
Building 54 and 54a: Pen yr Orsedd Slate Quarry **Nantlle**



Level 2 photographic building record

GAT Project No. 2071

Report No. 835

Nov, 2009

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Prepared for
Welsh Slate

Nov 2009

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ARCHAEOLOGICAL BUILDING RECORDING AT PEN YR ORSEDD SLATE QUARRY, NANTLLE (G2071)

Summary

Gwynedd Archaeological Trust has completed a photographic building survey in response to assessment report 784. 2008. A level 2 building survey was completed on 4th March 2009 in which the interior and exterior of building 54 and 54a was recorded. Map evidence shows that both these buildings were constructed during a similar period. Neither exist on the Ordnance survey 1900 map (figure 1), whereas they both appear on the 1915 Ordnance survey (figure 2). Building 54 functioned as a winding house, an office and an explosives store, whereas the function of building 54a could not be definitely ascertained, but is thought to have been an earlier steam winding house.

1 INTRODUCTION

Welsh Slate has commissioned Gwynedd Archaeological Trust to carry out a photographic building survey of the ancillary building 54, which was recorded in the archaeological assessment of the Pen Yr Orsedd quarry (GAT report 748) in advance of quarrying. The survey incorporated ancillary building 54 (NGR 250828354067) and associated building 54a (NGR 250828354072) which was not recorded in the previous assessment survey. (Figure 2 and 3)

2 METHODOLOGY

A photographic record was made recording all features and elevations. The report conforms to the requirements for a building record at level 2 as set down in English Heritage's *Understanding Historic Buildings: a guide to good recording practice* (2006).

The recording of the building was undertaken on the 4th March 2009. The recording was completed using a Nikon D40X DSLR (10 megapixel), coupled with sketches and written site records

Basic plans were produced of the floor plan showing structural and architectural features of significance.

The archive is held by Gwynedd Archaeological Trust and Royal Commission of Ancient and Historic Monuments Wales (RCAHMW) under the project number (G2071), with the photographic images stored on the JPEG Interchange Format.

The Trust is grateful to Dr Gwynfor Pierce Jones for help with interpretation.

3. LOCATION

Pen yr Orsedd quarry is situated on the northern slopes of Dyffryn Nantlle, in the community (formerly civil parish) of Llandwrog at grid ref: SH51005380 within the county of Gwynedd. It is one of the major sites of the Nantlle slate district, extracting the rock from pits on the hillside slopes. Its workings and tips dominate the northern side of the valley, and the village of Nantlle was built to house the quarry's workforce.

Building 54a and 54 are located in the northern portion of Pen yr Orsedd quarry to the south-east of Eureka quarry and to the north-west of Eureka mill.

4 HISTORICAL BACKGROUND

(Reproduced from assessment report 784, 2008, with amendments)

It is known that the scale of local economic activity began to intensify in Nantlle in the late eighteenth century, leading to the reopening of the copper mines at Drws y Coed. Work had begun at Pen yr Orsedd by the end of the eighteenth century, and from 1816 onwards prospered due to William Turner, a quarry entrepreneur from the Lake District.

The construction of the Nantlle Railway, a 3' 6" gauge horse-worked public railway, to a terminus near the quarry in 1828 substantially reduced transport costs, even more so after a short extension was constructed to the quarry itself in perhaps 1832. This connected to an internal railway network. There were also lines from the working faces to the *gwaliau* and the tips. There are hints that the first internal rails in the quarry was a cast-iron plateway, but by the 1860s movement of raw blocks and of rubble was being carried out on 2' gauge edge rails, such as were then commonplace throughout the Welsh slate industry.

There is little other evidence of technical development in the first half of the nineteenth century, however, and the quarry appears to have grown very little between the 1820s and the 1860s. At some stage, probably during the period when the manager was Miss Lydia Cane, a chain incline to raise wagons from the main working pit was installed, operated by a water-wheel. It is possibly that this was installed c. 1848 when an extensive water-powered system to serve Pen yr Orsedd's neighbour, Pen y Bryn quarry, was installed, whose supply leat passed through Pen yr Orsedd and certainly came to be used by them to power machinery. Chain inclines known as Blondins were aerial ropeways steeply inclined from a working bank to a quarry pit along which a traveller carriage ran from which a dependent rope lifted a wagon.

