Archaeology Wales

Land at Maes-y-Meillion, Leeswood, Flint

Desk Based Study, Field Evaluation & Excavation

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Report No. 1567

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Desk Based Study and Excavation Report

Prepared For: Wates Living Space

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Non-Technical Summary

Between January and March 2017 Archaeology Wales carried out an archaeological Desktop Study, field evaluation and archaeological excavation to examine the archaeological potential of a site intended for re-development on land at Maes-y-Meillion, Leeswood, Mold, Flintshire. The local planning authority is Flintshire County Council and the planning reference is 05528. The programme of archaeological work has been recommended by Clwyd-Powys Archaeological Trust, who act as advisors to Flintshire County Council.

The site is purported to be that of a later 19th century Engine House located above a mineshaft. The mining structure forms part of the Leeswood Main Colliery. Historic mapping suggests the building was only in use for a short period of time, being constructed after 1840 and demolished before 1899, but was located within a much wider mining landscape surrounding Leeswood.

The single evaluation trench showed that structural remains of the 19th century colliery were present within the development area, and that considerable demolition and robbing had subsequently taken place. The expansion of the single evaluation trench in to an open area excavation showed the form and extent of these structures.

The excavation revealed the presence on site of a high pressure, egg end, boiler house as well as the remains of a tramway. It is possible that the remains of the engine house are located along the western boundary of the proposed development site.

1. Introduction

In January 2017 Archaeology Wales was commissioned by Wates Living Space to carry out an archaeological desk top study and field evaluation on land at Maes-y-Meillion, Leeswood, Mold, Flintshire (NGR SJ 2684 5983 – Figures 1 & 2). The aim was to provide information regarding the archaeological potential of the land ahead of proposed residential redevelopment of the area. The local planning authority is Flintshire County Council and the planning reference is 05528.

Historic cartographic sources suggest that the assessment area lies within a former 19th century mining landscape and overlies the location of an Engine House sat atop a mine shaft sunk for the extraction of cannel coal.

A Written Scheme of Investigation was drawn up by Chris Smith MCIfA detailing the methodologies to be employed by Archaeology Wales (henceforth-AW) during the desktop study and field evaluation on the site (Appendix III). This was submitted to, and approved by, Mark Walters, development control archaeologist with Clwyd-Powys Archaeological Trust (henceforth-CPAT), who act as advisors to Flintshire County Council.

Following recommendations by Mark Walters at the end of the evaluation phase, the area of the proposed new development was subject to an open area excavation in March 2017. The approved Written Scheme of Investigation for this phase is contained within Appendix IV.

The AW project number for the work is 2491 and the site code is MML/17/EX. The project details are summarised on the Archive Cover Sheet (Appendix VI).

2. Site Description: Location, Topography, Geology

The underlying solid geology of the assessment area is made up of the Etruria Formation (Mudstone, Sandstone and Conglomerate). This is a sedimentary bedrock formed approximately 307 to 313 million years ago in the Carboniferous Period, the local environment being previously dominated by rivers. (BGS 2016). The subsoil deposits in the assessment area typically consist of slowly permeable, seasonally wet, acid, loamy and clayey soils (Soilscapes 2016).

The assessment area is located on open/waste ground to the rear of housing on the flat top of a natural topographic rise forming a wide, low, hill at approximately 174m OD. The town of Leeswood itself is located to the north and east of the site with the smaller village of Pontybodkin located to the south. The land falls away to the south and west into a valley with the Black Brook at its base.

3. Results of the Desktop Study

3.1 General Site Background

Collieries at Leeswood were developed during the early years of the 19th century, including Leeswood Hill, Leeswood Valley, Leeswood Green and Leeswood Main.

In 1858, industrialist Ebenezer Waugh Fernie discovered an exceptionally rich seam of cannel coal at Leeswood Green Colliery, near Mold. With the discovery of cannel coal, from which crude oil can be distilled, mining in Flintshire experienced a major boom period in the 1860s. This lead to the rapid establishment of 26 collieries in Flintshire. The boom period experienced in Flintshire was partly the result of the outbreak of the American Civil War in 1861. The war curtailed cheap oil imports from the United States which had initially begun in 1859 (Lloyd 2016; www.scottishshale.co.uk).

Cannel coal was extensively used by gasworks for the production of coal gas, and during the oil boom period from about the 1860s to 1880s large quantities of curly and smooth cannel coals and oil shale were used for the distillation of crude oil, paraffin, greases, etc. During this "oil boom" period, extensive trials were made locally in the search for cannel coal, in particular the curly variety which was held to be the most valuable, producing on distillation some 80 gallons of crude oil per ton, and priced in the Leeswood area at 28 shillings per ton, compared with smooth cannel producing about 35 gallons per ton, and priced at 9 shillings per ton, and oil shale giving about 33 gallons per ton, and priced at 8 shillings 6 pence per ton (Lloyd 2016; www.scottishshale.co.uk).

It is recorded that over 1,000 retorts were established in the districts of Leeswood, Coed Talon, and Copa Colleries, Padeswood, for the manufacture of oil from cannel coal, during this period. On the earlier maps dating from 1870 many works of this nature are to be seen, the Copa Oil Works, the Hope Oil Works, North Wales Oil Works, Leeswood Vale Oil Works, Canneline Oil Works, Mold Valley Oil Works (Marstons) etc. Some 20-24 works sites have been located in this area.

In 1862, 28,816 tons, and in 1864, 120,000 tons of cannel coal were raised in Flintshire by the following collieries Leeswood Hill, Leeswood Green, Coed Talwrn, Copa and Nerquis. In 1865, 150,000 tons were raised. Thin bands of cannel coal, sometimes 6" thick near the centre of the Main coal, had been known for many years and were first worked in 1858. Leeswood Green Colliery boring below the main coal passed through several seams of workable coals, and at a depth of 93 yards from the main the cannel coal was reached, and eventually proved

to be 4' thick. Trials proved many other cannel seams in the neighbourhood, Coed Talon 4' at a depth of 241 yards from the surface Leeswood 5' at 163 yards Nerquis 2' 9" at 193 yards Oak Pits, Mold, 2' 9" seams of coal and cannel at 185 yards Bromfield 4' 5" mixture coal and cannel at 214 yards Copa Collieries near Padeswood, cannel 4' 6" and shale 1' 6" at 252 yards Sandycroft Colliery, Buckley, mixture coal and cannel 2' 4" thick at 133 yards and at Aston Hall Colliery where a 7' main coal seam comes in at 22 yards from the surface, there was a 1' seam of cannel around the 60 yard mark, and a mixture of coal and cannel 2' 2" thick at 67 yards from the surface.

The end of the American Civil War in 1865 saw the resumption of cheap oil imports. However, the cannel coal industry of Flintshire was rendered almost unviable over a very short period of time with many businesses having ceased by 1866. An 1869 article in the Oil Trade Review describes the area as, "Dilapidated brickwork, smokeless stunted chimneys and other ruins of manufacturing operations are now the subject of melancholy comment by visitors who formerly were lost in wonderment at the sudden development of its commercial prosperity."

3.2 Engine Houses

The main function of an engine house was to provide the framework for the engine it contained. Its basic design was essentially established by Newcomen for his atmospheric engine. Engine houses thus needed to be large to accommodate steam cylinders which could be up to 100 inches (2.54m) in diameter. They typically stand adjacent to the top of the main mine shaft, the engine being used either to power winding/winching gear for the removal of extracted minerals, a water pump to prevent the underground workings from flooding or as an air compressor (Buchanan 1972; Hudson 1963).

Most surviving engine houses are rectangular in plan with a much thicker wall in the front (the bob wall). This was constructed using larger stone blocks and was around two-thirds the height of the other walls. It supported the beam (known as a bob), which transmitted the reciprocating motion of the piston to the pump rods in the adjacent shaft (in the case of a pumping engine) or to the hoisting or crushing machinery. This wall had to withstand both the weight (that might be over 50 tons for a large pumping engine) and the rocking forces of the bob (Rees 1975).

The other walls braced the bob wall and helped to take some of the working stresses of the engine. The rear wall (usually with a gable that supported a pitched roof) contained the cylinder opening through which the cylinder, bob, and other large components were brought into the house. There were usually three chambers internally (Rees 1975).

Associated structures include: boiler houses, which were usually attached to the side of the engine house proper as a additional building; chimney stacks that were either built-in to a rear corner of the engine house or sometimes detached and connected by a flue; and engine ponds (usually upslope), which stored water for the engine condensers.

Plates 1 and 2 show examples of existing Flintshire engine houses at Talargoch mine, Dyserth, and Minera, New Brighton.

3.3 Leeswood Collieries

There were five main collieries working in the Leeswood area during the later 19th century. These consisted of Leeswood Green, Leeswood New Hall, Leeswood Vale, Leeswood Hill and Leeswood Main. The sites of New Hall, Vale and Green collieries are located some distance from the development area, suggesting that the engine house here likely belonged to either Leeswood Hill or Leeswood Main colliery. A sales entry in the 1870 Mining Journal for the

Leeswood Hill colliery site and equipment suggests that the Hill site had shut down by this date. As the OS map of 1872 appears to show the Engine House within the development area as still extant at this date it is possible that it belonged to the Leeswood Main colliery (located on the area now laid out as playing fields adjacent to the site).

The Leeswood Main Colliery was in operation from 1862 to 1881. The colliery changed hands and went into liquidation during this period, illustrating the volatility of the industry. Ownership details below are taken from the Mining Journal (1870):

Ownership of Leeswood Main Colliery:

1862-3	Craig, Taylor & Craig
1864	Taylor & Craig
1865-6	Leeswood Main Coal & Cannel Co
c. 1868-73	Leeswood Main Coal, Cannel and Oil Co. Ltd
1873	Liquidation. Lease acquired by W C H Jones
1874 - *c*.1881	New Leeswood Main Colliery Co

Between 1874 and 1881 Leeswood Main appears to have been associated with, and possibly merged, with the North Leeswood Colliery. Both of these collieries were situated on the northwest edge of Leeswood village. By 1862 a branch from Hussey's Celyn tramroad had been laid to the Leeswood Main colliery but not to the North Leeswood pit until both pits were combined. This branch was about 400 yards long and ran northeast from near the top of the furnace incline. Around 1867 the tramroad was replaced by a standard gauge line from the Leeswood Green sidings with a self-acting incline. From the sidings the line ran north to the foot of an incline which climbed through the main Leeswood Green Colliery beside Hussey's tramroad, crossing Leeswood furnaces incline on a bridge. The branch probably closed *circa* 1881 when the Leeswood Main colliery closed, the track being lifted about the same time (Mining Journal 1870).

3.4 Map Regression

1839 Mold Parish Tithe Map (Fig 3)

The 1839 Tithe map shows the assessment area in great detail. The assessment area appears to be located on the boundary of two fields, marked 959 and 960 on this map. Field 959 is recorded as 'Field Behind the Houses' (referring to houses on Bryn Clyd and Heol-y-Goron, which pre-date the present dwellings), being 2 acres in size and occupied by Mr Ephraim Hopwood. Field 960 is recorded as being 4 acres in size and is described as 'Llaw y Berth' (Bush/hedgerow side). It was owned in 1839 by Mr Oakeley Edward Esq and being occupied by Mr Humphrey Rowland.

1872 Ordnance Survey 25 Inch Map (Fig 4)

The 1872 OS map shows the development site in very clear detail. Considerable change is evident in the scheme area in comparison with the tithe map. A series of mine workings and associated infrastructure can be seen across the wider landscape including shafts, ponds, tramways, weighing machines, offices and engine houses. The engine house within the assessment area is located directly to the south of a mineshaft and immediately to the east of a tramway. The structure itself is rectangular in plan and appears subdivided into three rooms. It is shown as having a likely yard surface abutting its eastern wall, and a smaller structure (possibly a boiler room or other associated feature) adjoining its western wall. A footpath appears to link the assessment area with the housing to the east.

