

ST HELEN'S CHURCH SKIPWITH NORTH YORKSHIRE

Assessment Report on an Archaeological Investigation

by Toby Kendall

Part 3: Discussion, Conclusions and
Appendices

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Cover Illustration:

Elevations of the church tower

18. CONCLUDING DISCUSSION

The archaeological excavations and building recording exercise at St. Helen's Church, Skipwith, as described in the preceding pages, has revealed archaeological deposits from the natural sands and clays of the drift geology up to that of the existing ground level and the sequence of structural activity present in the standing tower. The deposits examined and recorded have finds which date from the Roman period, though it is more likely that the archaeological deposits date from perhaps as early as the 8th century, and continue on through to the present day.

Pre-building activity

The earliest features recorded during the excavation appear to pre-date any structural remains on the site, though their purpose was not possible to determine. If there was activity on the site prior to the 7th or 8th centuries it was not immediately apparent. However, the potential for earlier archaeology in the immediate vicinity of the church tower should not be discounted. As mentioned in earlier work (Timms 2001) there are as yet undated earthworks to the north of the tower and the source for the re-used stone in the tower may be very local rather than being Roman buildings in York, an obvious source of gritstone blocks.

The earlier building

Structural features relating to the first, earlier, building on the site took the form of a continuous foundation of cobble and sand. It was also observed that this foundation extended to the west of current standing building, where it supported a cell, apse or porticus. Just how far these earlier foundations continued to the west could not be established during these excavations. This earlier building appeared to take the form of a rectangle with an additional structure on the western side. Associated with this earlier building were a number of burials, found both inside and outside the structure, dated primarily by radiocarbon to between the 7th and 10th centuries. Within the earlier building there was also a degraded mortar floor which had been cut by these early burials.

Demolition and abandonment

The demolition of the earlier building must have been carried out in a very careful and exacting manner as there was little in the way of rubble that could be attributed to it. This suggests that the stonework was being re-used, most probably within the standing building.

Within the tower, overlying the remnants of the earlier building and associated archaeology was a layer of material that appeared to have built up over time following demolition and/or abandonment.

The standing tower

The standing tower had been constructed after digging through the build-up deposit described above, re-using the bulk of the earlier building's foundations (excluding the western extension). There was little in the way of finds from the excavations that could be used to date the standing

tower, though as a result of the building survey there is no reason to doubt that it is late 10th - early 11th century as previously thought (Taylor and Taylor 1965; Pevsner and Neave 1995). Internally little remained which could be attributed to the first two centuries or so that the tower was standing. It appeared that all original floors and associated deposits had been stripped, perhaps on more than one occasion. Externally some of the burials may have been contemporary with the early life of the standing tower, though a paucity of datable finds gave little in the way of concrete evidence. However one of the burials, to the west of the tower, was dated to the 11th century by radiocarbon dating.

The building recording offers further confirmation of the structural phases in the tower and provided details of construction. The earliest phase which encompasses its lowest part up to the level of the first floor is thought to have originally served as the nave of an Anglo-Saxon church. This is made predominantly from re-used Roman materials, and possibly some complete structural elements. This structure was extended beyond the first storey to the height of the original belfry in the 11th century. There was perhaps an intermediate phase in which the structure was raised from the level of the first floor to the base of the second floor, the top of which is delineated by a distinctive course of Birdsall grit. The nature of the quoins changes at this level also from Millstone Grit to Birdsall grit.

Medieval activity

The earliest surviving floor levels inside the tower dated from the 12th-13th centuries. They were the earliest of a whole series of floors interspersed with hearths used for leadworking that seemed to relate to the successive alterations and expansions of the church throughout the medieval period. There were no medieval burials within the tower, but they were found in the nave and aisles.

There was a marked increase in the number of burials on the outside of the tower during this period which disturbed those of earlier date. Three distinct phases of burial were identified, though the lack of dating and stratigraphic evidence meant that not all could be assigned to a specific phase.

Externally also evidence was found for the construction of the west walls of the north and south aisles which had originally flanked the standing tower. In addition the scars for the aisle roofs were recorded on the tower structure. Unfortunately no accurate dating evidence was found for the aisle construction.

The late medieval period (15th – mid 16th centuries)

In the late medieval period (15th and first half of the 16th centuries) there were major alterations both to the interior of the tower and to the fabric of the tower itself. Internally earlier deposits in the centre of the tower were removed by a large circular cut, which was assumed to be a bell casting pit. Burial occasionally took place within the tower during this period, perhaps limited to people of importance or high status.

As far as the tower fabric is concerned, the 11th century belfry was closed and a new belfry constructed. In the process of construction some important evidence for the form of the earlier tower was preserved in the form of a wall plate along the northern wall.

Outside the tower both the northern and southern aisles had been reduced to their present length in this period. The archaeological evidence had been truncated by later activity, but some traces of disturbance and robbing were still visible.

Post-medieval activity (mid 16th century – 19th century)

Internally, the post-medieval period was represented by numerous burials in the nave and northern aisle, a solitary burial to the west of the tower and other features. In the south - west corner there was a pit within which a broken medieval alabaster tablet had been buried perhaps at the time of the Reformation. In the north - west corner of the tower the latest of the lead working hearths was found.

Externally post-medieval activity was characterised by at least three phases of burial. An early and later phase of east-west aligned graves was punctuated by a phase of north-south aligned graves.

Modern activity

In the last two centuries major changes have taken place within the standing building for which some evidence was found in the excavations. Inside the tower a series of post-holes linked with renovation and other activities had been sealed by the latest floor deposits. In the aisles, nave and eastern extent of the tower huge amounts of disturbance took place with the insertion of the heating system. Virtually all the earlier archaeology had been removed in these areas, along with any chances of a thorough interpretation of what had taken place in the past. The most recent disturbances were linked with the insertion of services.

Externally there was disturbance of earlier deposits caused by the construction of an ash box for cleaning the flue. In addition there were post-holes from the scaffold accompanying a clearance cut associated with the 1876 renovations. This clearance was recorded in the faculty for the restoration of church and had removed the uppermost section of numerous grave cuts as well as a whole series of deposits linked with activity round the tower. What was left behind was a confused picture of already complex archaeology, sealed by the pathway around the tower. The most recent activity around the tower took the form of the cuts for services linked with power, water and lights.

19. SUMMARY OF RECOMMENDATIONS FOR FURTHER WORK

In accordance with the specification the results of this excavation will be subjected to a program of further analysis prior to dissemination to the general public. It is proposed that dissemination takes place in an appropriate academic journal such as *Medieval Archaeology* or the *Archaeological Journal*.

Further analysis tasks identified by specialist contributors in this document include the following:

Architectural fragments

No further work required other than that AF12 and AF20 are seen by an architectural historian to clarify their function.

Alabaster fragments

The relative rarity of the fragments and their importance requires further study and publication. Further analysis by an appropriate art historian should be conducted once full conservation of the fragments has taken place.

Ceramic building materials

It is recommended that detailed fabric descriptions are prepared for the site, in order to complete the site archive.

Pottery

Analysis of the assemblage linked to the detailed site phasing to further refine the sequence.

Small finds

Further analysis of the finds in relation to the detailed site phasing, particularly the Saxon and Medieval periods.

The window glass analysed by a specialist in medieval window glass.

The metal working debris should be looked at by an archaeometallurgist.

Conservation assessment

Further investigative cleaning is recommended on some of the metal small finds, the scope of this will be determined by the detailed site phasing. Further cosmetic work could also be carried out on any material selected for photography, illustration or display.

Wood

More information may be gained from the small find Sf489 but this requires remedial treatment before any significant study can be undertaken.

Osteological analysis of human bones

The chronological distribution of the burials should be further analysed in relation to the detailed phasing now available. No other analysis possible as the bones are to be reburied.

Animal bones

No further work suggested due to the relatively small and very disturbed nature of the assemblage.

Deposit samples

No further work is warranted.

Scientific dating

No further work.

Discussion and synthesis

Once further work is completed it should be studied in the context of the site stratigraphy. Following this the results should be viewed in the context of churches from a similar period in Yorkshire and elsewhere with a view to producing an integrated account and synthesis of the discoveries at Skipwith and their significance.

