



JOHN MOORE HERITAGE SERVICES

HISTORIC BUILDING ASSESSMENT

ON

CHILDWICKBURY MANOR WATER TOWER

NGR TL 139 102

On behalf of Ms M Craig

SEPTEMBER 2013

REPORT FOR Ms M Craig
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1 Introduction

1.1 Planning Background

The Conservation and Design Section of St Albans District Council issued a brief for the recording of Childwickbury Manor Water Tower. The requirements of the brief involve the preparation of a report to provide information on the date, form, construction details and completeness of the structure prior to any alterations. The recording condition has been issued due to the rarity of survival for this type of structure, its current condition and the potential loss of historic fabric through proposed alterations.

The Government, through the Department of Culture Media and Sport is responsible for protecting the historic environment. The Planning (Listed Buildings and Conservation Areas) Act 1990 provides specific protection for buildings and areas of special architectural or historic interest. The Department monitors the effectiveness of the controls.

The Secretary of State has a duty under the Act to compile lists of buildings of special architectural or historic interest. There are three grades of listing:

- Grade II are of special interest, warranting every effort to preserve them
- Grade II* are particularly important buildings of more than special interest
- Grade I buildings are those of exceptional interest

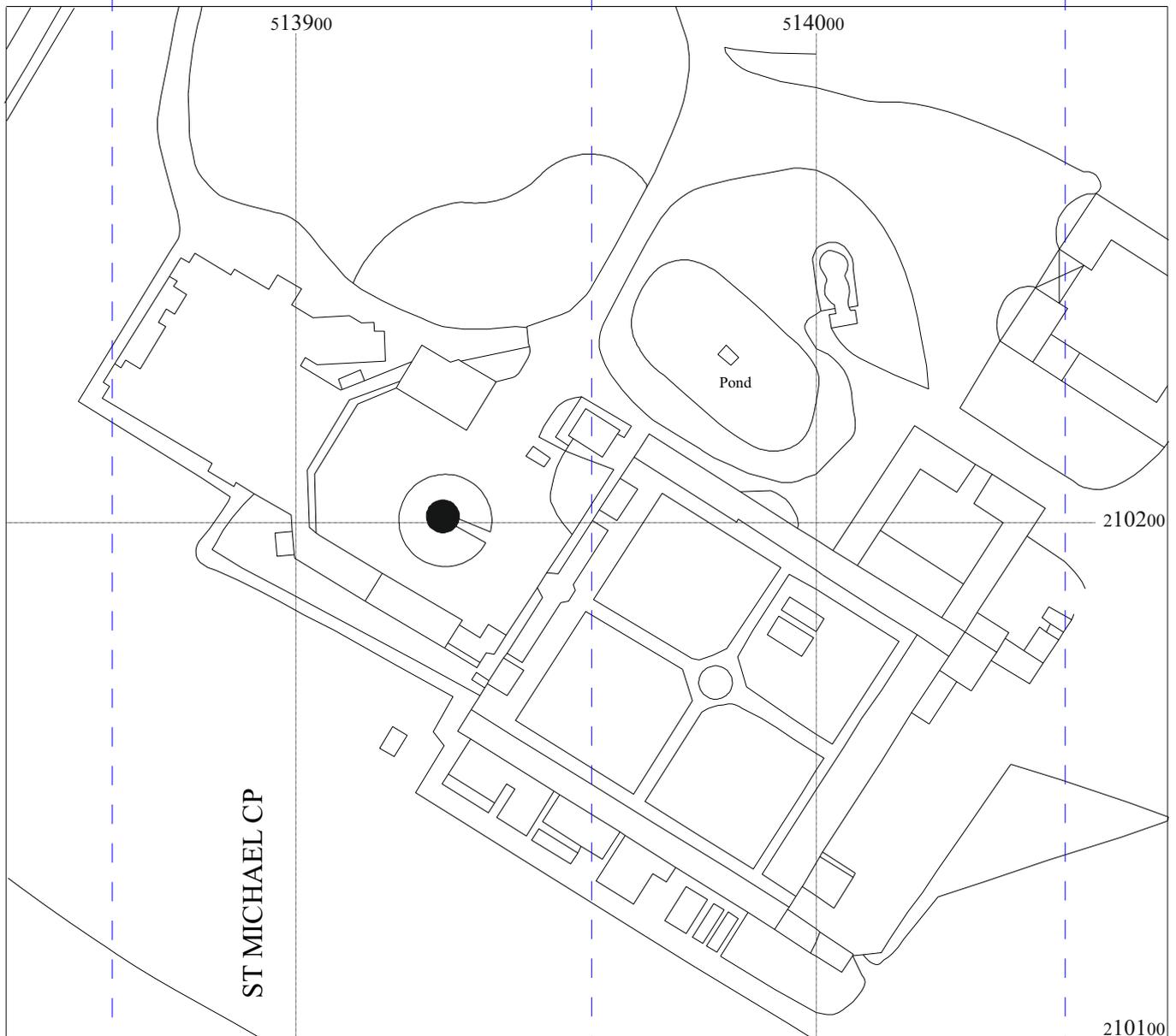
The water tower is within the Childwickbury Conservation Area (designated as such in June 1977). The property is listed as Grade II.