1899 Ordnance Survey 25 Inch Map (Fig 5)

The 1899 OS map shows that the Engine House within the assessment area has been demolished by this date. The location of the adjacent mine shaft is annotated 'Old Shafts (Coal)', showing that this location was no longer being worked. No above ground features are shown. The mine shafts to the immediate north of the assessment area appear to have still been in use at this date under the name 'Phoenix Collieries'. A new tramway is shown along the line of the road to the north of the assessment area.

1912 Ordnance Survey 25 Inch Map (Fig 6)

The 1912 OS map shows largely the same detail as that observed on the earlier 1899 OS map. On this map 'Old Shafts (Coal)' are still shown in the assessment area, with a slight depression marked at the top of the mineshaft. The Phoenix Colliery workings to the north appear to still have been in production at this date although the aforementioned new tramway along the road to the north of the assessment area is no longer depicted. This indicates that the tramway was no longer needed (and a mineshaft to the north of the development site also appears to have been closed).

1961-1962 Ordnance Survey 1:2,500 Map (Fig 7)

This 1962 map shows no sign of the former mine workings within the assessment area. Mine workings to the north are also shown as disused by this date. The housing, previously to the east of the assessment area, has been redeveloped into semi-detached properties with associated gardens. Further housing has also been constructed to the south of the assessment area at Maes-y-Meillion.

Summary

The map regression analysis for the assessment area at Maes-y-Meillion correlates the historic research on the Leeswood Collieries. The assessment area appears to have been in agricultural use at the time the Tithe map was drawn up in 1839, yet by 1872 the surrounding landscape had been completely changed by the boom in the mining industry. However, by the time the 1872 map had been surveyed this industry was already in decline. This is reflected in the map regression by the apparent demolition of the Engine House within the assessment area as well as former workings in the locality. The workings to the north of the assessment area were no longer part of the Leeswood Main colliery on the 1899 map, having been evocatively renamed the 'Phoenix Colliery'.

4 Methodology

4.1 Evaluation and Excavation Fieldwork

During January 2017, an archaeological evaluation was undertaken on the proposed development site in order to assess the presence or absence of archaeological remains, specifically those related to the Engine House located on the historic mapping.

Following a CAT scan for live services, a single trial trench was excavated a mechanical excavator fitted with a toothless ditching bucket, under close archaeological supervision. The trench was excavated perpendicular to the mapped location of the engine house.

All areas were photographed using high resolution (18mp+) digital photography.

All on-site illustrations were undertaken on drafting film using recognised conventions and scales (1:10, 1:20, 1:50, as appropriate).

The fieldwork was undertaken by Chris Smith MCIfA (AW), William Rigby (AW) and James Weaver (AW). The overall management of the project was undertaken by Mark Houliston MCIfA (AW).

All works were undertaken in accordance with the CIfA's *Standards and Guidance: for an Archaeological Evaluation 2014* and current Health and Safety legislation.

The results of the field evaluation phase of work identified structural remains of the 19th century colliery within the area of proposed development. The brickwork remains were deemed likely to relate to a boiler base, typically positioned to the side of the Engine House proper. An area measuring 14m x 22m, located to the immediate north and east of the evaluation trench, was therefore subject to open area excavation.

The methodology for this excavation phase reflected that of the previous field evaluation, and was undertaken in accordance with the CIfA's *Standards and Guidance: for an Archaeological Excavation 2014*.

4.2 Finds

Archaeological finds recovered during the course of the excavation were bagged by context.

4.3 Palaeo-environmental Evidence

No deposits suitable for sampling were encountered during the fieldwork.

5. Results of the Evaluation (Figs 2 & 9; Plates 3-9)

The trial trench measured 22m long by 1.8m wide and was aligned northwest to southeast. It was located so as to cross the walls of the structure shown on the historic mapping at a 90° angle.

As the evaluation phase of works was followed by an open area excavation, expanding upon and including the original evaluation trench, the following is a brief summary of that recorded with further detail being included in the description of the excavation:

- Located directly beneath the topsoil deposit (1) was a thin, stoney, mixed subsoil horizon (3) and a thicker (up to 0.4m) mixed shale mine waste and brick rubble deposit (2).

- The rubble deposit (3) was seen to overlay a 0.6m thick stone wall at the north-western end of the trench (5) (Plates 3, 5-6). The wall was faced on one side only (the south-eastern face) with the rear being composed of roughly hewn and randomly sized rubble. The facing blocks measured up to 0.4m in length and 0.3m in depth and were bonded with an off-white/beige lime mortar with coal inclusions (of likely later 19th century date).

- An earlier cobbled surface (4) was located to the northwest of the large stone wall (5) and was seemingly truncated during the construction of this wall.

- Wall 5 had been truncated at a later date when an entrance way was created, this being crudely finished in large, re-used, bricks (6/7).

- A poorly defined and narrow (0.4m) linear robber trench was noted running parallel to the stone block wall (5). Although this feature had no clear base or edges, it was clearly visible in plan, cut into a deep (0.5m) cinder and red brick dust deposit (11/12) located above the natural clay (013).

- Within the centre of the trench an irregularly shaped brick feature (16) was noted sat above the natural (013) (Plate 7). It was overlain by compacted brick rubble, mortar and masonry (33), likely derived from demolition or later robbing.

- The south-eastern end of the trench contained two parallel brick piers (18&19) separated by a small brick floor (21) (Plates 8-9). A further, smaller, brick plinth (20) was located to the northwest of the brick floor, perpendicular to brick piers 18 & 19.

- A narrow brick-lined culvert, 22, cut through cinder deposit (12) and natural clay (13) to the immediate south east of brick floor (21).

After a development control monitoring visit by Mark Walters (CPAT) it was recommended that a wider area be opened for an excavation based on the observed archaeological remains.

6. Results of the Excavation (Figures 8-11; Plates 10-40)

Removal of turf and topsoil (1001) and a mixed, stoney, subsoil and shale mine waste/cinder overburden (1002) was undertaken by a tracked 13 tonne mechanical excavator fitted with a toothless bucket, with close archaeological supervision.

Removal of overburden layers (1001) & (1002) showed the surface of the natural mottled yellow clay (1003) to be present at approximately 0.6m below the current ground surface at the south-eastern side of the trench, but layer 1003 was encountered up to 1.3m deep at the north-western side of the excavation area. A large sondage excavated against the north-eastern edge of the trench showed the natural (1003) to slope downwards to the northwest. The resultant sloping ground appeared to have been levelled up again through various dumps of mine waste, redeposited natural and cinder (1023). Levelling deposit 1023 was observed across more than half of the total excavated area.

The continuation of the faced stone block wall 1005, previously seen during the evaluation phase, was exposed within the trench, running for a total of 11m on an east to west alignment. It varied little along the exposed length from that described in the above evaluation section. A 1m wide section against the faced edge of the wall, excavated to assess its depth and foundation cut, showed it to be up to 0.7m high. No obvious foundation cut was apparent within the section, indicating the wall was built against the foundation trench. The foundation trench for the wall cut through the cinder levelling deposit (1023) on to the natural clay (1003).

Within the surface of the natural clay exposed in the section adjacent to wall 1005, was a faint linear plough scar running north-south. The rough un-faced ‘rear’ of the wall, its northern edge, indicated this part of the wall would have been obscured below ground level (and hence was not faced).

A cobbled surface (1022), first identified during the evaluation, located to the immediate northwest of wall 1005 was observed to extend approximately 2m by 1m, the remainder being obscured by the trench edge. The surface (1022) appeared to have been truncated on its north-eastern side by a sub-oval pit [1015] and on its southern edge by wall 1005. The small cobbles forming the surface were up to 0.25m deep in places. As the ground level appears likely to have been up to at least 0.5m higher when wall 1005 was constructed, cobbled surface 1022 would have been buried and is clearly from an earlier phase of use of the site.

Excavation of pit 1015 by half sectioning showed it to be sub-oval in plan, approximately 0.4m deep with 45° sloping sides and a flat base. It contained four fills, (1015-9), each a dark grey to black coarse silt with stone inclusions. No datable material was recovered from the pit. The pit [1015] appears to have been cut through cobbled surface 1022 prior to both being buried beneath made ground deposits.

Located to the north east of pit 1015 was stone wall 1009, measuring 6m in length and 0.6m wide. This was aligned on an approximately east west orientation. Its west end ran into the trench section whilst its eastern end appeared to run beneath, and was likely truncated by wall 1005. Wall 1009 was composed of the same stone material as wall 1005, although this had been heavily robbed with only a pair of facing stones remaining. The remainder was made up of un-bonded stone blocks of random size and shape. The eastern end of wall 1009 did not appear to be tied into wall 1005, but rather to be truncated by it.

Excavation across the surface of levelling deposit (1023) revealed a series of eight regularly spaced and parallel beam slots [1033] (Plates 26-27). The beam slots were aligned approximately east to west. Each measured approximately 1.8m in length by 0.3m wide. Of the eight beam slots forming part of group 1033, three were found to have timber remnants forming their fills. The fills of the remaining five beam slots contained cinder material into which they were cut (1023).

Excavation of a square sondage at the terminus of wall 1005 revealed a further three *in situ* beams [1008] continuing the line represented by group 1033 (Plate 28).

Further timbers were noted within the sections of sondages located to the west, again continuing the line from group 1033. Where the timbers were observed in section they were seen to be halved round-wood sleepers and are likely to have formed the line of a narrow-gauge railway, the tracks having been subsequently lifted. Further faint linear plough scars running north-south were noted within sondage 2.

The brick structures and floor (18-21 / 1026-9) previously observed in the evaluation phase were shown not to extend any further to the northeast. The brick piers 1027 and 1028 did, however, appear to be heavily robbed, the course of their continuation visible only as shallow robber trenches [1038/72] (Plates 29-31). At the north-western end of the robber trenches [1038/72] structural remains belonging to the same feature were found to still be present. These consisted of the irregularly shaped brick feature 16 (Plates 32-34), previously seen in the evaluation trench, and a rounded (apsidal) stone built end 1007.

The apsidal end of the structure 1007, the only part built in stone, comprised a roughly faced curving stone wall, its component blocks (mixed limestone and shale) bonded with patchy off-white/beige lime mortar with occasional coal fleck inclusions. The outside face of the curving stone wall had been roughly finished. The inside of the curve was filled with loosely packed, occasionally mortared, randomly sized stones (mixed limestone and shale). The stones of this fill varied in size from 0.1m to 0.5m. The stone deposit forming the centre of the feature was found to be 0.5m deep and was located directly above the natural clay (1003) (Plates 35-36). Whilst the curving stone face of structure 1007 retained the loosely packed central stone

deposit on the northeast and north sides, the irregularly shaped brick feature (16), previously seen on the evaluation phase, appeared to be part of structure 1007, retaining the loose central stones on the north-western edge of the feature. Brick feature (16) was also observed overlying a faint north-south running plough scar.

A small brick pier structure, 1029, identified in the evaluation phase, was noted set at a 90° angle to brick walls 1027 and 1028, the course now represented by the lines of robber trenches [1038/72] (Plate 30 – Foreground). Structure 1029 was extant and was largely the same in build as walls 1027 and 1028. A further robber trench [1037], representing another small pier, was noted to the northwest – again between, and perpendicular to robber trenches [1038/72]. Excavation of sections of the robber trenches showed them to be very shallow (between 0.05m and 0.1m) and have a single fill composed largely of loosely compacted lime mortar (1073/1039) (Plate 37). The bases of each robber trench consisted of heavily compacted clay (1024) with material trampled in. This is most likely to represent the flat and levelled base of the original foundation trenches, the robbed material simply having being removed.

