



**University of  
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**Archaeological Services**

**An Archaeological Standing Building Survey of  
Two Nissen Huts & a Blast Shelter  
at *MIRA*, Formerly RAF Nuneaton,  
Higham on the Hill,  
Leicestershire  
(NGR SP 36971 96128)**

**Gerwyn Richards**



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**For: MIRA Ltd**

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**Summary**

*University of Leicester Archaeological Services was commissioned by MIRA Ltd to undertake an archaeological standing building survey (Level 2) of two Nissen huts and a photographic record of a World War II blast shelter at their Lindley site, formerly RAF Nuneaton, Higham on the Hill, Leicestershire. The structures are being demolished in advance of the proposed re-development of the site.*

*The airfield at RAF Nuneaton was in use between 1943 and 1945 as an operational training unit (OTU), flying Wellington bombers and later Dakota DC-3 transport aircraft. In 1946 the site was acquired by the Motor Industry Research Association, MIRA and has remained as its headquarters and proving ground. The Nissen Huts and blast shelter are located towards the western perimeter of the former airfield. Both structures are standard World War II designs used extensively at airfields throughout Britain. The Nissen Huts are unusual in that they have remained on their original site.*

*The archive will be held by Leicestershire County Council Museums, under the museums accession number X.A13.2011.*

**1. Introduction**

University of Leicester Archaeological Services was commissioned by MIRA Ltd. to undertake an archaeological standing building survey of two Nissen Huts and a photographic record of a blast shelter at their Lindley site, formerly RAF Nuneaton, Higham on the Hill, Leicestershire (SP 36971 96128; Figure 1). Planning permission has been granted to demolish all three structures in advance of the proposed redevelopment of this part of the site with the construction of new workshops and a control tower. The structures all relate to the original World War II airfield and as a result, the Senior Planning Archaeologist, as advisor to Hinckley and Bosworth Borough Council, recommended that the structures be recorded prior to demolition, to level 2 standard as defined in *Understanding Historic Buildings: A guide to good recording practice* (English Heritage 2006).

The project was completed in accordance with the Institute for Archaeologists (IfA) *Code of Conduct* (rev. 2010) and adhered to their *Standard and Guidance for Archaeological Investigation and Recording of Standing buildings or Structures* (Rev. 2008). In addition, Leicestershire County Council's *Guidelines and Procedures for Archaeological Work in Leicestershire and Rutland* was followed.

