TOP YARD BOSTON LODGE, MINFFORDD

Archaeological Excavation





Ymddiriedolaeth Archaeolegol Gwynedd Gwynedd Archaeological Trust

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EXCAVATIONS AT BOSTON LODGE RAILWAY WORKS (G2410)

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Non-Technical Summary

A week-long assessment excavation was carried out in Top Yard, Boston Lodge in February 2015. This was carried out by Gwynedd Archaeological Trust and a team of volunteers as a community excavation.

The first function of the site was as a quarry producing stone for the construction of The Cob, the most important functional element of William Madocks' reclamation of Traeth Mawr between 1808 and 1811. The probable original quarry floor was found to be 0.4m beneath the current ground level.

The excavation uncovered the remains of a stone-built wagon shed dating from 1842. This was one of the first buildings to be constructed on the site after Boston Lodge ceased to function as a quarry. A length of rails, slate floor and wall foundations were found to be well-preserved beneath modern hard-standing. These discoveries allowed previous discoveries of rails and a sliding turntable (in 1956 and 1970) to be set in context and a structural and functional history of the building to be suggested. The shed appears to originally have been an open fronted store. Most of the original openings were subsequently infilled to produce an office, now preserved as Plas Smart and a workshop. A rail line passing through the building was inserted in 1920 to allow access to sand deposits to the rear.

A second early shed is known to have run along the south-eastern side of Top Yard but no definite traces of this were discovered. The footprint of the carpenter's shop, build in 1877 after the demolition of the early shed, was uncovered along with sleepers indicating the line of rails into the building. Surviving floor deposits were identified but there was not time for detailed excavation in this area. Much of the area of the early shed, carpenter's shop and an extension to the smithy are currently beneath a wooden shed known as the Tunnel Mess. Demolition of this building is planned and a second programme of excavation is recommended in order to complete the assessment of this area.

The assessment excavation demonstrated the potential for the preservation of wellpreserved archaeology in Top Yard. In this case the floor of the shed, rails and machinery were preserved for use as hard standing after the building itself had been lost. Much of the subsequent damage to the archaeology occurred as a result of the insertion of services such as electricity cables. This demonstrates a need for a greater awareness of the important archaeological remains at Boston Lodge. The production of a management plan is recommended.

EXCAVATIONS AT BOSTON LODGE RAILWAY WORKS, FEBRUARY 2015 (G2410)

1.0 INTRODUCTION

Gwynedd Archaeological Trust (GAT) was asked by the *Festiniog Railway Trust* to undertake an archaeological excavation at Top Yard, in the Ffestiniog & Welsh Highland Railways' Boston Lodge works (Fig. 1).The excavation was run as a community project with volunteers working on the site under supervision of two employees from GAT.

The works included:

- 1. Stripping of overburden and recent hard-standing from the area
- 2. Excavation and recording of any surviving buildings, rails and other machinery in the area.
- 3. Basic reinstatement
- 4. Production of a report and archive

2.0 ARCHAEOLOGICAL BACKGROUND

2.1 Boston Lodge

Boston Lodge was one of the quarries providing stone for the construction of the Cob, a causeway built across the Glaslyn estuary, between 1808 and 1811, by William Madocks. As works progressed it was developed and offices, stables and barracks for the workers were built.

The Festiniog Railway Company Works were established on the site in 1847 for the repair of wagons on the horse-drawn railway. The site expanded particularly after the introduction of steam locomotives in 1863 to become an almost self-sufficient production and maintenance facility. In its heyday the works contained a sawmill, foundries, a pattern making shop, a smithy, a carpenters shop, a machine shop, a paint shop and an erecting shop

By the end of the 1870s the railway was designing and building its own Fairlie double engine locomotives. The works were used for manufacturing shells during the First World War. The railway went into decline in the 1920s and closed in 1939 but much of the infrastructure was preserved. The company was revived by a group of volunteers in 1954 leading to the foundation of the Festiniog Railway Trust that currently runs the railway. The works at Boston lodge were brought back into use but many of the original buildings were upgraded, altered or demolished during the 1950s and 60s

2.2 The Archaeology of Top Yard

The project area is known as "Top Yard". It is the north-eastern end of the works and in recent years has been an area of rough hard-standing containing stored machinery and the wooden "Tunnel Mess" shed (Fig. 2). The shed was due for demolition before the excavation

but this was postponed and the excavations were limited to the north-eastern end of the yard. The only other surviving building at the north-eastern end of the yard is Plas Smart (grade II listed ref: 14419).

