

**Historic building recording  
at Tringford Pumping Station  
Little Tring,  
Wendover Arm, Grand Union Canal,  
Dacorum**

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# **Historic building recording at Tringford Pumping Station Little Tring, Wendover Arm, Grand Union Canal, Dacorum**

## **Introduction**

Historic building recording at Tringford Pumping Station Little Tring, Wendover Arm, Grand Union Canal, Dacorum (SP 91798 12969; Figs 1.1 and 1.2) was undertaken at the request of Phil Emery of the Canal & River Trust. Tringford Pumping Station is a listed building (Grade II), listed in 1986. The recording was to comprise a drawn and photographic record of two cast iron vessels on the roof of the pumping station, prior to their removal during restoration works. Resources were limited and no specific documentary or other study was undertaken to place these items in their historical context. However, a preliminary account of Tringford Pumping Station and the cast iron vessels had been made by a Canal & River Trust Heritage Advisor (Salberter 2016) and this has been quoted from extensively below.

The project was undertaken during repairs to the pumping station.

## **Summary**

Historic building survey was undertaken at Tringford Pumping Station Little Tring, Wendover Arm, Grand Union Canal, Dacorum. This recorded two cast iron vessels, known as mufflers, which were installed in 1911-12 as part of a diesel-electric generator system and were decommissioned in the 1960s when the pumps were connected to the mains electricity supply.

## **The documentary material**

### **Listed building description**

Listing Name: The TRING RURAL GRAND UNION CANAL - SP 91 SW WENDOVER ARM (North side) Little Tring 4/62 - Tringford Pumping Station Gd II

Listing Description: Water pumping station to fill Tring summit level of canal from reservoirs. Erected 1816-17 at 'spot determined by Rr Telford', with Boulton and Watt steam engine (date 1803 on c20 plaque incorrect) as second pumping station on Wendover feeder arm. Extended 1836-8 when station adapted as single centralised pumping station with 2nd steam engine ('York' engine) added, removed 1913, boiler house on n side mid c19, diesel engine house in ne angle dated '1911', beam engine removed and engine house reduced in height 1927 (plaque over door '1803/1927'). Red brick original engine-and-pumphouse, brown brick extensions, uniform sandstone dressings added to existing round headed windows, and slated pitched roofs. A long narrow brick pumphouse parallel with the canal and with outflow ponds between. 4 round-headed large windows with keystones and impost blocks. Still in use with long headings from reservoirs concentrating on 3 deep brick wells in the pumphouse. Water now pumped by electric pumps up to level of canal arm which flows into the Marsworth end of the summit level. Wider and lower boiler house extends along much of n side of pumphouse. Brown brick with blue brick offset to plinth and segmental arches to openings. Widespan c19 king-post timber trusses spanning from corbels on rear wall of pumphouse to piers in n wall. Designed for 2 boilers. Underfloor air intakes from small round headed external opening low down in middle of n wall there 22 1/2 inches thick. 2 high double doors with 2 large windows with cast iron framed small-pane frames in w gable end. Toothed brick band in corbelled verge. 5 bays panelled n side with 2 similar windows. Yellow brick diesel engine house with red brick dressings and canted corner, in the ne angle of the other buildings. 2 tall round headed windows and door. Small panes and windows at ground level.

Interior in glazed brick with dado and raised platform formerly supporting 100hp and 50hp diesel engines. Pumphouse entered by round headed double doorway in n side of part projecting to w of boiler house. 27" thick side-walls and 5ft thick crosswall built to support the 24ft long cast iron beam of the pumping engine. Photographs and a plaque record this in use and during removal. Erected 1817-8 it had a 49 1/2 inch diameter cylinder and a 8ft stroke. The doorway is flanked by 2 tall tuscan cast iron columns from the engine frame topped by balls from the superstructure. An ornamental cast iron trestle from the valve assembly is built into the apex of the w gable. An earlier pumping station at Whitehouses (1802) pumped from Wilstone no. 1 reservoir but was superseded

by Tringford Pumping Station and was subsequently demolished. Wilstone reservoir was heightened in 1811 and 1827 and extended in 1835 (no. 2) and 1839 (no. 3) by which time it had been supplemented by Marsworth Reservoir (1806), Tringford Reservoir (1814), and Startops End Reservoir (1815). They supply the summit level of the canal main line, opened in 1799 as the Grand Junction Canal. The Wendover arm opened in the same year, was closed to commercial traffic in 1896 and a long stretch beyond the pumping station has been filled in.

