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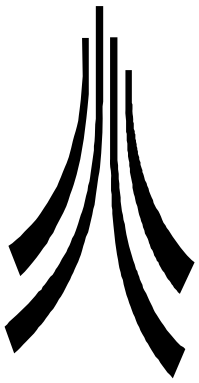

November 2000

AUCHINDRAIN TOWNSHIP
INVERARAY

Recording of the Architectural and Constructional Detail of the Standing Buildings

Commissioned by: Historic Scotland

Auchindrain Township, Inveraray

Recording of the architectural and constructional detail of the standing buildings

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SUMMARY

In April 1999 Lancaster University Archaeological Unit (LUAU) were commissioned by Historic Scotland to undertake a fabric survey of the Auchindrain Township, near Inveraray, Argyll (NGR NN 030 031). The survey was undertaken in two phases to record the architectural and constructional detail of the standing buildings. In the first phase, the survey examined buildings A, B, M, N, O, P, R, S, T, U and W, whilst the second phase examined buildings D, E, F, G, H, J, K and X. The results of both phases of survey are presented in this report.

The township was a multiple tenancy farm, and was one of six such townships in a six mile strip of land between Auchindrain and Inveraray. The earliest documented reference to Auchindrain is from 1534. In 1693 it was assessed as having four tenants and by 1779 there were up to six tenants and a total population of thirty-eight (RCAHMS 1992, 464). The township went into a decline in the late nineteenth and early twentieth century. The last tenant left in 1963, and the township was granted by the Argyll Estate, by a Declaration of Trust in 1964, to a newly founded Auchindrain Museum Trust, as one of the best surviving examples of a Highland 'clachan'.

The survey involved the implementation of an oral / documentary study, a photographic survey, following on from a major photographic survey by Historic Scotland Photographic Unit, a fabric survey of the township buildings by rectified photographic and reflectorless instrument techniques. The survey data was used to create plans, elevations and cross sections of the buildings. A geological study was undertaken to investigate the diversity and sources of the stone used to construct the buildings.

The stone survey identified that all the stone material was of essentially local origin, deriving from local drift deposits. Some of the stone could have been obtained from within the extent of the township, but also there are hushed gullies, both to the north of the main road, but also to the south of the burn which may potentially have served as the source.

An oral / documentary study examined the recent history of the site, recording the interventions that have occurred to the buildings within living memory. This used oral interviews, particularly with Bob Smith the former curator, but also unpublished reports and records of intervention proposals. Many of the buildings were repaired in about 1978, work which, where possible, used locally available or easily accessible materials. Some of the repairs were unsuccessful, such as the thatch roofing of the byre of Building O, which was completed in 1978 and subsequently collapsed in the same year. In general though most of the work undertaken since the establishment of the Trust has concentrated on maintenance of the extant structures rather than wholesale reconstruction. Some buildings have been subject to marked decline; this is most clearly exhibited at Building N, which has degraded very considerably since its roof blew off in 1968.

The analytical fabric survey has shown that there has been a general development and enhancement of the buildings, particularly through the nineteenth and early twentieth centuries. The most notable effect is that most of the earlier buildings were constructed with hipped roofs, and incorporated central hearths and louvres. These however, were for the most part re-roofed, and gables were constructed to provide additional loft space, with gable-end chimneys and fireplaces. This is most notable in Building O, which was rebuilt with a western gable.

ACKNOWLEDGEMENTS

We would particularly like to extend our thanks to Mr John MacDonald, Curator Auchindrain Museum, for his considerable assistance throughout the fieldwork. We would also like to thank Mr Neil Ross, Conservation Research Manager, Dr Michael Burgoyne, District Architect Central Region (Historic Scotland), Mr Jim Souness Historic Building Inspector Argyll and Bute, and Mr Ross Dallas, Survey Consultant, for their assistance and advice during the project. LUAU are grateful to all the individuals who have contributed to the oral study, and in particular to John MacDonald and Bob Smith who provided a valuable insight into the recent history of the site. We are grateful to the Royal Commission on the Ancient and Historical Monuments of Scotland for allowing the use of their topographic survey of the Auchindrain Township.

The archaeological survey was led by Chris Wild and was assisted by Dan Elsworth, Dan Atkinson, Graham Suggett and Neil Wearing. The stone analysis was by Colin Patrick, and the oral study was by Graham Suggett and Chris Wild. The drawings were prepared by Emma Carter, Alistair Hancock, Colin Feeley and Graham Suggett. This report was compiled by Chris Wild and Colin Patrick, and was edited by Jamie Quartermaine, Alison Plummer and Richard Newman. Phase One of the project was managed by Jamie Quartermaine, and Phase Two by Alison Plummer.

1. INTRODUCTION

1.1 CONTRACT BACKGROUND

1.1.1 In April 1999 Lancaster University Archaeological Unit (LUAU) were commissioned by Historic Scotland to undertake a fabric survey of Auchindrain Township, near Inveraray, Argyll (NGR NN 030 031). The Specification was prepared by Historic Scotland Technical, Conservation, Education and Research Division (TCRE), working in conjunction with Historic Scotland PIC Central Region.

1.1.2 The survey had the primary goal of providing a thorough and integrated record of the architectural and constructional form of the buildings. This integrated record was to comprise the rectified photography survey provided, detailed plan, elevation and sectional drawings of all buildings and text records of all features. The entire data set was required to be provided in computerised digital form, linked through an appropriate database.

1.1.3 Because of the extent of works and the requirement for the site to remain open to the public the building survey of Auchindrain Township was carried out over two seasons. The Phase One programme of works (1999) included the recording of buildings A, B, M, N, O, P, R, S, T, U and W; Phase Two (2000) included the recording of buildings D, E, F, G, H, J, K and X.

1.2 SITE DESCRIPTION AND HISTORICAL BACKGROUND

1.2.1 *Setting:* Auchindrain Township is located 9km south-west of Inveraray, on the A83. The clachan lies in the floor of a glen between the hills of An Torr and Dun Leacainn to the south-east, and the ridge of Creag Mhor to the west. The ground upon which the settlement is built is quite boggy. A small stream, the Eas a' Chorabhja Burn, flows through the site, along the main line of the valley, and a tributary burn enters the site from the north at the northern corner. The main river in the area, Leacann Water, lies about 1 km to the west of the site, and flows south into Loch Fyne at Furnace. The valley floor area from the north-east of the site round to the south is afforested.

1.2.2 ***Historical Summary:*** the township was a multiple tenancy farm, and was one of six such townships in a six mile strip of land between Auchindrain and Inveraray. The earliest documented reference to Auchindrain is from 1534 when the future wife of Archibald MacAlasdair MacIver received the charter of the merklands of Auchindrain from the fourth earl of Argyll (RCAHMS 1992, 464). In 1693 it was assessed as having four tenants, with one hearth each. By 1752 there were six joint tenants, and by 1779 there were up to six tenants and a total population of thirty-eight (*ibid*, 464). An estate plan of 1789 (Fairhurst 1968) shows two groups of buildings corresponding with the C-J buildings group and the R-T buildings group, and individual buildings in the approximate locations of present buildings A, L, N, and a further pair of buildings to the west of building W. Following the decline of the multiple tenancy in about 1935 a period of single tenancy was continued by Eddie MacCallum who occupied building A. In 1963 the township was granted by the Argyll Estate to the Auchindrain Museum Trust.

1.2.3 The township comprises a number of roofed byre-dwellings, associated barns, stables and other agricultural structures such as a cart shed. The majority of these probably date from about 1770 to 1840. A number exhibit evidence of later intervention works. In total there are twelve buildings, six ruins and four structures that are classed as remnants. These vary in age and condition but all are originally of dry stone construction with subsequent patches of repair.

2. METHODOLOGY

2.1 PROJECT DESIGN

2.1.1 A project design (*Appendix 1*) was submitted in March 1999 by LUAU in response to a Specification prepared by Historic Scotland for a building record survey of the Auchindrain Township, Inveraray.

2.1.2 The Specification called for a fabric record survey of the buildings, and was undertaken in two stages: the recording of buildings A, B, M, N, O, P, R, S, T, U, W and X were undertaken in 1999, with the remainder to be undertaken in 2000. The fabric survey was required to generate floor plans, rafter plans, elevations and cross sections of the buildings. This was undertaken in conjunction with a programme of context recording and analysis to investigate the development of the buildings.

2.1.3 Variations to the original Specification were implemented in order to record the roof nails on the buildings and an additional building X, a small building out with the main site, on the opposite side of the A83 road.

2.2 ORAL HISTORICAL STUDY

2.2.1 It was not within the remit of the project to undertake a full documentary study of the site, but it was required that an oral study be undertaken to examine the developments and alterations that have been made to the township buildings within living memory. This involved extracting work undertaken by the RCAHMS on the township and also by the University of Glasgow Archaeology Department. The material was used to augment the existing record. The study also involved interviewing the current and former curators of the Auchindrain Museum, the Trustees and also local persons or experts who have worked on the site and who would have a pertinent knowledge of its recent history. The principle aim of the study is to elucidate the recent history and interventions that have been made to the township fabric and which are not defined within written records.

2.2.2 Two visits were made to the RCAHMS archive in Edinburgh. A search through the archive revealed information from the 1963 survey of the site, and the report included in the 1967 Argyll volume. The material mainly comprised plans, and elevations which were copied for this archive and a large number of photographs, which it was unfeasible to copy. The site report, later included in the Argyll volume (1992) contained valuable information about the main buildings of the township prior to the interventions of the Museum Trust.

2.2.3 The archive of the Museum Trust kept at Auchindrain was examined, and contains a wealth of information, including proposals for alteration / consolidation works and minutes of Trustee meetings since 1963. However, there was little record of the interventions that had taken place. This extensive archive should be subjected to a more detailed inspection than was possible within the remit of this project.

2.2.4 A list of relevant interviewees (*Appendix 2*) for information about interventions was drawn up in association with Historic Scotland and an attempt was made to contact all of them. Telephone interviews proved sufficient with most people contacted. Visits were made to interview Hugh Crawford of Sir Frank Mears Architects and Bob Smith, Curator of the Museum between 1977 and 1986.

2.3 PHOTOGRAPHIC RECORD

2.3.1 A detailed rectified photographic survey had been undertaken for all the exteriors and much of the interiors by Historic Scotland Photographic Unit; this was provided by Historic Scotland on PhotoCD prior to the survey and it served as the basis for creating the external elevations. However, there were some gaps within the record and some photographs were too oblique to be used as the basis of creating elevation drawings. Some additional rectified photography was undertaken. Survey control for the photographs was established with a reflectorless total station to enable them to be digitised into a CAD system. The elevations generated by instrument survey were superimposed on those generated by rectified photography within a CAD environment.

2.4 FABRIC SURVEY

2.4.1 An instrument-based survey, with hand-measured enhancements, was carried out to record the fabric of the walls following the stripping of the wall finishes.

2.4.2 ***Survey Control:*** a Zeiss Elta 3 total station, linked to a portable data logger, was used to establish the survey control around the township by means of a closed traverse. This provided external control around the buildings and also within. The control was established over the whole site in order to allow for the precise location of the structures with respect to the base map.

2.4.3 ***Topographic Survey:*** a topographic site map had previously been undertaken of the site by RCAHMS during the early 1990s, and it was not required that this be resurveyed. However, there was a requirement for the mapping of the individual plans of the standing and ruined buildings, and that these should be superimposed on to RCAHMS base map.

2.4.4 The survey of the ruined buildings was undertaken by means of a conventional total station (Zeiss Elta 3) to LUAU's Level 3 which provides for a detailed level of structural recording in plan and elevation. However, the elevations of the ruined buildings were created using rectified photography with respect to survey control on the walls established by means of the total station. The digital survey data from the instrument logger was transferred, via DXF file format, into a CAD system (AutoCAD14). The archaeological detail was drawn up in the field with respect to plots of the survey data and these edits were then transferred onto the raw survey data within the CAD system. The archaeological digital data was subsequently superimposed as a vector file on top of the RCAHMS base topography which was incorporated as a scanned raster element.

2.4.5 ***Standing Building Survey:*** the standing buildings were for the most part recorded using a reflectorless total station, which is capable of measuring distances to a point of detail by reflection from the wall surface, and does not need a prism to be placed against the structure at each point of detail. The instrument used was a Leica T1010 theodolite coupled to a Disto electronic distance meter (EDM). The Disto emits a visible laser beam which can be visually guided around points of detail. The digital data was stored within a portable computer running TheoLT software which allows the survey to be directly inserted into AutoCAD LT software. The survey provided plan information internally and externally and also control points for the external walls to inform the creation of the external walls by rectified photography. The internal elevations were for the most part created directly by measurement of the

detail using the reflectorless total station, which was created as an elevation record within the computer. This latter method required only minimal manual enhancement to enable completion of the elevations and cross sections.

2.4.6 The specification required outline recording of the elevations. The drawings were created for an anticipated output at 1:20, however, in order to provide compatibility between all drawings it was subsequently agreed that the principal plotting scale would be 1:50 for all drawings at A1 paper size.

2.4.7 In one area, the byre of building A, there was too much floor detail to be economically recorded using instrument survey methods and in this instance the plan was mapped using a planning frame, and the resultant plan was digitised into the computer.

2.4.8 ***Fabric analysis:*** a context record was made for each element of the elevation, plan and cross sections. The context recording was based on a pre-defined pro-forma, however, in the event the data was recorded in the field on a tape recorder using the pro-forma as a verbal template and the data was subsequently transcribed onto a database (Microsoft Access). The context recording provided for a descriptive record of each element intended to augment the photographic and drawn records. These context details are incorporated within the project archive, but are not incorporated within this report.

2.5 STONE ANALYSIS

2.5.1 ***Aims:*** the aims of the stone survey were to determine:

i) the rock types involved

ii) the possible sources of the building stones and, in particular, whether they could have been obtained locally or would have had to be imported to the site

iii) whether there has been any selection of rock types for use as special structural elements, such as lintels and corner stones

iv) whether there is evidence of variations in the mixture of building stones used between buildings.

2.5.2 ***Methodology:*** the range of rock types used as building stones was determined during the survey (21st and 22nd July). The building stone surveys were based on the annotation of rectified colour photographs of the non-whitewashed buildings D to G, J, K, and N to P, provided by Historic Scotland. Prior to field survey the stones on the photographs were numbered and the minimum size of stones subsequently identified was determined by the ability to resolve them as separate and distinct units on the photographs.

2.5.4 The details of the buildings surveyed are summarised in Table 1 (*Section 3.1*), in terms of the buildings, the wall or walls surveyed, the number of stones involved, and whether all the stones in a wall were identified (giving a full survey for that wall) or only a fraction of them (giving a partial survey for that wall). All external walls were surveyed except for Building O in which external moss and lichen cover made the internal walls more useful. The number of stones surveyed was always less than the full number of stones present in the building, due to limitations of time. In only one building, Building F, were all external stones surveyed. In other buildings one or more walls were surveyed, in full or partially, and the aim was to identify a

large enough number of stones to represent a significant percentage of the total stones in each building.

2.5.5 In the survey the lithology of each numbered stone was determined and recorded, in an abbreviated form, against its number on a prepared survey sheet. Limitations were imposed on rock type identification by the impossibility of breaking stones to provide fresh faces (the standard geological approach), the general absence of fresh faces, the blurring effects of weathering and rounding, and varying degrees of cover due to moss and lichen, whitewash and mortar. A few stones numbered on the photographs proved to be voids and a few were unidentifiable. In the survey as a whole missing and unidentified stones accounted for 5.1 % of those surveyed.

2.6 ARCHIVE

2.6.1 An archive has been compiled in accordance with the Specification (*Appendix 1*). A copy of the report, including a synopsis of the archive, will be deposited with Historic Scotland and a copy submitted to RCAHMS on completion of the programme.

2.6.2 The archive cmprises approximately the following material:

Survey drawing sheets	262
Context record sheets	2400
Photographs including Historic Scotland material	590

2.6.3 please not that this report is not definitive in itself and should be read in conjunction with the archive material.

3. STONE ANALYSIS

3.1 GENERAL DESCRIPTION

3.1.1 In terms of solid geology Auchindrain Township lies almost centrally within a 6.5km wide north-east to south-west belt of Ardrishaig Phyllite, part of the Dalradian Supergroup of metamorphic rocks. This stratigraphic unit consists of phyllites, quartzites and sandstones, and chloritic slates and schists. These lithologies are exposed on the shores of Loch Fyne, and at two outcrops within the site. They occur in the path to the east of Building N and in the grassy area between Buildings D and E, and expose thin-bedded sandy and argillaceous beds, and a thin-bedded flinty lithology.

3.1.2 The Ardrishaig Phyllite has been intruded by felsite and diorite, the latter metamorphosed to epidiorite. Felsite occurs in the slope of An Torr to the south, the boundary lies immediately to the south of the Township boundary, and in the south-west quadrant of Dun Leacainn, extending south along the shore of Loch Fyne. It is well exposed in the quarries at Furnace and Crarae. The crags on the ridge to the west of the site consist of felsite and epidiorite.

3.1.3 The valley floor around the township is covered by drift deposits. These appear to be a mixture of boulder clay and fluvio-glacial sands and gravels. They are exposed in the road cuttings and forestry clearance area, adjacent to the main road, about 500m to the south-west of the site. The conical mound south of the modern wooden house may be a fluvio-glacial feature, not a drumlin as apparently reported in a previous investigation, but could possibly have also been used as the Township stone pile.

TABLE 1. SUMMARY OF BUILDING STONE SURVEYS

Ref	Building surveyed	Wall(s) stones	No of	Full / Partial
D	MacNicol's House	Front	300	Partial
E	Stable	Front	120	Partial
F	Cartshed	Left and right of opening	40	Full
G	Cottar's House	Front	147	Full
J	Munro's Barn	Back	260	Partial
K	Smiddy and Corn Kiln	Front	260	Partial
N	MacNicol's Barn : Ruin	South wall	165	Full
0	House and Byre: Ruin	Interior: East wall	119	Full
		Interior: West wall	185	Full
P	Barn: Ruin	Front	56	Full
		Back	152	Full
		South wall	66	Full
		Total stones surveyed	**1871**	

3.2 ROCK TYPE

3.2.1 Rock types were identified specifically, whenever possible, but the limitations on rock type identification made it impossible to distinguish between some similar rock types. In these cases composite categories, grouping several rock types together, had to be established. The following rock types were identified specifically:

- Felsite
- Quartzite
- Sandstone
- Schist / Mica schist
- Flinty rock type within the Ardrishaig Phyllite, exposed on the site
- Diorite
- Basalt
- Andesite
- Slate

3.2.2 The two composite categories established are:

- Green beds which probably includes epidiorite, chloritic schist, rocks from the stratigraphic unit known as the 'Green Beds' and other metamorphic rock types
- Ardrishaig Phyllite blocks and slabs of sandstone and quartzite which could have been derived from the Ardrishaig Phyllite, although this cannot be demonstrated

3.2.3 The results of the survey for each building are shown in Table 2, in terms of the percentages of each rock type present in the wall or walls surveyed. The percentage of rock types in all the building stones surveyed is also shown. Ten rock types / composite groupings were identified. Five rock types were identified in Building F, six in Buildings G, K, and N to P, seven in Buildings E and J, and eight in Building D. The building stones are dominated by five rock types (felsite, green beds, quartzite, and the two 'rock types which could be derived from the Ardrishaig Phyllite'). The subordinate rock types occur in only very small numbers. Buildings D and K have a relatively high proportion of 'rock types which could be derived from the Ardrishaig Phyllite', and Building N has a relatively high proportion of the 'flinty rock type found in the Ardrishaig Phyllite'.

TABLE 2

STATISTICAL RESULTS OF BUILDING STONE SURVEY

Percentage of stones in each rock type category

Building	F	Gb	Q	MS	AP	H	S	D	B	A..?
D	28	23	20	1.3	12	0	2.7	2.7	1.7	0...8.3
E	26	51	13	4.2	0.8	0.8	1.7	0	0	0...3.3
F	30	45	10	5.0	2.5	0	0	0	0	0...7.5
G	29	50	15	2.0	0	0	0.7	0	0.7	0...2.7
J	37	33	18	5.4	4.2	0	1.2	0	0	0.8 1.2
K	22	34	26	1.5	12	0	1.2	0	0	0...3.1
N	29	32	9.1	5.5	6.7	13	0	0	0	0...4.8
O	30	41	17	0.3	4.6	0	0.3	0	0	0...6.9
P	41	37	11	0.7	3.3	0	0.4	0	0	0...7.3
All Buildings	31	36 17	2.4	6.1	1.2	1.0	0.4	0.3	0.1	5.1

Key:

F	Felsite
Gb	'Green beds'
Q	Quartzite
MS	Schist and Mica Schist
AP	Rock types which could be derived from the Ardrishaig Phyllite
H	Flinty rock type found in the Ardrishaig Phyllite
S	Sandstone
D	Diorite
B	Basalt
A	Andesite
?	Missing or unidentified

3.3 COMPARISON OF BUILDINGS

3.3.1 The extent to which the survey results, based on only part of a building, can be considered to represent the proportions of stones used in each building as a whole has to be determined before inter-building comparisons can be made. This problem has been investigated in two ways:

i) by examining the effect of sample size on the stability of the resultant statistics

ii) by examining the results of the surveys of buildings in which several walls were surveyed.

3.3.2 The effect of sample size on survey results was investigated by recalculating the percentages of rock types in each category using subsets of data involving 50,100,150 etc stones up to the maximum number of stones surveyed. Examination of the sample size / percentage relationships produced suggests that with sample sizes of 200 stones or more stable percentage values result, although still accompanied by an error of the order of +/-3% for the three main rock types (felsite, green beds, quartzite). As full surveys were conducted on walls in buildings F, G, N, O and P, the percentages obtained are a correct reflection of their building stone composition.

3.3.3 The possibility of generalising from results for individual walls to the whole building was examined using the data from Buildings O and P, in which two and three walls, respectively, were surveyed. The results are ambiguous; for Building O the statistics for the walls are almost identical, suggesting that generalisation may be acceptable, whereas for Building P percentage values vary markedly from wall to wall, making generalisation impossible.

3.3.4 In spite of this ambiguity about the possibility of generalising results from a wall or walls to a whole building this step has to be made, with appropriate caution, if the data presented here is to be used to compare buildings. A second assumption also has to be made, that the construction of internal and external walls is identical. This has not been tested formally but general observations in the buildings surveyed suggest that it is probably valid. A third assumption is that the building has not been radically altered by maintenance or rebuilding, however, it is evident that in some instances, particularly buildings such as 'O', which have seen the rebuilding of gable walls from hip roofed buildings, that there has been some alteration to the fabric. Where this has been evident the stone data of the sections of rebuild / repairs have been excluded from the dataset.