Two parallel linear features, a narrow gully [1013] and a wider ditch [1004], were noted cut into the clay substrate material (1024) and the natural (1003) running on a northeast to southwest alignment (Plates 38 & 39). These linear features were approximately 10m long and appeared to terminate immediately to the northeast of the likely boiler base structure formed by [1007/26-9]. Excavation of two 1m sections across gully [1013] showed it to have 45° sloping sides and a flattish base. It contained a single fill of crushed shale mine waste (1014): no datable material was recovered from this deposit. Excavation of two 1m sections across linear 1004 showed it to be an extremely shallow (0.15m max), wide (up to 1.8m) ditch with a flat base and only a single shale mine waste fill (1010). Again, no datable material was recovered from this feature. These two linear features were recorded in the southwest-facing section of the trench. Only gully [1013] differed from that observed within the excavated sections, in that it appeared to be cut in from a slightly higher level and filled only with the mine waste overburden that covered most of the site (1002/14). This suggests ditch was open when the dumping of mine waste on the site began, presumably post-1881 when the site was likely out of use.

The hand excavation of a large sondage at the base of the trench, against the north-western trench edge, showed considerable amounts of made ground in this area, including redeposited natural (Plate 40). Contexts 1023, 1042 and 1049 to 1060 appear as dumped, possibly levelling material in this section (Figure 10). It is likely that they were overlain by the continuation of surface 1022 prior to its later truncation. The truncation and apparent removal of surface 1022 may coincide with the cutting of foundation trench 1040 (for wall 1009) through the made ground deposits 1023, 1042 and 1050-2. Foundation cut 1040 also clearly truncates horizon 1044, which overlays surface 1022. It is therefore likely that wall 1009 and surface 1022 belong to differing phases of activity within this area of the site; surface 1022 being buried at the time wall 1009 was constructed. A final phase of activity evidenced within this section is the cutting of a large pit [1071] which truncated wall 1009 as well as made ground 1042. It contained a single fill composed entirely of crushed shale mine waste material (1041).

7. Overall Phasing of the Site

7.1 Phase 1

The earliest identifiable features on site are likely to be the ephemeral plough scars cut into natural clay deposit 1003. These agricultural remnants predate any mining related use of the site. Their location within the surface of the natural clay (1003) where the ground level begins to lower to the northwest appears to show that the sloping ground is a natural topographic feature and did not result from later mining activities.

7.2 Phase 2

Activity carried out during phase 2 includes the apparent dumping of levelling material across the north-western side of the site, compensating for the natural topographic slope. This included contexts 1023, 1042, 1049-64, 1066-70, 1074-5, 1078, 1080, 1085-6. Linears 1010 and 1014, both cut into and overlain by phase 2 dumping deposits, are similarly attributable to this phase. This dumping of material to rectify the natural slope is likely to represent preparation of the site for construction. Context 1022, the truncated cobbled surface, is likely also attributed to this phase of activity. Material recovered from context 1023, including diagnostic clay tobacco pipe bowls, would appear to date this phase to *circa* 1860-80.

7.3 Phase 3

Phase 3 appears to be restricted to pit 1015. This pit was cut into make-up layers 1053 and 1054 and likely through surface 1022. As pit 1015 had four distinct fill episodes, all of which appear as accumulated silting rather than dumping, it is likely that it remained open for some time.

7.4 Phase 4

This phase is clearly represented by contexts 1043 to 1046, which overlie pit 1015 and surface 1022. These are mixed coal and mine waste deposits indicative of further dumping of material or of ground levelling.

7.5 Phase 5

Contexts belonging clearly to phase 5 are foundation cut 1040 and wall 1009. Cut 1040 was clearly made through phase 4 deposits overlying surface 1022. A small linear gully [1011], containing a single mixed mortar and brick dust fill (1012), may also be attributable to this phase owing to its apparent truncation by structure 1007 / 1026-9.

7.6 Phase 6

Wall 1005 is demonstrably later owing to its truncation of phase 5 wall [1009]. The construction of wall 1005 clearly cuts deposits from earlier phases including context 1023 (Phase 2) and 1009 (Phase 5). The railway timbers running parallel with wall 1005 and similarly cut into 1023 are also likely to derive from this phase of activity.

Whilst stratigraphically there is no relationship to prove categorically that structure 1007/1026-9 dates from phase 6, it would appear likely given its perpendicular layout in relation to wall 1005. Notably structure 1007 / 1026-9 was constructed solely on top of the natural clay, on the very edge of the subsequently levelled topographic slope.

7.7 Phase 7

Cut 1006 and its associated structure 1020, a culvert composed of loose, un-bonded, brickwork, a reused steel boiler pipe and a ceramic pipe, clearly butts against, and thus post-dates structure 1007/1026-9. Whilst they may still be associated with the use of structure 1007/1026-9 a different phase is clearly attributable to these contexts.

7.8 Phase 8

Phase 8 is represented solely by the apparent 'passageway' modification [1021] to wall 1005. Whilst it is possible that this belongs to an earlier phase, and may be contemporary with the use of structure 1007/1026-9, no stratigraphic relationship exists between the two. It is apparent that the rough structure 1021 overlays the projected line of railway timbers 1008/1033, which suggests the former belongs to a later phase.

7.9 Phase 9

Phase 9 is given over to all contexts relating to robbing activity of structure 1007/1026-9 (contexts 1037, 1038, 1039, 1072 and 1073) as well as to the general accumulation of overburden across the site (contexts 1079, 1087, 1002 and 1001).

7.10 Phasing Summary

As the use of the site for mining activities likely relates to a very short time span between its beginnings in *circa* 1862 and its closure *circa* 1881: as attested by the historic research and the apparent removal of above ground structures prior to the 1899 map (Figure 5). The length of each of the above phases is likely to be comparatively short, and closer dating is not likely to be possible.

8. Finds

Very few finds were recovered from the area of proposed development throughout the evaluation and excavation phases. The whole assemblage consisted of eight sherds of ceramics and two diagnostic clay tobacco pipe bowls. The finds catalogue is presented in Appendix V.

Six sherds of locally produced, 19th century Buckley ware, five of which were contiguous and formed the base of a small bowl, were recovered from phase 2 context 1023. A further sherd of 19th century Buckley ware was recovered from within the loose stone infill of phase 6 structure 1007.

Two clay tobacco pipe bowls were recovered from phase 2 context 1023. Both were poorly produced examples. One was undecorated with a heavily pronounced seam whilst the other bore a seam decorated with an embossed oak leaf relief, the remainder of the bowl being undecorated. Both are typical of later 19th century designs (*c*.1860-80).

Finds not retained to form part of the archive include a large steel plate (Plate 43) and a large stone block with clear signs of working (Plate 44). It is unclear whether the worked channel on the stone block was created during quarrying or if this is from an inserted steel rod that formed part of an engine base.

A small amount of the bricks recovered from the brick features 1026-9, forming part of the likely boiler base structure 1007, bore the maker's stamp 'R. Ashton & Co – Buckley' (Plate 45). These bricks were made in nearby Buckley, the Ashton brickworks being in production between 1790 and 1902.

9. Conclusions

9.1 Discussion

The historic mapping suggests that a mineshaft and engine house, with associated side buildings and yard, were located over a previously undeveloped site and that, once out of use, only the old shaft remained. However, none of the mapped structures are represented by remains observed within the excavated area; of most significance, is the apparent lack of engine house remains within the excavation area.

The structural remains found during the excavation appear to be more indicative of a boiler house than an engine house. As boiler houses were typically located immediately adjacent to the engine house, the archaeological investigation indicates that the engine house remains, if present, are located further to the southwest, beyond the excavated area. This explanation is, however, somewhat problematic in that the southwest field boundary is consistently represented as unchanged on all historic maps and is shown as being some distance from the mapped location of the engine house. In addition, the remaining space between the edge of the excavation area and the field boundary does not appear large enough to accommodate the remains of an engine house.

The most significant structural remains 1007/1026-9 located on the site consist of narrow walls with an opening, a rounded end and central cross plinths; this structure has been interpreted as a former housing for a high-pressure 'egg-end' boiler. Examples of other egg-end boiler houses are shown in plates 41 and 42. The presence of a horizontally-mounted egg-end boiler would most likely mean that any associated engine would be given over to winding rather than pumping (M.Walters Pers. Comm.).

9.2 Overall Conclusions

The historical research and archaeological fieldwork have shown that structures associated with later 19th century mining activities are present within the area of proposed development, the excavated features do not accurately correlate with those features mapped by the Ordnance Survey in 1872 (Figure 4). The 1872 map shows a clearly labelled engine house though no evidence for this ever having been at this location was recorded during the excavation. The presence of a boiler house on site would appear to suggest that an engine house was once present, most likely adjacent, though this would necessarily mean that it was located to the west of the boiler house (the east of the boiler house having been subject to excavation). The field boundary to the west of the boiler house is unchanged on the historic mapping and does not appear to leave a space large enough to have been occupied by any engine house structure. Nonetheless, there remains a possibility that the remains of the engine house are located along the western boundary of the proposed development site.

Given the excavated physical evidence on the site, and ruling out the engine house being an ephemeral structure leaving little trace, a mapping error concerning the location of the engine house by the Ordnance Survey is a possibility.

9.3 Storage and Curation

The site archive will be prepared in accordance with the Standards and Guidance for the Creation, Compilation, Transfer and Deposition of Archaeological Archives (CIfA, 2014), Standards in the Museum Care of Archaeological Collections (Museums and Galleries Commission 1994), Guidelines for the Preparation of Excavation Archives for Long-Term Storage (UKIC 1990) and Archaeological Archives: A Guide to Best Practice in Compilation, Transfer and Curation (AAF 2007). The resultant archive will conform to guidelines described in Management of Research Projects in the Historic Environment (MoRPHE) (Historic England 2006) and the Wales-specific draft on National Standards for Wales for Collecting and Depositing Archaeological Archives (WAT 2008).

10. Acknowledgements

Thanks are due to: Mark Walters (CPAT) for his assistance with both the historical research and interpretation of the remains and to Will Rigby and James Weaver for their on-site assistance.

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Tithe Maps

Tithe Map of Leeswood	*1839*	*Flintshire Record Office NT/M/76*

Ordnance Survey Maps

Ordnance Survey	1872	Scale: 1:2,500 (25 inches to 1 mile). *Promap*
Ordnance Survey	1899	Scale: 1:2,500 (25 inches to 1 mile). *Promap*
Ordnance Survey	1912	Scale: 1:2,500 (25 inches to 1 mile). *Promap*
Ordnance Survey	1961-62	Scale: 1:2,500. *Promap*

