAP313");
};
Date("MDate_I");
};
Boundary("End 1");
Interval("Interval_I_II");
Boundary("Start 2");
Phase("Phase_II")
{
 D_Sequence("MGAP311")
 {
  R_Date("124_MGAP311(1-5)",358,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(45);
  R_Date("125_MGAP311(46-50)",414,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(45);
  R_Date("126_MGAP311(91-95)",393,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(35);
  R_Date("127_MGAP311 (126-130)",292,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(45);
  R_Date("128_MGAP311 (171-175)",163,20)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(45);
```

```
 R_Date("129_MGAP311 (216-220)",226,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(33);
 R_Date("130_MGAP311 (249-253)",226,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(2.5);
 Date ("Felling_Date_MGAP311");
};
Date("MDate_II");
};
Boundary("End 2");
Interval("Interval_II_III");
Boundary("Start 3");
Phase("Phase_III")
{
 D_Sequence("MGAP281")
 {
  R_Date("114_MGAP281 (8-12)",134,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(16);
  R_Date("115_MGAP281 (24-28)",247,20)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(17);
  R_Date("116_MGAP281 (41-45)",229,24)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(19);
  R_Date("117_MGAP281 (60-64)",217,23)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(11);
  R_Date("118_MGAP281 (71-75)",246,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(2.5);
  Date ("Felling_Date_MGAP281");
 };
```

```
 D_Sequence("MGAP316")
 {
  R_Date("107_MGAP316(1-6)",410,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(77.5);
  R_Date("109_MGAP316(79-83)",177,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(16.5);
  R_Date("110_MGAP316 (96-99)",172,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(39.5);
  R_Date("111_MGAP316 (135-139)",225,20)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(23);
  R_Date("112_MGAP316 (158-162)",266,20)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(17);
  R_Date("113_MGAP316 (173-181)",195,20)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(4.5);
  Date ("Felling_Date_MGAP316");
 };
 Date("MDate_III");
};
Boundary("End 3");
Interval("Interval_III_IV");
Boundary("Start 4");
Phase("Phase_IV")
{
 D_Sequence("MGAP320")
 {
  R_Date("119_MGAP320 (7-11)",200,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(11);
```

```
    R_Date("120_MGAP320 (18-22)",201,22)
    {
     Outlier("SSimple", 0.05);
     color="black";
    };
    Gap(10);
    R_Date("121_MGAP320 (28-32)",228,21)
    {
     Outlier("SSimple", 0.05);
     color="black";
    };
    Gap(14);
    R_Date("122_MGAP320 (42-46)",249,22)
    {
     Outlier("SSimple", 0.05);
     color="black";
    };
    Gap(14);
    R_Date("123_MGAP320 (56-60)",193,22)
    {
     Outlier("SSimple", 0.05);
     color="black";
    };
    Gap(2.5);
    Date ("Felling_Date_MGAP320");
   };
   Date("MDate_IV");
  };
  Boundary("End 4");
  Difference("Diff_I_II", "MDate_I", "MDate_II");
  Difference("Diff_II_III", "MDate_II", "MDate_III");
  Difference("Diff_III_IV", "MDate_III", "MDate_IV");
  Span("MGA_Span");
 };
};
```

E.4 Taraheke Pā (TAR)

```
Plot()
 {
  Curve("SHCal20", "shcal20.14c");
  Outlier_Model("SSimple", N(0,2), 0, s);
  Sequence("TAR_Local_Scale")
  {
   Boundary("Start 1");
   Phase("TAR_PhaseI")
   {
    D_Sequence("Wigglematch_TARP132")
    {
     R_Date("69_TARP132 (1-5)",468,21)
     {
      Outlier("SSimple", 0.05);
      color="black";
     };
     Gap(14);
```

```
 R_Date("70_TARP132 (15-19)",475,26)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(16);
 R_Date("71_TARP132 (31-35)",410,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(38);
 R_Date("73_TARP132 (69-73)",375,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(2.5);
 Date ("Felling_Date_TARP132");
};
Date("MDate_PhaseI");
};
Boundary("End 1");
Interval("Interval 1");
Boundary("Start 2");
Phase("TAR_PhaseII")
{
 D_Sequence("Wigglematch_TARP131")
 {
  R_Date("74_TARP131 (1-5)",625,23)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(16);
  R_Date("75_TARP131 (17-21)",617,25)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(24);
  R_Date("76_TARP131 (41-45)",551,23)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(18.5);
  R_Date("77_TARP131 (59-64)",459,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(23.5);
  R_Date("78_TARP131 (83-87)",439,21)
  {
```

```
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(35.5);
   R_Date("79_TARP131 (119-122)",356,22)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(25);
   R_Date("80_TARP131 (143-148)",412,21)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(18.5);
   R_Date("81_TARP131 (163-165)",318,22)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(1.5);
   Date ("Felling_Date_TARP131");
  };
  Date("MDate_PhaseII");
 };
 Boundary("End 2");
 Span("TAR_Span");
 Difference("Diff_I_II", "MDate_PhaseI", "MDate_PhaseII");
};
};
```

E.5 Te Uapata Pā (TEU)