2 Aims of the Investigation

An analysis and photographic record of the building has been requested to assess the significance of the fabric to be altered in order to provide sufficient information to allow the Conservation and Design Section of St Albans District Council to assess the likely impact of the proposals on the special character of the building.

3 Strategy

- 3.1 A study of all available historic maps and plans, together with a documentary search was undertaken at the Public Records Office in Hertford, supplemented by background research at the Bodleian Library in Oxford.
- 3.2 A full photographic survey of the interior and exterior of the building was also undertaken to illustrate historic fabric and features. Floor plans showing the locations of the photographs have been produced for the site archive.
- 3.3 An on-site investigation of the building was carried out to examine the standing building fabric in order to assess the function and development of the building over time.

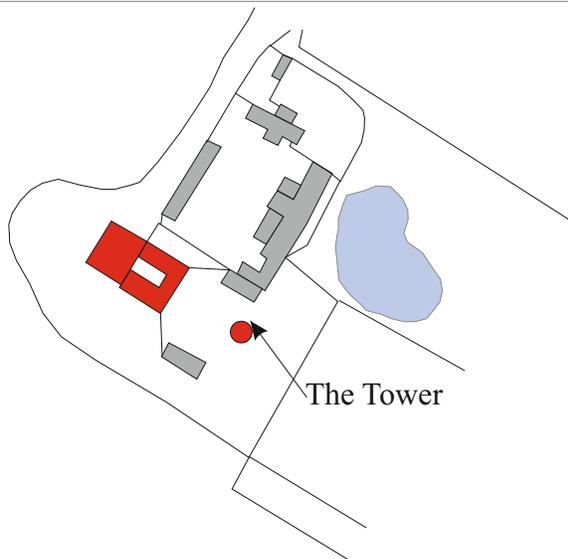


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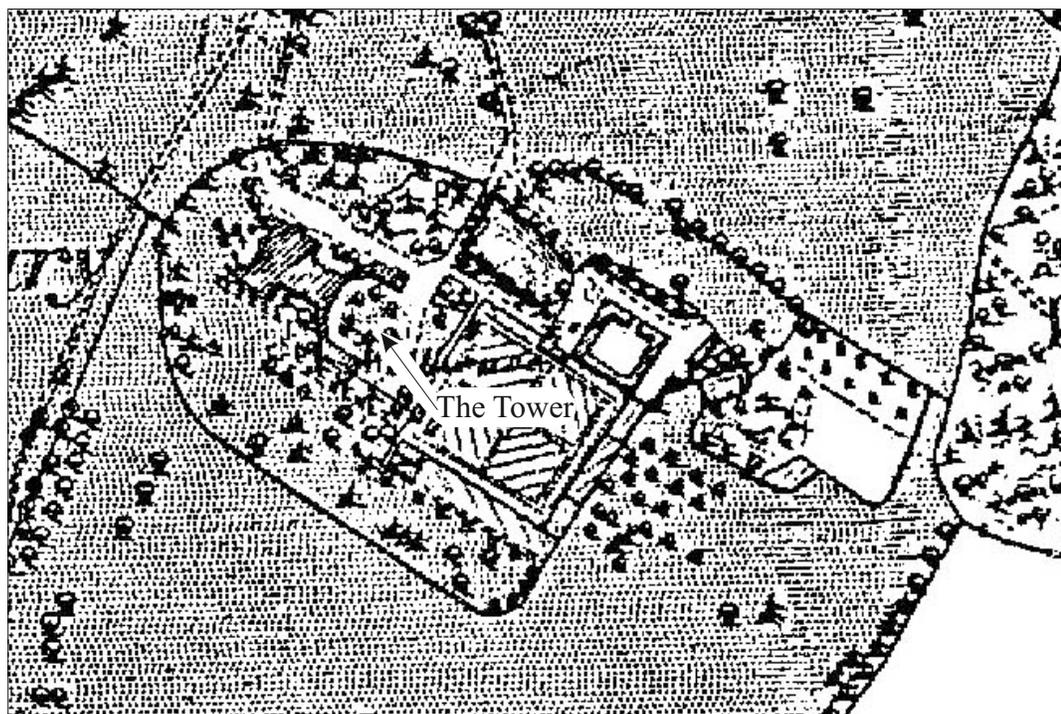
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● The Water Tower

