

# Historic building recording at Bell House, No. 50 East Street, Bovey Tracey, Devon



on behalf of **Mr Christopher Goulden** 

Report No. 20-06

Project No. 1593

March 2020



# Archaeological Groundworks and Historic Buildings

44 Hazel Road, Wonford, Exeter, Devon, EX2 6HN tel: 07834 591406

e-mail: info@oakfordarch.co.uk web: www.oakfordarch.co.uk

.....

**AUTHOR** 

M.F.R. Steinmetzer

WITH CONTRIBUTIONS BY

Lucy Browne

.....

Report No 20-06 Revision: 01

Date: March 2020

#### **Contents**

1. Introduction	1
1.1 The site	1
1.2 Geological background	1
2. Aims	1
3. Methodology	1
3.1 Building survey	1
4. Historical background	
4.1 General background	2
4.2 The Bell House	3
5. The building survey	
5.1 Introduction	6
5.2 The main building	6
5. Discussion	
7. Conclusion	

Site archive Acknowledgements Bibliography

Appendix 1: Method statement

Appendix 2: Dendrochronological analysis

#### List of illustrations

Fig. I	Location of site.
Fig. 2	Detail from the c.1641 Gulielmus Map of the Manor of Bovey Tracey.

Fig. 3 Detail from the 1841 Bovey Tracey tithe map.

- Fig. 4 Detail from the 1st edition 1888 Ordnance Survey Map Devonshire Sheet CI.10.
- Fig. 5 Detail from the 2nd edition 1905 Ordnance Survey Map Devonshire Sheet CI.10.
- Fig. 6
- Early 20<sup>th</sup> century photograph showing Bell House. Early 20<sup>th</sup> century photograph showing Bell House and neighbouring properties. Fig. 7
- Early 20<sup>th</sup> century photograph showing Bell House. Fig. 8
- Fig. 9 Early 20<sup>th</sup> century photograph showing Bell House.
- Fig. 10 Detail from the 1938 Ordnance Survey Map.
- Fig. 11 Detail from the 1956 Ordnance Survey Map.
- Fig. 12 Detail from the 1967 Ordnance Survey Map.
- Fig. 13 Plan of the ground-floor showing locations of observations and suggested phase of development.
- Plan of the first floor showing locations of observations and suggested phase of Fig. 14 development.
- Fig. 15 East and south elevations of Bell House showing jointed cruck truss in the former hall and side view of the south side of the medieval roof.
- West and north elevations of Bell House showing crown strut partition defining the first-Fig. 16 floor chamber and side view of the north side of the medieval roof.
- Fig. 17 East elevation of Bell House showing rear of crown strut partition defining the first-floor chamber.

### List of plates

- Plate 1 General view of the main facade fronting onto East Street and showing the full extent of the original house. Looking north.
- General view of former cross-passage. Looking north. Plate 2
- Plate 3 General view of granite fireplace inserted into formerly open hall. Looking east.

- Plate 4 General view of window in south elevation of hall. Looking south.
- Plate 5 General view of re-set 19<sup>th</sup> century open-string staircase with stick balusters and newel floating awkwardly above the height of the half-landing. Looking north.
- Plate 6 General view of room F05 showing 19<sup>th</sup> century fireplace and window in west elevation. Looking west.
- Plate 7 General view of room F06 showing 19<sup>th</sup> century fireplace in north elevation. Looking north.
- Plate 8 General view of corridor leading to room F04 showing sooting on the jointed cruck, through purlin and common rafters. Looking east.
- Plate 9 Close-up showing later fireplace in east elevation of Room F05. Looking east.
- Plate 10 General view of the jointed cruck truss at the eastern end of Room F05, with through purlins and common rafters. Looking east.
- Plate 11 Close-up of jointed cruck truss showing carpenters marks and detail of later close-studded partition in background. Looking east.
- Plate 12 Close-up of jointed cruck truss showing carpenters marks. Looking east.
- Plate 13 General view of crown strut forming western partition with simple vertical brace below. Looking northwest.
- Plate 14 General view of crown strut in corridor F01. Looking southeast.
- Plate 15 Close-up of crown strut. Looking northeast.
- Plate 16 Close-up of crown strut showing carpenters marks. Looking east.
- Plate 17 Close-up of crown strut showing carpenters marks. Looking east.
- Plate 18 Close-up showing remains of close-studded partition. Looking east.
- Plate 19 Close-up showing finger imprint on historic plaster covering close-studded partition. Looking east.

### 1. INTRODUCTION

This report has been prepared for Mr Christopher Goulden and sets out the results of an archaeological building survey carried out by Oakford Archaeology (OA) in July 2019, at Bell House, Bovey Tracey, Devon (SX 8195 7859). The work was carried out to satisfy condition no. 3 attached to the grant of listed building consent (17/01790/LBC) for internal alterations to the existing house and associated works.

#### 1.1 The site

The house is Grade II Listed (1165711), lying at the heart of the historic town of Bovey Tracey (Fig. 1). The house was originally built as an open-hall house in the early-mid 15<sup>th</sup> century. The building has been subject to alterations and additions in the 16<sup>th</sup> and 17<sup>th</sup> centuries. It has a typical three room and cross-passage layout with a recent outshuts and extensions at the rear. The building has been subject to extensive alterations and additions in the early 19<sup>th</sup> century and was subsequently divided into two properties.

The archaeological work and dendrochronological analysis was commissioned by the current owner of the property, Christopher Goulden, during the refurbishment of the house.

### 1.2 Geological background

The site lies on a steep south facing slope overlooking the Bovey river valley below. The geology of the area is mudstone of the Ashton Mudstone Member formed approximately 330.9 and 321.5 million years ago in the Carboniferous period and gives rise to deposits of clay (www.bgs.ac.uk).

### 2. AIMS

The aims of the project were to preserve by record any historic building fabric or architectural detail that was to be obscured, removed or otherwise affected by the development, and to disseminate the results of the investigation by appropriate reporting.

#### 3. METHODOLOGY

The work was undertaken in accordance with a Written Scheme of Investigation prepared by OA (2019), submitted to and approved by Naomi Archer, the Teignbridge District Council Conservation Officer under the planning and listed building conditions, prior to commencement on site. This document is included as Appendix 1.

### 3.1 **Building survey**

Recording of the buildings was undertaken by a historic building specialist in accordance with specifications applicable to Level 2-3 in the English Heritage 2006 document *Understanding Historic Buildings: a guide to good recording practices*. The building recording consisted of:

- A detailed written description of the buildings and more general record of the main building.
- A detailed photographic record of the buildings in colour (digital) format, and a basic record of the main building.

• A limited drawn record of the buildings, consisting of annotation of, and additions to, the architect's 'as existing' plans and elevations, to show the locations of any fixtures and fittings, building breaks, blocked openings or architectural detail.

### 4. HISTORICAL BACKGROUND

### 4.1 General background

The manor of *Bovi* or *Boui* is mentioned for the first time in the Domesday Book of 1086. It was held by Edric prior to 1066 and during the Norman reorganisation of the land holdings following the Conquest, and the death of Harold at Hastings, the manor was owned by Geoffrey de Mowbray, Bishop of Coutances, when it included 16 villagers and a mill. The parish and manor assumed their present name early in the 13<sup>th</sup> century when they were acquired by the de Tracy family. A document dated 23<sup>rd</sup> October 1219 granted permission to Eva de Tracy to hold to hold a market in Bovey Tracey.

The weekly market and three-day fair were confirmed in 1259 and the following year Henry de Tracy established a borough.<sup>3</sup> There are said to have been 64 burgesses in 1326, who would have owned or leased the long narrow burgage plots fronting the sharply curving main streets.<sup>4</sup> However, in 1332 only 38 taxpayers were recorded, paying amounts varying from 8*d*. to 3*s*, and several of these appeared to be resident on farms elsewhere in the parish.<sup>5</sup> During the late 13<sup>th</sup> century the manor passed to Henry's grand-daughter Maud de Brienne and her husband Geoffrey de Camville. On the latter's death he was succeeded in 1308 by his stepson William Martin. William was lord of Bovey Tracey until his death in 1324 when his son William inherited the manor. Following his premature death in 1326 his elder sister Eleanor and James de Audley, the son of his younger sister Joan, inherited the manor. James became the sole lord in 1342. He died in 1353 without male issue, his lands reverting to King Edward III. The lordship of Bovey Tracey remained in the possession of the crown for the following 250 years.

The Bovey area contains the only major deposit of lignite (a low grade coal) in the country, and it has been mined sporadically since the early 16<sup>th</sup> century. Of more economic significance are the associated deposits of ball clay, believed to have been worked for tobacco-pipe clay since the 17<sup>th</sup> century.

The major Indio and Bovey/Folly Potteries at Bovey did not develop until the second half of the 18<sup>th</sup> century, although Dean Milles, in his mid-18<sup>th</sup> century parochial history of the county, reports that workmen had by then been imported from Staffordshire in order to reproduce the popular wares already in circulation. This early pottery failed due to the inadequacies of the local lignite, which could not develop sufficient heat for good firing. <sup>7</sup> A pottery kiln discovered in 1934 in Fore Street, may represent the remains of small-scale 18<sup>th</sup> or 19<sup>th</sup> century operations. There is no evidence of medieval or early post-medieval pottery production at Bovey <sup>8</sup> and no pottery of this

<sup>&</sup>lt;sup>1</sup> Thorn & Thorn 1985, 3,8.

<sup>&</sup>lt;sup>2</sup> Gover et al. 1932, 467.

<sup>&</sup>lt;sup>3</sup> Hoskins 1972, 340.

<sup>&</sup>lt;sup>4</sup> Beresford & Finberg 1973, 87.

<sup>&</sup>lt;sup>5</sup> Erskine 1969, 58.

<sup>&</sup>lt;sup>6</sup> Durrance & Laming 1982, 204; Hoskins 1972, 341.

<sup>&</sup>lt;sup>7</sup> Weddell & Westcott 1987, 2.

<sup>&</sup>lt;sup>8</sup> Allan 1984, 79-81.

date employing the ball clay was found in excavations at the town of Newton Abbot only a few kilometres to the south of Bovey Tracey.<sup>9</sup>

An account of the town written around 1830 states that the houses were 'old and singular, projecting into the street', <sup>10</sup> implying that they were largely of late medieval and early post-medieval date.

#### 4.2 Bell House

In 1227, Henry de Tracy, feudal baron of Barnstaple and lord of the manor of Bovey Tracey confirmed in a charter the previous grant of the church of *Suthbovy* and some manorial lands to Bishop Brewer. This was later used by the bishop of Exeter to endow St John's Hospital, Bridgwater in Somerset. <sup>11</sup> However, the exact extent of the land grant along the eastern edge of the town is unclear.

The land ownership in Bovey Tracey, described by Frances Billinge in her article for The Devon Historian and published on her website *Aspects of the History of Bovey Tracey*, has included an examination of both manorial and borough records. Unfortunately unlike other Devon borough charters of the time, the Bovey Tracey charter does not provide clear descriptions of the exact land included within the borough. <sup>12</sup> Henry de Tracy was granted a charter to establish a Borough around 1260. Billingue quotes Hugh Peskett's translation of the Borough Charter which reads:

"I have granted for me and my heirs to all my burgesses of Bovey and their heirs that they may hold their burgage in fee and inheritance for ever to them and their heirs or to whomsoever they shall wish to give ...rendering for each burgage yearly..., twelve pence, ... I have granted the aforementioned burgesses that they may have common pasture for their horses and beasts and sheep in all my Heathfield which extends from the great bridge on Bovey river as far as Brimley in the southern part, and turbary ... And if it shall ... please me or my heirs to cultivate the said Heathfield or to set burgages [there], it shall be fully lawful for us ... Moreover I wish that the said burgesses shall be housed on their burgages within the space of two years" 13

The Tithe map apportionment of 1841 shows that Heathfield was used as the description for most of the land in what is now the central part of the current town, and part of the Brimley and Heathfield areas of Bovey Tracey parish. <sup>14</sup>

By the early 17<sup>th</sup> century Elizaeus Hele had become the new lord of the manor through his wife Alicia, widow of Nicholas Eveleigh who had bought the manor from the Crown in 1614. When Elizaeus and Alicia's son died young, Hele left his estate to charitable purposes. In *The Charities of Devon* <sup>15</sup> details of "Hele's Gift" to St John's Hospital in the City of Exeter

<sup>&</sup>lt;sup>9</sup> Allan 1985, 103.

<sup>&</sup>lt;sup>10</sup> Jones *c*. 1830, 118.

<sup>&</sup>lt;sup>11</sup> CCR Henry III, 1226–1257, 20th June 1227.