```
Plot()
{
 Curve("SHCal20", "shcal20.14c");
 Outlier_Model("SSimple", N(0,2), 0, s);
 Sequence("TEU_LocalScale")
 {
  Boundary("Start 1");
  Phase("Phase_I")
  {
   D_Sequence("TEUP219")
   {
    R_Date("89_TEUP219 (70-74)",198,23)
    {
     Outlier("SSimple", 0.05);
     color="black";
    };
    Gap(34);
    R_Date("90_TEUP219 (104-108)",185,21)
    {
     Outlier("SSimple", 0.05);
     color="black";
```

```
 };
 Gap(13);
 R_Date("91_TEUP219 (117-121)",216,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(13);
 R_Date("92_TEUP219 (130-134)",236,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(18);
 R_Date("93_TEUP219 (148-152)",211,22)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(16.5);
 Date ("Felling_Date_TEUP219");
};
Date("MDate_PhaseI");
};
Boundary("End 1");
Interval("Interval 1");
Boundary("Start 2");
Phase("Phase_II")
{
 D_Sequence("TEUP234")
 {
  R_Date("96_TEUP234 (100-104)",217,20)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(15);
  R_Date("97_TEUP234 (115-119)",213,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(16);
  R_Date("98_TEUP234 (131-135)",259,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(9);
  R_Date("99_TEUP234 (140-144)",244,20)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(10);
```

```
  R_Date("100_TEUP234 (150-154)",288,20)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(6);
  R_Date("101_TEUP234 (156-160)",226,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(13.5);
  Date ("Felling_Date_TEUP234");
 };
 D_Sequence("TEUP244")
 {
  R_Date("82_TEUP244 (1-5)",214,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(20);
  R_Date("83_TEUP244 (21-25)",207,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(15);
  R_Date("84_TEUP244 (36-40)",267,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(13);
  R_Date("85_TEUP244 (49-53)",233,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(12);
  R_Date("86_TEUP244 (61-65)",165,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(2.5);
  Date ("Felling_Date_TEUP244");
 };
 Date("MDate_PhaseII");
};
Boundary("End 2");
Span("TEU_Span");
Difference("Diff_I_II", "MDate_PhaseI", "MDate_PhaseII");
};
};
```

E.6 Otāhau Pā (OTA)

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot()
 {
  Curve("SHCal20", "shcal20.14c")
  {
   color="red";
  };
  Outlier_Model("SSimple", N(0,2), 0, s);
  Sequence("OTA_Sequence_Model")
  {
   Boundary("Start 1");
   Phase("OTA_PhaseI")
   {
    D_Sequence("OTAP003")
    {
     R_Date("OTAP003_7-3", 166, 14)
     {
      Outlier("SSimple", 0.05);
      color="black";
     };
     Gap(5);
     R_Date("OTAP003_8-12", 127, 16)
     {
      Outlier("SSimple", 0.05);
      color="black";
     };
     Gap(50);
     R_Date("OTAP003_58-62", 221, 20)
     {
      Outlier("SSimple", 0.05);
      color="black";
     };
     Gap(5);
     R_Date("OTAP003_63-67", 201, 17)
     {
      Outlier("SSimple", 0.05);
      color="black";
     };
     Gap(2.5);
     Date("Felling_Date_OTAP003");
    };
    D_Sequence("OTAP005")
    {
     R_Date("OTAP005_3-7", 142, 15)
     {
      Outlier("SSimple", 0.05);
      color="black";
```

```
};
Gap(5);
R_Date("OTAP005_8-12", 139, 15)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(5);
R_Date("OTAP005_13-17", 152, 16)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(5);
R_Date("OTAP005_18-22", 165, 14)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(5);
R_Date("OTAP005_23-27", 183, 15)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(5);
R_Date("OTAP005_28-32", 193, 19)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(5);
R_Date("OTAP005_33-37", 246, 18)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(5);
R_Date("OTAP005_38-42", 238, 14)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(5);
R_Date("OTAP005_43-47", 225, 19)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(5);
R_Date("OTAP005_48-52", 204, 15)
{
 Outlier("SSimple", 0.05);
 color="black";
};
```

```
  Gap(5);
  R_Date("OTAP005_53-57", 193, 15)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(5);
  R_Date("OTAP005_58-62", 226, 15)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(2.5);
  Date("Felling_Date_OTAP005");
 };
 D_Sequence("OTAP009")
 {
  R_Date("OTAP009_3-7", 158, 14)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(5.5);
  R_Date("OTAP009_8-12", 123, 14)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(45);
  R_Date("OTAP009_53-57", 194, 16)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(5);
  R_Date("OTAP009_58-62", 211, 15)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(2.5);
  Date("Felling_Date_OTAP009");
 };
 Date("MDate_Phase_I");
};
Boundary("End 1");
};
};
```

Appendix F. OxCal Regional Scale Codes

F.1 Overlapping Sequence Model

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot()
 {
  Curve("SHCal20", "shcal20.14c")
  {
   color="red";
  };
  Outlier_Model("SSimple", N(0,2), 0, s);
  Phase("Middle_Waikato_Basin")
  {
   Sequence("MA1")
   {
    Boundary("Start_AI");
    Phase("MA1_PI")
    {
     D_Sequence("MA1P204")
     {
      R_Date("23_MA1P204 (30-34)",293,21)
      {
       Outlier("SSimple", 0.05);
       color="black";
      };
      Gap(10);
      R_Date("24_MA1P204 (40-44)",260,21)
      {
       Outlier("SSimple", 0.05);
       color="black";
      };
      Gap(31);
      R_Date("25_MA1P204 (71-75)",210,24)
      {
       Outlier("SSimple", 0.05);
       color="black";
      };
      Gap(15);
      R_Date("26_MA1P204 (86-90)",173,23)
      {
       Outlier("SSimple", 0.05);
       color="black";
      };
      Gap(9.5);
      R_Date("27_MA1P204 (96-99)",162,21)
      {
       Outlier("SSimple", 0.05);
       color="black";
      };
      Gap(2);
      Date ("Felling_Date_MA1P204");
     };
     Date("MDate_MA1_I");
    };
```