3.3.5 Assuming that these assumptions are valid, the data from Table 2 has been plotted on a triangular diagram (Fig 3) to provide a basis for comparing the building stone composition of all the buildings. This is a method of presenting data which overcomes the problems inherent in comparisons based on tabulations of data. The data has to be expressed in terms of three components; the three components used in Fig 3 are felsite, green beds and (quartzite + schist and mica schist + the 'rock types' and 'flinty rock type' found in the Ardrishaig Phyllite + sandstone).

3.3.6 The rock type composition of each building, in terms of these three components, has been determined by recalculating the percentage of each rock type present as a percentage of the fraction represented by these three rock types. When expressed in this way the building stone composition of each building plots as a point within the triangular diagram. The potential effect of errors on the plotted points is shown by the error circles for +/-5%. When the error circles are taken into account Fig 3 suggests that Buildings D, J, K, N, O, and P are probably distinct from one another whilst Buildings E, F and G may be indistinguishable from one another although distinct from the other buildings.

3.4 STRUCTURAL USES OF ROCK TYPE

3.4.1 The possibility that rock types have been selected for use as specific structural elements in buildings has been investigated using the results of the surveys, where appropriate, augmented with more general observations on the buildings. No attempt has been made to quantify the results as the samples are too small to produce meaningful statistics. The following preferences can be detected, although not backed up by statistical results:

i) felsite and green beds are preferred for corners of buildings, edges of door and window openings, and for chimney corners.

ii) slabs of quartzite from the Ardrishaig Phyllite may be preferred as door, window and fireplace lintels, and as door steps,

iii) window sills show no preference among the slabby rocks, and slate was used in Buildings E and O,

iv) large flagstones used in the house as flooring or hearth are schist or quartzite, and possibly both from the Ardrishaig Phyllite,

v) fireplace edges, and flue linings are preferentially felsite.

3.4.2 Support for the idea of active selection of rock types to be used as building stone is provided by a comparison between Buildings D and N. Building D is located immediately adjacent to an outcrop of Ardrishaig Phyllite but contains none of the 'flinty rock type found in the Ardrishaig Phyllite'. This is in contrast to Building N, also alongside an outcrop, in which it has been used extensively. An explanation may be found in the different uses of the buildings in relation to the characteristics of the stone. The 'flinty rock type' forms irregular and erratically sized and shaped blocks, its load bearing properties are probably unpredictable as it is thinly banded and brittle, and it may be susceptible to weathering along the fissility. As a result the 'flinty rock type' may not have been a preferred stone for a habitable building, whereas it was acceptable for a barn.

3.4.3 This is the only comparison possible between the compositions of habitable and farm buildings as the sample of three houses and six barns makes further comparisons unrealistic.

3.5 SOURCES OF BUILDING STONE

3.5.1 Comparison of the rock types present as building stones within the buildings surveyed, in terms of their lithology, sizes and shapes indicates that, with the exception of slate, all the stones observed could have been derived from the local Drift. As the township site is underlain, and flanked on both valley slopes, by Boulder Clay and / or fluvio-glacial gravels derived from the Boulder Clay it follows that virtually all the stones surveyed could have been obtained within or adjacent to the site. The limitations on rock type identification imposed by various factors does not affect this conclusion as all the rock types included in the composite categories occur within the Drift.

3.5.2 Off-site derivation seems more probable than actual on-site derivation for most of the stones as, with two exceptions found on internal walls, the felsite stones show no indications of the effects of the chemical weathering which affects them in peaty soil. Chemical weathering is to be expected on felsite stones obtained within the Township area as most of the site is waterlogged and covered by peaty soil. The chemical weathering produces a rotted skin or rots the boulder entirely; it can be seen on the felsite boulders exposed in the peaty soil on the forestry clearance area. Although it is possible that some of the rounded stones, seen in building walls, may be core stones left after a weathered skin has been removed the general good condition of the stones suggests that they have not been subjected to chemical weathering.

3.5.3 These considerations suggest that the majority of the building stones were obtained by either surface picking from non-peaty ground, excavation during cultivation, especially by the lazy bed method, in areas without a peaty soil, excavation of better drained sites on fluvio-glacial deposits, such as alongside the wooden house, excavation on the better drained valley slopes.

3.5.4 Further support for a source of stones from adjacent lower slopes is provided by the variations observed in the proportions of felsite used in buildings. The percentage of felsite in each building surveyed has been plotted on a map and the data contoured

(Fig 4). The map also shows the approximate position of the geological boundary between the felsite and the Ardrishaig Phyllite.

3.5.5 Although the data set is small, the contours very subjective, and the occurrence of felsite in buildings is confused by the apparent selection of felsite for structural use, the pattern of contours does suggest that buildings nearer to the southern site boundary contain more felsite than those further away, and across the burn. It is interesting to note that all the buildings north of the burn appear to form a coherent group. This variation in felsite content is consistent with the expected geology as the drift on the south side of the stream is likely to be richer in felsite boulders, due to derivation from the felsite outcrop on the lower slope of An Torr, than the Drift to the north of the stream, where there will be no relative enrichment in felsite. On this basis it may be possible to distinguish between a 'high felsite' Drift source of stones, on the slopes of An Torr, and a 'low felsite' Drift source of stones, on the Creag Mhor hillslope. Recognition of these two distinct sources give support for separate hushing operations on the two sides of the valley; on the north side producing 'low felsite' stone mixtures, on the south side producing 'high felsite' stone mixtures.

3.5.6 In addition to these possible sources within the drift there are indications that stones were obtained by excavation from exposures of Ardrishaig Phyllite within the Township. This suggestion derives from the rock types found in buildings D, J, K and N. Buildings D, K and N contain high proportions of 'rock types which could be derived from the Ardrishaig Phyllite' and the 'flinty rock type found in the Ardrishaig Phyllite'. Although these rock types have been found in the Drift on the forest clearance area the relatively high occurrence of the former in Buildings D and K, and of the latter in Building N, suggests that a source, or sources other than the drift has been involved. The outcrops of Ardrishaig Phyllite within the Township are adjacent to Building N and in the grassy area between Buildings D and E; the flinty rock type occurs in both outcrops. The flinty rock type used in Building N could thus have been obtained by excavation near to the building. The 'rock types which could be derived from the Ardrishaig Phyllite' used in Building O may similarly have been excavated near to the building, although the present outcrop does not show the blocky or slabby rock types used in the building. The 'rock types which could be derived from the Ardrishaig Phyllite', used in Building K. could have come from either of the present outcrops or from one which has subsequently been covered up.

3.5.7 Building J is distinct from the other buildings in having a relatively high percentage of the 'quartzite plus' category of rock type. Although there is no evidence of the occurrence of these rock types on the site its grouping with Buildings O, K, and N (Fig 3), and its location on a 'line' connecting these buildings (Fig 4), which coincides with the strike in the underlying rocks, is suggestive of a common source in the Ardrishaig Phyllites.

3.5.8 If Buildings D, J, K and N are to be considered as a group, on the basis of both apparent stone composition and location, it is necessary to ask why other buildings in the same general location, Buildings E, F and G, do not appear to belong to the group on the basis of stone types present. This question cannot be answered on the basis of the information and data currently available but possibilities are; inadequate sample sizes distorting the real stone type proportions (Table 1, *Section 3.1*), construction at a time or times distinct from the construction of Buildings D, J, K, and N, and using other sources, effects of reconstruction.

3.5.9 Recognition of these similarities, and differences, between buildings makes it possible to propose a classification of the nine buildings surveyed in terms of the four principal stone sources inferred. These sources are the low felsite mixture from the northern valley slopes, high felsite mixture from the southern valley slopes, and Drift-derived and locally excavated Ardrishaig Phyllite mixtures. This classification is:

Buildings	**Felsite source**	**Ardrishaig Phyllite source**
E, F, G	Low felsite	Drift derived
D, J, K, N	Low felsite	Locally excavated
O, P	High felsite	Drift derived

3.5.10 One rock type, slate, must have been imported to the site as it is a rock type which would not survive glacial transport, and which does not occur within the Township area as part of the solid geology. It is not possible to define its source without further investigation, as there are several possible sources on the coast of South-West Scotland, but it is interesting to note that Lindsay and Cosh (1973) record the use of Easdale slate in the building of the New Town of Inverarary. Other, or several, sources could be involved, especially when the time period over which buildings have been constructed and altered is taken into account. It may also be appropriate to distinguish between extensive use of slate for a roof, as in Building E, and for window sills and chimney tops.

3.5.11 Two other building stones may have been imported to the site. These are the 'possible schist' flagstone in the kitchen of Building D and the quartzite hearth stone in Building O. Both may have been obtained on site if there was a suitable outcrop of the Ardrishaig Phyllite, but there is no evidence of an appropriate exposure now.

4. DOCUMENTARY STUDY

4.1 INTRODUCTION

4.1.1 The purpose of the documentary study was not to undertake further research into the site, but rather to undertake an inspection and review of the relevant background material relating to the site and its environs. Material was inspected at the RCAHMS (Edinburgh) and the Museum Trust at Auchindrain and interviews were conducted with former Curators and other experts who have worked on the site, in an attempt to provide a source of information into interventions and repairs to the buildings and structures. A summary of the historical information obtained for each building is presented below.

4.2 BUILDING A

4.2.1 Misnamed as Registrars House (Bob Smith pers comm), this structure was a typical long house, comprising parlour, closet, kitchen and byre. It appears to be one of the later buildings, inhabited from the 1820s until 1954 when the Colt house was erected (Dunbar 1965, 64).

4.2.2 Several interventions prior to its abandonment are recorded, such as the insertion of the stone partition between kitchen and byre, although without dates. Bob Smith observed quite a few alterations, mostly concerned with mortaring the dry stone, which took place at any time up to 1955.

4.2.3 A photo from the road, dated 1904, shows a thatched roof (Buchanan *et al* 1988). Bob Smith was aware of an exchange of correspondence from Argyll Estates, who by that time were the landlords, and the MacCallums regarding a new roof. It appears that the roof was offered by the Estates around 1902/3, and was fixed by the tenants shortly after the photograph of 1904 was taken (*ibid* 1988).

4.2.4 A proposal for works, dated 1964 (Hay 1964), included consolidation of the eastern gable and the re-insertion of glass into the skylights in the byre. A further proposal of 1978 (Naismith 1978) stated that the building should be maintained in its present condition and that only maintenance work should be done. It also suggests a thatched roof should be added at a later date. The subsequent report on the buildings in 1980 (Naismith 1980) states that the building was repaired in 1978.

4.3 BUILDING B

4.3.1 This was the barn for House A, set at 90º, across the prevailing wind to maximise the winnowing efficiency. The building incorporates a stable at its northern end and appears to have had a hipped southern end with a small structure attached, looking like a cartshed in the photograph of 1904 (Buchanan *et al* 1988). The building was also shown as thatched in this photograph.

4.3.2 The RCAHMS survey of 1963 noted that the building was '*said to have been rebuilt within comparatively recent years; in its original arrangement it was somewhat longer and incorporated a cart shed at its south end*' (Dunbar 1965).

4.3.3 It is unclear when the thatched roof was replaced with a corrugated iron roof. It is likely that it was after house A (*c*1904), and Bob Smith suggested that it was sometime before 1914.

4.3.4 Bob Smith recalled several alterations, some of which were obvious, like a patchwork of cement mortar into the dry stone wall. '*Sometimes they used old-fashioned lime mortar, other times modern cement mortar. People had just slapped some in when they felt like it, which was the typical way of doing it*' (Bob Smith pers comm).

4.3.5 The 1964 proposal for works (Hay 1964) included consolidation of the south-east and south-west angles, the rebuilding of the southern jamb of the north door (although it does not state which elevation) and the re-glazing of the west roof light. The further proposal of 1978 (Naismith 1978) stated that the roof timbers should be retained and a thatched roof should be ultimately be added, and that a split door should be added. Mr Naismith's subsequent report (1980) on the buildings noted recent wind damage to the roof, but no other signs of deterioration.

4.3.6 A summary of the buildings in September 1986 (Anon 1986) stated that the gable was recently rebuilt, and this presumably refers to the southern gable which was rebuilt in timber together with new trusses and a new corrugated iron roof in the same year. The document also mentions the disappearance of the '*small tarred shed, and the fairly modern pigsty at the southerly end*'. The shed at the northerly end of the barn had apparently been removed before the Auchindrain Museum Trust took over.

4.4 BUILDING C

4.4.1 The RCAHMS survey of 1963 (Dunbar 1965) noted the footings of a small sub-rectangular building, said to have been a dwelling-house, and latterly used as a stackyard. It was recommended in 1978 (Naismith 1978) that this building should be consolidated, and a small tree was removed from the stackyard after 1986 (Anon 1986).

4.5 BUILDING D

4.5.1 This building was of typical long-house plan but originally with a hipped gable and central chimney (evidence for which could be seen in the thatch underlying the corrugated iron roof). The structure is probably the oldest surviving structure in the township and a building in this location is shown on the 1789 Langlands map (Fairhurst 1968). The building was drawn in some detail by the RCAHMS in 1963 (RCAHMS 1992).

4.5.2 Bob Smith suggests that the house was widened slightly (the old gable door still visible in stonework during his time as curator, but not visible since restoration), and the original roof was replaced with a slightly larger roof. A later corrugated iron roof was laid on top of the thatch, supposedly in response to the improvements to House A (Bob Smith pers comm). However, it would appear that the dwelling part of the house was corrugated prior to the photograph of 1904 (Buchanan *et al* 1988), suggesting that it was "the other one" (corrugated iron roof) referred to by the Duke of Argyll around 1898 (see 4.2.3 above). Notes from the restoration of the building suggest that the original corrugated iron was added in the late 1800's.

4.5.3 Hay's (1964) proposal for works included consolidation of the wall-heads in the byre, shoring up the window lintel of the central northern window, and the replacement of the timber door-head. A further proposal of 1978 (Naismith 1978) stated that the building should have a thatched roof, and that the concrete floors should be replaced with flagstones and the central hearth exposed. It also suggested that the attached cartshed be provided with a simple coupled roof, but no door. Mr Naismith's (1980) subsequent report on the buildings noted further deterioration of the building, worsened by storms immediately prior to that report. Corrugated iron sheeting was repaired round the east chimney stack.

4.5.4 The floor had been covered in compacted dung in the 1960's (Bob Smith pers comm) and in the early 1980s an excavation was undertaken through this floor by Eric Talbot of Glasgow University, which revealed traces of an earlier pine coarse planked wooden floor resting on massive joists, which had all been infilled with lime mortar and were resting on earth. This wooden floor had an alignment that was different to that of the building, and the excavator considered that this was potentially the floor of an earlier structure on the same site (Alex Morrison pers comm). Further research by Robert Naismith (pers comm) produced evidence of other houses, the closest at Tranent near Edinburgh, where this technique was found in higher status housing as an early damp course.

4.5.5 By 1988 the building had become unsafe and was closed to the public prior to its restoration in 1990 and 1991. The restoration comprised the dismantling and rebuilding of specific unsafe areas of walling, unblocking of the western fireplace and rebuilding of the western chimney (as shown in the photograph of 1904), hidden internal supporting of the original roof and replacement of the corrugated iron roof and its timber framing, the copying and replacement of most windows and doors, the reconstruction of box-beds, based on original evidence, the covering of the dirt floor of the parlour with protective DPC, protective flagstones and timber and some re-cobbled in the byre (MacDonald pers comm).

4.6 BUILDING E

4.6.1 This structure was a small barn, oriented east / west and therefore not used for winnowing. It appears to have originally been used as a shed for rearing calves (Bob Smith pers comm), and is shown with a hipped western gable and thatched roof on the photograph of 1904 (Buchanan *et al* 1988). The slate roof was added after this time by the Estates Office. The slates came from Easdale, the then Duke of Argyll receiving royalties from the quarry (Bob Smith pers comm).

4.6.2 The 1964 proposal (Hay 1964) suggested reslating the gables with projecting drip-edges, and the proposal of 1978 (Naismith 1978) stated that the building needed repointing and additional drainage. Mr Naismith's subsequent report (1980) on the buildings noted that the building was in good condition, presumably the repointing having been carried out. The summary of the buildings in 1986 (Anon 1986) stated the building had been repaired and that '*the rear wall was badly bulging when we took over*'. During the early 1980s the building had a wooden floor and was used as a workshop and was stripped and internally renovated in the late 1980s (MacDonald pers comm).

4.7 BUILDING F

4.7.1 This structure was originally labelled in the 1963 survey by RCAHMS as a cartshed. However, a photograph taken about 1900 (Buchanan et al 1988, 21) shows that it was then used as a communal wash house, and had a pitched, thatched roof. The structure was built into the retaining wall of a raised stackyard / kailyard. The present corrugated iron roof was added, under the supervision of Bob Smith, in the 1980s.

4.7.2 A corrugated iron roof was suggested for the structure in the 1978 proposal (Naismith 1978), although it was later proposed that the building should be re-thatched with bracken (Anon 1986).

4.8 BUILDING G

4.8.1 Building G was completely ruinous in 1963 and was apparently a house comprising two rooms, each with a separate entrance. It was said to have been used latterly as a stirk-house (Dunbar 1963). A later structure abuts the western gable, possibly a cartshed.

4.8.2 Bob Smith excavated the interior, with input from Glasgow University in 1979. He noted '*little of it left apart from the floor, and it was so obvious where the fire had been that I restored the whole thing (in 1980). I constructed it in the ancient way cruck frames with the purlins lying across, with saplings on top of that with turf on top and thatch and run of rush. I had problems getting turf, and had to go well up the hill to find decent turf. I was forced to take an unsuitable wood; cherry*'.

4.8.3 The Building was restored by Bob Smith in 1980, probably from foundation-stone level, with a thatched roof and turf ridge. Wicker doors and an internal wicker partition were also added (Jim Souness pers comm). The building was also used as an occasional bothy (Jim Souness pers comm). The structure was maintained until around 1990, the roof eventually becoming unstable, being replaced, with new trusses and bracken thatch in the early 1990s.

4.9 BUILDING H

4.9.1 This structure is another long-house comprising parlour, closet, kitchen and byre. The westernmost window in the kitchen appears to have originally been an entrance doorway (Dunbar 1963). Both existing doorways also appear remodelled, the one to the byre having been inserted with the removal of a cruck. The partition between kitchen and byre also appears to be an insertion (Dunbar 1963). The attic floor was inserted around 1907 (RCAHMS 1992), with timber stairs from the closet. Bob Smith suggests that the byre was a later addition to the house. The report of 1986 (Anon 1986) agrees and also suggests that the building was renovated by the Munro family in 1907 and that partitions were added within the loft *c*1950. It would appear that the timber lining of the parlour dates from this same period.

4.9.2 The proposal of 1964 (Hay 1964) advocated repointing around the chimney base and along the gable upstand between the dwelling and byre, and reglazing of windows, including the skylights. However, Bob Smith stated that nothing was done to the building during his time as Curator (1963-1986). This is supported by the need for repointing to the chimney base being listed in the report of 1980 (Naismith 1980).

4.10 BUILDING J

4.10.1 This was the barn associated with house H and was a typical winnowing barn with stable at the north end; it was very similar to Barn B, but with a hipped roof.

4.10.2 Some strengthening work was proposed in 1964 (Hay 1964), but the roof blew off in 1968 (Bob Smith pers comm). The barn was rebuilt by Bob Smith in the late 1970's, in drystone with '*mortar at the wall-heads to bind them a little*'. When he came to re-roof it he noticed none of the walls were parallel as the barn was '*extended at both ends before Munro's time*'.

4.10.3 The document of 1980 stated that the corrugated iron roof was nearly finished, and that the new roof had survived two gales. Excavation of the floor undertaken by Glasgow University identified the change from earth to cobbled flooring coinciding with the change in layout (presumably by the Munros). The cobbles at the northern end appear recent and may date from the restoration in the late 1970's. The excavation also revealed post holes for an internal partition and evidence of a stock pen (Morrison pers comm).

4.11 BUILDING K

4.11.1 This structure was built on the site of the corn-drying kiln, which was excavated by Glasgow University in the 1980s (Alex Morrisson pers comm). Eddie MacCallum's grandfather apparently never saw the kiln used, and therefore it must have gone out of use before 1820 (Anon 1986). The building was latterly used as the Bull and Wool house (MacDonald pers comm), and as a tool store by the Trust until it was turned into the 'Smiddy' display prior to 1978 (Naismith 1978).

4.11.2 The proposal of 1964 (Hay 1964) included consolidating the wall-heads and re-pinning the walls where necessary. Perspex panels were suggested for part of the roof in 1986 (Anon 1986) to let in some light. The window in the northern gable and the western door were copied and replaced in the 1990s (MacDonald pers comm).

4.12 BUILDING L

4.12.1 This structure was built on the wettest part of the township and was inhabited by a man named MacCosham who leased the plot of land at some time after 1780 (Buchanan *et al* 1988, 23). Bob Smith believes it was constructed at the end of the Napoleonic wars when farm produce was fetching high prices.

4.12.2 It was suggested that this building should be reconstructed in 1978 (Naismith 1978), complete with louvre, but no interventions have been carried out by the Museum Trust.

4.13 BUILDING M

4.13.1 This house was originally built as a cottars house and was restored around 1890 for Bell Pol, who retired to the Township (MacDonald pers comm). As a consequence the house has come to be known as Bell Pol's house (Buchanan et al 1988). The building was shown as roofless and partially collapsed in a photograph of 1963 (AG/832), but was restored by the Trust in 1976 and subsequently maintained until the late 1980s under the guidance of Bob Smith and Jim Souness (Historic Building Inspector, Historic Scotland). By 1992 the roof timbers and thatch had deteriorated

beyond repair and were replaced in 1994. Subsequent repairs to the thatch have been carried out by Jeremy Cox (pers comm).

4.14 BUILDING N

4.14.1 This was the barn of House D and was situated in the windiest part of the township, presumably being one of the oldest barns. The northern part of the structure appears to have been shown as a ruin in the photograph of 1904 (Buchanan et al 1988). The building is shown intact on a detailed photograph of 1963 (AG/833), but its roof blew off in a gale in 1968 and it has steadily deteriorated to its present condition as a consequence. The north-west part of the building was apparently reconstructed, and Bob Smith recalled that Eddie MacCallum or his son had turned the barn into a garage.

4.14.2 The proposal of 1964 (Hay 1964) suggested consolidation of the northern gable, whilst the 1978 proposals (Naismith 1978) suggested a full rebuilding of the barn. No intervention has been recorded since the barn roof blew off, and the structure continues to deteriorate.