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- All the staff involved at Ove Arup Ltd
- Frank and numerous other local historians and interested parties

APPENDIX 1 BURIAL TABLES
Inhumation details

Area	Cut no./s	Burial Context no./s	Skeleton no./s	Head	Arms	Legs	Truncations
T1/E	5028	5027= 8045	SK3	disturbed	-	-	absent
T1/E	5031	5030	SK2	disturbed	disturbed	disturbed	absent
T1/F	6009	6008= 7019	SK6	normal	straight	straight	absent
T1/F	6038	6039	SK7	absent	unclear	unclear	truncated
T1/G	7066	7065= 14037	SK9	normal	on pelvis	straight	absent
T1/H	8032	8042= 11021	SK8	absent	left arm across body	absent	lower right arm, pelvis, down truncated
T1/I	9047	9046	SK108	normal	on pelvis	straight	absent
T1/I	9052	9051	SK107	normal	straight	straight	absent
T1/I	9067	9066	SK106	normal	on pelvis	straight	absent
T1/I	9071	9070	SK105	normal	straight	straight	unclear
T1/I	9074	9073	SK104	normal	left across body, right missing	only left leg, straight	unclear
T1/I	9078	9077	SK103	absent	only left arm, straight	absent	everything truncated except left arm
T1/I	9081	9080	SK102	absent	only left arm, straight?	absent	unclear
T1/I	9085	9084	SK101	disturbed	left disturbed, right on pelvis	fragmentary	unclear
T1/L	12032	12031	SK112	disturbed	Only left arm, on pelvis	only left leg, straight	right side truncated
T1/L	12039	12038	SK110	disturbed	left straight, right disturbed	straight	absent

T1/L	12042	12041	SK111	absent	absent	only right leg, straight?	everything truncated except right half of pelvis and right leg
T1/L	12048	12047	SK114	absent	only right arm, straight	only right leg, straight?	left side inc. head truncated
T1/L	12057	12056	SK113	normal	straight?	unknown	absent
T1/M	13041	13039= 14043	SK1	normal	only right arm, straight?	unknown	absent
T1/M	13047	13046= 14040	SK4	normal	Left on pelvis, right straight	straight	absent
T1/P	16027	16029	SK5	normal	right on pelvis, left across abdomen	unknown	absent
T2/R	18020	18019	SK53	unknown	unknown	straight	slightly truncated to east
T2/R	18033	18032= 19022	SK34	normal	unknown	straight	everything truncated except lower leg and feet
T2/U	21009	21011	SK61	unknown	straight	right straight, left disturbed	slightly truncated to east
T2/V	22019	22020	SK47	unknown	unknown	unknown	truncated to east and west
T2/V	22019	22025	SK46	normal	unknown	unknown	truncated to east and west
T2/W	23019	23020	SK60	unknown	unknown	straight	right femur truncated
T2/W	23023	23024	SK76	normal	disturbed	fragmentary	truncated to east
T2/X	24013	24014	SK35	unknown	unknown	unknown	truncated to east
T2/X	24018	24019	SK36	unknown	unknown	straight	absent
T2/X	24021	24022	SK37	unknown	unknown	unknown	heavily truncated, only feet bone present

T2/X	24025	24024	SK38	unknown	straight	straight	truncated to east, lower leg missing
T2/Y	25023	25022= 26039	SK57	unknown	straight	straight	head truncated
T2/Y	25026	25025	SK79	unknown	unknown	straight	heavily truncated to east and west, only lower legs present
T2/Y	25030	25029= 26077	SK70	unknown	straight	straight	Absent
T2/Y	25038	25037	SK80	unknown	unknown	straight	heavily truncated to east and west, only femurs present
T2/Y	25048	25047= 26060	SK69	truncated	straight	truncated	truncated to east and west
T2/Y	25042	25041	SK81	absent	absent	straight	heavily truncated to east and west, only lower legs and feet bone present
T2/Z	26017	26018	SK50	absent	absent	very fragmentary	everything truncated except lower legs and feet
T2/Z	26027	26028= 27019	SK55	normal	straight	straight	absent
T2/Z	26033	26031	SK56	disturbed	on pelvis?	absent	absent
T2/Z	26041= 26104	26044= 26103	SK59	normal	only right arm, on pelvis	straight?	truncated to east west and south, only right side and head present
T2/Z	26049	26048	SK65	unknown	unknown	straight	everything truncated except lower legs
T2/Z	26052= 26080	26051= 26079	SK66	truncated	straight?	truncated	head, legs and lower arms truncated
T2/Z	26055	26054	SK67	truncated	truncated	truncated	everything truncated except feet

T2/Z	26059= 26088= 27076	26058= 26087= 27075	SK68	absent	absent	straight	everything truncated except lower legs and right shoulder
T2/Z	26074	26081	SK72	unknown	unknown	unknown, only feet bone	unknown
T2/Z	26084	26083	SK73	unknown	unknown	unknown, only feet bone	unknown
T2/Z	26094	26093	SK74	truncated	truncated	straight, only right leg and feet bone	everything truncated except lower right leg and feet bone
T2/Z	26097	26096	SK75	truncated	truncated	straight	everything truncated except legs
T2/Z	26100	26099	SK84	disturbed	disturbed	truncated	pelvis down truncated
T2/Z	26076	26105	SK86	unknown	unknown	unknown	unknown
T2/AA	27025	27024	SK89	normal	on pelvis	only right femur	left femur truncated
T2/AA	27028	27027	SK88	normal	right straight, left on pelvis	only femurs, straight	absent
T2/AA	27035	27034	SK91	unknown	unknown	straight	absent
T2/AA	27040	27038	SK92	disturbed	disturbed	truncated	unclear
T2/AA	27044	27043	SK93	truncated	truncated	straight	everything truncated except legs
T2/AA	27047	27046	SK94	unknown	truncated	straight, only right lower leg	truncated to north, only right lower leg and feet bones present
T2/AA	27052	27051	SK95	truncated	only left arm, on pelvis?	truncated	truncated to east and west only present ribs and left arm

T2/ AA	27055	27054	SK96	absent	very disturbed	truncated	truncated to east and west, inc head and legs
T2/ AA	27059	27058	SK97	truncated	truncated	straight	truncated to west and south, only legs present
T2/ AA	27061	27060	SK98	truncated	truncated	truncated	everything truncated except feet bones
T2/ AA	27068	27067	SK99	unknown	only lower right arm, on pelvis?	only fragment of left femur	everything truncated except pelvis, hands, r.arm, some vertebrae and l. femur
T2/ AA	27071	27070	SK100	unknown	unknown	unknown, only visible feet bone	unknown
T2/ BB	28015	28016	SK31	disturbed	unknown	unknown	unknown
T2/ BB	28023	28021	SK39	very fragmentary	unknown	unknown	unknown
T2/ BB	28028	28026	SK40	normal	straight	only femurs, straight	unknown
T2/ BB	28030= 29030	28031= 29029	SK41	truncated	disturbed	only left leg, straight	truncated to east
T2/ BB	28033	28034	SK42	truncated	truncated	only lower legs, straight	truncated to east and west
T2/ BB	28036= 29022	28037= 29021	SK43	normal	right straight, left on pelvis	straight	absent
T2/ BB	28040	28041	SK44	truncated	very fragmentary	truncated	everything truncated to east and west, only ribs, vertebrae and arm fragments present
T2/ BB	28043	28044	SK45	truncated	only left, straight	unknown	truncated to west

T2/ CC	29027= 30038	29026= 30039	SK23	truncated	left arm on pelvis	straight	truncated to east, west and south
T2/ DD	30017= 31025	30015= 31024	SK10	normal	straight	straight	absent
T2/ DD	30022	30021	SK11	absent	on pelvis	straight	absent
T2/ DD	30009= 31021	30012= 31020	SK12	absent	Right straight, left on pelvis	only femurs, straight	absent
T2/ DD	30025	30026	SK19	truncated	only right humerus	very fragmentary	truncated to south
T2/ DD	30029	30028	SK20	very fragmentary	left and part of the lower right	only lower legs, straight	truncated to south
T2/ DD	30031	30033	SK21	normal	straight	unknown	absent
T2/ DD	30046	30048	SK26	absent	absent	straight	truncated to north
T2/ DD	30054	30055	SK28	absent	only lower arms, on pelvis	straight	absent
T2/ DD	30057= 31047	30058= 31046	SK29	facing north	right on pelvis, left straight	straight	absent
T2/ DD	30064= 31038	30065= 31037	SK32	normal	on pelvis	only right and left femur, straight	absent
T2/ DD	30062	30061	SK33	unknown	only pelvis present	truncated	truncated to east
T2/ EE	31034	31035	SK51	normal	very disturbed, only lower right arm	unknown	absent
T2/ EE	31032	31031	SK52	normal	only humerus	unknown	absent