The history of Top Yard was summarised in a paper by John Alexander (Alexander 2014). Much of the following historical background was taken from this paper. Figs 3 and 4 are also from this paper and illustrate the early development of the area.

The guarry for the Cob fell out of use after completion and repairs to the embankment in 1814. In 1842 two wagon storage sheds were built along the north-east and south-east sides of the yard (Fig. 3). There was an access ramp running to Penrhyn Isaf behind the southeastern shed. In 1856 the south-eastern end of the north-eastern shed was separated off as a store and the remainder was subsequently converted into the Loco Superintendent's office, the pay office and then into a residence. This is shown on a plan of 1915 (Fig. 5 provided by John Alexander). The residence now survives as a stand-alone building called Plas Smart named after a former resident Ian Smart. The shed was modified in 1920 to accommodate a siding running through the building immediately to the south-east of Plas Smart. This provided access to the sand pit to the rear (Fig. 6 shows this phase and gives a general overview of the works in 1963). A photograph from the Ffestiniog Railway archives shows the shed after this insertion, probably in the 1930s (Plate 1). The shed can be seen to have a mono-pitched roof. The south-eastern end used the former quarry face as a back wall, the north-western end a mortared stone wall. Later photographs (Ronald D 1958 Corley D J 1959 in Zeepvat B. 2011) show that the wall adjacent to the sand-pit siding access was made of wood.

The storage shed is thought to have contained two lines of rails fed by sliding or traversing turntable that was in turn fed by a the turntable in the middle of the yard. Photographs from 1956 show an excavated length of fish-belly rail apparently in the, by this time, derelict shed (Plate 2). The exact location of the rails not recorded but the wooden wall adjacent to the sand-pit siding access is visible in the photographs showing that the length of rail was in the north-western end of the surviving shed. It is thought that the rail was taken up and stored after it was recorded. The derelict shed was unsafe and was eventually demolished, probably in the 1960s. The sliding turntable survived the demolition and clearance of the building. This was excavated and removed in 1970 (Plate 3, see also P9 below and Fig. 13).

The south-eastern shed is thought to have been of a similar design and probably also contained rails and a sliding turntable. This was demolished in 1877 and the Penrhyn Isaf access ramp was quarried away in order to provide space to build a corrugated carpenter's shop. (See Figs. 7 and 8). This was subsequently extended to include an extension to the blacksmith's shop. Both were demolished in 1962. Only the rear wall of the smithy survives and the wooden Tunnel Mess now occupies part of the site.

One further small building is shown on the north-west side of the yard on the 1888 OS map, possibly a short-lived timber store or carriage shed.

3. METHODOLOGY

3.1 Aims and Objectives

The aim of the excavations was to assess the survival of archaeology in the area of the former sheds. It was not known how much of the area had been disturbed by subsequent events. The ground adjacent to Plas Smart is currently buried beneath an access ramp and is inaccessible but was probably previously disturbed by the construction of the siding in the 1920s.

The only area available for excavation was between the former quarry face, which also formed part of the rear wall of the north-eastern shed, and the "Tunnel Mess" (Fig. 2). This encompassed the area of the north-eastern shed and some of the yard in front of it. It was also hoped that elements of the south-eastern shed would be present.

3.2 Clearance

The excavation area comprised a subrectangular area with dimensions of 16.5m x 11m (Fig. 2). This was cleared of the modern hard standing and overburden using a mechanical excavator provided by Ffestiniog & Welsh Highland Railways under archaeological supervision and after location of services including a 11Kv buried cable.

