

TONEDALE MILLS

ASSESSMENT OF SIGNIFICANCE, BUILDINGS 30-33 AND INTERNAL MACHINERY

Main points of interest:

1. The buildings themselves represent a significant and rare survival, being well-preserved including the intact roof structures, wall features and the timber fittings to the arched doorways in the front (east) elevation. Boiler houses and related buildings are often the first parts of a textile mill to be altered or demolished.
2. Buildings 31 and 32 were built as a combined boiler house and dynamo room. They represented the latest thinking in textile mill power systems in the 1890s, and were part of a major reorganisation of the power systems at both Tonedale and Tone Works. Building 31 was the Dynamo Room, and is significant as a well-preserved early example of a mill building constructed for generating DC electricity.
3. Machinery. Building 31 contains two complete sets of generating equipment, but they are not original. The original equipment was specified in a 1916 Valuation of the site. The *in situ* machines date from the 1930s and 1940s; of particular interest is a 1934 steam turbine and generator, a rare example of the use of a steam turbine at a textile mill (identified as a pump (feature 19) in the Exeter Archaeology report – see Description, below).
4. Important features of the mid-20th century generating equipment have been removed since the buildings were photographed by RCHME in the mid-1990s, when the equipment was still in working order. This includes most of the gauges, electrical switchgear, heavy-duty cabling and the machine specification plates.
5. Building 32 is the boiler house. The main structure is similarly well-preserved, but of additional interest is the internal structure supporting the two *in situ* Lancashire boilers. These are early replacements of the original boilers. The boilers are unusually well-preserved, complete with most of their attachments, the flue-control mechanisms and the automatic coal and oil-feed mechanisms. The survival of a boiler house with this level of detail is highly unusual, but it should be noted that a slightly smaller but otherwise similar boiler house has been preserved recently at Coldharbour Mill.

BRIEF DESCRIPTIONS OF BUILDINGS AND MACHINERY, BUILDINGS 30 – 33

Inspected 25-9-2007

The buildings and machinery of the central power plant were inspected following the removal of asbestos. They were previously inspected and photographed in October 1996. They comprise a large boiler house (Building 32) with *in situ* Lancashire boilers with an attached Dynamo Room (Building 31) and Fire Station (Building 30). All the buildings are of factory-made red brick. They date from the re-organisation of the steam plant and addition of electricity-generating facilities in the early 1890s.

Building 30 (numbers refer to the attached block plan)

A narrow, single-storeyed extension to N end of Building 31, probably an early addition. N elevation of eight tall-arched windows, part blocked. Flat roof.

The two bays at the east end are segregated by a cross-wall and are the former fire station, named the "Fire Engine House" in the 1916 Valuation. This was very well-preserved in 1996, with a steam fire-pump, cupboards, desks, shelving, steel helmets and a wall-mounted electric fire-alarm panel. Most of the removable artefacts are now missing, although the desks and cupboards are still in place, together with the steam fire pump. This may be the Worthington Duplex Fire Pump referred to in the 1916 Valuation.

The six west bays comprise a single open space entered by a double-width door in the west end. This was possibly a garage? Tanks are situated beneath the concrete floor, with associated piping and valve gear, but their function is not known.

Building 31

Also dating from the early 1890s, this was probably built to accommodate an early electricity-generating plant. Externally, this appears to be part of the boiler house to its south (Building 32), the whole structure comprising three bays with symmetrical gables, each with a wide-arched opening in the east end. Building 31 is the northern bay, segregated by a cross-wall. It does not appear to have contained a boiler, and the original set of four boilers were probably accommodated in the two bays to the south of the cross wall (Building 32).

The 1916 Valuation referred to Building 31 as the "Dynamo Room", and this may be its original function, although electric lighting was not added to Tonedale until 1895-6 (FH Fox, p21). The Valuation mentioned steam-powered generating equipment which is not *in situ*. This included an 1895 110 hp Pollitt and Wigzell horizontal steam engine, with a rope-drive system to two Mather and Platt 205 volt dynamos, a Mather and Platt 400 / 250 volt generator, a 17 hp vertical single-cylinder steam engine and a dismantled 250 volt generator by W.H. Allen. These items are the type of early generating equipment which would probably have been installed in the late 19th or early 20th century; the 110 hp engine was contemporary with the introduction of electric lighting at Tonedale.