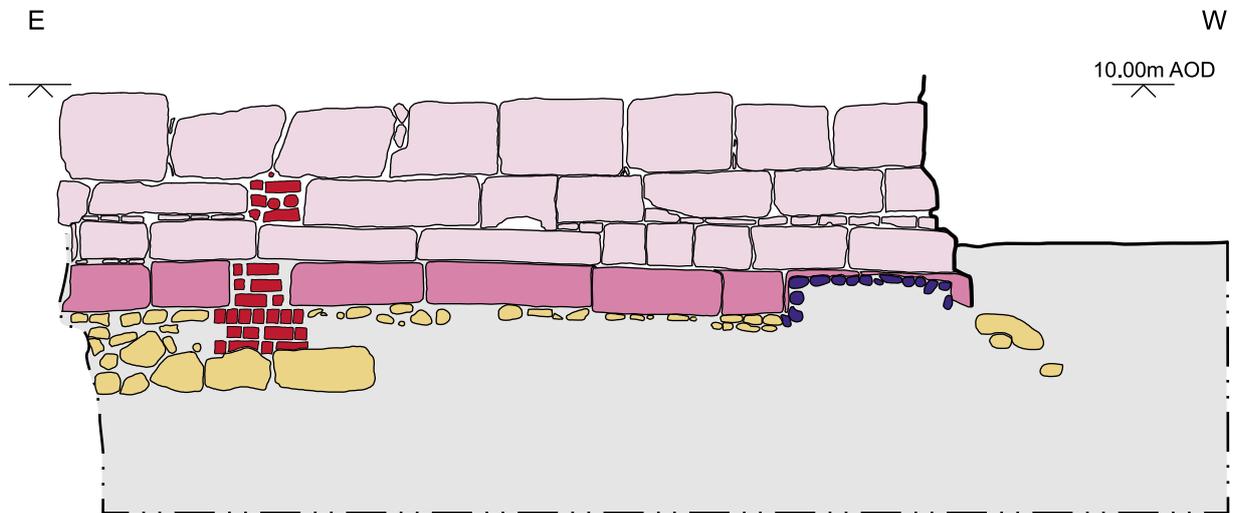
Coffin and cut details

Area	Burial Context no./s	Aligned	Coffin Context no./s	Pillow Context no./s	Cut Length (m)	Cut Width (m)	Cut Depth (m)
T1/E	5027= 8045	-	-	-	0.4	0	0.28
T1/E	5030	-	-	-	>0.6	0	0.08
T1/F	6008= 7019	E/W	-	-	1.7	0	0.84
T1/F	6039	E/W	6040	-	>1.20	>0.75	0.13
T1/G	7065= 14037	E/W	-	7067	2	0	0.69
T1/H	8042= 11021	E/W	-	8041	>0.6	1	0.32
T1/I	9046	E/W	9045	-	>1.20	1	0.76
T1/I	9051	E/W	9050	-	>0.85	1	0.46
T1/I	9066	E/W	9065	-	>1.60	1	0.98
T1/I	9070	E/W	9069	-	>1.50	1	0.64
T1/I	9073	E/W	-	-	>1.05	0	0.21
T1/I	9077	E/W	-	-	>1.30	>0.25	0.36
T1/I	9080	E/W	-	-	>0.55	>0.10	0.04
T1/I	9084	E/W	9083	-	>1.05	>0.70	0.08
T1/L	12031	E/W	12033	-	>1.20	>0.30	0.84
T1/L	12038	E/W	-	-	>1.00	0	0.76
T1/L	12041	E/W	-	-	>0.60	>0.20	0.55
T1/L	12047	E/W	-	-	>0.70	>0.28	0.79
T1/L	12056	E/W	-	-	>0.50	40	0.23
T1/M	13039=14043	E/W	-	-	>0.86	>0.50	0.2
T1/M	13046=14040	E/W	13045	-	>1.05	1	0.22
T1/P	16029	E/W	-	-	>0.90	1	0.48
T2/R	18019	E/W	-	-	>1.00	0	0.19
T2/R	18032=19022	E/W	18031	-	1.8	1	0.16
T2/U	21011	E/W	-	-	>0.33	0	0.32
T2/V	22020	E/W	-	-	>0.35	0	0.38
T2/V	22025	E/W	-	-	>0.35	0	0.38
T2/W	23020	E/W	-	-	>0.93	0	0.13

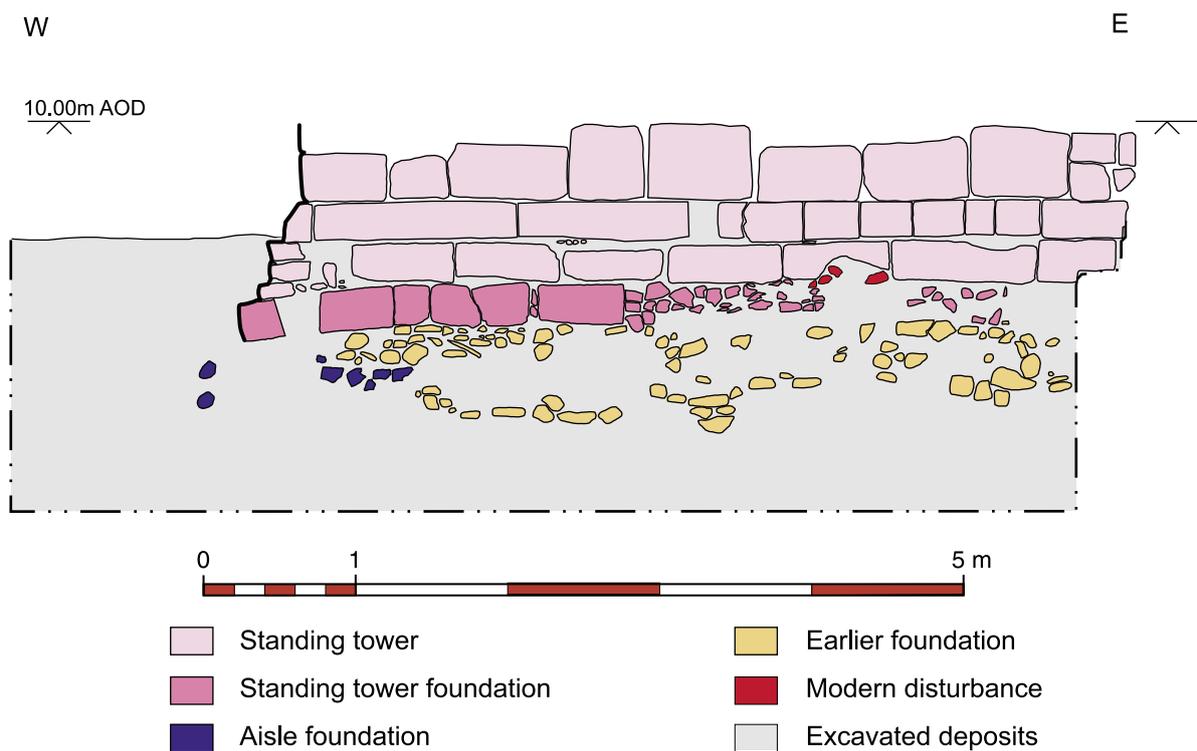
T2/W	23024	E/W	-	-	>0.60	0	0.21
T2/X	24014	N/S	24011	-	1.1	>0.20	0.31
T2/X	24019	E/W	-	-	>0.70	>0.45	0.26
T2/X	24022	E/W?	-	-	>0.90	>0.55	0.21
T2/X	24024	E/W	-	-	>0.95	1	0.2
T2/Y	25022=26039	N/S	25021	-	1.6	1	0.92
T2/Y	25025	E/W	-	-	>0.35	>0.45	0.56
T2/Y	25029=26077	N/S	25028	-	1.6	>0.20	0.87
T2/Y	25037	E/W	-	-	>0.37	0	0.55
T2/Y	25047=26060	E/W	-	-	>0.40	0	0.35
T2/Y	25041	E/W	-	-	>0.35	1	0.42
T2/Z	26018	N/S	-	-	>0.33	0	0.49
T2/Z	26028=27019	N/S	26026	-	2.36	1	0.88
T2/Z	26031	E/W	-	-	>0.75	>0.20	0.06
T2/Z	26044=26103	E/W	-	-	1.4	>0.27	0.35
T2/Z	26048	E/W	-	-	>0.40	1	0.34
T2/Z	26051=26079	E/W	-	-	1.6	0	0.51
T2/Z	26054	E/W	-	-	>0.23	>0.28	0.34
T2/Z	26058= 26087=27075	E/W	-	-	>2.00	1	0.24
T2/Z	26081	E/W	26073	-	>0.30	>0.35	0.92
T2/Z	26083	E/W	-	-	>0.10	0	0.7
T2/Z	26093	E/W	-	-	>0.20	>0.30	0.37
T2/Z	26096	NW/SE	-	-	>0.50	1	0.37
T2/Z	26099	E/W	-	-	>0.80	>0.40	0.24
T2/Z	26105	E/W	26101	-	>0.05	>0.10	0.05
T2/AA	27024	NE/SW	27032	-	>1.60	1	0.8
T2/AA	27027	NE/SW	27029	-	>1.40	1	0.85
T2/AA	27034	E/W	27036	-	>0.60	0	0.84
T2/AA	27038	E/W	27039	-	>0.45	>0.12	0.69
T2/AA	27043	NEE/ SWW	-	-	>1.10	0	0.4
T2/AA	27046	E/W?	-	-	>0.90	>0.20	0.04
T2/AA	27051	E/W	-	-	>0.20	>0.20	0.46
T2/AA	27054	E/W	-	-	>0.32	>0.47	0.12
T2/AA	27058	E/W	-	-	>0.80	>0.44	0.3