<sup>&</sup>lt;sup>12</sup> Published in *The Devon Historian* vol. 81, 2012, pp. 1-16. *Tracing the boundaries of the Borough of Bovey Tracey from Saxon times to the present* (https://boveytraceyhistory.org.uk)

<sup>&</sup>lt;sup>13</sup> Peskett, pp.176-178.

<sup>&</sup>lt;sup>14</sup> Devon Heritage Centre 3861M-1.

<sup>&</sup>lt;sup>15</sup> The Charities of Devon, selected from the Voluminous Reports of the Commissioners for Inquiring concerning Charities in England and Wales... Volume I (London 1839)

included "a messuage, orchard and little plot of ground in [Bovey Tracey] and a messuage and herb garden there...". It is unclear whether Bell House was one of these. <sup>16</sup>

The town is shown for the first time on the c.1641 Gulielmus map of the manor of Bovey Tracey (Fig. 2). No details are available for the property and all the town houses are simply abstracted.

It isn't until the mid-19<sup>th</sup> century that the ownership and occupation of the house becomes clearer. The tithe survey of Topsham parish took place in 1841 (Fig. 3), revealing that Bell House (plot 1360) was owned and occupied by "The Earl of Devon and others" (William Courtenay 10<sup>th</sup> Earl of Devon) and was included in the parcels of land headed "Heathfield Downs Etc". The Courtenays had become lords of the manor in the mid-18<sup>th</sup> century and would retain it until 1855 when the trustees of the Earl of Devon sold it to Charles Bentinck. <sup>17</sup> The map clearly shows the main house, a long rectangular range fronting onto East Street with a narrow projecting range along the rear of the building. The tithe map also shows that John Lamble (Bell) is listed as the owner and occupier of plots 1331 and 1332 across the road, a vegetable garden and orchard, as well the land at the rear of the Bell House, plots 1361 and 1363, also orchards.

In addition to the tithe map the decennial censuses were analysed to try and establish which property in East Street was Bell House, as it is not named in these records until 1871. The 1841 census <sup>18</sup> lists the north side of East Street, followed by Mary Street. Counting three households from the eastern end of the street, based on the tithe map, it is possible that John Lamble, a farmer aged 76, Jane Christopher aged 40, a lady of independent means and a servant were living at Bell House. There were at least four John Lambles recorded on the 1841 census, although the tithe apportionment identifies only two: John Lamble (Dolphyn) and John Lamble (Bell). The Dolphin and the Bell were both Inns, although there is no evidence to suggests that John Lamble (Bell), described as Innkeeper, owned it at the time. The Bell Inn first appears in the Quarter Sessions indexes in the 1820s under John Endacott. He was named as publican of the Bell in White's Devonshire Directory for 1850 and is described as an Innkeeper living in Fore Street in the 1851 census, presumably at the Bell. The Bell was still listed in Fore Street in White's Directory for 1878/9. It is possible therefore that there is a link between the Bell Inn and Bell House through a mutual occupier – John Lamble – and that he may have called his house after the inn.

Ten years later, John Lamble was still living in East Street, and farming at the age of 86. From the position in the census of East Street, he appears to be living in a different property further along the street. By 1851, <sup>19</sup> estimating where properties were situated is becoming less reliable as dwellings and their occupiers have changed. The third household from the eastern end are Michael and Susan Cumming, carpenter and "domestic affairs", while the fourth is Richard Savery, a farmer of 55 acres employing two men and landed proprietor.

<sup>&</sup>lt;sup>16</sup> A record worth examining, archived in the Plymouth and West Devon Record Office is *Survey of lands and tenements in the manors of Clyst St Lawrence, Gerrards Clyst, Teignharvey, Bovey Tracey and Newton Ferrers, settled on St John's Hospital, Exeter dated 1<sup>st</sup> May 1697 (Plymouth Archives/The Box: 81/H/2/83). There are further records for the charity divided between Plymouth and the National Archives at Kew.* 

<sup>&</sup>lt;sup>17</sup> 7<sup>th</sup> July 1855 Western Times.

<sup>&</sup>lt;sup>18</sup> HO7/253/13 Enumeration Schedule 4.

<sup>&</sup>lt;sup>19</sup> HO 107/1870 Folio 557, Schedule nos 3 and 4

By 1871 Gertrude Mortlock, an unmarried gentlewoman born in Cambridge in c.1839, was living at "Bell House" named for the first time in the censuses. <sup>20</sup> She likely lived there until her death on 9<sup>th</sup> August 1877. A month later, on 7<sup>th</sup> September, the *Exeter & Plymouth Gazette* published a notice of sale by auction, at Bell House, of "the whole of the HOUSEHOLD FURNITURE contained therein comprising the usual requirements for dining, drawing and bedrooms, cottage piano-forte &c. &c. the whole of which will be found in excellent condition and worthy the attention of purchasers. August 22 1877".

By 1881 Bell House was being used as a lodging house and was recorded as three separate households<sup>21</sup>: the family and two lodgers. William Walling aged 42, a painter at the Pottery, his wife Eliza aged 44, born in Plymouth and East Buckland respectively, and daughter Minnie 14 and Charles aged 11, born in Bovey Tracey were living with William's nephew, Herbert Clatworthy aged 10, born in Middlesex. Also in the house were a teacher and a retired banker's clerk who were not local.

The area was mapped by the Ordnance Survey in 1888, when the property was shown in the greatest detail thus far (Fig. 4). The building has seemingly been subdivided into three separate properties. The eastern dwelling (No. 52), the former service end of the house, has a large projecting range at the rear, while the former hall and chamber above form part of a central cottage and has been divided from the western end of the house. The projecting range at the rear has been divided in line with the two properties. However, evidence for the subdivision of the property into three separate dwellings should be taken with caution as is evidenced by the census information and a series of early 20<sup>th</sup> century photographs discussed below.

William, Eliza and Minnie Wallings were still there in  $1891^{22}$  and recorded at Bell House again in  $1901^{23}$  when William was described as a lodging housekeeper, Eliza a cook and Minnie a dressmaker.

The property remained remarkably unaltered throughout the early 20<sup>th</sup> century, as is evidenced by the 1905 Ordnance Survey map (Fig. 5). However, a series of early 20<sup>th</sup> century photographs (Figs. 6-9) show Bell House and the adjoining properties. It is interesting to note that the roof line over the properties differ significantly. The roof over Bell House is continuous up to the hall chimney, while he roof over the former passage and service end drops and is level with the adjoining properties (Nos. 54-56). The east end of Bell House is clearly a separate property, although interestingly there is no second doorway next to the passage door. It is possible therefore that the former passage and room had been alienated from Bell House and that access to No. 52 was provided by the former at this time. The uniform appearance of the roof over the remainder of the house and the household size described in the censuses suggest the remainder was not in fact subdivided but remained a single property. This view is supported by an advertisement listed in the East & South Devon Advertiser on the 6th November 1907, giving notice of a "Sale of house and effects by Mr Chas G Wills for Mr W Walling", including a "mahogany Chippendale drop-lap dining table". This was about six months before the St John's Hospital Foundation's decision to sell the Bell House described below. It should be noted that all the occupants identified to date were tenants of the Foundation.

<sup>&</sup>lt;sup>20</sup> RG10/2077 Folio 57, Schedule 248

<sup>&</sup>lt;sup>21</sup> RG11/2158 Folio 76, Schedules 122, 123, 124

<sup>&</sup>lt;sup>22</sup> RG12/1696 Folio 68, Schedule 109

<sup>&</sup>lt;sup>23</sup> RG13/2051, Folio 59, Schedule no 141

On 14<sup>th</sup> May 1908, the *Exeter & Plymouth Gazette* published a notice of Sale of Property. The notice says: "A letter was read from the Secretary of the Board of Education enclosing for the information of the Council a copy of a notice of a proposal order of the Board authorising the sale of property belonging to St John's Hospital Foundation which had been sent to the Governors for publication. The property was land situated on the eastern end of East-street near the parish church of Bovey Tracey having a frontage of 133ft 6in together with the house known as "Bell House" and three cottages erected." The *Western Times* on 15<sup>th</sup> May 1908, under Exeter City Council, reported that "Formal notice has been received by the City Council that the Governors of St John's Hospital propose to sell for £360 a piece of land at Bovey Tracey together with Bell House and three cottages erected thereon."

Bell House was bought by Jabez Edward Tucker, a coach builder on East Street, and George Tucker, also listed as a coach builder at the same address. The conveyance document states that they owned the property in fee simple as tenants in common, that is they would each own a decided share of the house that could be included in their respective wills to a beneficiary. The house is described as having seven rooms in the 1911 census and was occupied by Jane Pagdon, a spinster of private means aged 72, born in Folkington, Sussex and one general servant, Alice Hatch aged 25. Jane Pagdon lived at the Bell House until her death on 8<sup>th</sup> April 1922.

The next occupants were the Piercy family. The death notice for John Edwin Piercy of Bell House, a retired clayworks manager, was published in the *Exeter & Plymouth Gazette* on 25<sup>th</sup> Oct 1935. The chief mourners were his widow, daughters Kathleen and Molly Piercy, his brother-in-law Mr C S Varcoe and nephew Mr Varcoe.

By the late 1930s the Smith family were living at Bell House, now numbered as 50 East Street, with a domestic servant, Elizabeth Hyder. John A Smith, born 30<sup>th</sup> June 1873 was a retired Civil Servant, "late" secretary with the Air Ministry. Annie Smith, born 24<sup>th</sup> June 1872 performed "unpaid domestic duties" while Ada H Smith, possibly their daughter, born 15<sup>th</sup> March 1896, was also a retired Civil Servant, late supervisor for the G.P. telephone service.

The building remained separate dwellings throughout the 20<sup>th</sup> century (Figs 10-12) and following the death of George Tucker in 1978 Bell House was sold to Gladys Elsie Tucker.

### 5. THE BUILDING SURVEY

### 5.1 Introduction

The building survey took place in June 2019, during the removal of modern plasterboard, partitions and stud walls. The stripping out of certain parts of the building permitted closer inspection of the historic fabric of the house and allowed the identification of areas that contained original features and areas where these had been replaced.

# 5.2 The main building

#### **EXTERIOR**

### Main façade (Pl. 1)

The house is a two-storey structure, constructed of cob above a low stone rubble footing and covered with painted render. The original core of the house is a large rectangular range, aligned

east-west, parallel to the road, and crowned with a chimney in its west gable and a central chimney stacks. Two further axial stacks are located on the north elevation. The pitched slate roof is hipped to the west and gabled to the east and runs unbroken over both the Bell house and No. 52. The west end of the house was rebuilt in the early 19<sup>th</sup> century and the two-storey extension at the rear, with its central chimney stack, also dates to this period. The former lower or service end of the house became a separate dwelling by the mid-to late 19<sup>th</sup> century and was completely rebuilt probably sometime in the early 20<sup>th</sup> century.

The ground-floor of the Bell House is today entered through a doorway in the west elevation. To left of the door is a single-storeyed canted bay window with a slated pent roof. The first floor is lit by two wooden 6-paned sash windows, while a wooden casement with 8 panes is located in the north elevation. The doorway leading into the former cross passage is ovolomoulded with a cranked head and urn-stops and likely dates to the late 16<sup>th</sup> or early 17<sup>th</sup> century, while the door itself has 12 glass panes in the upper half and dates to the early 19<sup>th</sup> century. Light to the ground floor is provided in the south elevation by a 3-light wood casement window with 2 panes per light and a large fixed sash of 15 panes. On the first floor light is provided by two 6-paned wooden sashes, while the small window immediately above the door is a small 2-light wood casement with 2 panes per sash.

### **INTERIOR**

# The ground floor (Fig. 13, Pls. 2-4).

The interior of the main range has been severely altered. These alterations have included the rebuilding of the western end and the removal of the internal partitions defining the original rooms on the ground- and first floor, and the loss of the former lower end of the house, confusing the historic plan of the building. Some traces of the original interior arrangement remained, however, in the form of partitions and ceiling beams, which has allowed a suggested reconstruction of the original layout and phasing.

The property is entered from a side alley through a doorway placed at the southern end of the west elevation. This provides access to a spacious entrance lobby (G01) which is lit in the south elevation by a large fixed sash of 15 panes. A doorway at the eastern end provides access to a large kitchen to the north. Lit by a large canted bay window in the west elevation this room (G02) has the remnants of a former fireplace in the north elevation. The remains of a partially blocked opening, perhaps a former doorway, are visible to the right of the fireplace, while an opening to the west provides access to a modern extension (G03) and the garden beyond. Recent excavations have uncovered the remains of an open, stone-lined well against the west wall of the 19<sup>th</sup> century extension.