```
Boundary("End_AI");
Interval("Interval_A1");
Boundary("Start_AII");
Phase("MA1_PII")
{
 D_Sequence("MA1P53")
 {
  R_Date("1_MA1P53 (1-5)",413,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(9);
  R_Date("2_MA1P53 (10-14)",440,20)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(23.5);
  R_Date("3_MA1P53 (33-38)",334,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(36.5);
  R_Date("4_MA1P53 (70-74)",195,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(19.5);
  R_Date("5_MA1P53 (90-93)",172,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(43.5);
  R_Date("7_MA1P53 (133-137)",236,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(15);
  R_Date("8_MA1P53 (148-152)",227,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(2.5);
  Date ("Felling_Date_MA1P53");
 };
 Date("MDate_MA1_II");
};
Boundary("End_AII");
Interval("End_A2");
```

```
Boundary("Start_AIII");
Phase("MA1_PIII")
{
 D_Sequence("MA1P190")
 {
  R_Date("14_MA1P190 (1-5)",245,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(10);
  R_Date("15_MA1P190 (11-15)",233,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(15);
  R_Date("16_MA1P190 (26-30)",223,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(15);
  R_Date("17_MA1P190 (41-45)",264,23)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(9.5);
  R_Date("18_MA1P190 (51-54)",190,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(2);
  Date ("Felling_Date_MA1P190");
 };
 Date("MDate_MA1_III");
};
Boundary("End_AIII");
Interval("End_A3");
Boundary("Start_AIV");
Phase("MA1_PIV")
{
 D_Sequence("MA1P208")
 {
  R_Date("28_MA1P208 (1-5)",259,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(16);
  R_Date("29_MA1P208 (17-21)",216,26)
  {
   Outlier("SSimple", 0.05);
```

```
  color="black";
  };
  Gap(19);
  R_Date("30_MA1P208 (36-40)",230,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(15);
  R_Date("31_MA1P208 (51-55)",210,24)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(18);
  R_Date("32_MA1P208 (69-73)",169,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(2.5);
  Date ("Felling_Date_MA1P208");
 };
 Date("MDate_MA1_IV");
};
Boundary("End_AIV");
};
Sequence("MA2")
{
 Boundary("Start_BI");
 Phase("MA2_PI")
 {
  D_Sequence("MA2P161")
  {
   R_Date("64_MA2P161 (1-5)",307,23)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(19);
   R_Date("65_MA2P161 (20-24)",213,21)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(19);
   R_Date("66_MA2P161 (39-43)",198,22)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(19);
   R_Date("67_MA2P161 (58-62)",158,22)
   {
    Outlier("SSimple", 0.05);
```

```
  color="black";
 };
 Gap(22);
 R_Date("68_MA2P161 (80-84)",225,22)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(2.5);
 Date ("Felling_Date_MA2P161");
};
Date("MDate_MA2_I");
};
Boundary("End_BI");
Interval("Interval_B1");
Boundary("Start_BII");
Phase("MA2_PII")
{
 D_Sequence("MA2P15")
 {
  R_Date("38_MA2P15 (1-5)",231,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(11);
  R_Date("39_MA2P15 (12-16)",177,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(15);
  R_Date("40_MA2P15 (27-31))",211,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(19);
  R_Date("41_MA2P15 (46-50)",255,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(11);
  R_Date("42_MA2P15 (57-61)",212,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(2.5);
  Date ("Felling_Date_MA2P15");
 };
 D_Sequence("MA2P152")
 {
  R_Date("53_MA2P152 (1-5)",221,22)
```

```
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(11);
 R_Date("54_MA2P152 (12-16)",234,22)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(14);
 R_Date("55_MA2P152 (26-30)",273,23)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(21);
 R_Date("56_MA2P152 (47-51)",250,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(22);
 R_Date("57_MA2P152 (69-73)",222,22)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(2.5);
 Date("Felling_Date_MA2P152");
};
D_Sequence("MA2P153")
{
 R_Date("59_MA2P153 (1-5)",241,24)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(14);
 R_Date("60_MA2P153 (15-19)",259,22)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(10);
 R_Date("61_MA2P153 (25-29)",261,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(11);
 R_Date("62_MA2P153 (36-40)",273,22)
 {
  Outlier("SSimple", 0.05);
  color="black";
```

```
  };
  Gap(12);
  R_Date("63_MA2P153 (48-52)",206,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(2.5);
  Date("Felling_Date_MA2P153");
 };
 D_Sequence("MA2P154")
 {
  R_Date("48_MA2P154 (1-5)",264,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(14);
  R_Date("49_MA2P154 (15-19)",230,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(14);
  R_Date("50_MA2P154 (29-33)",234,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(15);
  R_Date("51_MA2P154 (44-48)",267,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(15);
  R_Date("52_MA2P154 (59-63)",219,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(2.5);
  Date("Felling_Date_MA2P154");
 };
 Date("MDate_MA2_II");
};
Boundary("End_BII");
};
Sequence("MGA")
{
 Boundary("Start_CI");
 Phase("MGA_PI")
 {
  D_Sequence("MGAP313")
  {
```