T2/AA	27060	E/W	-	-	>0.30	>0.32	0.19
T2/AA	27067	E/W	-	-	>0.60	>0.40	0.3
T2/AA	27070	E/W	-	-	>0.43	>0.12	0.15
T2/BB	28016	E/W	-	-	>0.30	>0.50	0.09
T2/BB	28021	E/W	-	-	>0.22	>0.20	0.1
T2/BB	28026	N/S	-	-	>1.30	>0.60	0.29
T2/BB	28031=29029	E/W	-	-	1.95	>0.23	0.12
T2/BB	28034	E/W	-	-	>0.60	>0.30	0.01
T2/BB	28037=29021	N/S	29020	-	>1.40	1	0.42
T2/BB	28041	E/W	-	-	>0.15	>0.32	0.09
T2/BB	28044	E/W	-	-	>0.21	>0.21	0.19
T2/CC	29026=30039	E/W	-	-	>1.30	>0.40	0.05
T2/DD	30015=31024	E/W	30016=31023	-	1.6	1	0.43
T2/DD	30021	-	-	-	>0.40	0	0.27
T2/DD	30012=31020	E/W	31019	-	1.6	1	0.49
T2/DD	30026	-	-	-	>0.30	>0.53	0.27
T2/DD	30028	E/W	-	-	1.08	>0.32	0.34
T2/DD	30033	N/S	30032	-	>0.81	1	0.36
T2/DD	30048	E/W	-	-	1	>0.27	0.15
T2/DD	30055	E/W	-	-	>1.30	1	0.23
T2/DD	30058=31046	E/W	-	-	>1.80	0	0.22
T2/DD	30065=31037	E/W	-	-	>1.30	0	0.26
T2/DD	30061	unknown	-	-	>0.12	>0.12	0.23
T2/EE	31037=30065	E/W	-	-	-	-	-
T2/EE	31035	E/w	-	-	>0.67	0	0.18
T2/EE	31031	E/W	-	-	>0.67	1	0.29