The building now contains the major parts of a later set of generating equipment dating from the mid-20th century, although it is possible that some minor items are of earlier date. In 1996 the generating plant with cabling and switchgear was essentially intact and in working condition, but many of the smaller items have since been removed (in the period when the building was sealed off due to asbestos

contamination). The maker's name and specification plates have also been removed. Some of the details below were provided by Mr Bob Spurway, retired engineer, in 2005.

There are four main items:

1. Diesel engine and generator set by W H Allen of Bedford, located in the east end of the room. Engine is a four cylinder, two stroke, 500 horse power, dated 1946. The DC generator was rated at 250 volts, 375 Kw.
2. A steam-turbine by W H Allen, probably of 1934, connected to a Mather and Platt generator. Engine produced 700 hp at 7,000 rpm, and drove the generator at 1,000 rpm via a gearbox. The turbine used steam at 100 psi. Exhaust steam at 30 psi was used for processes. Steam pressure gauges for the turbine, and associated brass piping, are located on a wall-mounted panel with a W H Allen name plate, probably also dating from the 1930s. It is not known if the generator might be one of the Mather and Platt machines mentioned in the 1916 Valuation.
3. A large slate electrical control panel occupying the west end of the room, formerly with gauges and switchgear, also by W H Allen. This was photographed intact in 1996, but now only the slate panel itself survives.
4. A horizontal steam water-pump by George Mills and Co. of Radcliffe, located by the south wall. This is completely intact, but appears to post-date the 1916 Valuation. Used to pressurise the sprinkler system.

Building 32

The main part of the boiler house comprises the two adjoining bays to the south of Building 31. The building is divided into two aisles by a central east-west wall with wide arcaded openings above the level of the boilers, creating spaces for a pair of Lancashire boilers to either side. The 1916 Valuation mentioned four 30 feet by eight feet boilers by Galloways, Daniel Adamson and Sons and the Oldham Boiler Works. The boilers had superheaters and were insured to work at 100 psi or 120 psi. The three surviving Lancashire boilers in Buildings 32 and 33 apparently date from 1907, 1908 and 1949 (information from Bob Spurway).

Buildings 31 and 32 are covered by a continuous triple-span roof of lightweight iron or steel components. The trusses comprise T-section principals mounted on stone corbels. The principals are strengthened by parallel iron ties mounted on two short cast-iron struts. The trusses are also reinforced by angled tie-rods connected to a central vertical tie-rod. The common rafters are of L-section iron or steel, and the slates are attached to wooden laths.

The structure of the boiler house is very similar to the 1884-5 detached boiler house at Tone Works. Both are of similar red brick and have a similar internal layout with a central arcaded spine wall and similar external openings. They also originally shared the same type of triple-span metal roof structure; a similar roof is also found on a wing of a nearby mill building at Tonedale (20 on the block plan).

The boilers are sited in the western half of the building, with an open firing floor by the entrance in the east elevation. The two surviving Lancashire boilers are to the south of the cross wall, and a late 20th century Multipac boiler located to the north. The boilers are well-preserved with most of their original attachments and now represent a rare survival, although a similar boiler house with Lancashire boilers has

been restored at Coldharbour Mill. The Tonedale boilers include the coal and oil-feed mechanisms, which were later additions; the two firing holes of the southernmost boiler retain a pair of coal hoppers and a conveyor feed mechanism. The north boiler retains an oil-feed system. Unusually, the brick structures which support the Lancashire boilers are also completely intact and accessible, including the flues, damper mechanisms and elevated walkways.

Building 33

This is a narrow extension to the south end of the boiler house, filling the space between the boiler house and the adjoining the workshops to the south. It was probably an early addition. It was formerly covered by a wooden lean-to roof, most of which has decayed, and is entered from the boiler house by a wide doorway which is original to the south wall. It contains a single Lancashire boiler, probably that described in the 1916 Valuation as a Galloways 30 feet by eight feet boiler dating from 1907.

