



# Northamptonshire Archaeology

Archaeological building recording at former  
RAF Chelveston, Chelveston  
Northamptonshire  
October 2011



## Northamptonshire Archaeology

2 Bolton House  
Wootton Hall Park  
Northampton NN4 8BE  
t. 01604 700493 f. 01604 702822  
e. [sparry@northamptonshire.gov.uk](mailto:sparry@northamptonshire.gov.uk)  
w. [www.northantsarchaeology.co.uk](http://www.northantsarchaeology.co.uk)



Northamptonshire  
County Council

Tim Upson-Smith

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**STAFF**

Project Manager: Steve Parry MA, MifA, FSA  
Text: Tim Upson-Smith BA, PG Dip  
Fieldwork: Tim Upson-Smith  
Illustrations: Amir Bassir BSc, PlfA

**QUALITY CONTROL**

	Print name	Signature	Date
Verified by	J Prentice		
Checked by	P Chapman		
Approved by	A Chapman		

**OASIS REPORT FORM**

PROJECT DETAILS	
Project title	Archaeological building recording at former RAF Chelveston, Chelveston, Northamptonshire
Short description	Northamptonshire Archaeology carried out a buildings recording action at the former RAF Chelveston Airfield, Chelveston, Northamptonshire to record two Nissen huts of possible WW2 construction prior to their restoration for reuse as storage.
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Previous work	Unknown
Future work	unknown
Monument type and period	WW2 or later Nissen Huts
PROJECT LOCATION	
County	Northamptonshire
Site address	Chelveston Airfield, Chelveston
Easting	5006
Northing	2688
Area	116 sq m
PROJECT CREATORS	
Organisation	Northamptonshire Archaeology
Project brief originator	Northamptonshire County Council Archaeological Advisor
Project Design originator	Northamptonshire Archaeology
Director/Supervisor	Tim Upson-Smith BA, PGDip
Project Manager	Steve Parry
Sponsor or funding body	CgMs Consulting
PROJECT DATE	
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**ARCHAEOLOGICAL BUILDING RECORDING**  
**AT FORMER RAF CHELVESTON,**  
**CHELVESTON, NORTHAMPTONSHIRE**

***Abstract***

*Northamptonshire Archaeology carried out a buildings recording action at the former RAF Chelveston Airfield, Chelveston, Northamptonshire to record two Nissen huts of possible WW2 construction prior to their restoration for reuse as storage.*

**1 INTRODUCTION**

Northamptonshire Archaeology (NA) were commissioned by CgMs Consulting to undertake an archaeological buildings recording action on two Nissen Huts at former RAF Chelveston, Chelveston, Northamptonshire, (NGR TL 006 688, Figs 1 and 6-20).

The work was carried out in response to planning permission being granted to Northamptonshire County Council for the conversion of the two Nissen huts, to a fire training facility.