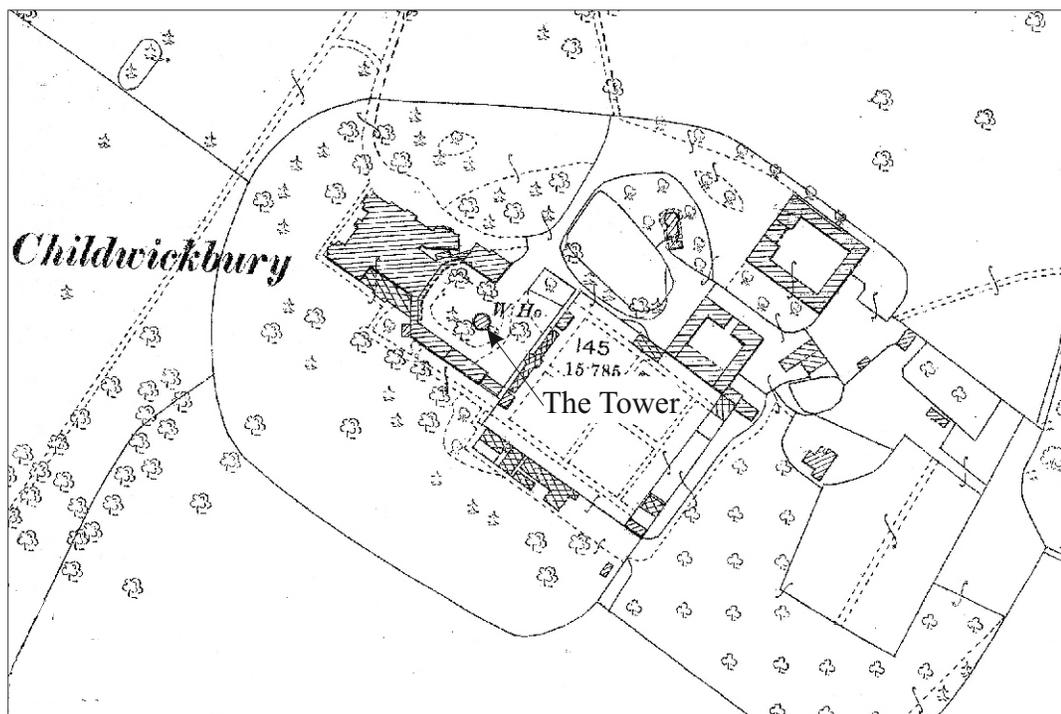
Figure 1: Site Location



The 1840 Tithe Map



The 1st Edition (1883)
Ordnance Survey Map



The 2nd Edition (1898)
Ordnance Survey Map

Figure 2:
The Historic Maps

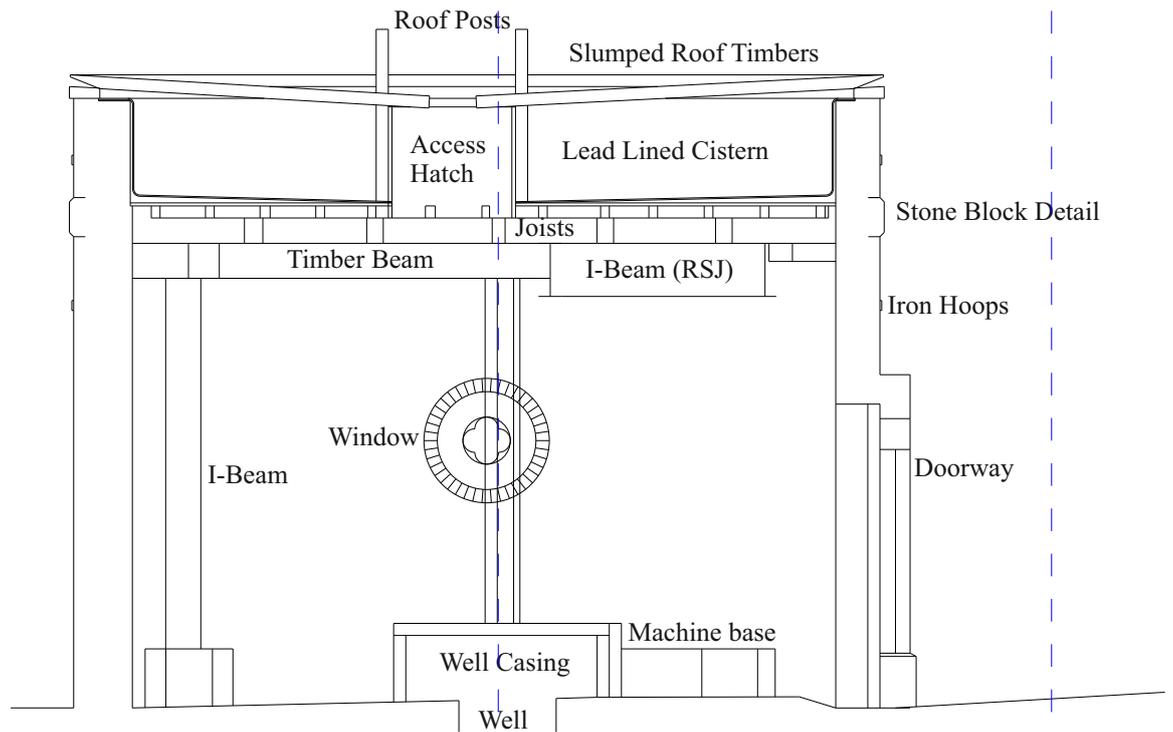


Figure 3: Section Through The Water Tower

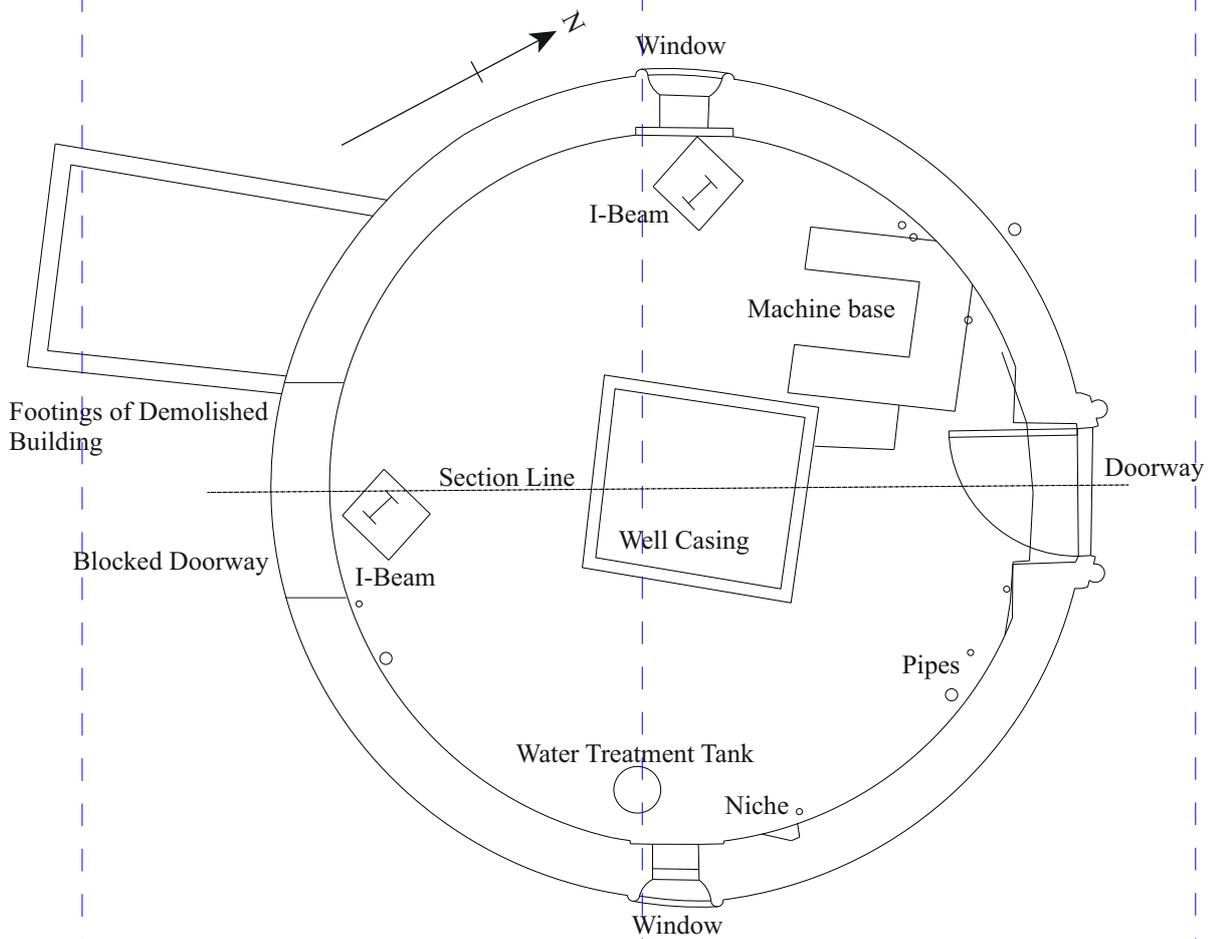


Figure 4: Plan of the Water Tower

4 Background and Cartographic Evidence (Figures 1-2)

- 4.1 The Water Tower is situated within the Childwickbury Estate in the Parish of St Michaels (TL 139102). The land was under ownership of St Albans Abbey from the 10th century (Victoria County History).
- 4.2 Under private ownership, the house underwent major alterations in the second half of the 18th Century. The instigator of the programme of works was Sheriff Caleb Lomax, owner of the property from 1753, succeeded by his son Joshua Lomax, noted on the 1843 tithe award as owner. Further transformations to the property were carried out in 1854 under new ownership: Henry Heyman Toulmin. The following owner of the site was Sir John Blundell Maple in 1883 and J. B. Joel in 1906. The property was re-sold privately in 1978.
- 4.3 The earliest available cartographic evidence for the site which shows the location of the water tower is the 1840 Tithe Map (Figure 2). The early edition Ordnance Survey maps (1883 and 1898: Figure 2: ii and iii) indicate the location of the tower and the 1947 edition records the structure as a *pump house*.