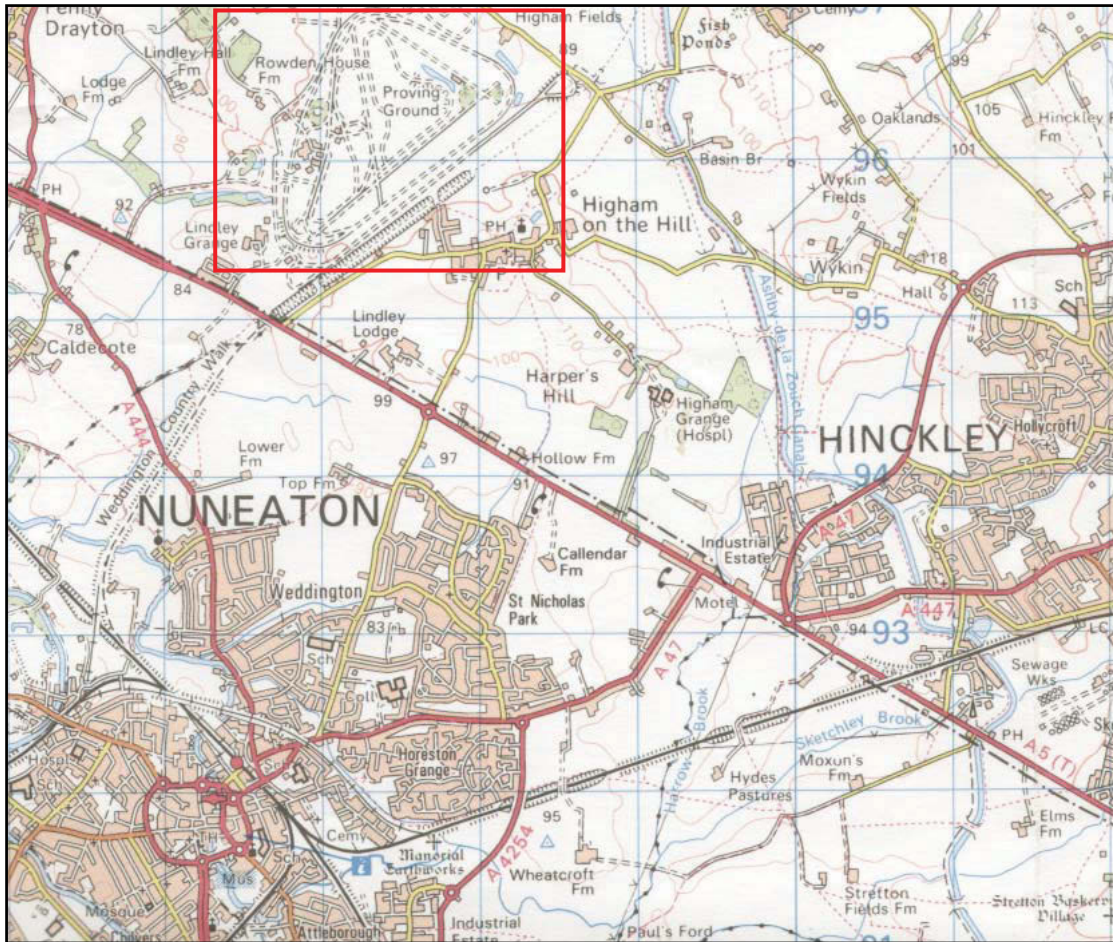


Figure 1: Site location

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## 2. Background

The land at Higham on the Hill was first surveyed as a potential airfield by the Air Ministry in 1940, with groundworks commencing in the spring of 1941. The airfield did not become operational until February 7th 1943, a period of approximately 18 months, which included a 6 month delay while negotiations were carried out with the Bishop of Leicester to remove the first 60 feet of the spire of St Margaret's Church at Stoke Golding which had been deemed to constitute a danger to aircraft operations. The stones were numbered and stored and the tower rebuilt in 1947 (Bonser 2001, Brown et al 1995, Francis 2010).

The station was opened in February 1943 within 93 Group, Bomber Command, as a satellite airfield for RAF Bramcote. As early as April 1943, the station was transferred to 44 Group, Transport Command, again as a satellite to Bramcote where 105 Operational Training Unit (OTU) was based and aircraft began to arrive at the end of June. In June 1945 the station was once again transferred, this time coming under the control of 4 Group, Transport Command and began to re-equip with Dakotas. In

August, the same year 105 OTU was re-titled 1381 Transport Conversion Unit ((T)CU), Dakota aircraft wholly replaced Wellingtons and training continued, but on a much reduced scale. By the autumn of 1945 it was clear that the station would close and on November 21st, 1381 (T)CU was scheduled to transfer to Desborough, Northamptonshire. However, the weather on the day was so poor that the move was delayed.

During 1946 negotiations between the Air Ministry and the Motor Industry Research Association (MIRA) began regarding acquiring a former airfield to use as a proving ground. A shortlist of 15 was drawn up and RAF Nuneaton was chosen. The first recorded use of the test site was in October 1948.

The use of the site by MIRA has led to extensive re-development, but has also preserved a number of the World War II buildings, including the two Nissen Huts, a T2 Hanger, now housing the wind tunnel and the original control tower, acting as a control tower for the proving ground. The original visual control room (VCR) was dismantled and rebuilt at the Imperial War Museum, Duxford.

Nissen Huts were invented by Major Peter Norman Nissen, a Canadian serving with the 29th Company, Royal Engineers during the First World War. The most important factors governing the design were cost of materials and portability. The Nissen hut was prefabricated for ease of erection, could be transported in standard military vehicles and could be erected by 6 men in only 4 hours. Production began in August 1916 and approximately 100,000 were built during the First World War. Production decreased during the inter-war years but revived in 1939.

Structurally the Nissen hut was formed from curved corrugated steel sheets, 10' 6" long by 2' 2" wide (3.2m long by 0.7m wide) with a two corrugation overlap and a 6" (0.15m) overlap. The frame consisted of T-shaped steel ribs, measuring 1 $\frac{3}{4}$ "  $\times$  1 $\frac{3}{4}$ "  $\times$   $\frac{1}{8}$ " (45mm x 45mm x 5mm) at 6' 1/2" centres (1.8m). Each rib was made up of three sections bolted together using splice plates. The use of an internal skin, frequently another layer of corrugated sheet laid horizontally clearly differentiates the Nissen hut from other similar huts. The end walls could be constructed from any number of different materials. Nissen huts came in three spans, 16', 24' and 30' (4.9m, 7.3m and 9.2m).

