

***THE  
ROYAL GUNPOWDER FACTORY  
WALTHAM ABBEY***

***AREA M  
(QUEENSMEAD, STEAM INCORPORATING MILLS AND  
FIRST WORLD WAR CORDITE BUILDINGS)***

***ARCHAEOLOGICAL REPORT***

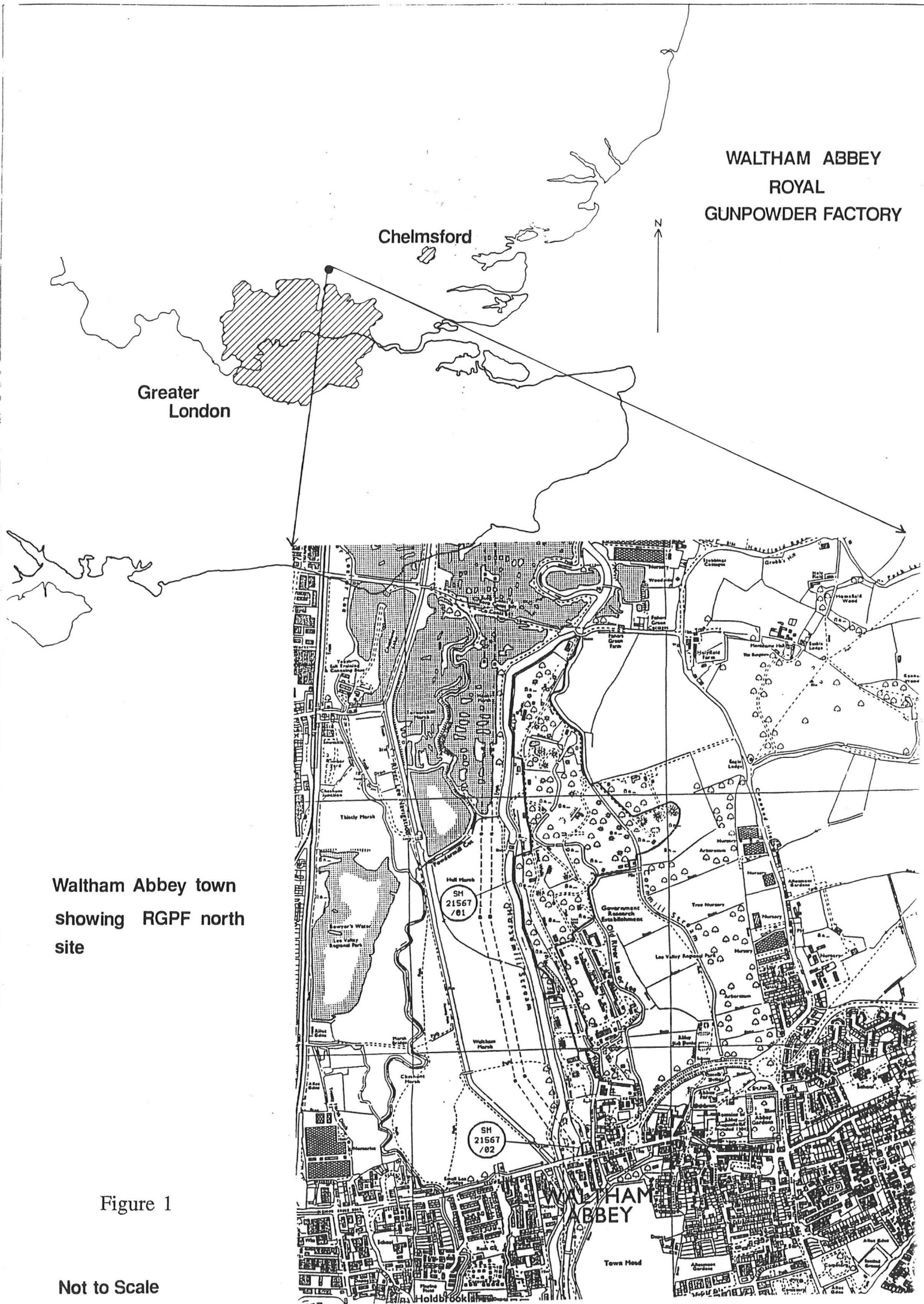
***JANUARY 1995***

***SUBMITTED BY ADAM FORD  
CONSULTANT ARCHAEOLOGIST TO  
MINISTRY OF DEFENCE***

## Contents.

- Site location.
- Report area location.
- Site general history.
- Report area brief history.
- Recent development and archaeology.
- References.
- Appendix A.





WALTHAM ABBEY  
ROYAL  
GUNPOWDER FACTORY

Chelmsford

Greater  
London

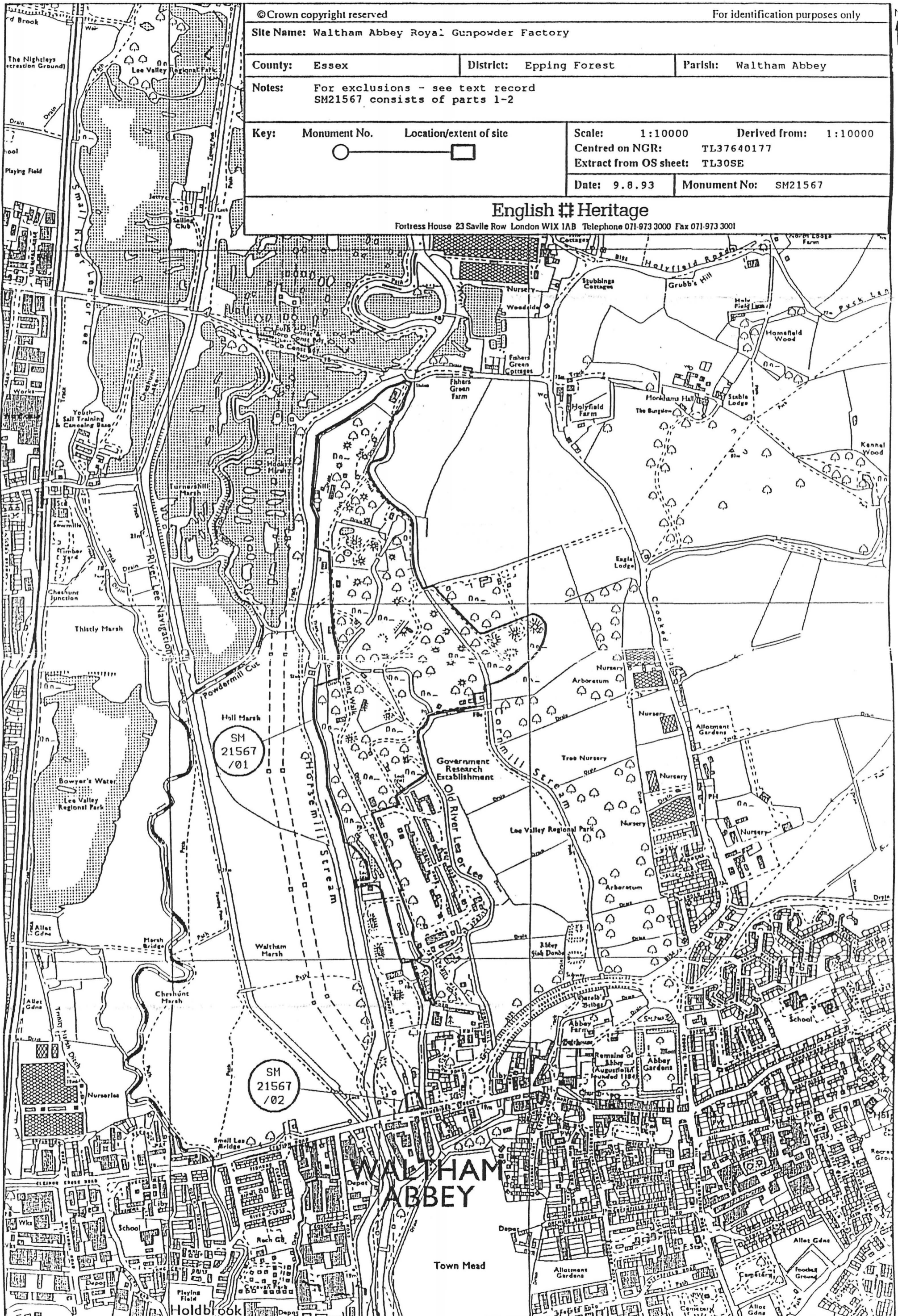
Waltham Abbey town  
showing RGPF north  
site

Figure 1

Not to Scale

# Scheduling Proposal

Figure 2



|                                                                                                                |                         |                                  |                       |
|----------------------------------------------------------------------------------------------------------------|-------------------------|----------------------------------|-----------------------|
| © Crown copyright reserved                                                                                     |                         | For identification purposes only |                       |
| Site Name: Waltham Abbey Royal Gunpowder Factory                                                               |                         |                                  |                       |
| County: Essex                                                                                                  | District: Epping Forest | Parish: Waltham Abbey            |                       |
| Notes: For exclusions - see text record<br>SM21567 consists of parts 1-2                                       |                         |                                  |                       |
| Key: Monument No.                                                                                              | Location/extent of site | Scale: 1:10000                   | Derived from: 1:10000 |
|                                                                                                                |                         | Centred on NGR: TL37640177       |                       |
|                                                                                                                |                         | Extract from OS sheet: TL30SE    |                       |
|                                                                                                                |                         | Date: 9.8.93                     | Monument No: SM21567  |
| <b>English Heritage</b><br>Fortress House 23 Savile Row London W1X 1AB Telephone 071-973 3000 Fax 071-973 3001 |                         |                                  |                       |



## SITE LOCATION

|          |   |               |
|----------|---|---------------|
| County   | - | Essex         |
| District | - | Epping Forest |
| Parish   | - | Waltham Abbey |

### National Grid Reference.

Waltham Abbey Royal Gunpowder Factory

(North Site) (TL30SE) TL376 015

The Waltham Abbey Royal Gunpowder Factory, more recently known as the Ministry of Defence's Royal Armaments Research and Development Establishment (RARDE) is located immediately to the North of the historic Essex town of Waltham Abbey.

The North Site stretches for nearly two kilometres from Highbridge Street north/south along the Lea Valley to Fishers Green in the north. The perimeter fence encompasses almost 75 hectares (190 acres). The factory is bounded on three sides by waterways; the Horsemill Stream to the north and west and by the Cornmill Stream and Old River Lea to the east.

The Lower Island and South Site will not be covered in this report.

The surface geology is mixed river gravels overlying London clay.

The topography of the site has changed considerably over the last 300 years. Originally the land, excluding the New Hill area, was water meadow. As the factory developed, so the area was partially drained by ditches and canals and traversed by raised causeways and the higher level water system. The nature of explosive process buildings, generally surrounded by earth blast mounds, has also

given the site a dynamic appearance. The woodland which covers just over half the site is a product of the manufacture of gunpowder. Alder, Willow and Black Dog Wood (Alder Buckthorn) plantations were set and coppiced creating an on site supply of wood for charcoal, one of the three ingredients of gunpowder.

Report Area Location.

National Grid Reference TL 37720 01300.

Area M, for the convenience of this report includes all the land and buildings to the east of Long Walk to the Old River Lea, to the south of the Scheduled Ancient Monument Boundary and the north of North P Area which is defined by the NE - SW section of Millhead Stream (see figures 3a and 3b).

This area includes most of the 21 listed buildings including L157 which is designated as a Grade 1 structure.

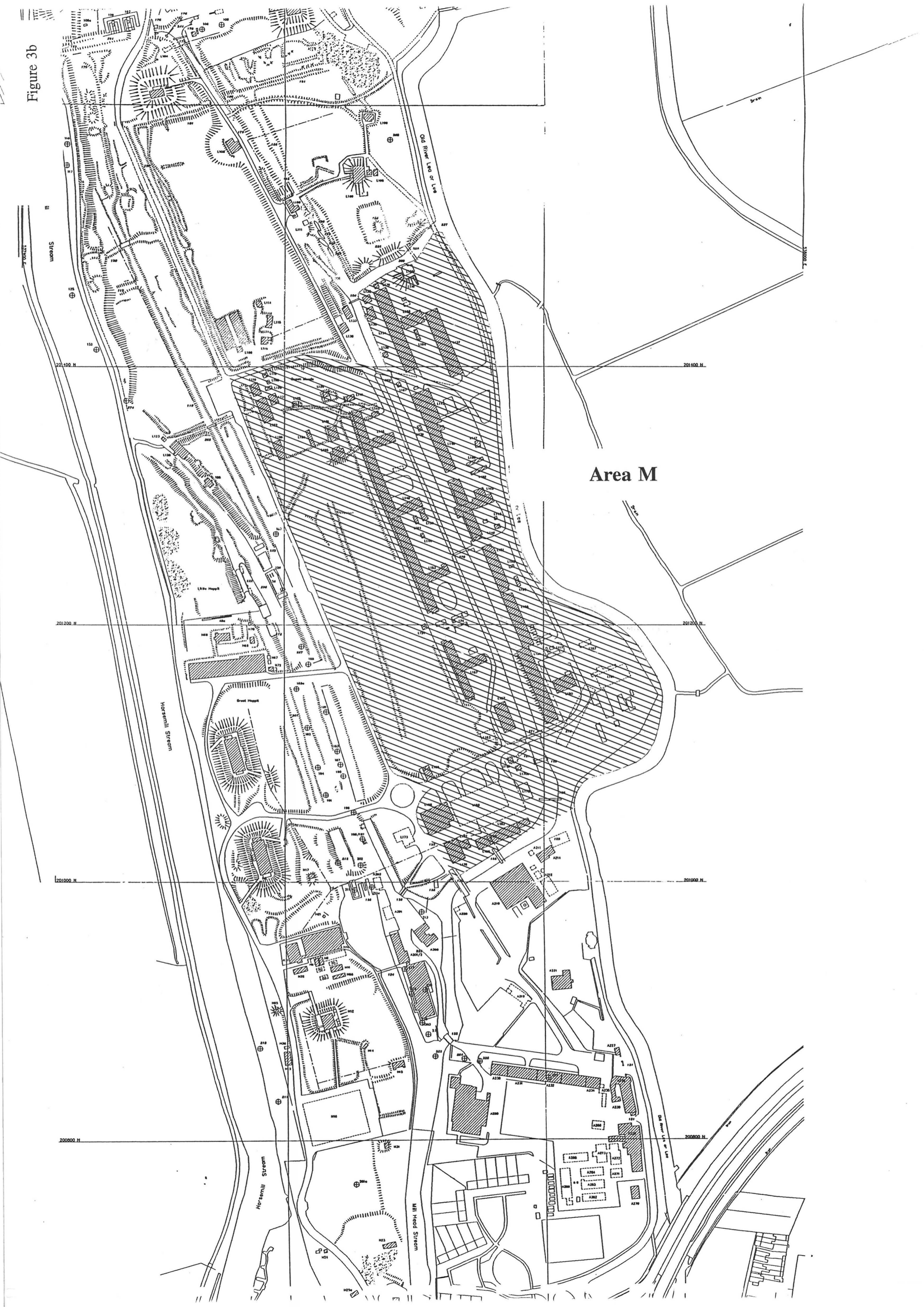
This area has, since the mid 19<sup>th</sup> Century, been the main explosives manufacturing section.

Figure 3a





Figure 3b



A BRIEF HISTORY OF THE ROYAL GUNPOWDER FACTORY,  
WALTHAM ABBEY 1665 - 1994.

The Royal Gunpowder Factory has been involved in the research and manufacture of explosives for over 300 years. Initially producing Gunpowder, the site then developed to manufacture chemical based explosives and propellants and finally experimental development of explosive materials after the Second World War.

The first documented references to gunpowder production on the site came from two sources. One is a contract between Ralph Hudson a sub-tenant of the Waltham Mills, and the government, for the supply of gunpowder. The other is the first recorded death in the parish caused by an explosion within a mill, both date to 1665.

The early factory, based around a former fulling mill, probably situated to the south of the island site, quickly expanded to form the well established works depicted on the engraving by Farmer in 1735 (figure 4). The site continued to develop and became one of the principle suppliers of gunpowder to the Board of Ordnance. In the second half of the Eighteenth Century the Board became concerned about the quality, quantity and reliability of the black powder produced by these private firms. So much so that in 1759 the government purchased the Home Works at Faversham, the first Royal Gunpowder Factory. Later in 1787 they purchased the Waltham Abbey works. Almost immediately after, the demand for powder rose as a repercussion of the French Revolution and later the Napoleonic Wars. There was major expansion and investment including the development of the lower island site, a narrow strip of land to the south of the original site. In sharp contrast the first half of the Nineteenth Century, between 1820 and 1840 saw little new development.

This period of relative inactivity did not last, by the second half of the



- 1. A Horse Mill
- 2. The Corning and Glazing Engine
- 3. Three Horse Mills
- 4. The Stables
- 5. The Coal Mill and Composition House

- 8. The Carpenters and Mill-wrights work house
- 9. The Clerks Counting house and the Watch house
- 10. The Loading house
- 11. Two Stamping Mills
- 12. Two Dumb Mills

- 15. The Charging house
- 16. The old Composition house
- 17. The Store house
- 18. The Dusting house
- 19. The Little Store
- 20. Three Sun Stoves, or drying Leads
- 21. The great Store



To John Walton Esq. Proprietor of these Mills this Plate is  humbly dedicated by his Obedient humble Servant J. Farmer.  
*Jas. Munds. Sculp.*

R. West. delin. 1735

GENERAL VIEW OF THE FACTORY IN 1735  
 (FROM FARMERS "HISTORY")

from Simmons W.H. 1963.

century the demand for cannon powders for larger guns and for moulded powders in greater quantities resulted in rapid changes and innovations.

It was also in the latter half of the Nineteenth Century that tentative production of the new chemical explosive, Guncotton, took place. Manufacture of the new liquid explosive Nitroglycerine soon followed and by the last decade of the Nineteenth Century, Cordite, a mixture of guncotton (Nitrocellulose) and nitroglycerine was in production. Cordite was such a successful explosive, it quickly became the main service propellant and by 1900 the majority of the old gunpowder buildings on site were converted to make cordite.

At the same time as the shift to chemical based explosives the works expanded south with the purchase of the Quinton Hill works in the 1880's now known as South Site.

Initially the South Site consisted of a guncotton factory but nitroglycerine and cordite production areas followed shortly afterward.

Back on the North Site an acid factory and nitroglycerine facility were built in 1890's. The wet guncotton was produced on the south site and barged up to the grand magazine where it was stored. Then it was moved down the site, north to south, from drying to mixing and pressing, finally resting at H12 the cordite reel magazine.

The First and Second World Wars naturally saw peaks in production and investment into the site. During the First World War the labour force rose to 5000 its greatest number, over half were women, working shifts to ensure continuous production.

A number of high explosive products were made at the RGPF even though the site was never a high explosive plant. Picric acid was produced in the 1870's and 1890's and later around 1910 tetryl (C.E or Composition Exploding) was produced. Between the Wars important research was carried out on the safe and efficient production of TNT and RDX.

The sites proximity to urban areas and the continent forced its closure as a production site in 1943 in favour of the new purpose built Ordnance sites in Scotland and the North West of England.

The site reopened in 1945 after the war as a government research establishment, initially set up to research into liquid fuels for rockets and other applications. A plant was also constructed to develop plastic propellants for use in rocket motors. Over the next 30 years research into propellants, plastic and rubber propellants, polymers, properties of high explosives and many other aspects of energetic and inert materials, took place on North and South Site.

By the 1960's Waltham Abbey was the sole government laboratory carrying out research on non nuclear explosives of every kind.

Many of the old cordite and gunpowder buildings were used as laboratories also some of the test beds were converted Nineteenth Century process buildings. A number of purpose built test beds were also constructed.

The site finally closed in June 1991 after 204 years of government service. Since 1992 a programme of decontamination and remediation has been carried out with the aim of putting the site to beneficial reuse in the public sector.

## BRIEF HISTORY OF M AREA.

This area incorporates the highest concentration of buildings on site. It is not the purpose of this report to outline the history of each building. Detailed descriptions and histories of the buildings and the area can be found in the RCHME report and associated component sheets (see Area L sections - Appendix A).

Much of this area was known historically as Queensmead and up until the 1850's was covered by a plantation of Willow which was managed and coppiced to make charcoal for gunpowder.

In the early to mid 19<sup>th</sup> Century the eastern bank of Middle Stream and the south eastern corner of M Area were used as the stacking yards and charcoal plant. Up to 10 years supply of wood was stacked in the yards. Until 1830 the RGPF relied entirely on imported retort fired charcoal. In 1830 the Charcoal Cylinder House was transferred from the Royal Gunpowder Factory at Faversham. This plant remained in use until gunpowder was superseded by cordite around the turn of the Century.

The major development in the area happened some 20 years afterward with the construction of the Group A Incorporating Mills (L168, L169 and L176). Built in 1857 these were the first steam driven gunpowder incorporating mills constructed in the world and dramatically altered the production of black powder.

Unlike the later mills, the engine and boilers in the Group A mills was situated at the western end of the building driving six individually housed mills to the east.