The first serious change in the quarry's existence however, came in 1862, when a partnership of which W.A. Darbishire was a leading light took over the quarry from John Lloyd Jones. Darbishire seemed to have believed in a intensive factory approach to quarry management. The purchase of a lease by this new partnership therefore led to substantial investment in the quarry, reflected in the provision of mills making use of both water and steam power.

A map of Pen yr Orsedd prepared for W.A. Darbishire in 1862 (CRO Pen yr Orsedd 375) shows a quarry that had barely begun the process of mechanisation, in which the raw blocks of slate were processed entirely by hand in the traditional open booths. Pen yr Orsedd's first mill, intended to produce mechanically-sawn slabs, and was proposed to construct a steam-powered mill for two small tables on level 4. When it came into being the following year, it was slightly more ambitious; a new steam engine had been bought for it instead of the second-hand one they originally proposed to use, a Hunter saw had been ordered for £200 and a 9' by 5' planer for £100. This is now the oldest surviving quarry mill in the Nantlle valley.

By the end of the nineteenth century the focus of workings had shifted to the north, and the original pit worked in the 1860s was being tipped over to form a new working level known as Eureka or Bonc Brig, on which a mill was constructed in 1898. This remained in use until 1997. It was built to house thirty-three saw-tables and thirty-two dressers, and was powered by a compound condensing horizontal steam engine. It was substantially rebuilt with modern equipment in the late 1960s and was further altered after the abandonment of rail transport in 1978-9. In order to reach the workable slate, chain inclines and blondin ropeways were installed from this level.

In 1904-6 Pen yr Orsedd quarry was working on an extensive scale with 161 men working inside, and 362 outside and was undergoing a second wave of investment in new

technology, which was effectively to see it through to 1978. Henceforth three-phase electrical power supplied by the North Wales Power and Traction Company's Cwm Dyli power station was to power the ropeway systems, the level 6 mill and the larger of the level 4 mills. The internal railway system continued to be operated by steam locomotives, and the exit railway from the stackyards by the mills to the standard gauge railway at Tal y Sarn station by horses, as it had been since 1832, and as it was to remain until 1963.

Pen yr Orsedd quarry continued to work along much the same lines for the next seventy years. Use of the level 4 mills ceased during the Second World War and of Bonc yr Offis in 1946, apart from some small-scale working into the 1960s. The last run of slate went down the remaining stub of the Nantlle Railway to Tal y Sarn station in 1963, and thereafter the quarry relied on road transport to take away the finished product. The 3' 6" gauge rails were lifted below the foot of the level 6 to Eureka incline in 1970. But the 2' gauge system, a short length of the 3' 6" gauge to a lorry loading bay, and the blondins remained in use until closure came in 1979, after the same company had run the quarry for 126 years.

The quarry was bought by the Ffestiniog Slate Quarries Company Ltd trading as the Nantlle Slate Quarry Company Ltd in March 1979, and reopened making use of road vehicles from the working face to the Eureka mill, now equipped with substantial diamond saws.

Both building 54a and 54 are first seen on the ordnance survey map 1915 lying on the edge of the Eureka quarry and in the area of the Eureka mill and tramway which was constructed in 1889 (figure 2).

5 BUILDING DESCRIPTIONS

5.1 Building 54

**OS NGR 250828 354067
PRN 30496**

This small rectangular structure is thought, from its shape and size, and from the large (now blocked) window in the north-west wall, to have been originally built as a winding house. The internal fittings (and verbal evidence) suggest it was subsequently used as an office before being converted to an explosives store (figure 4). It is sited on the south edge of Eureka quarry, and is shown on the 1915 OS map close to a tramway on the east, and with an incline further away on the west. An aqueduct is shown passing around the building and south-west to the incline. Also shown on the map are two narrow extensions running from either side the north-west gable towards the quarry. These are no longer present, but are best interpreted as anchor points for the cables.