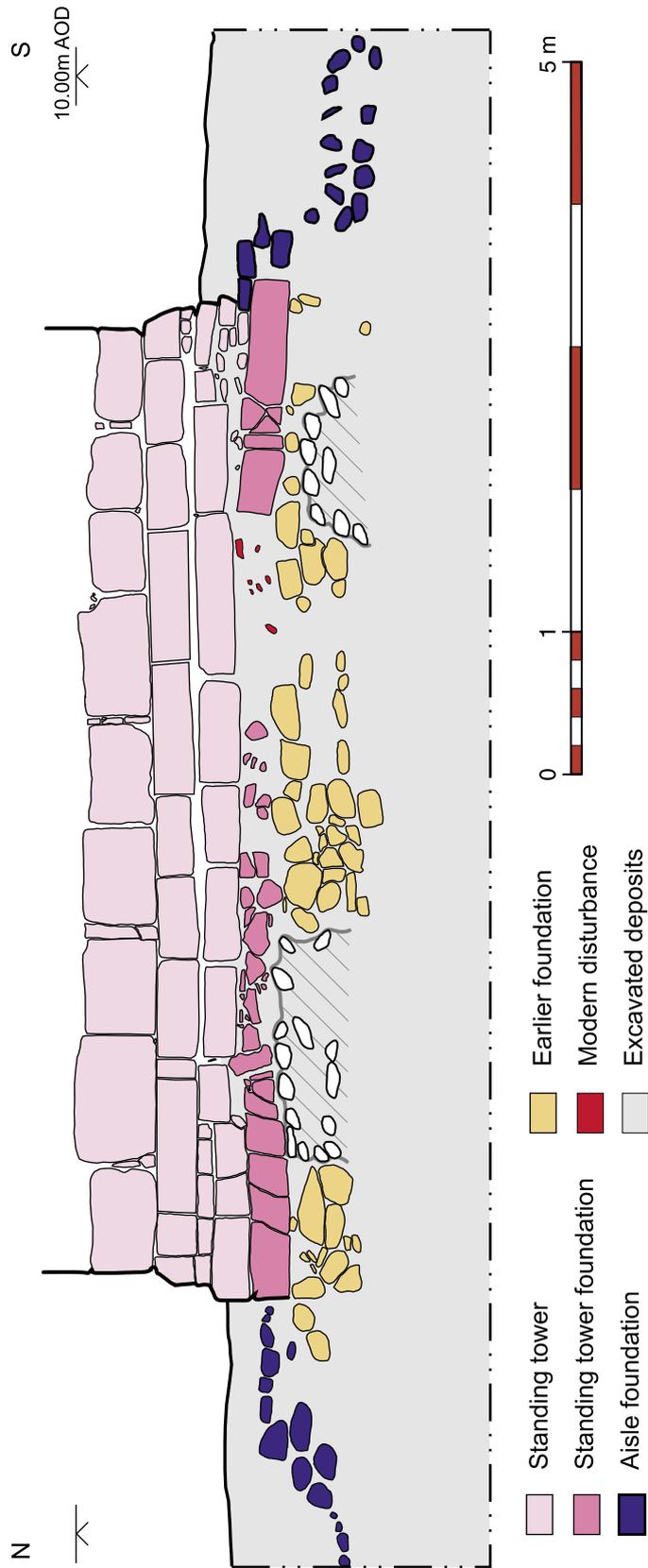
APPENDIX 2 FOUNDATION ELEVATIONS



North facing elevation of foundations

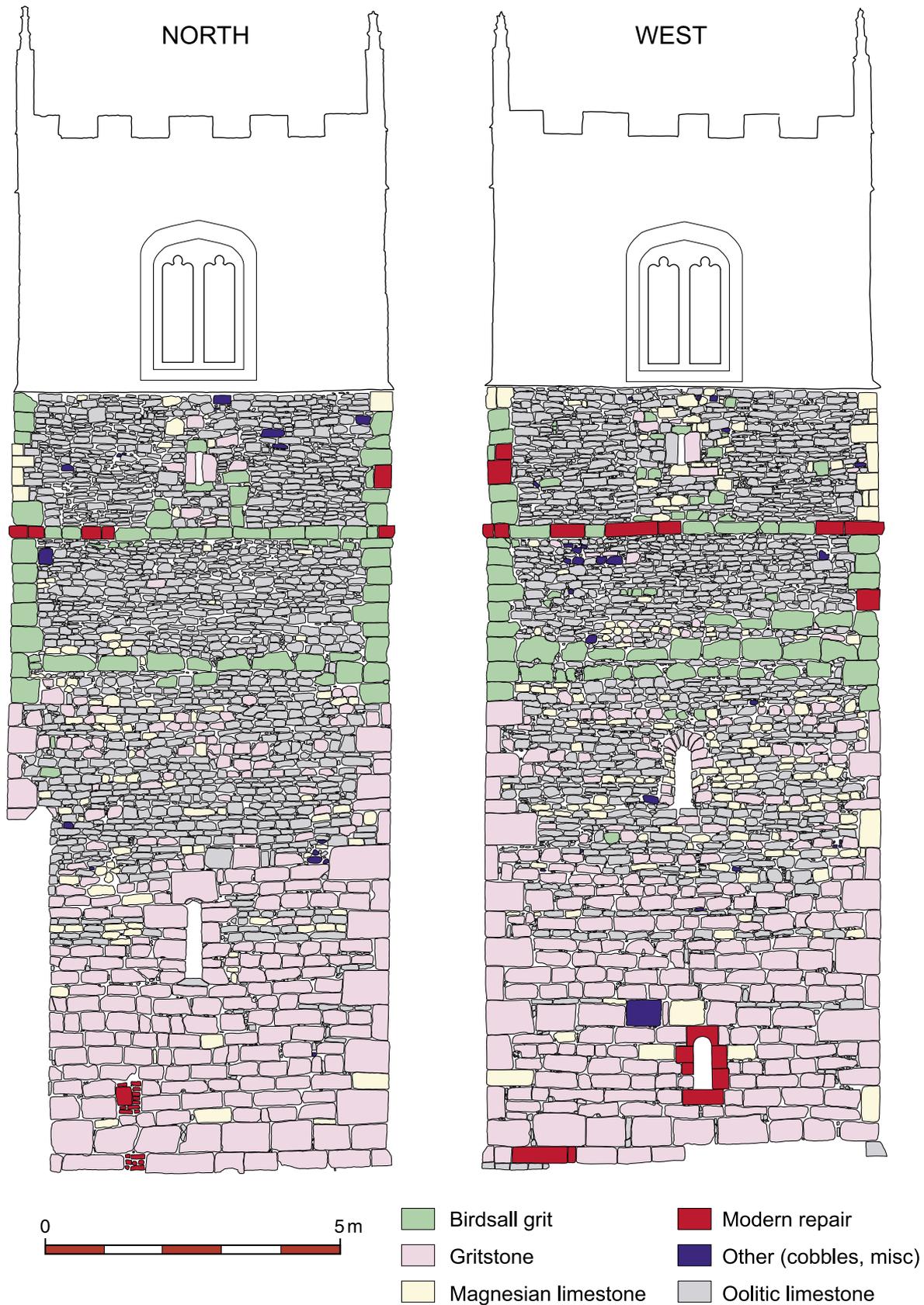


South facing elevation of foundations

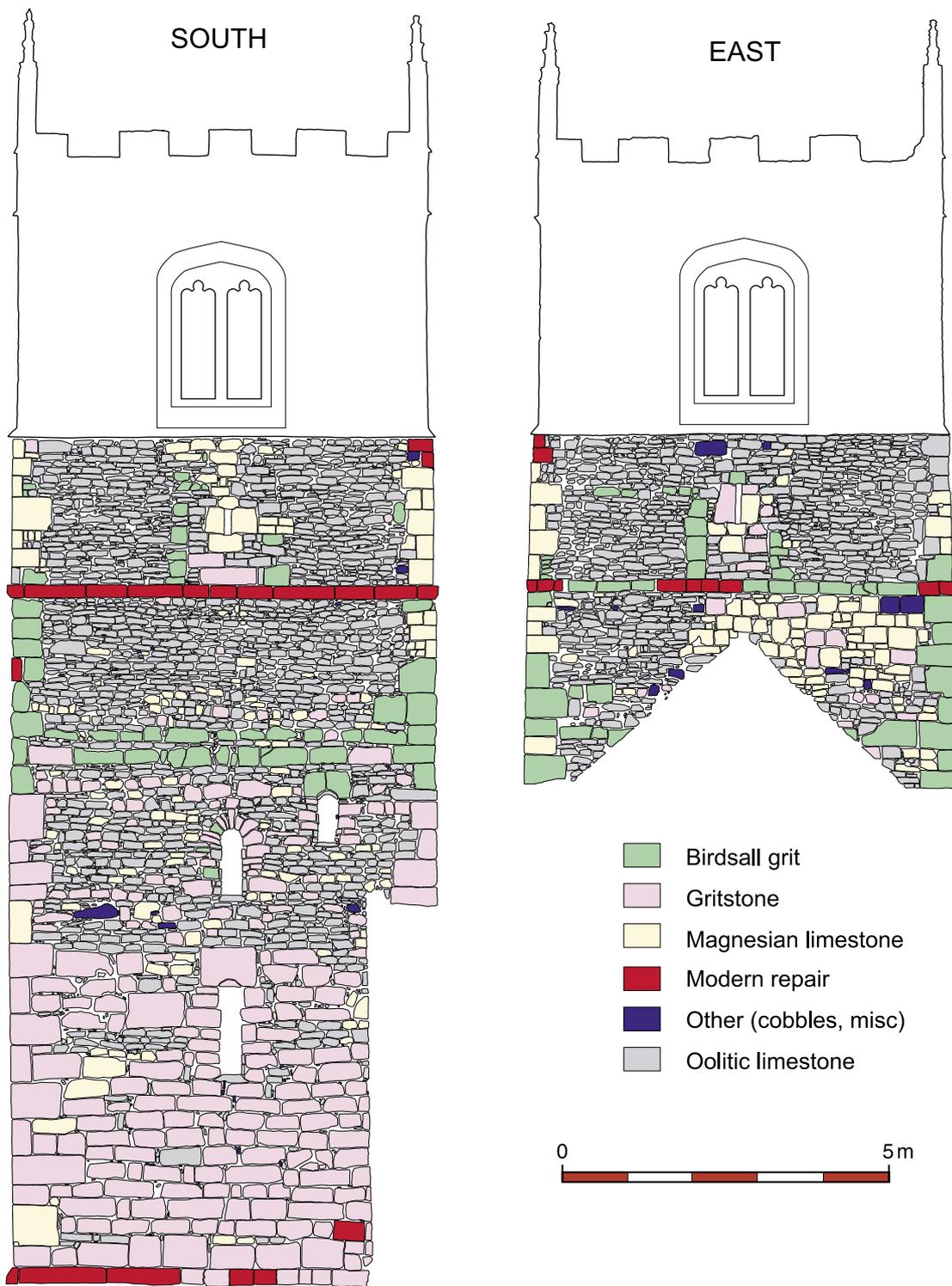


West facing elevation of foundations

APPENDIX 3 BUILDING ELEVATIONS – STONE TYPES

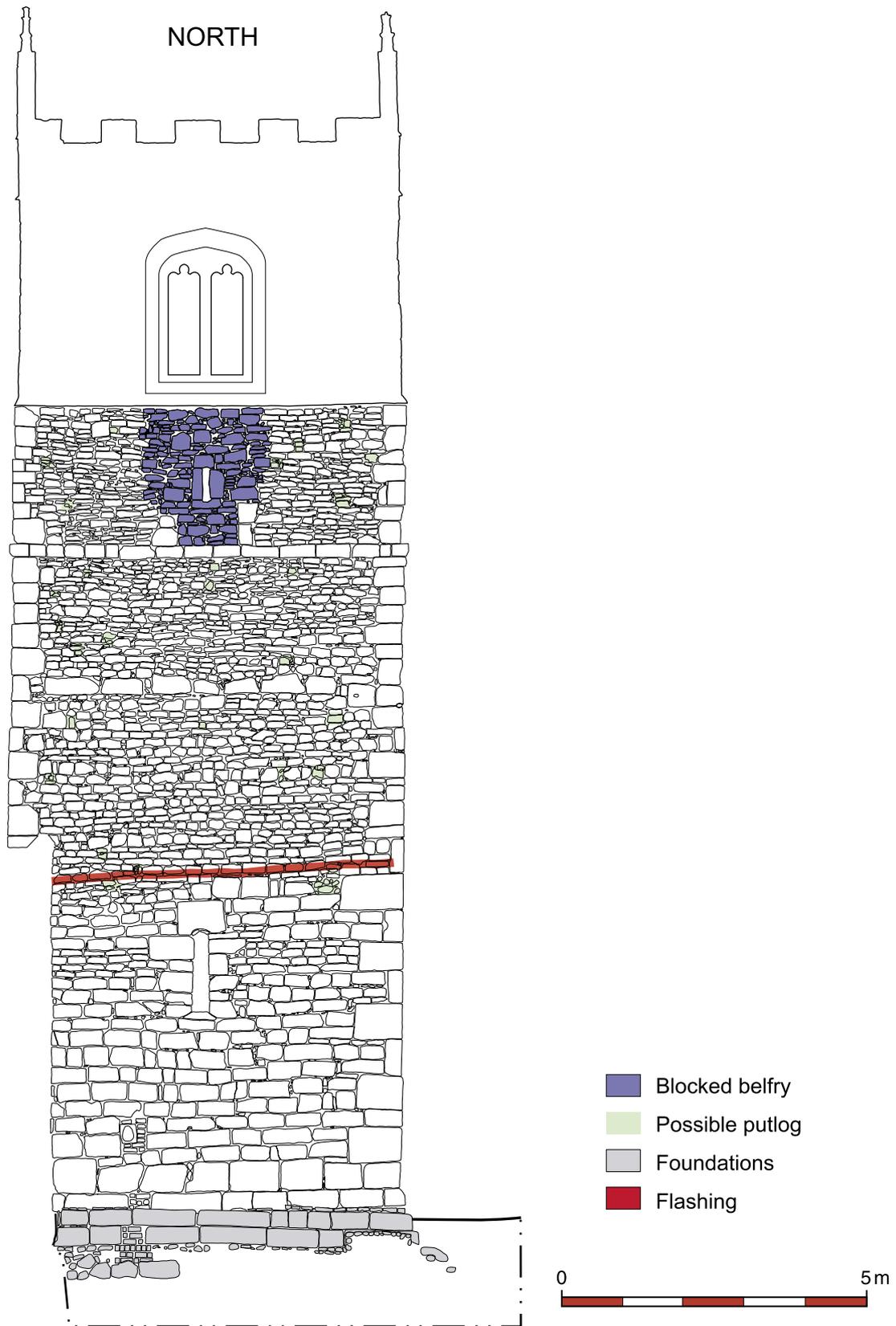


North and West facing elevations – stone types



South and East facing elevations – stone types

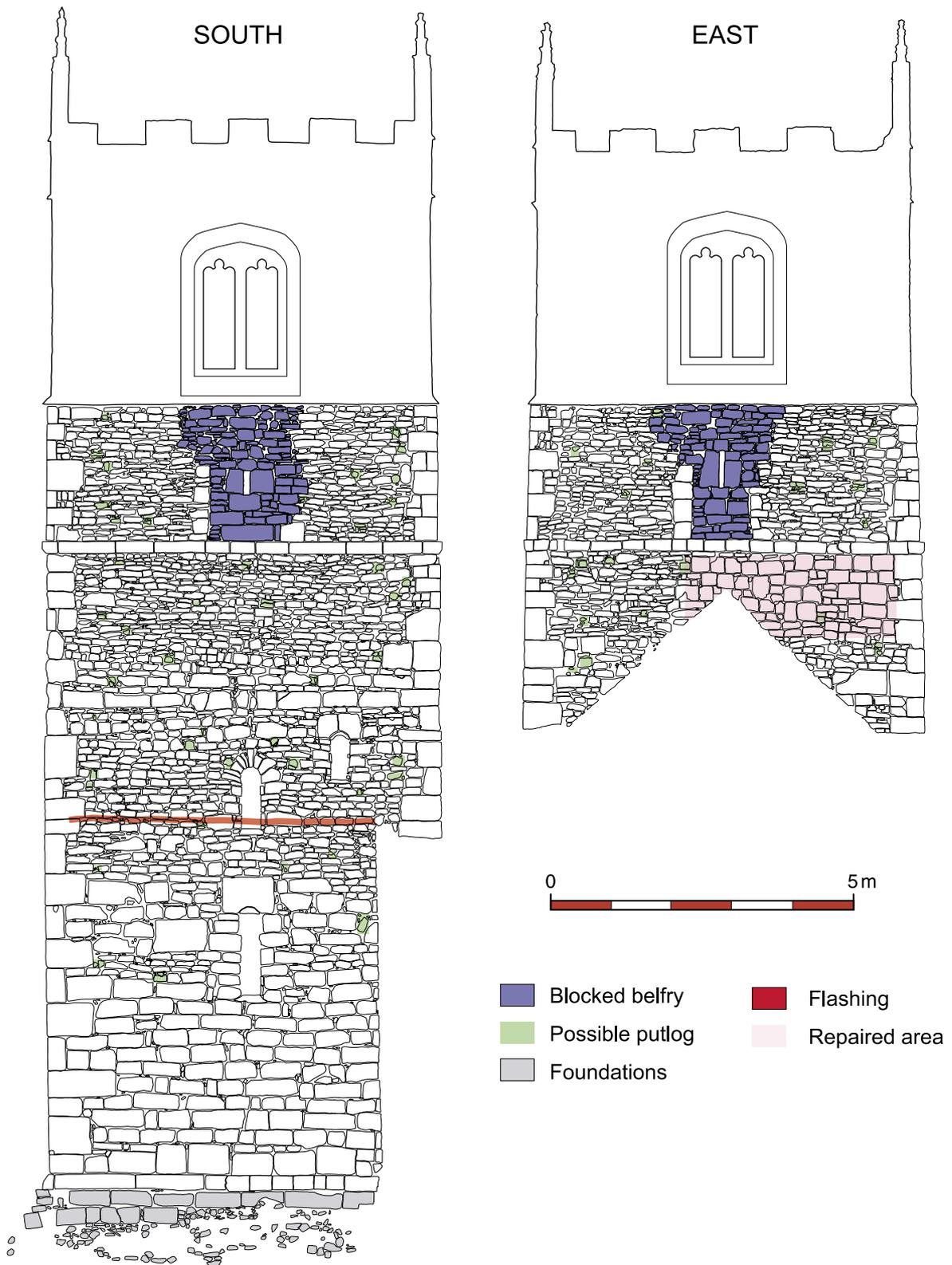
APPENDIX 4 BUILDING ELEVATIONS – FEATURES



North facing elevation showing features



West facing elevation showing features



South and East facing elevations showing features

APPENDIX 5 RADIOCARBON DATING REPORT

All results (excluding some inappropriate material types) which are less than about 20,000 years BP and more than about ~250 BP include this calendar calibration page. The calibrations are calculated using the newest (1998) calibration database with references quoted on the bottom of each page. Multiple probability ranges may appear in some cases, due to short-term variations in the atmospheric ¹⁴C contents at certain time periods. Examining the calibration graphs will help you understand this phenomenon.

Sample Data	Measured Radiocarbon Age	¹³ C/ ¹² C Ratio	Conventional Radiocarbon Age(*)
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Beta – 202746	600 +/- 40 BP	-19.7 o/oo	690 +/- 40 BP
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SAMPLE : Y20041812056

ANALYSIS : AMS-Standard delivery

MATERIAL/PRETREATMENT : (tooth): collagen extraction: with alkali