3.3 Excavation

The excavation was carried out as a community project utilising volunteers from GAT and the Railway between 9th and 13th February 2015. The works were supervised by experienced GAT staff and training, appropriate to their level of experience, was given to all volunteers.

After removal of overburden the areas were cleaned by hand and the features that are uncovered were recorded using a Trimble high resolution GPS survey system. Detailed drawn, written and photographic records were also produced. Standard GAT context and structure recording forms were used to record the deposits and features. Photographic records were taken using a digital SLR set to highest resolution. In view of the limited 5-day period available for both the excavation and recording of the site much of the detailed context planning was produced from a detailed 3D photographic model produced using Agisoft PhotoScan. The software allows multiple photographs taken from a range of viewpoints to be synthesised into a georeferenced 3D model that can then be used to produce detailed orthographic projections (Plate 4). This technique has the advantage of eliminated parallax error produced by most other photographic recording techniques. The model can then be used in the production of a conventional site plan.

The limited time and available and the need to preserve structures *in situ* determined the subsequent sampling strategy. The site was cleaned down to the upper archaeological horizons comprising a series of structural elements and rough surfaces. The structural elements were preserved *in situ* and the surfaces were sampled in two small sub-trenches.

The site records were synthesised into the present report.

3.4 Dissemination and Archiving

A full archive including plans, photographs, written material and any other material resulting from the project will be prepared. All plans, photographs and descriptions will be labelled and cross-referenced, and lodged in an appropriate place within an agreed submission period. A full digital archive will be provided for the Ffestiniog Railway Archive. Gwynedd Historic Environment Record will be provided with a copy of the report.

3.5 Personnel

The work was managed by David Hopewell, Senior Archaeologist GAT Contracts Section, who also provided on-site management and supervision. Neil McGuiness provided additional site supervision and produced the 3D model.

4 RESULTS

4.1 Introduction

A variable depth, typically 0.05m to 0.2m, of modern levelling and rough hard-standing was removed using a mechanical excavator prior to the main excavation. This comprised clean, grey, graded, dust to coarse gravel quarried ballast, overlaid by fine road scalpings. Modern material sealed beneath these layers indicated that they were laid since c.1995.

Floor levels and foundations of the wagon storage sheds along with various surfaces were preserved beneath the hard-standing. These were hand-cleaned and recorded. Several phases could be recognised. Modern service trenches could be seen to cut the earlier deposits in several places.

Context numbers, indicating the individual features and deposits that were excavated, are included in the text that can be related to the site plan (Fig. 9) and drawn sections (Figs. 9 and 10).

4.2 Phase 1: The quarry workings

The site originated as one of two quarries for the stone used in building the Cob from 1808 to 1811 and probably during repairs to a breach in 1812 to 14. The rock face forming the northwest side of the excavation marked the limit of the quarry in this direction. The level of the quarry floor was unknown but presumed to be close to or above the level of the Cob. Two small sub-trenches in the excavation (Trench 1 and Trench 2 Fig. 9) aimed to investigate the early deposits. Trench 1 identified a layer of compacted shattered stone and larger rocks (28 and Plate 5) at 7.05m OD. This was 0.35m below the level of the floor of the wagon storage sheds. This appeared to be the working level of the quarry although excavation down to bedrock was not possible in the small trench. The lowest excavated level contained fibrous organic matter, probably preserved roots and grass dating from the period between the abandonment of the quarry and the levelling of the site for Boston Lodge works. It was noted that the organic material was sealed by hard infill with no apparent root penetration suggesting that the material was not a product of the development of weeds during the 20th century abandonment; sections are shown on Figs 10 and 11.

A layer of compacted stone was identified at the base of trench 2 at a similar depth (Plate 6) but there was not time to further investigate this.