- 4.4 A 1978 Sales Catalogue description of the property records the presence of the water tower and states its capacity as c. 18 000 gallons. However, no additional descriptive information regarding the structure is given (Strutt & Parker, 1978).

5 Results (Figures 3-4)

It should be noted that the current derelict condition of the building creates problems in the assessment of the survival of original features and fabric. It is only with the stripping out of accumulated debris that a true inspection of the construction and character of the building could be made. The results of this analysis must be considered in the light of these limitations.

5.1 External Description

The water tower is almost circular in plan, measuring c. 6.7 m by 6.84 m. The walls are 0.48 m thick and stand to a height of 5.15 m. The structure is brick built and is entirely composed of header bond. The bricks measure 102 mm x 61 mm (length not seen). These dimensions are in line with those set out in Acts of Parliament prior to the Brick Tax of 1784: the bond used in the structure is also common in the 18th century for the creation of curved walls.



Plate 1: The Entrance to the Tower

Access to the tower is through a southeast facing doorway (Plate 1). The entrance is 1.06 m wide and provides access to persons for the maintenance of the machinery.

A further entrance was situated opposite the current access and was much wider at c. 1.7 m. This doorway situated under a brick arch two rows deep, now infilled in header bond to match the rest of the structure, may have been to facilitate replacement of machinery held within the tower, or to assist in the general function of the structure. Some effort had been given to the infill of this wider doorway (Plates 2 and 3) including the establishment of a matching plinth, rendered in stucco at the base of the doorway, in keeping with the foot of the external detail of the main body of the tower.



Plate 2: The Exterior View of the Blocked Doorway



Plate 3: The Interior View

- 5.2 Header Bond was common in the south of England in the 18th Century. The bond is particularly suited to the construction of round walls and structures requiring additional strength, as is the case with the water tower. In addition to the enhanced strength provided by the bond, there are two iron bands/hoops, c. 0.08 m wide, fixed around the diameter of the tower to provide additional support. The bands are situated near the top of the tower, less than half a metre from the underside of the stone coping, with a further band some 1.12 m below the first. The true function of the iron hoops was to add support to the lead lined tank/cistern particularly when full to capacity.