The doorway from the kitchen leads to a small awkward corridor between the staircase to the north (G04) and the former hall (G05) to the south. The opening to the stair has a curved jamb providing a narrow access to a small cupboard underneath the stair. If the rear extension is contemporary with the rebuilding of the western end of the house, then this seems an altogether awkward arrangement and it is possible that the stair has been rebuilt in its current configuration sometime in the 20<sup>th</sup> century. Consisting of plain stick balusters, handrail and five slender newel posts, the latter are located at the end of the balustrades and at the corners of the open well. They have unturned blocks at the top and base with a simple turned shaft and simple one- and two band detailing respectively. The stair rises against the eastern wall onto a half landing, dog-legs west, rising a further three steps onto a second half landing before returning against the western wall.

To the south the former hall (G05) contains a large granite fireplace with plain chamfered jambs in the southeast corner of the room. The remains of the chamfer on the lintel are visible in places, although close inspection showed that the formerly depressed angular arched lintel had been cut back, perhaps at the same time as the former bread-oven was removed. The room was lit by by a 3-light wood casement window with 2 panes per light in the south elevation. This had a low wall bench underneath and four-panelled shutters in the window reveals. The first floor is supported on two north-south beams, one over the centre of the room and one located immediately to the west and partly covered by the fireplace. These beams have a simple ovolo moulding along their length with plain triangular run-out stops. The central beam rests immediately above the lintel of the window in the south elevation, while its northern end is supported by a chamfered timber piece, braced by an additional upright below. The beams are likely late 16<sup>th</sup> or early 17<sup>th</sup> century in date, at a time when the formerly open hall was being floored over and the fireplace inserted into the east elevation of the hall. The additional bracing of the central beam may be early 19<sup>th</sup> century in date, at a time when the property was being extensively rebuilt and the original width of the north wall reduced.

A relatively plain late 19<sup>th</sup> century two-panelled doorway in the north elevation provides access to Room G06, part of the early 19<sup>th</sup> century extension and likely a former scullery. the north of the fireplace are the remains of a former plank-and-muntin screen. A doorway with depressed angular arched head within the screen provides access to the former cross passage (G07). Although altered by the insertion of two colored lights and vertical ledges below, the screen is largely intact, with chamfered muntins on the passage side and straight profiles towards the hall. The lintel of the doorway has been reset slightly below its original height, the chamfer of the jamb not coinciding with the head. It is likely that in its original configuration the screen was inserted at the same time as the fireplace, the beautifully constructed granite ashlar rear wall of the fireplace complementing the screen in defining the western edge of the passage.

There is no trace of the screen defining the eastern edge of the cross passage. Evidence from the rear suggests that the neighbouring property, once the lower end of the medieval house, has been completely rebuilt in the early  $20^{th}$  century.

### **The first floor** (Fig. 14, Pls. 5-9)

The first floor is accessed from the extension (G04) by the rebuilt early-19<sup>th</sup> century staircase. This gives onto a small landing (F01) which provides access to all the rooms on the first floor.

To the west of the upper half-landing is a small room (F01) lit by a small rectangular window in the west elevation. It is likely that this room may have served as a water closet or a closet for a close stool in the late 19<sup>th</sup> or early 20<sup>th</sup> century house. Immediately to the east of the landing was a large room (F03). A relatively large room today with a modern flat ceiling, this is located within the early 19<sup>th</sup> century extension. The north sloping roof over the staircase is originally likely to have continued uninterrupted over this room, with a small window in the north elevation providing light. The layout of the axial chimneystack in the north elevation suggests that there was no fireplace on the first floor and that the room was unheated.

To the east of the landing a narrow corridor extends along the northern edge of the earlier house leading to a small room (F04) which has served as the bathroom in the 20<sup>th</sup> century. Lit by a small 2-light wooden casement in the south elevation this room was formerly part of the neighbouring property and evidence from the rear elevation suggests that the eastern wall was rebuilt in the early 20<sup>th</sup> century. Although not exposed by the works the western wall is likely

to be, at least in parts, the remains of the late 16<sup>th</sup> or early 17<sup>th</sup> century partition, inserted following the flooring over of the late medieval hall.

Immediately to the south of the landing was the large main bedroom (F05). Light was provided by a 6-paned wooden sash window in the south elevation, identical to the windows lighting the adjacent rooms (F06 and F07), and was heated by a granite fireplace in the southeast corner. The jambs and lintel were decorated with plain chamfers, with the fireplace dating to the late 16<sup>th</sup> or early 17<sup>th</sup> century. A detailed description of the roof structure, western and eastern partitions is provided below.

At the western end of the house the landing leads to a short corridor which opens onto two large rooms (F06 and F07). Located within the part of the house that was rebuilt in the early 19<sup>th</sup> century room F06 is lit by two 6-pane sash windows in the south and west elevation respectively, both with low narrow window seats. The fireplace in the west elevation has a simple wooden surround and decorated cast-iron grate. The northern room (F07) has a 6-paned sash window in the west and a smaller 8-paned wooden casement in the north elevation, both again with low narrow window seats. The fireplace in this room has a very plain wooden surround and decorated grate.

### *The roof* (Figs. 15-17, Pls. 10-18)

Removal of modern ceilings and wall coverings in the corridor (F01) and the main bedroom (F05) exposed the remains of the medieval roof structure over the hall and western partition to the first-floor chamber over the inner room. The roof is two bays long and consists of a single side pegged jointed cruck truss with cranked and single arch braced collar, while the partition to the first-floor chamber consists of a crown strut. Both the single cruck and A-frame carry two sets of trenched purlins and a clasped diagonal ridge in the apex of each truss, while the original couples of common rafters remain common. The surviving timbers in the two bays are heavily sooted, while the back of the partition shows no evidence of smoke blackening clear, suggesting that the crown strut was closed up to the roof from the start. No timbers survive in the western bay, while the eastern end of the original house is likely to have been entirely demolished sometime in the mid-late 19<sup>th</sup> century.

A dendrochronological analysis of the roof (see Appendix 2), commissioned by the client, measured tree-ring series from three timbers sampled and matched together to form a 45-year site chronology, dated to span 1382 to 1426. One tree felled in the summer of 1426 and two trees felled in the of spring 1427 provide good evidence to indicate that construction occurred in 1427, or soon after. Although 45 rings is generally considered to be too short for confident cross-dating of tree-ring series, clear and well-replicated matches are shown against reference chronologies which are geographically near to the site, and therefore the short site chronology at Bell House is considered to have been securely dated.

### 6. DISCUSSION

# Phase I The primary building c.1427

Although the house has been substantially altered it is likely that, in its original early 15<sup>th</sup>-century form, it had a classic three-room and cross-passage plan with thick walls on all sides. The central hall was open to the roof under a jointed cruck truss and heated by an open hearth or hearths which blackened the roof timbers with soot. The western end was defined by a full height partition consisting of a crown strut and providing accommodation on the ground- and

first-floor. Access to the new first floor chambers may have been by a ladder, or perhaps by a staircase, of which no evidence now remains. It is unclear whether a similar arrangement was in use above the service end and passage.

# Phase II Remodelling and additions late 16th- early 17th century

At some time in the late 16<sup>th</sup> or early 17<sup>th</sup> century the house was substantially remodelled by the enclosure of the open hall at the centre of the building. A large chimney and fireplace was inserted in the east elevation of the hall and is associated with the timber screen defining the western edge of the former cross-passage.

The insertion of the new first floor structure coincided with the construction of the cross wall above the passage and the creation of a large hall chamber. This was originally heated and would have served as high-status accommodation within the building. The creation of additional accommodation on the first floor may suggest that the use of the former inner room at the west end of the house was perhaps changed to that of a parlour.

# **Phase III Additions** *early* 19<sup>th</sup> *century*

The beginning of the 19<sup>th</sup> century was one of continued change and prosperity for Bell House. The former west end of the building was demolished, and a new two-storey parlour range added. This consisted of a large heated ground-floor room with a large canted bay window in the east elevation and a large fixed sash in the main façade, while the doorway to the south would have provided access to the garden extending west from the house.

A large ancillary extension was constructed at the rear of the building. Although its function is not fully understood during this period it is assumed that this was a service room, perhaps a scullery. The staircase at the western end of the extension provided access to the first-floor accommodation, including the two new heated rooms above the parlour and a further room above the scullery.

Finally, the use of large sash windows in the new parlour range and the insertion of a matching window in the former hall chamber would have required the height of the front wall in the central section of the building to be raised. In turn this would have necessitated the construction of a new roof over the western and central sections of the house as part of this work. It is interesting that the new roof did not extend over the eastern part of the house, reflecting either its lower status or perhaps suggesting that they were already separate dwellings at this date.

# Phase IV Alterations mid-late 19th century

Throughout the mid-to-late 19<sup>th</sup> century small changes continued to be made to the property. The former lower or service end had been converted to a separate dwelling, similar to the adjacent properties (Nos. 54 and 56). Retaining its original roof height the property was accessed through the former passage door.

The main house was accessed through the former garden doorway in the west elevation of the former parlour, with a new wall inserted to the south of the canted bay window to provide a separate entrance lobby. A new access arrangement was also provided to the scullery with a new doorway in the south elevation providing access to the front room.

# Phase V Remodelling and additions early 20th century

The house was greatly altered in the early 20<sup>th</sup> century with the complete rebuilding of the adjacent property (No. 52). However, this was not rebuilt on the line of the existing property boundaries, as exemplified by the roof lines shown on the early 20<sup>th</sup> century photographs, rather it was rebuilt to the east of the former passage and provided with a separate doorway. Whether this is because the former passage continued to provide access to both properties throughout the 19<sup>th</sup> century is unclear. However, the rebuilding resulted in the reincorporation of the former passage and the rooms above into Bell House, perhaps explaining the awkward reconfiguration of the rear bedroom.

# Phase VI Later alterations 20th century

The 20<sup>th</sup> century is characterised by further small alterations to the layout of the property. The main change was the repositioning of the staircase. The former doorway from the parlour was blocked and a new access created from the former hall. This required the demolition of the original western scullery wall and the creation of a new partition in line with the former fireplace. The increased room provided additional space for a cupboard on the ground-floor and a toilet on the first floor, while new windows were inserted to provide light.

### 7. CONCLUSION

Bell House is an important historic house lying between the former marketplace and church on the eastern edge of the historic town. The size of the property reflect a large and prosperous farming or mercantile establishment in the 14<sup>th</sup> to the 18<sup>th</sup> centuries, and subsequent decline, partial demolition and subdivision into smaller dwellings during the 18<sup>th</sup> and 19<sup>th</sup> centuries.

The layout of the house perpetuates that of an earlier house, which was probably first constructed as a three room and cross-passage house in the early 15<sup>th</sup> century. This may have incorporated a ground-floor, heated parlour at the western end with a first-floor chamber above The hall, at the east end of the modern house, was probably enclosed by the late 16<sup>th</sup> or early 17<sup>th</sup> century to provide a new hall chamber. Extensive alterations in the early 19<sup>th</sup> century included the complete rebuilding of the western end of the house to provide a large modern ground-floor parlour and two new rooms above. To the north a new outbuilding provided a new scullery while the staircase at the western end provided access to the rooms above.

Further alterations were carried out in the mid-to-late 19<sup>th</sup> century. Perhaps due to changing agricultural practices or land ownership in the area, and the loss of independence by cottars and smallholders, the population of the village centre appears to have increased and the surviving house was subdivided into two properties. The original east end of the house was demolished and rebuilt sometime in the early 20<sup>th</sup> century, with the former passage and rooms above returned to Bell House. Despite many later alterations, the building remains substantially as it was at that time.

The house has a complex structural history; the subsequent additions and alterations have tended only to conceal the substantial interest of this house.

# SITE ARCHIVE

Details of the building recording, including a pdf copy of the final report will be submitted to the on-line archaeological database OASIS (oakforda1-390659).

#### **ACKNOWLEDGMENTS**

This project was commissioned by Mr Chris Goulding. It was monitored for Teignbridge District Council by Naomi Archer, the Conservation Officer. The building recording was carried out by E. Patkai and M. Steinmetzer, and Lucy Browne undertook the historic research. The drawings for this report were prepared by E. Patkai and M. Steinmetzer. The authors wish to thank the staff of the Devon Heritage Centre for their assistance throughout the project.

#### BIBLIOGRAPHY

### **Unpublished sources**

### Devon Heritage Centre

Bovey Tracey Tithe Apportionment and Map, 1839 & 1841 Bovey Tracey Church Rates 1844 & 1852 (DRO 2160A/PW2-3)

Ordnance Survey 2-inch Drawing No. 37, 1803–4 OS Ordnance Survey 1:2500 map sheet Devon CI.10, 1888 & 1905 1:2500 map sheet SX8178, 1956 1:2500 map sheet SX8078–8178, 1967

Endowed Charities (County Borough of Exeter) 1909 Calendar of Inquisitions Miscellaneous (Chancery) Vol. V, 1387–93 (1962).