Sources used:

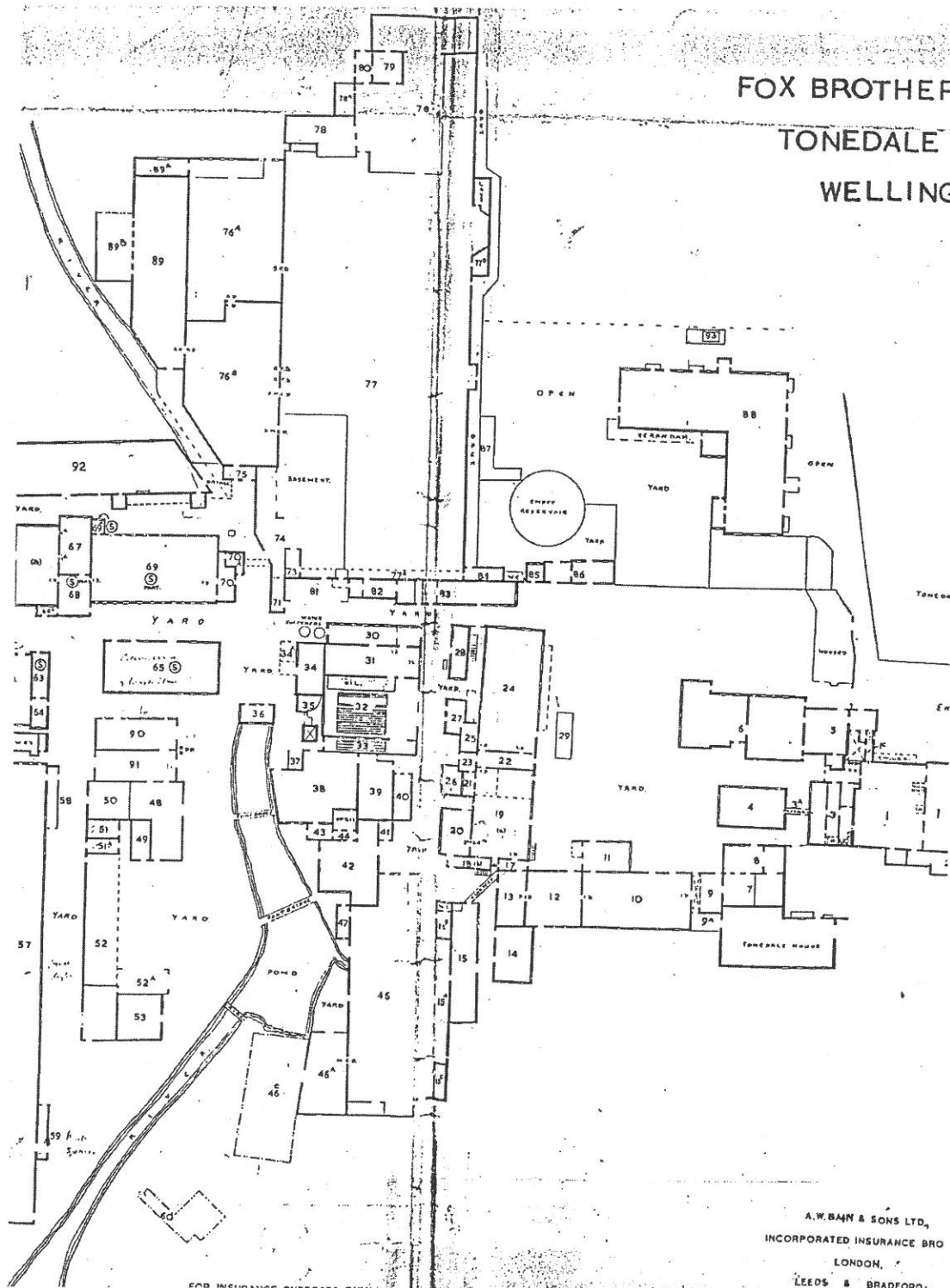
Fox, F.H., nd, Fox Brothers & Co. Ltd.: Fifty Years' History 1883-1933, Fox Company Archive.

Valuation of Machinery in Buildings 1 – 54, June 1916, Edison, Taylor and Booth, Huddersfield, Fox Company Archive (document consulted 1996).

Telephone interview with Mr Bob Spurway, retired engineer of Fox Brothers and Co., 25-2-2005.

MJW
8-10-2007

FOX BROTHER
TONEDALE
WELLING



A. W. BAIN & SONS LTD,
INCORPORATED INSURANCE BRO
LONDON,
LEEDS & BRADFORD.