```
 R_Date("102_MGAP313 (31-35)",412,20)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(19);
 R_Date("103_MGAP313 (50-54)",410,24)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(18);
 R_Date("104_MGAP313 (68-72)",375,20)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(19);
 R_Date("105_MGAP313 (87-91)",372,19)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(18);
 R_Date("106_MGAP313 (105-109)",384,20)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(2.5);
 Date ("Felling_Date_MGAP313");
};
Date("MDate_MGA_I");
};
Boundary("End_CI");
Interval("Interval_C1");
Boundary("Start_CII");
Phase("MGA_PII")
{
 D_Sequence("MGAP311")
 {
  R_Date("124_MGAP311(1-5)",358,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(45);
  R_Date("125_MGAP311(46-50)",414,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(45);
  R_Date("126_MGAP311(91-95)",393,21)
  {
```

```
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(35);
R_Date("127_MGAP311 (126-130)",292,21)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(45);
R_Date("128_MGAP311 (171-175)",163,20)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(45);
R_Date("129_MGAP311 (216-220)",226,21)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(33);
R_Date("130_MGAP311 (249-253)",226,21)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(2.5);
Date ("Felling_Date_MGAP311");
};
Date("MDate_MGA_II");
};
Boundary("End_CII");
Interval("Interval_C2");
Boundary("Start_CIII");
Phase("MGA_PIII")
{
D_Sequence("MGAP281")
{
R_Date("114_MGAP281 (8-12)",134,21)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(16);
R_Date("115_MGAP281 (24-28)",247,20)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(17);
R_Date("116_MGAP281 (41-45)",229,24)
{
 Outlier("SSimple", 0.05);
 color="black";
```

```
 };
 Gap(19);
 R_Date("117_MGAP281 (60-64)",217,23)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(11);
 R_Date("118_MGAP281 (71-75)",246,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(2.5);
 Date ("Felling_Date_MGAP281");
};
D_Sequence("MGAP316")
{
 R_Date("107_MGAP316(1-6)",410,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(77.5);
 R_Date("109_MGAP316(79-83)",177,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(16.5);
 R_Date("110_MGAP316 (96-99)",172,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(39.5);
 R_Date("111_MGAP316 (135-139)",225,20)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(23);
 R_Date("112_MGAP316 (158-162)",266,20)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(17);
 R_Date("113_MGAP316 (173-181)",195,20)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(4.5);
 Date ("Felling_Date_MGAP316");
```

```
 };
 Date("MDate_MGA_III");
};
Boundary("End_CIII");
Interval("Interval_C3");
Boundary("Start_CIV");
Phase("MGA_PIV")
{
 D_Sequence("MGAP320")
 {
  R_Date("119_MGAP320 (7-11)",200,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(11);
  R_Date("120_MGAP320 (18-22)",201,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(10);
  R_Date("121_MGAP320 (28-32)",228,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(14);
  R_Date("122_MGAP320 (42-46)",249,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(14);
  R_Date("123_MGAP320 (56-60)",193,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(2.5);
  Date ("Felling_Date_MGAP320");
 };
 Date("MDate_MGA_IV");
};
Boundary("End_CIV");
};
Sequence("TAR")
{
 Boundary("Start_DI");
 Phase("TAR_PI")
 {
  D_Sequence("TARP132")
  {
   R_Date("69_TARP132 (1-5)",468,21)
   {
```

```
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(14);
R_Date("70_TARP132 (15-19)",475,26)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(16);
R_Date("71_TARP132 (31-35)",410,21)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(38);
R_Date("73_TARP132 (69-73)",375,21)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(2.5);
Date ("Felling_Date_TARP132");
};
Date("MDate_TAR_I");
};
Boundary("End_DI");
Interval("Interval_D1");
Boundary("Start_DII");
Phase("TAR_PII")
{
D_Sequence("TARP131")
{
R_Date("74_TARP131 (1-5)",625,23)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(16);
R_Date("75_TARP131 (17-21)",617,25)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(24);
R_Date("76_TARP131 (41-45)",551,23)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(18.5);
R_Date("77_TARP131 (59-64)",459,22)
{
 Outlier("SSimple", 0.05);
 color="black";
```

```
  };
  Gap(23.5);
  R_Date("78_TARP131 (83-87)",439,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(35.5);
  R_Date("79_TARP131 (119-122)",356,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(43.5);
  R_Date("81_TARP131 (163-165)",318,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(1.5);
  Date ("Felling_Date_TARP131");
 };
 Date("MDate_TAR_II");
};
Boundary("End_DII");
};
Sequence("TEU")
{
 Boundary("Start_EI");
 Phase("TEU_PI")
 {
  D_Sequence("TEUP219")
  {
   R_Date("89_TEUP219 (70-74)",198,23)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(34);
   R_Date("90_TEUP219 (104-108)",185,21)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(13);
   R_Date("91_TEUP219 (117-121)",216,21)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(13);
   R_Date("92_TEUP219 (130-134)",236,21)
   {
    Outlier("SSimple", 0.05);
    color="black";
```