Allan, J.P. 1984 'The Pottery' in Griffiths, D.M. & Griffith, F.M. 'An excavation at 39 Fore Street, Totnes', *Proc. Devon Archaeol. Soc.* **42**, 77-100.

Allan, J.P. 1985 'The Pottery' in Weddell, P.J., 'The excavation of medieval and later houses at Wolborough Street, Newton Abbot', *Proc. Devon Archaeol. Soc.* **43**, 77-109.

Collings, A. 2001 Archaeological Assessment of Proposed Development Site off Fore Street, Bovey Tracey, Report No. **01.67**.

Horner, W. 27 July 2001 Land at rear of Fore Street, Bovey Tracey: outline brief for an archaeological assessment (DCC).

Jones, Revd J. P. c. 1830 'The Historical and Monumental Antiquities of the Hundred of Teignbridge, County of Devon' (MS)

Turton, S.D. 1993 Archaeological assessment of Bovey Tracey Sewer Requisition Phase 1, EMAFU Report No. **93.70**.

Weddell, P.J. & Westcott, K. 1987 A Survey of the Bovey Tracey Pottery Kilns, 1986, Exeter Museums Archaeological Field Unit Report No. 87.02.

#### **Published sources**

Adams, B. & Thomas, A. 1996 A Potwork in Devonshire: the history and products of the Bovey Tracey potteries 1750–1836.

Beresford, M. & Finberg, H.P.R. 1973 English Medieval Boroughs: a hand list.

BGS Geological Survey of Great Britain (England and Wales) 1976 1:50000 Solid and Drift Edition Sheet 339 (Newton Abbot).

Donn, B. *A Map of the County of Devon 1765* (1965 edition, reprinted by the Devon and Cornwall Record Society and the University of Exeter).

Durrance, E.M. & Laming, D.J.C. (eds) 1982 The Geology of Devon.

Hoskins, W.G. 1972 Devon.

Thorn, C. & Thorn, F. 1985 Domesday Book. Devon.

Tregoning, J.L. 1983 Bovey Tracey an ancient town: Its story and legend.

Westwood, E. 2012 Bovey Tracey Rediscovered.

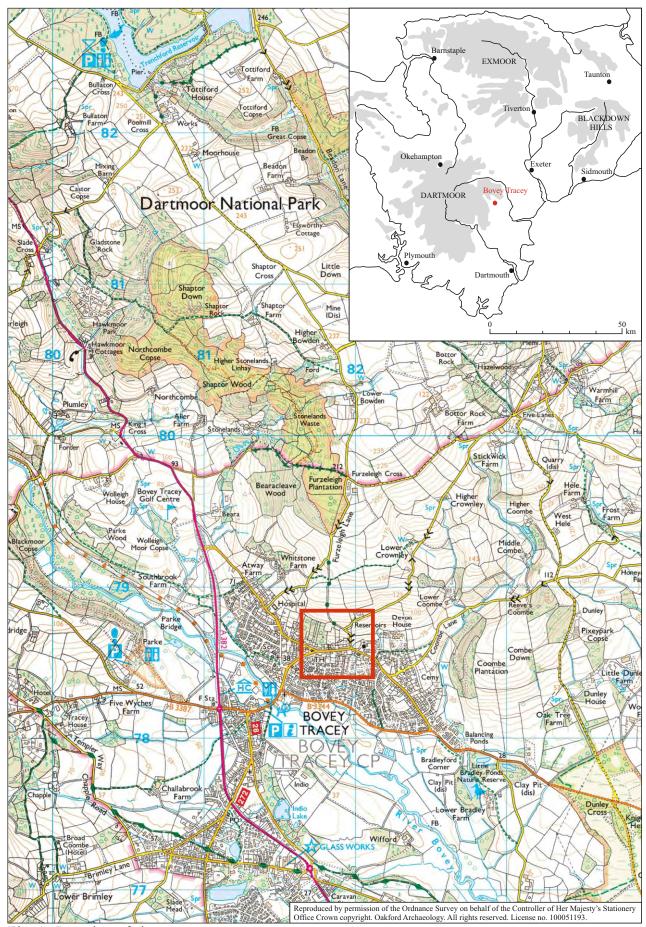
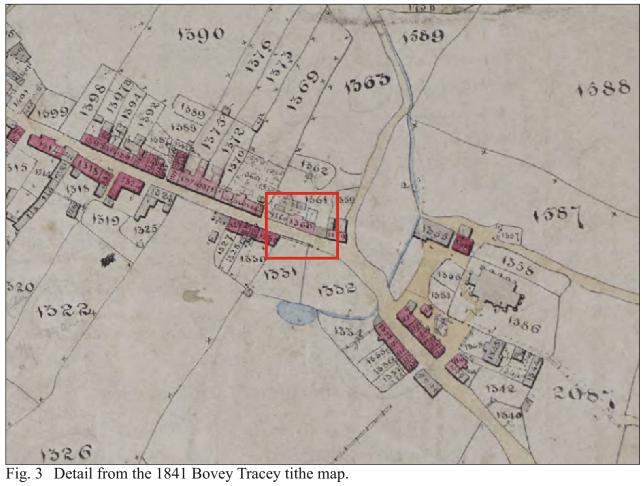


Fig. 1 Location of site.



Fig. 2 Detail from the c.1641 Gulielmus Map of the Manor of Bovey Tracey.



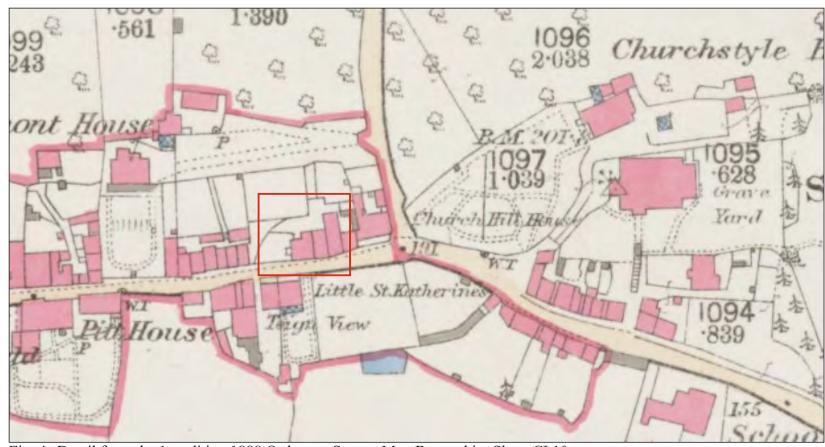


Fig. 4 Detail from the 1st edition 1888 Ordnance Survey Map Devonshire Sheet CI.10.

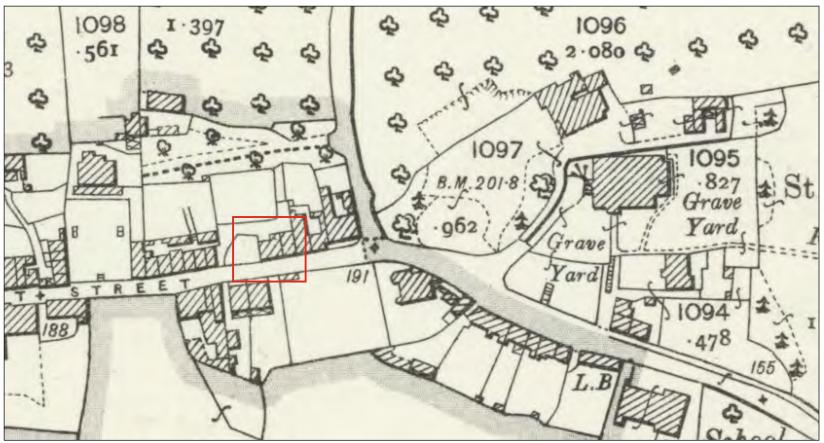


Fig. 5 Detail from the 2nd edition 1905 Ordnance Survey Map Devonshire Sheet CI.10.

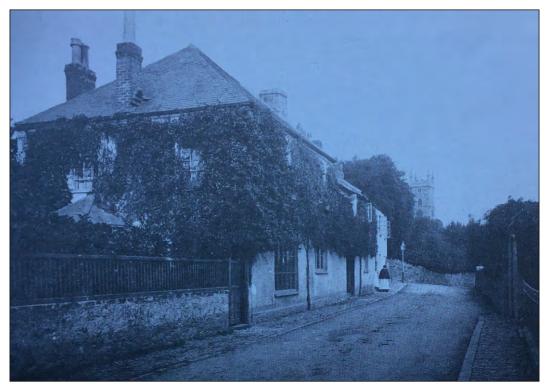


Fig. 6 Early 20th century photograph showing Bell House (photograph courtesy of Elizabeth Westwood).



Fig. 7 Early 20th century photograph showing Bell House and neighbouring properties (photograph courtesy of Elizabeth Westwood).



Fig. 8 Early 20th century photograph showing Bell House (photograph courtesy of the Francis Frith collection).

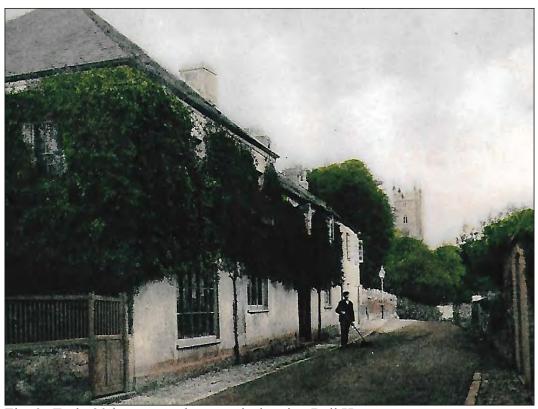


Fig. 9 Early 20th century photograph showing Bell House.

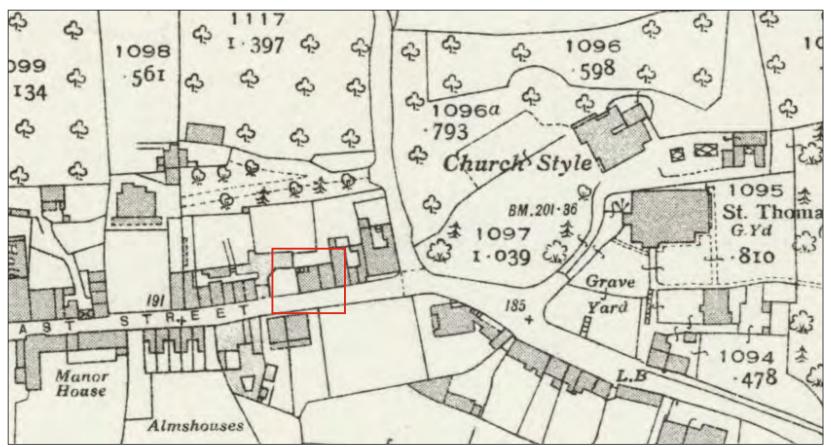


Fig. 10 Detail from the 1938 Ordnance Survey Map.

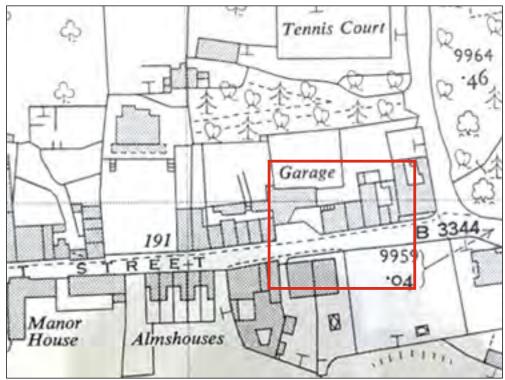


Fig. 11 Detail from the 1956 Ordnance Survey Map.

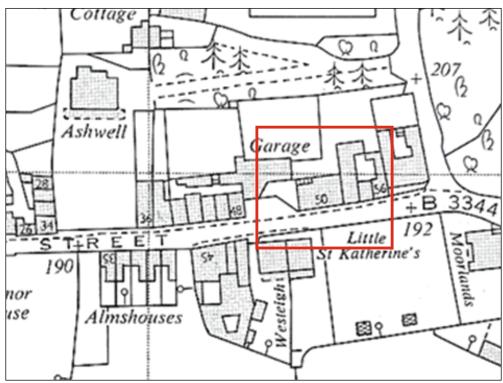


Fig. 12 Detail from the 1967 Ordnance Survey Map.



Fig. 13 Plan of the ground-floor showing locations of observations and suggested phase of development.



Fig. 14 Plan of the first-floor showing locations of observations and suggested phase of development.