**2 OBJECTIVES AND METHODOLOGY**

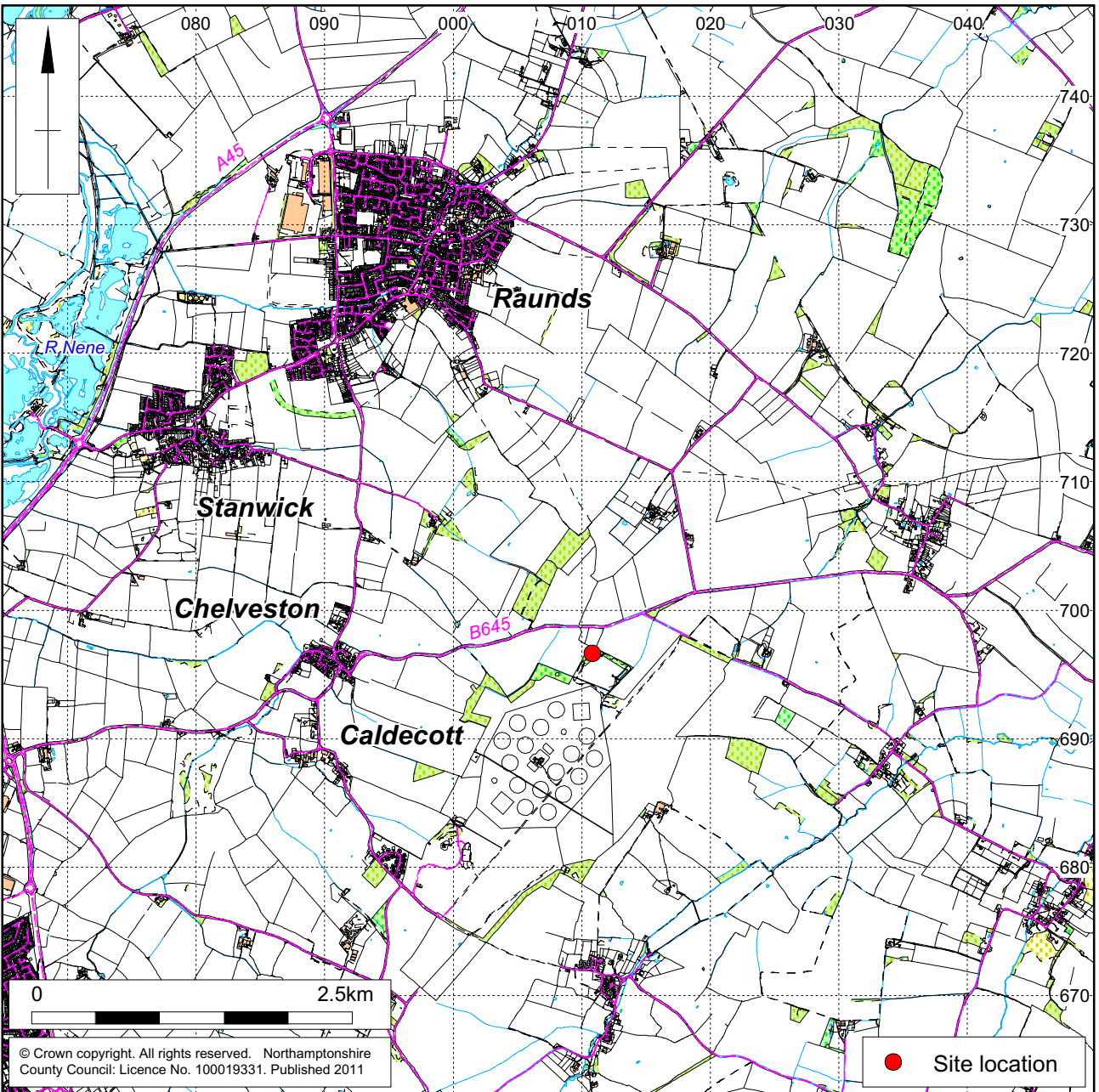
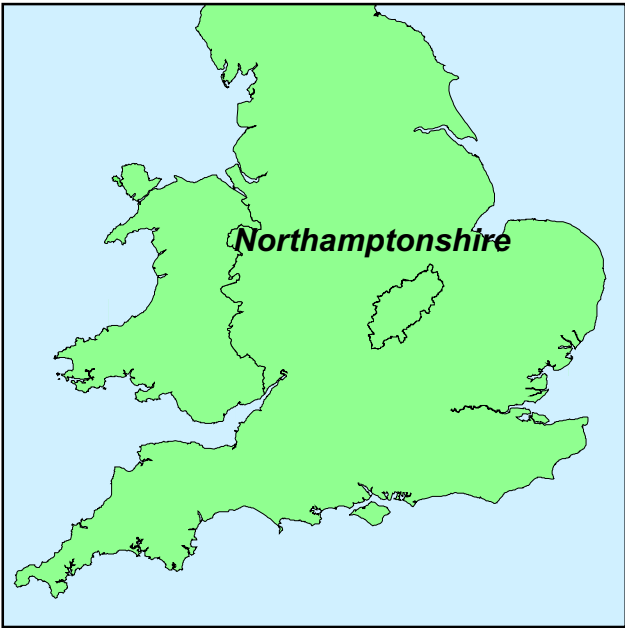
The principal objectives of the building recording brief as set out in the WSI (NA 2011) was to record and understand the nature, function and character of existing buildings and to place them in their historic, cultural and environmental setting. The level of recording was specified as Level 2 – a descriptive record (English Heritage 2006, 14).