5.1.1 External

A small single storey rectangular building measuring 5.6m by 5.2m and approximately 1.6m high to the eaves. A small square chimney is built on to the north-west corner. The walls are of slate rubble and the pitched roof is of slate with overlapping ridge tiles.

The south west facing elevation (plate 7) has a blocked opening 3.5m in length and 2.70m high with reinforced lintel and base, of reused narrow gauge rail. This elevation faces on to the Eureka quarry which suggests that this was the opening for the winding mechanism when this structure functioned as a winding house. The winding opening seems to have been blocked in two phases. The first phase was the blocking of the south-east of the opening to create a smaller window, possibly when the building was changed into an office. The opening was then totally blocked at a later date possibly when it was changed into an explosives store. There is a later external chimney attached to the north-west of this elevation which was probably constructed when the use was changed to an office. A single surviving ceramic terminal remains on this side.

The south-east facing elevation (plate 4) contains a blocked doorway 1m wide and 1.5m high with a slate lintel. Internally the door was blocked using breeze blocks. The bonding in this blocked doorway is similar to that seen in the first phase of blocking in the south-west opening so therefore this event is likely to have occurred when the structure became an office.

The north-east facing elevation (plate 5) contains a blocked window 1m wide and 1.25m high with a double slate lintel. Internally the window was blocked using breeze blocks. The external blocking is similar to the bonding seen in the second phase of the blocking of the south-west opening so this is likely to have occurred when the building was converted into an explosives store.

The north-west facing elevation (plate 6) contains the access doorway to the structure with a slate lintel. It contains a substantial metal door, inserted when the building was converted to an explosives store.

5.1.2 *Internal*

The interior of the building has a floor of slate slabs (plate 16). The single room is open to the roof, which has 13 timber rafters supported on 2 purlins (plate 17). This roof may be a replacement of the original.

A red metal explosives store is located in the centre of the room (plate 12). 1.23m wide, 1.23m depth and 1.25m high, with a smaller box 0.78 wide, 0.63m depth and 0.5m high attached to its south-east side (plate 15). The explosives store stands on a concrete plinth 1.90m wide, 1.88m depth and 0.29m high. A plaque on the box reads Hornsby and Goodwin LTD, Engineers. Scunthorpe Lincolnshire (plate 14). A notice seen on the north-west facing elevation shows a license given in 1993 for the use of mixed explosives.

A blocked fireplace is seen in the west corner of the room. It is constructed of slate and slate blocks and was possibly created when the building became an office. The fireplace was probably blocked when the structure became an explosives store. A platform/plinth is seen running along the north-west facing elevation associated with the blocked door.

5.2 **Building 54a**

OS NGR 250828 354072
PRN 30497

The south-east facing wall is all that remains of what is presumed to have been a steam winding house, possibly one which was superseded by building 54, though both buildings were constructed between 1900 and 1915 (figure 2). The remainder of the building was demolished to build the track which now runs past the wall. The surviving wall of bonded slate blocks with signs of render in places appears to consist of two gables, approximately 2m high to the eaves. A gap of approximately 1m separates the two walls in the upper sections, however they are joined at ground level by a 0.75m high wall containing a chute or hole. The function of the chute is unknown, however it disappears into the slate tip behind (plate 2). There are fragmentary remains of two return walls to the north-west and south-east (plate 3).

6 **CONCLUSION**

Both building 54 and 54a were constructed between 1900 and 1915 (fig 2). The function of building 54a is unclear, though a winding house is the most likely. Building 54 had three phases of use. It was originally constructed as a winding house associated with the Eureka quarry to the south-west. This quarry became the main focus of works in the late 19th century, and the Eureka mil was built in 1898. The two winding houses were built during expansion of the quarry pit after 1900. Though the relative dates are not known, building 54 became an office when it was no longer needed for a winding house, and more recently an explosives store.