### **3. Aims and Methodology**

The specific objectives of the standing building survey were as follows:

- To provide a written, drawn and photographic record of the buildings prior to their demolition.
- To ensure the long-term preservation of the information through deposition of the record and a summary written report with an appropriate depository.
- The site-based element of the Historic Building Recording programme involved the production of measured survey drawings and the compilation of photographic and written records.

- Desk-based research included the analysis of readily available documentary and cartographic sources.



Figure 2: Buildings recorded during this work (in purple) and other WWII era buildings.

(Drawing supplied by MIRA. Not to scale)

*Orientation:* The proposed development area occupies an area towards the western perimeter of the original airfield and consists of two Nissen Huts and a single brick-built blast shelter to the north-east (Fig. 2). The long axis of the Nissen Huts is orientated approximately north-west to south-east. For ease of description this is taken hereafter to be north to south, with the principal elevations being the north facing. Where the terms 'left', 'right', 'front' and 'back' etc. are used in the report, this is in relation to these principal elevations. For the purpose of this report letter identification has been allocated to identify the buildings.

The site visit was undertaken by Gerwyn Richards on February 8th 2011.

As far as is known, no previous historic building recording has been undertaken of the buildings.

#### 4. Description of the Buildings

##### *Blast Shelter (Figures 4 and 10)*

The blast shelter is located approximately 100m north-east of the Nissen huts, adjacent to the original perimeter road (Figure 2). It is a brick-built open shelter, 8.6m long by 4m wide within a raised earthwork. There are two access points, one on each long axis along with a central blast wall dividing the structure lengthways. It is constructed of 8" x 2<sup>3</sup>/<sub>4</sub>" x 4" red bricks laid in a Dutch Bond (alternating courses of headers and stretchers, with the stretchers moving by a half each course).

Such blast shelters are very common on air fields and were designed to offer shelter to ground crew and airmen caught in the open during an air raid. Construction of this type of shelter began in 1941, mainly within the communal, technical and administrative areas of airfields. The blast shelters were built in three main sizes, housing 10, 20 or 50 personnel. This example is the largest of the three.

The shelters were also designed to be used as defensive positions by semi-trained airmen in the event of a ground attack upon the airfield.

##### *Nissen Huts (Figures 7 – 9)*

There are two Nissen huts joined by a cross passage within the proposed development area (Figure 2). Both are standard 30ft (9.2m) span. The eastern hut, building A is the larger of the two, measuring 133ft (40.6m) long; the western hut, building B is smaller, measuring 108ft, 33.09m. There are large roller shutter doors on both northern elevations. The northern ends are built of concrete blocks, suggesting they may not be original. Original timber-framed windows survive on each long elevation; there is also a door on the east side of building A which originally led to the control tower. Part of the original stove pipe also remains on the western side of building B, towards the northern end. Nissen huts were originally heated by brick and iron stoves built against one of the long elevations.

Internally, both buildings are much altered and somewhat neglected, having been used as maintenance and grounds-keeping stores by MIRA for a number of decades, leaving little of their original form or function, or indeed any evidence of potential early use by MIRA. The standard Nissen hut design continues internally. The frame comprises T-shaped steel ribs, measuring 1<sup>3</sup>/<sub>4</sub>" x 1<sup>3</sup>/<sub>4</sub>" x 1/8" (45mm x 45mm x 5mm) at 6' <sup>2</sup>/<sub>5</sub>" centres (1.84m), slightly wider than the standard centre. The floors are composed of poured concrete and are not likely to be original.

The southern walls of both buildings are of original brick construction. The bricks are 9" x 3" x 4<sup>1</sup>/<sub>2</sub>" red bricks laid in a stretcher bond (rows of stretchers placed on centre with the joints below), with two brick piers, slightly off centre. There is a brick-built cross passage joining the two huts, the brickwork matches that of the southern walls and appears to be original.