Plate 4: Detail of Iron Hoop

5.3 Decorative Features

The tower although serving a very specific function for the estate is not without decorative embellishment in keeping with the fashions at the time of construction. The roof of the tower, originally sloping upwards towards the centre is hardly visible from the ground and it is the Georgian parapet that provides focus at the top of the tower. A decorative band comprising shaped stone blocks (Plate 5) is situated just over 0.80 m below the coping of the parapet, and the blocks, 0.32 m in height are recessed into the brick face. Above the current entrance an intricately detailed block is situated (Plate 6) and the door moulding is also highly stylised (Plates 7-9).



Plate 5: Detail of Shaped Stone Blocks



Plate 6: Detail Central Blocks Located Above Door



Plate 7: Door Detail

The materials utilised for the door mouldings is stone reinforced with narrow iron rods (Plate 7). Further decoration can be seen in the remains of a quatrefoil above the centre of the doorway and a stylised leaf motif to either side (Plates 8 and 9 below)

The two circular windows situated facing northeast and directly opposite, facing the southwest, provide additional decorative and functional detail. These windows are edged in brick and infilled with stone quatrefoil detail (Figure 5, Plate 10).

Reinforcement or structural support was again provided by thin iron rods (Plate 11). The windows let light into the centre of the tower probably to aid technical procedure and repairs. Below each window was a further stone feature. In the centre of each was a hole surrounded by four equally spaced petals in low relief echoing the quatrefoils found in the windows situated directly above (Plate 12). The function of these features is unknown.



Plate 8: Remains of Quatrefoil above Doorway

Plate 9: Detail of Motif Adjacent to Quatrefoil

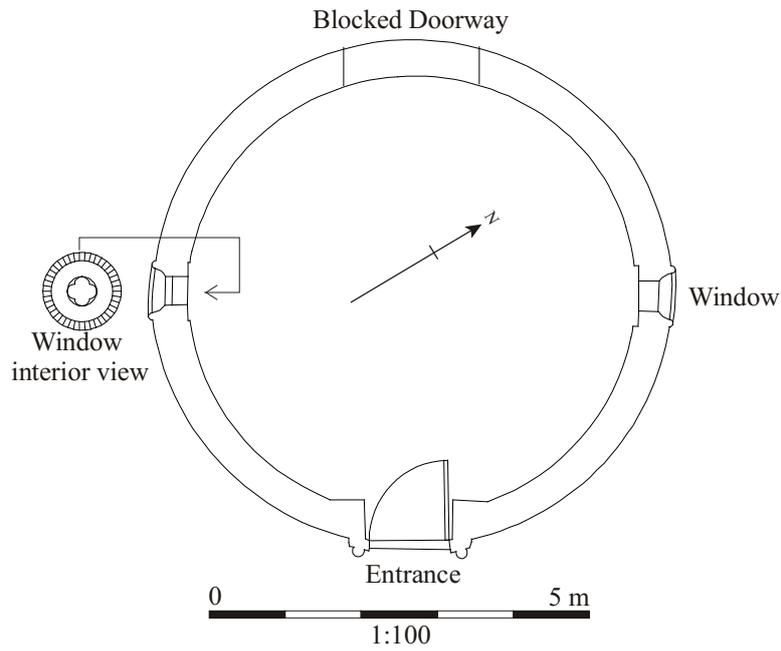


Figure 5: Plan Showing Location of Doorways and Windows, with Interior Detail of Window



Plate 10: Exterior View of Window and Stone Feature



Plate 11: Detail of Construction of Stone Quatrefoil in Window



Plate 12: Detail of Stone Feature

5.4 Additional Features and Structures

There is a standpipe situated some 4.80 m from the blocked door of the tower (Plate 13). This pipe comprises early and recent metalwork. The date of origin for the pipe is unknown. A secondary structure, now demolished was situated adjacent to the blocked doorway on the western external face of the tower. The footings (Plate 14) are to the north of the doorway and measure c. 2.00 m by 1.55 m. Traces of the roof of this structure are still visible on the external face of the towers indicating a height of c. 1.3 m for the later build.



Plate 13: The Standpipe



Plate 14: The footings of Demolished Additional Structure

5.5 Roof Structure External

The roof is currently in a state of collapse and access was extremely limited. The roof was constructed in wedge shaped segments, each segment comprising two long timber members tapering towards the centre of the roof and overlain with lengths of board decreasing in length towards the centre (Plates 15 and 16). The timber segments rest on the coping at the top of the tower walls (Plates 17-18), and further support may have been provided by four vertical timber members situated at the corners of the hatch near the centre of the structure (Plates 19-20).