```
 };
 Gap(18);
 R_Date("93_TEUP219 (148-152)",211,22)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(16.5);
 Date ("Felling_Date_TEUP219");
};
Date("MDate_TEU_I");
};
Boundary("End_EI");
Interval("Interval_E1");
Boundary("Start_EII");
Phase("TEU_PII")
{
 D_Sequence("TEUP234")
 {
  R_Date("96_TEUP234 (100-104)",217,20)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(15);
  R_Date("97_TEUP234 (115-119)",213,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(16);
  R_Date("98_TEUP234 (131-135)",259,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(9);
  R_Date("99_TEUP234 (140-144)",244,20)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(10);
  R_Date("100_TEUP234 (150-154)",288,20)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(6);
  R_Date("101_TEUP234 (156-160)",226,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(13.5);
```

```
  Date ("Felling_Date_TEUP234");
 };
 D_Sequence("TEUP244")
 {
  R_Date("82_TEUP244 (1-5)",214,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(20);
  R_Date("83_TEUP244 (21-25)",207,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(15);
  R_Date("84_TEUP244 (36-40)",267,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(13);
  R_Date("85_TEUP244 (49-53)",233,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(12);
  R_Date("86_TEUP244 (61-65)",165,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(2.5);
  Date ("Felling_Date_TEUP244");
 };
 Date("MDate_TEU_II");
};
Boundary("End_EII");
};
Sequence("ROT")
{
 Boundary("Start_FI");
 Phase("ROT_PI")
 {
  D_Sequence("ROTP353")
  {
   R_Date("131_ROTP353 (20-24)",427,26)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(11);
   R_Date("132_ROTP353 (31-35)",429,24)
   {
```

```
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(12);
 R_Date("133_ROTP353 (43-47)",405,25)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(13);
 R_Date("134_ROTP353 (56-60)",372,24)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(12);
 R_Date("135_ROTP353 (68-72)",396,26)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(2.5);
 Date ("Felling_Date_ROTP353");
};
Date("MDate_ROT_I");
};
Boundary("End_FI");
};
Sequence("OTA")
{
Boundary("Start_GI");
Phase("OTA_PI")
{
 D_Sequence("OTAP003")
 {
  R_Date("OTAP003_7-3", 166, 14)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(5);
  R_Date("OTAP003_8-12", 127, 16)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(50);
  R_Date("OTAP003_58-62", 221, 20)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(5);
  R_Date("OTAP003_63-67", 201, 17)
  {
```

```
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(2.5);
Date("Felling_Date_OTAP003");
};
D_Sequence("OTAP005")
{
R_Date("OTAP005_3-7", 142, 15)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(5);
R_Date("OTAP005_8-12", 139, 15)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(5);
R_Date("OTAP005_13-17", 152, 16)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(5);
R_Date("OTAP005_18-22", 165, 14)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(5);
R_Date("OTAP005_23-27", 183, 15)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(5);
R_Date("OTAP005_28-32", 193, 19)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(5);
R_Date("OTAP005_33-37", 246, 18)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(5);
R_Date("OTAP005_38-42", 238, 14)
{
 Outlier("SSimple", 0.05);
 color="black";
};
```

```
 Gap(5);
 R_Date("OTAP005_43-47", 225, 19)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(5);
 R_Date("OTAP005_48-52", 204, 15)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(5);
 R_Date("OTAP005_53-57", 193, 15)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(5);
 R_Date("OTAP005_58-62", 226, 15)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(2.5);
 Date("Felling_Date_OTAP005");
};
D_Sequence("OTAP009")
{
 R_Date("OTAP009_3-7", 158, 14)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(5.5);
 R_Date("OTAP009_8-12", 123, 14)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(45);
 R_Date("OTAP009_53-57", 194, 16)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(5);
 R_Date("OTAP009_58-62", 211, 15)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(2.5);
 Date("Felling_Date_OTAP009");
};
```

```
    Date("MDate_OTA_I");
   };
   Boundary("End_GI");
   Difference("Difference 1", "MDate_TAR_I", "MDate_ROT_I");
   Difference("Difference 2", "MDate_TAR_I", "MDate_MGA_I");
   Difference("Difference 3", "MDate_ROT_I", "MDate_MGA_I");
   Difference("Difference 4", "MDate_TAR_II", "MDate_MGA_I");
   Difference("Difference 5", "MDate_TAR_II", "MDate_ROT_I");
   Difference("Difference 6", "MDate_MA1_I", "MDate_MA2_I");
   Difference("Difference 7", "MDate_MA1_I", "MDate_OTA_I");
   Difference("Difference 8", "MDate_MA1_I", "MDate_MGA_II");
   Difference("Difference 9", "MDate_MA2_I", "MDate_OTA_I");
   Difference("Difference 10", "MDate_MA2_I", "MDate_MGA_II");
   Difference("Difference 11", "MDate_OTA_I", "MDate_MA1_II");
   Difference("Difference 12", "MDate_OTA_I", "MDate_MGA_II");
   Difference("Difference 13", "MDate_MA1_II", "MDate_MGA_II");
   Difference("Difference 14", "MDate_OTA_I", "MDate_TEU_I");
   Difference("Difference 15", "MDate_OTA_I", "MDate_MGA_III");
   Difference("Difference 16", "MDate_MA1_II", "MDate_MGA_III");
   Difference("Difference 17", "MDate_MA1_II", "MDate_TEU_I");
   Difference("Difference 18", "MDate_MGA_II", "MDate_TEU_I");
   Difference("Difference 19", "MDate_MGA_III", "MDate_TEU_I");
   Difference("Difference 20", "MDate_MGA_III", "MDate_MA1_III");
   Difference("Difference 21", "MDate_MGA_III", "MDate_MA1_IV");
   Difference("Difference 22", "MDate_MGA_III", "MDate_MA2_II");
   Difference("Difference 23", "MDate_MGA_III", "MDate_TEU_II");
   Difference("Difference 24", "MDate_TEU_I", "MDate_MA1_III");
   Difference("Difference 25", "MDate_TEU_I", "MDate_MA1_IV");
   Difference("Difference 26", "MDate_TEU_I", "MDate_MA2_II");
   Difference("Difference 27", "MDate_TEU_I", "MDate_MGA_IV");
   Difference("Difference 28", "MDate_MA1_III", "MDate_MA2_II");
   Difference("Difference 29", "MDate_MA1_III", "MDate_MGA_IV");
   Difference("Difference 30", "MDate_MA1_III", "MDate_TEU_II");
   Difference("Difference 31", "MDate_MA1_IV", "MDate_MA2_II");
   Difference("Difference 32", "MDate_MA1_IV", "MDate_MGA_IV");
   Difference("Difference 33", "MDate_MA1_IV", "MDate_TEU_II");
   Difference("Difference 34", "MDate_MA2_II", "MDate_MGA_IV");
   Difference("Difference 35", "MDate_MA2_II", "MDate_TEU_II");
   Difference("Difference 36", "MDate_MGA_IV", "MDate_TEU_II");
  };
 };
};
```

F.2 Sequential Sequence Model