4.15 BUILDING O

4.15.1 The buildings to the west of Building N (Buildings O - X) have previously been recorded in much less detail, primarily because they were not included in the original RCAHMS survey of 1963 (Dunbar 1965).

4.15.2 Building O comprises the consolidated ruins of a small house and later byre, adjoining to the south-east. A building is shown in this position on the George Langlands Estate plan of 1789 (Fairhurst 1968). A late-nineteenth century photograph (Buchanan *et al* 1988, 12) shows both structures, with thatched roofs, and with the house having a hipped western end.

4.15.3 Bob Smith suggested that the eastern gable and chimney were added in the second half of the nineteenth century, and the western gable was obviously added sometime after 1904 (Buchanan *et al* 1988, 2). The 1904 photograph also shows a small shed (coal-shed?) butting the eastern gable.

4.15.4 Interventions were undertaken in 1978 (Bob Smith pers comm), with the insertion of new crucks and the repointing of the walls. Repairs were carried out on the chimney, with the insertion of a ceramic liner inside it and it is believed that more substantial repair work was carried out on the stack at this stage also. It would further appear that some consolidation of the wall-heads was also undertaken at this time, and that a thatched roof was added to the byre, but this collapsed shortly afterwards (Hay 1978).

4.16 BUILDING P

4.16.1 This was a small animal shelter associated with Building O. It has thin walls and was constructed of low quality stonework. The building is just visible on the photograph of 1904 (Buchanan *et al* 1988, 2) and appears to have a gabled roof and a smaller structure attached to its southern elevation.

4.17 BUILDING R

4.17.1 This building was a gable-ended cottage and was one of the later buildings of the Township. The photograph of 1904 (Buchanan *et al* 1988) shows both gables and chimneys clearly. The building was modernised in 1967 to house the Museum Trust caretaker and plasterboard internal walls were inserted *c*1978 (Naismith 1978). The building became the museum office in 1986 (MacDonald pers comm).

4.18 BUILDING S

4.18.1 This was originally a long-house and appears to be shown on the photograph of 1904 (Buchanan *et al* 1988). A photograph of 1895, held within the Museum Trust archive, shows the eastern end of the building in use as a barn, although an excavation of the floor by Glasgow University in the 1970s, exposed the earlier floor layout of the house and byre. The building was a ruin when the Museum Trust took control of the site, shown by the RCAHMS survey of 1963 (RCAHMS 1992). The area to the north of the building, under the present car park, was subsequently levelled to create the present car park.

4.19 BUILDINGS T AND U

4.19.1 These buildings were associated with House S, and appear to represent a barn (Structure T) and an animal shelter (Structure U). Building T was planned by RCAHMS in 1967 (RCAHMS 1992) and appears to comprise two phases, with the original barn being sub-divided at the eastern end to form two new small rooms.

4.20 BUILDING W

4.20.1 This structure was a long-house and appears to have had three additional cells attached to the western gable. The building was a part-ruin in 1963, as shown in a photograph of that date (AG/781), with only the roofed byre and parlour wall surviving. The ruin was planned by RCAHMS in 1967 (RCAHMS 1992), suggesting a contemporary structure to the immediate west, presumably a stable or barn, with what was assumed to be a later mill and cartshed adjoining further to the west (*ibid*).

4.20.2 Rebuilding of the structure was commenced in 1968 and was thatched in 1969 (MacDonald pers comm). In 1978 the building was modernised for use as a restaurant, with the toilet block under construction. A new roof was also proposed at this time and was probably completed shortly afterwards. The restaurant closed in August 1981, and the building became a store for the museum.

4.21 BUILDING X

4.21.1 Originally labelled Building Y by RCAHMS in their survey of 1963 (RCHAMS 1992), this barn stands on a knoll to the west of the main road. Although outside the main focus of the township, the location was most probably chosen for the same reason as the location of Barn N; being an excellent location to take advantage of the wind for winnowing. No documentary evidence of interventions was revealed, suggesting the building remains as it was when the township was abandoned. It is currently used as a store for redundant farm tools and little used materials.

5. BUILDING SURVEY

5.1 GENERAL DESCRIPTION

5.1.1 The continuity of occupation at Auchindrain has ensured the survival of the majority of the structures in a relatively good state of preservation. The structures also demonstrate the changing form and function of the buildings both during the period of occupation and subsequently under the care of the Museum Trust.

5.1.2 The township in general exhibits a linear pattern of settlement, the majority of the buildings lying between the northern bank of the Eas a' Chorabha Burn, and the Inveraray - Campbeltown road to the north. The main tenant families occupied the five long-houses / byre-dwellings (Buildings A, D, H, S and W), each for the most part with barns, stables, cartsheds and kailyards, strung out along a road winding through the township. Other community members occupied the smaller cottages (Buildings G, M, O and R). In general, the dwellings are oriented on an east / west axis, with doors and windows concentrated on the warmer, southern, side, with perpendicular barns utilising the prevailing westerly winds for winnowing.

5.1.3 All structures were built of local undressed stone (*Section 3*), usually laid on large foundation stones and with some rough quoining at the corners. Eaves drip gullies were provided at the wall bases where necessary to aid drainage, and several of the buildings have flagstone or raised cobbled entrances to give drier access in a naturally boggy location. Most of the buildings were cruck framed, comprising two scarf-jointed members, pegged at approximately wall-head level, and although not strictly raised crucks, they sat within the wall fabric on the foundation course to protect them from the damp. Although jointed crucks are not common, their occasional usage can be seen throughout the Highland region (Stell 1981). The majority of the buildings originally had thatched hipped roofs at one or both ends, with centrally placed hip-crucks in the end-walls of the larger structures.

5.2 BUILDING A (FIG 5)

5.2.1 This east / west aligned structure appears to be the latest of the long-houses / byre-dwellings, and was built in the early nineteenth century. It has a typical basic long-house plan, comprising a parlour, closet / dairy, kitchen and byre with separate entrances on the southern, front, facade to house and byre. However, this building differs from the other long-houses in that the byre is significantly larger and has a second entrance [14] in the eastern gable, for mucking out to the midden to the east, and with a drain (subsequently replaced with a modern ceramic pipe) and bucket for collecting liquid manure, located immediately outside. These features show the conclusion of the evolution of the basic long-house plan form within the settlement, and also appear to reflect an increase in livestock numbers and / or changing farming practices. There is no surviving evidence of any original half-loft in the byre; a full loft was later added, probably at the same time as the thatched roof was replaced with a tin roof, with projecting ridge-vent over the byre, in the earliest part of the twentieth century (although after 1904 (Buchanan *et al* 1988), and prior to graffiti dated 1918). The cobbled byre comprised two conventional stalls at the western end [89], with, probably later, trevises (which are more appropriate for horned highland cattle who get hair tangled in conventional stalls) down both sides. Those on the

south were probably removed with the later insertion of a porch (Room 5) in the south-west corner of the byre creating a new, clean, entrance to either the kitchen (Room 4) or byre (Room 6). This may be associated with a remodelling of the eastern side of the doorway. The byre also had a calf pen [95] in the south-east corner.

5.2.2 The original timber partition between byre and kitchen was replaced with a thick stone partition [6] with a fireplace containing a range inserted into the kitchen, and must date before 1904 as a central chimney is shown on the photograph of that date (Buchanan *et al* 1988). Running water was also added into the kitchen, with a sink [71] located in front of the southern window, to maximise the available light. All the windows, with the exception of the north window of the kitchen (which appears to retain its original frame but was modified slightly to allow for an opening light), were enlarged and had sash windows inserted. Those in the parlour also had panelled interiors to match the tongue-and-grooved panelling to the gable. The features described mark the achievement of a level of privacy, hygiene and decency that was considered basic to the housing of the rural poor elsewhere in Britain by the later nineteenth century.

5.2.3 By 1904 (Buchanan *et al* 1988) both end walls had gables, but It is unclear whether the building originally had a hipped roof at either end; both external walls are heavily whitewashed (although the upper west gable less so when the rectified photographic survey was undertaken), and any joint in the western gable is internally masked by later timber panelling, presumably added at or around the same time as that in Building H. It would appear, however, that the western gable is an original feature, allowing for a fireplace [26] in the parlour, rather than a hearth. The interior of the eastern gable is also whitewashed at ground floor level, but leans outwards and thins in the roof-space, suggesting it may have been a later addition. Older long-houses within the site certainly had hipped roofs over the byre originally, but, without removing the whitewash and sampling what little of the mortar remains in the eastern gable, it is unclear whether this was a rebuild or an original feature showing further evolution of the basic long-house plan.

5.2.4 The closet / dairy (Room 2) was separated from the kitchen (Room 4), parlour (Room 1) and porch (Room 3) by stud partitions which were not seen in the older buildings. That between closet and parlour [7] had roughly cut studs from floor to ceiling height with rubble stone nogging; it was butted by a wall of similar construction forming the north partition of the porch. The eastern wall [8] was of a different style, however, having a timber rail [44] which housed the original studs. The studs, and presumably the rubble nogging, were later replaced with a timber partition. It is unclear why two different techniques were used, and as no stratigraphic relationships exist between them it is not possible to deduce which was tried first, or whether they were contemporary attempts to ascertain the best method for previously unused stud partitions. It does, however, highlight the dynamic, *ad hoc* approach to the evolution of the structures within the Township.

5.2.5 Many of the original cruck-bases remain in-situ [29, 33, 62, 74, 97 and 102]. A loft was added over the parlour, closet and kitchen, the floor being supported on large (*c* 0.25m diameter) beams of roughly hewn pine trunks. A window in the upper eastern gable [5] was presumably blocked at this time. All trusses in this loft were replaced with modern trusses and were clad with tongue-and-groove boards beneath the tin roof, presumably for insulation.

5.2.6 Concrete floors were added throughout the building in several stages, although only partially in the byre which had a concrete drain [92] added.

5.2.7 The building is largely unchanged since being taken over by the Museum Trust, with only minor repairs, most notably to the eastern end of the north wall [4] of the byre, most probably carried out in the late 1960's, and the addition of mains electricity throughout the building.

5.3 BUILDING B (FIG 6)

5.3.1 This north / south aligned structure is the barn for long-house A, immediately to the north, and has been largely rebuilt. It appears to have originally been two cells, with a winnowing barn to the south and a byre / stable to the north and had a hipped roof at the southern end and probably a northern gable.

5.3.2 The walls have been rebuilt almost from the footings, with a mixture of triangular [215] and rectangular [210, 211 and 214] vents used. A timber panelled gable [202] was added above wall-head height at the southern end at the same time as the building was re-roofed in 1986. A cartshed shown in a photograph of 1904 (Buchanan *et al* 1988), also appears to have been rebuilt as a small tarred shed and pigsty, jointed to the south elevation of the barn with concrete mortar, and with a concrete floor. The original partition between barn and stable was also removed and replaced with a new timber partition [205] at the same time as the building was re-roofed.

5.3.3 The building has been consolidated at wall top height by the Museum Trust and several *ad hoc* episodes of repointing / repair have also been undertaken. This style of repair, using materials that were either nearest to hand or were cheapest is typical of the interventions made by the Museum Trust (Bob Smith pers comm), and it is due to such methods that the settlement has survived in generally good condition. Display boards / boxes have more recently been fixed throughout the barn.

5.3.4 A concrete platform observed to the north of building B may represent the base of a shed mentioned as having been removed prior to the Museum's management of the site (MacDonald pers comm).

5.4 BUILDING D (FIG 7)

5.4.1 This east / west aligned structure is a typical long-house / byre-dwelling, comprising a parlour, closet / dairy, kitchen and byre with separate entrances on the southern, front, facade to house and byre. It has been largely rebuilt by the Museum Trust, but retains many original features.

5.4.2 The building, like others within the Township is constructed of undressed local stone, probably originally with drystone construction, although the external walls [301to 304] were all mortared during the massive renovation of the building, , undertaken by the Museum Trust in 1992. This was caried out because the building had become unsafe and involved the rebuilding [367, 394, 395] of large sections of the external walls. The building is slightly unusual in that it is the only long-house not externally whitewashed.

5.4.3 The northern long-wall [303] has an external pronounced bend, c 0.2m to the south, at the position between kitchen and byre. The wall then continues on its

original alignment to the east. The foundation course however is continuous in alignment, curving only slightly south, suggesting the original wall was straight. The bend in the wall was discovered during rebuilding, but might have subsequently become more exaggerated. The external foundation course also continues to the east, under a later? cart-shed wall, suggesting that there may have originally been an earlier structure, contemporary with the long-house, in this position. At the western end of the wall the foundation course is on a slightly more northerly alignment, up to 0.3m off-line with the present wall at its western return. This misalignment of the wall may relate to the Museum Trust renovation of 1992, when this corner was rebuilt, or possibly to an earlier rebuilding. Internally the wall is whitewashed, obscuring any detail.

5.4.4 Prior to the renovation of 1992 there was a roof-scar on the eastern gable (John MacDonald pers comm). This suggests that the structure to the immediate east of Building D most probably had a felt roof, sealed with bitumen, or a corrugated iron roof with bitumen flashing where it butted the gable wall. No evidence of the roof of this structure remains visible.

5.4.5 The structure retains the only thatched roof original to the Township [390], dating to the late eighteenth century. Although the structure was re-roofed with corrugated iron [400] (probably shortly after Building A, in the early twentieth century), the original thatch was retained beneath in the dwelling part of the long-house, adding to the insulation of the building, reducing the effort of renewing the roof with corrugated iron sheets.

5.4.6 The surviving original structure comprised four crucks [337, 339, 345, 346], each set into the long-walls, with the upper blades jointed at the top with a collar, with an additional strengthening collar below on the two central trusses, lap-jointed to the blades with metal bolts, which is likely to have been carried out after the initial construction. All trusses appear to be of oak, with chamfered edges, and are timber pegged. The trusses [385] were overlain by roughly cut purlins, constructed from long branches, typically c 0.15m diameter, roped onto the trusses, not lap-jointed into them. The roof length typically comprises two purlins, roped together at the ends, over a truss. The ridge purlin appears to be a single timber, socketed into the gable walls. A second ridge timber, slightly to the south, helps form the ridge over the eastern half of the roof, forming a gap at the roof top, into which the smoke hole [391] was built. The purlin ends are blade-cut, probably with an axe, with the exception of a small timber at the ridge of the third truss from the west, which is sawn, and is probably a later insertion. The purlins [387, 398] are overlain by thin branch rafters [389], many of which appear to be silver birch, and mostly with blade-cut ends, laid within a matrix of what appears to be heather. The rafters are tightly packed, each spanning between one and three purlins, and form at least one continuous layer above the purlins. This is in turn overlain by an unknown thickness of thatch.

5.4.7 A smoke hole [341] was observed within the thatch positioned centrally above the kitchen. The eastern and western edges are formed at the base by two machine cut timbers, set on edge, and resting on the two ridge purlins beneath. The rest of the cowl is formed by thin, presumably hazel, twigs, c 0.03m diameter, 'woven' around the rafters. The timber boards may be replacements.

5.4.8 The stone wall between kitchen and byre [305] is a later insertion, probably replacing an original timber partition. The thatch predates the construction of this wall, as it has a smoke hole, and the wall was built with a fireplace. However, the roof structure would have had to be modified at this time. The remains of a redundant cruck [364] were observed within the southern long-wall of the byre, but evidence for a northern terminal had been removed, with the insertion of a window [320] in its location.

5.4.9 There have been several other additions to the roof structure; the cruck stump immediately to the east of the dwelling doorway has been remodelled. It appears that the original cruck stump is the rear timber [341], recessed into the wall. The front timber [339], now supporting the base of the truss was presumably added when the original stump failed or became badly damaged. Extra collars [392] were added to the central two trusses, crudely bolted rather than pegged, with a second later collar added to the eastern of the two. It also appears that a post forming the box-beds in the kitchen was lap-jointed to one of these collars, further stabilising the roof structure [386].

5.4.10 The original fireplace within the parlour was blocked, and the chimney was removed, possibly at the time when the corrugated roof was added to the structure. These features, shown on the photograph of 1904, were reinstated by the Museum Trust in 1992 [321, 404].

5.4.11 The byre of the building remains relatively unchanged by the recent renovation. The half-loft, comprising roughly cut thin branches, is the only surviving example within the Township, and is probably broadly contemporary with the stone partition wall it butts. Half-lofts [379] would probably have been typical throughout the earlier Township buildings, only later being replaced by full lofts, as in Building A. The cobbling [369, 371, 372] of the byre suggests that there would originally have been stalls / tethers along the western side of the byre, as well as the east, with a narrow manuring passage [375] draining into a much larger central passage, only the southern end of which survives. It is likely that current layout dates from the conversion of the byre to a stable, as the use of horses within the Township grew, probably in the early / mid twentieth century. There is also a well preserved cobbled ramp [377] immediately outside the byre door, probably extending to the east, presumably constructed to prevent the cattle churning up the boggy ground.

5.4.12 Box-beds [323, 324] have been re-inserted in both the parlour and kitchen within the building. These have been located in the positions of the Township beds, observed in the parlour during excavation, and with the original footings still visible in the concrete floor of the kitchen.

5.5 BUILDING E (FIG 8)

5.5.1 This structure is a small barn, unusually oriented east / west and therefore not used for winnowing. It appears to have originally been used as a shed for rearing calves (Bob Smith pers comm), and is shown with a hipped western gable and thatched roof on the photograph of 1904. The building is also the only one with a slate roof

[541] in the Township. Slates were observed elsewhere within windowsills, but it appears to have been an unpopular roofing material.

5.5.2 The building appears to be one of the later buildings of the Township, constructed with mortared walls, presumably prior to graffiti dated 1897 on the north wall. The building has subsequently been largely rebuilt [508, 512, 513], observable by differences in mortar types and differing wall thicknesses, the earliest probably when the gable walls were added after 1904 [510, 516].

5.5.3 The building was presumably constructed as a byre or stable, although it would appear that the original stalls were on the raised platform [525] in the eastern end of the building. There is ephemeral evidence for a manuring passage by the western door jamb [527], although the cobbled floor [524] appears to have been repaired in many places, making the positive identification of features within it difficult. Several later attempts at drainage were observed, with a metal pipe [529], set into the floor, running outside through the doorway, and overlain by a later rubber hose [530].

5.5.4 The building was used by the Museum Trust as a workshop until 1986, and had an inserted concrete scree floor [531] to level the floor height with the eastern platform. It was restored as a stable in the early 1990s. Timber gutters [544] were also added to the roof at this time.

5.6 BUILDING F (FIG 9)

5.6.1 This north / south aligned structure was originally labelled in the 1963 survey by RCAHMS as a cartshed. However, a photograph taken c 1904 (Buchanan et al 1988, 21) shows that it was then used as a communal wash house, and had a pitched, thatched roof.

5.6.2 The structure is built into the retaining wall of a raised stackyard / kailyard. The rear of the structure is flush with the ground level, the long-wall-heads, built at this level, protrude up to 0.2m from the ground at the front of the structure. The building has no front, southern, wall. The eastern wall forms the return of the kailyard wall, which was rebuilt around this new structure. At the southern end of the western wall, which projects beyond the kailyard wall, are two alcoves, constructed within the wall thickness. These were most probably used as ‘keeping holes’ during the period when the structure was used as a wash-house.

5.6.3 The present corrugated iron roof was added, under the supervision of Bob Smith, in the 1980s.

5.7 BUILDING G (FIG 10)

5.7.1 This east / west aligned structure was completely ruinous in 1963, and was apparently a cottar's house comprising two rooms, each with a separate entrance. It was said to have been used latterly as a stirk-house. A later structure abuts the western gable, possibly a cartshed.

5.7.2 The structure was rebuilt in the 1980s, probably in its entirety, above the foundation course, which comprises some relatively large boulders. The construction style differs from that of original Township buildings in that it is

more randomly coursed, with small stone infilling between the larger irregular stones. There are other randomly coursed structures within the Township, but without the smaller infilling stones.

5.7.3 There is an alcove within the internal face of the western end of the front long-wall. It does not extend to full wall thickness, and is shown as an alcove on the RCAHMS survey of 1963. It may have been a blocked window prior to reconstruction, but has been rebuilt as an alcove or keeping hole, with stone lintel and sill.

5.7.4 The present roof dates to around 1992, the roof added in the 1980s having become unstable. Although it was constructed with the cruck bases independent of the walls, it is likely that the original crucks were recessed within the wall-thickness, as observed in all other cases within the Township. There is a smoke hole towards the western end of the roof, presumably in a similar position to that in the earlier reconstruction. Bob Smith recalls there being a hearth-stone in the western end of the building, determining the position of the smoke hole in the reconstruction, however no such feature is observable today.

5.7.5 There is a very rough cobbled floor at the eastern end of Building G. It has been suggested that this end was a byre, because the floor is so rough. The floor is presently too rough for animals to have walked on, but it would have easily filled up with earth and dung to produce an earth and cobble floor. There is a step in the floor level c 0.1m to the west onto a second, much smoother cobbled floor, constructed of larger stone sets, randomly laid to produce a flat surface. The step between this floor and the cobbling to the east was location of an internal wicker partition in the 1980s reconstruction, but may have been the position of an original partition between dwelling and byre.

5.7.6 There is an area of slightly raised cobbling (c 0.05m), opposite the western doorway, butting up against the northern long-wall and approximately the same size as the doorway. This feature was also shown by the RCAHMS survey in 1963, and comprises a mosaic of cobbles. Its function is unclear, but it may have formed a level surface for an internal fixture, possibly a bed?

5.7.7 A possible manuring passage was observed, located immediately to the west of the western doorway. It comprises an ephemeral kerb, approximately 1m long, with a gap in the cobbling about 0.35m wide to the east, and with five stones of a kerb on the eastern edge. The northern end is undefined. Its interpretation is unclear as it now appears to be in what is assumed to have been the dwelling end of the building.

5.8 BUILDING H (FIG 11)

5.8.1 This east / west aligned structure is a typical long-house / byre-dwelling, comprising parlour, closet, kitchen, porch and byre. The building has been suggested as possibly the oldest within the Township (Dunbar 1965), and still retains a hipped roof to the byre. The present window in the kitchen (817) it has been suggested was a former entrance doorway (ibid). The building was renovated by the Munro family in 1907, with the creation of a room, with skylight windows, within the roof space. The partitions were added c 1950 (ibid).

5.8.2 There is a step in wall-head height in the front, southern, wall between byre and kitchen. It has been suggested (ibid) that the byre, located at the western end of the building, is a later addition to the building, however, despite the heavy whitewash on both faces, the wall appears continuous. The byre is certainly earlier than the internal stone partition wall [805] separating it from the kitchen, which partly overlies one of the cruck stumps [824]. It appears that this replaced an earlier timber partition, most probably positioned level with the eastern edge of the present stone wall.