7 REFERENCES

7.1 Manuscript sources:

Caernarfon Record Office

Pen yr Orsedd MSS

Pen yr Orsedd Additional MSS

7.2 Maps and plans:

1/10,000

25" XXXI.5 (1889, 1900, 1915)

25" XXXI.9 (1889, 1900, 1916)

Caernarfon Record office X/Plans/R/1 - Nantlle Railway plan.

7.3 Photographs:

Pen yr Orsedd quarry's own collection survives as Caernarfon Record Office CHS 1245/1-11, 21/1-31, 22-46.

7.4 Unpublished sources:

Gwynedd Archaeological Trust: *Gwynedd Slate Quarrying Landscapes* 1994

Penrhyn Quarry Archaeological Assessment 1995

Gwynedd Archaeological Trust: Pen Yr Orsedd slate quarry. Archaeological Assessment. 2008. Report 784

Gwynedd Archaeological Trust: Pen Yr Orsedd slate quarry. Archaeological Assessment. 1997. Report 275

Kelly R: *Interim Report on the First Year's Work Towards Producing a list of Historic Landscapes* (Countryside Council for Wales, Cadw, Icomos UK, 1994)

Secretary of State. *Planning and the Historic Environment: Archaeology.* Annex3. Crown Copyright. 1996.

7.5 Published sources:

Boyd JIC: *Narrow Gauge Railways in North Caernarvonshire* (Lingfield 1986)

Bradley VJ: *Industrial Locomotives of North Wales* (Birmingham 1992)

Electricity Supply in the United Kingdom: A Chronology (Electricity Council 1982)

Gwyn DRh: *Dolgarrog: An Industrial History* (Caernarfon 1989)

Hughes I: *Chwareli Dyffryn Nantlle* (Y Groeslon 1980)

Jones RM: *The North Wales Quarrymen 1874-1922* (UWP 1982)

Kellow M: *Application of Hydro-Electric Power to Slate-Mining* (London 1907)

-- "The Autobiography of the late Ex-Alderman Moses Kellow" *Quarry Managers' Journal* 1944

Lindsay J: *A History of the North Wales Slate Industry* (Newtown Abbott 1974)