Within building B there appears to be an original brick-built partition towards the southern end of the building, with two original-looking timber doors, suggesting the space beyond has been divided; unfortunately, there was no access to this part of the building at the time of the survey. Limited evidence of the internal skin was also visible at the southern end of building B; the skin consisted of a type of fibreboard attached to timber purlins, which in turn were attached to the steel ribs. Limited traces of early, possibly original, paint also remained on the inner skin as well as on some of the timber window reveals. There was no evidence of the stove below the stove pipe. Both the nature of the cladding and the stove indicates the hut originally had a domestic use. Cladding on non-domestic huts, such as for example machine shops, was normally limited to a second skin of corrugated sheeting laid horizontally.

The cross passage joining the two huts appears to be original, as the bricks used on the external walls are identical to those used in the southern walls. The partition wall between building A and B is fibreboard on a timber frame.

## **5. Conclusion**

Both the blast shelter and the Nissen Huts are good examples of World War II airfield structures which have survived far beyond their original functions. These structures have survived because the former airfield was taken over by MIRA and not cleared and returned to agricultural land like so many airfields.

Nissen Huts were only intended as temporary structures, with a limited lifespan, however, these examples indicate that even with limited maintenance the design itself is strong enough to survive over 60 years. Upon clearance, the vast majority of Nissen Huts were dismantled and sold as war surplus and frequently re-used as agricultural or industrial buildings. The two examples at MIRA are unusual, therefore because they have remained in their original location.

The blast shelters were a standardised design and large numbers were built on airfields throughout Britain, again most were demolished or infilled once the airfield was de-commissioned. There is no known evidence that RAF Nuneaton was ever attacked, so it is likely the blast shelter was never used.

## 6. Bibliography

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## 7. Archive & Publication

The site archive consists of

- 1 A2 permagraph sheet containing sketch plans & site notes
- CD containing 53 digital images
- 2 A4 contact sheets
- 51 Black & White negatives and contact prints
- 2 A4 photo record sheets
- Unbound copy of this report (ULAS Report Number 2011-023)

The archive will be held at Leicestershire County Council Museums under the Accession Number X.A13.2011.

A version of the summary (above) will be submitted to the editor of the local journal *Transactions of Leicestershire Archaeological and Historical Society* for inclusion in the next edition.

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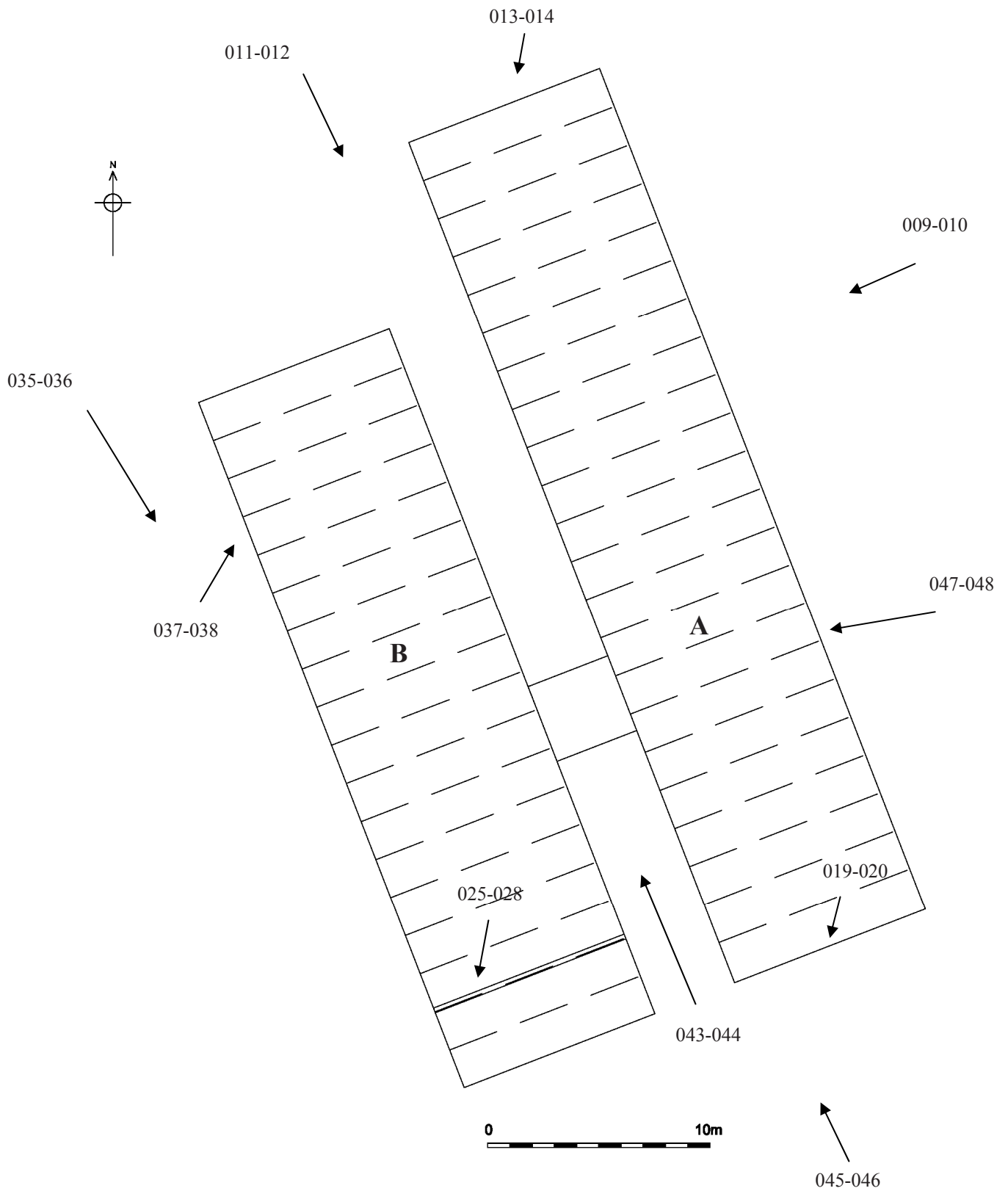