2 SIGMA CALIBRATION : Cal AD 1270 to 1320 (Cal BP 680 to 630) AND Cal AD 1350 to 1390 (Cal BP 600 to 560)

Beta - 202747	1070 +/- 40 BP	-20.5 o/oo	1140 +/- 40 BP
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SAMPLE : Y20041813046

ANALYSIS : AMS-Standard delivery

MATERIAL/PRETREATMENT : (tooth): collagen extraction: with alkali

2 SIGMA CALIBRATION : Cal AD 790 to 990 (Cal BP 1160 to 960)

Beta - 202748	1080 +/- 40 BP	-19.8 o/oo	1170 +/- 40 BP
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SAMPLE : Y20041816029

ANALYSIS : AMS-Standard delivery

MATERIAL/PRETREATMENT : (tooth): collagen extraction: with alkali

2 SIGMA CALIBRATION : Cal AD 770 to 980 (Cal BP 1180 to 970)

Beta - 202749 870 +/- 40 BP -21.1 o/oo 930 +/- 40 BP

SAMPLE : Y20041826103

ANALYSIS : AMS-Standard delivery

MATERIAL/PRETREATMENT : (tooth): collagen extraction: with alkali

2 SIGMA CALIBRATION : Cal AD 1020 to 1200 (Cal BP 930 to 750)

Beta - 202750 1180 +/- 40 BP -20.5 o/oo 1250 +/- 40 BP

SAMPLE : Y20041830058

ANALYSIS : AMS-Standard delivery

MATERIAL/PRETREATMENT : (tooth): collagen extraction: with alkali

2 SIGMA CALIBRATION : Cal AD 680 to 880 (Cal BP 1270 to 1070)

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-19.7:lab. mult=1)

Laboratory number: **Beta-202746**

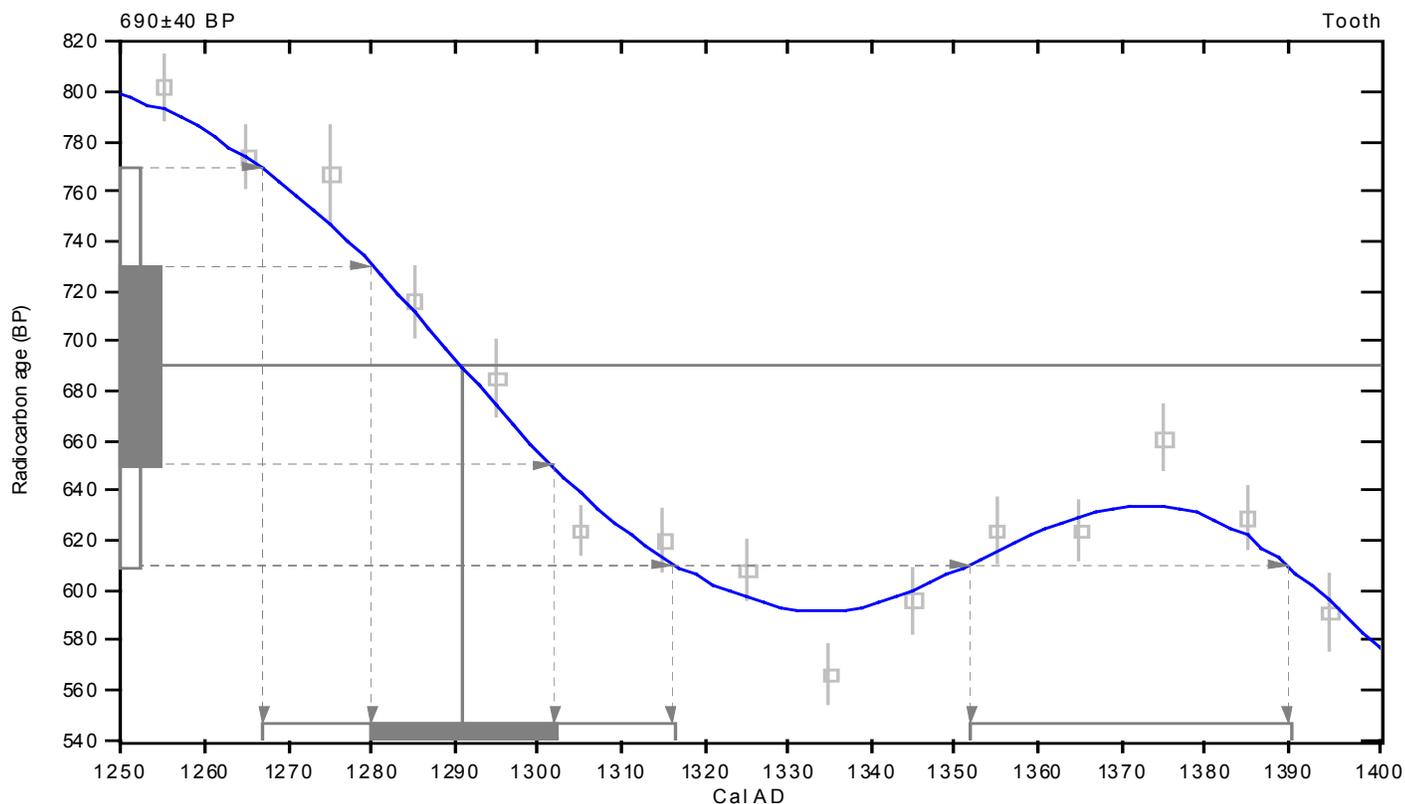
Conventional radiocarbon age: **690±40 BP**

2 Sigma calibrated results: **Cal AD 1270 to 1320 (Cal BP 680 to 630) and
Cal AD 1350 to 1390 (Cal BP 600 to 560)**

Intercept data

Intercept of radiocarbon age
with calibration curve: **Cal AD 1290 (Cal BP 660)**

1 Sigma calibrated result: **Cal AD 1280 to 1300 (Cal BP 670 to 650)**



References:

Database used

INTCAL98

Calibration Database

Editorial Comment

Stuiver, M., van der Plicht, H., 1998, Radiocarbon 40(3), pxii-xii

INTCAL98 Radiocarbon Age Calibration

Stuiver, M., et. al., 1998, Radiocarbon 40(3), p1041-1083

Mathematics

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-20.5:lab. mult=1)

Laboratory number: **Beta-202747**

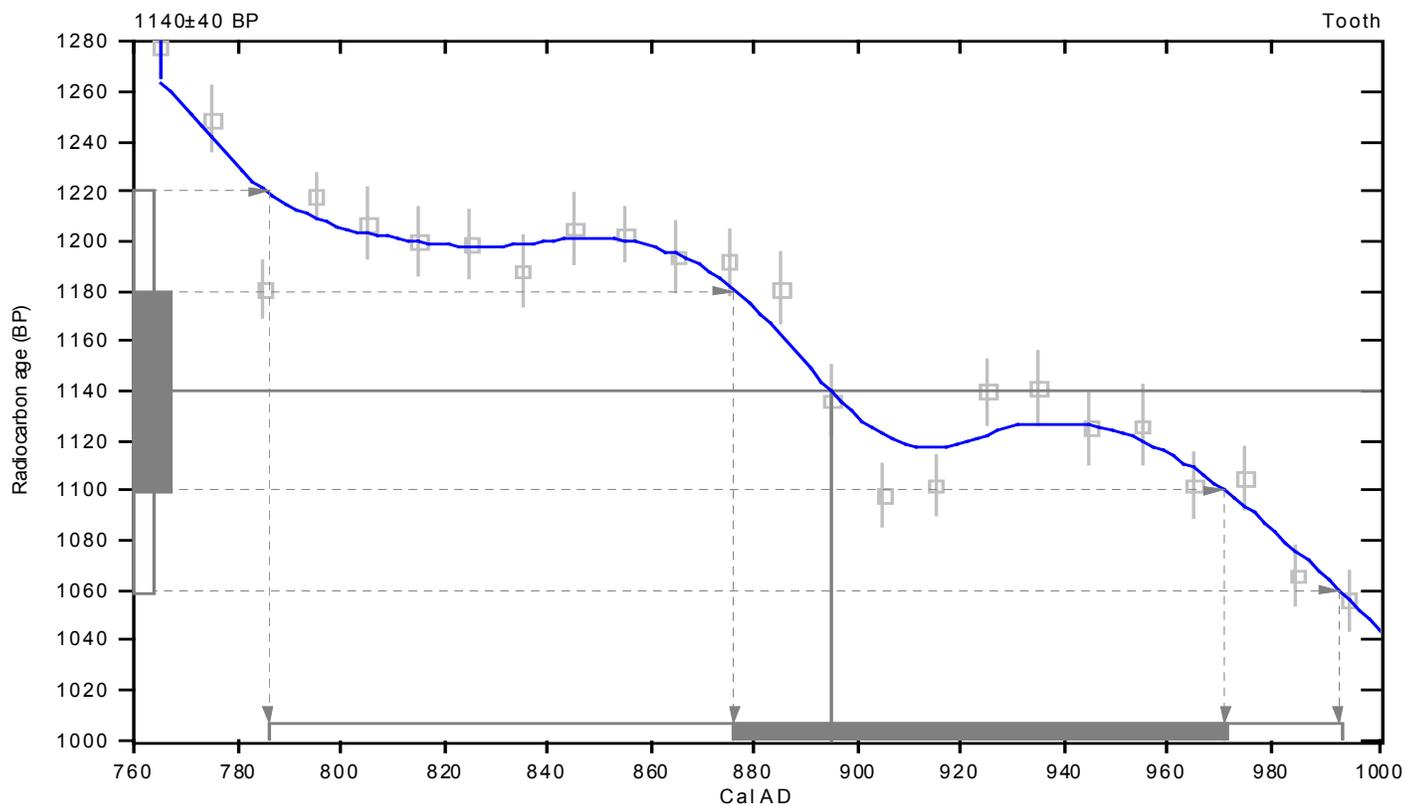
Conventional radiocarbon age: **1140±40 BP**

2 Sigma calibrated result: Cal AD 790 to 990 (Cal BP 1160 to 960)
(95% probability)

Intercept data

Intercept of radiocarbon age
with calibration curve: Cal AD 900 (Cal BP 1060)

1 Sigma calibrated result: Cal AD 880 to 970 (Cal BP 1070 to 980)
(68% probability)



References:

Database used

INTCAL98

Calibration Database

Editorial Comment

Stuiver, M., van der Plicht, H., 1998, *Radiocarbon* 40(3), p xii-xii

INTCAL98 Radiocarbon Age Calibration

Stuiver, M., et al., 1998, *Radiocarbon* 40(3), p1041-1083

Mathematics

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-19.8:lab. mult=1)

Laboratory number: **Beta-202748**

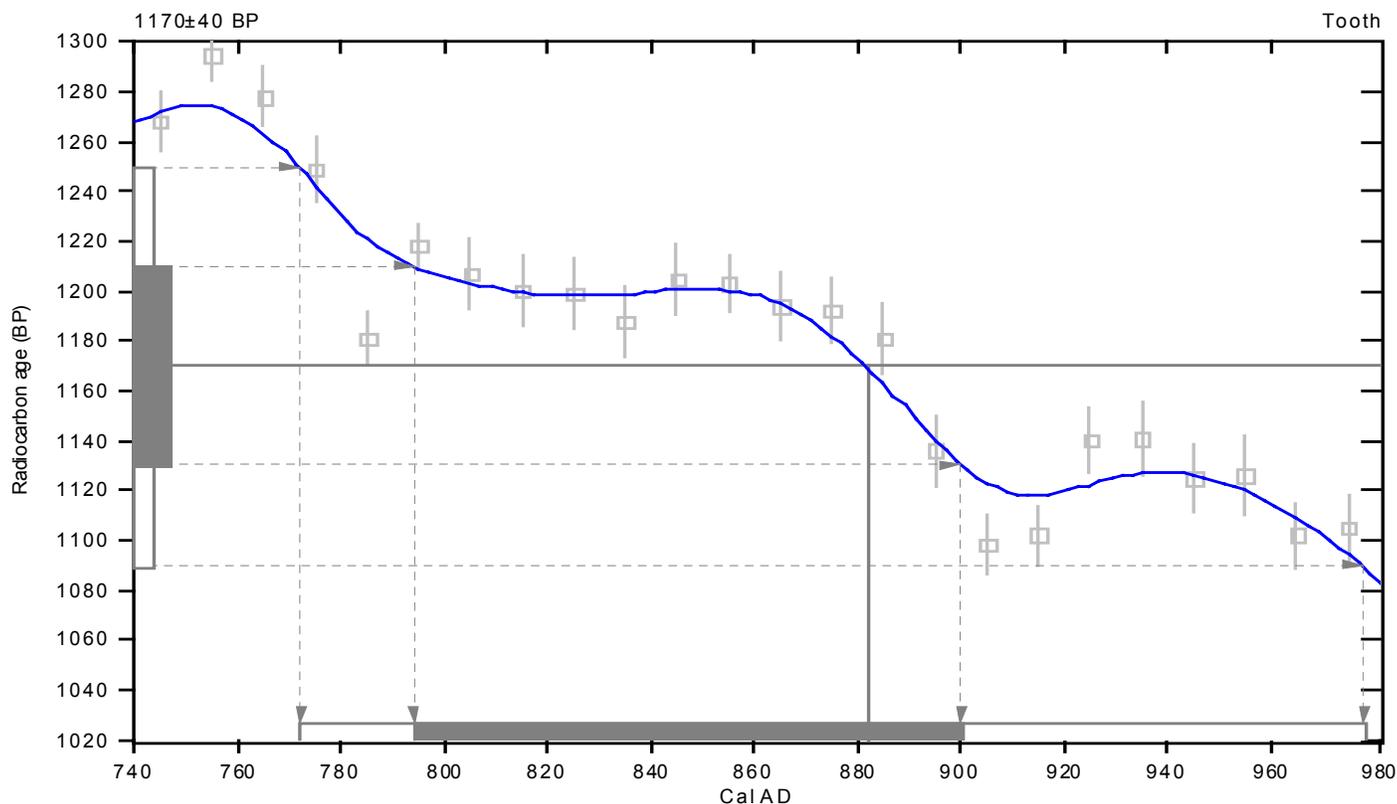
Conventional radiocarbon age: **1170±40 BP**

2 Sigma calibrated result: Cal AD 770 to 980 (Cal BP 1180 to 970)
(95% probability)

Intercept data

Intercept of radiocarbon age
with calibration curve: Cal AD 880 (Cal BP 1070)

1 Sigma calibrated result: Cal AD 790 to 900 (Cal BP 1160 to 1050)
(68% probability)



References:

Database used

INTCAL98

Calibration Database

Editorial Comment

Stuiver, M., van der Plicht, H., 1998, *Radiocarbon* 40(3), p xii-xii

INTCAL98 Radiocarbon Age Calibration

Stuiver, M., et al., 1998, *Radiocarbon* 40(3), p1041-1083

Mathematics

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, *Radiocarbon* 35(2), p317-322