```
Options()
 {
  Resolution=1;
  kIterations=3000;
 };
 Plot("Sequential_Sequence_Model")
 {
  Curve("SHCal20", "shcal20.14c")
  {
```

```
 color="red";
};
Outlier_Model("SSimple", N(0,2), 0, s);
Sequence("Middle_Waikato_Basin")
{
 Boundary("Start 1");
 Phase("RP1")
 {
  D_Sequence("TARP132")
  {
   R_Date("69_TARP132 (1-5)",468,21)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(14);
   R_Date("70_TARP132 (15-19)",475,26)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(16);
   R_Date("71_TARP132 (31-35)",410,21)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(38);
   R_Date("73_TARP132 (69-73)",375,21)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(2.5);
   Date ("Felling_Date_TARP132");
  };
  D_Sequence("ROTP353")
  {
   R_Date("131_ROTP353 (20-24)",427,26)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(11);
   R_Date("132_ROTP353 (31-35)",429,24)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
   Gap(12);
   R_Date("133_ROTP353 (43-47)",405,25)
   {
    Outlier("SSimple", 0.05);
    color="black";
   };
```

```
 Gap(13);
 R_Date("134_ROTP353 (56-60)",372,24)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(12);
 R_Date("135_ROTP353 (68-72)",396,26)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(2.5);
 Date ("Felling_Date_ROTP353");
};
D_Sequence("TARP131")
{
 R_Date("74_TARP131 (1-5)",625,23)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(16);
 R_Date("75_TARP131 (17-21)",617,25)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(24);
 R_Date("76_TARP131 (41-45)",551,23)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(18.5);
 R_Date("77_TARP131 (59-64)",459,22)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(23.5);
 R_Date("78_TARP131 (83-87)",439,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(35.5);
 R_Date("79_TARP131 (119-122)",356,22)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(25);
 R_Date("80_TARP131 (143-148)",412,21)
 {
```

```
 Outlier("SSimple", 0.05);
 color="black";
 };
 Gap(18.5);
 R_Date("81_TARP131 (163-165)",318,22)
 {
 Outlier("SSimple", 0.05);
 color="black";
 };
 Gap(1.5);
 Date ("Felling_Date_TARP131");
 };
 D_Sequence("MGAP313")
 {
 R_Date("102_MGAP313 (31-35)",412,20)
 {
 Outlier("SSimple", 0.05);
 color="black";
 };
 Gap(19);
 R_Date("103_MGAP313 (50-54)",410,24)
 {
 Outlier("SSimple", 0.05);
 color="black";
 };
 Gap(18);
 R_Date("104_MGAP313 (68-72)",375,20)
 {
 Outlier("SSimple", 0.05);
 color="black";
 };
 Gap(19);
 R_Date("105_MGAP313 (87-91)",372,19)
 {
 Outlier("SSimple", 0.05);
 color="black";
 };
 Gap(18);
 R_Date("106_MGAP313 (105-109)",384,20)
 {
 Outlier("SSimple", 0.05);
 color="black";
 };
 Gap(2.5);
 Date ("Felling_Date_MGAP313");
 };
 Date("MDate_RP1");
};
Boundary("End 1");
Interval("Interval_1");
Boundary("Start 2");
Phase("RP2")
{
 D_Sequence("MA1P204")
 {
```

```
 R_Date("23_MA1P204 (30-34)",293,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(10);
 R_Date("24_MA1P204 (40-44)",260,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(31);
 R_Date("25_MA1P204 (71-75)",210,24)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(15);
 R_Date("26_MA1P204 (86-90)",173,23)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(9.5);
 R_Date("27_MA1P204 (96-99)",162,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(2);
 Date ("Felling_Date_MA1P204");
};
D_Sequence("MA2P161")
{
 R_Date("64_MA2P161 (1-5)",307,23)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(19);
 R_Date("65_MA2P161 (20-24)",213,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(19);
 R_Date("66_MA2P161 (39-43)",198,22)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(19);
 R_Date("67_MA2P161 (58-62)",158,22)
 {
  Outlier("SSimple", 0.05);
```