4.2 Phase 2: levelling

The shattered rock in trench 1 was sealed by a layer of compacted, clean, yellow redeposited glacial till (27: silty gravel and sand), presumably quarried from nearby deposits. An almost totally decayed rectangular-section piece of timber was visible as a brown stain and wood fibres in this deposit. This was in turn sealed by a layer of clean compact, but not cemented, yellow sand (018). The sand appears to have been widely used across the excavation area to level the site before the sheds were built in 1842. The sand was found to be clean and without marine inclusions such as shell fragments, suggesting that it was derived from the "sandpit" area to the north-east as opposed to the estuary.

4.3 Phase 3: The wagon storage sheds

An area of slate flooring and a length of rails were uncovered immediately beneath the modern overburden (Plate 7). The slab floor was bounded on the south-east (02) and south-west (10) by the somewhat fragmentary remains of the foundations and lower courses of a stone wall. The wall corresponds to the limits of the north-eastern wagon shed as shown on the 1889 25" OS map and 1915 plan. The south-western wall was also, having once been part of the same structure, aligned with the front of Plas Smart. The wall foundations were not investigated in detail.

There appeared to be at least two entrances into the front of the shed. Fig. 12 shows a scaled interpretive elevation of the shed, after the alterations of the 1920s, drawn from photographic evidence. The entrance corresponding to the line of the incoming rails (29) is clearly visible, as is the entrance (37) to the south-east of this. The 1920-30s photograph shows a window or door in the latter entrance which had gone by 1956 (photograph 15 Sept 1955 - J Halsall). Probable straight joints in the masonry and in the interior walls indicate that the other two windows to the north-west had formerly been entrances into the building that had been subsequently partially blocked with masonry (Plates 1 and 2 and also see Fig.13). This suggests that the shed in its original form had been largely open-fronted, with sections of wall c.1.3m to 1.5m long alternating with c.1.8 to 1.9m wide openings.

There were no *in situ* foundation stones in trench 1. This initially suggested that it had been cut through an entrance. No entrance is however visible on the photographs of the standing building although there is a straight joint in the masonry in alignment with the north-western side of the trench. This could indicate that the wall was a secondary structure infilling an opening and thus had less substantial foundations. The north-west facing section (Fig. 11) shows some *in situ* stones set into the sand infill (18). The wall was built from a variety of stones ranging from angular but unshaped quarried material to occasional larger rounded field-stones with a few surviving traces of mortar.

Two *in situ* chairs (29) and a few slate fragments indicate the line of the rails running to the entrance from the turntable in the middle of the yard. Wagons were presumably then transferred to the sliding turntable that ran on 4 ft. 3 ½ in gauge rails set below the level of the floor This is shown on Fig. 13 (from Waters 1992); the entrance to the shed is at the top of the drawing. The building floor was heavily disturbed on this alignment by modern service trenches and presumably as a result of the turntable being removed in 1970 (36). The rails running parallel to the front wall of the shed that are shown on Water's drawing had also been removed, presumably during the installation of the 11kV cable. A stub of mortared masonry on the north-western edge of the excavation crosses the projected line of the rails and may indicate the edge of the turntable pit. The second entrance (37) was identified about 0.13 m to south-east of the entrance containing the rails. This had been partly disturbed by the 11kV cable trench but a brown stain in the sand appeared to mark the position of a wooden door sill.

The south-eastern wall (02) was generally well-preserved although the north-eastern end, as it approached the rock face, contained loose and randomly orientated stones, either indicating a doorway or an area of deeper disturbance.

The interior of the south-eastern end of the shed was better-preserved. A 7.5m x 3.25m area of slate flooring (04 and 05) and a 6.5m length of 1 ft. 11 ½ in (597 mm) gauge rails (06) were preserved directly beneath the modern overburden (18). The south-west facing section in trench 1 (Fig. 10) demonstrates that a sleeper (23) and probably the rail and slabs were laid directly onto the sand infilling (19 appears to be modern material under the edge of the top of the rail). The rails were badly corroded and apart from their upper surface, mostly hidden beneath the slab floor. They were T-shaped in section, about 28mm wide and 61mm deep. Measurements are approximate because, the rails were both corroded and covered with concretions of rust and sand. The south eastern end had been slightly disturbed by a modern service duct (13) but the mains of chairs and a wooden sleeper could be identified. As noted above, a second wooden sleeper (23) was present in trench 1. The north western end of the length of rail (Plate 8) was resting on a stone sleeper block about 22cm deep, and again sitting on sand. A second stone sleeper (30) block was recorded 0.8m to the north-west of the end of the rails.