Over the next 32 years another five steam driven mills were constructed on either side of Middle Stream on Queensmead. These mills were constructed in a T shape with the engine house central. The easterly wing housed two Lancashire boilers and the wings to the north and south housed the incorporating mills, three to each wing.

Associated with the mills were a number of expense magazines. Three survive, L170a, L154 and L141.

All the mills were served by a narrow gauge railway and although nothing survives of the rail system, remains of the supporting brick piers were uncovered, running along the western frontage of L157, L153, L148 and L145. Also a section of rail was recovered from the fill of the gas works canal adjacent to bridge 4.

With the transfer of production from gunpowder to cordite, the main service propellant, the steam mills were converted to incorporate the NC/NG material.

The engines and mills were removed, power was now obtained from electric driven overhead drive shafts which transferred power via belt drivers to the cordite machines.

An explosion in L148 in 1902 caused extensive damage and it was soon after, that massive concrete blast walls were erected along the eastern bank of Middle Stream and between L153 and L148.

These traverses were removed in the 1930's and no traces remain today.

Increasing demand for cordite at the outbreak of the First World War prompted the rapid construction of two new Cordite Press Houses (L134 and L159) and four Cordite Incorporating Houses (L143, L146, L151 and L155). A number of ancillary structures were also built at this time including the Mineral Jelly Store, L165.

After the Second World War when the site was turned over to experimental research, all the old gunpowder mills and cordite buildings were converted into laboratories. Over the next twenty years or so, more buildings were erected around the laboratories and around the old laboratory building, L122 on the north west corner of Queensmead. These included test labs, locker magazines, acid and acetone stores and toilet blocks.

## RECENT DEVELOPMENTS AND ARCHAEOLOGY.

The description of decontamination works in this area will be separated into ground works and building works.

### Ground Works.

Exploratory ground works were carried out in the south eastern section of M Area also known as the cordite area in 1992, but the bulk of work was carried out in the Spring and Summer of 1993.

Canal RCHM278 (see figure 5) and the surrounding area were excavated. A significant quantity of cordite was recovered during works. During the excavation the later car park and green houses were removed and the surface material was scraped. This activity revealed the brick footings of the charcoal cylinder house, some of the gas works buildings and possibly the boat repair shop.

Since August/September 1993 no further work has been carried out in this area although further investigation is planned.

At the same time work to remove and scrape beneath the steam pipe routes was carried out. This work was completed by April 1993.

Most recently in the Spring of 1994 a rectangular water feature to the east of Long Walk and to the south of L185 was excavated. This feature appeared on a number of late 19<sup>th</sup> and early 20<sup>th</sup> Century maps and seemed to show a shallow rectangular pond fed by the north south drainage ditch which ran parallel to Long Walk on the eastern side.

When excavated the feature was found to be approximately 600mm deep and full of ash. Work could not be completed due to the proximity of mature Alder trees.

Approximately six test trenches were sunk across Queensmead in an attempt to discover the position of the narrow ditch which is shown crossing the



meadow from Long Walk, under the present position of L148 to Middle Stream. The exercise was unsuccessful. There are no plans to continue the search. (See figure 5).

### Buildings.

Almost without exception the buildings to the north of L168/L169 were involved in the production, experimentation or testing of explosives.

The excepted method of decontaminating such structures is to burn them out and then demolish the remains. In this situation, however, a number of the buildings are protected under a listing schedule and the rest are covered by conservation area restrictions. A new strategy had to be employed.

Initially the five gunpowder incorporating mills were targeted.

The phase 1 strip out involved, firstly the controlled removal of all asbestos products from the buildings. This was carried out in the Winter of 1992/3. Secondly it involved the systematic removal of the services, light weight internal partition walls, block flooring and asphalt flooring.

The purpose of these works was to identify and remove any materials or access any locations where explosives or chemicals may have been discretely deposited during the life of the building.

The second phase involved the removal of the concrete floors in the building, most of these dated to the conversion from gunpowder to cordite, around 1900. It also involved the removal of more substantial internal partitions and all the woodwork especially the half glazed partitions between the main corridor and the bays.

The paint on the walls and the steel roof trusses were also scheduled for removal.

The aim was to leave the original structure of the building intact but stripped down to the core materials, clean brickwork, steel etc.

This proved to be extremely time consuming, labour intensive and enormously expensive.

L157 which is a Grade I listed building was completely cleaned but the other Incorporating Mills were completed to Phase 1 standard and up to the removal of partition walls and woodwork, approximately half of Phase II.

There are no plans to continue the Phase II strip out in these structures.

The First World War cordite buildings were cleaned to the same degree ie. all but the removal of floors and paint work.

During the late Spring early Summer of 1993 a number of the small 1950/60's stores in the mills precinct were burnt out and now survive as brick shells.

Although the work in the Incorporating Mills has now ceased the experience gained and the lessons learnt during the decontamination of such important and sensitive structures has proved invaluable.

During the works described above fixtures and fittings were selected and retained and photographic and graphic records were made. It is hoped that this information can be used to recreate parts of the buildings as they were before decontamination. An unfortunate result of the decontamination process is that the building loses the features of its later history eg. the 1950's laboratory phase. These features, although not as pleasing as the 19<sup>th</sup> Century buildings are just as important historically and it is unfortunate that much of the later building phases have been destroyed.

External and internal work is still planned in M Area but not to the extent of previous exercises.



Figure 5



References.

1994 Royal Commission on the Historical Monuments of England, Keele office. Synthesis report and component sheets of the 1993 RCHME Field Survey of Waltham Abbey Royal Gunpowder Factory.

1994 Carden and Godfrey, Condition Survey of Waltham Abbey RARDE (North Site).

**APPENDIX A.**

**ROYAL COMMISSION ON THE HISTORICAL  
MONUMENTS OF ENGLAND.**

**BUILDING COMPONENT SHEETS REFERRING TO  
AREA M.**

RCHME Copyright 1994.

Not to be re-produced without permission.

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                          |                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L122                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | OLD SERIES<br>144 | RCHME NUMBER                                                                                                                                                                                                                                                                                                                                                                                                                             | N.G.R.<br>TL 37584 01364 |
| NAME/FUNCTION<br>Main Laboratory<br>Managers Office & Laboratory                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                   | START DATE<br>1897<br>extended 1902                                                                                                                                                                                                                                                                                                                                                                                                      | END DATE                 |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                          |                          |
| <p>CARTOGRAPHIC DEPICTION</p> <p>1897 WASC 900/53C<br/>c1910 WASC 900/65 ; Managers office and Laboratory<br/>c1910 WASC 900/79 ; Managers office and Laboratory<br/>1917 WASC 900/70 ; Main Laboratory<br/>1917 WASC 900/72 ; 144<br/>1919 WASC 900/74 ; 144<br/>c1920 WASC 900/80 ; 144<br/>1923 WASC 900/84 ; 144<br/>&gt; 1940 WASC 900/91A ; L122<br/>1954 A - B.34 ; L122<br/>c1960 WASC 900/94 ; L122<br/>c1963 WASC 900/97 ; L122<br/>1972 WASC 900/102 ; L122<br/>1972 WASC 900/104 ; L122<br/>1976 WASC 900/113 ; L122</p> |                   | <p>DOCUMENTARY REFERENCES</p> <p>Plans;<br/>L122 B01-B22 ; Plans and Elevations 1918 to 1963</p> <p>1908 RGPF Ledger WASC 1509 + WASC 1764 ; Managers office and Lab built 1897 p15<br/>c1925 RGPF Ledger WASC 1680 ; Managers office and Lab<br/>c1945 RGPF Ledger WASC 1508 ; Managers office and Lab</p> <p>1972 ERDE List ; Main Lab<br/>1991 Mott McDonald survey<br/>1992 RARDE List ; Main Lab</p> <p>1993 RCHME NBR No.91454</p> |                          |
| <p>PHOTOGRAPHY<br/>HISTORIC<br/>WASC 989/1 Main Lab<br/>PRO Supply 5/861 279 April 1912 From north west<br/>?PRO Supply 5/861 281 Fume cupboard in main laboratory</p>                                                                                                                                                                                                                                                                                                                                                               |                   | <p>PHOTOGRAPHY<br/>RCHME<br/>1) 206/F/35 From South East<br/>206/F/36 From South West<br/>2) BB92/26102 From South East<br/>BB92/26103 From North West</p>                                                                                                                                                                                                                                                                               |                          |
| <p>RELATIONSHIPS WITH OTHER MONUMENTS<br/>ASSOCIATED WITH: L114, L121</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                          |                          |
| <p>CONDITION Good</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                          |                          |

DESCRIPTION

- 1) CONSTRUCTIONAL MATERIAL  
Timber frame Brick infill upper storey cement rendered
  - 2) ROOF MATERIALS AND STRUCTURE  
Slate
  - 3) POWER SOURCE  
Steam Electricity
  - 4) DIMENSIONS i) L 19.3 ii) W 8.1 iii) HT Eave 7.6
  - 5) Date Stone 1902-3
- See attached RCHME Threatened Buildings Section report.

ROYAL COMMISSION ON THE HISTORICAL MONUMENTS OF ENGLAND

MOD Building No. L122  
Manager's Office and Laboratory  
The Royal Gunpowder Factory  
Waltham Abbey  
Essex

NBR No: 91454  
NGR: TL37584 01364

This two-storeyed building has a rectangular plan and is constructed of wood-framing with red brick infill. First built in 1897, it was extended to the south in 1902-3.

It has always functioned as a Laboratory and is fitted throughout with benches and gas pipes. There was a Manager's Office on the ground floor.

-oo0oo-

Situated on the Queen Meads part of the site, approximately 100 metres west-north-west of "Group F" Incorporating Mills (L145), the building was constructed in 1897 as a Laboratory and Manager's Office.<sup>1</sup>

Of two storeys, it is a wood-framed building with red brick infill on the ground floor between the framing. It has a chamfered brick plinth. The joists of the first floor corbel out approximately 0.30 metre from the ground floor. The infill on the first floor exterior is covered with a cement render. Windows are casement with timber frames. The interior is matchlined and there are timber floorboards. Roof trusses are of timber and each comprises a tie beam, a king post with expanded head and foot, and raking struts. The north and south ends of the roof is hipped, and the whole is covered with slate tiles.

It has a rectangular plan, aligned north to south,<sup>2</sup> which was approximately 11.5 x 8 metres when originally built in 1897. The ground floor, entered by a doorway at the original centre of both the east and west elevations, had four main rooms. There was a further room or rooms on the first floor above.

In 1902-3 the building was extended by three bays (approximately 7.5 metres) to the south.<sup>3</sup> The style and fabric of the extension matches that of the 1897 building. At this date the ground floor of the original building contained a Heat Test Room (north-west), a Gas Room (north-east), a Manager's Office (west) and Principal Foreman's Office (east).<sup>4</sup> Two further ground floor rooms in the extension were Chief Clerk's Office (south-west) and Writer's Room (south-east). The extension has doorway on the west side, giving a second main entrance on the west elevation. There was an extensive network of gas pipes on the east elevation and on the interior.<sup>5</sup>

In c1908, on the north-east side of the building, there was a detached cycle shed, built in 1902 of corrugated iron, and a detached Accumulator House.<sup>6</sup>

Although the building has continued to be used as a Laboratory throughout this century, the function of the rooms has changed

---

1 OS County Series 1:2500 maps, 2nd ed. 1897 (surveyed 1865-9, revised 1895), sheet refs XLIX.14, XLI.8.12, XLII.5.9.

2 The building is aligned north-north-west to south-south-east but for clarity in this report it is described as if it was aligned north to south.

3 Datestone of 1902-3 on south side. Undated drawing of "Extension of Laboratory Offices", uncatalogued (?H167/X623) (PRO, Hayes Repository).

4 Undated drawing of "Extension of Laboratory Offices", uncatalogued (?H176/X163), (PRO, Hayes Repository).

5 Some of the piping still survives on the interior.

6 Ledger c1908, cat. WASC 1509 (PRO, Hayes Repository).

periodically. In 1918, for example, the ground floor contained a Glass Blower's Room (north-west), a Gas Room (north-east), a Store Room (centre east), Assistant Manager's Room (centre west), C.E. Testing Room (south-east) and Nitrometer Room (south-west), and the first floor contained laboratories with, at the northern end, Balances, Extraction Room and an Office.<sup>7</sup> Proposal drawings of 1936 show the ground floor rooms at the south end of the building as being Chem. Res. Office, Chem. Cor. Office and JAC and Chem II Office, and also show a proposed addition on the south side for Research and CE Labs.<sup>8</sup> It is not clear whether the latter addition was ever built. Plans of 1963 label the rooms on the ground floor as two laboratories, office, PA, DCSO and office, and show the first floor as a large laboratory with a balance room and office at the north end.<sup>9</sup>

Surveyed March 1993  
Report by R L Burgess

- 
- <sup>7</sup> Plans showing arrangement of fittings, benches etc in laboratories, dated 1918, cat. L122.B.07 (MOD Central Disposals Unit, Chessington).
- <sup>8</sup> Pencil drawing of proposed extension to Main Laboratory, signed A? White 9/1/1936, uncatalogued drawing 144 (PRO, Hayes Repository).
- <sup>9</sup> Plans for modifications to first floor laboratories, dated 14/5/1963, cat. L122.B.15 (MOD Central Disposals Unit, Chessington).

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

|                                                                                                                                                                                                                                                                                                                                                                          |            |                                                                                                                                                                                                                                   |                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L121                                                                                                                                                                                                                                                                                                                                                           | OLD SERIES | RCHME NUMBER                                                                                                                                                                                                                      | N.G.R.<br>TL 37393 01376 |
| NAME/FUNCTION<br>Toilet & Store                                                                                                                                                                                                                                                                                                                                          |            | START DATE<br>1952                                                                                                                                                                                                                | END DATE                 |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                                                                              |            |                                                                                                                                                                                                                                   |                          |
| <p>CARTOGRAPHIC DEPICTION</p> <p>&gt; 1940 WASC 900/91A ; L121<br/>         1954 A - B.34 ; L121<br/>         c1960 WASC 900/94 ; L121<br/>         c1963 WASC 900/97 ; L121<br/>         1972 WASC 900/102 ; L121<br/>         1972 WASC 900/104 ; L121<br/>         1976 WASC 900/113 ; L121</p>                                                                       |            | <p>DOCUMENTARY REFERENCES</p> <p>Plans;<br/>         L121 B01,B02 ; Plans and Elevations 1952</p> <p>1972 ERDE List ; Toilet and Store<br/>         1991 Mott McDonald survey<br/>         1992 RARDE List ; Toilet and Store</p> |                          |
| <p>PHOTOGRAPHY<br/>HISTORIC</p>                                                                                                                                                                                                                                                                                                                                          |            | <p>PHOTOGRAPHY<br/>RCHME<br/>1) 206/F/34 From South East</p>                                                                                                                                                                      |                          |
| <p>RELATIONSHIPS WITH OTHER MONUMENTS</p> <p>ASSOCIATED WITH: L122</p>                                                                                                                                                                                                                                                                                                   |            |                                                                                                                                                                                                                                   |                          |
| <p>CONDITION      Good</p>                                                                                                                                                                                                                                                                                                                                               |            |                                                                                                                                                                                                                                   |                          |
| <p>DESCRIPTION</p> <p>1)      CONSTRUCTIONAL MATERIAL<br/>                Brick</p> <p>2)      ROOF MATERIALS AND STRUCTURE<br/>                Corrugated Asbestos</p> <p>3)      POWER SOURCE<br/>                Electricity</p> <p>4)      DIMENSIONS i) L 7.9 ii) W 5.9 iii) HT 4.3</p> <p>5)      The toilet block is a single storey with a rectangular plan.</p> |            |                                                                                                                                                                                                                                   |                          |



**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

|                                                                                                                                                                                                                                                                                                                                                                                                                                  |                    |                                                                                                                                                                                                                                                                            |                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L120                                                                                                                                                                                                                                                                                                                                                                                                                   | OLD SERIES<br>144b | RCHME NUMBER                                                                                                                                                                                                                                                               | N.G.R.<br>TL 37588 01383 |
| NAME/FUNCTION<br>Silvered Vessel House<br>Solvent Store                                                                                                                                                                                                                                                                                                                                                                          |                    | START DATE<br>1914-18<br>(rebuilt) 1960                                                                                                                                                                                                                                    | END DATE<br>1960         |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                                                                                                                                      |                    |                                                                                                                                                                                                                                                                            |                          |
| CARTOGRAPHIC DEPICTION                                                                                                                                                                                                                                                                                                                                                                                                           |                    | DOCUMENTARY REFERENCES                                                                                                                                                                                                                                                     |                          |
| c1910 WASC 900/65 ; Silvered Vessel House<br>c1910 WASC 900/79 ; Silvered Vessel House<br>1917 WASC 900/70 ; 144b<br>1917 WASC 900/72 ; 144b<br>1919 WASC 900/74 ; 144b<br>c1920 WASC 900/80 ; 144b<br>1923 WASC 900/84 ; 144b<br>> 1940 WASC 900/91A ; L120<br>1954 A - B.34 ; L120<br>c1960 WASC 900/94 ; L120<br>c1963 WASC 900/97 ; L120<br>1972 WASC 900/102 ; L120<br>1972 WASC 900/104 ; L120<br>1976 WASC 900/113 ; L120 |                    | c1925 RGPF Ledger WASC 1680 ; Silvered Vessel House<br>c1945 RGPF Ledger WASC 1508 ; Silvered Vessel House<br><br>Plans;<br>L120 B01,B02 ; Plans and Elevations 1960<br><br>1972 ERDE List ; Solvent Store<br>1991 Mott McDonald survey<br>1992 RARDE List ; Solvent Store |                          |
| PHOTOGRAPHY<br>HISTORIC                                                                                                                                                                                                                                                                                                                                                                                                          |                    | PHOTOGRAPHY<br>RCHME<br>1)206/F/37 From South West                                                                                                                                                                                                                         |                          |
| RELATIONSHIPS WITH OTHER MONUMENTS<br>ASSOCIATED WITH: L122                                                                                                                                                                                                                                                                                                                                                                      |                    |                                                                                                                                                                                                                                                                            |                          |
| CONDITION Fair                                                                                                                                                                                                                                                                                                                                                                                                                   |                    |                                                                                                                                                                                                                                                                            |                          |
| DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                      |                    |                                                                                                                                                                                                                                                                            |                          |
| 1) CONSTRUCTIONAL MATERIAL<br>Brick                                                                                                                                                                                                                                                                                                                                                                                              |                    |                                                                                                                                                                                                                                                                            |                          |
| 2) ROOF MATERIALS AND STRUCTURE<br>Corrugated Asbestos                                                                                                                                                                                                                                                                                                                                                                           |                    |                                                                                                                                                                                                                                                                            |                          |
| 3) POWER SOURCE<br>Electricity                                                                                                                                                                                                                                                                                                                                                                                                   |                    |                                                                                                                                                                                                                                                                            |                          |
| 4) DIMENSIONS i) L 5.4 ii) W 2.55 ii) HT 2.5                                                                                                                                                                                                                                                                                                                                                                                     |                    |                                                                                                                                                                                                                                                                            |                          |
| 5) The store is a single storey structure, rectangular in plan, with gabled ends. The north and south walls incorporate earthenware drain pipes to act as vents. In the eastern wall are two vents. The store was entered through a double grilled door on the west side. Store to the West double doors with grills.                                                                                                            |                    |                                                                                                                                                                                                                                                                            |                          |

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

|                                                                                                                                                                                                                                                                                                                                                  |                    |                                                                                                                                                                     |                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L119                                                                                                                                                                                                                                                                                                                                   | OLD SERIES<br>144A | RCHME NUMBER                                                                                                                                                        | N.G.R.<br>TL 37578 01381 |
| NAME/FUNCTION<br>Managers Office<br>Heat Test Room                                                                                                                                                                                                                                                                                               |                    | START DATE<br>by 1912<br>1918?                                                                                                                                      | END DATE                 |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                                                      |                    |                                                                                                                                                                     |                          |
| CARTOGRAPHIC DEPICTION                                                                                                                                                                                                                                                                                                                           |                    | DOCUMENTARY REFERENCES                                                                                                                                              |                          |
| 1917 WASC 900/70 ; Heat Test Room<br>1917 WASC 900/72 ; 144a<br>1919 WASC 900/74 ; 144a<br>c1920 WASC 900/80 ; 144a<br>1923 WASC 900/84 ; 144a<br>> 1940 WASC 900/91A ; L119<br>1954 A - B.34 ; L119<br>c1960 WASC 900/94 ; L119<br>c1963 WASC 900/97 ; L119<br>1972 WASC 900/102 ; L119<br>1972 WASC 900/104 ; L119<br>1976 WASC 900/113 ; L119 |                    | Plan;<br>L119 B01 - 13/10/1950 ; Alterations,General Layout<br><br>1972 ERDE List ; Heat Test Room<br>1991 Mott McDonald survey<br>1992 RARDE List ; Heat Test Room |                          |
| PHOTOGRAPHY<br>HISTORIC                                                                                                                                                                                                                                                                                                                          |                    | PHOTOGRAPHY<br>RCHME                                                                                                                                                |                          |
| WASC 989/1 Main Lab<br>PRO Supply 5/861 279 April 1912 From west                                                                                                                                                                                                                                                                                 |                    | 1) 206/P/8 from South West                                                                                                                                          |                          |
| RELATIONSHIPS WITH OTHER MONUMENTS                                                                                                                                                                                                                                                                                                               |                    |                                                                                                                                                                     |                          |
| ASSOCIATED WITH: L118?                                                                                                                                                                                                                                                                                                                           |                    |                                                                                                                                                                     |                          |
| CONDITION Fair                                                                                                                                                                                                                                                                                                                                   |                    |                                                                                                                                                                     |                          |

DESCRIPTION

1) CONSTRUCTIONAL MATERIAL  
Rendered Brick

2) ROOF MATERIALS AND STRUCTURE  
Slate

3) POWER SOURCE  
Steam Electricity

4) DIMENSIONS i) L 9.1 ii) W 6.6 iii) HT 5.0

5) The building is a single storey and has a rectangular plan with gabled ends. The floor is raised and the building is entered through two raised doors on the west side and a single raised door on the east side. There are two windows on all the elevations except the eastern where there are three.