Pierce Jones G: "The Slate Quarries of the Nantlle

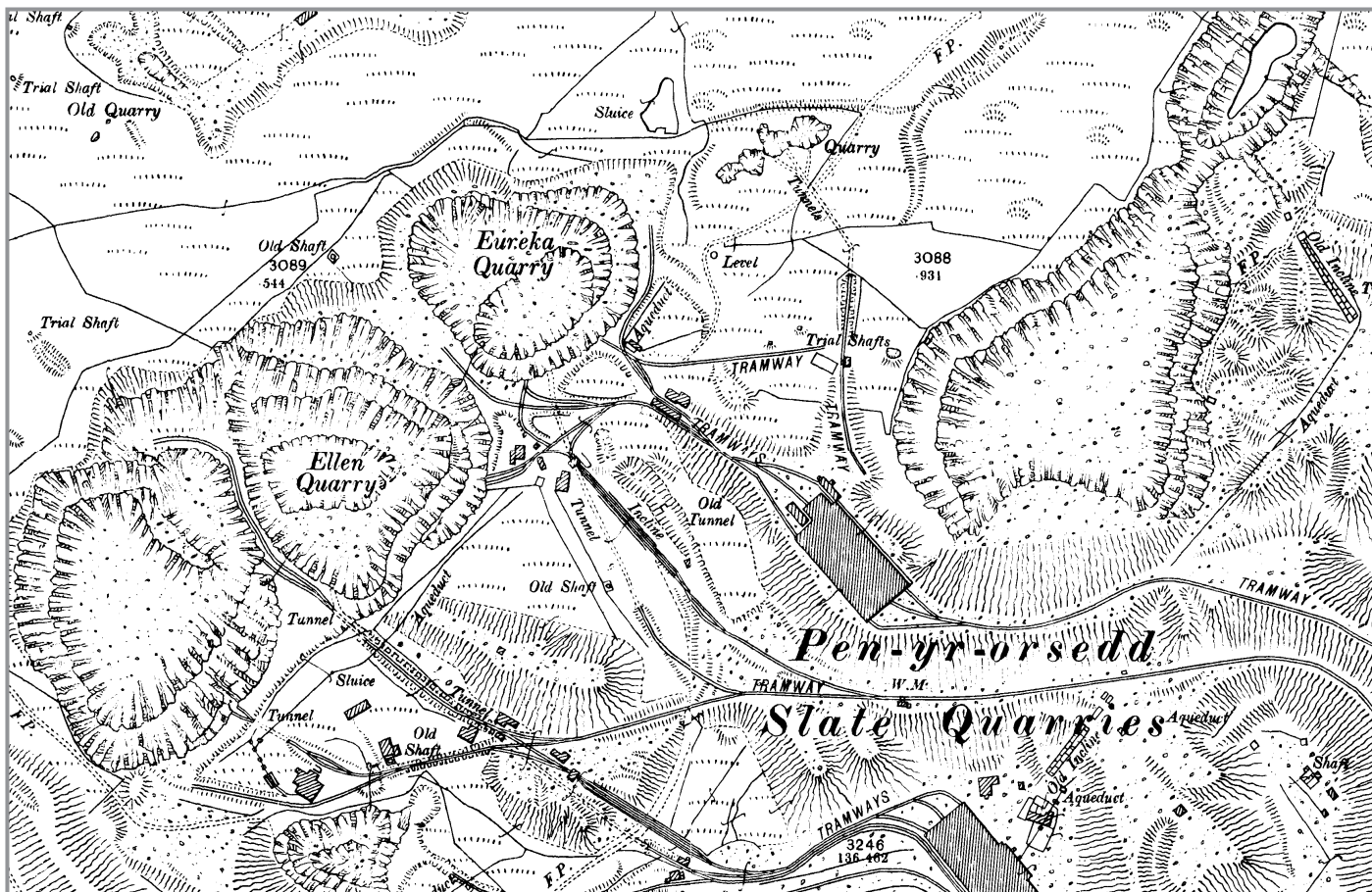


Figure 1: Second edition Ordnance Survey 1900. Caernarfonshire county series XXI.5 (1:4,000)