The slate-slab floor (04) comprised closely fitted, but somewhat irregular, sub-rectangular slabs up to 1.2m in length (Plate 7). Slabs were carefully fitted around and between the rails and in the narrow 0.23m wide gap between the rails and the south-western wall of the shed. At least one of the slabs was sawn, the rest were roughly shaped. The floor did not run up to the rock face at the rear, leaving a 0.6m wide gap in most places perhaps in order to accommodate a drain. The north-west end of the slate flooring (05) consisted of smaller slabs and was somewhat fragmentary. A discrete area of heat affected material (09: mostly sand with some charcoal), filled the gap between the two rails at their north-western end. This was not excavated. Its origin was unclear, it could have been a result of a process carried out in the shed, or could have been imported from another building such as the foundry to infill a hole in the floor.

4.4 Phase 4: Later uses of the shed

The shed was allowed to decay, photographs from the 1950s show that the roof had mostly gone by this time. Later plans mark the shed as a store or timber store. A neat stack of bricks (08) designed to mark cable trenches, marked S.E. (Southern Electricity) and made by Baldwin Brickworks (Nottinghamshire) was stacked against the rear wall and a few appeared to have been laid to fill in the gap between the slate floor and the rock face. Three cast iron covers (15) covered a slight hollow against the foot of the rock face further to the north-west. Two lengths of wood (40), again at the base of the rock-face, may have been left over from the shed's use as a wood store.

4.5 The yard and carpenter's shop

The area to the south and south-west of the shed was a spread of hard-standing that had been used as a yard and an access road to the rear of the buildings in recent years. A line of three wooden sleepers (22) and a few displaced rail chairs marked the line of the rails running into the former carpenters shop. The yard surface in this area consisted of yellow sand, presumably, as elsewhere, a levelling layer, with post 1970s material (stones coal rubbish etc.) pressed into the top of it. A large patch of burnt material (11) marked the site of a bonfire.

A somewhat irregular line of stones (17) appeared to be a continuation of the south-eastern wall (02) of the shed. This was initially interpreted as the front of the early south-eastern wagon store. This was investigated by trench 2 but was found to be part of a surface (25) covering the southern corner of the site. The surface was made up of compacted angular stones with modern material pressed into the surface. A roughly rectangular patch of superficially similar, compacted, bluish slate in smaller pieces (24) was found to overlie surface 25 in trench 2. A small sondage, about 0.15m deep was cut through layers 24 and 25 (Trench 2A) revealing a layer of oily broken wood, discarded ironwork and stones, sitting on shattered rock (see Plate 6). Surface 25 roughly corresponds to the area of the former carpenter's shop. The layer beneath it, identified in trench 2A, seems to be a result of activity in the building; the upper stony layer 025 was probably levelling material added in 1962 after the demolition of the carpenter's shop and smithy.

4.6 Modern services

An 11kV cable (33) was laid across the site in 1975 (info from Manweb drawing). A 240v supply (13 and 14), some of which runs in a plastic duct, was added in the last decade. The laying of these services resulted in fairly substantial disturbance to the north-west end of the site. A recent land-drain (12) runs to a manhole; the contents of a further trench (42) are unknown.

5 CONCLUSIONS

The present excavations confirmed the extent of the 1842 north-eastern wagon shed. The expected second line of rails was not present, at least in the surviving south-eastern end of the shed. It had been presumed that the function of the traversing turntable was to transfer wagons between two or more sets of rails in the shed. This now seems unlikely, at least in the latter use of the shed, unless a second line of rails existed only in the north-western end and their destruction was not recorded. The floor levels appear to have been intact until the 1970s. Given the level of interest in the archaeology of the works it is unlikely that a second line of rails could have been removed without any record having been made.