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

|                |            |              |                          |
|----------------|------------|--------------|--------------------------|
| NUMBER<br>L125 | OLD SERIES | RCHME NUMBER | N.G.R.<br>TL 37610 01369 |
|----------------|------------|--------------|--------------------------|

|                                   |                    |          |
|-----------------------------------|--------------------|----------|
| NAME/FUNCTION<br>Electrical Store | START DATE<br>195? | END DATE |
|-----------------------------------|--------------------|----------|

NO PHOTOGRAPHY  
AVAILABLE

|                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>CARTOGRAPHIC DEPICTION</p> <p>&gt; 1940    WASC 900/91A ; L125<br/>         1954    A - B.34 ; L125<br/>         c1960    WASC 900/94 ; L125<br/>         c1963    WASC 900/97 ; L125<br/>         1972    WASC 900/102 ; L125<br/>         1972    WASC 900/104 ; L125<br/>         1976    WASC 900/113 ; L125</p> | <p>DOCUMENTARY REFERENCES</p> <p>1972    ERDE List ; Electrical Store<br/>         1991    Mott McDonald survey<br/>         1992    RARDE List ; Electrical Store</p> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                 |                                                             |
|---------------------------------|-------------------------------------------------------------|
| <p>PHOTOGRAPHY<br/>HISTORIC</p> | <p>PHOTOGRAPHY<br/>RCHME<br/>1) 206/P/9 From South West</p> |
|---------------------------------|-------------------------------------------------------------|

RELATIONSHIPS WITH OTHER MONUMENTS

ASSOCIATED WITH: L122

CONDITION      Good

DESCRIPTION

- 1)      CONSTRUCTIONAL MATERIAL  
        Brick
- 2)      ROOF MATERIALS AND STRUCTURE  
        Concrete Slab
- 3)      POWER SOURCE  
        Steam Electricity
- 4)      DIMENSIONS i) L 2.26 ii) W 2.26 iii) HT 2.30
- 5)      The small single storey store has a square plan. There is a single door on the north wall. It is protected by a lightning conductor.

## THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                                                                                                                                                                                                                |                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L118                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | OLD SERIES | RCHME NUMBER                                                                                                                                                                                                   | N.G.R.<br>TL 37586 01394 |
| NAME/FUNCTION<br>Preparation Room                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            | START DATE<br>1941                                                                                                                                                                                             | END DATE                 |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |                                                                                                                                                                                                                |                          |
| <b>CARTOGRAPHIC DEPICTION</b><br><br>> 1940    WASC 900/91A ; L118<br>1954      A - B.34 ; L118<br>c1960    WASC 900/94 ; L118<br>c1963    WASC 900/97 ; L118<br>1972      WASC 900/102 ; L118<br>1972      WASC 900/104 ; L118<br>1976      WASC 900/113 ; L118                                                                                                                                                                                                                                                                                              |            | <b>DOCUMENTARY REFERENCES</b><br><br>Plan;<br>L118      B01 - 1941 ; General Layout<br><br>1972      ERDE List ; Preparation Room<br>1991      Mott McDonald survey<br>1992      RARDE List ; Preparation Room |                          |
| <b>PHOTOGRAPHY<br/>HISTORIC</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            | <b>PHOTOGRAPHY<br/>RCHME</b><br>1) 206/C/2 From West                                                                                                                                                           |                          |
| <b>RELATIONSHIPS WITH OTHER MONUMENTS</b><br><br>ASSOCIATED WITH: L119?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |            |                                                                                                                                                                                                                |                          |
| <b>CONDITION</b> Fair                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |                                                                                                                                                                                                                |                          |
| <b>DESCRIPTION</b><br>1)      CONSTRUCTIONAL MATERIAL<br>Asbestos Sheet and Timber Frame<br><br>2)      ROOF MATERIALS AND STRUCTURE<br>Corrugated Asbestos<br><br>3)      POWER SOURCE<br>Steam Electricity<br><br>4)      DIMENSIONS i) L 3.9 ii) W 3.28 iii) HT 2.54<br><br>5)      The building is a single storey, rectangular in plan, constructed from a timber frame covered by sheet asbestos. It was entered through a single door on the west side and lit by two windows on the north wall. On the south wall are two small Gauzed covered vents. |            |                                                                                                                                                                                                                |                          |

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

|                                                                                                                                                                                                                                                                                                          |                     |                                                                                                           |                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L110                                                                                                                                                                                                                                                                                           | OLD SERIES          | RCHME NUMBER                                                                                              | N.G.R.<br>TL 37702 01458 |
| NAME/FUNCTION<br>Acid Store                                                                                                                                                                                                                                                                              |                     | START DATE<br>Post-War                                                                                    | END DATE                 |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                              |                     |                                                                                                           |                          |
| CARTOGRAPHIC DEPICTION                                                                                                                                                                                                                                                                                   |                     | DOCUMENTARY REFERENCES                                                                                    |                          |
| 1954                                                                                                                                                                                                                                                                                                     | A - B.34 ; L110     | 1991                                                                                                      | Mott McDonald survey     |
| c1960                                                                                                                                                                                                                                                                                                    | WASC 900/94 ; L110  | 1992                                                                                                      | RARDE List ; Acid Store  |
| c1963                                                                                                                                                                                                                                                                                                    | WASC 900/97 ; L110  |                                                                                                           |                          |
| 1972                                                                                                                                                                                                                                                                                                     | WASC 900/102 ; L110 |                                                                                                           |                          |
| 1972                                                                                                                                                                                                                                                                                                     | WASC 900/104 ; L110 |                                                                                                           |                          |
| 1976                                                                                                                                                                                                                                                                                                     | WASC 900/113 ; L110 |                                                                                                           |                          |
| PHOTOGRAPHY<br>HISTORIC                                                                                                                                                                                                                                                                                  |                     | PHOTOGRAPHY<br>RCHME                                                                                      |                          |
|                                                                                                                                                                                                                                                                                                          |                     | 1) 206/D/33 From North West<br>206/D/34 From South East<br>206/D/35 Detail of machine bay from North West |                          |
| RELATIONSHIPS WITH OTHER MONUMENTS                                                                                                                                                                                                                                                                       |                     |                                                                                                           |                          |
| CUTS L130                                                                                                                                                                                                                                                                                                |                     |                                                                                                           |                          |
| CONDITION                                                                                                                                                                                                                                                                                                |                     | Fair                                                                                                      |                          |
| DESCRIPTION                                                                                                                                                                                                                                                                                              |                     |                                                                                                           |                          |
| 5) The store is a roughly built structure set into the southern side of the traverse to L130. It is constructed from fron reinforced concrete beams and reused sandstone blocks with a roof of RSJs with earth over. A pipe 11.5cm in diameter, with a pulley at the end connects this building to L130. |                     |                                                                                                           |                          |

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

|                |            |              |                       |
|----------------|------------|--------------|-----------------------|
| NUMBER<br>L117 | OLD SERIES | RCHME NUMBER | N.G.R.<br>37809 01178 |
|----------------|------------|--------------|-----------------------|

|                                  |                    |                  |
|----------------------------------|--------------------|------------------|
| NAME/FUNCTION<br>Locker Magazine | START DATE<br>1956 | END DATE<br>198? |
|----------------------------------|--------------------|------------------|

NO PHOTOGRAPHY  
AVAILABLE

**CARTOGRAPHIC DEPICTION**

c1960 WASC 900/94 ; L117  
c1963 WASC 900/97 ; L117  
1972 WASC 900/102 ; L117  
1972 WASC 900/104 ; L117  
1976 WASC 900/113 ; L117

**DOCUMENTARY REFERENCES**

Plans;  
L117 B01 - B03 ; Plans and Elevations 1956  
1972 ERDE List ; Locker Magazine  
1991 Mott McDonald survey  
1992 RARDE List ; Locker Magazine  
1992 FBRC Class 1 Explosives Magazine

PHOTOGRAPHY  
HISTORIC

PHOTOGRAPHY  
RCHME  
1)206/P/10 from West

**RELATIONSHIPS WITH OTHER MONUMENTS**

ASSOCIATED WITH: L112, L113, L159, L165

CONDITION Poor fired

**DESCRIPTION**

- 1) CONSTRUCTIONAL MATERIAL  
Brick in English Bond
- 2) ROOF MATERIALS AND STRUCTURE  
Corrugated Iron
- 3) POWER SOURCE  
Electricity
- 4) DIMENSIONS i) L 10.0 ii) W 2.61
- 5) The building has been fire and is now roofless. The building is a single storey and is rectangular in plan. The building was entered through two doors at either end of the north side. Within the magazine were four lockers along the northern side. A sign on the east wall reads 'L117 NP4 DIVISION'. The building has been fired.

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

|                |            |              |                          |
|----------------|------------|--------------|--------------------------|
| NUMBER<br>L144 | OLD SERIES | RCHME NUMBER | N.G.R.<br>TL 37709 01270 |
|----------------|------------|--------------|--------------------------|

|                                        |                     |          |
|----------------------------------------|---------------------|----------|
| NAME/FUNCTION<br>Solvent & Waste Store | START DATE<br>1960? | END DATE |
|----------------------------------------|---------------------|----------|

NO PHOTOGRAPHY  
AVAILABLE

|                                                                                                                                                                                              |                                                                                                                                                                                                                                     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>CARTOGRAPHIC DEPICTION</b></p> <p>c1960 WASC 900/94 ; L144<br/> c1963 WASC 900/97 ; L144<br/> 1972 WASC 900/102 ; L144<br/> 1972 WASC 900/104 ; L144<br/> 1976 WASC 900/113 ; L144</p> | <p><b>DOCUMENTARY REFERENCES</b></p> <p>Plan;<br/>L144 B01 - 31/5/59 ; Proposed New Solvent Store</p> <p>1972 ERDE List ; Solvent and Waste Store<br/> 1991 Mott McDonald survey<br/> 1992 RARDE List ; Solvent and Waste Store</p> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                        |                                                                   |
|----------------------------------------|-------------------------------------------------------------------|
| <p><b>PHOTOGRAPHY<br/>HISTORIC</b></p> | <p><b>PHOTOGRAPHY<br/>RCHME</b><br/>1)206/M/1 From South East</p> |
|----------------------------------------|-------------------------------------------------------------------|

**RELATIONSHIPS WITH OTHER MONUMENTS**

ASSOCIATED WITH: L153, L148, L164, L150

**CONDITION** Good

**DESCRIPTION**

- 1) **CONSTRUCTIONAL MATERIAL**  
Brick
- 2) **ROOF MATERIALS AND STRUCTURE**  
Corrugated Asbestos
- 3) **POWER SOURCE**  
Electricity
- 4) **DIMENSIONS** i) L 4.8 ii) W 2.29 iii) HT 2.63
- 5) The store is a single storey building, rectangular in plan with a gabled roof. The store is divided into two by a central partition wall. On the south elevation is a double door the northern room was entered through a grilled door. Attached to the north wall is a veranda, a notice reads 'ACETONE CLEAN TRICHLOROETHYLENE RECOVERED TRICHLOROETHYLENE'. Also attached to the north wall is a small yellow glass fronted cabinet.



## THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY

| NUMBER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | OLD SERIES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | RCHME NUMBER           | N.G.R.         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|----------------|
| L148                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 156                    | TL 37700 01292 |
| NAME/FUNCTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | START DATE             | END DATE       |
| Incorporating Mills Group G Gunpowder                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1889                   | 1898           |
| Incorporating Mills Group G Cordite                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1898                   | 1945           |
| Lab/Store/Incorp House No7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1946                   | 1991           |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                        |                |
| CARTOGRAPHIC DEPICTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | DOCUMENTARY REFERENCES |                |
| <p>1897 WASC 900/53C</p> <p>c1910 WASC 900/65 ; Incorp House Group G</p> <p>c1910 WASC 900/79 ; Incorp House Group G</p> <p>1917 WASC 900/70 ; Incorp House Group G</p> <p>1917 WASC 900/72 ; 156</p> <p>1919 WASC 900/74 ; 156</p> <p>c1920 WASC 900/80 ; 156</p> <p>1923 WASC 900/84 ; 156</p> <p>&gt; 1940 WASC 900/91A ; L148</p> <p>1954 A - B.34 ; L148</p> <p>c1960 WASC 900/94 ; L148</p> <p>c1963 WASC 900/97 ; L148</p> <p>1972 WASC 900/102 ; L148</p> <p>1972 WASC 900/104 ; L148</p> <p>1976 WASC 900/113 ; L148</p> | <p>Plans;</p> <p>1904 WASC 901/160 10 Oct 1904 Traverses to Group "G"</p> <p>WASC 901/160A no date Traverses to Group "G"</p> <p>WASC 901/162 no date No7 Incorporating Mill N? of No6 Mill</p> <p>L148 B01 - B34 ; Plans and Elevations 1888 to 1972</p> <p>1908 RGPF Ledger WASC 1509 + WASC 1764 ; Incorp House Group G built 1889 p17</p> <p>c1925 RGPF Ledger WASC 1680 ; Incorp House Group G</p> <p>c1945 RGPF Ledger WASC 1508 ; Incorp House Group G</p> <p>1972 ERDE List ; Plastics Manufacture</p> <p>1991 Mott McDonald survey</p> <p>1992 RARDE List ; Lab and Store Rooms/Incorp House No.7</p> <p>1993 RCHME NBR No. 91458</p> <p>WASC 353 Nathan F.L. Proceedings of a court of Enquiry re circumstances attending explosion at Waltham Abbey on 15 December 1902</p> <p>WASC 353 Nathan F.L Drawing of Group G mills for manufacture of Cordite No 914</p> <p>WASC 353 Nathan F.L Drawing of Incorporating machine for Cordite factory No 917</p> |                        |                |

PHOTOGRAPHY  
HISTORIC

WASC 73 Explosion 11.3.1892  
WASC 74 Explosion 11.3.? (x2)  
WASC 76 Explosion 11.3.1892  
WASC 102 Explosion  
WASC 104 Explosion 15.12.1902  
WASC 353 Nathan F.L Bay 3 & Engine House Group G  
photograph No.1  
WASC 353 Nathan F.L Engine House & Bays 3,2,1 Group  
G photograph No.2  
WASC 1543/47 Gunpowder mills Group G 1888-9  
WASC 1655/13-15 Explosion 15.12.1902 57lb MD Cordite  
paste in No 3 bay  
Supply 5/860 (Photo No.139),(Neg No.B25) RCHME Neg  
No. BB92/16738 ; Group G exploded 15/12/1902  
Supply 5/860 (Photo No.145),(Neg No. B30) RCHME Neg  
No. BB92/16727 ; Group G exploded 15/12/1902  
Supply 5/860 (Photo No.142),(Neg No.B28) RCHME Neg  
No. BB92/16728 ; Group G exploded 15/12/1902  
PRO Supply 5/860 139-145, 147 Group G exploded 57lbs  
Cordite MD

PHOTOGRAPHY  
RCHME

- 1) 206/P/4 Group G mills 1888-9  
206/P/14 Boiler & Engine house from South
- 2) BB92/16727 Explosion 15.12.1902  
BB92/16728 Explosion Group G 15.12.1902  
BB92/16738 Explosion Group G 15.12.1902  
BB92/26089 From North East  
BB92/26090 From South East  
BB92/26191 From North East  
BB92/26192 Roof Trusses from North West  
BB92/26193 East room from West  
BB92/26352 Elevations, Plans & Sections
- 4) 4788/4 06.05.1993  
4788/7 06.05.1993  
4788/8 06.05.1993

RELATIONSHIPS WITH OTHER MONUMENTS

ASSOCIATED WITH: L145, L149, L153, L157

CONDITION GOOD

DESCRIPTION

- 5) See attached RCHME Threatened buildings Section report

ROYAL COMMISSION ON THE HISTORICAL MONUMENTS OF ENGLAND

MOD Building No. L148  
Group G Incorporating Mills  
The Royal Gunpowder Factory  
Waltham Abbey  
Essex

NBR No: 91458  
NGR: TL 37700 01292

Built in 1888-9, the Group G Incorporating Mills building has a T-shaped plan which comprises a central Engine House, with a Boiler House at its east end, and three-bay cross wings on its north and south sides, for six black-gunpowder incorporating mills. There was an open verandah along the west front. On the south side of the Boiler House was a coal yard containing a tall chimney.

The Engine House, Boiler House and partition walls separating the bays in the incorporating mills are constructed of yellow brick laid in English bond. The roofs and side walls of the cross wings were less substantial, being of wood and felt with a slight iron framework. The gearing for the machinery of the mills was in a chamber below the ground.

In 1898-9 the machinery of the gunpowder incorporating mills was dismantled and the whole group was converted to take cordite incorporating mills. The building was partially rebuilt after an explosion in one of its bays in December 1902.

-oo0oo-

The Group G Incorporating Mills building was constructed in 1888-9.<sup>18</sup> The latest of the group of incorporating mills on this part of the site, the building was an infill between Group D and Group F Incorporating Mills.

Its T-shaped plan comprises a central Engine House, with a Boiler House at its east end, and cross wings, each of three bays, for the incorporating mills on its north and south sides.<sup>19</sup> There was an open verandah along the west front. On the south side of the Boiler House was a coal yard containing a chimney at the centre of its west wall.

Both the Engine House and the Boiler House are constructed of yellow brick laid in English bond, with a chamfered brick plinth and brick dentil cornice. Each has a hipped roof which was originally covered with board and slate.

The Engine House has a rectangular plan of approximately 20'6" x 34'<sup>20</sup> (6.3 x 10.4 m) and rises to a height of approximately 30'8" (9.4 m).<sup>21</sup> It is entered through a doorway from the open verandah on the west side and through a doorway reached by stairs rising up from the Boiler House on the east side. On the upper part of the east and west elevations of the Engine House there are a pair of window with a semi-circular heads of rubbed red-brick. The north and south elevations had no fenestration originally. The Engine House carried a steam engine to drive the edge runners in the incorporating mills in the cross wings.

On the east side of the Engine House is the Boiler House which has a rectangular plan of 23' x 50' (7 x 15.24 m).<sup>22</sup> Brick pilasters separate the exterior elevations into four bays by one bay. The north bays each contained a window with a cambered head. There was a doorway in the east elevation bay which had a semi-circular head with a keystone. The Boiler House carried

---

A datestone below the windows the western side of the Engine House bears the inscription "Group G Mills 1888-9".

Although the building faces west-south-west and the cross wings are aligned north-north-west to south-south-east, for clarity in this report the building is described as if it faced west.

Drawing of "Waltham Abbey Incorporating Mills", dated ?July 1888, ?no cat. no (L148/X369) (MOD Central Disposals Unit, Chessington).

Ledger c1908, cat. WASC 1509 (PRO Hayes Repository).

Drawing of "Waltham Abbey Incorporating Mills", dated ?July 1888, ?no cat. no. (L148/X369) (MOD Central Disposals Unit, Chessington).

two Lancashire<sup>23</sup> boilers which were aligned east to west.<sup>24</sup> The roof contains trusses which have round wrought iron tension rods, king rods, and decorative cast iron compression members. The roof had cast iron ventilators, tongued boarding and zinc-galvanised metal coverings.

Serving the Boiler House, on its south side was the coal yard with a brick wall and an octagonal chimney which was 75'<sup>25</sup>(22.86 m) in height and constructed of brick.<sup>26</sup>

The cross wings, originally containing six black-gunpowder incorporating mills, are of three bays each and are single-storeyed and have a gabled roof.<sup>27</sup> The bays are separated by partition walls, aligned east to west, which are constructed of yellow brick, laid in English bond. The front and back walls were lightly framed, comprising wood and non-inflammable felt, with movable sashes glazed with 15 oz (425 g) sheet glass.<sup>28</sup> On the west wall frames, on the inner side of the verandah, were lampframes constructed of lead, copper and sheet glass. The bottom of the lampframes were to hold ½' (0.15 m) of water constantly, as a fire precaution. Cast iron columns on the outer west side of the verandah are slender (2½" or .635 m diameter) and, having foliate-type design capitals, are more elaborate than the capitals of the verandah columns in the other incorporating mills. The roof was of angle and tee iron framing, with board and lead coverings. Drenching apparatus, constructed of iron and copper, was position on the tie of the truss.<sup>29</sup> The relatively insubstantial fabric of the sides and roof of the cross wings could be easily replaced should an explosion occur.<sup>30</sup> In the event of an explosion, a wooden shutter would have been lifted automatically to release 40 gallons (182 l) of water from a cistern in the drenching apparatus of all the mills in the building.