5.8.3 Dunbar (1965) also suggested that both existing external doorways [808, 809] were later insertions. It is not possible to verify the phasing of the eastern door, which may well have been inserted when the external threshold into the kitchen was blocked. However, it was suggested that the byre door was inserted in the position of a cruck stump, which is incorrect; the cruck would have been positioned slightly to the east, within an area of wall, which has certainly been remodelled [930]. The layout of the byre is oriented towards the present door position, and it is unlikely that the floor was remodelled to insert a new manuring passage to the new doorway. However, the manuring passage [830] is somewhat unusual, in that the southern end, by the doorway, is blocked with later concrete.

5.8.4 The western end-wall of the byre contains the only surviving end-wall cruck stump [822] within the Township. It is most probable that this is a remnant of the original style of hipped roof construction throughout the Township. The cruck is now redundant, although the corrugated iron roof, added most probably in 1907, is also hipped at the western end.

5.8.5 The attic floor [853] was inserted around 1907 (Dunbar 1965), with steep stairs [815] constructed within the closet. It would appear that the timber panelling [876] within the northern part of the parlour, some of which forms the eastern part of the staircase, dates from this same period. A repair within the concrete floor of the parlour [881] also suggests that either the position of the wall was also moved slightly to the west, or that the new wall was much thinner than the original, which may have been similar to that between the parlour and closet in Building A (7).

5.8.6 The stalls within the byre [826] are similar to those within Building A, but without the tether rail. Instead each stall had its own tether chain, showing a difference of stalling practices within the Township. Evidence of a secondary manuring passage [832] was also observed from the eastern stall [827].

5.8.7 The box-beds within the kitchen [850] are probably the oldest within the Township, although the slats forming the bed have been replaced, probably c 1950 when the attic was renovated, as they comprise the same timber.

5.8.8 The renovation to the attic involved the insertion of two timber partition walls [888, 889], creating two rooms either side of a central landing. The flues of the fireplaces have also been rebuilt [886, 887], possibly at this time, or earlier. It would appear that either the flues, or the junctions between chimney and roof, were leaking badly; the western beam in the kitchen has been repaired, with new floorboards above [890], and the attic floor by the western chimney has rotted and broken.

5.8.9 Several repairs have been made to the corrugated iron roof [903], by the Museum Trust since 1986. Extra sheets were inserted under the hipped ridge [908] of the byre, and also under the badly corroded lower sheets on the southern pitch of the eastern part of the roof [909]. There is an ongoing process of taping minor corrosion of the sheets on the northern pitch.

5.9 BUILDING J (FIG 12)

5.9.1 This is a barn associated with long-house H and with its north / south alignment is a typical winnowing barn. It is similar to Building B, originally having a hipped roof, and is the longest building in the Township. The northern end of the building was recorded as a stable by the RCAHMS survey of 1963, but it is more probable that it was originally a byre, as the number of cattle within the Township was far greater than that of horses. It was probably converted to a stable in the early / mid twentieth century.

5.9.2 The western, rear, long-wall [1003] has some large foundation stones projecting from the base, particularly towards the northern end, where the foundation stones are on a different alignment; up to 0.9m to the west at the northern end. This suggests that the wall has at some point been substantially rebuilt. There was heavy rebuilding by the Museum Trust after a gale of 1968, largely indistinguishable from the original construction, but the north-western corner of the building is shown on its current alignment on the RCAHMS plans of 1963, demonstrating it to be a much earlier rebuild.

5.9.3 There is the only one surviving cruck stump [1010] within the building, located within a wall-recess between the two doors in the eastern long-wall. It is very badly damaged, with the front edge almost completely worn away. The base of the upper cruck blade also remains, cut off flush at the stump head height. The present roof dates from rebuilding after the gale of 1968.

5.9.4 The southern end of the building, from a line roughly level with the northern door, has an earth / dung floor [1017]. There may be cobbling underneath in places, but without excavation it was not possible to determine. To the north are two different styles, and presumably phases, of cobbled floor [1019, 1020], separated by a central, north / south aligned manuring passage [1018]. The passage, which has been partially rebuilt in concrete, is unique within the Township, in that it does not drain out of a doorway. It is aligned at a right angle to the building, similar to that in Building A, and drains through a hole [1054] at the base of the northern end-wall, into a ditch leading to a burn to the west.

5.9.5 The building has three triangular shaped vents [1014] within the western long-wall [1003], and three later ceramic vents within the eastern, front, long-wall [1001]. The northern two triangular vents [1008] have been rebuilt, probably by the Museum Trust.

5.9.6 Although the roof [1037] was replaced after 1968, it appears that the original sheets of corrugated iron were re-used. The corrugated iron gables [1038, 1039], which replaced the earlier hipped roofs in the early twentieth century, also appear to have re-used sheets, as does the ridge [1042], which is of the earlier style, comprising short, narrow corrugated sheets bent over the ridge. The roof has three

skylight windows [1043, 1044, and 1045] on the eastern pitch, similar in style to those elsewhere within the Township. Internally, the purlins continue across the windows, and it is unclear whether this was a feature of the original corrugated iron roof.

5.10 BUILDING K (FIG 13)

5.10.1 This north / south aligned structure is constructed on the site of the corn-drying kiln, which went out of use before 1820. The present building, which appears to have been a small barn (not for winnowing), was latterly used as the 'Bull and Wool house' (MacDonald pers comm), and then as a tool store by the Museum Trust until it was turned into the present 'Smiddy' display prior to 1978.

5.10.2 The building has offset doorways within the long walls, suggesting that it had two cells. This is further supported by the division in the cobbled floor, slightly to the north of the southern door, on the line of the present partition wall. To the north the floor [1110] comprises relatively large cobbles, typically 0.15m by 0.1m, E-W aligned, forming an unusally robust floor surface c 0.1m deep. To the south there is a very rough earth / cobble floor [1111]. The thickness of the floor may be related to the building's function.

5.10.3 Although the partition wall [1118] is presumed to be a Museum Trust addition, there is the possibility that it is in the position of the original partition, which may well have been attached to the truss to the north.

5.10.4 The trusses and corrugated iron roof are amongst the oldest surviving within the Township. There is much graffiti on the trusses, especially in the northern end of the building, dating from at least 1916 and possibly as early as 1911. The grafitti concentration and better made floor of the northern end suggests a clear functional distinction between it and the southern end, and it is tempting to view the northern end as the wool store with southern end use to house livestock.

5.10.5 The building appears to originally have had a hipped roof, subsequently replaced by a stone gable [1128] at the southern end, and by a corrugated iron gable [1122] at the northern end, which contained a central window. This window [1123] and the western door [1106] were recently replaced with replicas by the Museum Trust.

5.11 BUILDING M (FIG 14)

5.11.1 This east / west aligned structure is one of the smallest buildings in the Township lying on the boggy margins of the burn. It was one of the later buildings in the settlement, reputedly built as a poorhouse by the Duke of Argyll (RCAHMS 1992). The building appears to retain much of its original walling, albeit heavily whitewashed, with gabled ends; the western gable housing a fireplace and chimney. The building was originally thatched, but was roofless at the time of the formation of the Museum Trust. Purlin sockets [1211 and 1212] and ridge pads [1202 and 1204] can be seen internally in both gables. No cruck-bases or cruck positions were observed within the building, suggesting they have either been infilled, or that the low-status building had more traditional ground-set crucks.

5.11.2 The wall-heads were repaired around the windows and new frames, a thatched roof and trusses were added by the Museum Trust in 1976.

5.11.3 The floor shows several phases, from rough stone flagging [1201] to modern concrete flagstones, laid by the Museum Trust. The principle box bed was located in the western corner and, but there is also a concrete floor pad [1216] in the northern corner of the building that shows the position of a second box bed.

5.12 BUILDING N (FIG 15)

5.12.1 This ruined, north south aligned, structure is the barn, for long-house D, the main structure standing intact, with roof, until a gale in 1968. Henceforth the building has deteriorated rapidly and now little is identifiable and interpretable. The north-west corner of the barn [1304] was possibly reconstructed, with the west wall bowing at its northern end and returning to the east, whereas it originally continued north into a second cell, which appears to be shown as a ruin in the photograph of 1904 (Buchanan *et al* 1988). The photograph also shows the barn with a hipped southern end and a gabled northern end. All that remains of the original cruck for the hipped roof is an *ex situ* timber [1312], amidst a large area of collapse against the eastern wall [1301], whilst the northern gable [1304] survives to less than 1m in height.

5.12.2 Little remains of the opposing entrances [1309 and 1311]; the footings of the southern jamb on the eastern elevation [1301] and those of the northern jamb [1303] of the narrow door in the western elevation appear intact, whilst the eastern doorway [1311] has been remodelled. Although no documentary evidence was revealed for any alterations by the Museum Trust, the apparent brick jamb and wall on the north side of the doorway appear to relate to the narrowing of a previously widened opening. However, the RCAHMS photograph of 1963 (AG/833) clearly shows the doorway in its original form; there is no evidence of the inserted brickwork, and the stonework to the north does not match any of the stonework on the photograph. This would suggest that the intervention was undertaken by Argyll Estates, who still owned the building, between 1963 and 1968 when the roof blew off.

5.13 BUILDING O (FIG 16)

5.13.1 This east / west aligned structure has been much altered, but originally appears to have been a single room house, with a hipped roof at the west, possibly with a gable and fireplace to the east. The eastern gable [1409] has subsequently been rebuilt and repointed above wall-head height, with a new chimney flue and stack [1426] added, probably in the mid-nineteenth century (Bob Smith pers comm). A gable was also added to the western end of the building after the photograph of 1904 (Buchanan *et al* 1988). There is a clear building line on the western elevation, defining the interface between the original build [1404] and the added gable [1410]. The window [1412] in the northern elevation was rebuilt and possibly enlarged, with slate flashings, most probably at the same time as the new gable was built, certainly the late nineteenth century photograph (Buchanan *et al* 1988, 12) shows the smaller original windows. The adjoining building (Room 2) to the rear (north) was a barn or byre with a hipped roof and was added prior to the late nineteenth century photograph.

5.13.2 Cruck-bases [1418, 1419, 1420 and 1423] have been re-inserted since the building's abandonment (in 1978) (Bob Smith pers comm), and whilst not original timbers,

they appear to occupy repaired original positions. The wall-heads have also been partially repaired, although collapse around one of the cruck positions in the barn [1405] is continuing.

5.14 BUILDING P (FIG 17)

5.14.1 This structure is in a very ruinous state and appears to be a small barn or animal shelter associated with building O. A photograph of 1904 apparently shows it with a northern gable and a thatched roof, hipped at the south. The northern elevation is now almost completely collapsed, and as no cruck positions were observed within the wall fabric it appears that they were ground-set.

5.14.2 No direct evidence of the small structure shown to the south on the photograph of 1904 was revealed, although the field boundary butting the south-east corner of the building may have formed its western side.

5.15 BUILDING R (FIG 18)

5.15.1 This roughly north / south aligned structure was originally a three-bay cottage with gabled ends, each with a fireplace [1723] and chimney [1799 and 1800]. The building has one of the earliest tin roofs and a timber porch within the Township, and they are shown in an early twentieth century photograph (Buchanan *et al* 1988, 32). Evidence of a partition wall [1801] and blocking off of the eaves in the roof-space suggest that it was used as living space, with the windows in both gables being blocked later. The building is currently the museum office and has been fully refitted internally, with enlarged windows, complete replastering and the addition of several stud partition walls [1705-1708], mains water and electricity.

5.16 BUILDINGS S, T AND U (FIG 19)

5.16.1 Building S, standing to less than 1m in height, was a typical, east – west aligned long-house / byre dwelling. The plan is still clearly visible, with the byre at the western end. Much of the floor cobbling has been retained, as have the foundation courses of several of the internal divisions. A large slab, most probably a hearth stone, was located *c*0.5m from the eastern end-wall showing the evolution of the architectural style within the Township, with the more typical central hearth, as seen in Building D, being moved towards a gable wall for greater efficiency of the hearth Brunskill 1997, 230).

5.16.2 The structure is shown as a barn on a photograph held within the Museum Trust archive, dated to around the turn of the twentieth century, but was a ruin in its present state, by the time of the RCAHMS survey of 1963. The curving wall butting the north-eastern corner of the building was added by Bob Smith prior to 1986.

5.16.2 The ruinous structures located in the boggy area to the south appear to be associated buildings. Building T may originally have been a barn, although it was aligned at the wrong angle for winnowing. It has two north / south aligned internal walls; the easternmost of which had a slight return that was added at a later stage to create a three-celled structure. At this stage this building was presumably used as a stable or animal shed, and incorporated two much smaller rooms at its eastern end.

5.16.3 The very ruinous structure U was probably an animal shelter of similar size to structure P, and had similarly thin walls; however, little structural evidence survives and it was not possible to establish the detailed character.

5.17 BUILDING W (FIG 20)

5.17.1 This east / west aligned structure was originally a long-house and was badly collapsed by 1960, with only the byre, located at the western end, retaining its roof. The byre originally had a hipped roof, the later south-west gable being a clear rebuild. The north-eastern end-wall, which contained a fireplace [2238], survived to a height just above the wall-heads.

5.17.2 The original internal layout of the long-house was different to those in the east of the Township, and appears to resemble the early layout suggested for Building H. A single entrance [2222] served the byre and kitchen, presumably incorporating a timber partition, although now they are a combined room (Room 1). The closet and parlour (Room 2) would have been divided by a further partition, which no longer survives. They would have been accessed by a second doorway [2221] through the south-east wall, and directly inside the door would have been an internal porch, similar to Room 5 of Building A, with entrances to kitchen, closet and parlour. The partition between kitchen and closet was subsequently replaced in stone [2225]. The modern render and whitewash that cover the walls make phasing almost impossible, whilst the original floors have been covered with concrete.

5.17.3 The building has been re-roofed and extensively rebuilt / repaired by the Museum Trust in the late 1970's / early 1980's, with little of the original features remaining. The window [2230] in the south-eastern elevation of the byre was re-inserted, with similar windows being added to the parlour [2229], within the original embrasure, in what was the closet [2232]. This latter window is highly conjectural and given the former position of the closet, is unlikely to reflect the original fenestration. A window [2231] was also inserted in what appeared to be an original opening in the north-western elevation of the byre.

5.17.4 A toilet block (Rooms 5-7) and two concrete outshots (Rooms 3 and 4) were constructed to the north-east and north-west of the building, and an internal dry store built more recently. The original kitchen window [2223] was remodelled into a doorway to one of these modern extensions (Room 3).

5.17.5 To the south-west of the long-house are the discontinuous, overgrown foundational remains of three adjoining cells. That closest to the byre appears contemporary and probably represents a stable or storage barn, whilst the documentary study suggests that the central cell represents the remains of a mill. The south-westernmost cell was most probably a cartshed.

5.18 BUILDING X (FIG 21)

5.18.1 This north / south aligned structure was located on a knoll on the edge of the Township, across the Inveraray - Campbeltown road from the other buildings of the settlement. The structure appears to have originally been similar to barn N, being located on a knoll, ideal for winnowing, and was probably associated with long-house W. The present Inverarary-Campbeltown road post dates the settlement of Auchindrain and before its insertion Building X would have clearly been related to the other buildings.

5.18.2 The barn appears to have originally had a hipped roof, the northern gable being built later with an aperture, presumably a pitching hole that served a half-loft, which has subsequently been removed. The tin gable at the southern end is most probably contemporary with the relatively early tin roof. The winnowing door in the western elevation was blocked, presumably when the Township shrank in population and the building went out of use as a barn, and thereafter became a storage shed.

6. CONCLUSION

6.1 Auchindrain Township was a multiple tenancy farm, first referred to in 1534, and was one of six such townships in a six mile strip of land between Auchindrain and Inveraray. Prior to the agricultural revolution of the eighteenth century Scotland was a land of small farms, held from landowners. Farming was mixed, comprising small townships of up to a dozen dwellings called 'fermtouns' or sometimes known as 'clachans' in the Highlands. Fermtouns were small open, unplanned nucleations, usually loosely scattered along a series of paths or lanes. The fermtoun was primarily a shared farm worked by several tenants and labourers (Whyte and Whyte 1991, 4 -5). The tenant was generally responsible for construction of house and buildings (Brunskill 1997, 224)). Auchindrain is a typical fermtoun.

6.2 A plan for modernising Auchindrain along with other townships was drawn up for the fifth Duke of Argyll in 1788, but not acted upon (Buchanan, Sprott & Swanson 1988,10). As a result Auchindrain continued as it had done. The decline in the number of tenants was a gradual process and not the result of a single event planned reorganisation. Given the paucity of such surviving sites, the site at Auchindrain is of national importance, forming a valuable archive of information relating to both the growth and decline of the shared farming practice and the development of its associated vernacular architecture. The Highlands of Scotland, courtesy of the Clearances, are littered with deserted settlement remains, very few of which have been excavated so their material culture is not well understood (Dixon 1993, 24). Auchindrain offers a rare example to allow the study of this culture.

6.3 The township comprises a number of roofed byre-dwellings, associated barns, stables and other agricultural structures such as a cart shed and the majority of these probably date from about 1770 to 1840. A number exhibit evidence of later intervention works. In total there are twelve buildings, six ruins and four structures that are classed as remnants. These vary in age and condition but all are originally of dry stone construction with subsequent mortar repairs and rebuilds.

6.4 It is perhaps interesting that eight of the nine dwellings, with the exception of Building R, are aligned roughly east / west. This is presumably to provide maximum shelter from the predominantly southwesterly wind. It is somewhat surprising therefore, that within the five long-houses (A, D, H, S and W), not all byres are positioned on the western side of the dwelling. Instead they appear to have been positioned for ease of use; for example that within Building A is next to the road through the township.

6.5 The analytical fabric survey has shown that there has been a general development and enhancement of the buildings, particularly through the nineteenth and early twentieth centuries. The type of buildings present, although broadly contemporary, also reflect the development of the architectural style within rural Scotland as a whole. Before the eighteenth century agricultural improvements a typical farmhouse was an elongated single cell, open to the roof, and with a single entrance for humans and animals (Brunskill 1997, 228), any privacy being created by the use of box-beds. Building O, probably one of the oldest buildings within the township, was most probably originally of this style, prior to the building of

the barn to the east. In the Highlands in the early eighteenth century, even a well built, new, commodious dwelling like a ferryhouse, was single-celled, single storey and unceilinged with an earth floor (Mackie 1997, 246-8, 280-1).

6.6 As farms were generally small there was little call for a cottar class until the improvements of the eighteenth century. Cottars were not considered as part of the community, and as such, had the most meagre accommodation. Buildings G and, to a lesser extent, M, which had no provision for cattle after being rebuilt, are good examples of this low-status dwelling, constructed barely above the standard of the earliest dwellings, but at a time when other houses within the township were advancing significantly. In addition to reflecting the lack of status of the cottager within the community the relatively poor construction of these buildings is also a reflection of the insecurity of the position of the cottager, which to some degree would have acted as a disincentive to invest in housing (Newman forthcoming).

6.7 The next stage of development was the separation of the animals into cow-houses and barns, the space within the house being converted to a living room / parlour. At Auchindrain, as throughout the Highland region, buildings were built on a more elongated plan, with the byre separated, often with its own entrance, but still within the building. This basic plan was used from the eighteenth century throughout the development of the township, and reflects the embracing within Scottish rural society of multi-celled dwellings incorporating rooms with specialist functions. As earlier in England this must have both reflected, and wider conditioned in society changes with perhaps increasing individualisation at the expense of communal forms of social organisation.

6.8 Subsequent development related to the divisions of the internal space, whilst maintaining the basic plan of byre, milk-house, kitchen and parlour, with the use of box-beds apparently surviving throughout. All buildings of any size had crucks supporting the roof, comprising half-crucks set within the wall thickness, above the damp floors. Whilst many of the original cruck stumps survive within the township, and notably one within an end-wall of Building H, the upper blades only survive within Building D. These were jointed at the top by a collar, presumably allowing the thatched ridge to form a more rounded arch, rather than a sharp apex. One example alone does not prove that this was the only style used, but it would appear to have been preferred to the lap-jointed blade style, as seen in the reconstructed Building G.

6.9 The smoke hole within the roof of Building D also shows an example of the early long-house layout, with a single fire near the centre of the dwelling end, with a hearth-stone below. The workings of the hearth were improved by the provision of a chimney canopy (‘lum’), and later by repositioning the hearth to a gable wall (Brunskill 1997, 230). This evolution can be seen within the township, within Building S, where the hearth-stone is positioned c 0.5m from the eastern end-wall.

6.10 The development of internal partition walls is also well demonstrated at Auchindrain. The earliest partitions appear to have all been removed, probably the earliest surviving are the stone gables inserted between byre and kitchen within Buildings D and H, or possibly the partition wall between the closet, porch and parlour in Building A. Although A is one of the later buildings of the township, it was also constructed with a timber partition between kitchen and byre, suggesting that at the time of A’s construction they still probably remained in the other long-houses. The wall is a crudely timber framed wall. The vertical posts are of cut

timber, set vertically above a layer of foundation stones, rather than socketed into a timber rail, presumably as a protective measure against damp. At the wall-head the posts are overlain by a joist, again not socketed, thus reducing the structural qualities of the wall. The studs are infilled with a single skin of roughly coursed local stone, with three horizontal timber rails in each section presumably serving as levelling rails rather than as structural entities as they are not jointed to the vertical posts. It is unclear what bonding material was used for the infill; probably lime-mortar, but possibly clay.

6.11 The most notable development seen at Auchindrain is the addition of fireplaces within gables, as observed within all the upstanding dwellings, with the exception of Building G. This development appears late at Auchindrain even for rural Scotland, probably starting in the late nineteenth century. Before their introduction open hearths with louvres were still common.

6.12 From the later nineteenth century, many of the developments in accommodation introduced throughout the late eighteenth and nineteenth centuries in Lowland Scotland, appeared in rapid succession within the township, probably as elsewhere in much of the Highland region. Loft spaces were added to dwellings, entirely within the roof space with skylight windows, and buildings were re-roofed in modern materials.

6.13 Corrugated iron roofs appear to have been introduced to Auchindrain in the earliest part of the twentieth century. Its use was taken up quickly, with buildings subsequently being re-roofed with corrugated iron when the thatch needed replacing, even though this involved the construction of new roofing timbers and trusses (even in Building D, where the thatch remained beneath the corrugated sheeting). It would also appear that many of the gable walls, particularly within the barns, were added at this time, suggesting that the initial outlay of time and resources in acquiring a corrugated iron roof, outweighed the relative cheapness and ease of the simple thatching techniques used in the Highlands.