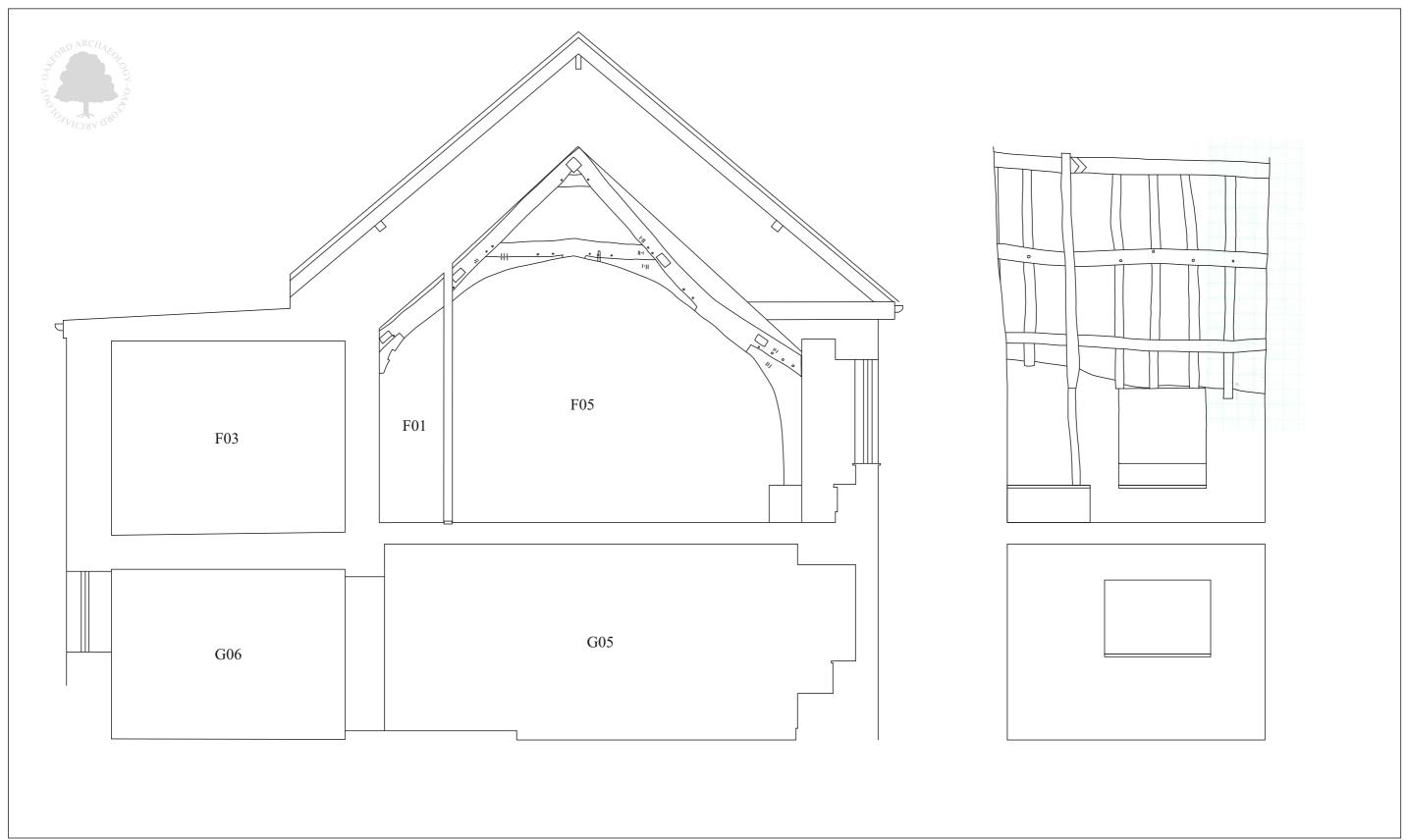


Fig. 15 East and south elevations of Bell House showing jointed cruck truss in the former hall and side view of the south side of the medieval roof.



Fig. 16 West and north elevations of Bell House showing crown strut partition defining the first floor chamber and side view of the north side of the medieval roof.

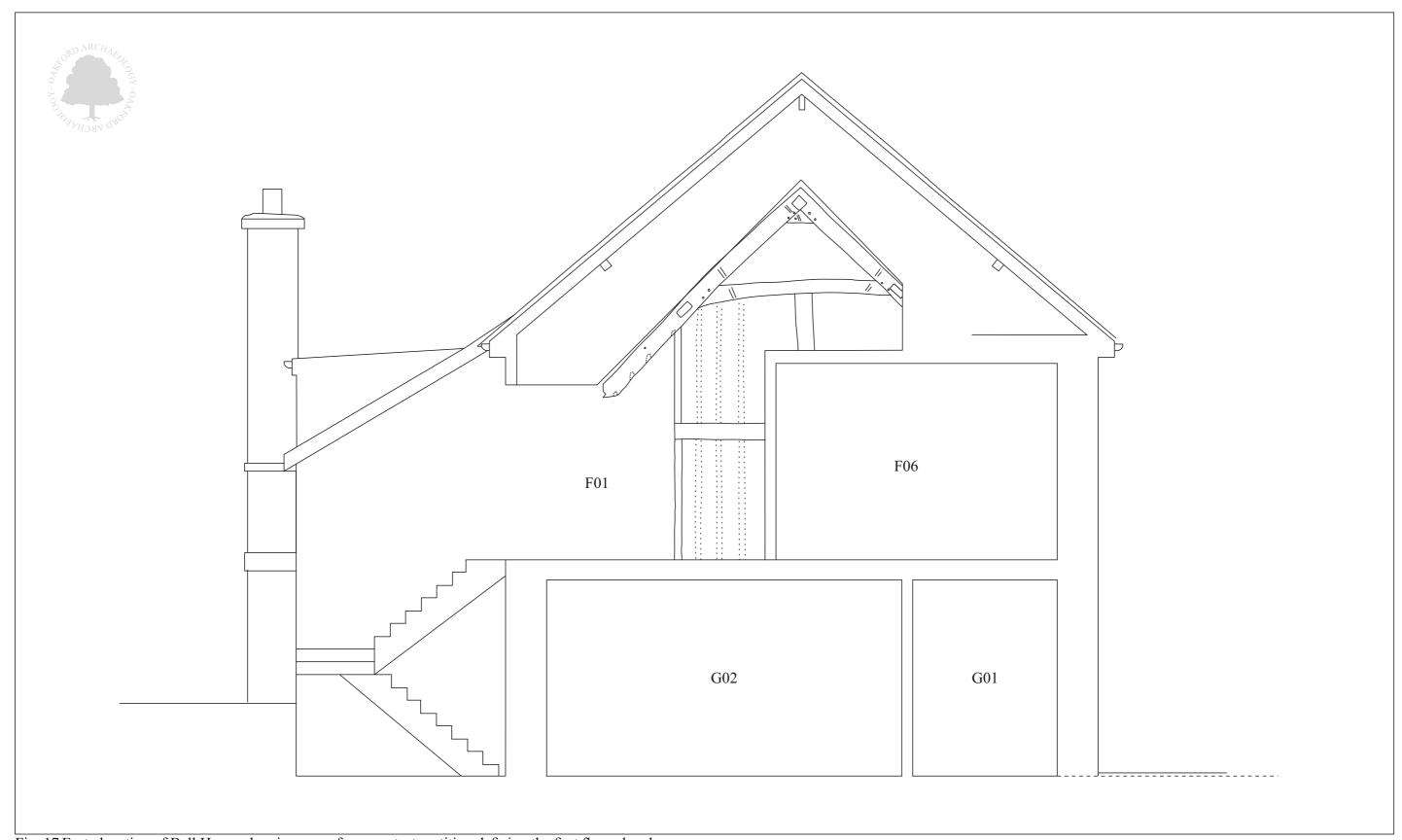
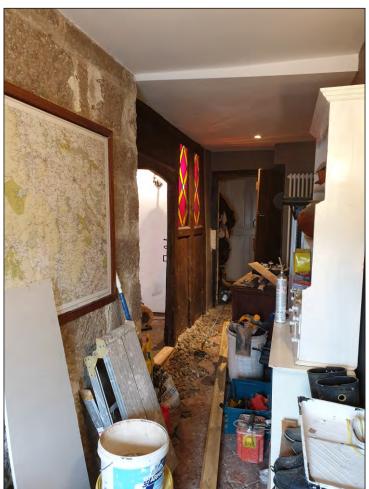


Fig. 17 East elevation of Bell House showing rear of crown strut partition defining the first floor chamber.



Pl. 1 General view of the main facade fronting onto East Street and showing the full extent of the original house. Looking north.



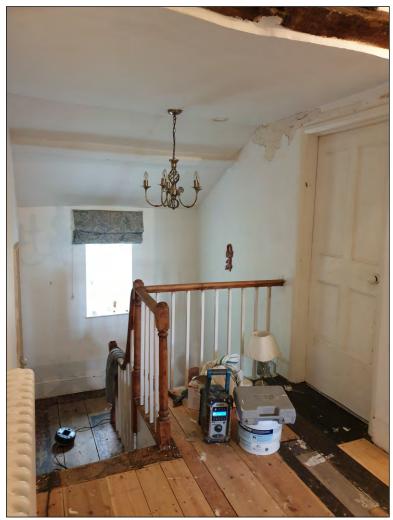
Pl. 2 General view of former cross-passage. Looking north.



Pl. 3 General view of granite fireplace inserted into formerly open hall. Looking east.



Pl. 4 General view of window in south elevation of hall. Looking south.



Pl. 5 General view of re-set 19th century open-string staircase with stick balusters and newel floating awkwardly above the height of the half-landing. Looking north.



Pl. 6 General view of room F05 showing 19th century fireplace and window in west elevation. Looking west.



Pl. 7 General view of room F06 showing 19th century fireplace in north elevation. Looking north.



Pl. 8 General view of corridor leading to room F04 showing sooting on the jointed cruck, through purlin and common rafters. Looking east.



Close-up showing later fireplace in east elevation of Room F05. Looking east.



Pl. 10 General view of the jointed cruck truss at the eastern end of Room F05, with through purlins and common rafters. Looking east.



Pl. 11 Close-up of jointed cruck truss showing carpenters marks and detail of later close-studded partition in background. Looking east.



Pl. 12 Close-up of jointed cruck truss showing carpenters marks. Looking east.



Pl. 13 General view of crown strut forming western partition with simple vertical brace below. Looking northwest.



Pl. 14 General view of crown strut in corridor F01. Looking southeast.



Pl. 15 Close-up of crown strut. Looking northeast.



Pl. 16 Close-up of crown strut showing carpenters marks. Looking east.



Pl. 17 Close-up of crown strut showing carpenters marks. Looking east.



Pl. 18 Close-up showing remains of close-studded partition. Looking east.



Pl. 19 Close-up showing finger imprint on historic plaster covering close-studded partition. Looking east.

## **Appendix 1:**

# Written Scheme of Investigation for Archaeological works

#### 1. BACKGROUND

- 1.1 This document has been produced by Oakford Archaeology (OA) for Mr and Mrs Goulden. The document sets out the methodology to be used during historic building recording at the Bell House, Bovey Tracey, Devon (SX 8195 7859). The work is to be carried out to satisfy condition no. 3 attached to the grant of listed building consent (17/01790/LBC) for internal alterations to the existing house and associated works. The present document represents the 'written scheme of archaeological work' required by the local planning authority, Teignbridge District Council (TDC), as advised by Naomi Archer, the Teignbridge Conservation Officer.
- 1.2 Bell house is a Grade II Listed house with possible late-16<sup>th</sup> or early 17<sup>th</sup> century origins. It has a typical three room and cross-passage layout with a recent outshuts and extensions at the rear. The building has been subject to extensive alterations and additions in the early 19<sup>th</sup> century and was subsequently divided into two properties.

#### 2. AIMS

2.1 The aim of the project is to ensure the adequate recording of any historic fabric exposed, to establish the presence or absence, character, depth, extent and date of archaeological deposits within the site and to excavate and record them as necessary prior to and during the development; and to report the results of the project as appropriate.

#### 3. METHOD

Liaison will be established with the client and their contractors prior to works commencing in order to advise on OA requirements in relation to the works outlined below. If a good working relationship is established at the outset any delays caused by archaeological recording can be kept to a minimum. However, localised delays to site operations may be caused and time should be allowed within the main contractor's programme for the adequate investigation and recording of exposed historic building fabric.