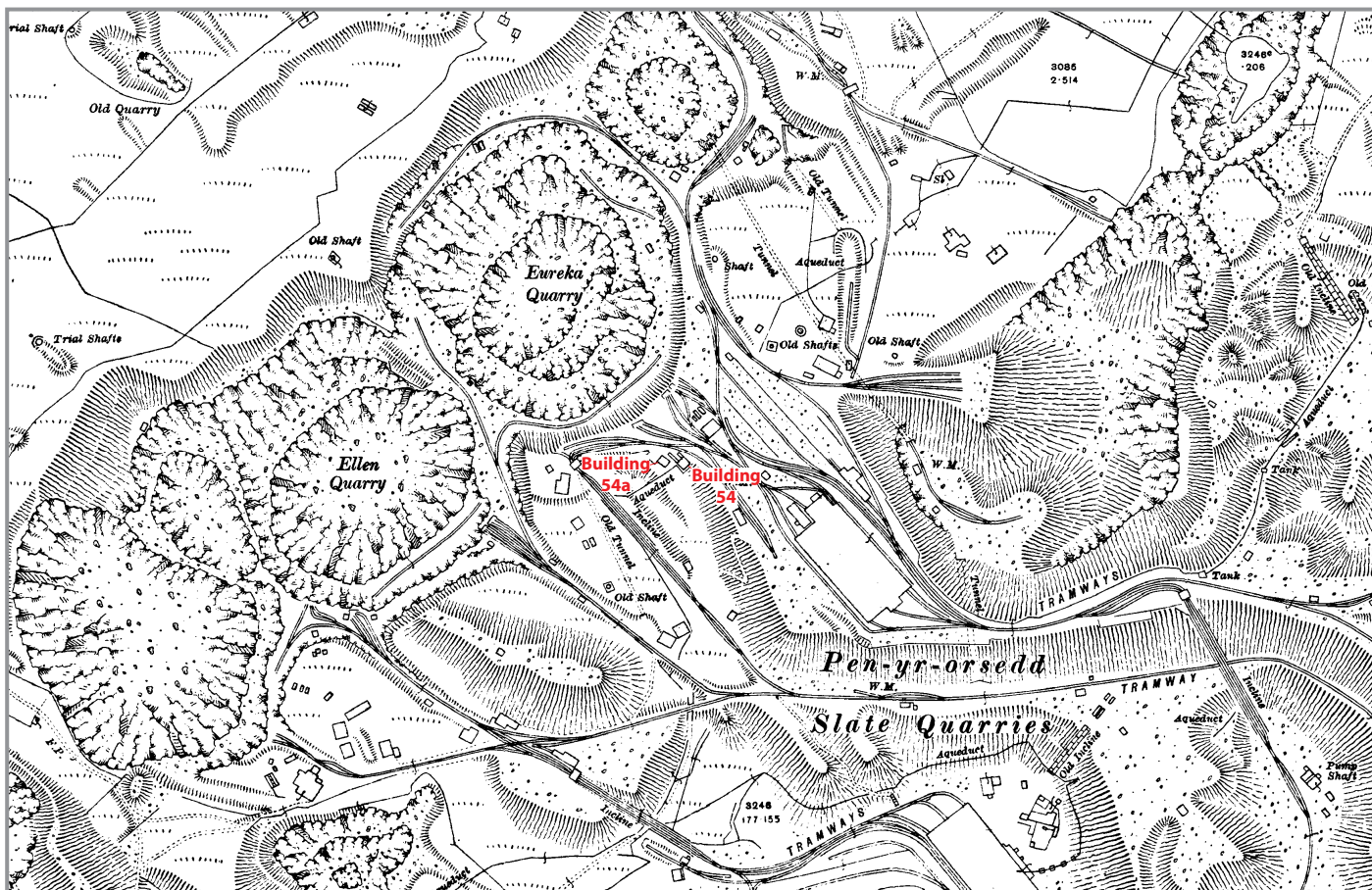


Figure 2: Third edition Ordnance Survey. Caernarfonshire county series 1915. XXI.5 (1:4,000)