The specific aims of the building recording project were to:

- make a written, drawn and photographic record of the buildings as they exist prior to redevelopment;
- enhance and substantiate the rapid survey record produced by the English Heritage Cold War Assessment;
- provide an understanding of the functioning of the buildings based on surviving historic fabric;
- place Chelveston Airfield within its military context.

A site visit was made on Thursday, 6 October 2011. All principal exterior elevations were photographed. The interiors were photographically recorded to include structural details that may be lost during alterations or moved to alternative locations within the building.

A representative plan and cross section of the building was drawn. Fixtures and fittings that related to the buildings' use were recorded, and former uses of the individual buildings were postulated where sufficient evidence remained to do so.



Scale 1:50,000

Site location Fig 1



### 3 HISTORICAL BACKGROUND

#### 3.1 Chelveston Airfield

Chelveston Airfield lies in eastern Northamptonshire, close to the village of Caldecott on the county boundary with Bedfordshire. The area of the airfield is today largely pasture characterised by the remnants of the former airfield dating to the Second World War (1939-46) and Cold War periods (1947-8 to 1991). The site is significantly degraded with large areas demolished after the airfield was closed.

Chelveston Airfield was built in 1940-1 and opened on 15 August 1941. The airfield comprised a standard RAF 'A' pattern airfield and its fully developed form is recorded in contemporary plans and photographs (Chelveston Record Site Plan Site No1 [Airfield Site] October 1941). In mid-1942 the airfield was established as the base for the United States Army Air Force (USAAF) 301st Bomb Group, replaced in December by the 305th Bomb Group. During the winter months of 1942/43 the airfield's runways and dispersal areas were expanded to accommodate the B17 aircraft of the 305th Bomb Group. At the end of the war the airfield was returned to the RAF and from October 1945 to May 1947 it remained a sub-site of 25 Maintenance Unit.

The Second World War Airfield officially closed in 1947 but in 1951 it was re-commissioned to accommodate United States Air Force (USAF) B-47 bombers capable of carrying nuclear weapons. (The name changed from USAAF to USAF in 1946.) This required the construction of a rectangular concrete apron, headquarters building and crash tender shed and a new control centre in addition to a new runway, dispersal and taxiways. On 1 December the base was handed over to the USAF Third Air Force.

Between 1951 and 1954 the airfield was almost entirely re-built. The former runways and taxi-paths were partially removed to accommodate the new designs (Smith 2006, 58, 60, 65). The Airfield remained under the jurisdiction of the USAF until 1 August 1962. In 1977 the runways and most of the perimeter tracks were removed to be used as hardcore in the development of Milton Keynes. Later in the year the airfield site was re-commissioned as a Radio Transmitter site under the 81st Signals Unit. Eighteen aerial masts were erected on the site of the former airfield and remained in use until December 2003. In June 2005 the site was sold by Bruton Knowles selling agents (Dawson and Hooper 2008, amended 2011).

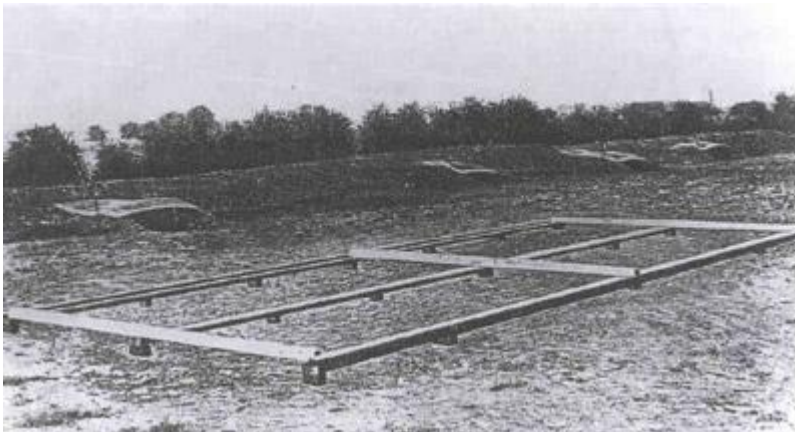
### 3.2 Nissen Huts

The design of the Nissen Hut goes back to the First World War when, in April 1916, Major Peter Norman Nissen of the 29th Company Royal Engineers began to experiment with hut designs.