Archaeology Wales

Appendix I: Figures

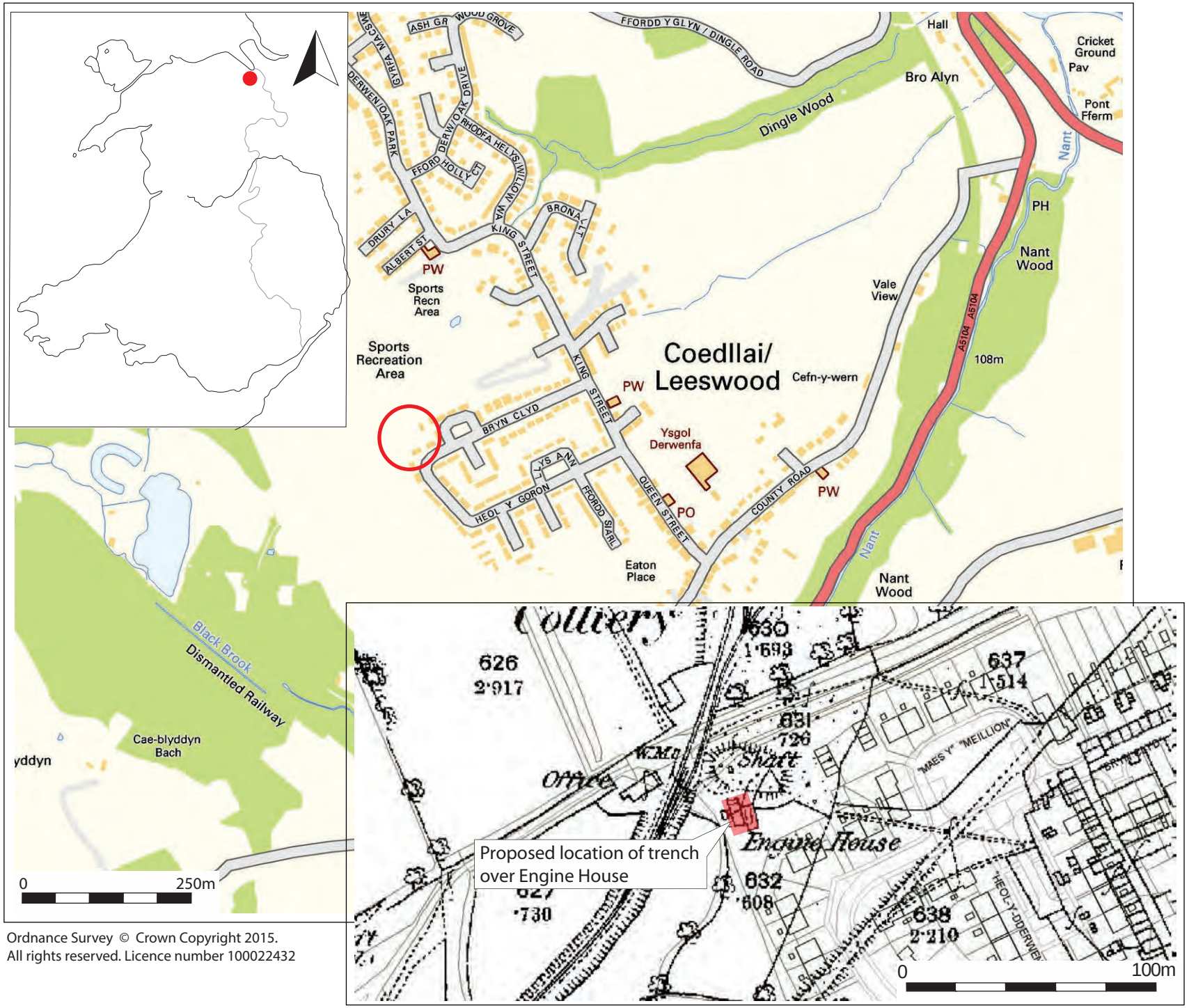

Figure 1
Location of Site and Ordnance Survey Map of 1872 (1:2,500) with proposed development and excavation area overlaid (inset)

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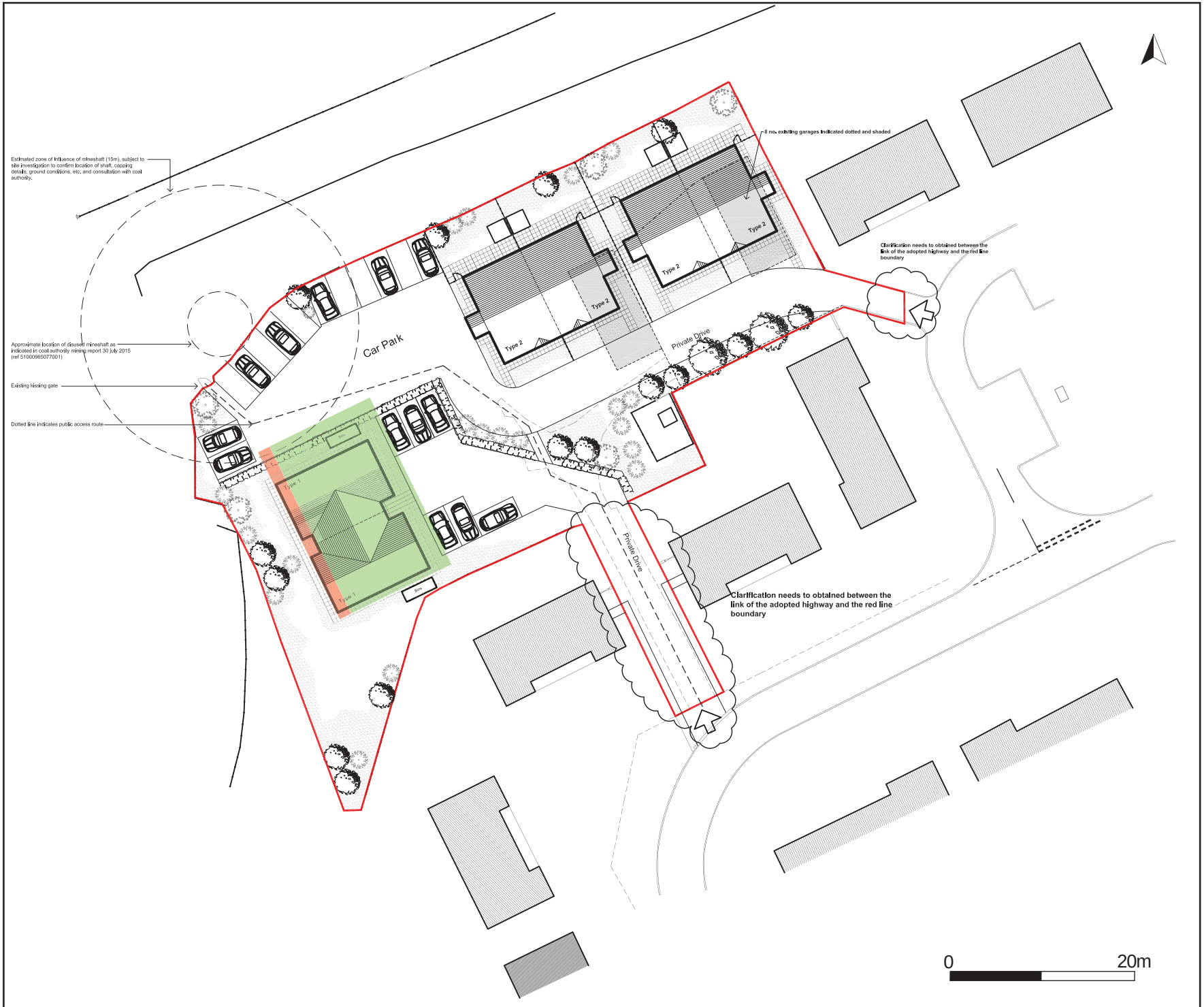
Revealing the past, informing the future



Proposed Development Site

Evaluation Trench

Excavation Area

Figure 2
Proposed Site Layout

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Revealing the past, informing the future

0 125m

Approximate location of the development area

Figure 3
Extract of the tithe Map of the Parish of Mold of 1839

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Location of the development area

Figure 4
Extract of the 1872 Ordnance Survey Map (1:2,500)

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Location of the development area

Figure 5
Extract of the 1899 Ordnance Survey Map (1:2,500)

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Location of the development area

Figure 6
Extract of the 1912 Ordnance Survey Map (1:2,500)

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Location of the development area

Figure 7
Extract of the 1961-62 Ordnance Survey Map (1:2,500)

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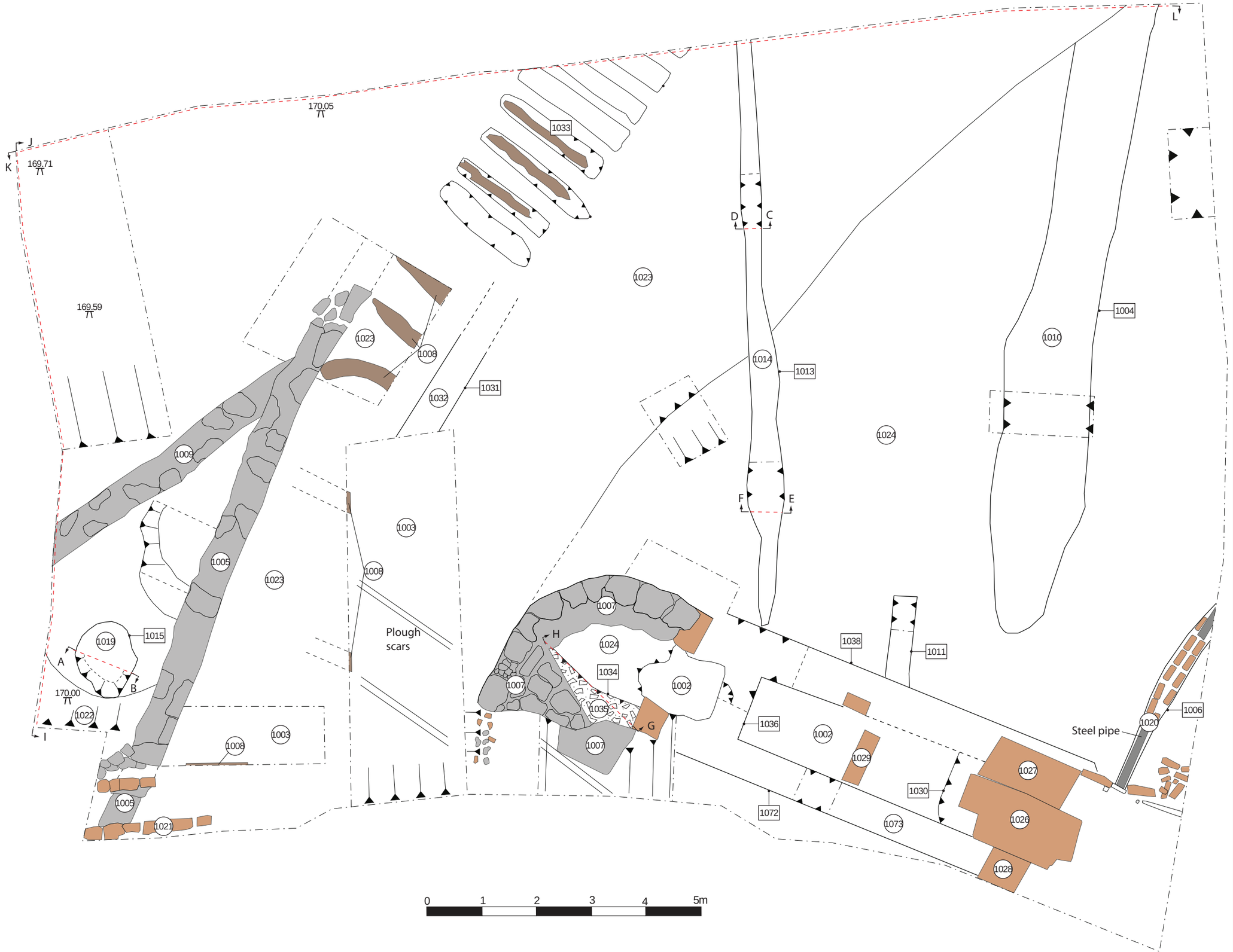