#### **Building recording**

- 3.1 Historic building recording will be undertaken by a suitably qualified historic buildings specialist. All monitoring and recording will be carried out as per OA standard recording procedures and in accordance with the standards of the Institute for Archaeology (*Standards and Guidance for the archaeological investigation and recording of standing buildings or structures*, 1996, revised 2008).
- 3.2 The following method for historic building recording will be utilised, tailored to the level of recording required once historic features have been identified.
  - A photographic record using a high-quality digital camera for interpretative and reporting needs.
  - Production of floor and roof plans (based on architect's plans where appropriate), with sections, elevations and more detailed drawings of architectural features and details as appropriate. (These will also utilise architect's drawings where available.) These drawings will be prepared at

- scales of 1:100, 1:50 and 1:20 with smaller details drawn at larger scales as appropriate.
- A written record outlining the evidence for historic fabric, an interpretation of this evidence, and an outline of the development of the building.
- The archive will be either born digital or scanned to a suitable format for deposition in Archaeology Data Service (ADS).
- 3.3 If significant historic features that are worthy of retention are exposed during the stripping out the historic building's specialist will request the contractor that these features are not removed and inform the Conservation Officer of their presence.

#### General project methods

- 3.4 Health and Safety requirements will be observed at all times by archaeological staff working on site, particularly when machinery is operating nearby. Personal protective equipment (safety boots, helmets and high visibility vests) will be worn by staff when plant is operating on site.
- 3.5 Initial cleaning, conservation, packaging and any stabilisation or longer-term conservation measures will be undertaken in accordance with relevant professional guidance (including *Conservation guidelines No 1* (UKIC, 2001); *First Aid for Finds* (UKIC & RESCUE, 1997) and on advice provided by Alison Hopper-Bishop, Specialist Services Officer, RAM Museum, Exeter.
- 3.6 Should items be exposed that fall within the scope of the Treasure Act 1996, then these will be removed to a safe place and reported to the local coroner. Where removal cannot be effected on the same working day as the discovery, suitable security measures will be taken to protect the finds from theft.
- 3.7 The Conservation Officer will be informed of the start of the project and will monitor progress throughout on behalf of the planning authority and will wish to inspect the works in progress. Any amendments to the specific responses and methods set out elsewhere in this document will be reviewed and agreed with him prior to implementation and completion. A date of completion of all archaeological site work will be confirmed with the Conservation Officer and the timescale of the completion of items under section 4 will run from that date.

#### 4. REPORTING AND ARCHIVING

- 4.1 The results of the historic building recording will be presented within one summary report within six months of the date of completion of all archaeological site work. The summary report will contain the following elements as appropriate:
- i) location plan;
- ii) a written description of the exposed historic fabric and a discussion and interpretation of their character and significance in the context of any locally available historical evidence from any nearby sites and historic mapping;
- iii) A site location plan at an appropriate scale, and a plan of the site showing the location of the recorded buildings;

- iv) Phased and annotated floor plans, along with copies of other drawn records (elevations, cross sections, etc) as appropriate to illustrate features of historic or architectural interest and/or the development of the building;
- v) Photographs of features of significant historic or architectural interest;
- vi) specialist reports as appropriate.
- vii) if necessary, an assessment of what further work is necessary to analyse and publish any particularly significant finds and/or results.
- 4.2 A .pdf version of the summary report will be produced and distributed to the Client and the Conservation Officer on completion of sitework within the timescale above (4.1). A copy of the .pdf version will also be deposited with the site archive and a copy sent to the DCC HER.
- An ordered and integrated site archive will be prepared with reference to *The Management of Archaeological Projects* (English Heritage, 1991 2nd edition) and *Management of Research Projects in the Historic Environment (MoRPHE*, English Heritage, 2006) upon completion of the project. The archive will consist of two elements, the artefactual and digital the latter comprising all born-digital data and digital copies of the primary site records and copies of all photographs and associated metadata collected during the course of the historic building recording. This will be deposited with the ADS while any retained artefacts will be deposited with the Royal Albert Memorial Museum in accordance with their current conditions of deposit (RAMM reference number *pending*) within 12 months of the finish of site work. A retention and discard strategy will be agreed with the RAMM after the finish of site work, when it is clear what has been found, but before any processing of the material for archiving (other than cleaning).
- 4.4 A .pdf copy of the updated summary report will be submitted, together with the site details, to the national OASIS (Online AccesS to the Index of Archaeological investigationS) database within six months of the completion of site work.
- 4.5 A short report summarising the results of the project will be prepared for inclusion within the "round up" section of an appropriate national journal, if merited, within 12 months of the completion of site work.
  - Should particularly significant remains be encountered, then these, owing to their importance, are likely to merit wider publication in line with government planning guidance. If such remains are encountered, the publication requirements including any further analysis that may be necessary will be confirmed with the Conservation Officer, in consultation with the Client. OA, on behalf of the Client, will then implement publication in accordance with a timescale agreed with the Client, and the Conservation Officer. This will be within 12 months of the completion of all phases of archaeological site work unless otherwise agreed in writing.
- 4.6 Any amendments to the method or timescale set out above will be agreed in writing with the Conservation Officer before implementation.

#### 5. COPYRIGHT

5.1 OA shall retain full copyright of any commissioned reports, tender documents or other project documents, under the Copyright, Designs and Patents Act 1988 with all

rights reserved, excepting that it hereby provides an exclusive licence to the client for the use of such documents by the client in all matters directly relating to the project as described in this document.

#### 6. PROJECT ORGANISATION

6.1 The historic building recording will be undertaken by a suitably qualified and experienced OA archaeologist, in accordance with the Code of Conduct and relevant standards and guidance of the Chartered Institute for Archaeologists (*Standards and Guidance for the archaeological investigation and recording of standing buildings or structures*, 1996, revised 2008, and *Standards and Guidance for an Archaeological Watching Brief*, 1994, revised 2008). The project will be managed for OA by M. Steinmetzer MCIfA, who produced this document.

#### Health & Safety

6.2 All monitoring works within this scheme will be carried out in accordance with current *Safe Working Practices (The Health and Safety at Work Act 1974)*.

#### ADDITIONAL INFORMATION

Specialists contributors and advisors

The expertise of the following specialists can be called upon if required:

Bone artefact analysis: Ian Riddler;

Dating techniques: University of Waikato Radiocarbon Laboratory, NZ;

Illustrator: Sarnia Blackmore;

Charcoal identification: Dana Challinor; Diatom analysis: Nigel Cameron (UCL);

Environmental data: Hayley McParland (Historic England);

Faunal remains: Lorraine Higbee (Wessex);

Finds conservation: Alison Hopper-Bishop (Exeter Museums);

Human remains: Louise Loe (Oxford Archaeology), Charlotte Coles;

Lithic analysis: Dr. Linda Hurcombe (Exeter University);

Medieval and post-medieval finds: John Allan;

Metallurgy: Gill Juleff (Exeter University);

Numismatics: Norman Shiel (Exeter);

Petrology/geology: Roger Taylor (RAM Museum), Imogen Morris;

Plant remains: Julie Jones (Bristol);

Prehistoric pottery: Henrietta Quinnell (Exeter);

Roman finds: Paul Bidwell & associates;

Others: Wessex Archaeology Specialist Services Team

MFR Steinmetzer 4 June 2019 WSI/OA1593/01

## **Appendix 2:**

## Dendrochronological analysis



### DENDROCHRONOLOGICAL ANALYSIS OF OAK TIMBERS FROM BELL HOUSE, BOVEY TRACEY, DEVON, ENGLAND

**Tree-Ring Services Report: TQBH/19/19** 

**Dr Andy Moir** 



Tree-Ring Services
Oakraven Field Centre, Jubilee Road,
Mitcheldean, Gloucestershire, GL17 OEE
Email: enquiries@tree-ring.co.uk
www.tree-ring.co.uk

#### DENDROCHRONOLOGICAL ANALYSIS OF OAK TIMBERS FROM BELL HOUSE, BOVEY TRACEY, DEVON, ENGLAND

#### **Dr Andy Moir**

**Tree-Ring Services Report: TQBH/19/19** 

#### **SUMMARY**

A three-bay open hall with cob walls, which appears to have both a crown strut and jointed cruck truss. The middle and eastern bays show smoke blackening; no timbers survive in the western bay. The crown-strut truss appears to have been closed up to the roof. The recently partly exposed jointed cruck truss has a cranked collar. The cruck truss is single arch braced and has a type M apex.

Measured tree-ring series from three timbers sampled are matched together to form a 45-year site chronology, which is dated to span 1382 to 1426. One tree felled in the summer of 1426 and two trees felled in the of spring 1427 provide good evidence to indicate that construction occurred in 1427, or soon after.

The site chronology contains just 45 rings, which is generally too short for confident cross-dating of tree-ring series. However, strong, clear and well-replicated matches are shown against reference chronologies which are geographically near to the site, and therefore this short site chronology is considered to have been successfully dated.

#### **KEYWORDS**

Dendrochronology, 15<sup>th</sup> Century, Standing building, Devon, Bovey Tracey.

#### © 2019 Tree-Ring Services. All rights reserved.

Individual dendrochronology reports should perhaps be considered interim reports which make available the results of specialist investigations in advance of possible further analysis and publication. Their conclusions may sometimes have to be modified in the light of information which was not available at the time of the investigation. Readers are requested to contact the author before citing this report in any publication. Reports may be ordered from the Tree-Ring Services website (www.tree-ring.co.uk).

#### Dendrochronological Report: Bell House – Bovey Tracey – Devon

INTRODUCTION	4
METHODOLOGY	7
RESULTS	
RESULTS	11
INTERPRETATION	13
CONCLUSIONS	13
ACKNOWLEDGEMENTS	15
REFERENCES	15
APPENDIX I: Plan of Bell House	17
APPENDIX II: Raw ring-width data	18
APPENDIX III: Mean ring-width data	40
APPENDIX III: Wean ring-wigth gata	าห

#### Dendrochronological Report: Bell House – Bovey Tracey – Devon

Figure	S				
		_			

the series dated from13
form the site chronology12 st reference chronologies12
14
ugh the sanding of core

#### INTRODUCTION

The increased interest in Britain's past is demonstrated by such television programmes as "Time Team" and "The House Detectives". More and more people wish to know precisely when ancient buildings were constructed in order to better understand the history of their occupants and land in which we live. Although it is sometimes possible to date a building on stylistic grounds, a precise date is rare except when there is a date-stone or documentary evidence.

The increasing use of dendrochronology (tree-ring dating) has changed this scenario, at least for buildings with timbers containing sufficient rings for analysis. The science is simple in concept. The width of a tree's growth rings varies from year to year, so that each series of years has a unique pattern of narrow and wide rings. We now know in detail the pattern of rings shown by oak trees in England for at least the last 2000 years, and there is some work in progress on other species, such as pine, beech and yew. Tree-ring dating typically involves small cores of wood being taken from the structural timbers of a building. Once sanded to a polished finish, these samples show the pattern of rings laid down during the lifetime of the trees from which the timbers were cut. If this pattern is then compared with "master chronologies" it is often possible to identify the felling date of the trees with astonishing accuracy. Where bark is present, it is possible to give a precise year, sometimes even the season of the year. We know that oak for building was almost always used "green", (unseasoned, not having been felled and prepared until required), so construction dates can be determined in which we can place considerable confidence.

#### **Recording Timber-Framed Buildings**

National trends in building activity inevitably conceal regional differences that can only be explained by detailed local studies. The Royal Commission on the Historical Monuments of England (RCHME) has analysed 53 medieval buildings in Kent (Pearson 1994). Hampshire County Council has analysed well over 100 buildings in the county (Roberts 2003). These projects utilize the specific dates provided by tree-ring analysis to refine the typological and stylistic dating of buildings.

Tree-Ring Services is committed to the development of date-range spans for stylistic features to help refine the dating of timber-framed buildings. Buildings are recorded using a 'Tick-Box' sheet (available at <a href="www.buildingarchaeology.co.uk">www.buildingarchaeology.co.uk</a>) which is used to summarise the most common and distinctive 'key features'. This information is entered into a purpose-built Building Archaeology Research Database (BARD), a resource then available for further analysis (Moir *et al.* 2012). BARD has been used to analyse 177 dwellings in Surrey and establish date ranges for 52 key features (Wild and Moir 2013). Each additional building tree-ring dated by Tree-Ring Services adds to this research and should eventually allow date ranges to be extended to other counties.

Harris (1978) provides a useful introduction to the study of timber-framed buildings, while Brunskill (2000) details the study of vernacular architecture. Alcock's (1996) glossary provides illustrative drawings which are particularly useful in facilitating the naming of timbers in a building.

#### Bell House (SX 8194 7859)

A three-bay open hall with cob walls (**Photos 1 &** 2), which appears to have both a crown strut (**Photo 3**) and jointed cruck truss (**Photo 4**). The middle and eastern bays show smoke blackening; no timbers survive in the western bay.

The crown-strut truss appears to have been closed up to the roof (**Photo 3**). The recently partly exposed jointed cruck truss has a cranked collar. The cruck truss is single arch braced (**Photo 5**) and has a type M apex (Alcock 1981). There is a single tier of purlins and a ridge purlin. No windbraces were observed. The rafters are set flatways and pegged through the purlins. There are long scribed carpenter's marks (**Photo 6**).