Nissen was a mining engineer and inventor. He constructed three prototype semi-cylindrical huts, the shape of which was derived from the drill-shed roof at Queen's University, Kingston, Ontario. The design was subject to intensive review by his fellow officers, which helped Nissen develop the design. After the third prototype was completed, the design was formalized and the Nissen hut was put into production in August 1916. At least 100,000 were produced in World War I.

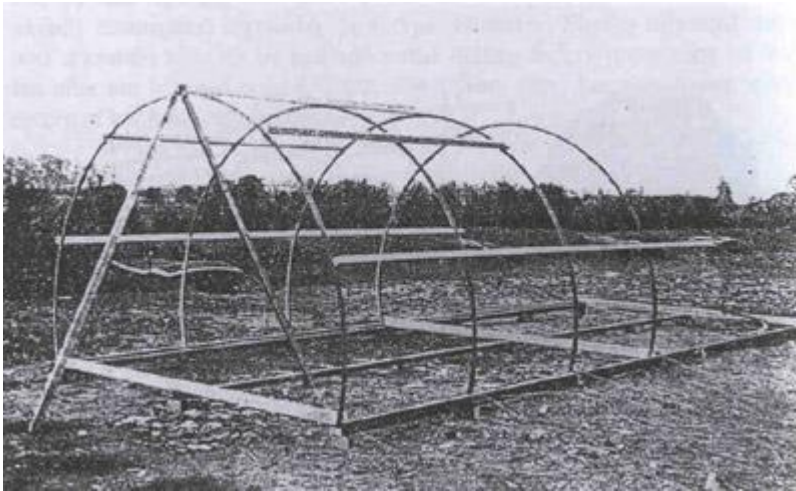
Production continued in the interwar period although at a slower rate and at the start of the Second World War, the company waived their patent rights for war time production. Due to the flexible nature of the design the huts were built in their thousands and were a common site on military bases across the allied countries ([http://en.wikipedia.org/wiki/Nissen\\_hut](http://en.wikipedia.org/wiki/Nissen_hut)).

Figures 2-5 show how a basic Nissen Hut was assembled:



Wooden bearers are laid on level ground

Fig 2

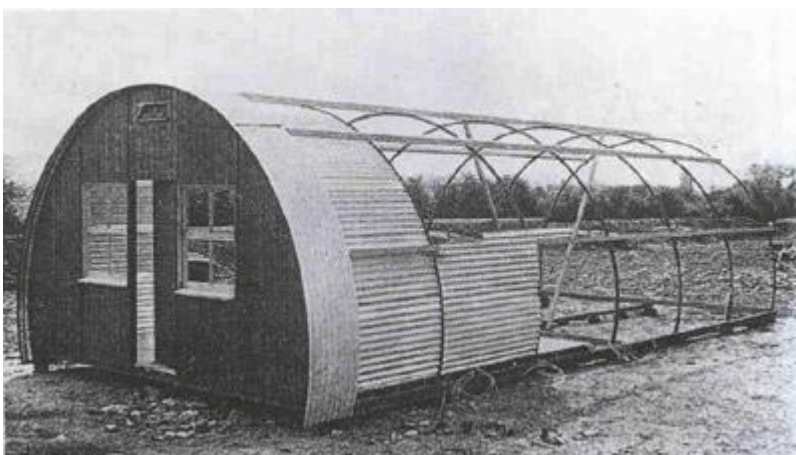


Steel ribs are bolted to the bearers and wooden purlins are fixed to the ribs with hook-bolts Fig 3



Wooden joists, to support the wooden floor panels, are screwed to the bearers Fig 4

The surveyed huts at Chelveston had concrete floors.