### **Summary by Salberter (2016)**

The challenge of ensuring that the water level could be maintained to a navigable level on a canal was crucial to the success and profitability of the Grand Junction Canal Company. In the case of the Grand Junction Canal (GJC), there are two summits: at Braunston and at Tring and each had their particular difficulties.

The GJC ascends some 380 feet from its junction with the River Thames until, after a climb of 56 locks in over 36 miles, it reaches the two-and-a-half mile long Tring Summit, from where it then descends northwards towards Braunston. Streams and rivers were diverted and reservoirs, feeders, headings and pumping stations were built to supply the summit with water.

There is a group of reservoirs at Tring that were built and altered over several decades: Wilstone built in 1802, altered in 1811 and 1827 and extended in 1836 and 1839; Marsworth built in 1806, Tringford built in 1816 and Startops End built in 1817. Two associated pumping stations were built: on the Wendover Arm: 'Whitehouses' (1803), and Tringford (1818) while a third one was located near Bulbourne Junction. The only remaining pumping station associated with these reservoirs is the one at Tringford, following a centralisation scheme in the 1830s (Evans).

In the same epoch, William Anderson carried out an inspection of the main line and recommended the construction of a series of pumping stations to return some of the water that was being carried downstream with each boat going through a lock. By 1841, nine engines referred to as the 'Northern Engines' were built to pass the water back around the seventeen locks and in some cases connect onto wells. These engine house were built by contractors 'Grissell & Peto' at Fenny Stratford (lock 22), Stoke Hammond (lock 23), Soulbury (locks 24-26), Leighton Buzzard (lock 27), Church (locks 28 & 29), Horton (locks 30 & 31), Ivinghoe (locks 32 & 33), Seabrook (locks 34 to 36) and Marsworth (locks 37 & 38). These buildings were usually rectangular in plan, built of bricks with a slate roof and used to include a prominent chimney to accommodate a steam engine (Faulkner).

The same contractor built duplicate locks at the same period from Marsworth to Stoke Hammond and in total 23 locks northwards from the summit were duplicated apart from Fenny Stratford. These new locks were narrow locks to reduce the amount of water required when locking a single narrow boat. In the original Act, smaller boats of a certain size could be prevented from using locks unless there was a surplus of water and this could lead to long wait for single narrow boat to use a wide locks when water levels were low.

### *The Wendover Arm*

Canals are most profitable if they can link up with industrial and commercial towns and the construction of branches enabled the main line to connect to further places. The original 1793 Act authorised the construction of four arms and of feeders to provide required water. Shortly after, the locations of a further potential eight were surveyed of which, locally, Aylesbury was built after it had been approved by Jessop.

The Wendover Arm was actually originally conceived as a feeder channel and as such could be built under the first Act.(Faulkner). It was extremely important in bringing water to the Tring summit and works were under way as early as 1793. Realising that the feeder would bring additional benefits if it could be made navigable, it was incorporated into the 1794 Act which gave assent to the Aylesbury and Wendover Arms. By about 1797 the Wendover Arm was completed as a navigable feeder (Massey).

As early as 1802, it was noted that the banks of the Wendover Arm were leaking and various repairs were undertaken. Several of the leading canal engineers at the time pondered the issue, including Jessop, Telford and Benjamin Beevan (Massey). Still leakage persisted and by 1841 it was found that 20 locks of water a day were being lost (Faulkner). Further localised puddling was carried out

but by 1855 the amount of loss had increased to 25 locks (*ibid*) which led to John Lakes and William Cubitt's plan of asphaltting the canal bed to be undertaken in 1858 (Massey). This would eventually be removed and replaced with new puddle as the asphalt didn't solve the problem. Ultimately, the Arm was abandoned as a navigable waterway west of Little Tring, where a dam was built in 1904 (*ibid*) although it had been in intermittent use only since the late 1890s.