**Photo 1: Bell House – south aspect** 

**Photo 2: Bell House – south-west aspect** 





Photo 3: Smoke-blackened rafters & crown strut in truss A

Photo 4: Jointed cruck in truss B





Photo 5: Single arch brace

Photo 6: Roman numeral III carpenter's marks

#### **Objective of the Analysis**

The main objective of this analysis was to provide dendrochronological evidence to date the primary phase of construction of the building.

#### **Dendrochronological Assessment**

Bell House was visited on the 23rd April 2019 and the timbers assessed for their potential use in dendrochronological study. Oak timbers with more than 50 rings, traces of sapwood or bark, and accessibility were the main considerations.

At the time of the assessment, the timbers in the two trusses were only visible above collar level. All the roof timbers inspected appeared to be oak and to contain less than 50 rings. Full sapwood was observed to survive on a number of the rafters. While the timbers were fast-grown with few rings, they appeared to contain quite even growth (without disturbances), which was thought might help their dating. Therefore, those timbers thought to contain the most rings were selected for sampling.

#### METHODOLOGY

Methods employed by Tree-Ring Services in general are those described in English Heritage guidelines (Hillam 1998). Part 2 of the Guidelines is designed for large projects in conjunction with other specialist disciplines and is not applicable to the type of privately commissioned dendrochronological analysis generally conducted by Tree-Ring Services and is therefore not used. Details of the methods employed for the analysis of this building are described below.

#### **Sampling and Preparation**



Photo 7: Extraction of a core in progress

Whenever possible, timbers with more than 50 annual growth rings are selected for sampling. This is necessary to provide a pattern of rings of sufficient length to be unique to the period of time when the parent tree was growing. Timbers are sampled using purpose-made 12mm and 15mm diameter corers attached to an electric drill. Sampling is located as discreetly as possible in what appear to be original timbers and is orientated in the most suitable direction to maximize the numbers of rings for subsequent analysis. Extracted core samples are immediately taped and glued onto wooden laths on site and then labelled, ready for subsequent analysis.

Tree-ring series are revealed through sanding with progressively finer grits to a 600 abrasive grit finish to produce results suitable for measuring, see **Photo 8**. When required, for example where bands of narrow rings occur, further preparation is performed manually. Where requested, extraction holes are "made good", employing pine dowelling, wood-glue, sawdust and wood stains to restore the timbers to their original appearance.



Photo 8: An example of the tree-ring series revealed through the sanding of cores

Tree-ring series are measured under a  $\times 20$  stereo microscope to an accuracy of 0.01mm using a microcomputer-based travelling stage. All samples are measured from the centremost ring to the outermost. Samples considered unsuitable for dating purposes are then rejected. These include samples with disturbed ring series which cannot be measured due to knots or bands of extremely narrow rings, and samples with to few rings.

Samples of fewer than 50 rings are sometimes rejected from dendrochronological analysis because their ring patterns may not be unique (Hillam *et al.* 1987). Although this is certainly true of all ring series of fewer than 30 rings, which should not be used in dating (Mills 1988), samples with 30 to 50 rings may be dated in some circumstances (Hillam 1998). It has been felt wise to maximize the recorded amount of data, and therefore series of 35–50 rings are included in analysis and considered for dating, usually when they match well with a number of other series. Samples are measured twice and the two sets of measurements cross-matched and plotted visually as a check. Where series match satisfactorily they are averaged and the resulting series are used in subsequent analysis.

#### **Dendrochronological Report: Bell House – Bovey Tracey – Devon**

Series containing fewer than 50 rings are suffixed '-S', and series from managed trees '-M' to help indicate that additional caution must be exercised in dating.

Cross-correlation algorithms are then employed to search for the positions where tree-ring series correlate and therefore possibly match. All statistical correlations are reported as *t*-values derived from the original CROS73 algorithm (Baillie and Pilcher 1973). A value of 3.5 or over is usually indicative of a good match as it represents the value of *t* which should occur by chance only once in every 1000 mismatches (Baillie 1982), and the higher the *t*-value the closer to congruency in the cross-matching. However, due to the remaining small risk of high *t*-values being produced by chance, all indicated correlations are further checked to ensure that corroborative high results are obtained at the same relative position against a range of independent tree-ring series. Visual comparisons of series are also employed to support or reject possible cross-matches and serve as a means of identifying measuring errors.

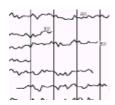
#### **Timber Groups**



A further element of the tree-ring analysis of buildings and archaeological assemblages is the grouping of timbers within the sampled material. Inspection of *in situ* timbers may indicate that samples derive from a common timber, while common arrangements of anatomical features (knots & branching) may also indicate that samples are derived from a single tree.

Tree-ring analysis is used to support suggestions of same-tree groups between samples based on a combination of information. Timbers derived from the same tree are generally expected to have *t*-values over 10, although lower *t*-values may be produced when different radii measured from the same tree are compared. Tree-ring series producing *t*-values of 10 or above are examined to identify same-tree groups. Good comparisons of visual matching, growth rates, short and longer-term growth patterns, are combined with pith information, sapwood boundaries, bark and anatomical anomalies, to help decide whether timbers are likely to come from the same tree. Where timbers are assessed as deriving from the same tree, to avoid bias the series are averaged to produce a single tree-ring series before inclusion in the final site chronology, but inevitably some same-tree samples go undetected by dendrochronology.

#### **Chronology Building and Cross-dating**

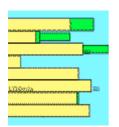


The process of cross-matching compares all tree-ring series against one another and those found to cross-match satisfactorily together are combined to create an average series. The site mean(s) and individual ring series which remain unmatched with the site mean are then tested against a range of established reference series (reference chronologies). Significant *t*-values replicated against a range of series at the same

position with satisfactory visual matching are similarly used to establish cross-matches with reference chronologies. Where cross-matching is established against dated reference chronologies, calendar dates can be assigned to the site series. The dates of the first and last rings of dated series are produced as date spans. These dates should not be confused with felling dates.

#### Dendrochronological Report: Bell House - Bovey Tracey - Devon

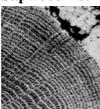
#### **Felling Dates**



Series dated by the cross-dating process provide calendar year dates for the final tree-ring present in the measured timber sample. The interpretation of these dates then relies upon the nature of the final rings in the series. Where bark survives intact on a sample a felling date is given as the date of the last ring measured on the tree-ring series. Based on the completeness of the final ring it is sometimes even possible to distinguish between spring, summer or winter fellings, corresponding to

approximately March to May, June to September and October to February, respectively. Where timbers were felled in either spring or summer and the final ring is incomplete and therefore not measured, allowance has to be made for the one-year discrepancy between the end of a measured series and the actual year of felling.

#### **Sapwood Estimates**



Where bark is missing from oak samples, as long as either sapwood or the heartwood/sapwood boundary have been identified, an estimated felling-date range can be calculated using the maximum and minimum number of sapwood rings that were likely to have been present. Sapwood estimates have varied over time with different data sets, geographical location and researchers. A general trend identified is that the number of

sapwood rings in oak decreases from north to south and from west to east across Europe.

However, simply not enough is yet understood about sapwood variations and the mechanisms responsible for them. A generally accepted sapwood estimate of between 10 and 55 rings for British and Irish oaks (at 95% confidence) was given in 1987 (Hillam *et al.* 1987). Analysis of the increased data set available ten years later indicates a range of 10 to 46 rings to be more appropriate for England (Tyers 1998). Currently, as research in areas improves, sapwood estimates are refined and new estimates applied. Therefore, when dendrochronological dates are produced, the reference to the sapwood estimate used in its calculation should always follow.

This report applies a sapwood estimate of a minimum of 9 and maximum of 41 annual rings, which means that 19 out of every 20 trees examined is expected have between 9 and 41 sapwood rings. This sapwood estimate is currently applied to most of the south-east region and has been arrived at by Oxford Dendrochronology Laboratory (Haddon-Reece *et al.* 1990; Miles 1997). Felling-date ranges have been calculated by adding the sapwood estimate of minimum and maximum missing rings to the date of the heartwood/sapwood boundary. Felling-date ranges have been refined by the presence of surviving sapwood where appropriate, see **Table 3**. Where samples ending in heartwood were dated, "felled after dates" have been calculated by adding the minimum expected number of missing sapwood rings to the samples' final ring dates. These dates represent the earliest probable felling dates. However, the actual felling date of a tree may be decades later due to an unknown number of missing heartwood rings.

#### **Felling Groups**



It is common to find that timbers used in the construction or repair of smaller buildings, or identifiable parts of larger buildings, date into groups whose felling dates occur within a narrow range of years. These groups are called associated fellings. Where they are identified the average heartwood/sapwood boundary of the component timbers is used

#### Dendrochronological Report: Bell House - Bovey Tracey - Devon

to calculate an overall estimated period of felling. Close location association and a short (21 years at most) range of heartwood-sapwood boundary dates are normally used to define these groups. The estimates do not assume that trees within a group were felled at the same time. However, evidence published by the Nottingham University Tree-Ring Dating Laboratory indicates that the range estimate encompasses the possible different individual felling dates (English Heritage 2001). Where bark is present within a group of timbers and other evidence does not dispute the date, it is assumed that all the trees within a felling group were felled in the same year.

#### **Date of Construction**



It is vitally important to understand that dendrochronological analysis provides dates for when trees were felled and not necessarily when their timbers were used. Green or freshly felled wood is, however, far easier to work and it is standard practice to assume that medieval timbers were felled as required and used green (Rackham 1990; Miles 1997). However, the use of previously felled timbers in vernacular construction

was not uncommon, with short-term stockpiling of usually not more than 1 to 2 years (Miles 1997), and the use of leftovers or re-used timbers may certainly give rise to differences between felling dates and the date of construction where samples are analysed in isolation. A number of samples having a close range of felling dates are required from different elements of a building either to strongly indicate a single date of construction or to identify separate phases of construction.

#### Tree-Ring Services - Methods and Criteria



Tree-ring analysis and graphics are achieved via a dendrochronological programme suite developed by Ian Tyers of Sheffield University (Tyers 1999). Alcock's (1996) timber-framed building nomenclature has been adopted throughout to facilitate regional comparisons. Summary features of most buildings dated, are made available on the Building Archaeology Research Database (Moir *et al.* 2012). Tree-Ring Services reports are published with tree-ring data to enable independent verification and

allow their use in dating. Report may be ordered through the website at <a href="www.tree-ring.co.uk">www.tree-ring.co.uk</a>.

For the analysis of a building an initial assessment is conducted with the owner and recommendations in line with English Heritage guidelines on sampling strategies made, (i.e., that a minimum of 8 to 10 samples are obtained per building or per phase). However, the final decision concerning the number of samples taken for analysis rests with the individuals who commission the analysis. It is generally beyond the scope of an analysis to describe a building in detail or to undertake the production of detailed drawings. Without the benefit of other specialist disciplines there is always the danger that re-used timbers may be inadvertently selected, and the conclusions presented in a report may be modified in the light of subsequent work.

#### **RESULTS**

Six core samples were taken from Bell House on the 23rd April 2019. The western crown strut truss was labelled A and the eastern jointed cruck truss was labelled B. Sampling locations are indicated on a sketch plan of the building (see **Appendix I**) and the exact locations of the samples taken are shown in the photographs below.





Photo 9: Cores TQBH01 (top right), TQBH02-S (left), TQBH03-S (bottom right) & TQBH04-S (top middle)

Photo 10: Core TQBH05



Photo 11: Core TQBH06-S

All six samples were confirmed as oak (*Quercus* spp). Cores TQBH01, TQBH05 and TQBH06 contained less than 35 rings and so were rejected from further analysis at this point. Series TQBH02, TQBH03 and TQBH04 contained less than 50 rings and were identified by the suffix '-S'. All the samples were recovered with complete sapwood.

#### Dendrochronological Report: Bell House - Bovey Tracey - Devon

Three series were found to match together (see **Table 1**) and were combined to form a 45-year site chronology named BOVEY-BH.

Table 1: Cross-matching between the three series which form the site chronology BOVEY-BH

Filenames	Stat dates	End dates	TQBH03-S	TQBH04-S
TQBH02-S	AD1382	AD1426	3.46	5.63
TQBH03-S	AD1392	AD1426		4.63
TQBH04-S	AD1386	AD1426		

KEY: - = t-values less than 3.50.  $\setminus = \text{overlap} < 30 \text{ years}$ .

This site chronology was found to produce consistently high *t*-values against reference chronologies (**Table 2**), with the first ring of the series at AD 1382 and the final ring of the series at AD 1426.