The procedure for combining the ingredients of saltpetre, sulphur and charcoal to form gunpowder in each of the mills in the cross wing appears to have been essentially the same as it had been since 1857 when the first of the incorporating mills buildings (Group A; Building L169, now gone) was built.<sup>31</sup> The following is an extract from the Handbook of Gunpowder and Guncotton, 1888, which describes both the machinery and the process of Incorporating or Milling as carried out in this type of incorporating mill building at the Royal Gunpowder Factory at Waltham Abbey:

The incorporating mill consists of a circular iron or stone bed, about 7 feet in diameter (fixed very firmly in the floor of the building), whereon the iron or stone cylindrical edge runners revolve .... The runners have a common axle, resting in gun-metal bouches in a solid cross-head attached to a vertical shaft, which, passing through a bearing in the centre of the bed, is in gear with the machinery, which is ... beneath it in

---

"Proceedings of a Court of Enquiry and a Report ... on the Circumstances Attending an Explosion which occurred at the Royal Gunpowder Factory, Waltham Abbey, on the 15th December 1902", cat. WASC 353.

Drawing of "Waltham Abbey Incorporating Mills", signed J.W. Hale, 19/6/1888, (cat. no. ripped off, L148.B (MOD Central Disposals Unit, Chessington).

Drawing of plans and sections, "Waltham Abbey Incorporating Mills", signed J.W. Hale, 19/6/1888, (cat. no. ripped off), L148.B (MOD Central Disposals Unit, Chessington).

Ledger c1908, cat. WASC 1509 (PRO, Hayes Repository).

"Proceedings of a Court of Enquiry and a Report ... on the Circumstances Attending an Explosion which occurred at the Royal Gunpowder Factory, Waltham Abbey, on the 15th December 1092", cat. WASC 353.

Drawing of "Waltham Abbey Incorporating Mills", dated ?July 1888, ?no cat. no (L148/X369) (MOD Central Disposals Unit, Chessington).

Drawing showing enlarged cross section of "Waltham Abbey Incorporating Mills", dated 4/1888, cat. L148.B.20 (MOD Central Disposals Unit, Chessington).

"A Handbook of the Manufacture and Proof of Gunpowder, as carried on at the Royal Gunpowder Factory, Waltham Abbey," by the Captain F M Smith, Royal Artillery, Assistant Superintendent, 1870.

The same procedure is outlined in both "A Handbook of the Manufacture and Proof of Gunpowder, as carried on at the Royal Gunpowder Factory, Waltham Abbey," by Captain F.M. Smith, Royal Artillery, Assistant Superintendent, 1870 and "Handbook of Gunpowder and Guncotton," by W.H. Wardell, 1888.

cast iron tanks in the new steam mills. ...

The bed has a sloping rim on the outside, called the "curb," and on the inside, an edge formed by the "cheese," or bearing through which the vertical shaft passes. The runners are not equidistant from the centre of the shaft; one works the part of the charge nearest the centre of the bed, the other the outer part, but their paths overlap; two "ploughs" of wood, covered with leather, attached to the cross-head by arms or brackets (one working next the vertical shaft, the other to the rim), throw the composition under the runners, as it works away from them.

The green charge to brought in its bag, and put on the bed of the mill, being spread evenly by means of a wooden rake; it is then "liquored," or moistened with distilled water, and is worked for 4 hours under iron runners for R.F.G. powder, which time was formerly considered sufficient to render the incorporation complete in every respect; but R.F.G2 powder is incorporated about 8 hours under iron runners. MG1, for Nordenfelt guns, is kept 7 hours under iron runners. The granulated cannon powders now made (RLG2 and RLG4) are incorporated for 3 hours under iron runners, an additional hour being allowed if worked under stone runners. All "dust" and "re-work" charges are milled for 40 minutes.

... During the time of working the millman enters the mill occasionally, takes a wooden "shover," and pushes the outside of the charge into the middle of the path of the runners, so that every portion may be regularly incorporated.

... The action of the runners is a combination of rolling and twisting, and has, on a large scale, somewhat the effect of a pestle and mortar, crushing, rubbing, and mixing, thus giving the charge a most intimate union.

.. When the charge, which in this state is called "mill-cake," is ready to be taken off the bed, it should be uniform in appearance, not having any specks of either saltpetre or sulphur visible to the eye, and of a greyish or brownish colour, according to the charcoal used.

Finally the mill cake would have been taken from the incorporating mill to a detached expense magazine.<sup>32</sup> It would then have been taken in covered trucks to a "breaking down" house<sup>33</sup>.

Each mill contained in the bays had its own independent gearing in an underground chamber.<sup>34</sup> Unlike the barrel-vaulted chambers of the adjacent Group D and Group C Incorporating Mills, the chamber has a flat roof. It appears to have been approximately 3'6" wide and is positioned slightly off-centre to the east below the cross wing gable.<sup>35</sup>

In 1898-9 the gunpowder incorporating mills in the building were dismantled and new machinery was installed for cordite incorporating mills.<sup>36</sup> In effect, all the original machinery on the ground floor (circular bed, runners, etc) was removed and that in the chamber became redundant. A plan and sections of the building as it was used for the manufacture of cordite shows the Engine House with engine and hydraulic pumps, steam pipes, six sets of mills, and shaft alley.<sup>37</sup> The cross wing partition walls have "I" girders and blocked openings in the gables which are likely to belong to shafting for the cordite machinery. The

---

A drawing of "Waltham Abbey Incorporating Mills" dated 4/1888, shows plans and sections for a magazine to go with Group G Incorporating Mills: a single-storeyed building constructed of brick it had a rectangular plan of 10' x 16' internal dimensions and had a barrel-vaulted ceiling and a gable roof, cat. L148.B.20 (MOD Central Disposals Unit, Chessington).

"How Explosives are Made" by William G. Fitzgerald, The Strand Magazine, Vol IX Jan-June 1895.

The underground chamber was not investigated at the time of this survey in March 1993 owing to contamination in the building.

Drawing showing enlarged cross section of "Waltham Abbey Incorporating Mills", dated 4/1888, cat. L148.B.20 (MOD Central Disposals Unit, Chessington).

"Proceedings of a Court of Enquiry and a Report ... on the Circumstances Attending an Explosion which occurred at the Royal Gunpowder Factory, Waltham Abbey, on the 15th December 1902", cat. WASC 353.

"Proceedings of a Court of Enquiry and a Report ... on the Circumstances Attending an Explosion which occurred at the Royal Gunpowder Factory, Waltham Abbey, on the 15th December 1092", cat. WASC 353.

cordite incorporating mills were powered by an engine in the central Engine House, as the gunpowder incorporating mills had been powered, but the engine appears to be different in the two phases.<sup>38</sup>

Cordite incorporating involved the "incorporating," or the conversion of "paste," a mixture of guncotton and nitroglycerine, to which mineral jelly was added after half the incorporation was completed, into "incorporated material" by means of the solvent acetone.<sup>39</sup>

On 15 December 1902 there was an explosion in the bay immediately adjacent on the south side of the Engine House of this Group G Incorporating Mills building.<sup>40</sup> Three men were killed and the building was severely damaged. The building was then repaired shortly afterwards. Concrete and earth traverses, 12' (3.66 m) high, were built on the west and east sides of the cross wings in 1904-5.<sup>41</sup>

Some time after the explosion and before the chimney was demolished in c1908-9, the building ceased to be steam powered.<sup>42</sup>

In the mid twentieth century, after 1945, the building was converted into laboratories. Large windows were inserted on the north and south elevations of Boiler House, the doorway at its east end was blocked and replaced by narrower doorway, windows were added on the north and south elevations of the Engine House, and the sides of the verandah were enclosed. A low flat-roofed extension was added on the north side of the Boiler House and a flat-roofed brick addition was built to link this building with buildings L153 and L145 on the south and north sides.

The laboratories were finally closed around 1991 and stripping out began in early 1993.

Surveyed March 1993  
Report by R L Burgess

---

Cf the Engine House in plans and sections, "Waltham Abbey Incorporating Mills", signed J.W. Hale, 19/6/1888, (cat. no. ripped off), L148.B (MOD Central Disposals Unit, Chessington) with plan of "Group G Mills for Manufacture of Cordite, RGPF" in "Proceedings of a Court of Enquiry and a Report ... on the Circumstances Attending an Explosion which occurred at the Royal Gunpowder Factory, Waltham Abbey, on the 15th December 1902", cat. WASC 353.

"Proceedings of a Court of Enquiry and a Report ... on the Circumstances Attending an Explosion which occurred at the Royal Gunpowder Factory, Waltham Abbey, on the 15th December 1902", cat. WASC 353.

"Proceedings of a Court of Enquiry and a Report ... on the Circumstances Attending an Explosion which occurred at the Royal Gunpowder Factory, Waltham Abbey, on the 15th December 1902", cat. WASC 353.

Ledger c1908, cat. WASC 1509, and undated drawing RGPF Waltham Abbey showing traverses to Group "G", section of concrete traverse, 156/C261, (PRO, Hayes Repository)

Ledger c1908, cat. WASC 1509 (PRO, Hayes Repository). The replacement power may have come from a central hydraulic system at the Accumulator building A214 over 250 metres to the south-east of the building.

## THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L145                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | OLD SERIES | RCHME NUMBER<br>152                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | N.G.R.<br>TL 37674 01340 |
| NAME/FUNCTION<br>Gunpowder Incorporating Mills Group F<br>Cordite Incorporating House 6 Group F/Spare<br>Gear Room No1<br>Laboratory                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            | START DATE<br>1879<br>1898<br>1946                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | END DATE<br>1898<br>1945 |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                          |
| <b>CARTOGRAPHIC DEPICTION</b><br><br>1865 WASC 900/38 + SUPP5 975 ; Group F Incorp. Mills , Engine House , Boiler House/Coal Yard<br>1865 WASC 900/41A ; Group F Incorp. Mills , Engine House , Boiler House/Coal Yard<br>1865 WASC 900/42 ; Group F Incorp. Mills , Engine House , Boiler House/Coal Yard<br>1897 WASC 900/53C<br>c1910 WASC 900/65 ; Incorp House Group F<br>c1910 WASC 900/79 ; Incorp House Group F<br>1917 WASC 900/70 ; Incorp. House No. 6/ Spare Gear Room No. 1<br>1917 WASC 900/72 ; 152<br>1919 WASC 900/74 ; 152<br>c1920 WASC 900/80 ; 152<br>1923 WASC 900/84 ; 152<br>> 1940 WASC 900/91A ; L145<br>1954 A - B.34 ; L145<br>c1960 WASC 900/94 ; L145<br>c1963 WASC 900/97 ; L145<br>1972 WASC 900/102 ; L145<br>1972 WASC 900/104 ; L145<br>1976 WASC 900/113 ; L145 |            | <b>DOCUMENTARY REFERENCES</b><br><br>Plans;<br>L145 B01 - B95 ; Plans and Elevations 1946 to 1963<br><br>1908 RGPF Ledger WASC 1509 + WASC 1764 ; Incorp House Group F built 1879 p17<br>c1925 RGPF Ledger WASC 1680 ; Incorp House Group F<br>c1945 RGPF Ledger WASC 1508 ; Incorp House Group F<br>Not Dated WASC 901/137 Group F Mills Alterations at porch to magazine & additions to platform<br><br>1972 ERDE List ; Analytical House<br>1991 Mott McDonald survey<br>1992 RARDE List ; Lab/Incorp House No.6<br><br>1993 RCHME NBR No. 91459 |                          |
| <b>PHOTOGRAPHY HISTORIC</b><br><br>WASC 1524/22-25 Production of Ethyl cellulose tube for Giant Viper                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            | <b>PHOTOGRAPHY RCHME</b><br><br>1) 206/P/2 From South West<br>206/P/3 Group F mills 1878<br><br>2) BB92/26100 View from North West<br>BB92/26177 View from North West (Colour)<br><br>3) 225/A/12-14 Underground piping<br><br>4) 4788/7 06.05.1993<br>4788/8 06.05.1993                                                                                                                                                                                                                                                                            |                          |



RELATIONSHIPS WITH OTHER MONUMENTS

ASSOCIATED WITH: L140, L141, L148, L149, L153, L157

CONDITION      Good

DESCRIPTION

- 1)      CONSTRUCTIONAL MATERIAL  
        Brick
  
  - 2)      ROOF MATERIALS AND STRUCTURE  
        Felt on timber boards over iron tension rod trusses
  
  - 3)      POWER SOURCE  
        Formerly steam latterly steam heating and electric lighting
  
  - 4)      DIMENSIONS i) L 50.6m ii) W 9.6m iii) HT gable estimate 5.7m
  
  - 5)      Plaque on front of engine house tower reads 'Group F Mills 1878'.
- See attached RCHME Threatened Buildings Section Report.



ROYAL COMMISSION ON THE HISTORICAL MONUMENTS OF ENGLAND

MOD Building No. L145  
Group F Incorporating Mills  
The Royal Gunpowder Factory  
Waltham Abbey  
Essex

NBR No: 91459  
NGR: TL 37674 01340

Built in 1878, the Group F Incorporating Mills building has a T-shaped plan which comprises a central Engine House, with a Boiler House at its east end, and three-bay cross wings on its north and south sides for six gunpowder incorporating mills. There was an open verandah along the west front. On the south side of the Boiler House was a coal yard containing a tall chimney.

The Engine House, Boiler House and partition walls separating the bays in the incorporating mills are constructed of yellow brick laid in English bond. The roofs and side walls were less substantial, being of wood and canvas or felt, with a slight iron framework.

The original gearing for the machinery of the mills was in a chamber below the ground.

-oo0oo-

The Group F Incorporating Mills building was constructed in 1878.<sup>1</sup> Its design is similar to the other incorporating mills in this area of the site and was almost identical to the adjacent Group G Incorporating Mills building of 1888-9, for which it was a model.

Its T-shaped plan comprises a central Engine House, with a Boiler House at its east end, and cross wings on its north and south sides which are each of three bays and contained a total of six gunpowder incorporating mills.<sup>2</sup> There was an open verandah along the west front. On the south side of the Boiler House was a coal yard containing a chimney at the centre of its west wall.

Both the Engine House and the Boiler House are constructed of yellow brick laid in English bond, with a chamfered brick plinth and brick dentil cornice. Each had a hipped roof with a board and lead covering.

The Engine House has a rectangular plan, with internal dimensions of approximately 30' by 13'6" (9.15 x 4.1 m).<sup>3</sup> It is entered through a doorway from the open verandah on the west side and through a doorway reached by stairs rising up from the Boiler House on the east side. On the upper part of the east and west elevations of the Engine House there are a pair of window with a semi-circular heads of rubbed red brick. The north and south elevations had no fenestration originally. The Engine House carried a steam engine to drive the edge runners of the incorporating mills in the cross wings.

On the east side of the Engine House is the Boiler House which has a rectangular plan of approximately 21'2" by 53'4 1/4" (6.45 x 16.3 m).<sup>4</sup> Brick pilasters separate the exterior elevations into four bays by one bay. The north bays each contained a window with a cambered head. There was a doorway in the east elevation bay which had a semi-circular head with a keystone. The Boiler House carried two boilers which were aligned east to west.<sup>5</sup> The roof contained nine trusses which had round wrought

---

A datestone below the two windows on the western side of the Engine House bears the inscription "Group F Mills 1878".

Although the building faces west-south-west and the cross wings are aligned north-north-west to south-south-east, for clarity in this report the building is described as if it faced west.

Drawing of plan and sections of "Waltham Abbey, Extension of Factory, New Incorporating Mills - Group F", dated 12/1877, ?no cat. no. (L145/2), (MOD Central Disposals Unit, Chessington).

Drawing of plan and sections of "Waltham Abbey, Extension of Factory, New Incorporating Mills - Group F", dated 12/1877, ?no cat. no. (L145/2), (MOD Central Disposals Unit, Chessington).

Drawing of "Waltham Abbey, Extension of Factory, New Incorporating Mills Group F", dated 12/1877, ?no cat. no. (L145/2) (MOD Central Disposals Unit, Chessington).

iron tension rods, king rods, decorative cast iron compression members and cast iron ventilators. The roof had tongued boarding and lead coverings.

Serving the Boiler House, on its south side was the coal yard with a brick wall and an octagonal chimney which was 75' (22.86 m) in height and constructed of brick.<sup>6</sup>

The cross wings, originally containing the gunpowder incorporating mills, are of three bays each. They are single-storeyed and had a gabled roof which rose to just below the eaves of the Engine House. The bays are separated by partition walls, aligned east to west, which are constructed of brick laid in English bond. The front and back walls would have been of wood and canvas or felt, with shutters in an iron framing. The outer side of the verandah on the west side of the cross wings and Engine House originally had slender columns of cast iron. There were timber cabins at the north and south ends. The roof was of iron framing with a board and lead covering.<sup>7</sup> The relatively insubstantial fabric for the sides and roof of the cross wings could be easily replaced in the event of an explosion.<sup>8</sup> Drenching apparatus would have been erected over each pair of runners. In the event of an explosion, a wooden shutter would have been lifted automatically to release 40 gallons (182 l) of water from a cistern in the drenching apparatus of all of the mills in the building.<sup>9</sup>

The procedure for combining the ingredients of saltpetre, sulphur and charcoal to form gunpowder in each of the mills in the cross wing appears to have been essentially the same as it had been since 1857 when the first of the incorporating mills buildings (Group A; Building L169, now gone) was built.<sup>10</sup> The following is an extract from the Handbook of Gunpowder and Guncotton, 1888, which describes both the machinery and the process of Incorporating or Milling as carried out in this type of incorporating mill building at the Royal Gunpowder Factory at Waltham Abbey:

The incorporating mill consists of a circular iron or stone bed, about 7 feet in diameter (fixed very firmly in the floor of the building), whereon the iron or stone cylindrical edge runners revolve .... The runners have a common axle, resting in gun-metal bouches in a solid cross-head attached to a vertical shaft, which, passing through a bearing in the centre of the bed, is in gear with the machinery, which is ... beneath it in cast iron tanks in the new steam mills. ...

The bed has a sloping rim on the outside, called the "curb," and on the inside, an edge formed by the "cheese," or bearing through which the vertical shaft passes. The runners are not equidistant from the centre of the shaft; one works the part of the charge nearest the centre of the bed, the other the outer part, but their paths overlap; two "ploughs" of wood, covered with leather, attached to the cross-head by arms or brackets (one working next the vertical shaft, the other to the rim), throw the composition under the runners, as it works away from them.

The green charge is brought in its bag, and put on the bed of the mill, being spread evenly by means of a wooden rake; it is then "liquored," or moistened with distilled water, and is worked for 4 hours under iron runners for R.F.G. powder, which time was formerly considered sufficient to render the incorporation complete in every respect; but R.F.G2 powder is incorporated about 8 hours under iron runners. MG1, for Nordenfolt guns, is kept 7 hours under iron runners. The granulated cannon powders now made (RLG2 and RLG4) are incorporated for 3 hours under iron runners, an additional hour being allowed if worked under stone runners. All "dust" and "re-work" charges are milled for 40 minutes.

---

Ledger c1908, cat. WASC 1509 (MOD Central Disposals Unit, Chessington).

Drawing of "Waltham Abbey, Extension of Incorporating Mills Group F", dated 12/1877, ?no cat. no., L145/2 (MOD Central Disposals Unit, Chessington).

"A Handbook of the Manufacture and Proof of Gunpowder, as carried on at the Royal Gunpowder Factory, Waltham Abbey," by Captain F M Smith, Royal Artillery, Assistant Superintendent. London, 1870, p43.

"A Handbook of the Manufacture and Proof of Gunpowder, as carried on at the Royal Gunpowder Factory, Waltham Abbey," by Captain F M Smith, Royal Artillery, Assistant Superintendent, 1870. Printed by Order of the Secretary of State for War, London.

The same procedure is outlined in both "A Handbook of the Manufacture and Proof of Gunpowder, as carried on at the Royal Gunpowder Factory, Waltham Abbey," by Captain F.M. Smith, Royal Artillery, Assistant Superintendent, 1870 and "Handbook of Gunpowder and Guncotton," by W.H. Wardell, 1888.

... During the time of working the millman enters the mill occasionally, takes a wooden "shover," and pushes the outside of the charge into the middle of the path of the runners, so that every portion may be regularly incorporated.

... The action of the runners is a combination of rolling and twisting, and has, on a large scale, somewhat the effect of a pestle and mortar, crushing, rubbing, and mixing, thus giving the charge a most intimate union.

.. When the charge, which in this state is called "mill-cake," is ready to be taken off the bed, it should be uniform in appearance, not having any specks of either saltpetre or sulphur visible to the eye, and of a greyish or brownish colour, according to the charcoal used.

Finally the mill cake would have been taken from the incorporating mill to a detached expense magazine. It would then have been taken in covered trucks to a "breaking down" house<sup>11</sup>.