In 1989, the Wendover Arm Trust was formed to promote the restoration of the Arm. Volunteers are relining the canal bed and banks and a section is in water, although only a short length is currently connected to the main line.

### *Tringford Pumping Station*

The original 1817 building has been so extensively remodelled, extended and rebuilt that the only element that is likely to remain of that period is some fabric hidden within well 2 and some headings and reservoir structures. The original footprint of the building isn't known and a map regression exercise shows the footprint of the building has been consistent since the 1870s. Original drawings for the construction of the Pump station in 1817-18 haven't been found but the subsequent alterations have been documented and in particular, the photographs held by the Waterways Archives are extremely informative.

#### 1817-18: The origins

The Station was built at a spot chosen by Thomas Telford (Massey) and headings constructed from Startops End and Tringford Reservoirs. A Boulton and Watt steam pumping engine that had a capacity of 80 locks per day (Massey) was installed (in what is now pump well no.2)

#### 1836-44 - Centralisation

A second pumping well was dug and headings driven from Wilstone reservoir. The pumping at Whitehouses was terminated. The original steam engine was modified to occupy the new well (now referred to as well 3) and a new "York" steam engine was installed in the old well (now well 2).

#### 1911-12 – Modernisation

Various alterations were carried out to carry water to/from the station with new headings and pipelines. The York steam engine was scrapped and a new well built (well 1) with new electric pumps installed at wells 1 & 2 alongside associated diesel-electric generators. The original Boulton & Watt steam engine was still in use.

#### 1927 – The end of the steam days and major rebuilt

The original Boulton & Watt steam engine from 1818 was scrapped with the chimney and upper storey of the building, previously accommodating the steam engine, being removed. A new 11Kv AC mains electricity supply was installed and a new AC electric pump was installed in well 3 from 1835, while the diesel-electric plants are still used for the 1911-12 pumps in wells 1 & 2.

#### 1945

Pump no.4 was built at the bottom of the lane from Tringford P.S.

#### 1960s

No. 1 pump was replaced and the diesel-electric plant was scrapped. The generators are no longer required as the pumps are now linked to the mains electricity supply.

#### 21st century

No. 2 pump was taken out of use and pump 3 repaired.

## **The fieldwork**

### **General**

Fieldwork took place on the 31st October 2016. It comprised drawing and photographic recording of the cast iron vessels.

### **Description and commentary**

There were two cylindrical cast iron vessels, apparently identical, resting upon girders set into the wall of the pumping station (Fig 7). They both had semi-spherical lower ends, cast monolithic with

the cylindrical bodies and a semi-spherical cap on the top, bolted through a collar (Figs 2, 3, 4 and 5). Both top and bottom semi-spheres were pierced at their apices and provided with collars to allow for the attachment of pipework.

The cylinders were plain except for a raised circular boss and a raised arrow with fletchings, pointing upwards as the vessels were mounted (Figs 2 and 6). There was a curved recess in the brickwork behind the vessels to accommodate the curve of the cylinder. This appeared to have been a constructional feature of this part of the structure and not a subsequent modification to allow their later installation (*cf* Cook and MacLeod in prep). Conversely, and curiously, the coping stones surmounting this brickwork did appear to have been rather inexpertly cut back.

It is understood that the vessels were mufflers. Mufflers are installed within the exhaust system of most internal combustion engines. The muffler is engineered as an acoustic sound proofing device designed to reduce the loudness of the sound pressure created by the engine by way of acoustic quieting.

They are probably associated with the 1911-12 modernisation when diesel-electric generators were installed alongside new electric pumps installed at wells 1 & 2. The mufflers would have gone out of use in the 1960s when the pumps were linked to the mains electricity supply and the diesel-electric plant was scrapped.

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<https://en.wikipedia.org/wiki/Muffler>

## **Acknowledgements**

The author would particularly like to thank Anna Zucchelli (C&RT Heritage Advisor – London, South-East & Kennet and Avon (east) and Phil Emery (C&RT Senior Heritage Adviser) for their kind cooperation.

## **Archive**

The physical archive consists of:

6 x A4 pages	The text of the report
6 x A4 illustrations	Illustrations for the report

It has been deposited at the Waterways Archive..