Table 2: Dating evidence for the series BOVEY-BH against reference chronologies

BOVEY-BH dated AD 1382 TO AD 1426									
File	Start Date	End Date	t-value	Overlap (yr.)	Reference chronology				
COLWALL-3	AD1354	AD1509	8.95	45	Church Ale House - Colwall - Here & Worc (Hillam and Groves 1991)				
SCOTLAND	AD946	AD1975	6.48	45	Southwest Central Scotland (Baillie 1977)				
TCKNHM1X	AD1372	AD1475	6.28	45	Tickenham Ct - Tickenham - Somerset (Bridge and Miles 2004)				
BROMHAM	AD1359	AD1483	6.25	45	Bayntun Chapel - Bromham - Wiltshire (Howard <i>et al.</i> 2008)				
EXETR-HS	AD1309	AD1491	6.23	45	46 High St - Exeter - Devon (Arnold and Howard 2009a)				
DUNU09	AD1355	AD1450	6.18	45	The Nunnery - Dunster - Somerset (Tyers 2006)				
POUND7	AD1316	AD1441	6.07	45	Pound Farm - Kington - Herefordshire (Nayling 2002)				
STANDREW	AD1253	AD1490	5.76	45	St Andrew's Church - Alwington - Devon (Arnold and Howard 2009b)				
HART-X9	AD1203	AD1452	5.61	45	St Nectan Church - Hartland - Devon (Arnold and Howard 2013)				
HERE_CB2	AD1359	AD1491	5.53	45	Cathedral Barn - Hereford (Tyers 1996)				
MINT-T4	AD1350	AD1429	5.46	45	21 The Mint - Exeter - Devon (Nayling 2001)				
SFPF-T4B	AD1380	AD1473	5.43	45	Barn - Prowse - Sandford - Devon (Groves 2005)				

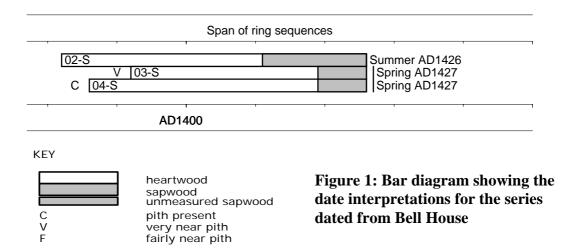
KEY: **Bold** = indicates a composite reference chronology consisting of multiple site chronologies.

The BOVEY-BH site chronology contains just 45 rings, which is generally too short for confident cross-dating of tree-ring series. However, the matches shown are very strong, clear and well replicated, with no other significant matching positions. Additionally, many high matches are evident with reference chronologies that are geographically near to the site, and therefore the BOVEY-BH site chronology is considered to have been successfully dated.

#### INTERPRETATION

#### **Felling Dates**

The sapwood allowance used to calculate the felling dates now discussed is presented in **Table 3**, and the bar diagram (see **Figure 1**) helps to demonstrate the findings visually.



Bell House produced three precise felling dates. Under the microscope, one tree felled in the summer of 1426 and two trees felled in the spring of 1427 provide good evidence to indicate that construction occurred in 1427, or soon after.

#### CONCLUSIONS

Measured tree-ring series from three timbers sampled are matched together to form a 45-year site chronology, which is dated to span 1382 to 1426. One tree felled in the summer of 1426 and two trees felled in the spring of 1427 provide good evidence to indicate that construction occurred in 1427, or soon after.

The site chronology contains just 45 rings, which is generally too short for confident crossdating of tree-ring series. However, strong, clear and well-replicated matches are shown against reference chronologies that are geographically near to the site, and therefore this short site chronology is considered to have been successfully dated.

Table 3: Summary of dendrochronological analysis

Sample	Timber and Position	Timber Conversion	Timber Dimensions (mm)	Rings	Sapwood	Average Growth Rate (mm/yr)	Sequence Date Range	Felling Date Range
TQBH01	South rafter - 1st west of truss B	C2	80 x 100	<35				
TQBH02-S	North rafter - 1st west of truss B	C2	80 x 100	45	15+½B	2.23	AD1382-AD1426	Summer AD1426
TQBH03-S	South upper cruck - truss B	B2	200 x 115	35	7+¼B	4.29	AD1392-AD1426	Spring AD1427
TQBH04-S	North upper cruck - truss B	B2	200 x 120	41	7+1/4B	2.89	AD1386-AD1426	Spring AD1427
	Norht rafter - 1st east of truss B	C2	90 x 110	<35				
TQBH06	South rafter - 1st east of truss A	C2	80 x 100	<35				

KEY	
+	= additional information not measured on the core
(+)	= unmeasured heartwood rings at the beginning or end of the core
	= heartwood/sapwood boundary
	= probable bark
1⁄4B	= spring bark
½B	= summer bark
	= winter bark
A2	= boxed heartwood & trimmed
	= halved & trimmed
	= quartered & trimmed
E2	= tangential & trimmed

Note: Timber dimensions were generally taken at the core sample location and are not necessarily the maximum dimensions of the timber

#### **Dendrochronological Report: Bell House – Bovey Tracey - Devon**

#### ACKNOWLEDGEMENTS

I would like to thank the owners for commissioning this analysis.

#### REFERENCES

Alcock, N W, 1981 Cruck construction: an introduction and catalogue, CBA Res Rep, 42

Alcock, N W, Barley, M W, Dixon, P W, and Meeson, R A, 1996 Recording timber-framed buildings: an illustrated glossary, York (CBA)

Arnold, A J and Howard, R E, 2009a 46 High Street, Exter, Devon: Tree-ring analysis of timbers., Research Department Report Series, **71/2009** 

Arnold, A J and Howard, R E, 2009b St Andrew's Church, Alwington, Devon: Tree-ring analysis of timbers., Research Department Report Series, **42/2009** 

Arnold, A J and Howard, R E, 2013 *Church of St Nectan, Stoke, Hartland, Devon: Tree-ring Analysis of timbers.*, Research Department Report Series, **47/2013** 

Baillie, M G L, 1977 An oak chronology for south central Scotland, Tree-ring Bulletin, 37, 33-44

Baillie, M G L, 1982 Tree-ring dating and archaeology, London (Croom-Helm)

Baillie, M G L and Pilcher, J R, 1973 A simple cross-dating program for tree-ring research, *Tree-ring Bulletin*, **33**, 7-14

Bridge, M C and Miles, D H, 2004 *Tree-ring analysis of timbers from Tickenham Court, Church Lane, Tickenham, Near Nailsea, Somerset*, Centre for Archaeol Rep, **45/2004** 

Brunskill, R W, 2000 Vernacular Architecture: an illustrated handbook, London (Faber and Faber)

English Heritage, 2001 *Timber Dendrochronology of Roof Timbers at Lincoln Cathedral*, London (James & James (Science Publishers) Ltd)

Groves, C, 2005 *Dendrochronological Research in Devon: Phase 1*, Centre for Archaeol Rep, **56/2005** 

Haddon-Reece, D, Miles, D H, and Munby, J T, 1990 List 38 - Tree-Ring Dates from the Ancient Monuments Laboratory, HBMC, *Vernacular Architect*, **21**, 46-50

Harris, R, 1978 Discovering timber-framed buildings, Princess Risborough (Shire Publications)

Hillam, J, 1998 Dendrochronology: Guidelines on producing and interpreting dendrochronological dates, London (Historic England)

Hillam, J and Groves, C, 1991 *Tree-ring dating of timbers from the Church Ale House, Colwall, Herefore and Worcester*, Centre for Archaeology Report, **106/91** 

Hillam, J, Morgan, R A, and Tyers, I, 1987 Sapwood estimates and the dating of short ring sequences, in *Applications of tree-ring studies: current research in dendrochronology and related areas* (ed R G W Ward), BAR Int Ser, **\$333**, 165-85

#### **Dendrochronological Report: Bell House – Bovey Tracey - Devon**

Howard, R E, ., and Arnold, A J, 2008 Church of St Nicholas, Bromham, Wiltshire: Tree-Ring Analysis of Timbers from the Roof of the Beauchamp or 'Bayntun' Chapel, Centre for Archaeol Rep, **37/2008** 

Miles, D H, 1997 The interpretation, presentation, and use of tree-ring dates, *Vernacular Architect*, **28**, 40-56

Mills, C M, 1988 Dendrochronology: the long and short of it, in *Science and archaeology* (eds E A Slater, and J O Tate), Glasgow, BAR Int Ser, **196**, 549-65

Moir, A K, Wild, R, and Haddlesey, R, 2012 An Internet-Accessible Building Archaeology Research Database (BARD), *Vernacular Architecture*, **43**, 1-6

Nayling, N, 2001 *Tree-ring analysis of timbers from 21 The Mint, Exeter, Devon*, Centre for Archaeol Rep, **55/2001** 

Nayling, N, 2002 *Tree-ring analysis of timbers from Pound Farm, Kington, Herefordshire*, Centre for Archaeol Rep, **28/2002** 

Pearson, S, 1994 The Medieval Houses of Kent, An Historical Analysis, London (RCHME)

Rackham, O, 1990 Trees and woodland in the British Landscape, London (J M Dent & Sons Ltd)

Roberts, E, 2003 Hampshire Houses 1250 - 1700: Their dating & Development, (Hampshire County Council)

Tyers, I, 1996 The tree-ring analysis of six secular buildings from the City of Hereford, Anc Mon Lab Rep, **17/96** 

Tyers, I, 1998 Tree-ring analysis and wood identification on timbers excavated on the Magistrates Court Site, Kingston upon Hull, East Yorkshire, ARCUS Rep, **410** 

Tyers, I, 1999 Dendro for Windows Program Guide 2nd Edition, ARCUS Rep, 500

Tyers, I, 2006 *The Nunnery, Dunster, Somerset: Dendrochronological analysis of oak timbers*, Research Department Report Series, **52/2006** 

Wild, R and Moir, A K, 2013 Key dating features for timber-framed dwellings in Surrey, *Vernacular Architecture*, **44**, 46-61

#### © 2019 Tree-Ring Services. All rights reserved

#### Copyright

Tree-Ring Services shall retain copyright of any commissioned reports, under the Copyright, Designs and Patents Act 1988 with all rights reserved, excepting that it hereby provides an exclusive licence to Christopher Goulden to copy and distribute this document for private and non-commercial use. No PDF copies may be made accessible via the internet. Hard copies of this report can be purchased from www.tree-ring.co.uk. No part of this publication may be reproduced in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of Tree-Ring Services. This publication may not be reviewed for any publication, whether in hard copy or electronic form, without the copyright holder's prior permission.

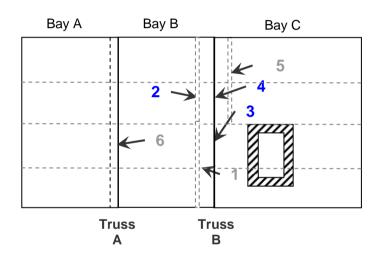
#### Liability Disclaimer

No responsibility is assumed by Tree-Ring Services for any injury and/or damage to persons or property from any use or operation of any methods, instructions, results or ideas contained in the material herein. To the maximum extent permitted by applicable laws, Tree-Ring Services disclaims any and all liability for special, incidental, indirect or consequential damages whatsoever arising out of the use of information contained in the material herein, even if Tree-Ring Services has been advised of the possibility of such damages. The entire risk as to the use of the information herein is assumed by the user.

#### **APPENDIX I: Plan of Bell House**

Note to scale





< East Street >

KEY:

Numbers identify location of the cores taken.

Blue = Dated to AD 1427

Gray = Undated

--- = Roof timbers

#### APPENDIX II: Raw ring-width data

Ring widths (0.01mm), starting with innermost measured ring

TQBH	102-S								
202	230	205	193	229	181	213	214	162	241
211	246	217	237	253	174	206	265	232	243
201	182	185	172	173	183	192	216	153	149
178	198	273	221	163	201	219	139	199	199
224	473	401	438	332					
TQB	103-S								
333	469	410	487	500	404	429	554	644	537
444	458	546	629	536	439	466	576	339	335
445	458	342	515	420	439	445	200	289	308
271	376	326	354	289					
TQB	104-S								
248	143	252	175	182	249	154	265	252	354
379	295	274	347	371	320	334	310	483	528
533	359	454	499	207	232	299	311	358	225
180	224	236	160	178	201	235	363	264	232
183									

#### APPENDIX III: Mean ring-width data

Title: Bell House - Bovey Tracey - Devon [BOVEY-BH]

Ring-width QUSP data of 45 years length

Unit of Measurement 0.01mm Dated AD1382 to AD1426 3 timbers raw data mean

Average ring width 294.42 Sensitivity 0.17

AD1382	245				193 359			 	
AD1401		307	322	324	443 320 341	254	-	 	