Figure 3: Nissen Huts

Showing building identification & location of selected photographs.

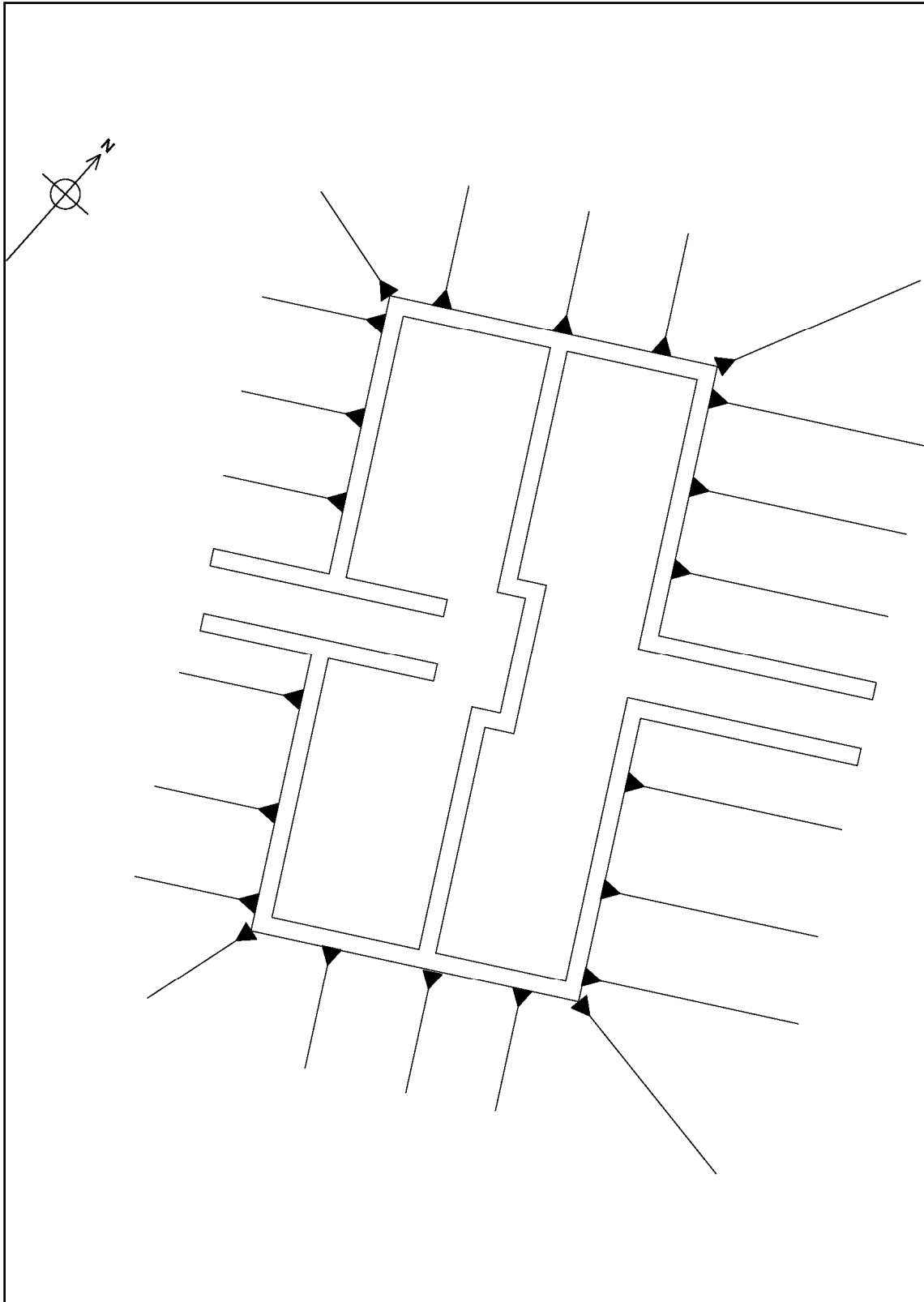


Figure 4: Sketch plan of blast shelter.



Figure 5: North facing elevations of the Nissan huts (Looking South).



Figure 6: Building A (Looking West).