The underground chamber, which contained the independent gearing for each of the six mills, appears to have been flat-roofed, like that in the chamber of the adjacent Group G Incorporating Mills.<sup>12</sup> Almost all of the machinery of the gunpowder incorporating mills has been removed. The intermediate pinion wheel beams survive in the chamber.

Like most of the other gunpowder incorporating mills buildings on the site, this building was probably converted to take cordite incorporating mills in the late nineteenth century or early twentieth century.<sup>13</sup> It would have been then that the gunpowder incorporating mills were removed from the building. The cross wing partition walls have "I" girders and blocked openings in the gables which are likely to belong to shafting for machinery associated with cordite manufacture.

The timber cabins at the north and south ends of the cross wings were demolished in December of 1905.<sup>14</sup> The chimney was demolished in c1908-9.<sup>15</sup>

The building was extensively altered in the mid twentieth century for use as laboratories. In c1955 the gable roofs and partition walls of the cross wings were lowered, and probably at this time the Boiler House roof was replaced by a flat roof.<sup>16</sup> A drawing of 1956 shows that by this date the Boiler House was used as a propellant laboratory, with a balance room and solvent laboratory at its west end, the Engine House had a floor inserted to create an optical laboratory on the ground floor and an office above, and the bays, from north to south, were: initiator's laboratory, HE and compatibility laboratory, micro-analysis laboratory, oven room and H&S laboratory, store and physical laboratory, and preparation room.<sup>17</sup> It was probably with this conversion that new windows were inserted in the bays on the north and south sides of the Boiler House and on the south elevation of the Engine House, and possibly then that the cast iron columns of the verandah were removed. A link block, of

---

"How Explosives are Made" by William G. Fitzgerald, The Strand Magazine, Vol IX Jan-June 1895.

Drawing of "Waltham Abbey, Extension of Factory, New Incorporating Mills Group F", dated 12/1877, ?no cat. no, L145/2 (MOD Central Disposals Unit, Chessington).

The building is labelled as Incorporating Houses Group F in the OS County Series 1:2500 maps, 2nd ed. 1897 (surveyed 1865-9, revised 1895), sheet refs XLIX.14, XLI.8.12, XLII.5.9.

Another building, Group G Incorporating Mills, were converted from black gunpowder incorporating mills to cordite incorporating mills in 1898-9 and it is probable that most of the gunpowder incorporating mills were dismantled and converted in this way at around the same time.

Ledger c1908, cat. WASC 1509 (PRO, Hayes Repository).

Ledger c1908, cat. WASC 1509 (PRO, Hayes Repository).

Drawing showing specifications for conversion of building L145 to analytical laboratories, dated 9/1955, cat. L145.B.15 (MOD Central Disposals Unit, Chessington).

Drawing of "LPHW Heating and Layout of Plant Room", dated 10/7/1956, cat. L145.B.68 (MOD Central Disposals Unit, Chessington).

brick with a flat roof, joining the south cross wing with the north cross wing of the adjacent building no. L148 is also likely to be of this date.

The building was last used as laboratories in 1991. Stripping out began in early 1993.

Surveyed March 1993

Report R L Burgess

## THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |            |                                                                                                                                                                                                                                                           |                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L140                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | OLD SERIES | RCHME NUMBER                                                                                                                                                                                                                                              | N.G.R.<br>TL 37672 01365 |
| NAME/FUNCTION<br>Locker Magazine                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |            | START DATE<br>1955?                                                                                                                                                                                                                                       | END DATE                 |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |                                                                                                                                                                                                                                                           |                          |
| <b>CARTOGRAPHIC DEPICTION</b><br><br>c1960    WASC 900/94 ; L140<br>c1963    WASC 900/97 ; L140<br>1972    WASC 900/102 ; L140<br>1972    WASC 900/104 ; L140<br>1976    WASC 900/113 ; L140                                                                                                                                                                                                                                                                                                         |            | <b>DOCUMENTARY REFERENCES</b><br><br>Plan;<br>L140    B01 - 10/4/1961 ; Extention to Magazine<br><br>1972    ERDE List ; Locker Magazine<br>1991    Mott McDonald survey<br>1992    RARDE List ; Locker Magazine<br><br>1992    FBRC ; Class 1 Explosives |                          |
| <b>PHOTOGRAPHY<br/>HISTORIC</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |            | <b>PHOTOGRAPHY<br/>RCHME</b><br>1) 206/C/13 From South West                                                                                                                                                                                               |                          |
| <b>RELATIONSHIPS WITH OTHER MONUMENTS</b><br><br>ASSOCIATED WITH: L145                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                                                                                                                                                                                                                                                           |                          |
| <b>CONDITION</b> Good                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |                                                                                                                                                                                                                                                           |                          |
| <b>DESCRIPTION</b><br>1) <b>CONSTRUCTIONAL MATERIAL</b><br>Brick in English bond<br><br>2) <b>ROOF MATERIALS AND STRUCTURE</b><br>Corrugated asbestos<br><br>3) <b>POWER SOURCE</b><br>Electricity<br><br>4) <b>DIMENSIONS</b> i) L 5.5m ii) W 2.6m    ii) HT gable 2.6m<br><br>5)    The magazine is a single storey building, it has a rectangular plan and is laid in English bond. roof. The building is protected by a copper strip lightning conductor. Internally are metal locker magazines. |            |                                                                                                                                                                                                                                                           |                          |

## THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |                                                                                                                                                                                                                     |                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L126                                                                                                                                                                                                                                                                                                                                                                                                                                               | OLD SERIES | RCHME NUMBER                                                                                                                                                                                                        | N.G.R.<br>TL 37634 01378 |
| NAME/FUNCTION<br>Sewer pump house                                                                                                                                                                                                                                                                                                                                                                                                                            |            | START DATE<br>1951-2                                                                                                                                                                                                | END DATE                 |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |                                                                                                                                                                                                                     |                          |
| <b>CARTOGRAPHIC DEPICTION</b><br><br>c1960    WASC 900/94 ; L126<br>c1963    WASC 900/97 ; L126<br>1972     WASC 900/102 ; L126<br>1972     WASC 900/104 ; L126<br>1976     WASC 900/113 ; L126                                                                                                                                                                                                                                                              |            | <b>DOCUMENTARY REFERENCES</b><br><br>Plans;<br>L126    B01-B04 ; Plans and ELevaltions 1951-52<br><br>1972    ERDE List ; Sewer Pump House<br>1991    Mott McDonald survey<br>1992    RARDE List ; Sewer Pump House |                          |
| <b>PHOTOGRAPHY<br/>HISTORIC</b>                                                                                                                                                                                                                                                                                                                                                                                                                              |            | <b>PHOTOGRAPHY<br/>RCHME</b><br>1) 206/F/32 Pump House from South East                                                                                                                                              |                          |
| <b>RELATIONSHIPS WITH OTHER MONUMENTS</b><br>ASSOCIATED WITH: L170, H17, H31                                                                                                                                                                                                                                                                                                                                                                                 |            |                                                                                                                                                                                                                     |                          |
| CONDITION    Good                                                                                                                                                                                                                                                                                                                                                                                                                                            |            |                                                                                                                                                                                                                     |                          |
| <b>DESCRIPTION</b><br>1)    CONSTRUCTIONAL MATERIAL<br>Brick<br><br>2)    ROOF MATERIALS AND STRUCTURE<br>Flat concrete slab<br><br>3)    POWER SOURCE<br>Electricity<br><br>4)    DIMENSIONS i) L 4.3m ii) W 3.37m iii) HT 2.8m<br><br>5)    The pump house is a single storey brick building, it has a rectangular plan. It is entered through a single door on the west side and is lit by a window on the north wall. Internally are two electric pumps. |            |                                                                                                                                                                                                                     |                          |

## THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                 |                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L141                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | OLD SERIES<br>143 | RCHME NUMBER                                                                                                                                                                                                                                                                                                                                                                                                                    | N.G.R.<br>TL 37652 01376 |
| NAME/FUNCTION<br>Expense Magazine<br>Sorting house no. 1<br>Sorting house no. 2<br>Solvent extraction room                                                                                                                                                                                                                                                                                                                                                                                                                           |                   | START DATE<br>1899<br><br>?1959                                                                                                                                                                                                                                                                                                                                                                                                 | END DATE<br><br>1959?    |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                 |                          |
| <p><b>CARTOGRAPHIC DEPICTION</b></p> <p>1897 WASC 900/53C<br/> c1910 WASC 900/65 ; Sorting House No.1<br/> c1910 WASC 900/79 ; Sorting House No.1<br/> 1917 WASC 900/70 ; Sorting House No.1<br/> 1917 WASC 900/72 ; 143<br/> 1919 WASC 900/74 ; 143<br/> c1920 WASC 900/80 ; 143<br/> 1923 WASC 900/84 ; 143<br/> &gt; 1940 WASC 900/91A ; L141<br/> 1954 A - B.34 ; L141<br/> c1960 WASC 900/94 ; L141<br/> c1963 WASC 900/97 ; L141<br/> 1972 WASC 900/102 ; L141<br/> 1972 WASC 900/104 ; L141<br/> 1976 WASC 900/113 ; L141</p> |                   | <p><b>DOCUMENTARY REFERENCES</b></p> <p>Plans;<br/> L141 B01,B02 ; Plans and Elevations 1958,1982<br/> <br/> 1908 RGPF Ledger WASC 1509 + WASC 1764 ;<br/> Sorting House built 1889 p15<br/> c1925 RGPF Ledger WASC 1680 ; Sorting House<br/> c1945 RGPF Ledger WASC 1508 ; Sorting House<br/> <br/> 1972 ERDE List ; Solvent Extraction Room<br/> 1991 Mott McDonald survey<br/> 1992 RARDE List ; Solvent Extraction Room</p> |                          |
| <p><b>PHOTOGRAPHY HISTORIC</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   | <p><b>PHOTOGRAPHY RCHME</b></p> <p>1) 206/F/33 From South West<br/> 2) BB92/26094 From North West</p>                                                                                                                                                                                                                                                                                                                           |                          |
| <p><b>RELATIONSHIPS WITH OTHER MONUMENTS</b></p> <p>ASSOCIATED WITH: L145</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                 |                          |
| <p><b>CONDITION</b>      Good</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                 |                          |

DESCRIPTION

- 1) CONSTRUCTIONAL MATERIAL  
Brick in English bond
- 2) ROOF MATERIALS AND STRUCTURE  
Slate with tile ridges over brick vault
- 3) POWER SOURCE  
Electricity and steam heating
- 4) DIMENSIONS i) L 5.8m ii) W 4m iii) HT gable 5.2m
- 5) The expense magazine is a single storey building, rectangular in plan with gabled ends. It is constructed of buff bricks laid in English bond, with red brick details. The magazine is roofed in slate with ridge tiles over a brick vault. It is lit by a small windows on the north and south walls. A leanto was formerly attached the eastern elevation. The magazine was entered through a raised door on the western side. This was formerly served by a narrow guage railway on trestles. The following is painted on the side of the building '143 3-34'.



## THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L130                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | OLD SERIES<br>123 | RCHME NUMBER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | N.G.R.<br>TL 37700 01476 |
| NAME/FUNCTION<br>Moulding House No2<br>Cordite Hydraulic Press House<br>Magazine                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                   | START DATE<br>186??<br>1898                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | END DATE<br>1898?        |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                          |
| <p><b>CARTOGRAPHIC DEPICTION</b></p> <p>1865 WASC 900/38 + SUPP5 975 ; Moulding House No.2</p> <p>1865 WASC 900/41A ; Moulding House No.2</p> <p>1865 WASC 900/42</p> <p>1897 WASC 900/53C</p> <p>c1910? WASC 900/65 ; Moulding House No.2</p> <p>c1910? WASC 900/79 ; Moulding House No.2</p> <p>1917 WASC 900/72 ; 123</p> <p>1919 WASC 900/74 ; 123</p> <p>c1920 WASC 900/80 ; 123</p> <p>&gt; 1940 WASC 900/91A ; L130</p> <p>1954 A - B.34 ; L130</p> <p>c1960 WASC 900/94 ; L130</p> <p>c1963 WASC 900/97 ; L130</p> <p>1972 WASC 900/102 ; L130</p> <p>1972 WASC 900/104 ; L130</p> <p>1976 WASC 900/113 ; L130</p> |                   | <p><b>DOCUMENTARY REFERENCES</b></p> <p>Plans;</p> <p>L130 B01,B02 ; Plans and Elevations 1892-94</p> <p>1888 Maj.Gen W.H.Wardell <u>Handbook of Gunpowder &amp; Guncotton</u> 1888 Chp V111 p.61-9 Plate X111 p.80</p> <p>1908 RGPF Ledger WASC 1509 + WASC 1764 ; Press House built 1882 p13</p> <p>c1925 RGPF Ledger WASC 1680 ; Press House</p> <p>c1945 RGPF Ledger WASC 1508 ; Press House</p> <p>1972 ERDE List ; Pyrotechnics Store and Workroom</p> <p>1991 Mott McDonald survey</p> <p>1992 RARDE List ; Ruin</p> |                          |
| <p><b>PHOTOGRAPHY HISTORIC</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   | <p><b>PHOTOGRAPHY RCHME</b></p> <p>1)206/D/33 View from East</p> <p>206/D/34 View from South East</p> <p>206/D/35 View from West</p>                                                                                                                                                                                                                                                                                                                                                                                        |                          |
| <p><b>RELATIONSHIPS WITH OTHER MONUMENTS</b></p> <p>ASSOCIATED WITH: L110, L136?</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                          |
| <p><b>CONDITION</b> Fair</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                          |

DESCRIPTION

1) CONSTRUCTIONAL MATERIAL  
Brick and earthwork

2) ROOF MATERIALS AND STRUCTURE  
-

3) POWER SOURCE  
Hydraulic? Electricity

4) DIMENSIONS i) L 17.5m ii) W 15.5m iii) HT 5.5m

5) The moulding house sat at the centre of an L shaped traverse the inner face revetted in brick. At the northern edge of the traverse is the remains of a small room two narrow slots in the wall may have formerly housed connections to the machinery within the traverse. The moulding house has been demolished. A concrete floor slab 8.65m x 7.4m covered by asphalt remains this may represent the floor of the later magazine. This magazine was served by the canal to the north, a rotten landing stage remains.

A broken pottery insulator dated 1897 found lying within the traverse may indicate the introduction of electric lighting around this date when the structure was converted into a magazine.

A small store L110 has been cut into the southern side of the traverse.

## THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY

|                |                    |              |                          |
|----------------|--------------------|--------------|--------------------------|
| NUMBER<br>L132 | OLD SERIES<br>128A | RCHME NUMBER | N.G.R.<br>TL 37666 01452 |
|----------------|--------------------|--------------|--------------------------|

|                                                                              |                                  |                  |
|------------------------------------------------------------------------------|----------------------------------|------------------|
| NAME/FUNCTION<br>Pump House<br>Physical Test House/Climatic Control Building | START DATE<br>1914?<br>Post 1945 | END DATE<br>1945 |
|------------------------------------------------------------------------------|----------------------------------|------------------|

NO PHOTOGRAPHY  
AVAILABLE

### CARTOGRAPHIC DEPICTION

|        |                               |
|--------|-------------------------------|
| 1917   | WASC 900/70 ; Pump House      |
| 1917   | WASC 900/72 ; 128a            |
| 1919   | WASC 900/74 ; 128a            |
| c1920  | WASC 900/80 ; 128a            |
| 1923   | WASC 900/84 ; 128a Pump House |
| > 1940 | WASC 900/91A ; L132           |
| 1954   | A - B.34 ; L132               |
| c1960  | WASC 900/94 ; L132            |
| c1963  | WASC 900/97 ; L132            |
| 1972   | WASC 900/102 ; L132           |
| 1972   | WASC 900/104 ; L132           |
| 1976   | WASC 900/113 ; L132           |

### DOCUMENTARY REFERENCES

|        |                                                            |
|--------|------------------------------------------------------------|
| Plans; |                                                            |
| L132   | B01,B02 ; Plans and Elevations 1914 to 1958                |
| c1925  | RGPF Ledger WASC 1680 ; Pump House                         |
| c1945  | RGPF Ledger WASC 1508 ; Pump House                         |
| 1972   | ERDE List ; Physical Test House                            |
| 1991   | Mott McDonald survey                                       |
| 1992   | RARDE List ; Physical Test House/ Climate Control Building |

PHOTOGRAPHY  
HISTORIC  
WASC 1543/14 Gen View

PHOTOGRAPHY  
RCHME  
1)206/B/3 View from top floor of L136 ie from West  
206/C/15 From South West  
2) BB92/26162 Detail of roof structure from West

### RELATIONSHIPS WITH OTHER MONUMENTS

ASSOCIATED WITH: L134

CONDITION      Good

### DESCRIPTION

- 1)      CONSTRUCTIONAL MATERIAL  
Brick in Flemish Bond
- 2)      ROOF MATERIALS AND STRUCTURE  
Felt over timber boards in a hipped pyramid form
- 3)      POWER SOURCE  
Steam Electricity
- 4)      DIMENSIONS i) L 5.83 ii) W 5.39 iii) HT Eave 4.3
- 5)      The building is a single storey with an almost square plan, it has pyramidal shaped roof. The building is entered through modern double doors on the western side. On the eastern elevation is an original window with astone sill a metal window has been inserted into the north wall. Across the top of the interior are two RSJs with wheeled runners, the interior has latterly been partitioned.

## THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L134                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | OLD SERIES<br>129A | RCHME NUMBER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | N.G.R.<br>TL 37682 01430 |
| NAME/FUNCTION<br>Press House No. 2<br>Laboratories                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                    | START DATE<br>1914-1917?<br>1951                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | END DATE<br>1945         |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                          |
| <p><b>CARTOGRAPHIC DEPICTION</b></p> <p>1917 WASC 900/70 ; Press House No.2<br/>         1917 WASC 900/72 ; 129a<br/>         1919 WASC 900/74 ; 129a<br/>         c1920 WASC 900/80 ; 129a<br/>         1923 WASC 900/84 ; 129a<br/>         &gt; 1940 WASC 900/91A ; L134<br/>         1954 A - B.34 ; L134<br/>         c1960 WASC 900/94 ; L134<br/>         c1963 WASC 900/97 ; L134<br/>         1972 WASC 900/102 ; L134<br/>         1972 WASC 900/104 ; L134<br/>         1976 WASC 900/113 ; L134</p> |                    | <p><b>DOCUMENTARY REFERENCES</b></p> <p>Plans;<br/>         L134 B01 - B36 ; Plans and Elevations 1952 to 1986</p> <p>c1925 RGPF Ledger WASC 1680 ; Press House No.2<br/>         1938 Text Book of Explosives 1938 Chp XV<br/>         p99-111 Figs 15.2-9<br/>         c1945 RGPF Ledger WASC 1508 ; Press House No.2<br/>         Not Dated WASC 901/101 Materials Research<br/>         Laboratories "Preliminary"</p> <p>1972 ERDE List ; Laboratories<br/>         1991 Mott McDonald survey<br/>         1992 RARDE List ; Laboratories</p> <p>1992 FBRC Workshops, Mess, Rm3 Flammable</p> |                          |
| <p><b>PHOTOGRAPHY HISTORIC</b></p> <p>PRO Supply 5/860 79 1893 Hydraulic Press<br/>         PRO Supply 5/860 81 1893 Large vertical Press. In raised<br/>         letters on the side RGP W ^ D<br/>         PRO Supply 5/861 309-10 Ignition in bay 3 5-aug-1916</p>                                                                                                                                                                                                                                           |                    | <p><b>PHOTOGRAPHY RCHME</b></p> <p>1) 206/U/18 From south<br/>         206/U/19 From south east<br/>         206/U/20 From west<br/>         2)BB92/26367 Documents of Gunpowder Works<br/>         Elevations &amp; Plans</p>                                                                                                                                                                                                                                                                                                                                                                     |                          |
| <p><b>RELATIONSHIPS WITH OTHER MONUMENTS</b></p> <p>ASSOCIATED WITH: L143, L146, L151, L155, L159, L187</p>                                                                                                                                                                                                                                                                                                                                                                                                     |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                          |
| CONDITION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                    | Fair                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                          |

DESCRIPTION

1) CONSTRUCTIONAL MATERIAL  
Brick in English Bond

2) ROOF MATERIALS AND STRUCTURE  
Felt with vents, roof lights to the East

3) POWER SOURCE  
Hydraulic?, Steam, Electricity

4) DIMENSIONS i) L 65.95 ii) W 10.36 iii) HT Eave 3.55

5) The building is single storeyed with a rectangular plan the original walls are laid in English bond. The original structure consists of the west wall and the internal brick partition walls creating eight bays. An additional room has been added to the north and south ends and a timber leanto corridor along the eastern side. 10 bays formed by partitions. At the centre of each bay is a metal roof truss. All the interior partition walls are plastered thereby masking any evidence for the transmission of power within the building.