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-21.1:lab. mult=1)

Laboratory number: **Beta-202749**

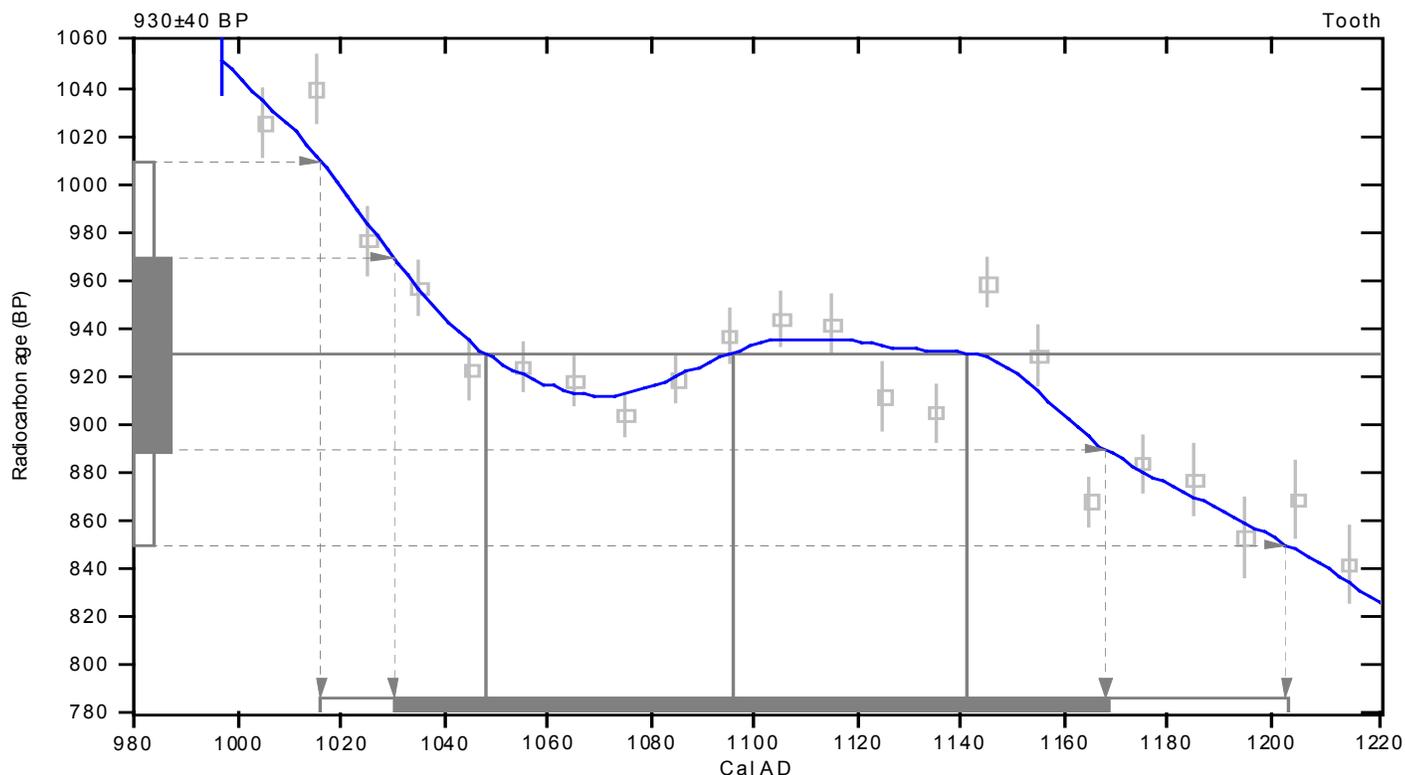
Conventional radiocarbon age: **930±40 BP**

2 Sigma calibrated result: Cal AD 1020 to 1200 (Cal BP 930 to 750)
(95% probability)

Intercept data

Intercepts of radiocarbon age
with calibration curve: Cal AD 1050 (Cal BP 900) and
Cal AD 1100 (Cal BP 850) and
Cal AD 1140 (Cal BP 810)

1 Sigma calibrated result: Cal AD 1030 to 1170 (Cal BP 920 to 780)
(68% probability)



References:

Database used

INTCAL98

Calibration Database

Editorial Comment

Stuiver, M., van der Plicht, H., 1998, *Radiocarbon* 40(3), pxi-xii

INTCAL98 Radiocarbon Age Calibration

Stuiver, M., et al., 1998, *Radiocarbon* 40(3), p1041-1083

Mathematics

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, *Radiocarbon* 35(2), p317-322

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-20.5:lab. mult=1)

Laboratory number: **Beta-202750**

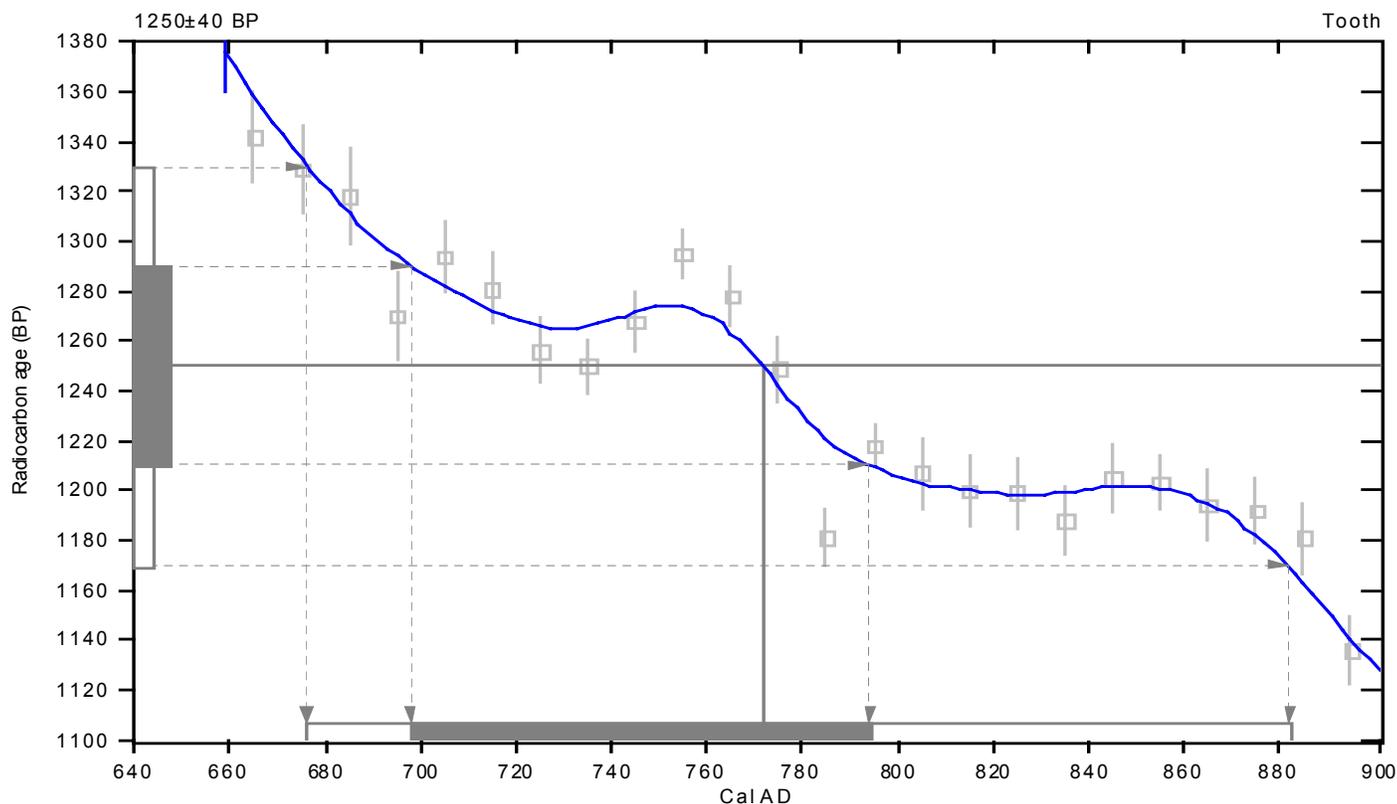
Conventional radiocarbon age: **1250±40 BP**

2 Sigma calibrated result: Cal AD 680 to 880 (Cal BP 1270 to 1070)
(95% probability)

Intercept data

Intercept of radiocarbon age
with calibration curve: Cal AD 770 (Cal BP 1180)

1 Sigma calibrated result: Cal AD 700 to 790 (Cal BP 1250 to 1160)
(68% probability)



References:

Database used

INTCAL98

Calibration Database

Editorial Comment

Stuiver, M., van der Plicht, H., 1998, *Radiocarbon* 40(3), pxi-xiii

INTCAL98 Radiocarbon Age Calibration

Stuiver, M., et. al., 1998, *Radiocarbon* 40(3), p1041-1083

Mathematics

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Talma, A. S., Vogel, J. C., 1993, *Radiocarbon* 35(2), p317-322

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