The digital archive consists of:

6 x A4 pages	The text of the report (.doc format)
6 x illustrations	Illustrations for the report (.bmp format)
1 x copy of the combined report	(.pdf format)

It has been deposited with OASIS.

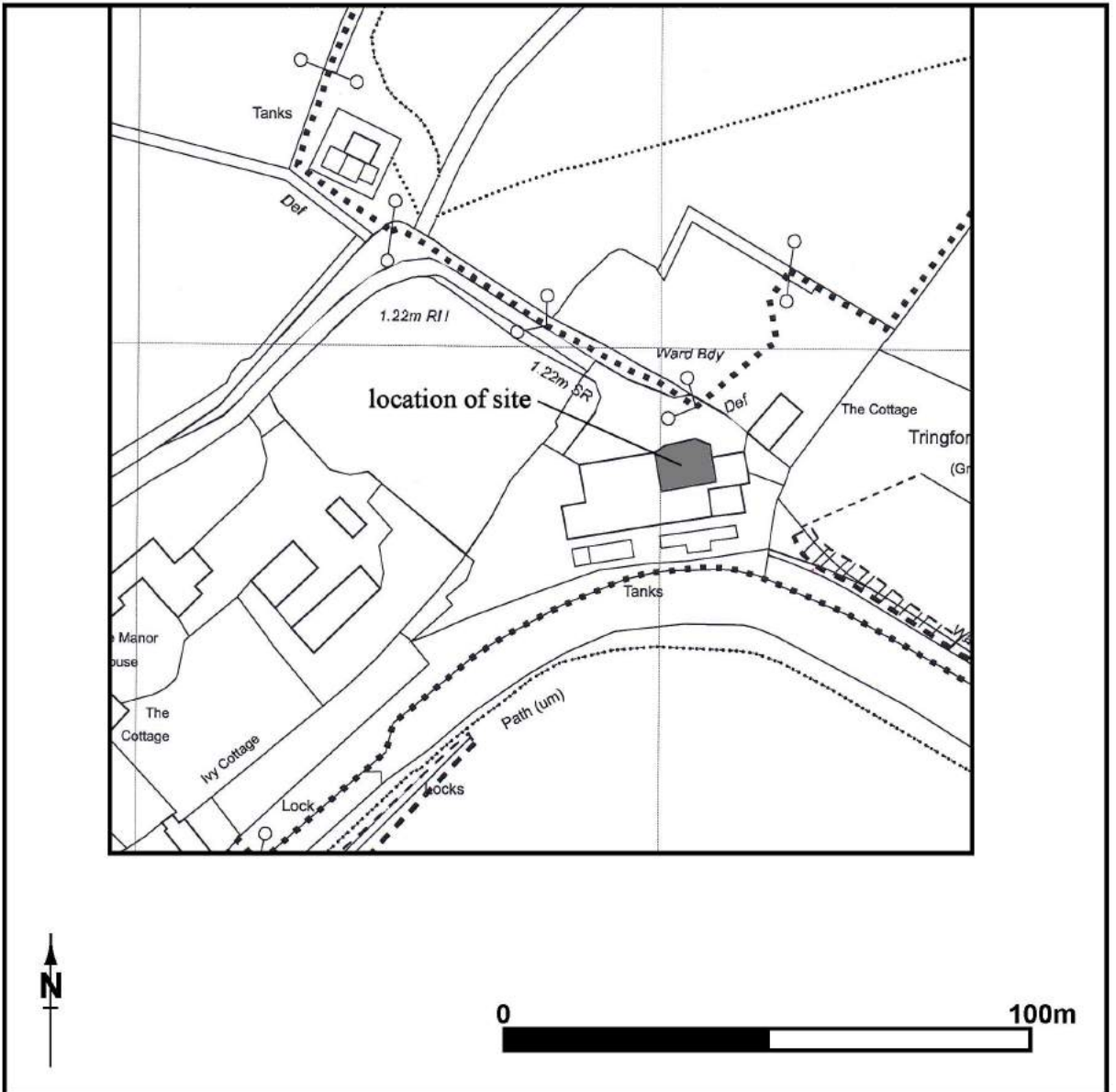


Fig 1.1: Location of site

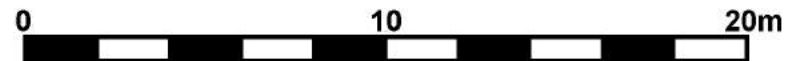
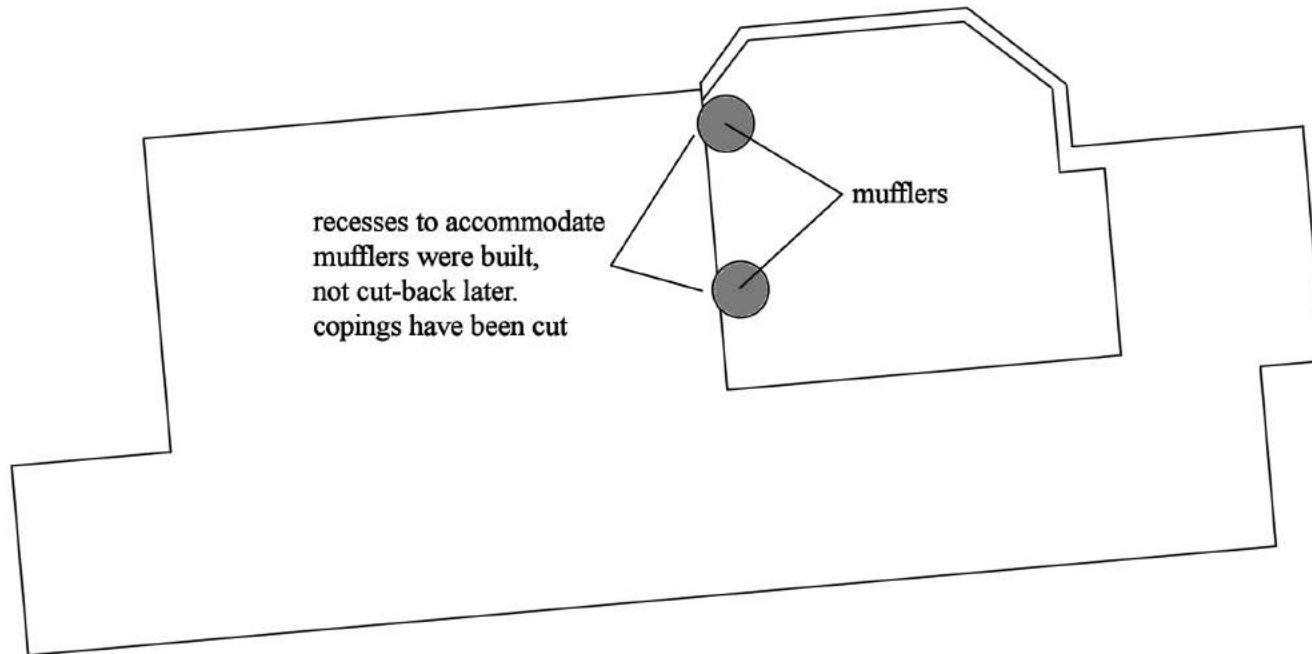
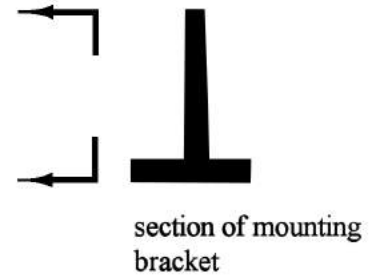
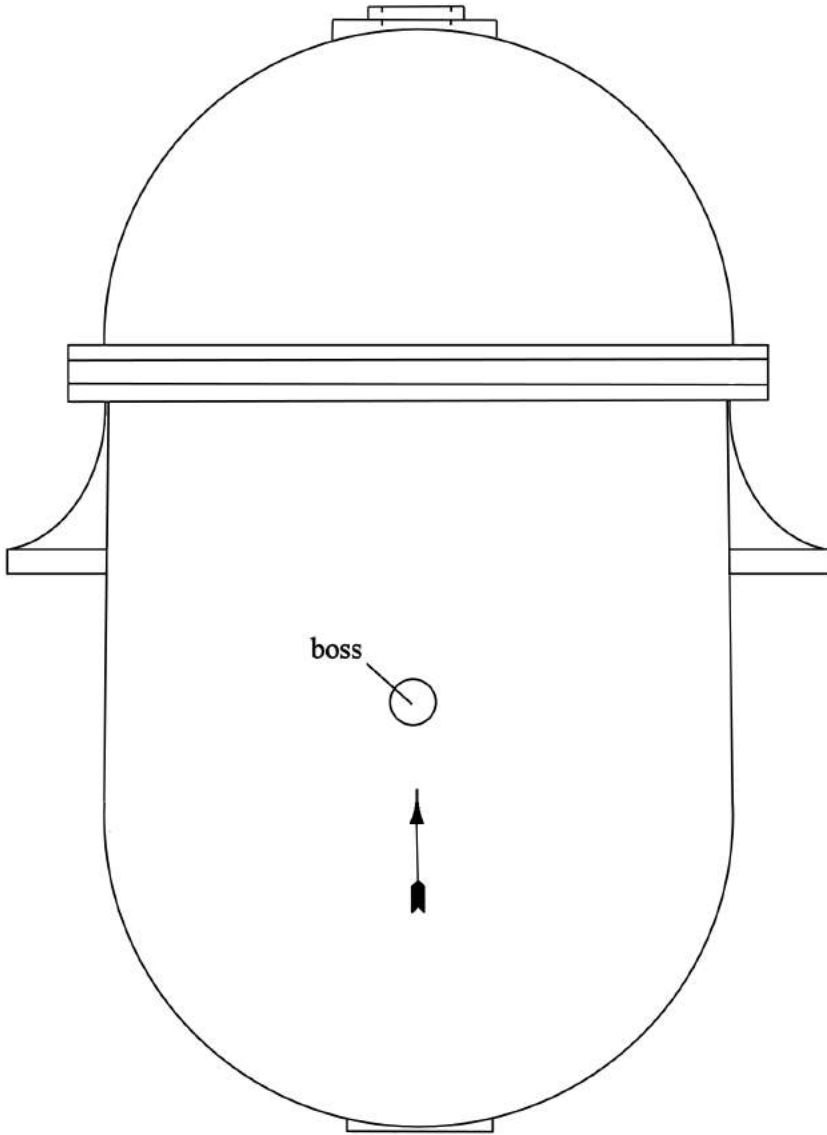