The hut is clad in corrugated iron Fig 5

<http://www.nissens.co.uk/Working%20Drawings.htm>

The cross-section was not precisely semi-circular, as the bottom of the hut curved in slightly. The exterior was formed from curved corrugated steel sheets, 10 feet 6 inches by 2 feet 2 inches (3.2 × 0.70m), laid with a two-corrugation overlap at the side and a 6 inch (180mm) overlap at the ends. Three sheets covered the arc of the hut (about 54 sheets in all were required, for a standard 6 bay hut). These were attached to five 3 × 2 inch (75 × 50mm) wooden purlins and 3 × 2inch wooden spiking plates at the ends of the floor joists.

The purlins were attached to eight T-shaped ribs (1¾ × 1¾ × ⅛ inch; 45 × 45 × 5mm) set at 6 feet 0.5 inch (1.8m) centres. Each rib consisted of three sections bolted together using splice plates, and each end was bolted to the floor at the bearers. With each rib were two straining wires, one on each side and a straining ratchet (or in some cases a simple fencing wire strainer). The wires were strained during construction. The straining wires do not appear in the original Nissen patent.

The purlins were attached to the ribs using a "hook" bolt, which hooked through a pre-drilled hole in the rib and was secured into the purlin. The hook bolt was a unique feature of the Nissen design.

Interior lining could be horizontal corrugated iron (as at Chelveston) or material like Masonite attached to the ribs. The roof and lining form a circular space with a radius of 8 feet 0.5inch (2.4m), although, because of the inward curve, the floor was only 15 feet 10inches wide (4.8m). The space between the interior and exterior lining could be used for insulation and services, if required.

The walls and floors rested on foundations consisting of 4 × 4inch (100 × 100mm) blocks with 15 × 9 inch (380 × 230mm) sole plates. On these were 4 × 3inch (100 × 80mm) bearers and 4 × 2 inch (100 × 50mm) joists at 2 feet 10 inch (1.0m) centres. The floor could be made from tongue and groove floorboards or concrete as at Chelveston.

At either end the walls could be made from a wooden frame with weatherboards nailed to the outside. The end walls could also be in brick as at Chelveston.

Nissen huts come in three internal spans - 16ft (4.90m), as at Chelveston, 24ft (7.3m) or 30ft (9.20m). The longitudinal bays come in multiples of 6ft (1.83m). ([http://en.wikipedia.org/wiki/Nissen\\_hut](http://en.wikipedia.org/wiki/Nissen_hut) )

#### 4 BUILDING ASSESSMENT

The buildings were visited on the 6 October 2011 to carry out a photographic and drawn survey of the buildings to be affected by the proposed works.

The buildings which fell within the scope of the survey consisted of two Nissen Huts which formed part of a wider group of Nissen Huts surviving in the northern corner of the airfield (Figs 6 and 7). The two surveyed huts are part of a group of four, two of which have recently been renovated and are being reused. The huts are separated by 1.8m high brick walls (Fig 8). The purpose of these walls is unclear as they do not appear to be substantial enough to act as blast walls and may just divide the huts from each other (Figs 6, 8 and 9). Of the Nissen Huts in this part of the airfield these were the only group to have these walls between them (Figs 6 and 7).