Plates 15 and 16: General Construction of Roof 'Segments'.

The almost centrally located hatch would allow access to the tank for maintenance and cleaning, that the timber infrastructure of the roof currently rests on this may suggest that the original position of the roof has failed, as access to the tank through the hatch would be inhibited.



Plate 17: The coping at the top of the Parapet (Shows detail of slipped rafters)



Plate 18: Detail of Coping Location in Relation to Tower



Plate 19: The Vertical Posts that would have Supported the Roof over the Hatch

The vertical timbers shown in Plate 19 may indicate the location of a sloping conical roofline. The original position of the roof structure would have been elevated at the centre to a height of c. 0.50 m above the level of the coping on the parapet. The nature of this roofing material suggests a 'lid' like function: prevention of bacterial contamination to the stored water supply, particularly from birds (Barry Barton, 2003).

5.6 Interior of Cistern

The cistern is formed of the upper part of the tower, c. 0.80 m deep. The lining is of lead (Plate 20) and it can be assumed that the cistern has been re-lined as necessary since construction in the second half of the 18th century! Within the cistern are a number of pipes including an inlet pipe with float valve (stop-cock) as shown in Plates 21 and 22. This is *in situ* but is probably a later replacement and its function was to indicate full capacity of the tank. Means of access to the roof and cistern from the ground was not seen, although for a tower this size, a ladder may have been sufficient and easy to store.



Plate 20: Lead Lining of Cistern shown on Service Hatch Near the Centre of the Structure



Plates 21 and 22: The Stop-Cock

5.7 Interior of Tower

The interior of the water tower has whitish discoloration on the walls reminiscent of mineral build up rather than the remnants of a decorative finish, additional discoloration may have been the result of staining from water leakage. The interior of the tower is further marred by cement patching and the addition of machinery due to the conversion of the tower to electrical supply. Several niches (Plate 23) are also let into the tower walls; the original function of these is unknown.

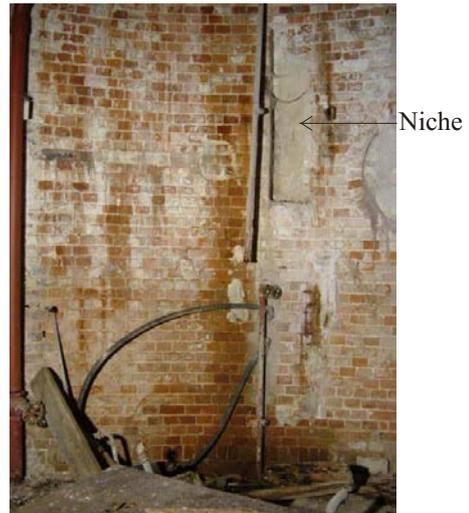


Plate 23: View of the Interior of the Tower Showing Location of Niche

5.8 The Ceiling

The ceiling supporting the underside of the cistern is an oak construction comprising main beams and joists; the hatch through to the tank is also clearly visible (Plate 24). The main beams include four that are recessed into the tower walls (Plate 25-26) and the joists are housed within the main beams. Later support was added in the form of iron I-beams in turn supported on vertical I-beams set into concrete footings. The iron supports are a much later addition to the tower: one is situated in front of the bricked up doorway, the other adjacent to a window.