Key

- Brick
- Timber
- Stone
- Building waste/rubble deposit

Note: all heights are metres above Ordnance Datum

Job Title: Maes-Y-Meillion, Leeswood

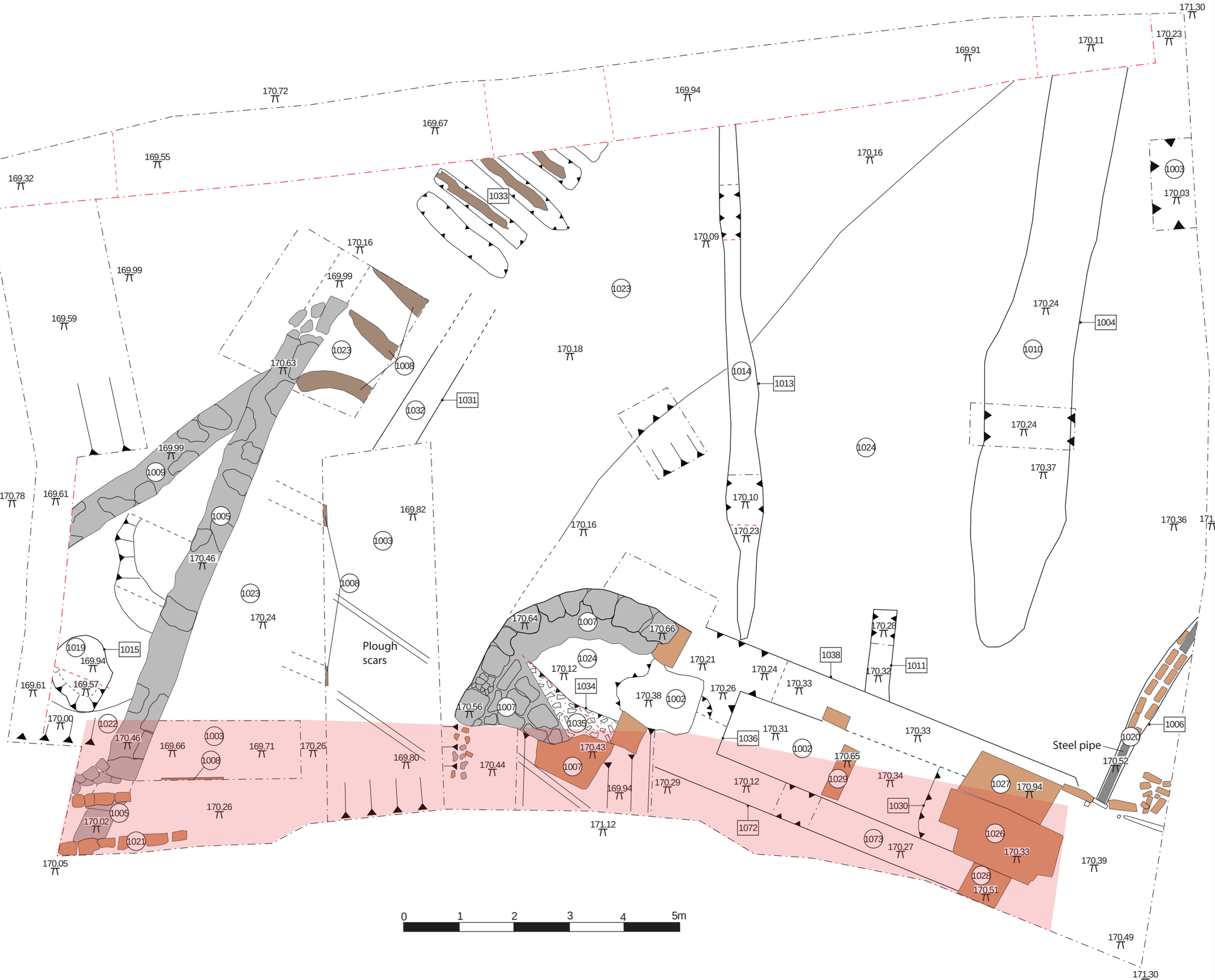
Drawing Title: Post-excavation Site Plan

Date: April 2017

Drawn By: ILB

Figure 8

ARCHAEOLOGY WALES
Revealing the past, informing the future



Key

- Brick
- Timber
- Stone
- Building waste/rubble deposit
- Sondage
- Location of evaluation trench

Note: all heights are metres above Ordnance Datum

Job Title: Maes-Y-Meillion, Leeswood

Drawing Title: Site Plan with levels and sondages

Date: April 2017

Drawn By: ILB

Figure 9

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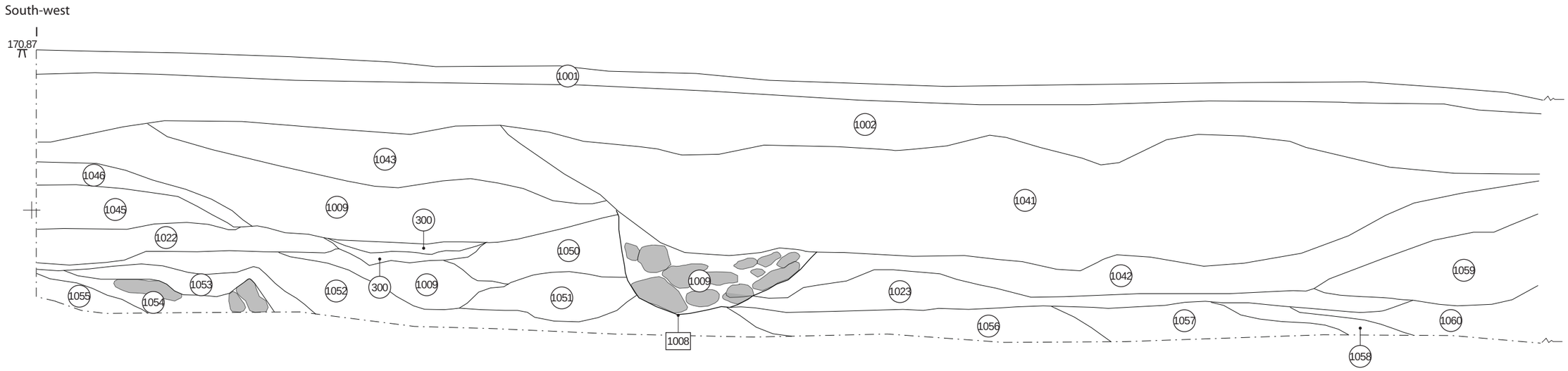
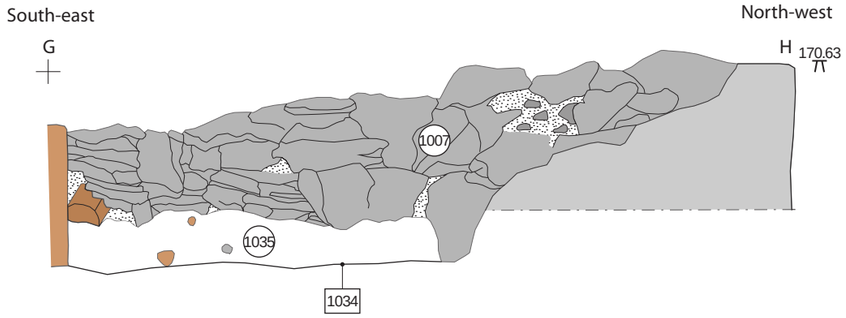
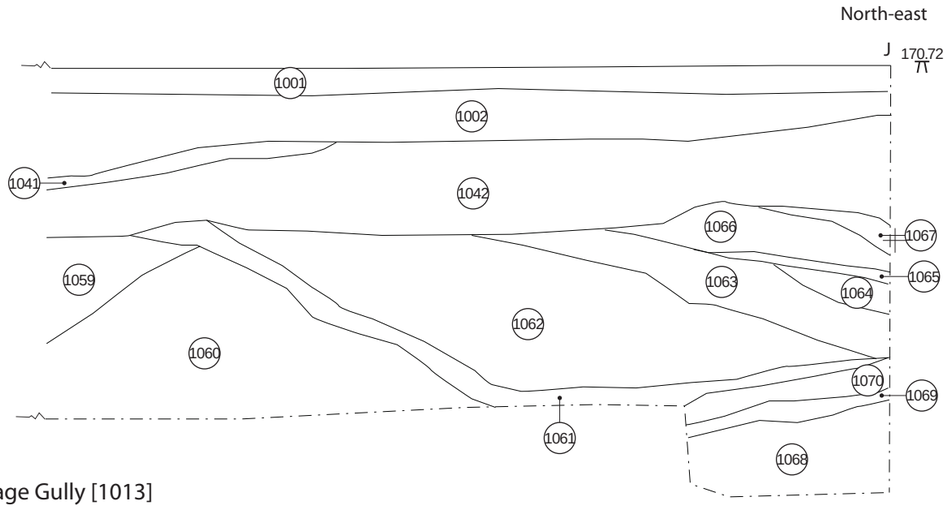
Section at east side of excavation area

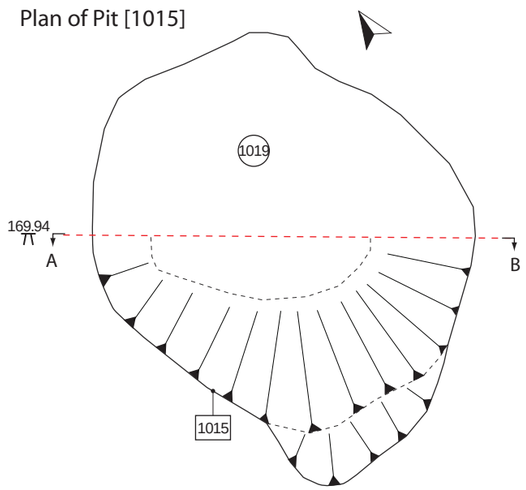


Section of Stone Plinth [1007] and Foundation cut [1034]

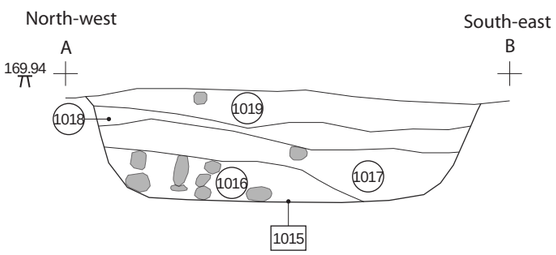




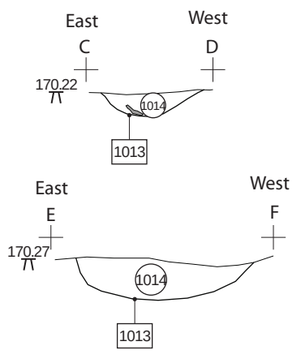
Plan of Pit [1015]



Section of Pit [1015]



Sections of possible Drainage Gully [1013]