6.14 It is noteworthy that several styles of roof, gable, ridge and chimney exist within the township, further demonstrating the ad hoc, and rapid evolution of styles. It is noteworthy that a slate roof was added to one structure, Building E, and appears not to have been repeated elsewhere, even though the slate roof survives to the present. This may be indicative of relative poverty and/or a lack of confidence in the longer–term security of the tenancies.

6.15 The function of many of the structures also appears to have been altered during the twentieth century, as the population dwindled, and the relative number of horses to cattle, grew. Several of the barns were converted to storage, rather than winnowing, as seen in Building X, whilst Long-house S was converted to a barn around the turn of the twentieth century (MacDonald pers comm). It is likely that changes were also made to the buildings after the abandonment of the Township, by Argyll Estates, who still owned part of the Township (MacDonald pers comm). The remodelling of the doorway in Barn N was undertaken after the RCAHMS survey of 1963, as shown by the photographic record (AG/833), possibly for the shepherds living in the Colt house.

6.16 It is clear that much of the fabric of the buildings of Auchindrain Township has been altered in recent times. Whilst this may be considered to have reduced the historical authenticity of some of the buildings, these interventions can also be

viewed as part of the necessary on-going maintenance of the buildings and thus part of their structural history. The buildings are close to the vernacular threshold and without regular maintenance it is evident that they would rapidly decay into a highly ruinous state. The survey has also shown that this process of ad hoc repair, and the application of new ideas and techniques, has been continuous throughout their history. Without the interventions that have taken place in the past thirty years, like those prior to the Museum Trust, the buildings would have continued to fall into ruinous state.

6.17 This survey has identified those intrusions that have produced features of a wholly modern nature and those reconstructions which are at best conjectural and at worst inaccurate. It should enable any such errors to be rectified if considered necessary and inform the historical accuracy of any further repair and consolidation work.

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ILLUSTRATIONS

LIST OF FIGURES

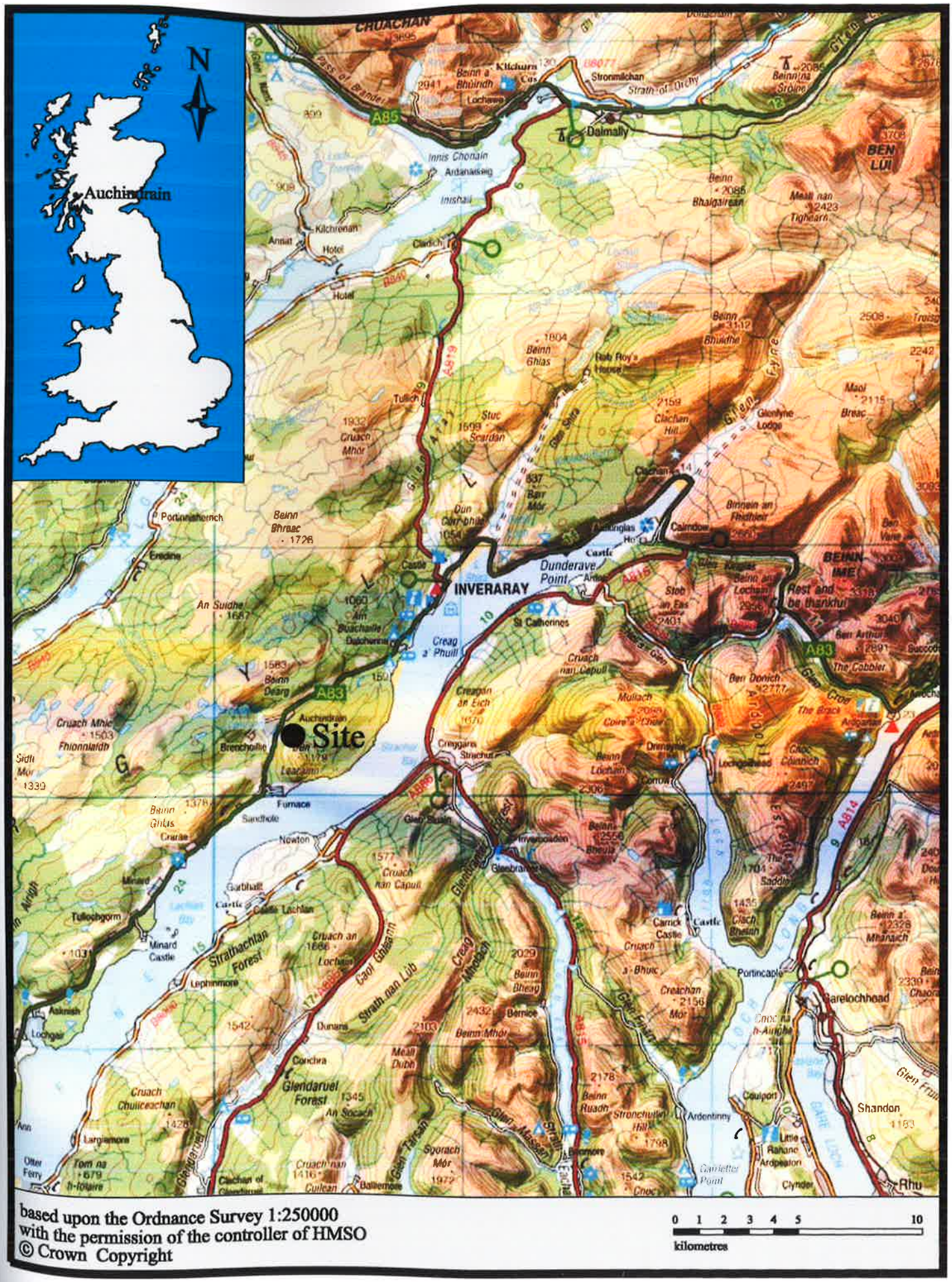


Fig 1 : Location Map

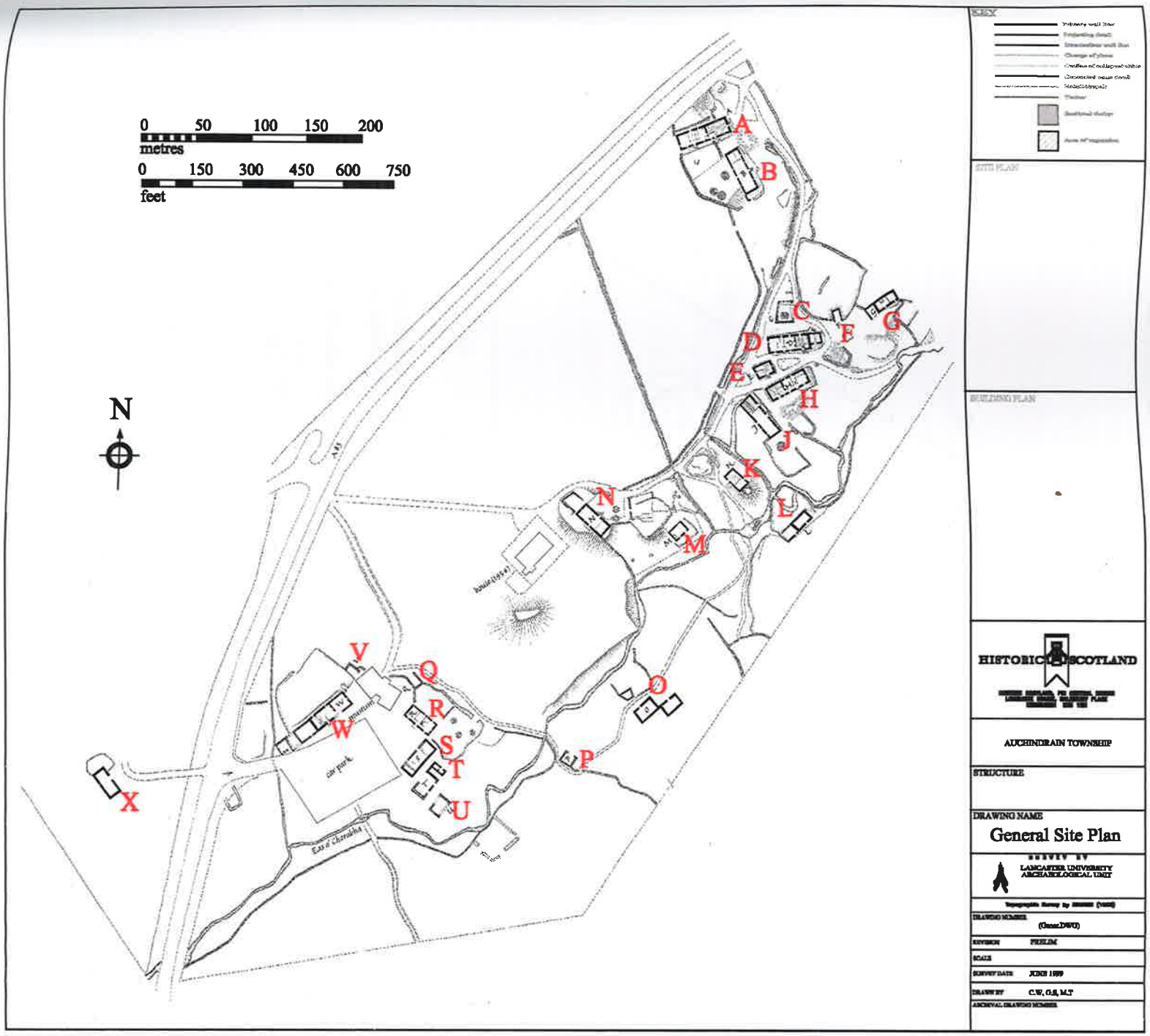
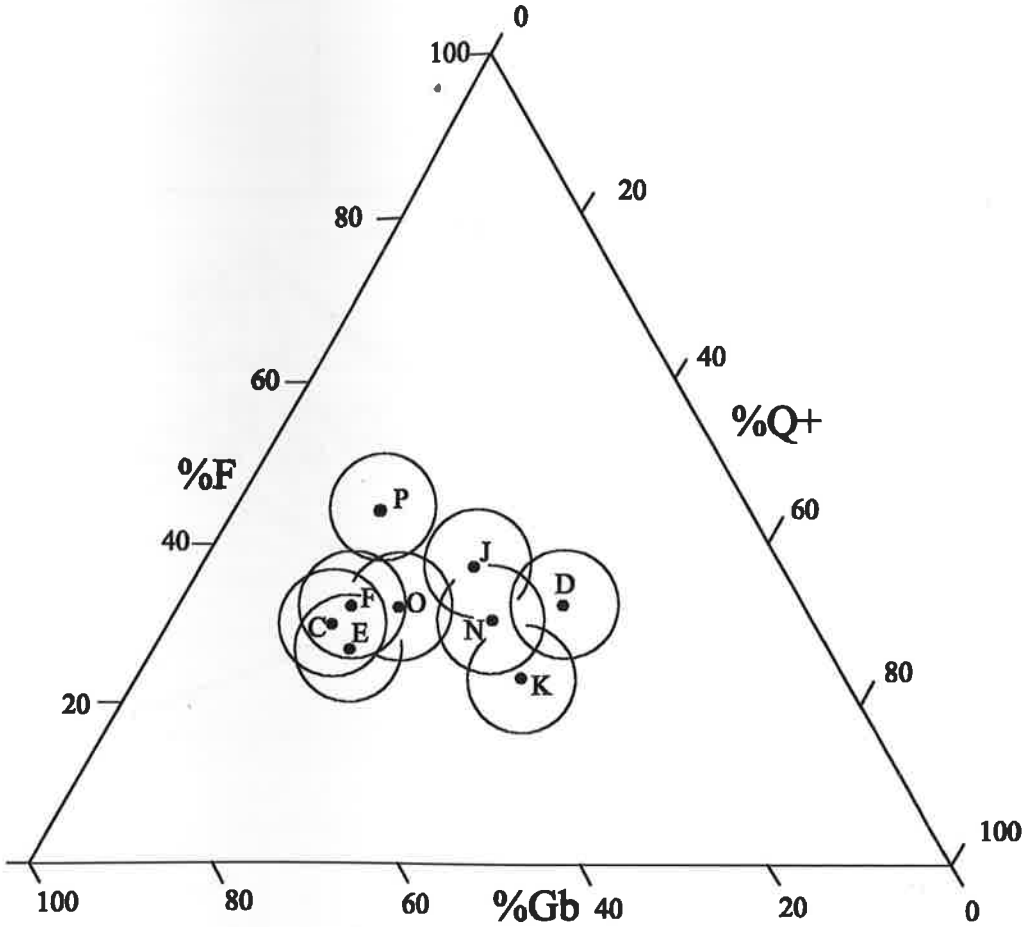


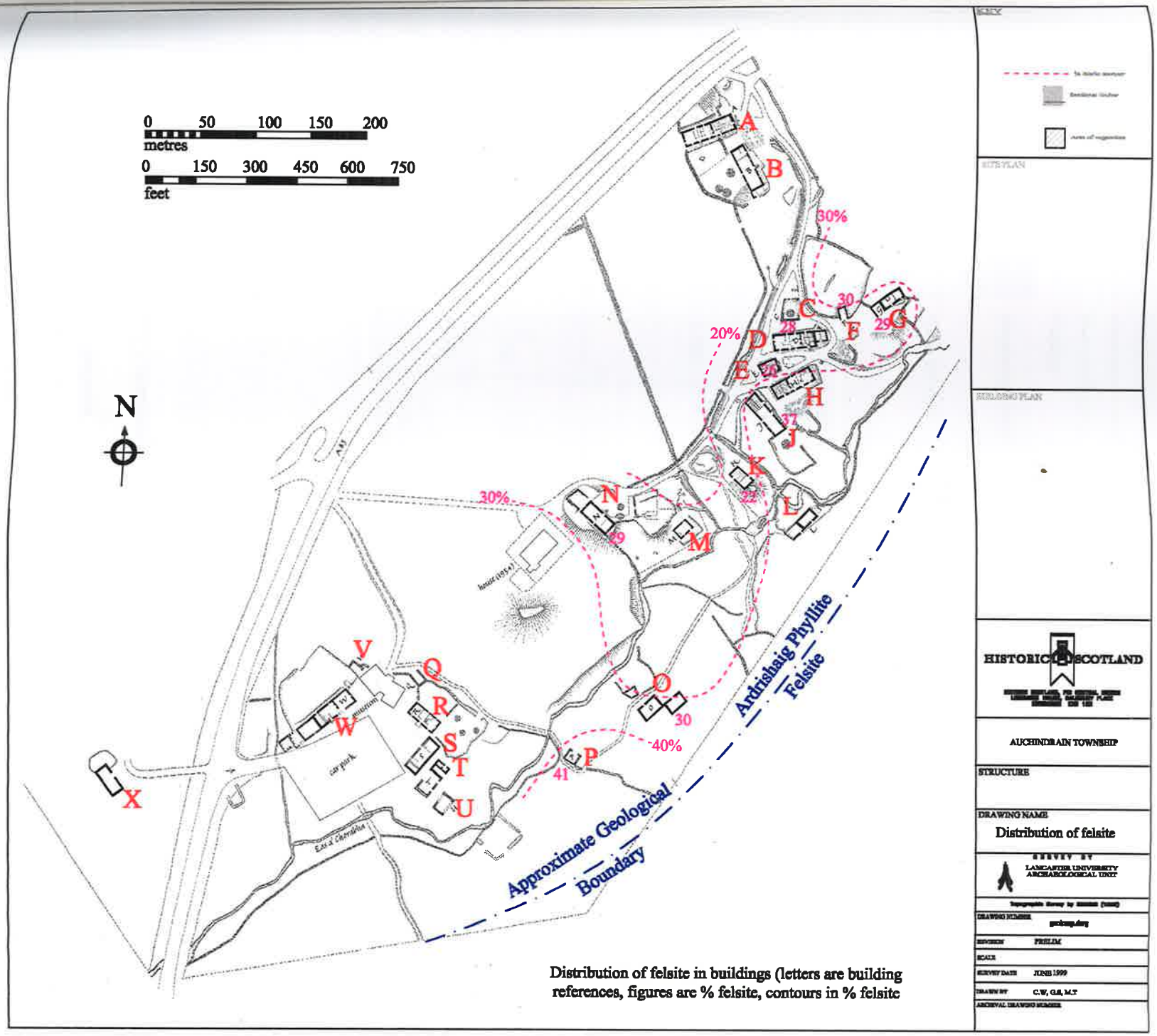
Fig 2 General Site Map (After RCAHMS 1992)



Stone combinations are expressed in terms of felsite, green beds, and (quartzite and sandstone and Schist / mica schist and rock types / flinty rock type derived from / found in the Ardrishaig Phyllite)

Circles represent +- 5% error margins about the data points

Fig 3 Building Stone Combinations



Distribution of felsite in buildings (letters are building references, figures are % felsite, contours in % felsite