```
 color="black";
 };
 Gap(22);
 R_Date("68_MA2P161 (80-84)",225,22)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(2.5);
 Date ("Felling_Date_MA2P161");
 };
 Date("MDate_RP2");
};
Boundary("End 2");
Interval("Interval_2");
Boundary("Start 3");
Phase("RP3")
{
 D_Sequence("MA1P53")
 {
  R_Date("1_MA1P53 (1-5)",413,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(9);
  R_Date("2_MA1P53 (10-14)",440,20)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(23.5);
  R_Date("3_MA1P53 (33-38)",334,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(36.5);
  R_Date("4_MA1P53 (70-74)",195,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(19.5);
  R_Date("5_MA1P53 (90-93)",172,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(43.5);
  R_Date("7_MA1P53 (133-137)",236,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
```

```
 Gap(15);
 R_Date("8_MA1P53 (148-152)",227,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(2.5);
 Date ("Felling_Date_MA1P53");
};
D_Sequence("OTAP003")
{
 R_Date("OTAP003_7-3", 166, 14)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(5);
 R_Date("OTAP003_8-12", 127, 16)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(50);
 R_Date("OTAP003_58-62", 221, 20)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(5);
 R_Date("OTAP003_63-67", 201, 17)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(2.5);
 Date("Felling_Date_OTAP003");
};
D_Sequence("OTAP005")
{
 R_Date("OTAP005_3-7", 142, 15)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(5);
 R_Date("OTAP005_8-12", 139, 15)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(5);
 R_Date("OTAP005_13-17", 152, 16)
 {
  Outlier("SSimple", 0.05);
  color="black";
```

```
};
Gap(5);
R_Date("OTAP005_18-22", 165, 14)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(5);
R_Date("OTAP005_23-27", 183, 15)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(5);
R_Date("OTAP005_28-32", 193, 19)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(5);
R_Date("OTAP005_33-37", 246, 18)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(5);
R_Date("OTAP005_38-42", 238, 14)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(5);
R_Date("OTAP005_43-47", 225, 19)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(5);
R_Date("OTAP005_48-52", 204, 15)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(5);
R_Date("OTAP005_53-57", 193, 15)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(5);
R_Date("OTAP005_58-62", 226, 15)
{
 Outlier("SSimple", 0.05);
 color="black";
};
```

```
 Gap(2.5);
 Date("Felling_Date_OTAP005");
};
D_Sequence("OTAP009")
{
 R_Date("OTAP009_3-7", 158, 14)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(5.5);
 R_Date("OTAP009_8-12", 123, 14)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(45);
 R_Date("OTAP009_53-57", 194, 16)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(5);
 R_Date("OTAP009_58-62", 211, 15)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(2.5);
 Date("Felling_Date_OTAP009");
};
D_Sequence("MGAP311")
{
 R_Date("124_MGAP311(1-5)",358,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(45);
 R_Date("125_MGAP311(46-50)",414,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(45);
 R_Date("126_MGAP311(91-95)",393,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(35);
 R_Date("127_MGAP311 (126-130)",292,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
```

```
  };
  Gap(45);
  R_Date("128_MGAP311 (171-175)",163,20)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(45);
  R_Date("129_MGAP311 (216-220)",226,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(33);
  R_Date("130_MGAP311 (249-253)",226,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(2.5);
  Date ("Felling_Date_MGAP311");
 };
 Date("MDate_RP3");
};
Boundary("End 3");
Interval("Interval_3");
Boundary("Start 4");
Phase("RP4")
{
 D_Sequence("MGAP281")
 {
  R_Date("114_MGAP281 (8-12)",134,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(16);
  R_Date("115_MGAP281 (24-28)",247,20)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(17);
  R_Date("116_MGAP281 (41-45)",229,24)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(19);
  R_Date("117_MGAP281 (60-64)",217,23)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(11);
```

```
 R_Date("118_MGAP281 (71-75)",246,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(2.5);
 Date ("Felling_Date_MGAP281");
};
D_Sequence("MGAP316")
{
 R_Date("107_MGAP316(1-6)",410,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(28);
 R_Date("108_MGAP316(30-33)",420,20)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(49.5);
 R_Date("109_MGAP316(79-83)",177,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(16.5);
 R_Date("110_MGAP316 (96-99)",172,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(39.5);
 R_Date("111_MGAP316 (135-139)",225,20)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(23);
 R_Date("112_MGAP316 (158-162)",266,20)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(17);
 R_Date("113_MGAP316 (173-181)",195,20)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(4.5);
 Date ("Felling_Date_MGAP316");
};
D_Sequence("TEUP219")
```

```
 {
  R_Date("89_TEUP219 (70-74)",198,23)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(34);
  R_Date("90_TEUP219 (104-108)",185,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(13);
  R_Date("91_TEUP219 (117-121)",216,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(13);
  R_Date("92_TEUP219 (130-134)",236,21)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(18);
  R_Date("93_TEUP219 (148-152)",211,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(16.5);
  Date ("Felling_Date_TEUP219");
 };
 Date("MDate_RP4");
};
Boundary("End 4");
Interval("Interval_4");
Boundary("Start 5");
Phase("RP5")
{
 D_Sequence("MA1P190")
 {
  R_Date("14_MA1P190 (1-5)",245,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(10);
  R_Date("15_MA1P190 (11-15)",233,22)
  {
   Outlier("SSimple", 0.05);
   color="black";
  };
  Gap(15);
  R_Date("16_MA1P190 (26-30)",223,21)
```