View looking south-east showing the group of four huts

Fig 6

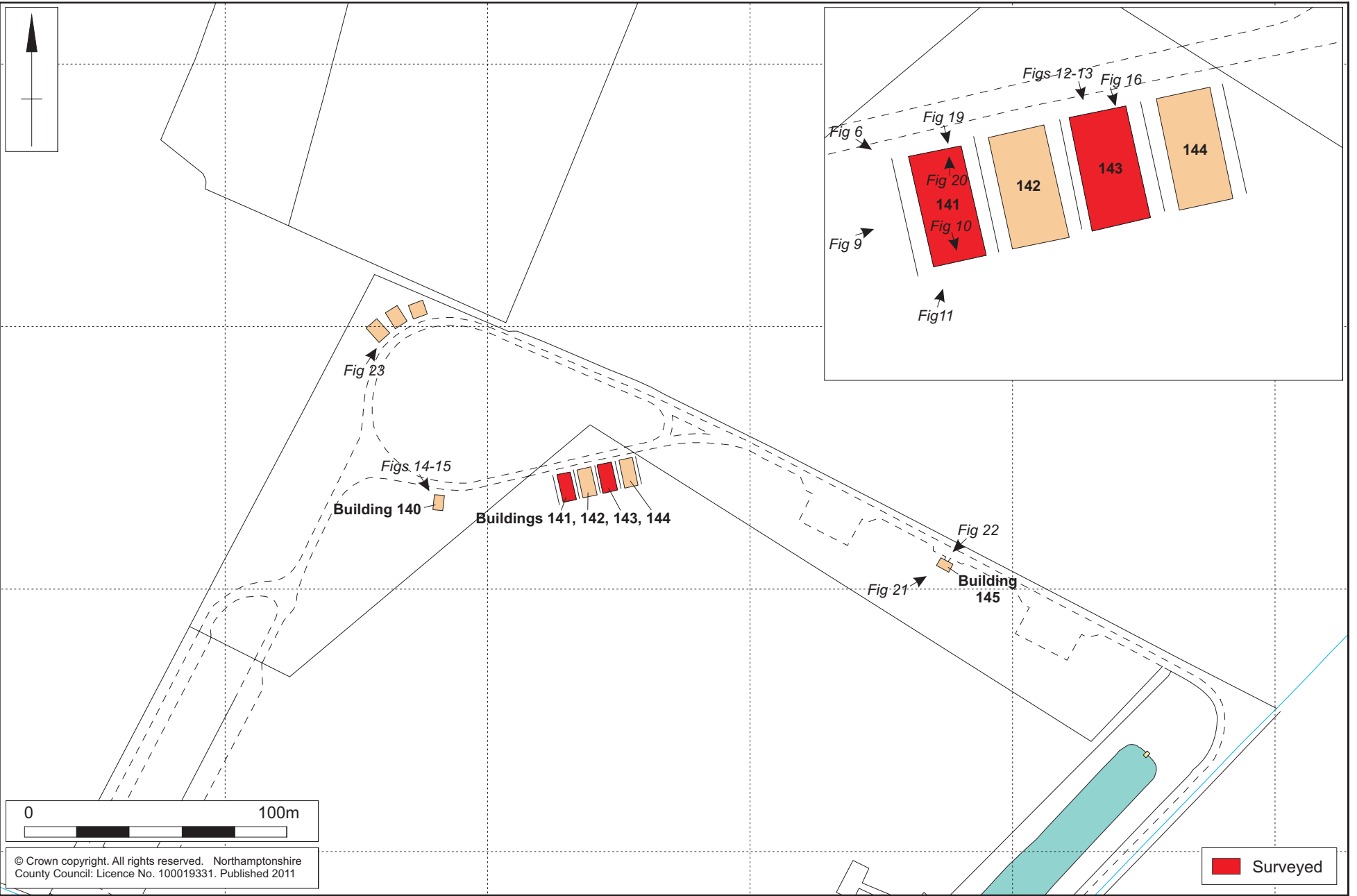
The four Nissen Huts and dividing walls appeared to be contemporary with each other, with the huts being numbered in sequence (141-144) with the same stencilled information on each. Nissen Huts 141 and 143 were the two which were recorded.



Scale, Main 1:2000, Inset 1:500 (A4)