The function of the shed appears to have changed fairly early in its history and prior to any currently available photographic or detailed drawn evidence. It appears that the shed in its original form was a largely open-fronted structure, perhaps used as a simple wagon store. Sometime before the 1920s most of the openings were partially infilled and windows inserted. This conversion to a closed shed may have reflected a change in use, perhaps indicating use as a repair shop. It may have been necessary to remove the second line of rails to allow sufficient space to carry out repairs in the narrow shed. The slate-slab floor would therefore be a secondary feature laid after the removal of a second line of rails.

The survival of other buildings was less clear. The outline of the former carpenter's shop could be recognised as an area of later infilling and deposits were shown to be sealed beneath this. The limited time available for excavation did not, however, allow for further investigation. No remains of the second early wagon-store were identified. The best remaining potential for deposits or structures from this phase are beneath the hard-standing in the area of the former carpenter's shop and beneath the Tunnel Mess.

The excavation demonstrated a good potential for the survival of early remains at Boston Lodge. After the demolition of buildings the floor levels had been re-used as the basis for hard standing and preserved. Subsequent damage was caused by the insertion of service trenches and archaeological excavation, where *in situ* rails and a turntable were removed for safe keeping.

6 RECOMMENDATIONS

6.1 Further excavations and research

The excavation examined about half of the area occupied by the early wagon sheds. Further excavation is recommended after the planned removal of the Tunnel Mess. A basic record should be made of the building before demolition. The 2015 project comprised a brief assessment excavation with little time for historical research. An informative historical summary was, however, provided by John Alexander. The final output from the project, preferably to be produced after a second phase of excavation, should be a paper suitable for publication in a reputable industrial archaeological journal that includes both the results of the excavations and a detailed historical review including reproductions of primary sources such

as plans, maps and photographs. A non-technical summary could also be produced from this material for wider circulation.

6.2 Management

The development of a management plan addressing the preservation and utilisation of archaeological remains within the works is recommended. Boston Lodge is a functioning engineering facility but also contains buildings and archaeology of great importance to the development of steam powered railways, the manufactured landscape of Traeth Mawr and the infrastructure of the slate industry. All are of national importance.

7 ACKNOWLEDGEMENTS

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Neil McGuiness assisted with the excavations, site supervision and technical aspects of the excavations for GAT.

Finally many thanks to Dr David Gwyn for setting up the excavation and to Pete Gray, Tony Williams, Humph Davies and all at Boston Lodge for organisation, support, information and interest.

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Fig. 1 Location of Boston Lodge Railway Works



Fig. 2 Location of excavation



Fig. 3 Outline plan of Top Yard in 1847 (John Alexander)



Fig. 4 Outline plan of Top Yard in 1888 (John Alexander)



Fig. 5 Plan of Top Yard in 1915 (FR Archives)



Fig. 6 Boston Lodge Works indicating changes since 1955 (Wilson D.H. 1963)



Fig. 8 Location of excavation, features from 1915 plan and previous excavations



Fig. 9 Top Yard, Boston Lodge. Plan of excavations February 2015



Fig 10 Trench 1: south-west facing section



Fig 11 Trench 1: north-west facing section



Fig. 12 Diagrammatic south-west facing elevation of the north-eastern wagon shed c.1930



Fig. 13 The traversing turntable (from Waters 1992)



Plate 1 Top yard probably in the 1930s (F R Archive)



Plate 2 Early fish-bellied track in 1956 (G. E. Baddley in Boyd 1975, Plate1T)



Plate 3 The sliding turntable 17 October 1970 (John Alexander)



Plate 4 Orthographic, georeferenced, vertical image of the excavations from 3D model



Plate 5 Trench 1 excavated down to quarry floor



Plate 6 Trench 2A showing buried deposits from carpenter's shop with possible quarry deposits beneath



Plate 7 Rails and slate slabs after excavation from the south-east



Plate 8 The north-western end of the rails with heat-affected deposit and stone sleeper block



Gwynedd Archaeological Trust Ymddiriedolaeth Archaeolegol Gwynedd



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