Key

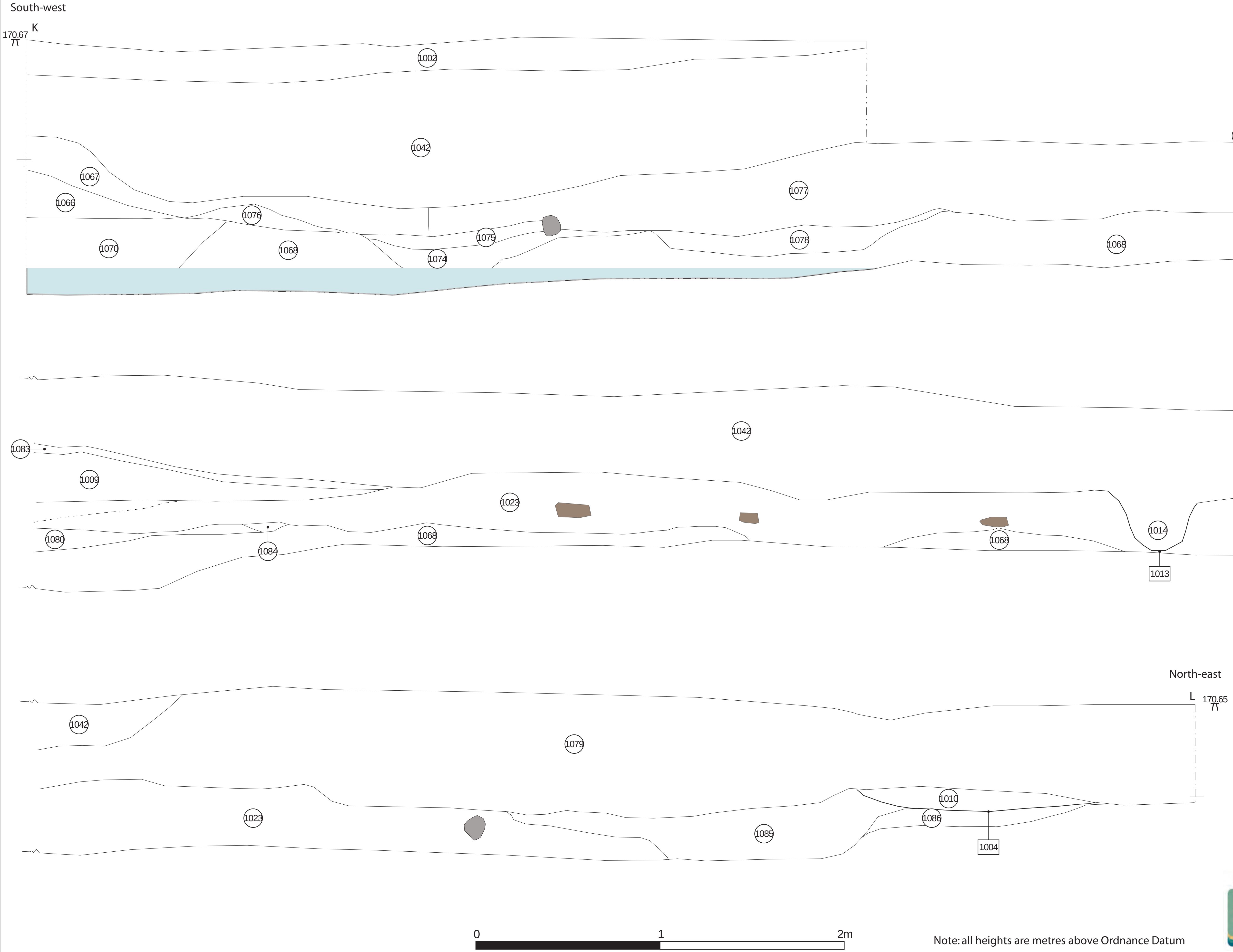
- Brick
- Mortar
- Stone

Note: all heights are metres above Ordnance Datum

0 1 2m

Job Title:	Maes-Y-Meillion, Leeswood
Drawing Title:	Plan & sections
Date:	April 2017
Drawn By:	ILB
Scale:	1:20 @ A3
Figure 10	

ARCHAEOLOGY WALES
Revealing the past, informing the future



Key
Timber
Water
Stone

Figure 11
Section along north-east end of excavation area

Scale 1:20 @ A3

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Appendix II: Plates

Plate 1. Example of Engine House at Talargoch, Dyserth, Flintshire

Plate 2. Example of Engine House at Minera, Wrexham

Plate 3. View south-east along Evalution Trench. Scales 2 x 1m

Plate 4. View north-west along Evaluation Trench. Scales 2 x 1m

Plate 5. View of Wall (005), Entrance (006/007) and Surface (004) in plan. Scales 1m & 2m

Plate 6. View of section of Sondage, adjacent to Wall (005). Looking north-east. Scales 1m & 2m

Plate 7. View of likely Brick Boiler Base [016]. Scale 1m

Plate 8. View of Brick Floor [021] and Plinths [018] & [019]. Looking south. Scales 2 x 1m

Plate 9. View of Brick Floor [021] and Plinths [018] & [019]. Looking north. Scales 2 x 1m

Plate 10. General view across excavated area. Looking north-west. Scales 1m & 2m

Plate 11. General view across excavated area. Looking north. Scales 1m & 2m

Plate 12. General view across excavated area. Looking north-east. Scales 1m & 2m

Plate 13. General view across excavated area. Looking east. Scales 1m & 2m

Plate 14. General view across excavated area. Looking East. Scales 1m & 2m

Plate 15. General view across excavated area. Looking east. Scales 1m & 2m

Plate 16. General view across excavated area. Looking south-east. Scales 1m & 2m

Plate 17. General view across excavated area. Looking south-east. Scales 1m & 2m

Plate 18. General view of excavated area. Looking south-west. Scales 1m & 2m

Plate 19. General view across excavated area. Looking west. Scales 1m & 2m

Plate 20. General view across excavated area. Looking west. Scales 1m & 2m

Plate 21. View along Wall [1005]. Looking east. Scale 2m

Plate 22. View along Wall [1005]. Looking west. Scales 1m & 2m

Plate 23. Pre-excavation shot of Pit Cut [1015] and adjacent Wall [1005]. Looking south-west. Scales 1m & 2m

Plate 24. Post-excavation shot of Pit Cut [1015] with Cobbled Stone Surface (1022) in foreground. Looking north-east. Scale 1m

Plate 25. Post-excavation shot along Wall Line [1009]. Scales 0.5m & 1m

Plate 26. View of *in-situ* Timbers of Tramway [1008]. Looking east. Scale 1m & 2m

Plate 27. View of *in-situ* Timbers of Tramway [1008]. Looking west. Scale 1m & 2m

Plate 28. View of excavated Timbers [1008] within Sondage. Looking south. Scales 1m & 2m

Plate 29. View of clearly defined robbed wall lines. Looking north-west. Scales 1m & 2m

Plate 30. View of clearly defined robbed wall lines. Looking north-west. Scales 1m & 2m

Plate 31. View of clearly defined robbed wall lines. Looking south. Scales 1m & 2m

Plate 32. View of apsidally ended Stone Feature [1007]. Looking east. Scales 1m & 2m

Plate 33. View of apsidally ended Stone Feature [1007]. Looking south. Scales 0.5m & 1m

Plate 34. View of absidally ended Stone Feature [1007]. Looking north. Scales 1m & 2m

Plate 35. Mid-excavation shot of Stone Feature [1007]. Looking north-west. Scales 1m & 2m

Plate 36. Post-excavation shot of Stone Feature [1007]. Looking north-west. Scale 1m

Plate 37. Post-excavation shot of Robber Trenches [1036] & [1038]. Looking south-west. Scales 0.5m & 1m

Plate 38. Post-excavation shot of Gully [1013]. Looking south-west. Scale 0.5m

Plate 39. Post-excavation shot of Ditch [1004]. Looking south-west. Scale 1m

Plate 40. View of north-western Trench Section. Looking north. Scales 1m & 2m

Plate 41. Example 1 of extant Egg End Boiler.

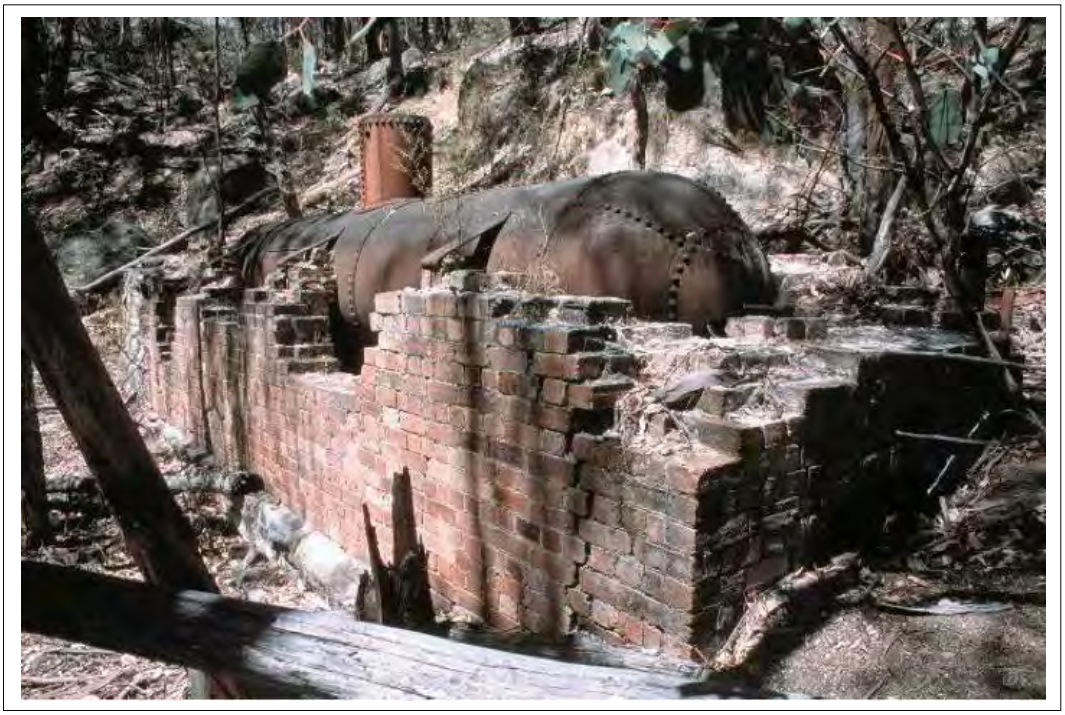

Plate 42. Example 2 of extant Egg End Boiler.

Plate 43. Shot of steel plate located within overburden material. Scale 0.5m

Plate 44. Shot of worked/quarried stone from overburden material. Scale 0.5m

Plate 45. Shot of 'R Ashton & Co - Buckley' Bricks from context [1026] & [1029]. Scale 0.2m

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Appendix III: Specification for Field Evaluation & Desk-based Study

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ARCHAEOLOGY WALES LIMITED:

Specification

for Field Evaluation & Desk Based Study

at

Maes-y-Meillion, Leeswood, Flint

Prepared for:
Wates Living Space
The Royals, 4th Floor
353 Altrincham Road
Sharston
Manchester, M22 4BJ

Planning Reference Number: 05528
AW Project Number: 2491

January 2017

REGISTERED ORGANISATION CIfA

NON TECHNICAL SUMMARY

This Written Scheme of Investigation details a proposal for a brief desk based study and field evaluation on the site of a former Engine House structure, Maes-y-Meillion, Mold, prior to the erection of new domestic dwellings with associated landscaping, access and infrastructure. It has been prepared by Archaeology Wales Ltd for Wates Living Space. The Flintshire planning reference number is 055828 and the Archaeology Wales Ltd project number is 2491.

1. Introduction

The proposed development is on open land to the north west of Heol-y-Goron, Leeswood, Mold (Henceforth – the site) and is centred on NGR SJ26845983. The development proposal has been submitted by Wates Living Space. The local planning authority is Flintshire County Council (FCC) and the planning reference number is 055828.

This Written Scheme of Investigation has been prepared by Chris E Smith (MCIfA), Senior Site Supervisor, Archaeology Wales Ltd (Henceforth - AW) at the request of Wates Living Space. It provides information on the methodology which will be employed by AW during the desk based study and the field evaluation at the site. The work will be Project Managed by Mark Houliston, AW Company Director (MCIfA).

The archaeological work has been recommended by Clwyd Powys Archaeological Trust (CPAT) in its capacity as archaeological adviser to the planning authority.

AW is a Registered Organisation with the Chartered Institute for Archaeologists (CIfA). All work will be undertaken by suitably qualified staff and in accordance with the standards and guidelines of the IfA.

2 Archaeological Background

The proposed development is sited within a former post-medieval coal mining area, now located to the rear (north-east) of domestic properties along Heol-y-Goron.

The 1872 1:2500 Ordnance Survey map of the assessment area shows a building (the engine house) located to the immediate south of a mineshaft adjacent to a railway line, weighing machine and other industrial infrastructure. The engine house and shaft is one of three located to the north of the larger Leeswood Green Colliery complex. The engine house structure is also shown on the later 1879 1:10560 OS. The 1899 OS map labels the mineshaft as 'old' suggesting it was no longer being worked at this date. The Engine house is not shown on this later map possibly suggesting demolition. The map of 1900 shows that the Leeswood Green Colliery is was at this date in use as the 'Earth, Brick, Tile and Terracotta Works' suggesting a downturn in coal workings in the area.