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

|                |            |                     |                          |
|----------------|------------|---------------------|--------------------------|
| NUMBER<br>L135 | OLD SERIES | RCHME NUMBER<br>129 | N.G.R.<br>TL 37666 01440 |
|----------------|------------|---------------------|--------------------------|

|                                            |                            |                  |
|--------------------------------------------|----------------------------|------------------|
| NAME/FUNCTION<br>Tray Magazine<br>Workshop | START DATE<br>1882<br>195? | END DATE<br>195? |
|--------------------------------------------|----------------------------|------------------|

NO PHOTOGRAPHY  
AVAILABLE

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>CARTOGRAPHIC DEPICTION</b></p> <p>1865 WASC 900/38 + SUPP5 975<br/>         1865 WASC 900/41A<br/>         1865 WASC 900/42<br/>         1897 WASC 900/53C<br/>         c1910 WASC 900/65 ; Tray Magazine<br/>         c1910 WASC 900/79 ; Tray Magazine<br/>         1917 WASC 900/70 ; Tray Magazine<br/>         1917 WASC 900/72 ; 129<br/>         1919 WASC 900/74 ; 129<br/>         c1920 WASC 900/80 ; 129<br/>         1923 WASC 900/84 ; 129<br/>         &gt; 1940 WASC 900/91A ; L135<br/>         1954 A - B.34 ; L135<br/>         c1960 WASC 900/94 ; L135<br/>         c1963 WASC 900/97 ; L135<br/>         1972 WASC 900/102 ; L135<br/>         1972 WASC 900/104 ; L135<br/>         1976 WASC 900/113 ; L135</p> | <p><b>DOCUMENTARY REFERENCES</b></p> <p>Plan;<br/>L135 B02 - 1894 ; Plan,Section and Elevation</p> <p>1908 RGPF Ledger WASC 1509 + WASC 1764 1 ;<br/>Tray Magazine built 1882 p14<br/>         c1925 RGPF Ledger WASC 1680 ; Tray Magazine<br/>         c1945 RGPF Ledger WASC 1508 ; Tray Magazine</p> <p>1972 ERDE List ; Workshop<br/>         1991 Mott McDonald survey<br/>         1992 RARDE List ; Workshop</p> <p>1992 FBRC ; Stores</p> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                                   |                                                                                                                                                                                               |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>PHOTOGRAPHY</b><br/> <b>HISTORIC</b><br/>         WASC 1543/14 Gen View</p> | <p><b>PHOTOGRAPHY</b><br/> <b>RCHME</b><br/>         1) 206/B/2 View from top of L136 from West<br/>         206/C/14 From South West<br/>         2) BB92/26266 From South West (Colour)</p> |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**RELATIONSHIPS WITH OTHER MONUMENTS**

ASSOCIATED WITH: L107,L135,L137,L138

**CONDITION**      Good



DESCRIPTION

- 1) CONSTRUCTIONAL MATERIAL  
Brick in English Bond with red brick bands
- 2) ROOF MATERIALS AND STRUCTURE  
Slate over brick vault
- 3) POWER SOURCE  
Steam Electricity
- 4) DIMENSIONS i) L 9.35 ii) W 3.94 iii) HT 4.6
- 5) The magazine is a single storey building, rectangular in plan, with gabled ends north and south. It was formerly served by a canal on the west side. Entry to the building was under a cover porch, the step of which retains a hide floor covering fixed by copper nails. The doors to the magazine are modern. On the northern elevation is a small segmental headed window with a stone sill and on the eastern wall two brick buttresses. The magazine has subsequently been converted into a workshop, in addition to the insertion of the modern doors a metal window has been inserted into the south window. The workshop was heated by steam pipes.

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

|                                                                                                                                                           |            |                                    |                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------------------------------|--------------------------|
| NUMBER<br>L137                                                                                                                                            | OLD SERIES | RCHME NUMBER<br>134                | N.G.R.<br>TL 37725 01418 |
| NAME/FUNCTION<br>Gun Cotton Press House<br>Hydraulic Press House & Experimental House<br>Press House No. 3<br>Hydraulic Press House Group H<br>Laboratory |            | START DATE<br>pre 1886<br><br>1947 | END DATE<br><br>1945     |

NO PHOTOGRAPHY  
AVAILABLE

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>CARTOGRAPHIC DEPICTION</b></p> <p>1865 WASC 900/41A ; Guncotton Press House &amp; Experimental House</p> <p>1865 WASC 900/42</p> <p>1897 WASC 900/53C</p> <p>c1910 WASC 900/65 ; Hydraulic Press House, Group H</p> <p>c1910 WASC 900/79 ; Hydraulic Press House, Group H</p> <p>1917 WASC 900/70 ; Press House No.3</p> <p>1917 WASC 900/72 ; 134</p> <p>1919 WASC 900/74 ; 134</p> <p>c1920 WASC 900/80 ; 134</p> <p>1923 WASC 900/84 ; 134</p> <p>&gt; 1940 WASC 900/91A ; L137</p> <p>1954 A - B.34 ; L137</p> <p>c1960 WASC 900/94 ; L137</p> <p>c1963 WASC 900/97 ; L137</p> <p>1972 WASC 900/102 ; L137</p> <p>1972 WASC 900/104 ; L137</p> <p>1976 WASC 900/113 ; L137</p> | <p><b>DOCUMENTARY REFERENCES</b></p> <p>Plans;<br/>L137 B01 - B53 ; Plans and Elevations 1947 to 1983</p> <p>1908 RGPF Ledger WASC 1509 + WASC 1764 ; Hydraulic Press House Group H built 1902/3/4 p14</p> <p>c1925 RGPF Ledger WASC 1680 ; Hydraulic Press House Group H</p> <p>c1945 RGPF Ledger WASC 1508 ; Hydraulic Press House Group H</p> <p>1972 ERDE List ; Lab. Press House No.2</p> <p>1991 Mott McDonald survey</p> <p>1992 RARDE List ; Lab. Press House No.2</p> <p>1992 FBRC ; Lab. Offices Laser Hazard</p> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>PHOTOGRAPHY HISTORIC</b></p> <p>WASC 741 Old Guncotton &amp; Cordite conv to labs 1968</p> <p>WASC 742 Old Guncotton &amp; Cordite conv to labs 1968</p> <p>WASC 1524/26 Dr D Sims test of plastics breaking point</p> <p>PRO Supply 5/861 213 10-May-1905 Cordite Press bay 2</p> <p>PRO Supply 5/861 214 10-May-1905 Lift with cylinder bay 2</p> <p>PRO Supply 5/861 215 10-May-1905 Front elevation showing toe boards and railway at north end</p> <p>PRO Supply 5/861 10-May-1905 Rear elevation showing pipes, (?hydraulic or ?heating)</p> <p>PRO Supply 5/861 238-243 Damage to cordite press bay 1</p> <p>2-Dec-1907</p> <p>PRO Supply 5/861 265-9, 271 Cordite press explosion, no date</p> | <p><b>PHOTOGRAPHY RCHME</b></p> <p>1) 206/G/36 From South</p> <p>206/T/28 From South East</p> <p>2) BB92/25356 No3 Press House Sections Plans &amp; Elevations</p> <p>BB92/26377 Extension of Press House Group H</p> <p>BB92/26383 Extension of Press House Group H</p> <p>BB92/26384 Extension of Press House Group H</p> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

RELATIONSHIPS WITH OTHER MONUMENTS

ASSOCIATED WITH: Expense Magazines L107,L135 L138 Secondary L136, L131, L149

CONDITION Good

DESCRIPTION

- 1) CONSTRUCTIONAL MATERIAL  
Brick
- 2) ROOF MATERIALS AND STRUCTURE  
Felt
- 3) POWER SOURCE  
Electricity
- 4) DIMENSIONS i) L 53.1 ii) W 8.6
- 5) This building is single storeyed and is rectangular in plan. It is divided into seven bays by five internal partition walls. All the internal walls were plastered. The north and south bays are later additions as is the brick corridor along the eastern side. The bays partly lit by glass roof lights.

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

|                                                                                                                                                                                                                                                                                                                                          |            |                                                                                                                                                                                                                                                                |                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L138                                                                                                                                                                                                                                                                                                                           | OLD SERIES | RCHME NUMBER<br>133/139                                                                                                                                                                                                                                        | N.G.R.<br>TL 37678 01410 |
| NAME/FUNCTION<br>Dough Store No. 7<br>Store House                                                                                                                                                                                                                                                                                        |            | START DATE<br>1870                                                                                                                                                                                                                                             | END DATE                 |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                                              |            |                                                                                                                                                                                                                                                                |                          |
| CARTOGRAPHIC DEPICTION                                                                                                                                                                                                                                                                                                                   |            | DOCUMENTARY REFERENCES                                                                                                                                                                                                                                         |                          |
| 1917 WASC 900/70 ; Dough Store No.7<br>1917 WASC 900/72 ; 139<br>1919 WASC 900/74 ; 133<br>c1920 WASC 900/80<br>1923 WASC 900/84 ; 133<br>> 1940 WASC 900/91A ; L138<br>1954 A - B.34 ; L138<br>c1960 WASC 900/94 ; L138<br>c1963 WASC 900/97 ; L138<br>1972 WASC 900/102 ; L138<br>1972 WASC 900/104 ; L138<br>1976 WASC 900/113 ; L138 |            | 1908 RGPF Ledger WASC 1509 + WASC 1764 ;<br>Dough Store built 1870 p14<br>c1925 RGPF Ledger WASC 1680 ; Dough Store<br>c1945 RGPF Ledger WASC 1508 ; Dough Store<br>1972 ERDE List ; Store House<br>1991 Mott McDonald survey<br>1992 RARDE List ; Store House |                          |
| PHOTOGRAPHY<br>HISTORIC                                                                                                                                                                                                                                                                                                                  |            | PHOTOGRAPHY<br>RCHME<br><br>1) 206/C/11 From South West                                                                                                                                                                                                        |                          |
| RELATIONSHIPS WITH OTHER MONUMENTS<br><br>ASSOCIATED WITH L107,L135, L137                                                                                                                                                                                                                                                                |            |                                                                                                                                                                                                                                                                |                          |
| CONDITION Fair                                                                                                                                                                                                                                                                                                                           |            |                                                                                                                                                                                                                                                                |                          |

DESCRIPTION

- 1) CONSTRUCTIONAL MATERIAL  
Brick in English Bond
- 2) ROOF MATERIALS AND STRUCTURE  
Slate over brick vault
- 3) POWER SOURCE  
Steam Electricity
- 4) DIMENSIONS i) L 4.01 ii) W 3.94 iii) HT Gable 3.7
- 5) The store is a single storey building, it has an almost square plan. The store was served by the adjacent canal to the west. The entrance is protected by a covered timber porch. At the threshold of the door is a removable shoe board to delimit a dirty and clean area. Windows have been inserted into the north and south walls. The interior has centrally suspended steam pipes. The building is earthed.

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

|                |            |              |                          |
|----------------|------------|--------------|--------------------------|
| NUMBER<br>L139 | OLD SERIES | RCHME NUMBER | N.G.R.<br>TL 37706 01354 |
|----------------|------------|--------------|--------------------------|

|                           |                     |          |
|---------------------------|---------------------|----------|
| NAME/FUNCTION<br>Magazine | START DATE<br>1958? | END DATE |
|---------------------------|---------------------|----------|

NO PHOTOGRAPHY  
AVAILABLE

|                                                                                                                                                                                              |                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>CARTOGRAPHIC DEPICTION</b></p> <p>c1960 WASC 900/94 ; L139<br/> c1963 WASC 900/97 ; L139<br/> 1972 WASC 900/102 ; L139<br/> 1972 WASC 900/104 ; L139<br/> 1976 WASC 900/113 ; L139</p> | <p><b>DOCUMENTARY REFERENCES</b></p> <p>Plans;<br/> L139 B01,B02 ; Plans and Elevations 1957 to 1961</p> <p>1972 ERDE List ; Magazine<br/> 1991 Mott McDonald survey<br/> 1992 RARDE List ; Magazine</p> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                        |                                                                                                                                                                                                                         |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>PHOTOGRAPHY<br/>HISTORIC</b></p> | <p><b>PHOTOGRAPHY<br/>RCHME</b></p> <p>1) 206/P/12 From South<br/> 206/P/13 From South doors open<br/> 2) BB92/26095 View from South West<br/> BB92/26096 View from South West<br/> BB92/26115 View from South West</p> |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**RELATIONSHIPS WITH OTHER MONUMENTS**

ASSOCIATED WITH: L143, L146

**CONDITION**      Good

**DESCRIPTION**

- 1) **CONSTRUCTIONAL MATERIAL**  
Brick in Stretcher bond
- 2) **ROOF MATERIALS AND STRUCTURE**  
Corrugated Asbestos
- 3) **POWER SOURCE**  
Steam Electricity
- 4) **DIMENSIONS** i) L 4.35 ii) W 2.9 iii) HT Gable 2.9
- 5) The building is a single storey building with a rectangular plan with gables elevations east and west. The building is divided into two self contained rooms by a central wall. The southern room is entered through double doors on the south wall, internally the room is shelved and heated with steam pipes. The northern room is also entered through double doors, with a red shoe board at the threshold. Internally there is a single shelf, it is heated by steam pipes. The building is earthed and connected to a lightning pole 7.0m in height attached to the east wall.



**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

|                                    |                                                                                                                                                                       |                                                    |                          |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|--------------------------|
| NUMBER<br>L142                     | OLD SERIES                                                                                                                                                            | RCHME NUMBER                                       | N.G.R.<br>TL 37767 01276 |
| NAME/FUNCTION<br>Toilet            |                                                                                                                                                                       | START DATE<br>1952                                 | END DATE                 |
| NO PHOTOGRAPHY<br>AVAILABLE        |                                                                                                                                                                       |                                                    |                          |
| CARTOGRAPHIC DEPICTION             |                                                                                                                                                                       | DOCUMENTARY REFERENCES                             |                          |
| c1960                              | WASC 900/94 ; L142                                                                                                                                                    | 1972                                               | ERDE List ; Toilet       |
| c1963                              | WASC 900/97 ; L142                                                                                                                                                    | 1991                                               | Mott McDonald survey     |
| 1972                               | WASC 900/102 ; L142                                                                                                                                                   | 1992                                               | RARDE List ; Toilet      |
| 1972                               | WASC 900/104 ; L142                                                                                                                                                   |                                                    |                          |
| 1976                               | WASC 900/113 ; L142                                                                                                                                                   |                                                    |                          |
| PHOTOGRAPHY<br>HISTORIC            |                                                                                                                                                                       | PHOTOGRAPHY<br>RCHME<br>1)206/G/31 From South West |                          |
| RELATIONSHIPS WITH OTHER MONUMENTS |                                                                                                                                                                       |                                                    |                          |
| ASSOCIATED WITH: L149, L151        |                                                                                                                                                                       |                                                    |                          |
| CONDITION      Good                |                                                                                                                                                                       |                                                    |                          |
| DESCRIPTION                        |                                                                                                                                                                       |                                                    |                          |
| 1)                                 | CONSTRUCTIONAL MATERIAL<br>Brick in stretcher bond                                                                                                                    |                                                    |                          |
| 2)                                 | ROOF MATERIALS AND STRUCTURE<br>Corrugated Asbestos                                                                                                                   |                                                    |                          |
| 3)                                 | POWER SOURCE<br>Electricity                                                                                                                                           |                                                    |                          |
| 4)                                 | DIMENSIONS i) L 4.14 ii) W 3.37 iii) HT Gable 3.53                                                                                                                    |                                                    |                          |
| 5)                                 | The building is a single storey it has a rectangular plan. The gentlemens toilet has a single door on the south elevation and a single window on the north elevation. |                                                    |                          |

## THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L143                                                                                                                                                                                                                                                                                                                                                                                                                                         | OLD SERIES | RCHME NUMBER<br>143A                                                                                                                                                                                                                                                                                                                                                                                                                                        | N.G.R.<br>TL 37719 01348 |
| NAME/FUNCTION<br>Cordite Incorporating house<br>Laboratory/Electrode Boiler                                                                                                                                                                                                                                                                                                                                                                            |            | START DATE<br>1914-17?<br>1946                                                                                                                                                                                                                                                                                                                                                                                                                              | END DATE<br>1945         |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                                                                                                                                                            |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                          |
| <b>CARTOGRAPHIC DEPICTION</b><br><br>1917      WASC 900/70 ; Incorporating House No.1<br>1917      WASC 900/72 ; 143a<br>1919      WASC 900/74 ; 143a<br>c1920     WASC 900/80 ; 143a<br>1923      WASC 900/84 ; 143a<br>> 1940    WASC 900/91A ; L143<br>1954      A - B.34 ; L143<br>c1960     WASC 900/94 ; L143<br>c1963     WASC 900/97 ; L143<br>1972      WASC 900/102 ; L143<br>1972      WASC 900/104 ; L143<br>1976      WASC 900/113 ; L143 |            | <b>DOCUMENTARY REFERENCES</b><br><br>Plans;<br>L143      B01 - B33 ; Plans and Elevations 1954 to 1973<br><br>c1925     RGPF Ledger WASC 1680 ; Incorporating<br>House No.1<br>c1945     RGPF Ledger WASC 1508 ; Incorporating<br>House No.1<br><br>1972      ERDE List ; Labs. and Plastic Moulding<br>1991      Mott McDonald survey<br>1992      RARDE List ; Electrode Boiler<br>House/Incorporating Mill<br><br>1992      FBRC ; Decontamination Ovens |                          |
| <b>PHOTOGRAPHY<br/>HISTORIC</b>                                                                                                                                                                                                                                                                                                                                                                                                                        |            | <b>PHOTOGRAPHY<br/>RCHME</b><br>2) BB92/26092 Cordite incorp house steam pipe over<br>canal from South West<br>4) 4788/7 06.05.1993                                                                                                                                                                                                                                                                                                                         |                          |
| <b>RELATIONSHIPS WITH OTHER MONUMENTS</b><br><br>ASSOCIATED WITH: L134, L146, L151, L155, L159                                                                                                                                                                                                                                                                                                                                                         |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                          |
| <b>CONDITION</b> Fair                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                          |

DESCRIPTION

- 1) CONSTRUCTIONAL MATERIAL  
Brick in part English bond
- 2) ROOF MATERIALS AND STRUCTURE  
Felt over flat roof
- 3) POWER SOURCE  
Electricity
- 4) DIMENSIONS i) L 27.5 ii) W 14.7 iii) HT Eave 3.1
- 5) The building is a single storey, it has a rectangular plan the original parts of the building are laid in English bond. The building has gable walls at the north and south end. In the northern wall a small blocked feature high on the wall probably marks the position of a bearing box. The building is divided into six bays by four internal partition walls in English bond. A modern flat roof extension has been added to the eastern side. Along the west side a brick and timber corridor has been added.

## THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY

|                                                                                                                                                                                                                                                                                                                                                                                                  |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                 |                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L146                                                                                                                                                                                                                                                                                                                                                                                   | OLD SERIES<br>152A | RCHME NUMBER                                                                                                                                                                                                                                                                                                                                                                                                                    | N.G.R.<br>TL 37719 01348 |
| NAME/FUNCTION<br>Cordite Incorporating house No.2<br>Crystallograph                                                                                                                                                                                                                                                                                                                              |                    | START DATE<br>1914-17?<br>1946                                                                                                                                                                                                                                                                                                                                                                                                  | END DATE<br>1945         |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                                                                                                      |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                 |                          |
| <b>CARTOGRAPHIC DEPICTION</b><br><br>1917 WASC 900/70 ; Incorporating House No. 2<br>1917 WASC 900/72 ; 152a<br>1919 WASC 900/74 ; 152a<br>c1920 WASC 900/80 ; 152a<br>1923 WASC 900/84 ; 152a<br>> 1940 WASC 900/91A ; L146<br>1954 A - B.34 ; L146<br>c1960 WASC 900/94 ; L146<br>c1963 WASC 900/97 ; L146<br>1972 WASC 900/102 ; L146<br>1972 WASC 900/104 ; L146<br>1976 WASC 900/113 ; L146 |                    | <b>DOCUMENTARY REFERENCES</b><br><br>Plans;<br>L146 B01 - B04 ; Plans and Elevations 1949 to 1956<br><br>c1925 RGPF Ledger WASC 1680 ; Incorp House No.2<br>c1945 RGPF Ledger WASC 1508 ; Incorp House No.2<br><br>1972 ERDE List ; Crystallograph Lab/Incorp House No.2<br>1991 Mott McDonald survey<br>1992 RARDE List ; Crystallograph Lab/Incorp House No.2<br>1992 FBRC left hand site Radiation, Right hand site Workshop |                          |
| <b>PHOTOGRAPHY HISTORIC</b>                                                                                                                                                                                                                                                                                                                                                                      |                    | <b>PHOTOGRAPHY RCHME</b><br>1) 206/D/31 From East<br>206/D/32 From North East<br>206/T/29 From South West<br>2) BB92/26099 From North West<br>4) 4788/7 06.05.1993<br>4788/8 06.05.1993                                                                                                                                                                                                                                         |                          |
| <b>RELATIONSHIPS WITH OTHER MONUMENTS</b><br><br>ASSOCIATED WITH: L134, L143, L146, L151, L155, L159                                                                                                                                                                                                                                                                                             |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                 |                          |
| <b>CONDITION</b>                                                                                                                                                                                                                                                                                                                                                                                 |                    | Fair                                                                                                                                                                                                                                                                                                                                                                                                                            |                          |

DESCRIPTION

1) CONSTRUCTIONAL MATERIAL  
Brick

2) ROOF MATERIALS AND STRUCTURE  
Felt with timber boards over purlins

3) POWER SOURCE  
Steam Electricity

4) DIMENSIONS i) L 31.9 ii) W 8.8 iii) HT Eave 3.1

5) The building is a single storey with a rectangular plan. It has gabled ends to the north and south. It is divided into seven bays by five internal partition walls laid in English bond. On a number of the dividing walls the positions of bearing boxes could be discerned and cut off I girders formerly used to support a belt drive system. A lean to corridor has been added along the west side. the timber frame infill along the eastern side is modern. To the West is a leanto forming a corridor. An addition has been made to the north end in brick.