Fig 1.2: Location of features

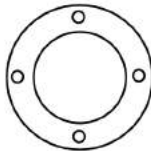




25mm diameter holes and studs;  
only five (shaded) appear to  
have been used



14mm diameter holes and studs  
26mm AF nuts  
40mm diameter washer



32mm diameter hole  
22mm diameter bolt  
42mm AF nut (hexagonal)  
52mm diameter washer

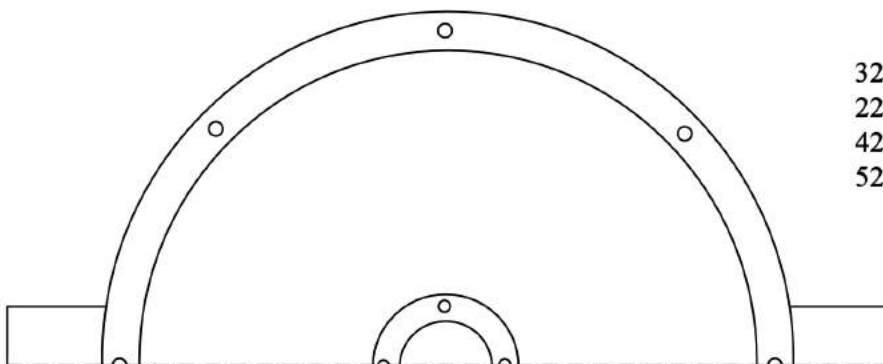


Fig 2: Third-angle projection of muffler



Fig 3: Northern muffler; view from east



Fig 4: Northern muffler; view from south



Fig 5: Southern muffler; view from north



Fig 6: Southern muffler; detail of boss and arrow, scale is 300mm



Fig 7: General view of both mufflers from east