3 Objectives

The primary objectives will be to locate and describe, by means of desktop analysis and strategic trial trenching, all archaeological features which may be present within the development area with specific reference to the 19th century Engine House and any

associated features. Preservation in situ will be advocated where at all possible, but where engineering or other factors result in loss of archaeological deposits, preservation by record will be recommended.

Method statement for a rapid desk top study (Stage 1)

The desk based assessment will consider the following:

1. collation and assessment of all relevant information held in the regional HER (Welshpool)
2. assessment of all available excavation reports and archives (including unpublished and unprocessed material) affecting the site and its setting
3. assessment of online records held by the Portable Antiquities Scheme relating to finds from the assessment area
4. assessment of archive records held at the County Archives, and as appropriate, site files held by RCAHMW

The history of the site will also be studied. This will involve the following:

1. A review of the published resources (in particular the documents outlined in Section 2 above).
2. An analysis of relevant maps and plans. Cartographic evidence is held at the County Record Offices, including tithe maps, enclosure act plans, estate maps and all editions of the Ordnance Survey.
3. An analysis of the historical documents (e.g. county histories, local and national journals and antiquarian sources) held in museums, libraries or other archives, in particular local history and archives library.

Method statement for strategic trial trenching (Stage 2)

Preliminary work

The archaeological project manager in charge of the work will satisfy him/herself that all constraints to ground works have been identified, including the siting of live services, Tree Preservation Orders and public footpaths.

Evaluation

The precise location of the trench will be agreed with the developer and the curator prior to the commencement of on-site work. Provisionally, the location suggested is shown on Fig 1 – Overlaying the likely location of the engine house and measuring approximately 20m x 2m. The trench will be excavated initially using a machine fitted with a wide toothless ditching blade where appropriate. Thereafter all identified archaeological contexts will be excavated manually unless otherwise agreed with the curator in advance.

All modern overburden and non-archaeological subsoils will be removed down to the level of the first recognisable archaeological horizon. All archaeological contexts subsequently located must be adequately sampled in order to define their function, date, and relationship to adjacent features.

All trench sides and bases must be cleaned manually by trowelling to reveal contexts in plan and profile. This must be completed even if the trench apparently reveals only natural deposits. Spade or shovel cleaning only of trench bases and sides will not be acceptable. The level of natural soils below the archaeology should be tested for in at least one trench section location in each trench by means of machine/manual excavation or auguring.

As a minimum:

i) small discrete features will be fully excavated;
ii) larger discrete features will be half-sectioned (50% excavated); and
iii) long linear features will be sample excavated along their length - with investigative excavations distributed along the exposed length of any such feature and to investigate terminals, junctions and relationships with other features.
Should the above % excavation not yield sufficient information to allow the form and function of archaeological features/deposits to be determined full excavation of such features/deposits will be required. Additional excavation may also be required for the taking of palaeoenvironmental samples and recovery of artefacts.

Any variation of the above will be undertaken in agreement with CPAT.

All spoil heaps will be examined for the recovery of artefacts.

Human remains will be left *in situ*, covered and protected when discovered. No further investigation will normally be permitted and CPAT and the local Coroner must be informed immediately. After discussion, it may be appropriate to take bone samples for C14 dating. If removal is essential it will take place under the appropriate Ministry of Justice and Environmental Health regulations.

If excavation is undertaken through loose/friable material, such as rubble, consideration will be given to shoring, stepping or battering of trench edges to avoid slumping/collapse. The depth of the excavation will conform to current safety requirements and archaeological best practice.

Recording will be carried out using AW recording systems (pro-forma context sheets etc), using a continuous number sequence for all contexts.

Written, drawn and photographic records of an appropriate level of detail will be maintained throughout the course of the project. Digital photographs will be taken using cameras with resolutions of 14 mega pixels or above.

Plans and sections will be drawn to a scale of 1:50, 1:20 and 1:10 as required, and these will be related to Ordnance Survey datum and published boundaries where appropriate.

5 Monitoring

CPAT will be contacted at least one week prior to the commencement of site works, and subsequently once the work is underway.

Any changes to this specification that AW may wish to make after approval will be communicated to CPAT for approval on behalf of Planning Authority.

Representatives of CPAT will be given access to the site so that they may monitor the progress of the work. CPAT will be kept regularly informed about developments, both during the site works and subsequently during the post-fieldwork programme.

If significant detail is discovered, all works will cease and a meeting will be convened with the client and CPAT to discuss the most appropriate way forward.

6 Stage 3 - Archiving and Reporting

Site archive

An ordered and integrated site archive will be prepared in accordance with: Management of Research Projects in the Historic Environment (MoRPHE) English Heritage 2006 upon completion of the work on site. It will include:

- All site records (fully cross-checked and catalogued)
- Digitised copies of all site plans
- All artefacts (cleaned, marked and catalogued as appropriate)
- All ecofacts (sample processed and catalogued as appropriate)
- An interim or summary report on the above.

A copy of the site archive will be supplied to Wates and CPAT. The requirements for archive storage will be agreed with the appropriate organisation.

Final reporting

A draft report will be submitted to Wates and to CPAT for comments within 4 weeks of stages 1-2 being completed.

A full client report of the results of the archaeological work will be prepared within 6 months of the end of the project. Copies of the report will be sent to Wates, CPAT and for inclusion in the regional HER (Welshpool). Digital copies will also be provided in pdf format.

Terminology will be consistent with the English Heritage Thesaurus.

The client report will contain, as a minimum, the following elements:

- Concise English and Welsh non-technical summary of the results
- Detailed plans of the site
- Site illustrations, related to Ordnance Datum
- Written description
- Artefactual and Ecofactual summaries
- Statement of local and regional context
- Impact assessment with mitigation proposals
- Conclusions as appropriate
- Bibliography
- A copy of the AW Written Scheme of Investigations

A summary of the work will be published in a national journal (i.e. *Archaeology in Wales)* no later than a year after its completion.

Final archive

Although there may be a period during which client confidentiality will be maintained, the report and the final (project) archive will be deposited in the appropriate repository not later than six months after completion of the work. The contents and location of the archive will be agreed with CPAT beforehand.

7 Resources and timetable

Standards
The fieldwork will be undertaken by AW staff using current best practice.

Staff
The project will be undertaken by suitably qualified AW staff. Overall management of will be undertaken by Mark Houliston (MCIfA).

Equipment
The project will use existing AW equipment.

Timetable of archaeological works
No start date has yet been agreed between AW and the client.

Insurance
Archaeology Wales Limited (AW) is an affiliated member of the CBA, and holds Insurance through the CBA insurance service.

Health and safety
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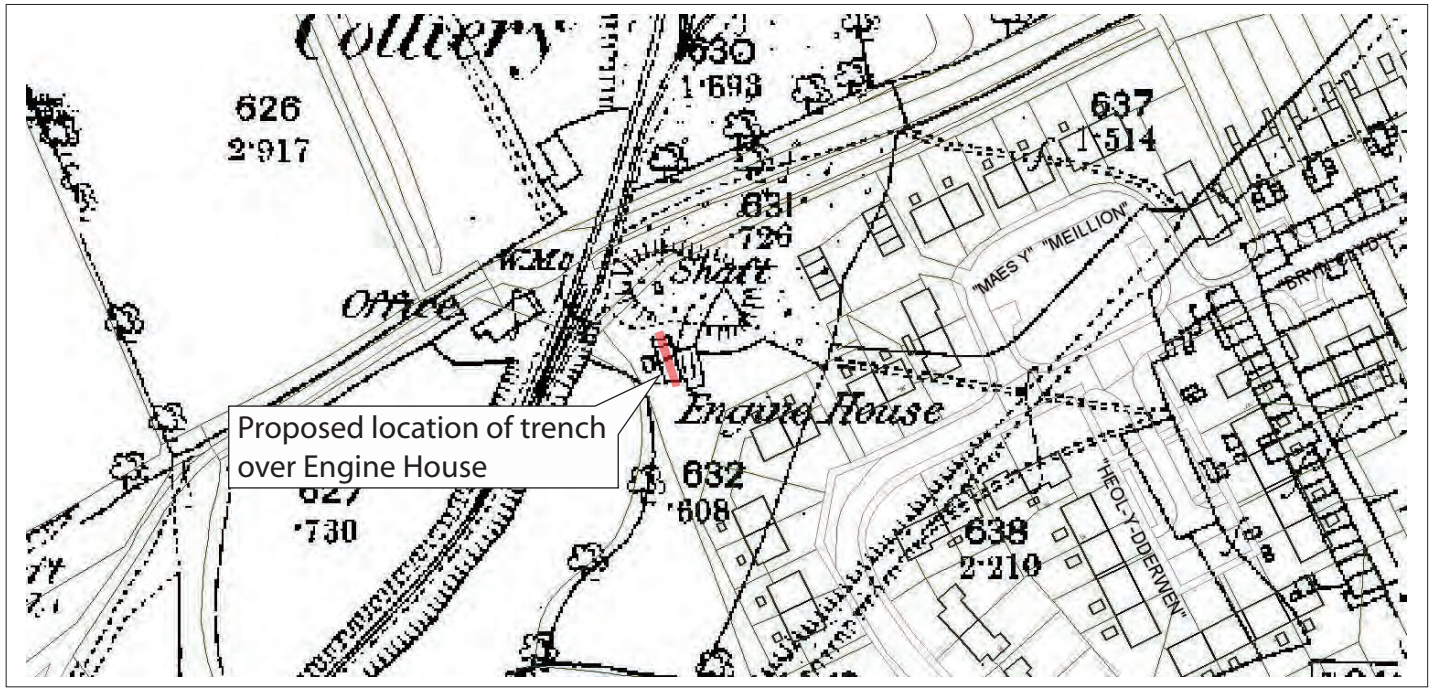

Fig 1 - 1872 1:2500 Ordnance Survey Map with proposed development and evaluation trench overlaid

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Appendix IV: Specification
Open area excavation

ARCHAEOLOGY WALES
Revealing the past, informing the future

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ARCHAEOLOGY WALES LIMITED:

Specification

Open area excavation

at

Maes-y-Meillion, Leeswood, Flint

Prepared for:
Wates Living Space
The Royals, 4th Floor
353 Altrincham Road
Sharston
Manchester, M22 4BJ

Planning Reference Number: 05528
AW Project Number: 2491

March 2017

REGISTERED CIfA ORGANISATION

NON TECHNICAL SUMMARY

This Written Scheme of Investigation details a proposal for an open area excavation on the site of a former Engine House structure, Maes-y-Meillion, Mold, prior to the erection of new domestic dwellings with associated landscaping, access and infrastructure. It follows on from an earlier phase of work comprised of a desk based study and a single evaluation trench. It has been prepared by Archaeology Wales Ltd for Wates Living Space. The Flintshire planning reference number is 055828 and the Archaeology Wales Ltd project number is 2491.

1. Introduction

The proposed development is on open land to the north west of Heol-y-Goron, Leeswood, Mold (Henceforth – the site) and is centred on NGR SJ26845983. The development proposal has been submitted by Wates Living Space. The local planning authority is Flintshire County Council (FCC) and the planning reference number is 055828.

This Written Scheme of Investigation has been prepared by Chris E Smith (MCIfA), Senior Site Supervisor, Archaeology Wales Ltd (Henceforth - AW) at the request of Wates Living Space. It provides information on the methodology which will be employed by AW during the open area excavation at the site. The work will be Project Managed by Mark Houliston, AW Company Director (MCIfA).

The archaeological work has been recommended by Clwyd Powys Archaeological Trust (CPAT) in its capacity as archaeological adviser to the planning authority.

AW is a Registered Organisation with the Chartered Institute for Archaeologists (CIfA). All work will be undertaken by suitably qualified staff and in accordance with the standards and guidelines of the IfA.