Plate 24: The Hatch Access Viewed from the Floor of the Tower



Plate 25: A Main Beam Recessed into Wall Later Iron Beam Re-inforcement Below

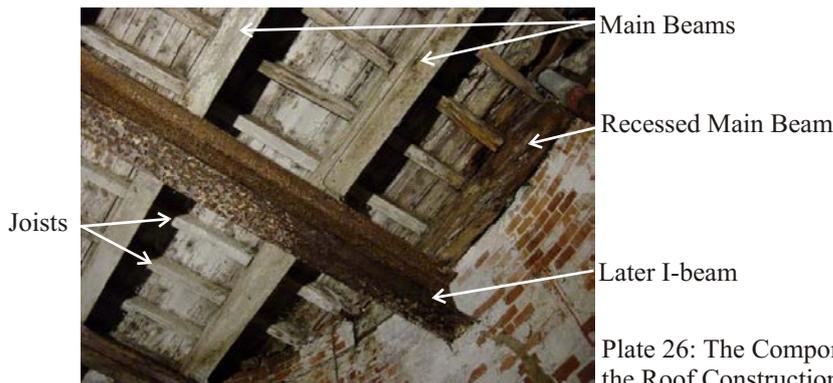


Plate 26: The Components of the Roof Construction

5.9 The Well

The well, situated in a central position within the tower is currently encased in a wooden box-like structure of plywood construction and is believed to be over 100 foot deep. The well is brick lined and there are putlock type holes let into the walls probably to aid in the construction. The well houses an iron pump mechanism: a wheel that would have held a drive belt is clearly visible as are the pistons and a large cogwheel. Iron joists are also *in situ* within the well, which may have been inserted to provide additional support at a later date in conjunction with the addition of the I-beams supporting the roof and tank.



Plate 27: The Interior of The Well



Plate 28: The Cog Wheel (top of Picture)



Plate 29: The Drive Belt Wheel (Situated at the opposite end from the Cog Wheel)



Plate 30: Detail of the Crank shaft attached to the Cog Wheel

5.10 Later Machinery

The fixtures and fittings *in situ* within the tower are predominantly later in origin than the construction itself. The conversion of the facility to electric power (Plate 31) with the addition of a large motor driven mechanism situated to the north of the current doorway (Plate 32-35) made some of the original

fittings redundant, resulting in their replacement with larger diameter pipes, taps and the addition of a modern water softening tank.



Plate 31: The Electric Supply



Plate 32: The Electric Supply connected to the 'modern' Pump



Plate 33: The Pump Mechanism from the Front



Plate 34: The Drive Wheel with Motor adjacent



Plate 35: Detail of Maker's Plate on Motor

The Pump mechanism illustrated in plates 32 to 34 bears a resemblance to the larger apparatus situated within the well: both have drive wheels separated by a crank shaft fitted to a cog-wheel to drive the pistons and in turn pump the well. The modern version is smaller and is driven by the electricity supply.

5.11 Floor

The floor of the tower is currently a combination of concrete and remnants of earlier paving blocks. The conversion to electric power and the consequent addition of electrical components and machinery may have required a more level, strong and stable surface than the brickwork. The later motor driven machinery is situated on an additional concrete and brick base 0.40 m high and U-shape in plan.

6. Discussion

The source of water for the estate was a deep well housed within the brick built tower. The water was pumped up through the well and stored in the lead lined cistern housed in the top of the tower: the highest point in order to

facilitate the flow of water for use on the estate. The metalwork required for the basic running of the tower would include three vertical pipes (Barry Barton, 2003) an inlet pipe, to fill the tank, an outlet pipe to distribute the water and an overflow pipe to prevent the tank from overflowing. An inlet pipe with float valve is *in situ* within the cistern but may be a later replacement. A small number of pipes narrow in diameter (c. 0.06 m) are still in situ within the tower and may be associated with the earlier stages of the towers function, prior to the electric conversion.

A tower similar in size to the Childwickbury is located at Wrotham in Kent and was built in the mid 19th century. This structure (Plate 36) was octagonal and held a lead lined cistern at the top under a low-pitched conical roof. The tower comprised a pony, or donkey worked pump over a well in the base of the tower and this may be how the water tower at Childwickbury originally functioned prior to the electricity conversion. The Childwickbury Tower is very similar in style to the Wrotham tower; however, the architectural detail of the Childwickbury tower places its origin in the Georgian period, making it an earlier example.



Plate 36: The Wrotham Water Tower of mid 19th Century Date

The Childwickbury tower may be seen as a functional, operational facility useful to the running of the estate, but it can also be viewed as a status symbol. The rebuilding of the country estate carried out by Caleb Lomax in the second half of the 18th century may have incorporated the addition of the water tower for facility and further evidence of status.

That the tower is shown on the 1840 Tithe map, provides a *Terminus Ante Quem* for the construction, locating it in the first half of the 19th Century: the stylistic detail places it firmly in the Georgian Period.

7 Conclusions

As discussed in Barry Barton's book 'Water Towers of Britain', the subject area within Britain has been largely neglected. There are few recorded examples of water towers published independently or as papers in Journals. Furthermore, the distribution map included in Barton's work does not hold any examples for the area within which the Childwickbury Tower is situated.

The tower is rare in type, location and date of origin. In addition it is an example largely unaffected by development. The tower was built to hold water and had continued to do so through the introduction of electricity into modern times. The current deterioration of the building fabric and the general dereliction of the tower call for work to be carried out to make safe and sound this rare structure.

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