Figure 7: Building B (Looking South-east).



Figure 8: Building A, internal view (Looking South).

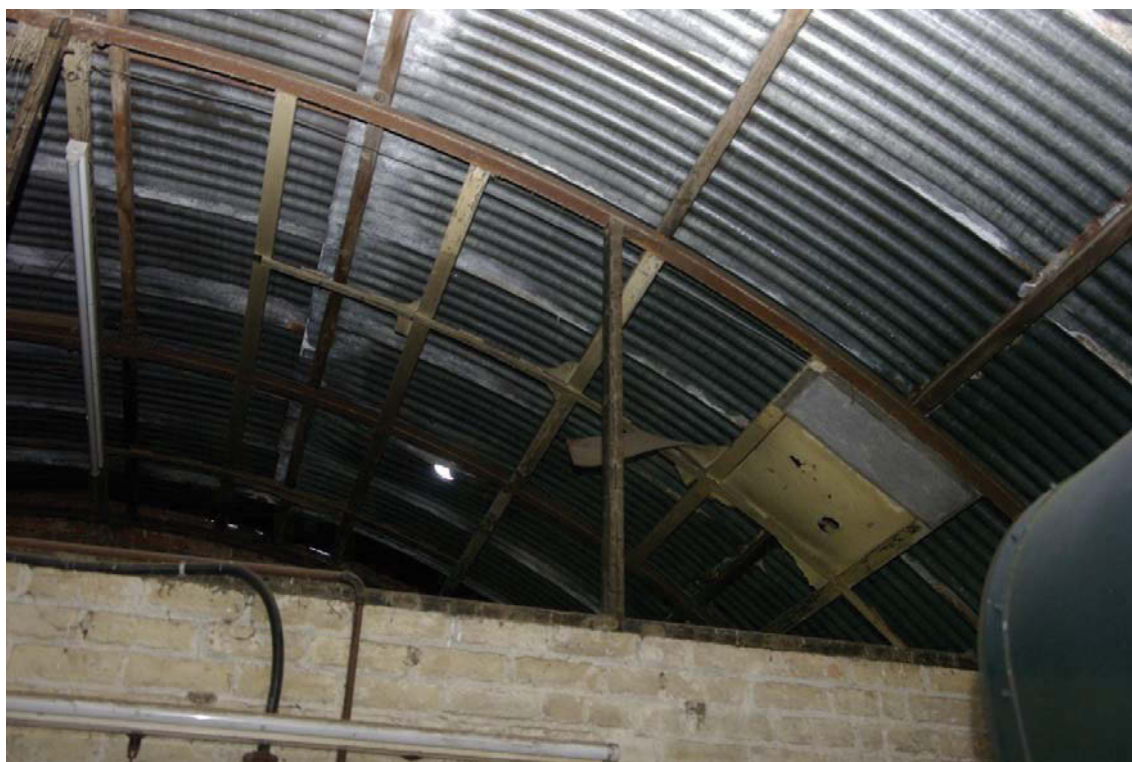


Figure 9: Building B, remains of internal cladding.



Figure 10: Blast Shelter (Looking North West).



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