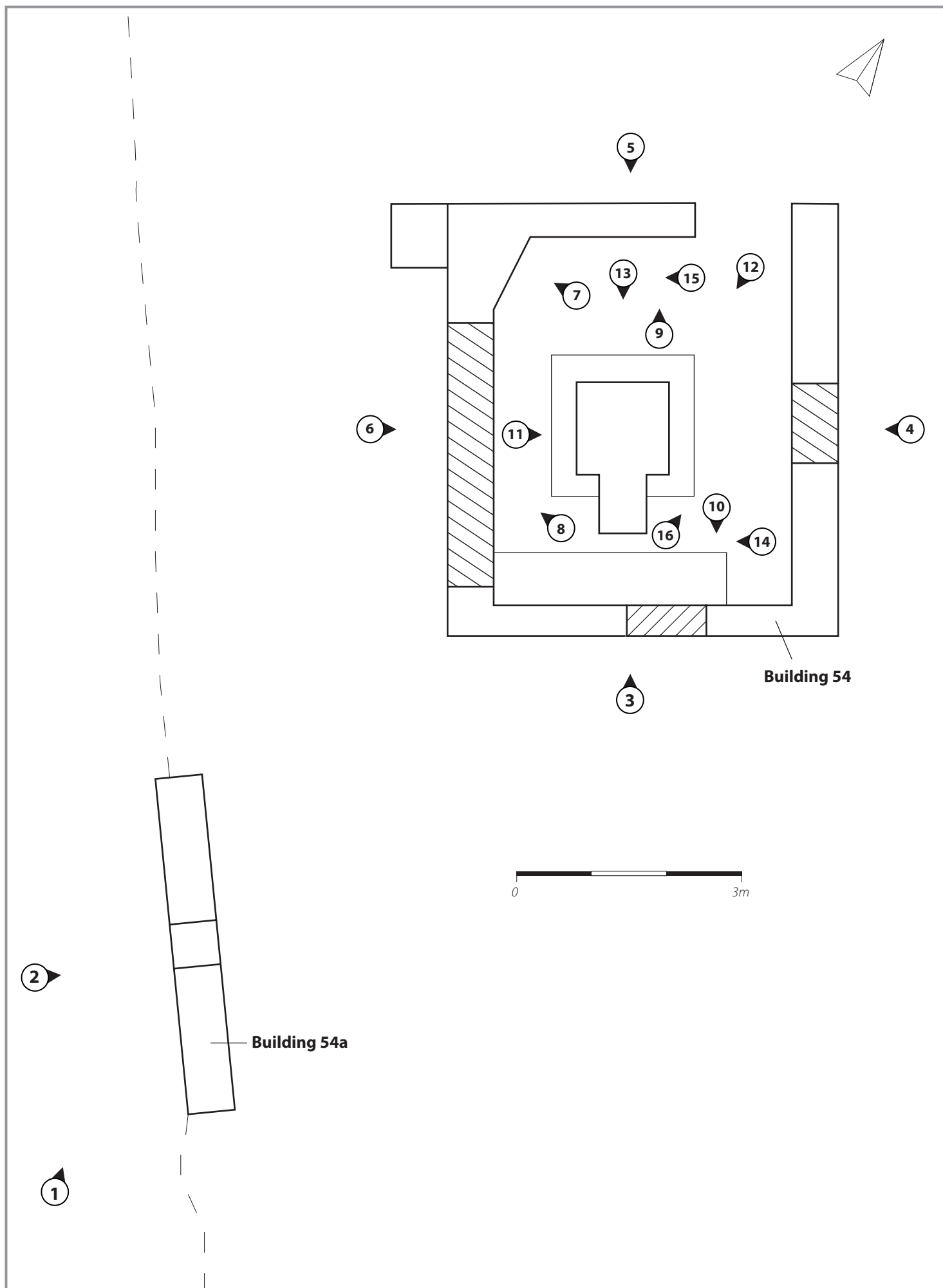


Figure 3: Building 54a and 54. Location and photo location plan

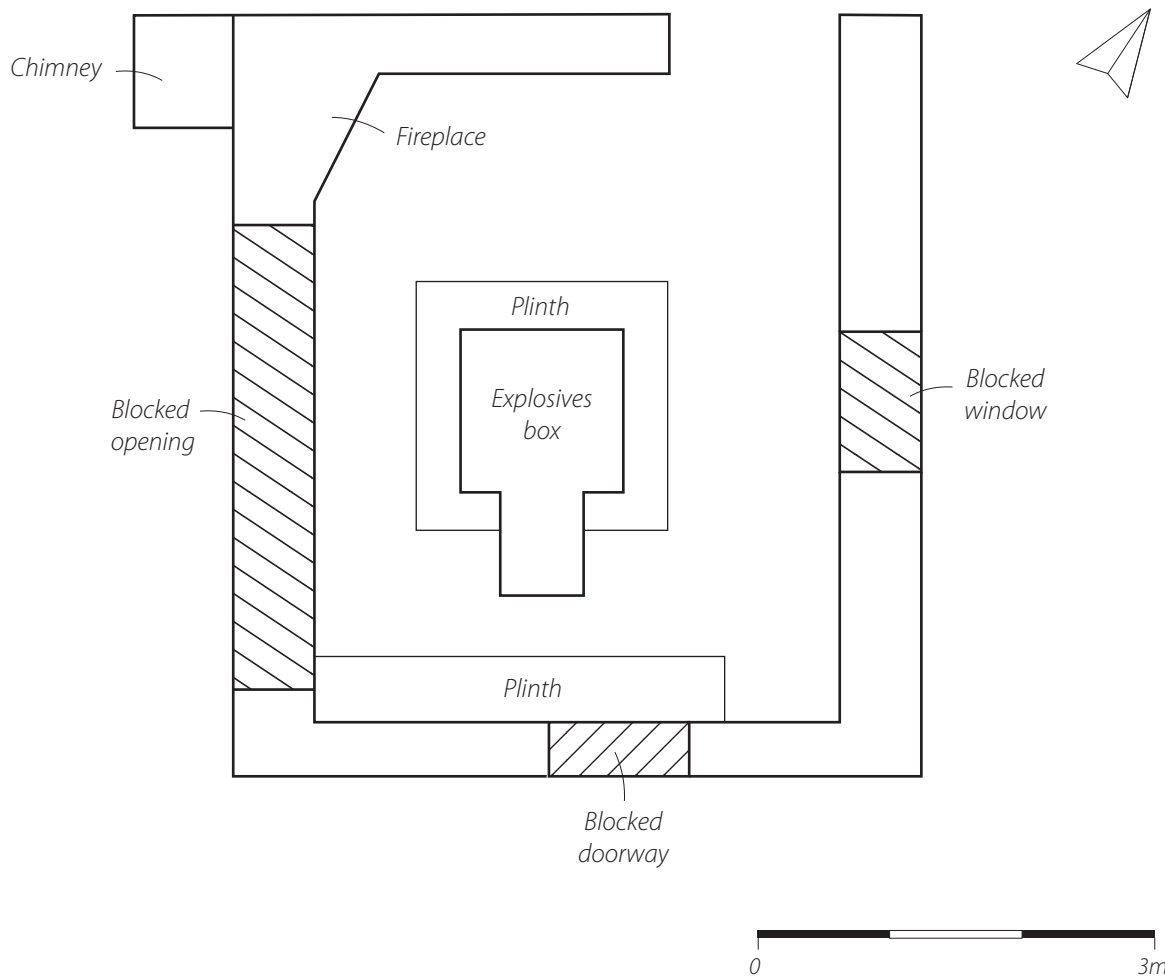


Figure 4: Building 54 ground plan



Plate 1: Aerial photograph. Aug 1936. Taken by Idwl Jones employed as weigher Pen yr Orsedd quarry. Caernarfon Record Office CHS 1245/26



Plate 2: Building 54a. View taken from the south-west. Showing the south-east facing elevation two possible gables joined by a lower level wall containing a chute or hole, of unknown function.



Plate 3: Building 54a. View taken from the south. Showing the return walls in the south-east facing elevation.



Plate 4: *Building 54. View of the south-east facing elevation. Showing the blocked doorway.*



Plate 5: *Building 54. View of the north-east facing elevation. Showing the blocked window.*



Plate 6: *Building 54. View of the north-west elevation. Showing the main entrance.*



Plate 7: *Building 54. View of the south-west elevation. Showing the two phases of the blocked opening and chimney, which was added at a later date. With the Eureka mill in the background*



Plate 8: *Building 54. Internal view taken from the east. Showing the blocked fireplace.*



Plate 9: *Building 54. South-west elevation internal. Showing the two phases of blocking of the original winding house opening.*



Plate 10: *Building 54. Internal view taken from the south-east. Showing the main entrance.*



Plate 11: *Building 54. South-east elevation internal. Showing the blocked doorway in the north-west facing elevation.*



Plate 12: *Building 54. North-east elevation internal. Showing the blocked window.*



Plate 13: *Building 54. Internal view taken from the north. Showing the explosives store.*



Plate 14: Building 54. Plaque on explosives store. 'Hornsby & Goodwin LTD, Engineers, Scunthorpe Lincolnshire.'



Plate 15: Building 54. View taken from the south-east. Showing the explosives store.



Plate 16: Building 54. Internal view taken from the north-east. Showing the slate floor.



Plate 17: Building 54. Internal view taken from the south. Showing the replacement roof.



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