Fig 4 Distribution of felsite in buildings

KEY

Primary wall line

Projecting detail

Intermediate wall line

Change of plane

Ground line

Concealed stone detail

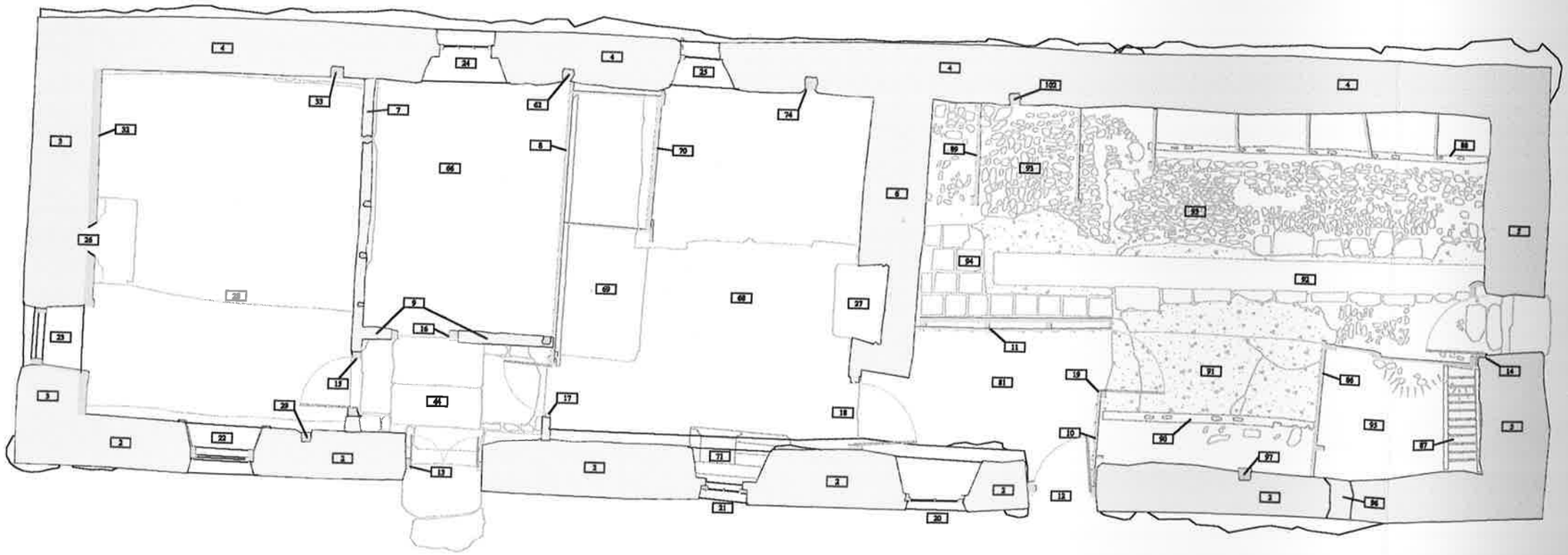
Rebuild/repair

Timber

Sectional timber

Area of core

N



0 2 4 6 8 10
metres

0 6 12 18 24 30 36
feet

Fig 5: Plan of Building A

KEY

Primary wall line

Projecting detail

Intermediate wall line

Change of plane

Ground line

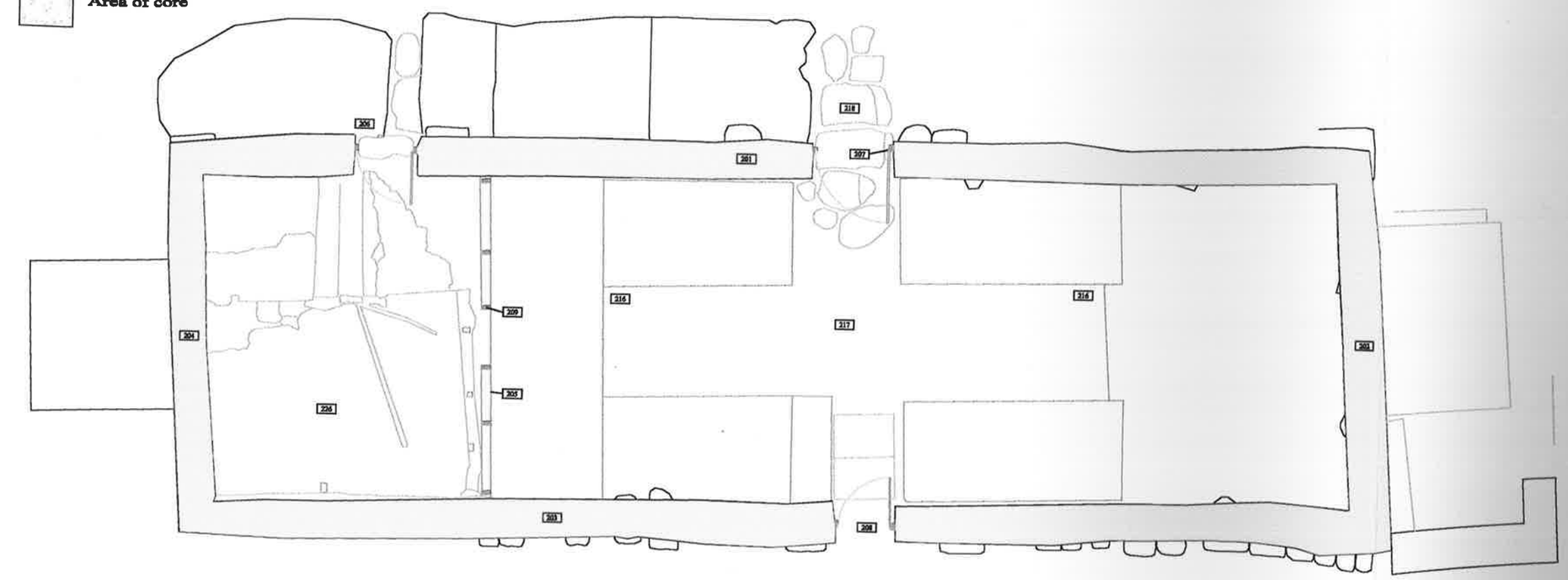
Concealed stone detail

Rebuild/repair

Timber

Sectional timber

Area of core



0 2 4 6 8 10
metres

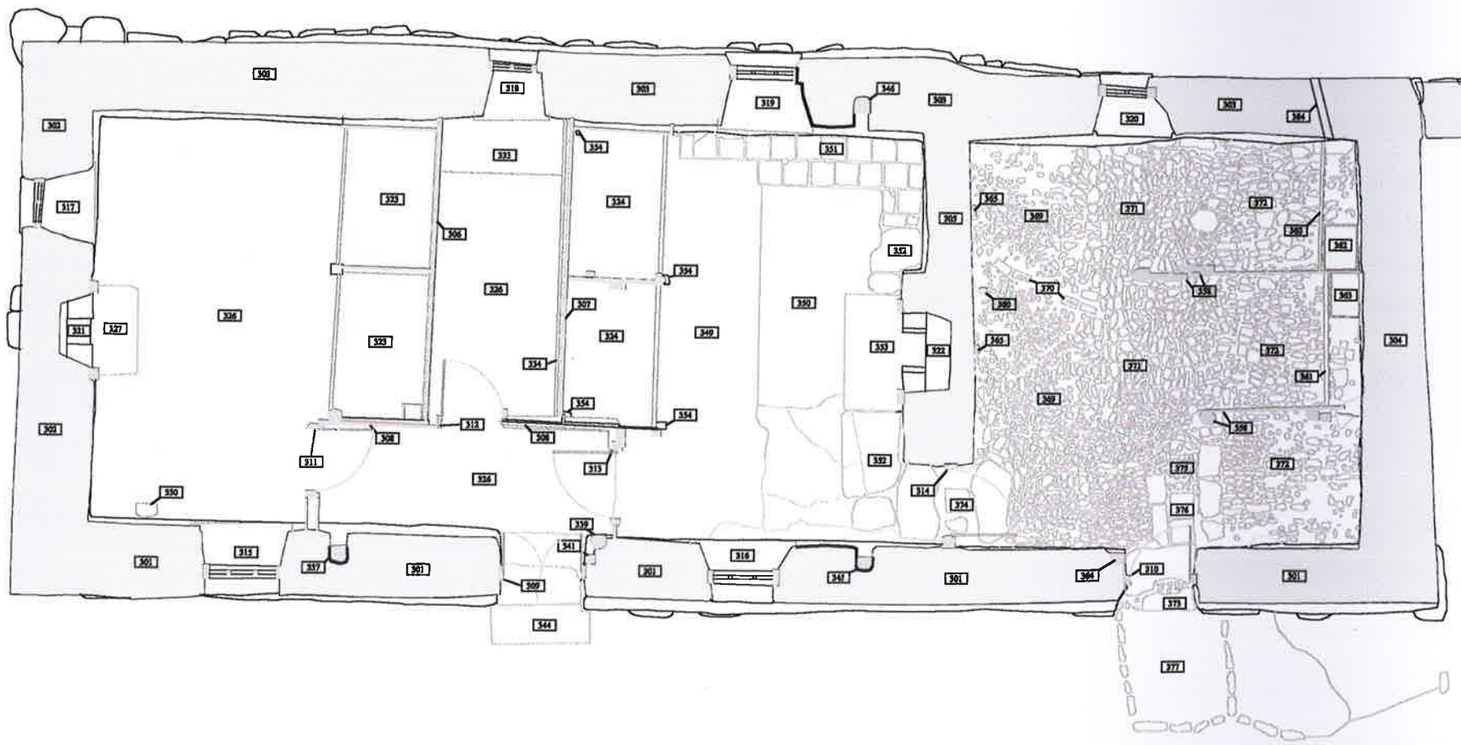
0 6 12 18 24 30 36
feet

Fig 6: Plan of Building B

KEY

- Primary wall line
- Projecting detail
- Intermediate wall line
- Change of plane
- Ground line
- Concealed stone detail
- Rebuild/repair
- Timber
- Sectional timber
- Area of core