```
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(15);
 R_Date("17_MA1P190 (41-45)",264,23)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(9.5);
 R_Date("18_MA1P190 (51-54)",190,22)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(2);
 Date ("Felling_Date_MA1P190");
};
D_Sequence("MA1P208")
{
 R_Date("28_MA1P208 (1-5)",259,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(16);
 R_Date("29_MA1P208 (17-21)",216,26)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(19);
 R_Date("30_MA1P208 (36-40)",230,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(15);
 R_Date("31_MA1P208 (51-55)",210,24)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(18);
 R_Date("32_MA1P208 (69-73)",169,22)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(2.5);
 Date ("Felling_Date_MA1P208");
};
D_Sequence("MA2P15")
{
```

```
 R_Date("38_MA2P15 (1-5)",231,22)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(11);
 R_Date("39_MA2P15 (12-16)",177,22)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(15);
 R_Date("40_MA2P15 (27-31))",211,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(19);
 R_Date("41_MA2P15 (46-50)",255,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(11);
 R_Date("42_MA2P15 (57-61)",212,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(2.5);
 Date ("Felling_Date_MA2P15");
};
D_Sequence("MA2P152")
{
 R_Date("53_MA2P152 (1-5)",221,22)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(11);
 R_Date("54_MA2P152 (12-16)",234,22)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(14);
 R_Date("55_MA2P152 (26-30)",273,23)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(21);
 R_Date("56_MA2P152 (47-51)",250,21)
 {
  Outlier("SSimple", 0.05);
```

```
 color="black";
 };
 Gap(22);
 R_Date("57_MA2P152 (69-73)",222,22)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(2.5);
 Date("Felling_Date_MA2P152");
};
D_Sequence("MA2P153")
{
 R_Date("59_MA2P153 (1-5)",241,24)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(14);
 R_Date("60_MA2P153 (15-19)",259,22)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(10);
 R_Date("61_MA2P153 (25-29)",261,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(11);
 R_Date("62_MA2P153 (36-40)",273,22)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(12);
 R_Date("63_MA2P153 (48-52)",206,22)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(2.5);
 Date("Felling_Date_MA2P153");
};
D_Sequence("MA2P154")
{
 R_Date("48_MA2P154 (1-5)",264,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(14);
 R_Date("49_MA2P154 (15-19)",230,21)
 {
```

```
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(14);
R_Date("50_MA2P154 (29-33)",234,22)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(15);
R_Date("51_MA2P154 (44-48)",267,22)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(15);
R_Date("52_MA2P154 (59-63)",219,22)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(2.5);
Date("Felling_Date_MA2P154");
};
D_Sequence("MGAP320")
{
R_Date("119_MGAP320 (7-11)",200,21)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(11);
R_Date("120_MGAP320 (18-22)",201,22)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(10);
R_Date("121_MGAP320 (28-32)",228,21)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(14);
R_Date("122_MGAP320 (42-46)",249,22)
{
 Outlier("SSimple", 0.05);
 color="black";
};
Gap(14);
R_Date("123_MGAP320 (56-60)",193,22)
{
 Outlier("SSimple", 0.05);
 color="black";
};
```

```
 Gap(2.5);
 Date ("Felling_Date_MGAP320");
};
D_Sequence("TEUP234")
{
 R_Date("96_TEUP234 (100-104)",217,20)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(15);
 R_Date("97_TEUP234 (115-119)",213,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(16);
 R_Date("98_TEUP234 (131-135)",259,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(9);
 R_Date("99_TEUP234 (140-144)",244,20)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(10);
 R_Date("100_TEUP234 (150-154)",288,20)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(6);
 R_Date("101_TEUP234 (156-160)",226,22)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(13.5);
 Date ("Felling_Date_TEUP234");
};
D_Sequence("TEUP244")
{
 R_Date("82_TEUP244 (1-5)",214,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
 };
 Gap(20);
 R_Date("83_TEUP244 (21-25)",207,21)
 {
  Outlier("SSimple", 0.05);
  color="black";
```

```
    };
    Gap(15);
    R_Date("84_TEUP244 (36-40)",267,21)
    {
     Outlier("SSimple", 0.05);
     color="black";
    };
    Gap(13);
    R_Date("85_TEUP244 (49-53)",233,21)
    {
     Outlier("SSimple", 0.05);
     color="black";
    };
    Gap(12);
    R_Date("86_TEUP244 (61-65)",165,22)
    {
     Outlier("SSimple", 0.05);
     color="black";
    };
    Gap(2.5);
    Date ("Felling_Date_TEUP244");
   };
   Date("MDate_RP5");
  };
  Boundary("End 5");
  Span("Span_MWB");
  Difference("Diff_RP1_RP2", "MDate_RP1", "MDate_RP2");
  Difference("Diff_RP2_RP3", "MDate_RP2", "MDate_RP3");
  Difference("Diff_RP3_RP4", "MDate_RP3", "MDate_RP4");
  Difference("Diff_RP4_RP5", "MDate_RP4", "MDate_RP5");
 };
};
```