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |                                                                                                                                                                                                                                                                                                                                        |                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| NUMBER<br>L147                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | OLD SERIES<br>151 | RCHME NUMBER                                                                                                                                                                                                                                                                                                                           | N.G.R.<br>37752 01343 |
| NAME/FUNCTION<br>Fire Engine Shed<br>Friction Test Room                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                   | START DATE<br>1865-1877                                                                                                                                                                                                                                                                                                                | END DATE              |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                   |                                                                                                                                                                                                                                                                                                                                        |                       |
| <p>CARTOGRAPHIC DEPICTION</p> <p>1865 WASC 900/38 + SUPP5 975 ; Fire Engine Shed<br/>         1865 WASC 900/41A ; Fire Engine Shed<br/>         1865 WASC 900/42 ; Fire Engine Shed<br/>         1897 WASC 900/53C<br/>         c1910 WASC 900/65 ; Fire Engine House<br/>         c1910 WASC 900/79 ; Fire Engine House<br/>         1917 WASC 900/70 ; Fire Engine House<br/>         1917 WASC 900/72 ; 151<br/>         1919 WASC 900/74 ; 151<br/>         c1920 WASC 900/80 ; 151<br/>         1923 WASC 900/84 ; 151<br/>         &gt; 1940 WASC 900/91A ; L147<br/>         1954 A - B.34 ; L147<br/>         c1960 WASC 900/94 ; L147<br/>         c1963 WASC 900/97 ; L147<br/>         1972 WASC 900/102 ; L147<br/>         1972 WASC 900/104 ; L147<br/>         1976 WASC 900/113 ; L147</p> |                   | <p>DOCUMENTARY REFERENCES</p> <p>1908 RGPF Ledger WASC 1509 + WASC 1764<br/>         Fire Engine House built pre 1877 p16<br/>         1972 ERDE List ; Friction Test Room<br/>         1991 Mott McDonald survey<br/>         1992 RARDE List ; Friction Test Room/ Fire Engine<br/>         Shed<br/>         1992 FBRC ; Stores</p> |                       |
| <p>PHOTOGRAPHY<br/>HISTORIC</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                   | <p>PHOTOGRAPHY<br/>RCHME<br/>1) 206/G/35 From North</p>                                                                                                                                                                                                                                                                                |                       |
| <p>RELATIONSHIPS WITH OTHER MONUMENTS</p> <p>ASSOCIATED WITH:</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                   |                                                                                                                                                                                                                                                                                                                                        |                       |
| <p>CONDITION      Good</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                   |                                                                                                                                                                                                                                                                                                                                        |                       |

DESCRIPTION

1) CONSTRUCTIONAL MATERIAL  
Brick with Red brick banding

2) ROOF MATERIALS AND STRUCTURE  
Corrugated Asbestos

3) POWER SOURCE  
Steam Electricity

4) DIMENSIONS i) L 5.06 ii) W 3.85 iii) HT 4.2

5) The building is a single storey with gabled ends and a rectangular ground plan. On the south elevation is a single blind panel with an inserted window, the west and east elevations have two blind panels. A modern double door has been inserted into the north wall.



## THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY

| NUMBER | OLD SERIES | RCHME NUMBER | N.G.R.         |
|--------|------------|--------------|----------------|
| L149   | 154        |              | TL 37750 01292 |

| NAME/FUNCTION                                                      | START DATE | END DATE |
|--------------------------------------------------------------------|------------|----------|
| Hydraulic Accumulator House for Pellet Powder House                | 1867-8     | 1877     |
| Steam Gunpowder Incorporating House Group E                        | 1877       | 1898     |
| Cordite Incorporating House Group G                                | 1898       | by 1917  |
| Cordite Incorporating House No3 Spare gear room No4 and Pump House | by 1917    | 1945     |
| Laboratory                                                         | 1947       |          |

NO PHOTOGRAPHY  
AVAILABLE

| CARTOGRAPHIC DEPICTION                                                                                    | DOCUMENTARY REFERENCES                                                                                                                                           |
|-----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1865      WASC 900/38 + SUPP5 975 ; Group E Accumulator (Incorp Mills), Engine, Boiler Houses / Coal Yard | Plans;<br>L149      B01 - B51 ; Plans and Elevations 1867 to 1985<br>1877      WASC 901/129 13.Mar.1877 Plan & sections of platform & bridge (group E) New Mills |
| 1865      WASC 900/41A ; Group E Accumulator (Incorp Mills), Engine, Boiler Houses / Coal Yard            |                                                                                                                                                                  |
| 1865      WASC 900/42 ; Group E Incorp Mills , Boiler House /Coal Yard                                    | 1894      WASC 901/129A 30.Nov.1894 Incorporating Mills Group E                                                                                                  |
| 1897      WASC 900/53C                                                                                    |                                                                                                                                                                  |
| c1910      WASC 900/65 ; Incorp House Group E                                                             | 1908      RGPF Ledger WASC 1509 + WASC 1764 ; Incorp House Group E built 1867-8 p17                                                                              |
| c1910      WASC 900/79 ; Incorp House Group E                                                             | c1925      RGPF Ledger WASC 1680 ; Incorp House Group E                                                                                                          |
| 1917      WASC 900/70 ; Incorp House No. 3/ Spare Gear Room No. 4 + Pump House                            | c1945      RGPF Ledger WASC 1508 ; Incorp House Group E                                                                                                          |
| 1917      WASC 900/72 ; 154                                                                               |                                                                                                                                                                  |
| 1919      WASC 900/74 ; 154                                                                               |                                                                                                                                                                  |
| c1920      WASC 900/80 ; 154                                                                              |                                                                                                                                                                  |
| 1923      WASC 900/84 ; 154                                                                               | 1972      ERDE List ; Initiation Solvent Store                                                                                                                   |
| > 1940      WASC 900/91A ; L149                                                                           | 1991      Mott McDonald survey                                                                                                                                   |
| 1954      A - B.34 ; L149                                                                                 | 1992      RARDE List ; Lab/Incorp. House No.3                                                                                                                    |
| c1960      WASC 900/94 ; L149                                                                             |                                                                                                                                                                  |
| c1963      WASC 900/97 ; L149                                                                             | 1992      FBRC ; Explosives Testing/ Offices                                                                                                                     |
| 1972      WASC 900/102 ; L149                                                                             |                                                                                                                                                                  |
| 1972      WASC 900/104 ; L149                                                                             | 1993      RCHME NBR No.91460                                                                                                                                     |
| 1976      WASC 900/113 ; L149                                                                             |                                                                                                                                                                  |

PHOTOGRAPHY  
HISTORIC

WASC 1233/1 Looking North West 12.12.1978  
WASC 1543/48 Group E mills 1877-8  
WASC 1568 Rotter impact Machine  
Supply 5/861 (Photo No.217),(Neg No.B95) RCHME Neg.  
No.BB92/16726 ; View of Group E showing traverse  
10/5/1904  
Supply 5/860 17 1879 Exterior  
Supply 5/860 146 Damage after explosion in group G 15-  
dec-1902

PHOTOGRAPHY  
RCHME

- 1) 206/D/27 From South East  
206/D/28 Boiler House from South East  
206/D/29 Boiler House from North East  
206/D/30 From South East  
206/Q/23 From North
- 2) BB92/26086 From South East  
BB92/26087 From South West  
BB92/26091 From North West  
BB92/26098 From South West  
BB92/26176 From South West (Colour)  
BB92/26177 From North West (Colour)  
BB92/26178 Steampipes from North West  
BB92/26182 Detail pinnion wheel/Clutch  
BB92/26183 Detail support beam & bearing  
BB92/26184 Detail drive shaft/clutch  
BB92/26185 Detail drive shaft/clutch  
BB92/26186 Detail drive shat channel  
BB92/26187 Detail of clutch/drive shaft  
BB92/26190 Steam Incorporating mill & Accumulator  
tower  
BB92/26194 From North West  
BB92/26195 Roof from East  
BB92/26196 Detail of roof  
BB92/26350 Plans Sections Elevations  
BB92/26360 Plans Elevations Pellet Powder buildings  
BB92/26361 Extension to new Incorporating Mills  
Group F
- 3) 225/B/6-8 Corridor & Column details looking South  
225/B/9-10 Baffle wall showing relieving arch for  
underground chamber  
225/B/11 Roof detail of mill  
225/B/12-13 Roof detail Boiler house  
225/B/14-15 Doorway West side of Accumulator tower  
225/B/16 North Elevation  
225/B/17 West side  
225/B/18 South side  
225/B/19 West Elevation  
225/B/20 Boiler house South elevation
- 4) 4788/4 06.05.1993  
4788/5 06.05.1993  
4788/8 06.05.1993

RELATIONSHIPS WITH OTHER MONUMENTS

ASSOCIATED WITH: L145, L148, L149 1/2, L153, L157

CONDITION Good

DESCRIPTION

1) CONSTRUCTIONAL MATERIAL

Brick in English bond

2) ROOF MATERIALS AND STRUCTURE

Felt and slate

3) POWER SOURCE

Steam, Hydraulic, Electricity

4) DIMENSIONS i) L 47.2m ii) W 6.7m iii) HT iv) DIA

5) A plaque on the west side of the accumulator tower reads 'GROUP E MILLS 1877-8'

See attached RCHME Threatened Buildings Section report.

ROYAL COMMISSION ON THE HISTORICAL MONUMENTS OF ENGLAND

MOD Building No. L149  
Group E Incorporating Mills  
The Royal Gunpowder Factory  
Waltham Abbey  
Essex

NBR No: 91460  
NGR: TL 37750 01292

The Building No. L149 has two main phases of construction. The core was built in c1869 as "Pellet Powder Buildings". As such it had an almost-square plan comprising an Accumulator House, Engine House and Boiler House, with a coal yard with chimney against the Boiler House.

In 1877-8 the building was converted to Group E Incorporating Mills. The Accumulator House, Engine House and chimney of the original building appear to have been retained but the Boiler House and coal yard walls were demolished. A new Boiler House was built at the rear of the Engine House and a new coal yard was formed which incorporated the earlier chimney. On the north and south sides of the Engine House three-bay cross wings were added to contain six gunpowder incorporating mills. There was an open verandah along the west front of the cross wings. A Pump House was subsequently added, in two phases, on the north side of the Boiler House.

The construction is of yellow brick, laid in English bond, with red brick details, except for the side walls of the cross wings which were of wood and canvas or felt on a slight iron framework. The gearing for the machinery of the mills survives in a chamber below the ground.

-oo0oo-

This building has a t-shaped plan and is constructed of yellow brick, laid in English bond, with red brick detailing, and of timber with a slight iron framework.

It has two main phases of construction. The original structure was built in c1869 as "Pellet Powder Buildings". Project drawings for this show an almost-square building containing a Boiler House, on one side of which is an Accumulator House and Engine House, and on the other side is a coal yard with chimney.<sup>43</sup> As a Pellet Powder Building, the structure would have been used for the pressing of gunpowder.

Almost a decade later, in 1877-8, the building was significantly altered and converted into the fifth gunpowder incorporating mills building to be constructed on the Gunpowder Factory site, and was named Group E Incorporating Mills.<sup>44</sup> Proposal drawings for this new incorporating mills building outline and label the site of the original Boiler House and coal yard, which were still standing at that time in March 1877.<sup>45</sup> The structure then built in 1877-8 may have utilised the existing Accumulator House<sup>46</sup>, Engine House and chimney. The original Boiler House and coal yard walls were demolished. A new Boiler House was built at the east end of the Engine House, reusing the iron roof trusses of the former Boiler House, and on its east side a new coal yard was created which incorporated the existing chimney at its south-west corner.<sup>47</sup> On the north and south sides of the Engine House, set back from the front of the Accumulator House, three-bay cross wings were added to contain six

---

Drawing of "Waltham Abbey, (Project), Plans, Sections & Elevations for Pellet Powder Buildings, signed I. Randall, Clerk of Works, 2/12/186(?9), cat. L149.B.15 and drawing of "Pellet Powder Buildings, Accumulator House", dated 1869, cat. L149.B.10 (MOD Central Disposals Unit, Chessington).

Drawings of "Waltham Abbey, Proposed New Incorporating Mills, Item I, AE 1877-8, dated 3/1877, cat. L149.B.05 (MOD Central Disposals Unit, Chessington).

Drawings of "Waltham Abbey, Proposed New Incorporating Mills, Item I, AE 1877-8", dated 3/1877, cat. L149.B.05 (MOD Central Disposals Unit, Chessington).

The Accumulator House may be partly rebuilt, however, because its style is slightly different from that shown in the proposal drawings for the "Pellet Powder Buildings" of 186(?9) and because its west front carries a datestone bearing the inscription "Group E Mills 1877-8".

Although the building faces west-south-west and the cross wings are aligned north-north-west to south-south-east, for clarity in this report the building is described as if it faced west.

gunpowder incorporating mills. There was an open verandah along the west front of the cross wings.

Probably as a result of combining parts of an earlier building as its core, the Group E Incorporating Mills building is more elaborate in plan and design than the other incorporating mills on this part of the site.

The Engine House has a rectangular plan of 16'6" x 30'6" (5.05 x 9.3 m), and rises to a height of 22'6" (6.9 m).<sup>48</sup> As such it is both narrower and lower than the Engine Houses in the other incorporating mill buildings on this part of the site. Constructed of yellow brick, laid in English bond, with red brick details, it had brick pilasters and windows on its north side, and a brick dentil cornice.<sup>49</sup> It has a hipped roof which is wood-framed. A large wooden transverse beam may have carried the engine itself.

The Accumulator House, at the west side of the Engine House, may be the Accumulator House of the earlier "Pellet Powder Buildings" of c1869. Although it differs slightly in appearance from the Accumulator House shown in the proposal drawings for the earlier building, the Accumulator House actually built for that earlier building may be that which survives.<sup>50</sup> Alternatively it may be a rebuild or partial rebuild. A datestone on its west elevation reads "Group E Mills 1887-8" but, rather than being incorporated into the brickwork, the plaque is adhered to it. Built of yellow brick with red brick details, with a 16'6" (5.05 m) square plan, it forms a tower 36' (11 m) in height.<sup>51</sup> On the north and west elevations a kind of platband with dentils marks a point almost halfway up the tower, below which the tower is wider on these north and west sides only. The absence of this feature on the south elevation might support the theory that this is the Accumulator House from the earlier building which would have had the Boiler House abutting on the south side. Furthermore, the brickwork of the innermost walls of each of the cross wings does not appear to be bonded into the brickwork of the tower.

Below the datestone on the west front, the entrance doorway to the Accumulator House has a semi-circular head and brick label. At a higher level on the tower, each of its elevations has a pair of semi-circular headed windows with rubbed red-brick arches with a pair of brick drops at the springing on either side. The windows on the north and south elevations are blind. Above the windows, a series of five brick arches give the appearance of false machicolations, and this is echoed in an arrangement of bricks which corbel out as part of the cornice. It appears to have had a hipped roof originally.<sup>52</sup>

The accumulator which would have been housed within the tower supplied a more remote accumulator on the site (Building No. L136). An internal pier would have held the guide rail of the accumulator itself.

---

Ledger c1908, cat. WASC 1509 (PRO, Hayes Repository).

Drawing of "Waltham Abbey, (Project), Plans, Sections & Elevations for Pellet Powder Buildings", signed I Randall, Clerk of Works, 2/12/186(?9), cat. L149.B.15 (MOD Central Disposals Unit, Chessington).

The project drawings for the "Pellet Powder Buildings" of 2/12/186(?9) for the front west elevation of the Accumulator House show, above the doorway, a rectangular panel with clipped corners, above a pair of semi-circular headed windows which have keystones and which span almost the entire width of the front, and a simple dentil cornice below the eaves. The present building has no such rectangular panel, narrower windows with no keystone and a more elaborate false-machicolation design above.

Ledger c1908, cat. WASC 1509 (PRO, Hayes Repository).

A hipped roof is shown on the tower in an elevation drawing of "Waltham Abbey, Proposed New Incorporating Mills, Item I. AE 1877-8", cat. L149.B.05 (MOD Central Disposals Unit, Chessington). However, in place of a hipped roof, the tower carried a water tank by 1902, as recorded in a photograph of December 1902, RCHME neg. no. BB92/16730, PRO Supply 5/860 (photo no. 146; neg. no. B32).

Serving the Boiler Houses in both phases of construction, was a chimney stack which had an octagonal plan, 75'<sup>53</sup> (22.86 m) in height, and was constructed of brick.<sup>54</sup> A coal yard on the south side of the original Boiler House incorporated the chimney on its east wall, while a new coal yard created in 1877-8 on the south side of the new Boiler House incorporated the same chimney in the south-west corner.

The Boiler House which was constructed in the second phase of 1877-8 has a rectangular plan of 45' x 23'. (13.7 x 7 m)<sup>55</sup> Of a single storey and of the same height as the Engine House, it is also brick-built and has a dentil cornice as well as dentils at the top of recessed panels between pilasters which separate the exterior elevations into four bays by one bay. The three eastern bays on the north and south elevations each contained a pair of semi-circular headed windows with red brick heads and drops, in a style similar to that of the Accumulator House. There is a doorway in the east elevation bay which has a semi-circular head of rubbed red-brick. The Boiler House carried a pair of boilers which were aligned east to west. The roof is hipped and contains trusses which are probably reused from the earlier Boiler House, since the trusses match those in the drawings for the original building.<sup>56</sup> The trusses have wrought iron tension rods, decorative cast iron compression members, and cast iron ventilators. The hips have central roundels with five bridging arms on a horizontal plane and a king rod on a vertical plane. The roof had tongued boarding and lead coverings.

Cross wings, set back from the front of the Accumulator House, were added in 1877-8 on the north and south sides of the Engine House. The wings contained a total of six gunpowder incorporating mills. Each of three bays, the wings are single-storeyed and have a gabled roof. The bays are separated by partition walls, aligned east to west, which are constructed of brick laid in English bond. The front and back walls had a light iron framing filled in with moveable panels of non-inflammable felt on light deal frames.<sup>57</sup> On the west wall frames were lampframes constructed of iron, copper and sheet glass, the bottom of which were to hold 1/2' (0.15 m) of water constantly.<sup>58</sup> Cast iron columns on the outer west side of the cross wings originally formed part of an open verandah which had ends of corrugated iron.<sup>59</sup> The roof was of angle and tee iron framing (round rods with metal purlins and pin spokes), with board and lead coverings. Drenching apparatus, constructed of iron and copper, was positioned on the tie of the truss.<sup>60</sup> The relatively insubstantial fabric for the sides and roof could be easily replaced in the event

---

The chimney stack is labelled as being 75' in height in both the early project drawing for the "Pellet Powder Buildings", cat L149.B.15, and in the Group E Incorporating Mills, Ledger c1908, cat. WASC 1509 (PRO, Hayes Repository).

The date of 1877 given to the Chimney Shaft in the Ledger of c1908 appears to be incorrect, cat. WASC 1509 (PRO, Hayes Repository).

Ledger c1908, cat. WASC 1509 (PRO Hayes Repository).

Drawing of "Waltham Abbey, (Project), Plans, Sections & Elevations for Pellet Powder Buildings", signed I. Randall, Clerk of Works, 2/12/186(?9), cat. L149.B.15.

A drawing of "Waltham Abbey, Proposed New Incorporating Mills, Enlarged Section, Item I, A.E. 1877-8", dated 13/3/1877, describes the side walls as such, ?no cat. no. (L149/6) (MOD Central Disposals Unit, Chessington). However, the an undated drawing (?c1908) describes the walls as being of wood and canvas, with shutters in an iron-framing, cat. WASC 901/129A, (PRO, Hayes Repository).

Drawing of "Waltham Abbey, Proposed New Incorporating Mills, Enlarged Section, Item I, A.E. 1877-8", dated 13/3/1877, ?no cat. no. (L149/6) (MOD Central Disposals Unit, Chessington).