N



0 2 4 6 8 10
metres

0 6 12 18 24 30 36
feet

Fig 7: Plan of Building D

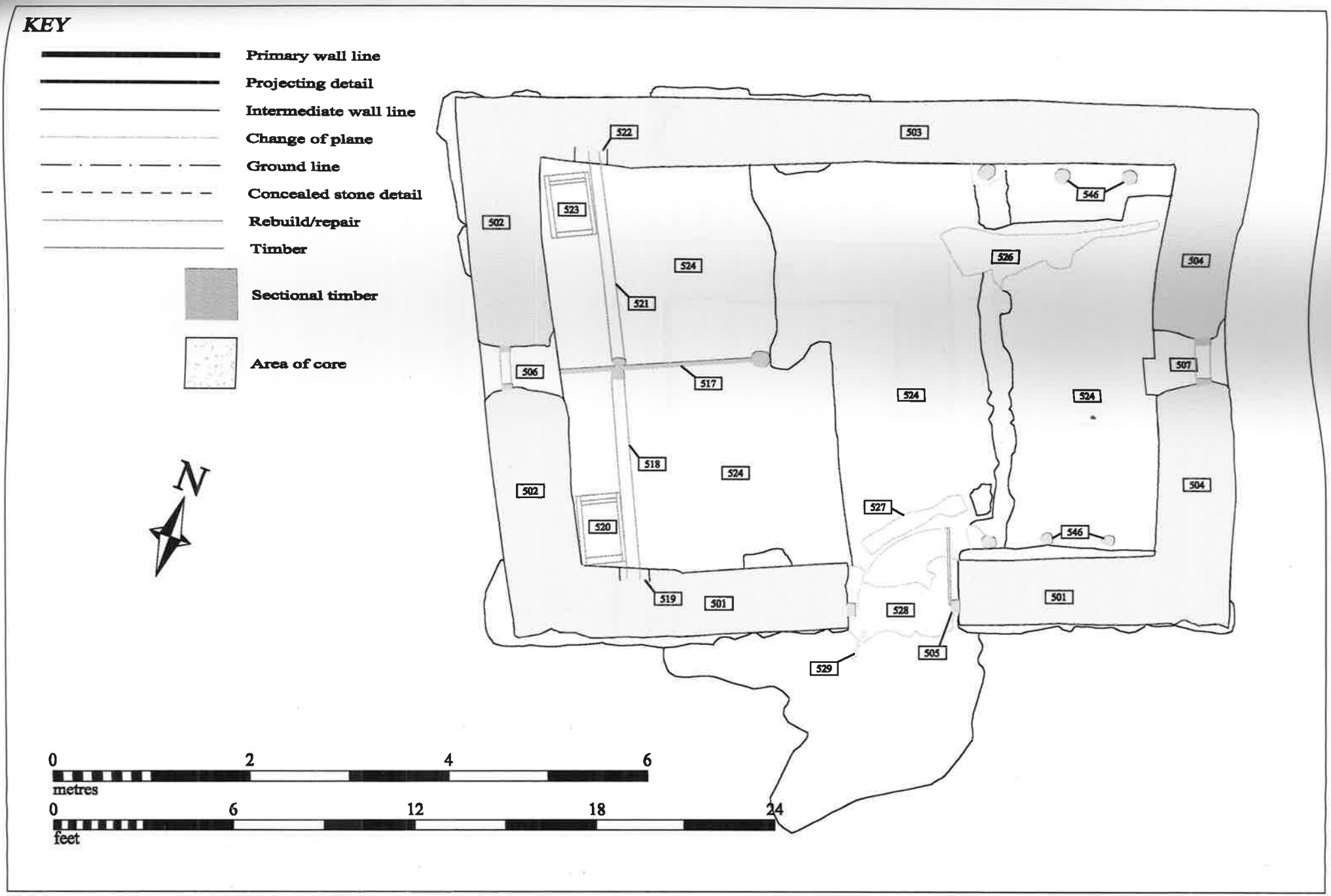


Fig 8: Plan of Building E

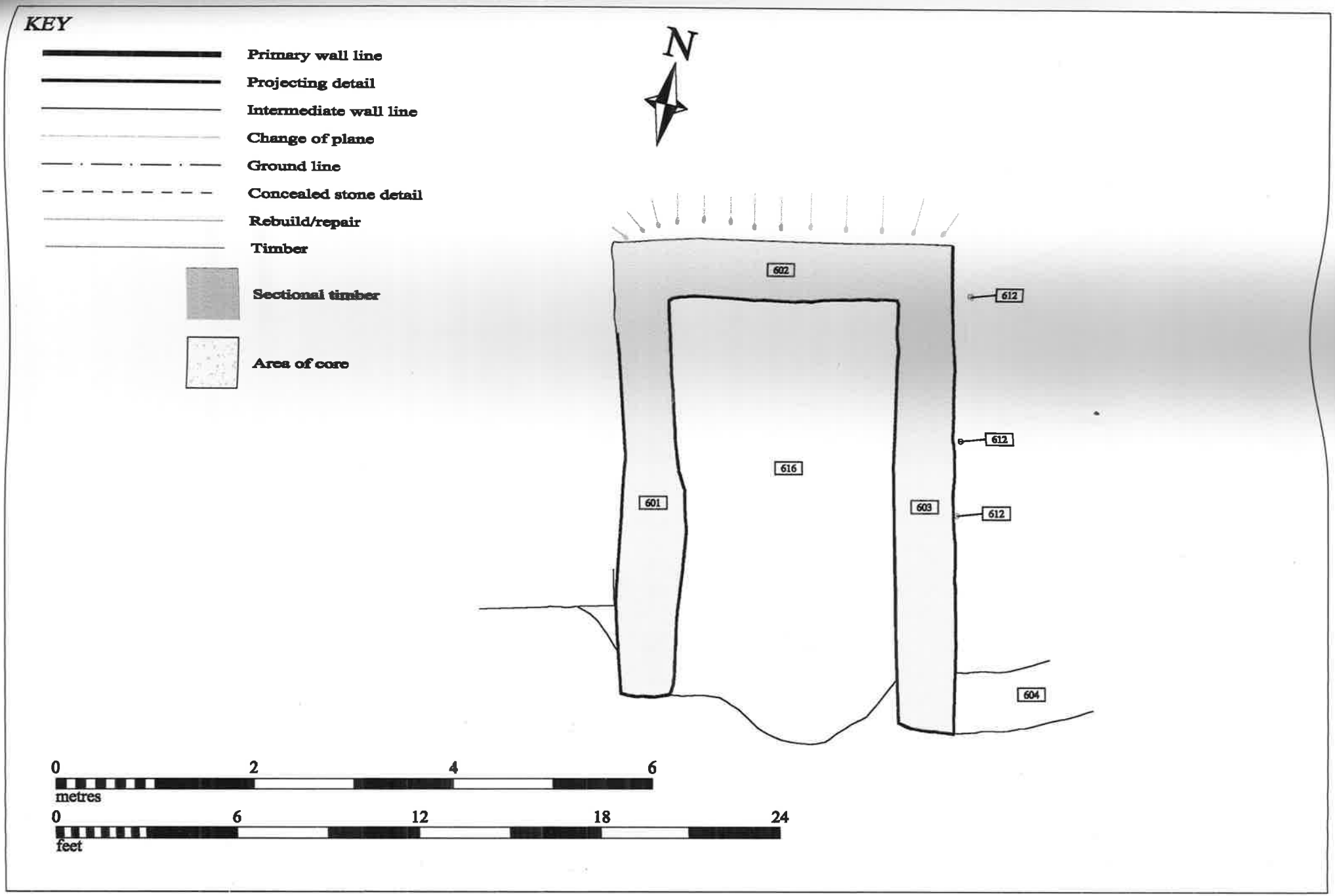


Fig 9: Plan of Building F

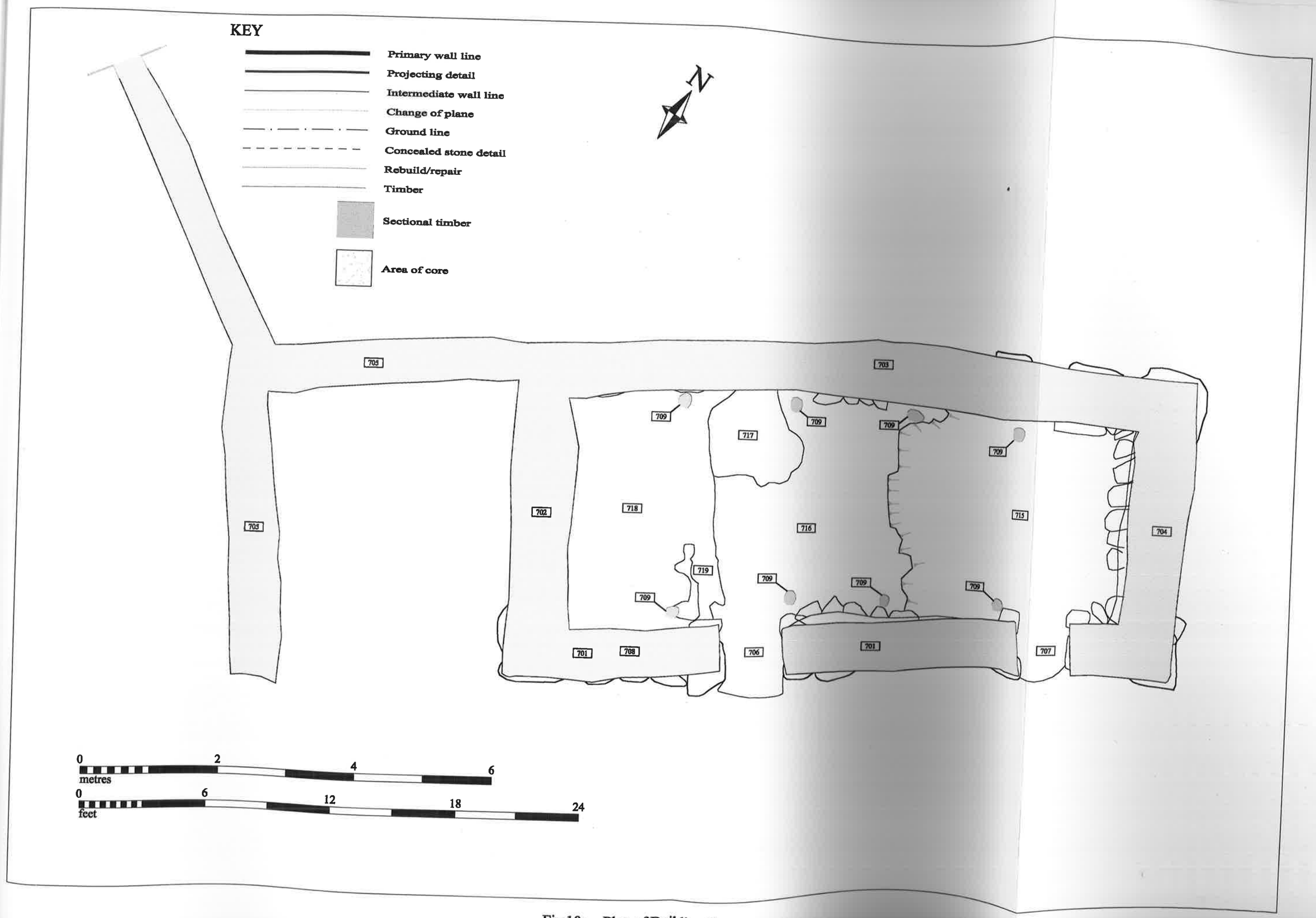


Fig 10: Plan of Building G

KEY

Primary wall line

Projecting detail

Intermediate wall line

Change of plane

Ground line

Concealed stone detail

Rebuild/repair

Timber

Sectional timber

Area of core

N

0 2 4 6
metres

0 6 12 18 24
feet

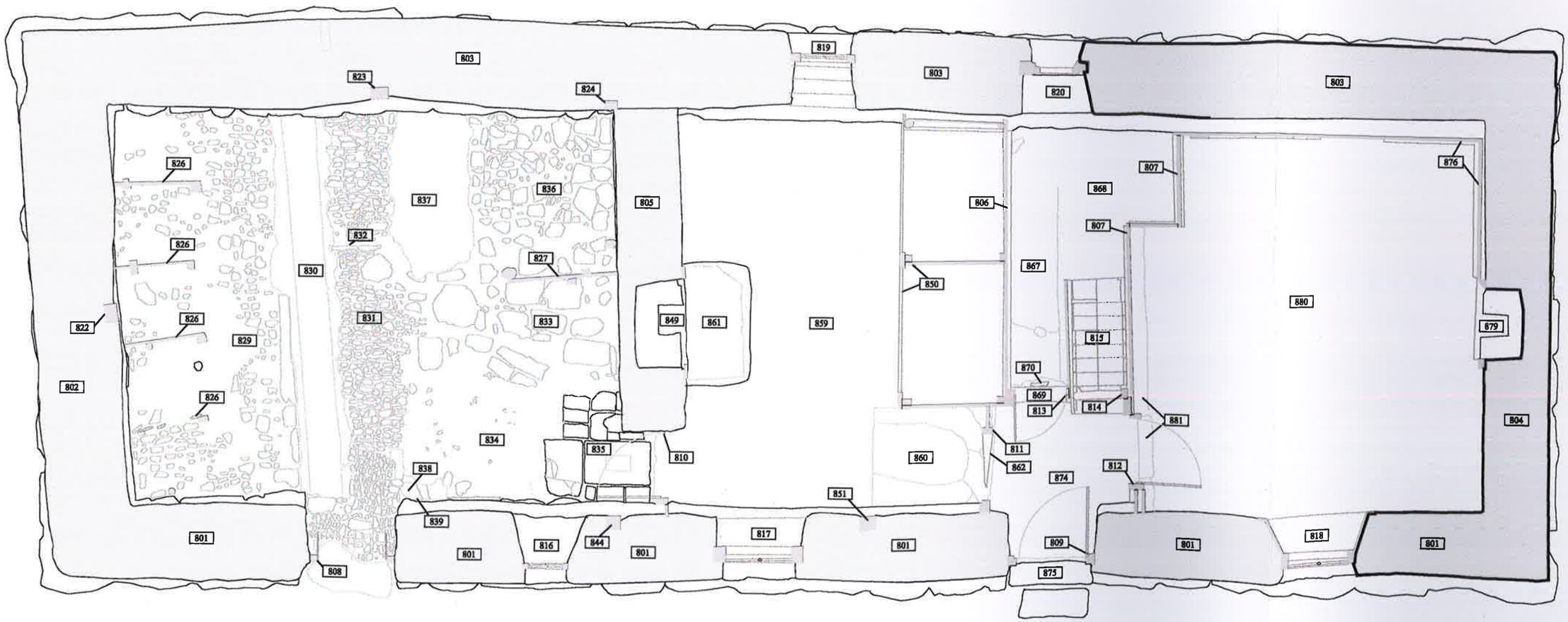


Fig 11: Plan of Building H

KEY

Primary wall line

Projecting detail

Intermediate wall line

Change of plane

Ground line

Concealed stone detail

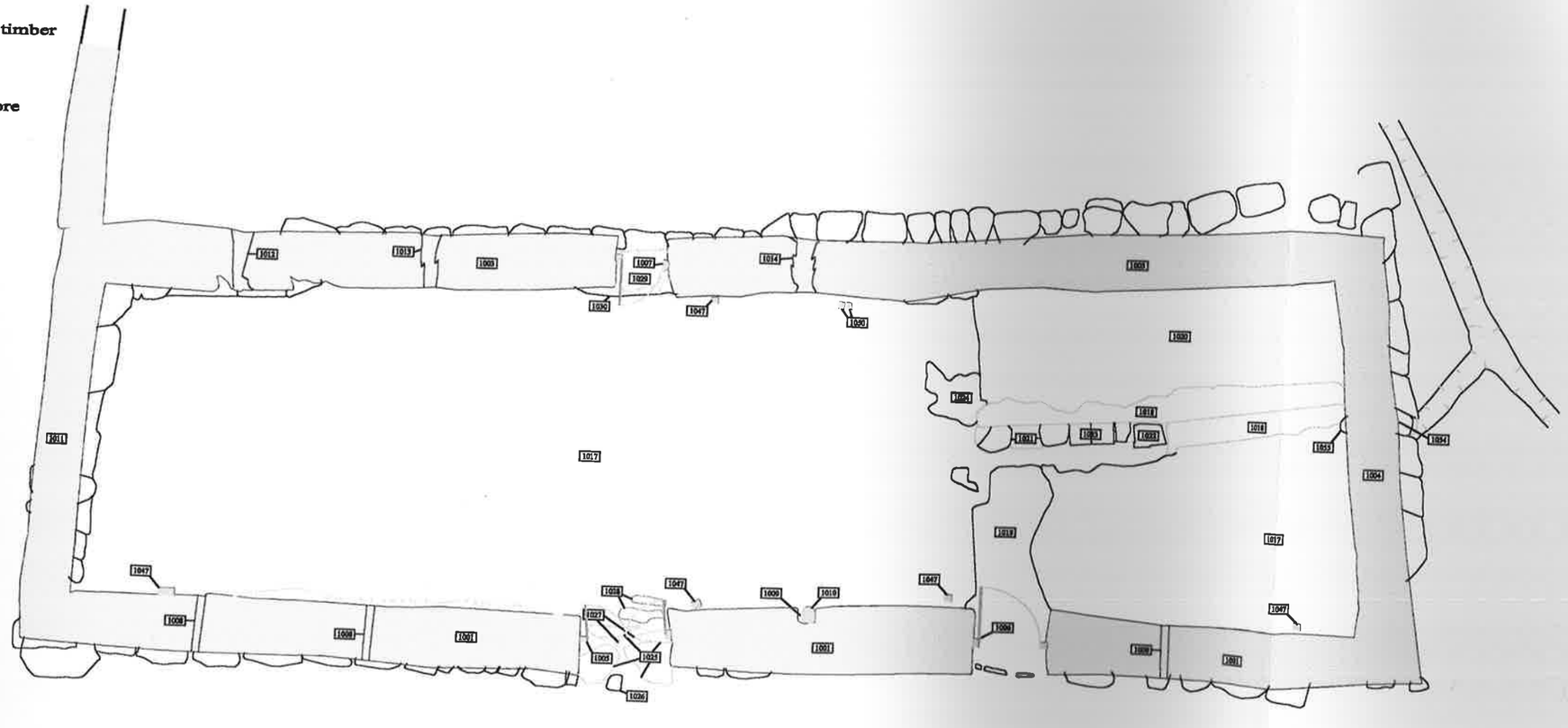
Rebuild/repair

Timber

Sectional timber

Area of core

N



0 2 4 6 8 10
metres

0 6 12 18 24 30 36
feet

Fig 12: Plan of Building J

KEY

Primary wall line

Projecting detail

Intermediate wall line

Change of plane

Ground line

Concealed stone detail

Rebuild/repair

Timber

Sectional timber

Area of core

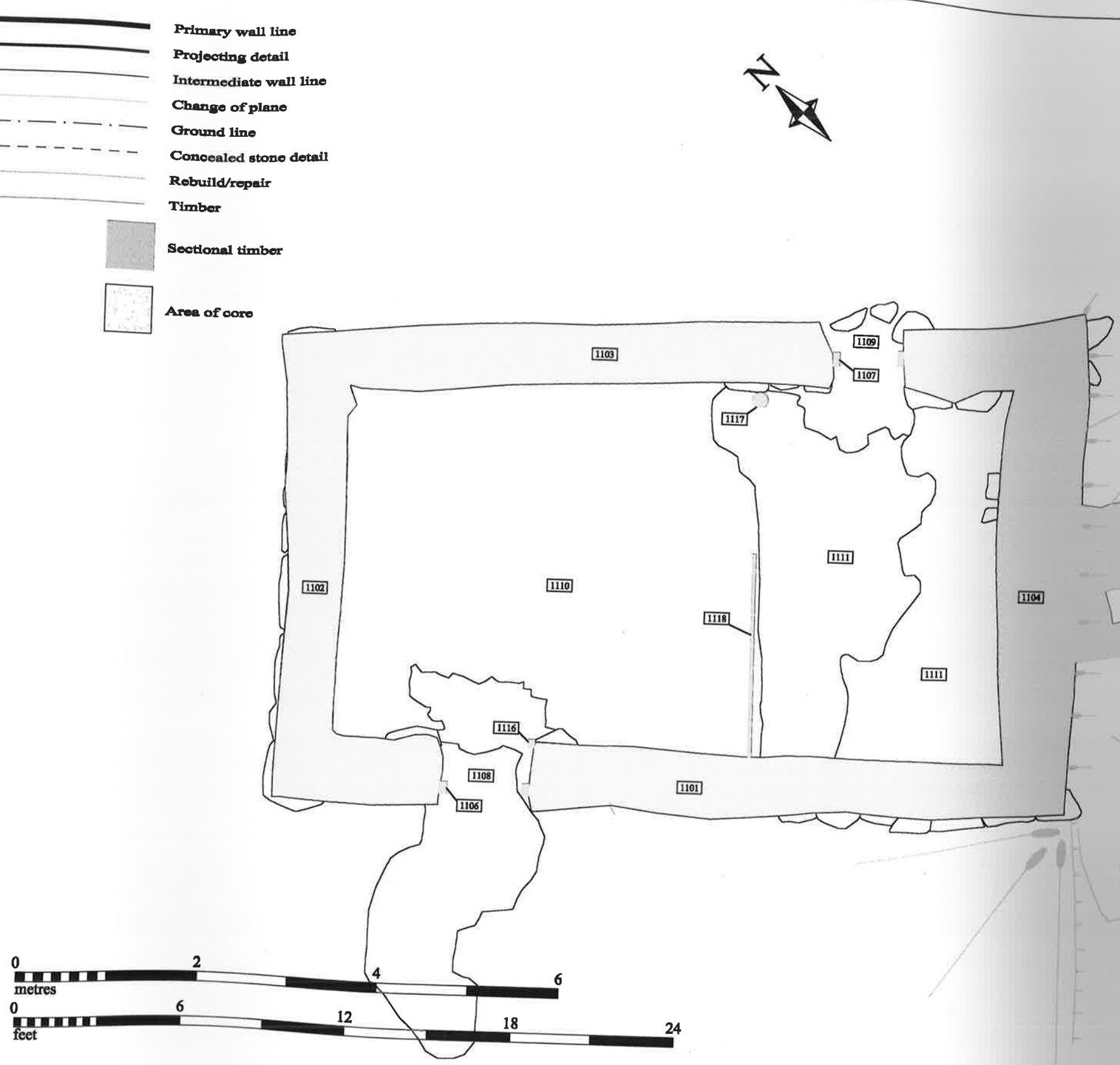


Fig 13 : Plan of Building K

KEY

Primary wall line

Projecting detail

Intermediate wall line

Change of plane

Ground line

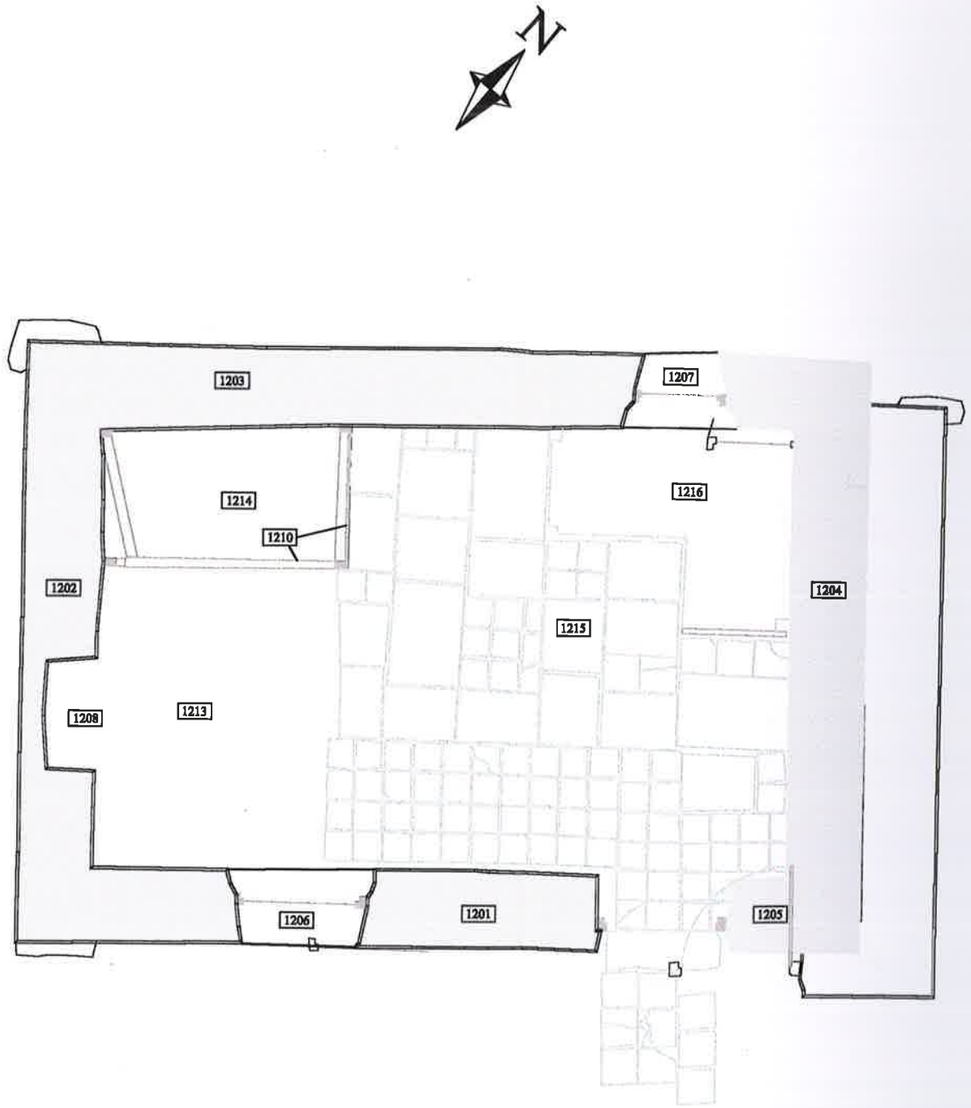
Concealed stone detail

Rebuild/repair

Timber

Sectional timber

Area of core



0 2 4 6
metres

0 6 12 18 24
feet

Fig 14: Plan of Building M

KEY

Primary wall line

Projecting detail

Intermediate wall line

Change of plane

Ground line

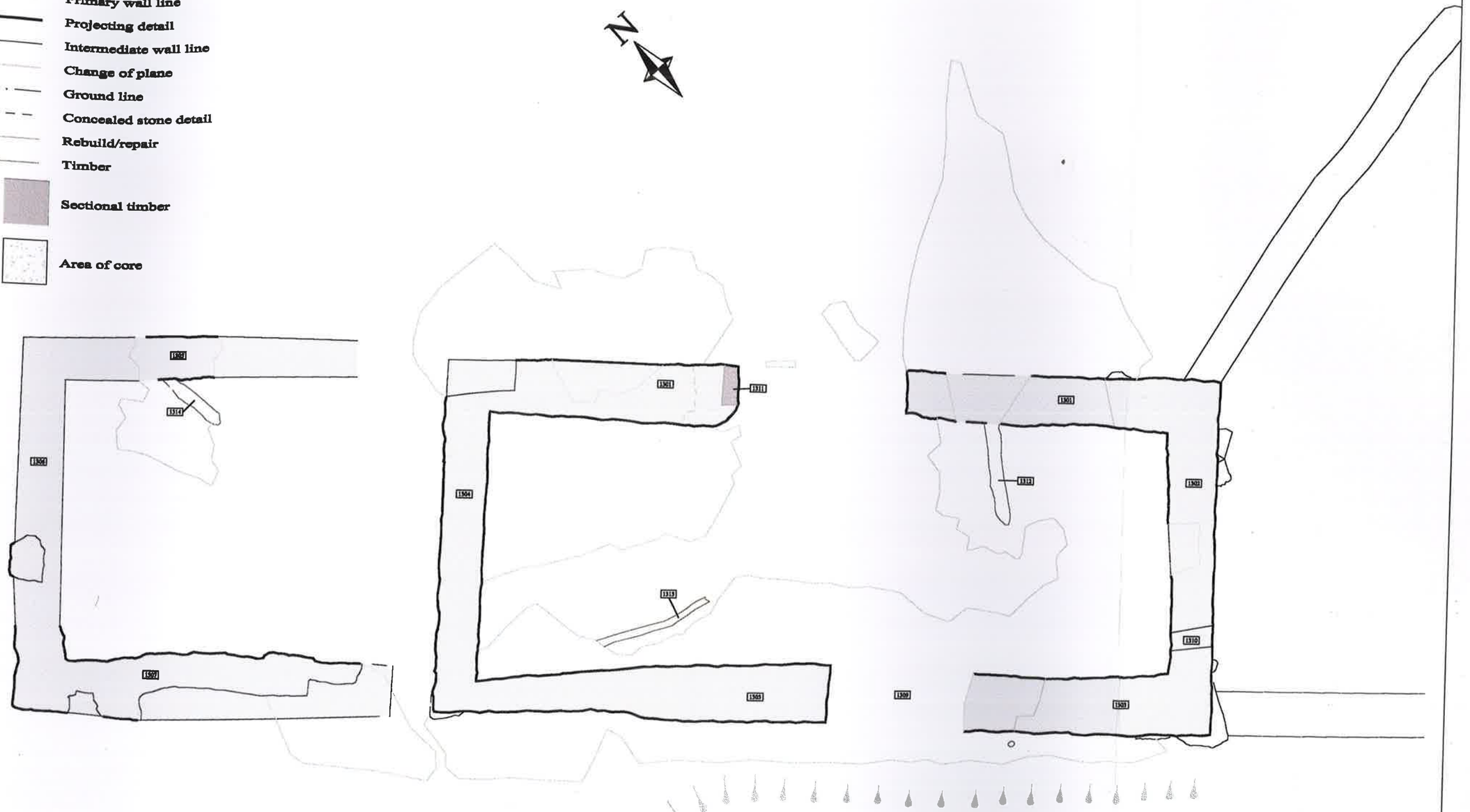
Concealed stone detail

Rebuild/repair

Timber

Sectional timber

Area of core



0 2 4 6 8 10
metres

0 6 12 18 24 30 36
feet

Fig 15 : Plan of Building N

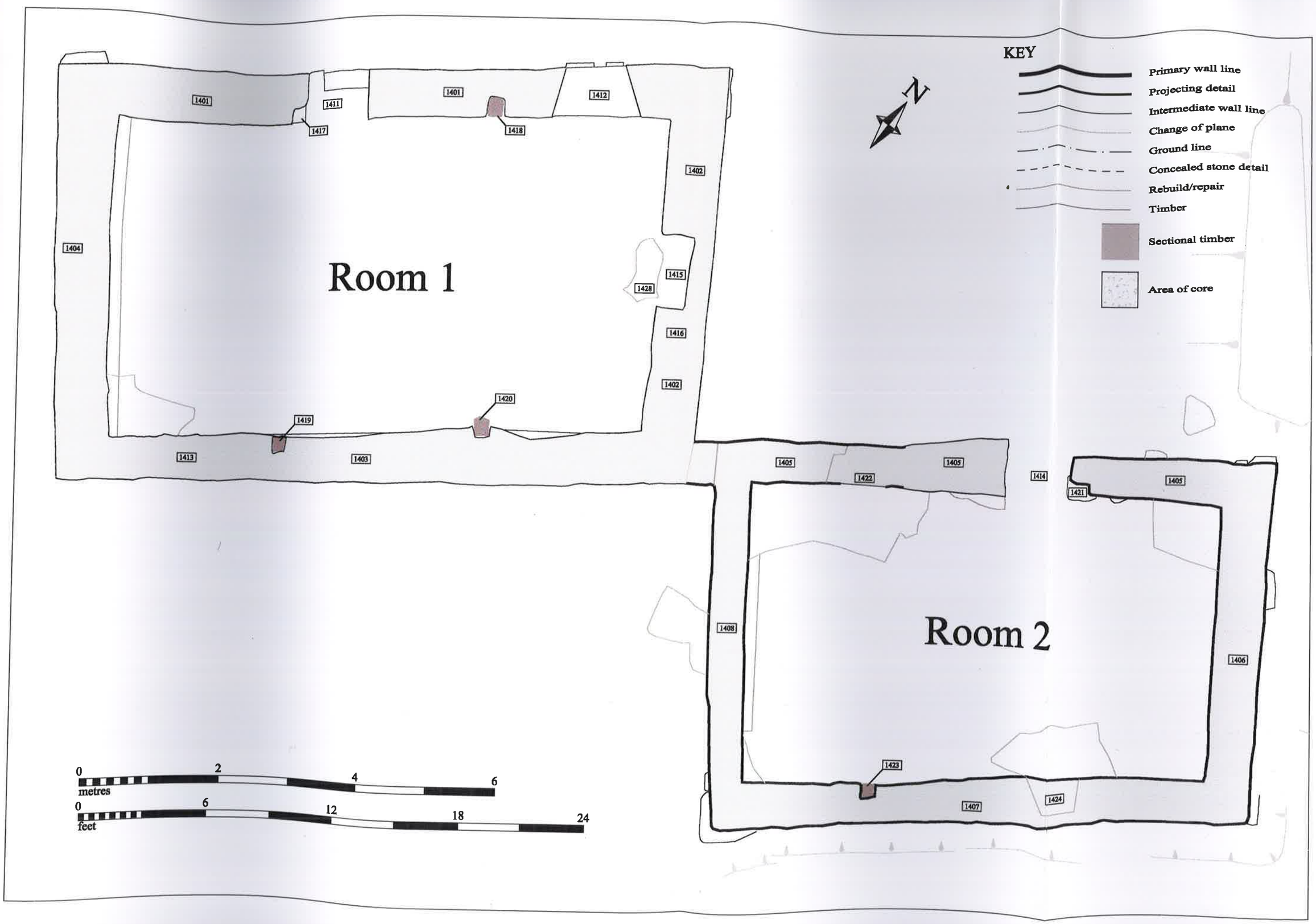


Fig 16: Plan of Building O

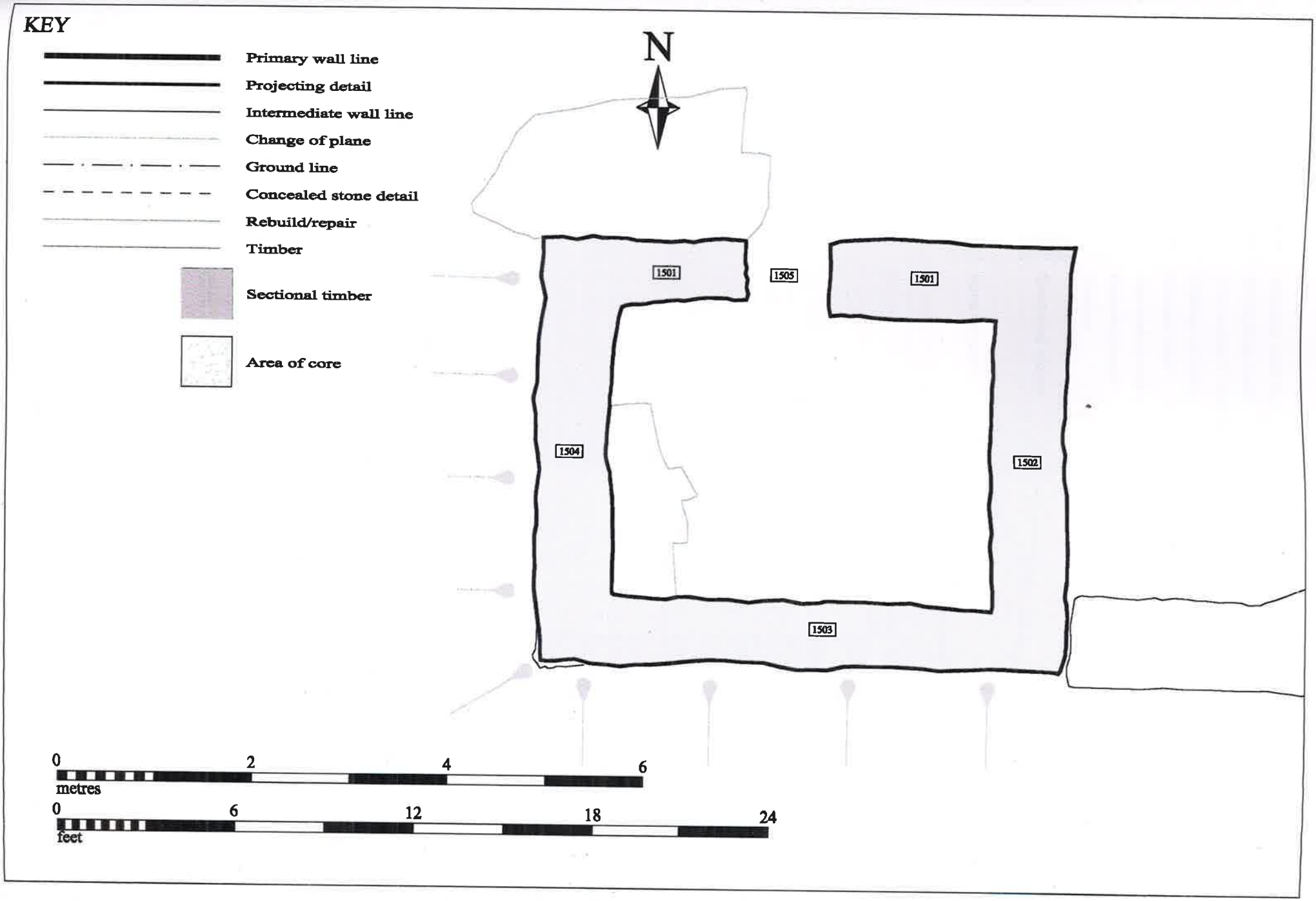


Fig 17: Plan of Building P

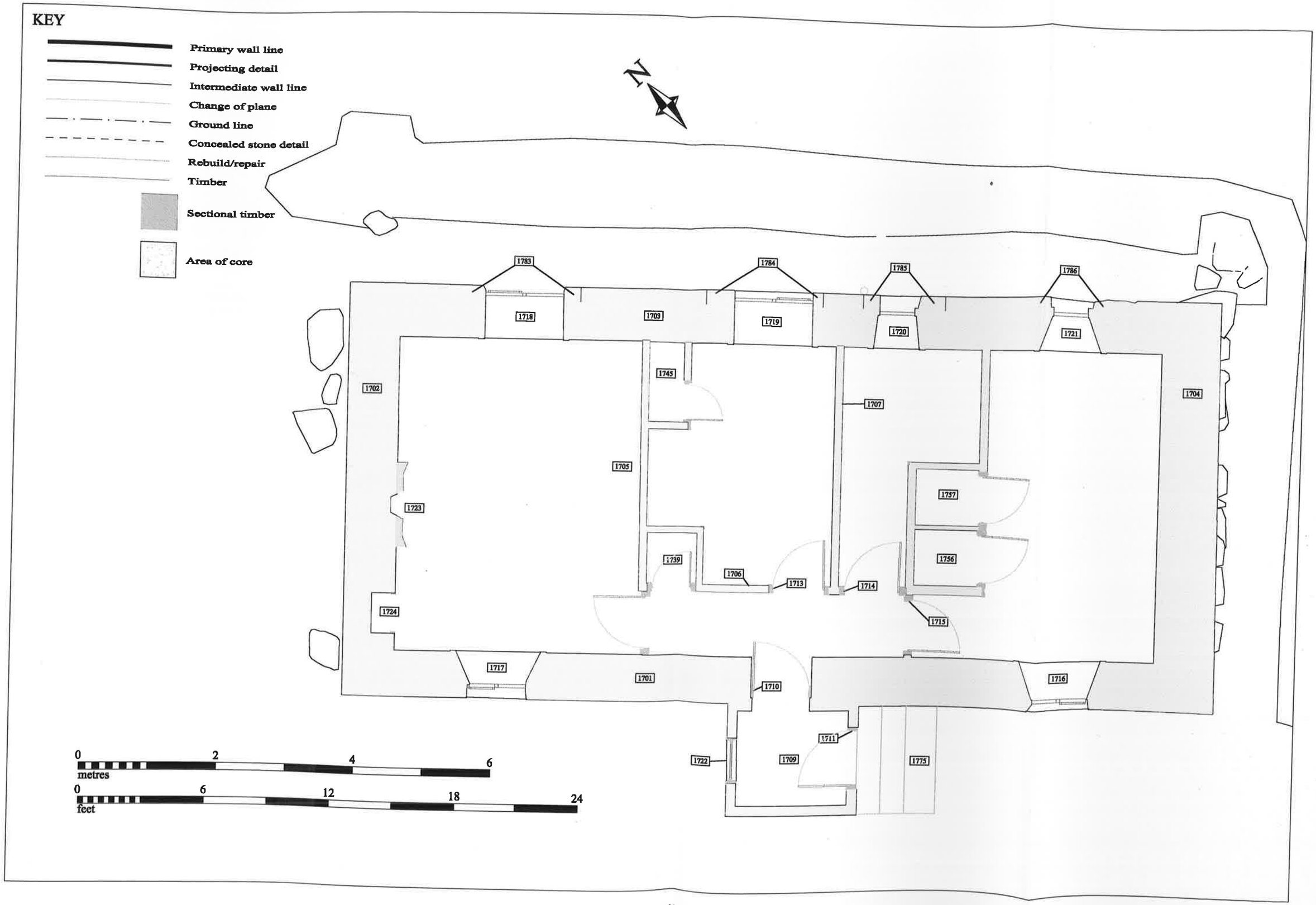


Fig 18: Plan of Building R

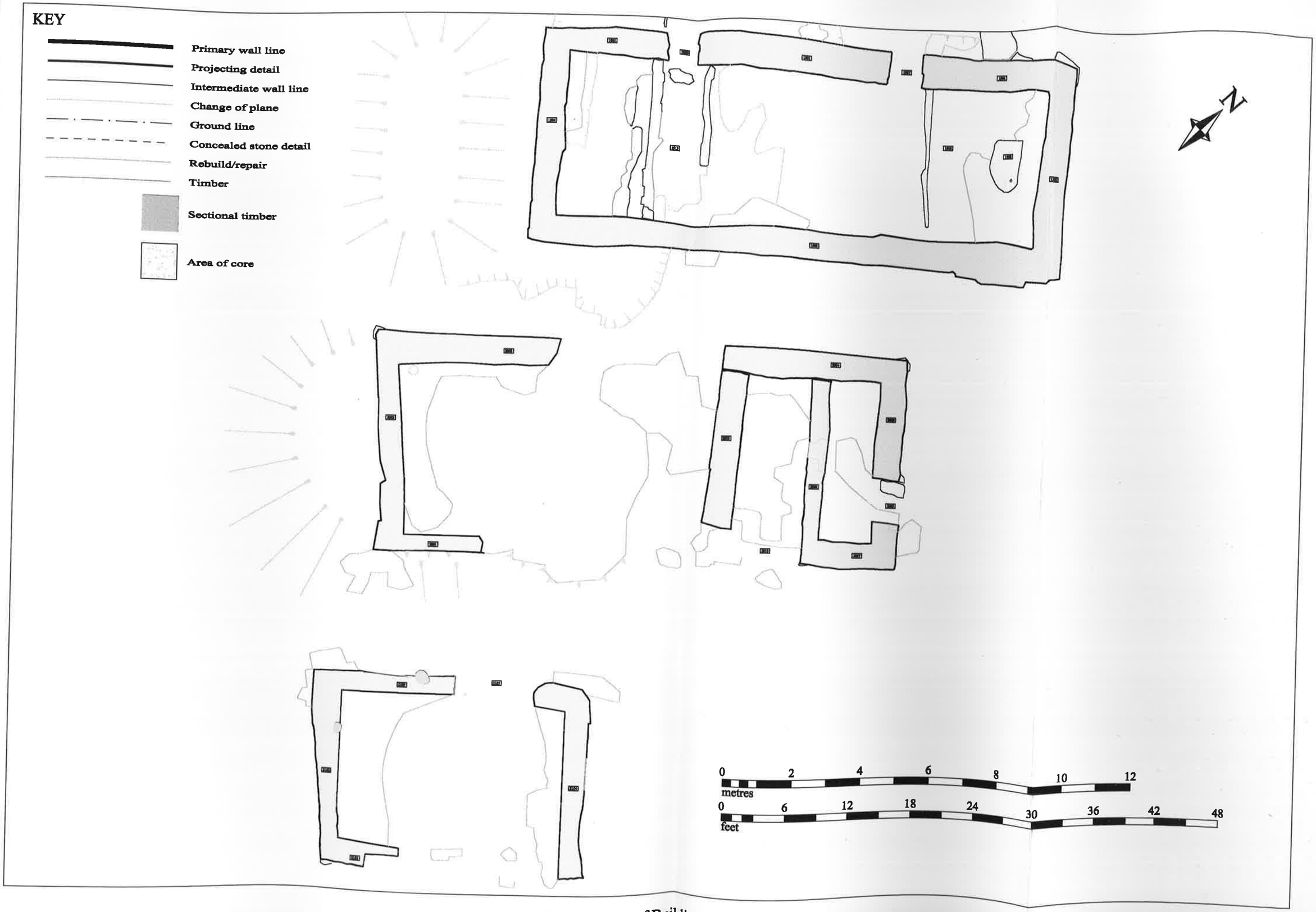


Fig 19: Plan of Building S,T & U

KEY

Primary wall line

Projecting detail

Intermediate wall line

Change of plane

Ground line

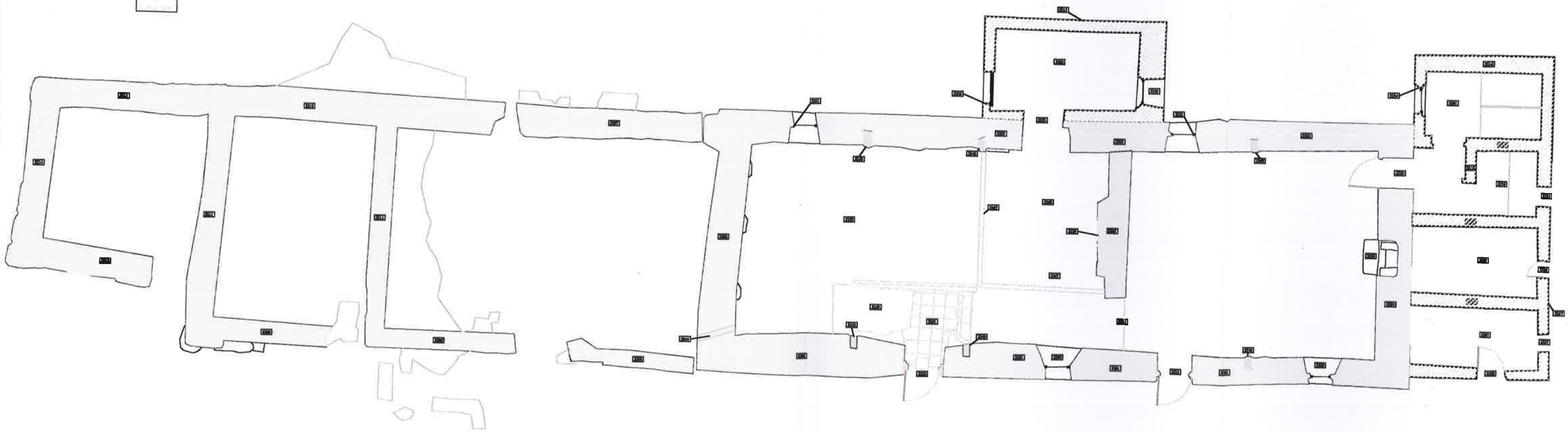
Concealed stone detail

Rebuild/repair

Timber

Sectional timber

Area of core



0 2 4 6 8 10 12
metres

0 6 12 18 24 30 36 42 48
feet

Fig 20: Plan of Building W

KEY

Primary wall line

Projecting detail

Intermediate wall line

Change of plane

Ground line

Concealed stone detail

Rebuild/repair

Timber

Sectional timber

Area of core

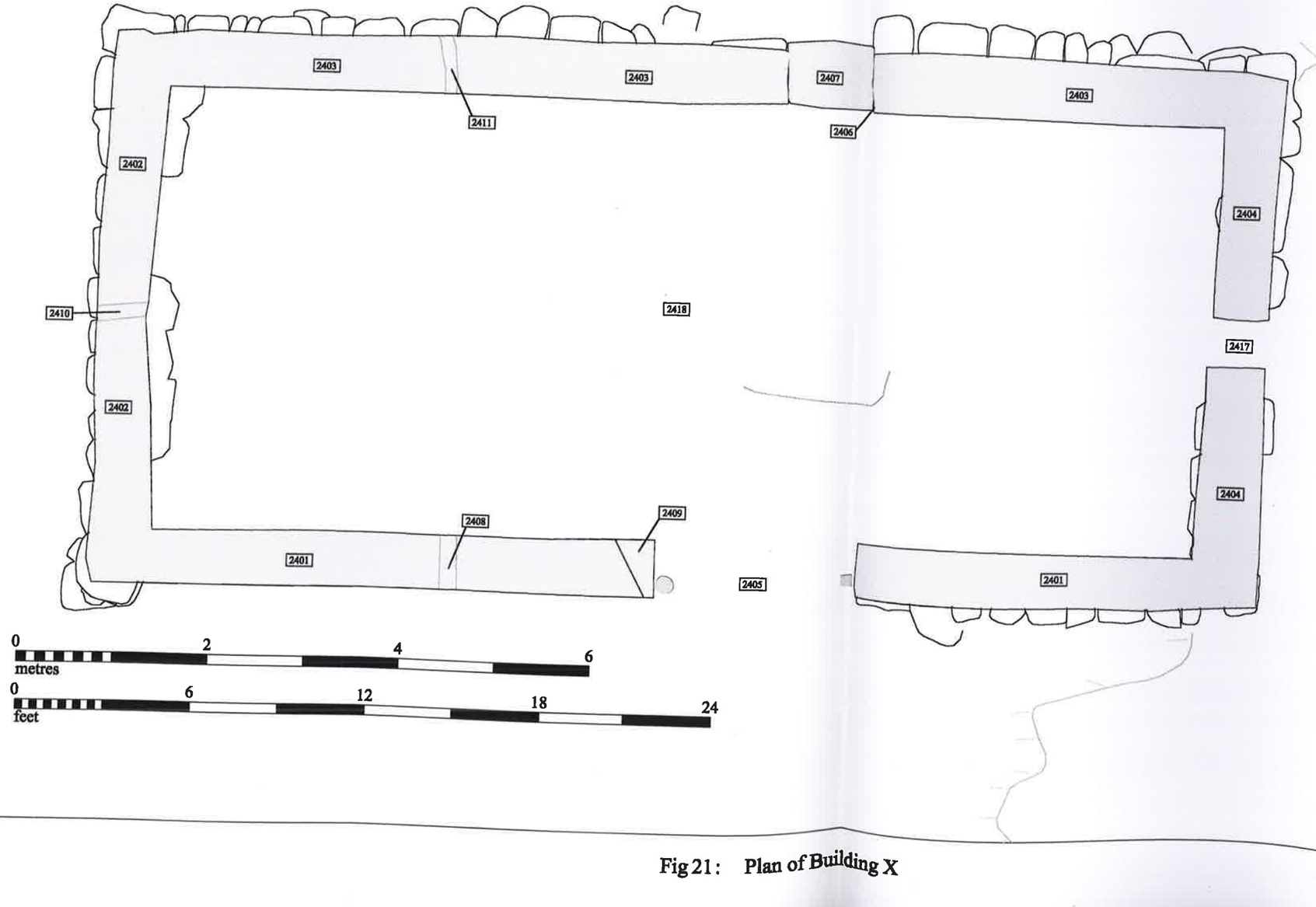


Fig 21: Plan of Building X

APPENDIX 1: PROJECT DESIGN

1.1 PROJECT BACKGROUND

1.1.1 Auchindrain Township located 9 km. south-west of Inveraray existed as a multiple tenancy farm until 1935. It was one of six such townships in a six mile strip of land between Auchindrain and Inverarary. Following the decline of the multiple tenancy a period of single tenancy continued until the township became a museum in 1963. The majority of the existing buildings probably date from about 1770 to 1840, a number exhibit evidence for intervention works.

1.1.2 The township comprises a number of roofed byre-dwellings, associated barns, stables and other agricultural structures such as a cart shed. In total there are twelve buildings, six ruins and four structures that are classed as remnants. These vary in age and condition and are of dry stone construction with subsequent patches of repointing.

1.2 PROJECT DESIGN

1.2.1 Prior to the undertaking of a scheme of repairs and possible reconstruction, Historic Scotland has issued a specification for the recording of the architectural and constructional detail of the standing buildings and structures of the township to include those that have areas of modern intervention.

1.2.2 The survey will serve three purposes, firstly the provision of detailed drawings for the scheme of repair works, secondly an analytical record and interpretation of the site and finally the provision of reconstruction drawings as an aid to presentation.

1.2.3 This document was written in response and to comply with the specification as issued as Historic Scotland and contains a programme of works, method statement and project costing.

2. PROGRAMME OF WORKS

2.1 PROGRAMME

2.1.1 Due to the extent of works and the requirement for the site to remain open to the public it is proposed that the archaeological building survey of Auchindrain Township is carried out over two seasons. The dates as specified for the two seasons are a start date of 12th April to 30th September for site work and a delivery date for the seasons work of 31st October.

2.1.2 Following the end of the first season an interim report will be produced summarising the findings for the buildings recorded during that season. The project archive will be submitted following completion of the second season.

2.1.3 The first season programme of works will include the recording of the following roofed buildings:

Houses **A,D,F**; Barns **B,J,W**.

2.1.4 The second season programme of works will include the recording of the following:

Smaller buildings **G,E,F,K,M,R**; ruins **N,O,P,S,T,U** and remnants/ruins **C,L,Q,V**.

2.1.5 It is anticipated that some elements of the recording, such as establishing external survey station control and additional control for external elevations, will be carried out for the entire site within the first season to maximise the efficiency of the survey team.

3. METHOD STATEMENT

3.1 DOCUMENTARY RESEARCH

3.1.1 There is no proposal to undertake new documentary research into the site but rather to undertake an inspection and review of the relevant background material relating to the site and its environs as kept by the RCAHMS, and academic projects carried out by University of Glasgow Archaeology Department. Interviews with the current and former Curators, the Trustees and other such local persons or experts who have worked on the site will be undertaken. These interviews will provide a source of information into interventions and repairs to the buildings and structures.

3.2 SURVEY TECHNIQUES

3.2.1 ***Survey control:*** this will be established for all structures/ruins utilising an Elta conventional total station.

3.2.2 ***Ground plans/joist plans/rafter plans:*** these will be undertaken using a Reflectorless Electronic Distance Measurer (REDM) using substantial amounts of detail points. This will either be used within the TheoLT environment on a portable PC, or alternatively the data captured by the REDM will be down loaded into an industry standard CAD package (Autocad release 14) for the production of final drawings. Where the nature of the structure restricts the use of the REDM hand survey techniques will be utilised and the results imported into Autocad.

3.2.3 ***Building elevations:*** where appropriate both internal and external elevation drawings will be produced by the process of digitising from the rectified photographic record in Autocad Release 14. The plotted drawings will be corrected/enhanced on site prior to production as finished drawings. Where the rectified coverage is insufficient for this process to be carried out a combination of REDM and/or hand survey will be used. The resultant data will be imported into the CAD package. Following site inspection it is anticipated that the majority of the internal elevations will be produced using the REDM and the external taken from the rectified record.

3.2.4 ***Vertical cross sections:*** the cross sections will not detail elevations/walls located behind the cross section. The sections will be taken through the main elements of the structures rather than through cross walls and will consist of the principal wall plane, openings, voids, passageways, beam sockets, roof and floor timber components.

3.2.1 PLANS AND DRAWING DETAIL

3.3.1 ***Floor plans;*** these will be provided at a scale of 1:20 and incorporate such detail as structural wall outlines, plinths, skirting, openings, windows, doors and structural timber. Normally drawn at a height of 0.50m above internal floor level, windows of sill height 0.75 to 1.25m will be represented.

3.3.2**.** ***Elevation drawings:*** unless otherwise stated stone by stone detail will not be drawn. Detail to be shown will include constructional breaks, change in building material, damage and architectural/structural features such as windows, doorways, fireplaces, chimneys, constructional and timber detail, and architectural moulding.