2 Archaeological Background

The proposed development is sited within a former post-medieval coal mining area, now located to the rear (north-east) of domestic properties along Heol-y-Goron.

The 1872 1:2500 Ordnance Survey map of the assessment area shows a building (the engine house) located to the immediate south of a mineshaft adjacent to a railway line, weighing machine and other industrial infrastructure. The engine house and shaft is one of three located to the north of the larger Leeswood Green Colliery complex. The engine house structure is also shown on the later 1879 1:10560 OS. The 1899 OS map labels the mineshaft as 'old' suggesting it was no longer being worked at this date. The Engine house is not shown on this later map possibly suggesting demolition. The map of 1900 shows that the Leeswood Green Colliery is was at this date in use as the 'Earth, Brick, Tile and Terracotta Works' suggesting a downturn in coal workings in the area.

A field evaluation undertaken in January 2017 located *in situ* structural remains likely associated with the boiler house commonly situated adjacent to engine houses.

3 Objectives

The primary objectives of the open area excavation will be to locate and describe all archaeological features which may be present within the assessment area with specific reference to the 19th century Engine House and any associated features. Preservation *in situ* will be advocated where at all possible, but where engineering or other factors are likely to result in loss of archaeological deposits, preservation by record will be recommended.

Method statement for open area excavation

Preliminary work

The archaeological project manager in charge of the work will satisfy him/herself that all constraints to ground works have been identified, including the siting of live services, Tree Preservation Orders and public footpaths.

Excavation

The precise location of the trench will be agreed with the developer and the curator prior to the commencement of on-site work. Provisionally, the location suggested is shown on Fig 1 – Overlaying the likely location of the engine house and measuring approximately 21m x 15m. The trench will be excavated initially using a machine fitted with a wide toothless ditching blade where appropriate. Thereafter all identified archaeological contexts will be excavated manually unless otherwise agreed with the curator in advance.

All modern overburden and non-archaeological subsoils will be removed down to the level of the first recognisable archaeological horizon. All archaeological contexts subsequently located must be sufficiently excavated in order that their function, date, and relationship to adjacent features is fully understood.

All areas (trench sides and bases) must be cleaned manually by trowelling to reveal contexts in plan and profile. Spade or shovel cleaning only of trench bases and sides will not be acceptable. The level of natural soils below the archaeology should be tested for in at least one location.

As a minimum:

i) small discrete features will be fully excavated;
ii) larger discrete features will be half-sectioned (50% excavated); and
iii) long linear features will be sample excavated along their length - with investigative excavations distributed along the exposed length of any such feature and to investigate terminals, junctions and relationships with other features.
Should the above % excavation not yield sufficient information to allow the form and function of archaeological features/deposits to be determined full excavation of such features/deposits will be required. Additional excavation may also be required for the taking of palaeoenvironmental samples and recovery of artefacts.
iv) All structural remains (wall lines, floors) will be examined for evidence of phasing
v) Larger architecturally significant pieces of masonry/ironwork will be subject to individual recording/photogrpahy

Any variation of the above will be undertaken in agreement with CPAT.

All spoil heaps will be examined for the recovery of artefacts.

Human remains will be left *in situ*, covered and protected when discovered. No further investigation will normally be permitted and CPAT and the local Coroner must be informed immediately. After discussion, it may be appropriate to take bone samples for C14 dating. If removal is essential it will take place under the appropriate Ministry of Justice and Environmental Health regulations.

If excavation is undertaken through loose/friable material, such as rubble, consideration will be given to shoring, stepping or battering of trench edges to avoid slumping/collapse. The depth of the excavation will conform to current safety requirements and archaeological best practice.

Recording will be carried out using AW recording systems (pro-forma context sheets etc), using a continuous number sequence for all contexts.

Written, drawn and photographic records of an appropriate level of detail will be maintained throughout the course of the project. Digital photographs will be taken using cameras with resolutions of 14 mega pixels or above.

Plans and sections will be drawn to a scale of 1:50, 1:20 and 1:10 as required, and these will be related to Ordnance Survey datum and published boundaries where appropriate.

5 Monitoring

CPAT will be contacted at least one week prior to the commencement of site works, and subsequently once the work is underway.

Any changes to this specification that AW may wish to make after approval will be communicated to CPAT for approval on behalf of Planning Authority.

Representatives of CPAT will be given access to the site so that they may monitor the progress of the work. CPAT will be kept regularly informed about developments, both during the site works and subsequently during the post-fieldwork programme.

If significant detail is discovered, all works will cease and a meeting will be convened with the client and CPAT to discuss the most appropriate way forward.

6 Stage 3 - Archiving and Reporting

Site archive

An ordered and integrated site archive will be prepared in accordance with: Management of Research Projects in the Historic Environment (MoRPHE) English Heritage 2006 upon completion of the work on site. It will include:

- All site records (fully cross-checked and catalogued)
- Digitised copies of all site plans
- All artefacts (cleaned, marked and catalogued as appropriate)
- All ecofacts (sample processed and catalogued as appropriate)
- An interim or summary report on the above.

A copy of the site archive will be supplied to Wates and CPAT. The requirements for

archive storage will be agreed with the appropriate organisation.

Final reporting

A draft report will be submitted to Wates and to CPAT for comments within 4 weeks of stages 1-2 being completed.

A full client report of the results of the archaeological work will be prepared within 6 months of the end of the project. Copies of the report will be sent to Wates, CPAT and for inclusion in the regional HER (Welshpool). Digital copies will also be provided in pdf format.

Terminology will be consistent with the English Heritage Thesaurus.

The client report will contain, as a minimum, the following elements:

- Concise English and Welsh non-technical summary of the results
- Detailed plans of the site
- Site illustrations, related to Ordnance Datum
- Written description
- Artefactual and Ecofactual summaries
- Statement of local and regional context
- Impact assessment with mitigation proposals
- Conclusions as appropriate
- Bibliography
- A copy of the AW Written Scheme of Investigations

A summary of the work will be published in a national journal (i.e. *Archaeology in Wales)* no later than a year after its completion.

Final archive

Although there may be a period during which client confidentiality will be maintained, the report and the final (project) archive will be deposited in the appropriate repository not later than six months after completion of the work. The contents and location of the archive will be agreed with CPAT beforehand.

7 Resources and timetable

Standards

The fieldwork will be undertaken by AW staff using current best practice.

Staff

The project will be undertaken by suitably qualified AW staff. Overall management of will be undertaken by Mark Houliston (MCIfA).

Equipment

The project will use existing AW equipment.

Timetable of archaeological works

A start date of 13th March has been agreed between AW and their client

Insurance

Archaeology Wales Limited (AW) is an affiliated member of the CBA, and holds Insurance through the CBA insurance service.

Health and safety

All members of staff will adhere to the requirements of the *Health & Safety at Work Act*, 1974, and the AW Health and Safety Policy. AW will similarly adhere to best practice with regard to Health and Safety in Archaeology as set out in the FAME (Federation of Archaeological Managers and Employers) health and safety manual *Health and Safety in Field Archaeology (2002)*.

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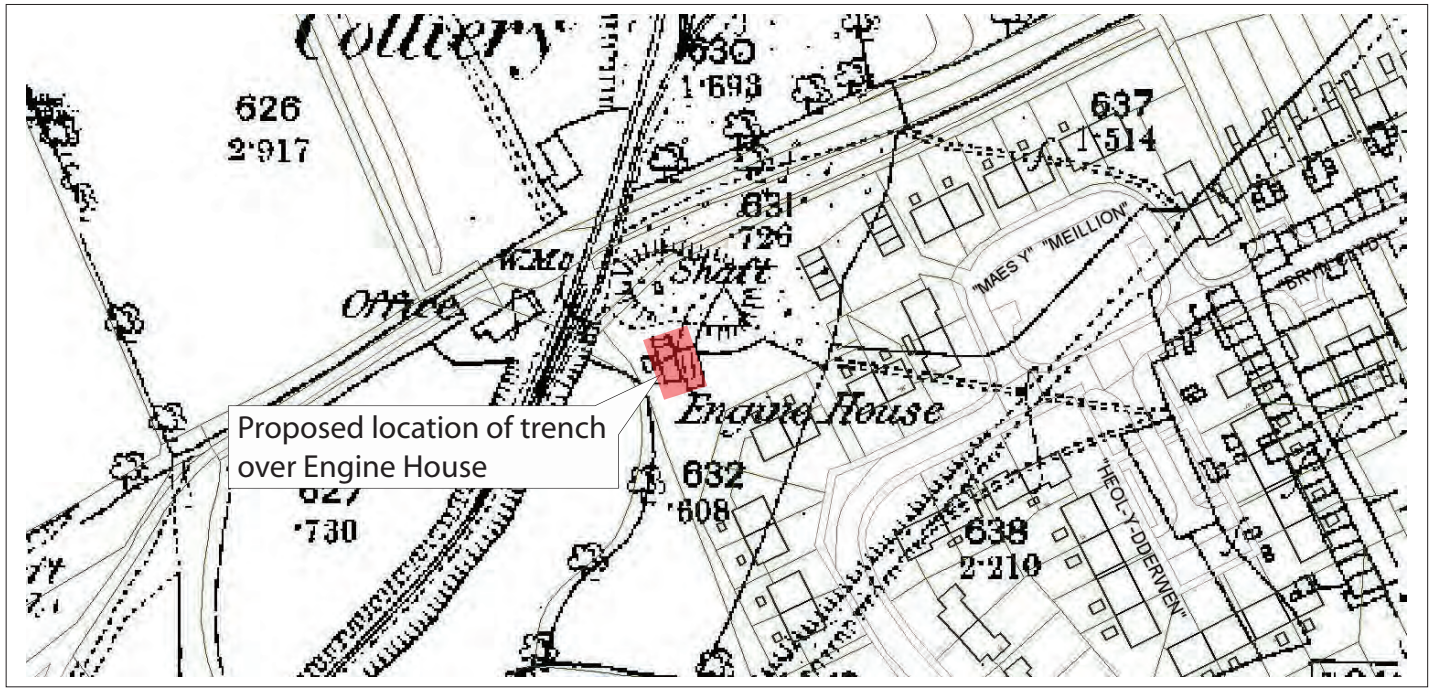

Fig 1 - 1872 1:2500 Ordnance Survey Map with proposed development and excavation area overlaid

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Appendix V: Finds catalogue

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Finds catalogue Maes-Y-Meillion, Leeswood

Site code: 2451 - MML/17/EX

Number	Context	Description		Amount	Weight gram	Kept/Discard
Pottery						
	[1007]	Buckley Ware - 18th-19th Century		1	33	Kept
	1023	Glazed Red Earthenware - Post-Medieval		6	114	Kept
Tobacco Clay Pipe						
	[1007]	Clay pipe - stem - 19th Century		1	3	Kept
	1023	Clay pipe - bowl - 1860-80 C		2	14	Kept
		Total finds:				
		Pottery		**7**		
		Tobacco Clay Pipe		**3**		
			Total:	**10**		

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Appendix VI: Archive Cover Sheet

ARCHIVE COVER SHEET

Maes-Y-Meillion, Leeswood, Flintshire

Site Name:	Leeswood, Flintshire
Site Code:	MML/17/EX
PRN:	103367 (Leeswood Engine House) 103371 (Phoenix Coal Mine)
NPRN:	-
SAM:	-
LB:	-
NGR:	SJ 2684 5983
Site Type:	Brownfield
Project Type:	Evaluation & Excavation
Project Manager:	Mark Houliston
Project Dates:	January-February 2017
Categories Present:	19th Century Industrial
Location of Original Archive:	AW
Location of Duplicate Archives:	Paper copies with RCAHMW. Finds to be deposited with Flintshire Museum Service
Number of Finds Boxes:	1
Location of Finds:	AW
Museum Reference:	TBC
Copyright:	AW
Restrictions to Access:	None

Archaeology Wales

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