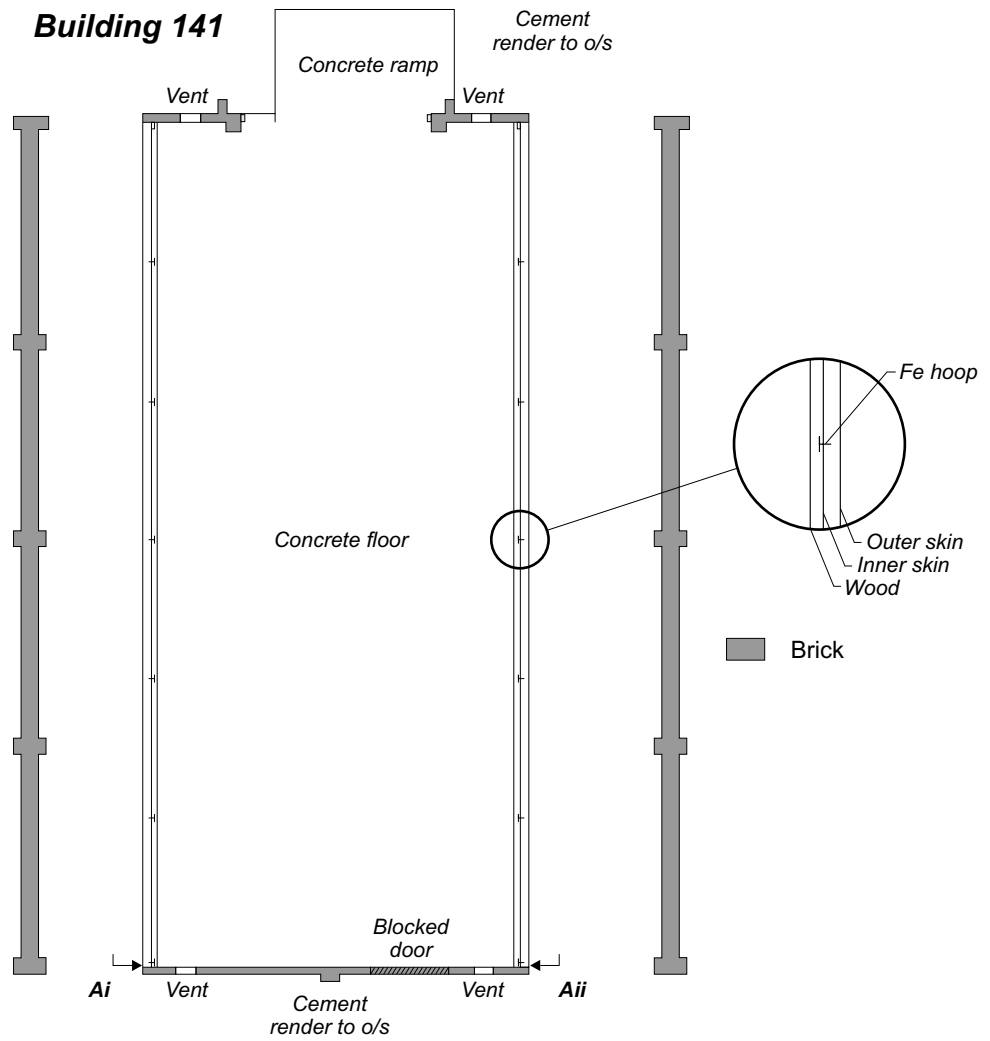
Figure location plan

Fig 7

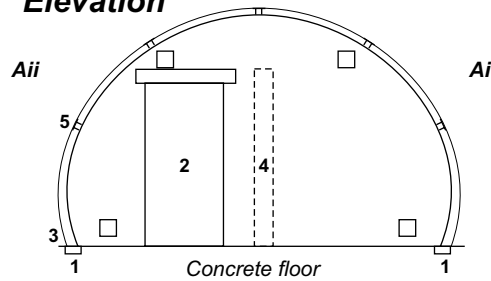




**Building 141**



**Elevation**



- 1 Wood sole plate
- 2 Blocked door
- 3 Fe Hoop
- 4 External buttress
- 5 3" x 1½" timber purlins for outer skin





View looking east showing the dividing wall

Fig 9

The two surveyed Nissen Huts were to all intents and purposes the same and are described together. All four of the huts in the group are six bay Nissen Huts, with brick walls blocking either end (Fig 8). No windows were present in the huts. The rear walls of the two surveyed examples had originally had a door, which had been subsequently bricked up (Figs 8, 10 and 11). The outside of the wall had been rendered in cement covering the bricked up doorway indicating that there was a change of function or need at some point in the use of the buildings. Four iron rungs were built into the back of the surveyed huts, the bottom pair were horizontal and the upper pair were placed vertically (Fig 11), the function of these was not clear.



Interior of Hut 141, showing blocked door (left of the ranging pole), looking south Fig 10





Back wall of Hut 141 showing concrete render over the blocked door, the vents and four iron rungs, looking north Fig 11

The front brick wall to each hut had a 2.4m wide opening, the doors to which had been removed (Fig 12).



Front wall of Hut 143, looking south Fig 12



The front walls were also cement rendered and each building had a small stencilled panel (Fig 13) giving the;

Building No. ...