3.3.3 ***CAD layers:*** an appropriate CAD layering system will be detailed or adopted to separate different categories of information.

3.4 PRODUCTION OF SITE DRAWINGS[1]

3.4.1 ***Plans:*** the production of plans for the site will include:

Floor plans for structures **ADH BJW GEF KMR NOP TU [17]**: roof space plans for structures **ADH R [4**]; floor surface for byres attached to structures **ADH [3**]; joist plans for structures **ADH R [4]**; rafter plans for structures **ADHG BJW EKM R [10]**

3.4.2 ***Vertical sections:*** vertical sections will be produced for:

Transverse sections, 3 each for buildings **ADH [9]**; Transverse sections each for **BJW GEF KMR NO [11];** a longitudinal section each for **ADH BJW GEF KMR NOS [17]**

3.4.3 ***Elevation drawings:*** outline elevation drawings of all external and all internal walls of structures **ADH BJW GEF KMR N [45]** external and **[100]** internal; for ruins/remnants **NP STU CLQV** a total of **[30]** elevation drawings: for structure **O** stone by stone elevations drawings will be produced for both external and internals **[16]**

3.4.4 ***Roof slopes:*** these will be presented as true to scale for buildings **ADH BJW GEF KMR [12]** as well as shown as foreshortened on the elevation drawings.

[1] Numbers shown in brackets denote approximate number of plans/drawings to be produced e.g. [17]

3.5 ANALYSIS AND INTERPRETATION

3.5.1 ***Text Based information:*** to allow for a descriptive record of all detail of each building/structure to be maintained it is proposed that LUAU building pro forma record sheets are utilised (see attached). The pro forma comprise building description, room description and single context record sheets as well as record sheets for plans/elevations/sections and photographs. It is envisaged that context numbers will be allocated to every architectural component within the wall structures and that the site drawings will be annotated to include the allocated numbers. The existing building and room numbering system will be adopted. The information recorded on the sheets will be entered into a computer database (Access) and cross-referenced to the Autocad drawings.

3.5.2 ***Rebuilt structures:*** the level of recording for these structures will be less detailed in nature than for areas of historic fabric. It is anticipated that context record sheets will not be applied to rebuilt parts of the structures.

3.5.3 ***Photographic records***: the need for additional photography has been identified for sample areas of internal roofing material, in particular the areas which utilise small branches such as building D. Where access permits sample sections of these areas will be photographed using semi-oblique photography. Photography will be taken in colour negative film and colour transparency. One set each of these will be supplied to the client. All photographs taken will include a scale bar and identification number.

3.6 PREPARATION OF THE RECORD DRAWINGS

3.6.1 All drawings will be supplied in Autocad Release 14 format and will be stored onto CDs. Each drawing will be in metric format at a scale of 1:10, 1:20 or 1:50 as appropriate and show a scale bar with the equivalent imperial value. Drawings will be supplied on Mylar-base film of minimum 0.003'' thickness as a standard A1 sheet, in landscape format. The sheets will have a standard 90mm design panel down the right hand side containing the Historic Scotland logo.

3.6.2 ***Analytical drawings***: these will appear as layers within the site drawings and on separate printed sheets as specified above.

3.6.3 ***Axonometric drawings:*** axonometric drawings showing current layout are to be undertaken for structures **A,D,H,J** and **W**. One view of each structure **[5]** will be produced utilising 3d survey data and Autocad release 14.

3.7 MATERIALS ANALYSIS

3.7.1 ***Stone:*** all types of building stone found within the structures will be identified and analysed. The results will be incorporated into the site report and a layering system for typology established within Autocad. The approximate cost for a specialist to undertake this study will be **£1050.** At this stage it is anticipated that the analysis would be undertaken by the Department of Environmental Sciences at Lancaster University.

3.8 ARCHIVE

The results of the survey will form the basis of a full archive to professional standards, in accordance with current English Heritage guidelines (MAP II 1991). The project archive represents the collation and indexing of all data and material gathered during the course of the project. The deposition of a properly ordered and indexed project archive in an appropriate repository is considered an essential and integral element of all archaeological projects by the IFA.

3.8.1 The principal material generated in the course of the recording programme will be deposited with the RCAHMS National Monuments Record of Scotland (NMRS) and all materials submitted will comply with their requirements.

3.9 REPORT

The site report will assemble and summarise the results of the documentary study, geological analysis and site recording. The buildings will be presented in individual chapters and appropriately illustrated. The report will be supplied in both bound paper and digital form, the number of copies and recipients to be specified by the client.

4. ATTENDANCES AND MONITORING

4.1 PROJECT TEAM

4.1.1 The team will consist of a project officer and project assistant located on site to carry out the surveying and recording work, and a project supervisor based at Lancaster to undertake the bulk of the digitising work. The site report will be written up and produced at Lancaster where the archiving of the paper and digital databases will also take place. This team will be managed by a project manager based in Lancaster.

4.2 PROJECT MONITORING

4.2.1 Management will be facilitated by an appropriate number of days allocated for site visits and meetings with the client and representatives of the client. An allowance has been made for approximately one day per month of field work and one additional day per year for meetings to discuss work in between the seasons.

4.3 HEALTH AND SAFETY

4.3.1 LUAU considers health and safety to be of paramount importance on all their projects. LUAU has considerable experience in applying modern health and safety practices in large and small-scale archaeological projects.

4.3.2 LUAU provides a Health and Safety Statement for all projects and maintains a Unit Safety policy. All site procedures are in accordance with the guidance set out in the Health and Safety Manual compiled by the Standing Conference of Archaeological Unit Managers (1996 rev.). A written risk assessment will be undertaken in advance of project commencement and copies will be made available on request to all interested parties.

4.4 CONFIDENTIALITY

4.4.1 The report is designed as a document for the specific use of the Client, for the particular purpose as defined in the project brief and this project design, and should be treated as such; it is not suitable for publication, save as a note, without amendment or revision. Any requirement to revise or reorder the material for submission or presentation to third parties beyond the project brief and project design, or for any other explicit purpose, can be fulfilled, but will require separate discussion and funding.

4.4.2 Any proposed variations to the project design will be agreed with Historic Scotland with whom preliminary meeting will be arranged.

4.5 INSURANCE

4.5.1 LUAU has both professional indemnity and public liability insurance. Details will be provided if required.

APPENDIX 2: DOCUMENTARY STUDY INTERVIEWEES

Name	Organisation	Manner of Interview
Hugh Crawford	Sir Frank Mears Architects	In person
Robert Naismith	Sir Frank Mears Architects	Phone
Bob Smith	Former Curator	In person
Dr. Margaret McKay	University of Edinburgh	Phone
Sandy Fenton	National Museums of Scotland	Phone
Gavin Sprott	Trustee	Phone
Marion Campbell	Former Trustee	Phone
John MacDonald	Present Curator	In person
Alex Morrison	GUARD	Phone and correspondence
Jim Souness	Historic Scotland	In person
Ian Fisher	RCAHMS	In person