Resistance - ... Ohms

Date of inspection - ...



Stencilled panel on the front wall of Hut 143

Fig 13

It was not possible to determine the date of inspection on the two huts which were surveyed, although Hut 140 which stood in the woods to the west of the surveyed examples, was inspected on 22/11/63 (Figs 7, 14 and 15). The date would indicate that the huts were rendered pre-1963.



Hut 140, looking south-east

Fig 14



Stencilled panel on Hut 140

Fig 15

The resistance reading may relate to the building's earth as it was a metal building, which may have been used for storing munitions, where sparks would have been very undesirable.

Simple vents were present in the brick end walls of each hut, three in the front wall and four in the back (Fig 16).



Vent detail

Fig 16

The huts were clad in corrugated iron sheeting in accordance with the description in Section 3.2. The covering varied in its state of completeness and condition, allowing the various details of internal construction and fittings to be viewed (Figs 17 and 18).





Purlin detail, Hut 143

Fig 17



Straining ratchet detail, Hut 143      Fig 18

Each of the two surveyed huts had an electrical supply with the junction boxes surviving on the front walls to the left side of the opening (Fig 19). The associated internal wiring had been removed (Fig 20).



Electric junction box on Hut 141

Fig 19



The inside of the front wall showing where the wiring came through from the junction box  
Fig 20

No other internal fixtures or fittings were observed.

A further hut, 145, which was not subject to survey was observed to the east of the surveyed huts in the woods. This hut appeared to be in its Second World War condition, with no sign of the later stencilling (Fig 21). This hut had a steel framed window in its back wall (Fig 22).





Hut 145, looking north-east

Fig 21



Hut 145, looking south-west

Fig 22

A further group of three huts was located to the north-west of the surveyed group, these huts were in a poor state of repair (Fig 23).



Group of three huts to the north-west of the surveyed group, looking north-east Fig 23

## 5 DISCUSSION

The survey recorded the two Nissen Huts in the group of four which had not been previously renovated. The survey demonstrated that the huts were of standard build, and within the variations of the basic structures that were available. The only alteration which appears to have taken place was the blocking up of the door on the back wall of the two surveyed huts. It was noted that on the two previously restored huts that the door in the back wall had been reinstated, no doubt for use as a fire exit.

The date of the buildings inspection raises a slight issue as the USAF left Chelveston in 1962 and the readable stencil on Hut 140 gave a date of 1963, suggesting that there may have still been a USAF presence, as the site remained as a reserve airfield.

The stencilling would suggest that the huts had been used for storage of electrical or electrically sensitive material during the second period that the airfield was under the tenure of the USAF at the time of the Cold War.

The other surviving huts in the woods were subject to basic photographic recording as they formed part of the wider group of huts in this part of the airfield.

## **BIBLIOGRAPHY**

EH 2006 *Understanding Historic Buildings: A guide to good recording practise*, English Heritage

Dawson, M, & Hooper, M, 2008 (Amended 2011) *Project Design for an Archaeological Watching Brief & Recording of existing buildings prior to development, Chelveston Biomass Plant, Northants*, CgMs Consulting Ltd Project Design

IfA 2008 *Standard and guidance for the archaeological investigation and recording of standing buildings and structures*, Institute for Archaeologists

NA 2011 *Specification for a building recording action on former defence buildings for conversion to fire training facility on land at the airfield, Chelveston, Northamptonshire*, Northamptonshire Archaeology

NCC 2011 *Brief for a programme of archaeological building recording in advance of the conversion of former defence buildings to form fire training facility at Chelveston, Northamptonshire*, Northamptonshire County Council

Smith J N, 2006 *Chelveston. One Name Two Airfields. An Airfield Focus Special*, GMS: Peterborough

## **Websites**

<http://www.nissens.co.uk/> (accessed December 2011)

[http://en.wikipedia.org/wiki/Nissen\\_hut](http://en.wikipedia.org/wiki/Nissen_hut) (accessed December 2011)





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Wootton Hall Park  
Northampton NN4 8BE

t. 01604 700493 f. 01604 702822

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w. [www.northantsarchaeology.co.uk](http://www.northantsarchaeology.co.uk)



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