A photograph taken in December 1902 shows the open verandah. RCHME Neg. No. BB92/16730 (PRO Supply 5/860; photo no. 146)

Although the drawing of "Waltham Abbey, Proposed new Incorporating mills, Enlarged Section, Item I, A.E. 1877-8", dated 13/3/1877, details this apparatus, an adjacent note states that "This drenching Apparatus will not be included in the Contract for the building".

of an explosion.<sup>61</sup>

The procedure for combining the ingredients of saltpetre, sulphur and charcoal to form gunpowder in each of the mills in the cross wing appears to have been essentially the same as it had been since 1857 when the first of the incorporating mills buildings (Group A; Building L169, now gone) was built.<sup>62</sup> The following is an extract from Handbook of Gunpowder and Guncotton, which describes both the machinery and the process of Incorporating or Milling as carried out in this type of incorporating mill building at the Royal Gunpowder Factory at Waltham Abbey:

The incorporating mill consists of a circular iron or stone bed, about 7 feet in diameter (fixed very firmly in the floor of the building), whereon the iron or stone cylindrical edge runners revolve .... The runners have a common axle, resting in gun-metal bouches in a solid cross-head attached to a vertical shaft, which, passing through a bearing in the centre of the bed, is in gear with the machinery, which is ... beneath it in cast iron tanks in the new steam mills. ...

The bed has a sloping rim on the outside, called the "curb," and on the inside, an edge formed by the "cheese," or bearing through which the vertical shaft passes. The runners are not equidistant from the centre of the shaft; one works the part of the charge nearest the centre of the bed, the other the outer part, but their paths overlap; two "ploughs" of wood, covered with leather, attached to the cross-head by arms or brackets (one working next the vertical shaft, the other to the rim), throw the composition under the runners, as it works away from them.

The green charge is brought in its bag, and put on the bed of the mill, being spread evenly by means of a wooden rake; it is then "liquored," or moistened with distilled water, and is worked for 4 hours under iron runners for R.F.G. powder, which time was formerly considered sufficient to render the incorporation complete in every respect; but R.F.G2 powder is incorporated about 8 hours under iron runners. MG1, for Nordenfelt guns, is kept 7 hours under iron runners. The granulated cannon powders now made (RLG2 and RLG4) are incorporated for 3 hours under iron runners, an additional hour being allowed if worked under stone runners. All "dust" and "re-work" charges are milled for 40 minutes.

... During the time of working the millman enters the mill occasionally, takes a wooden "shover," and pushes the outside of the charge into the middle of the path of the runners, so that every portion may be regularly incorporated.

... The action of the runners is a combination of rolling and twisting, and has, on a large scale, somewhat the effect of a pestle and mortar, crushing, rubbing, and mixing, thus giving the charge a most intimate union.

.. When the charge, which in this state is called "mill-cake," is ready to be taken off the bed, it should be uniform in appearance, not having any specks of either saltpetre or sulphur visible to the eye, and of a greyish or brownish colour, according to the charcoal used.

Finally the mill cake would have been taken from the incorporating mill to a detached expense magazine which was probably situated north-west of the building.<sup>63</sup> It would then have been taken in covered trucks to a "breaking down" house<sup>64</sup>.

Although all of the machinery on the ground floor has been removed, all of the machinery for the independent gearing of each of the six mills survives in the underground chamber.<sup>65</sup> This includes parts of the vertical shafting, pinions, friction clutch, and

---

"A Handbook of the Manufacture and Proof of Gunpowder, as carried on at the Royal Gunpowder Factory, Waltham Abbey, by Captain F M Smith, Royal Artillery, Assistant Superintendent, 1870, London, p43.

The same procedure is outlined in both A Handbook of the Manufacture and Proof of Gunpowder, as carried on at the Royal Gunpowder Factory, Waltham Abbey, by Captain F.M. Smith, Royal Artillery, Assistant Superintendent, 1870 and Handbook of Gunpowder and Guncotton by W.H. Wardell, 1888.

The drawing of "Waltham Abbey, Proposed New Incorporating Mills, Item I. AE 1877-8" includes a plan and sections of a magazine, with interior dimensions of 10' x 8', cat. L149.B.05 (MOD Central Disposals Unit, Chessington).

"How Explosives are Made" by William G. Fitzgerald, The Strand Magazine, Vol IX Jan-June 1895.

The relieving arches of the chamber are visible in the partition walls at the lower part of the ground floor.



wheel. Below the Engine House is a tunnel which contains cast iron members, possibly the spokes of a flywheel, and clutch to chambers from the Engine House end.

Some time after 1878, and before 1895, a Pump House was added at the centre of the north elevation of the Boiler House, cutting across the former windows in this position.<sup>66</sup> Of a single storey, approximately 16' (4.88 m) in height, it is of yellow brick laid in Flemish bond and has a gabled roof, aligned north to south. Originally it was one bay wide and housed Worthington and Tangye pumps.<sup>67</sup> In c1904 the Pump House was extended by another bay, giving it an almost-square plan, 22' x 23'9" (6.71 x 7.3 m).<sup>68</sup> The new bay housed a new hydraulic pump. It is lit by a pair of semi-circular headed windows on the north elevation and square windows on the east and west sides.

A timber cabin at the north end of the north cross wing was built in 1895 and demolished in 1905.<sup>69</sup>

Around the turn of the century the building was altered for the manufacture of cordite. New line shafting, pulleys and individual driving wheels were installed. Blocked openings in each of the end gables of the cross wings are evidence of the existence of the line shafting. Concrete traverse were added on the west side in the early twentieth century; the traverse has since been demolished but a photograph of 10 May 1904 shows the traverse on the west side of the building.<sup>70</sup>

Although the chimney stack was proposed to be demolished in c1908-9,<sup>71</sup> it appears to have survived at least until the following decade, as it is shown in a block plan of 1923.<sup>72</sup>

In c1947 the building was converted into laboratories.<sup>73</sup> The former Accumulator Tower was a room for an impact machine, the former Engine House was divided into a laboratory and a store, the former Boiler House was a laboratory, balance room and machine shop, the former Pump House was a dark room and a laboratory, and the bays of the cross wings were variously used for glass blowing, laboratories, dark room, drawing office, office and writing room. The verandah was probably filled in at this time and extended to form a covered way around the west side of the Accumulator House.

The building ceased to function as laboratories in c1991. Stripping out began in c1993.

---

Although the Ledger of c1908 dates the addition to 1877, it is in fact secondary to the Boiler House of that date and is therefore a later addition, cat. WASC 1509 (PRO, Hayes Repository). The addition is shown on the OS County Series 1:2500 maps, 2nd ed. 1897 (surveyed 1865-9, revised 1895), sheet refs XLIX.14, XLI.8.12, XLII.5.9.

This single-bay extension was drawn as a later addition to the plan of "Waltham Abbey, Proposed New Incorporating Mills, Item I. AE 1877-8", cat. L149.B.02 (MOD Central Disposals Unit, Chessington).

Drawing of "Extension of Pump House Group E", dated 16/4/1904, ?no cat. no. (L149/13) (MOD Central Disposals Unit, Chessington).

Drawing of "Extension of Pump House Group E", dated 16/4/1904, ?no cat. no. (L149/13) (MOD Central Disposals Unit, Chessington).

Ledger c1908, cat. WASC 1509 (PRO, Hayes Repository).

RCHME Neg. No. BB92/16726. A print from this negative appears in PRO. Supply 5/861 (photo no. 217, negative no. B.95), Group E Mills, 10 May 1904.

Ledger c1908, cat. WASC 1509 (PRO, Hayes Repository).

"Royal Gunpowder Factory, Waltham Abbey" site plan 1:2500, as named 13th September 1917, revised March 1919, and March 1923, cat. WASC 900/84.

Drawing of "Layout of New Laboratories in Building No. 154", dated 18/11/1947, cat. L149.B.28 (MOD Central Disposals Unit, Chessington).

Surveyed March 1993  
Report by R L Burgess

## THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY

|                                                                                                                                                                                                         |            |                                                                                                                        |                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L149 1/2                                                                                                                                                                                      | OLD SERIES | RCHME NUMBER                                                                                                           | N.G.R.<br>TL 37759 01281 |
| NAME/FUNCTION<br>Dehumidifier Plant & Hardstanding                                                                                                                                                      |            | START DATE<br>197?                                                                                                     | END DATE                 |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                             |            |                                                                                                                        |                          |
| CARTOGRAPHIC DEPICTION<br><br>1972 WASC 900/102; L149 1/2<br>1972 WASC 900/104; L149 1/2<br>1976 WASC 900/113; L149 1/2                                                                                 |            | DOCUMENTARY REFERENCES<br><br>1991 Mott McDonald survey<br>1992 ION Poor                                               |                          |
| PHOTOGRAPHY<br>HISTORIC                                                                                                                                                                                 |            | PHOTOGRAPHY<br>RCHME<br><br>1) 206/G/32 10.Feb.1993 From South West<br>206/P/11 09.Mar.1993 Floor slab from South East |                          |
| RELATIONSHIPS WITH OTHER MONUMENTS<br><br>ASSOCIATED WITH: L149                                                                                                                                         |            |                                                                                                                        |                          |
| CONDITION Demolished                                                                                                                                                                                    |            |                                                                                                                        |                          |
| DESCRIPTION<br>1) CONSTRUCTIONAL MATERIAL<br><br>2) ROOF MATERIALS AND STRUCTURE<br><br>3) POWER SOURCE<br><br>4) DIMENSIONS i) L    ii) W    iii) HT<br><br>5) Demolished concrete floor slab remains. |            |                                                                                                                        |                          |

## THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |                                                                                                                                                                                                                                |                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L150                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | OLD SERIES | RCHME NUMBER                                                                                                                                                                                                                   | N.G.R.<br>TL 37709 01284 |
| NAME/FUNCTION<br>Concrete Air Raid Shelter<br>Solvent Store                                                                                                                                                                                                                                                                                                                                                                                                                                    |            | START DATE<br>1941                                                                                                                                                                                                             | END DATE<br>1945<br>198? |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            |                                                                                                                                                                                                                                |                          |
| <b>CARTOGRAPHIC DEPICTION</b><br><br>> 1940    WASC 900/91A ; L150<br>1954      A - B.34 ; L150<br>c1960    WASC 900/94 ; L150<br>c1963    WASC 900/97 ; L150<br>1972      WASC 900/102 ; L150<br>1972      WASC 900/104 ; L150<br>1976      WASC 900/113 ; L150                                                                                                                                                                                                                               |            | <b>DOCUMENTARY REFERENCES</b><br><br>Plan;<br>L150      B01 - 1940 ; Air Raid Shelter for RGPF<br><br>1972      ERDE List ; Solvent General Store<br>1991      Mott McDonald survey<br>1992      RARDE List ; Air Raid Shelter |                          |
| <b>PHOTOGRAPHY<br/>HISTORIC</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            | <b>PHOTOGRAPHY<br/>RCHME</b><br>1) 206/M/0 From South East<br>4) 4788/4 06.05.1993                                                                                                                                             |                          |
| <b>RELATIONSHIPS WITH OTHER MONUMENTS</b><br><br>ASSOCIATED WITH: L148                                                                                                                                                                                                                                                                                                                                                                                                                         |            |                                                                                                                                                                                                                                |                          |
| <b>CONDITION</b> Good                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |                                                                                                                                                                                                                                |                          |
| <b>DESCRIPTION</b><br>1)            CONSTRUCTIONAL MATERIAL<br>Concrete<br><br>2)            ROOF MATERIALS AND STRUCTURE<br>Concrete slab<br><br>3)            POWER SOURCE<br>Steam Electricity<br><br>4)            DIMENSIONS i) L 9.18 ii) W 5.18 iii) HT 2.62<br><br>5)            The air raid shelter is single storeyed with a U shaped plan. It is entered through two doors on the eastern side. Its later conversion into a store has included the insertion of a metal roof vent. |            |                                                                                                                                                                                                                                |                          |

## THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY

|                                                                                                                                                                                                                                                                                                                                                                                           |                    |                                                                                                                                                                                                                                                                                                                                                                                                                             |                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L151                                                                                                                                                                                                                                                                                                                                                                            | OLD SERIES<br>161A | RCHME NUMBER                                                                                                                                                                                                                                                                                                                                                                                                                | N.G.R.<br>TL 37766 01241 |
| NAME/FUNCTION<br>Incorporating House No.4<br>Laboratory                                                                                                                                                                                                                                                                                                                                   |                    | START DATE<br>1914-17?<br>1946                                                                                                                                                                                                                                                                                                                                                                                              | END DATE<br>1945         |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                                                                                               |                    |                                                                                                                                                                                                                                                                                                                                                                                                                             |                          |
| <b>CARTOGRAPHIC DEPICTION</b><br><br>1917 WASC 900/70 ; Incorp. House No.4<br>1917 WASC 900/72 ; 161a<br>1919 WASC 900/74 ; 161a<br>c1920 WASC 900/80 ; 161a<br>1923 WASC 900/84 ; 161a<br>> 1940 WASC 900/91A ; L151<br>1954 A - B.34 ; L151<br>c1960 WASC 900/94 ; L151<br>c1963 WASC 900/97 ; L151<br>1972 WASC 900/102 ; L151<br>1972 WASC 900/104 ; L151<br>1976 WASC 900/113 ; L151 |                    | <b>DOCUMENTARY REFERENCES</b><br><br>Plans;<br>L151 B01 - B15 ; Plans and Elevations 1947 to 1958<br><br>c1925 RGPF Ledger WASC 1680 ; Incorp. House No.4<br>c1945 RGPF Ledger WASC 1508 ; Incorp. House No.4<br>1938 Text Book of Explosives 1938 H.M.S.O. Chp XV<br>p99-111 Figs 15.2-9<br>1972 ERDE List ; Organic Igniferous Laboratory<br>1991 Mott McDonald survey<br>1992 RARDE List ; Laboratory/Incorp. House No.4 |                          |
| <b>PHOTOGRAPHY HISTORIC</b>                                                                                                                                                                                                                                                                                                                                                               |                    | <b>PHOTOGRAPHY RCHME</b><br>1) 206/D/26 From South East<br>206/Q/22 From North<br>2) BB92/26086 From South East<br>BB92/26087 From South West<br>BB92/26176 From South West (Colour)<br>4) 4788/9 06.05.1993                                                                                                                                                                                                                |                          |
| <b>RELATIONSHIPS WITH OTHER MONUMENTS</b><br><br>ASSOCIATED WITH L152, L198, L134, L143, L146, L151, L155, L159                                                                                                                                                                                                                                                                           |                    |                                                                                                                                                                                                                                                                                                                                                                                                                             |                          |
| <b>CONDITION</b> Fair                                                                                                                                                                                                                                                                                                                                                                     |                    |                                                                                                                                                                                                                                                                                                                                                                                                                             |                          |

DESCRIPTION

- 1) CONSTRUCTIONAL MATERIAL  
Brick
- 2) ROOF MATERIALS AND STRUCTURE  
Felt over timber boards supported by purlins
- 3) POWER SOURCE  
Steam Electricity
- 4) DIMENSIONS i) L 32.07 ii) W 8.8 iii) HT Eave 3.67
- 5) The building is single storeyed it has a rectangular ground plan with gabled walls north and south. The building was divided into seven bays by five internal partition walls in English bond. Also visible in the partition walls are cut off I girders that formerly supported internal machinery. The external walls of the bays are filled to the east and west by modern timber frames. Small timber framed leantos with an asbestos covering have been added to the north and south ends of the building.

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                    |                                                                                                                                                                                                                                                          |                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L152                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | OLD SERIES<br>161B | RCHME NUMBER                                                                                                                                                                                                                                             | N.G.R.<br>TL 37777 01244 |
| NAME/FUNCTION<br>Chemical Store/Solvent Store                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    | START DATE<br>1914-18?                                                                                                                                                                                                                                   | END DATE                 |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                    |                                                                                                                                                                                                                                                          |                          |
| <b>CARTOGRAPHIC DEPICTION</b><br><br>1919 WASC 900/74<br>c1920 WASC 900/80 ; 161b<br>1923 WASC 900/84 ; 161b<br>> 1940 WASC 900/91A ; L152<br>1954 A - B.34 ; L152<br>c1960 WASC 900/94 ; L152<br>c1963 WASC 900/97 ; L152<br>1972 WASC 900/102 ; L152<br>1972 WASC 900/104 ; L152<br>1976 WASC 900/113 ; L152                                                                                                                                                                                                                                                                                        |                    | <b>DOCUMENTARY REFERENCES</b><br><br>c1925 RGPF Ledger WASC 1680 ; EC<br>c1945 RGPF Ledger WASC 1508 ; EC<br><br>1972 ERDE List ; Hazardous Chemicals<br>1991 Mott McDonald survey<br>1992 RARDE List ; Chemicals Store<br><br>1992 FBRC ; Solvent Store |                          |
| <b>PHOTOGRAPHY HISTORIC</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                    | <b>PHOTOGRAPHY RCHME</b><br>1) 206/G/30 From South                                                                                                                                                                                                       |                          |
| <b>RELATIONSHIPS WITH OTHER MONUMENTS</b><br><br>ASSOCIATED WITH: L151                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                    |                                                                                                                                                                                                                                                          |                          |
| <b>CONDITION</b> Fair                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                    |                                                                                                                                                                                                                                                          |                          |
| <b>DESCRIPTION</b><br>1) CONSTRUCTIONAL MATERIAL<br>Brick in Stretcher bond<br><br>2) ROOF MATERIALS AND STRUCTURE<br>Corrugated Asbestos with a vented ridge<br><br>3) POWER SOURCE<br>Steam Electricity<br><br>4) DIMENSIONS i) L 3.45 ii) W 1.92 iii) HT 3.19<br><br>5) The store is a single storeyed building with a rectangular ground plan. It has gabled ends on the north and south side. The south elevation has a single door and a small segmental headed window. On the north elevation is an inserted door and a small segmental headed window. The east and west elevations are blank. |                    |                                                                                                                                                                                                                                                          |                          |



## THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY

| NUMBER                          | OLD SERIES                                                         | RCHME NUMBER                                           | N.G.R.                                                                   |
|---------------------------------|--------------------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------------------------|
| L153                            | 160                                                                |                                                        | TL 37720 01237                                                           |
| NAME/FUNCTION                   |                                                                    | START DATE                                             | END DATE                                                                 |
| Group D Incorporating House     |                                                                    | 1868                                                   | 1898?                                                                    |
| Press House Group D             |                                                                    | 1898                                                   | by 1908                                                                  |
| Cordite Incorporating Mill No.8 |                                                                    | by 1908                                                | 1946?                                                                    |
| Initiators Section /Laboratory  |                                                                    | 1946                                                   |                                                                          |
| NO PHOTOGRAPHY<br>AVAILABLE     |                                                                    |                                                        |                                                                          |
| CARTOGRAPHIC DEPICTION          |                                                                    | DOCUMENTARY REFERENCES                                 |                                                                          |
| 1865                            | WASC 900/38 + SUPP5 975 ; Group D Incorp. House                    | Plans;<br>L153                                         | B01 - B36 ; Plans and Elevations 1946 to 1985                            |
| 1865                            | WASC 900/41A ; Group D Incorp. House/Electric Machine House & Pump | 1908                                                   | RGPF Ledger WASC 1509 + WASC 1764 ; Incorp. House Group D built 1868 p17 |
| 1865                            | WASC 900/42 ; Group D Incorp. House/Electric Machine House & Pump  | c1925                                                  | RGPF Ledger WASC 1680 ; Incorp. House Group D                            |
| 1897                            | WASC 900/53C                                                       | 1938                                                   | Text Book of Explosives 1938 H.M.S.O. Chp XV p99-111 Figs 15.2-9         |
| 1902                            | WASC 353 ; Press House Group D                                     | c1945                                                  | RGPF Ledger WASC 1508 ; Incorp. House Group D                            |
| c1910                           | WASC 900/65 ; Incorp. House Group D                                | Not Dated WASC 901/149 Incorporating Mills Group C & D |                                                                          |
| c1910                           | WASC 900/79 ; Incorp. House Group D                                | 1972                                                   | ERDE List ; Laboratory                                                   |
| 1917                            | WASC 900/70 ; Incorp. House No. 8/Spare Gear Rm No. 3              | 1991                                                   | Mott McDonald survey                                                     |
| 1917                            | WASC 900/72 ; 160                                                  | 1992                                                   | RARDE List ; Initiators Section/Incorp. House No.8                       |
| 1919                            | WASC 900/74 ; 160                                                  | 1993                                                   | RCHME NBR No.91457                                                       |
| c1920                           | WASC 900/80 ; 160                                                  |                                                        |                                                                          |
| 1923                            | WASC 900/84 ; 160                                                  |                                                        |                                                                          |
| > 1940                          | WASC 900/91A ; L153                                                |                                                        |                                                                          |
| 1954                            | A - B.34 ; L153                                                    |                                                        |                                                                          |
| c1960                           | WASC 900/94 ; L153                                                 |                                                        |                                                                          |
| c1963                           | WASC 900/97 ; L153                                                 |                                                        |                                                                          |
| 1972                            | WASC 900/102 ; L153                                                |                                                        |                                                                          |
| 1972                            | WASC 900/104 ; L153                                                |                                                        |                                                                          |
| 1976                            | WASC 900/113 ; L153                                                |                                                        |                                                                          |

PHOTOGRAPHY

HISTORIC

WASC 1039/1 Building constructed 1867-8  
WASC 1233/10

PHOTOGRAPHY

RCHME

- 1) 206/F/25 Foundations of Narrow Gauge Railway trestles  
206/J/23 From South  
206/P/5 Erected 1867-8  
206/P/33 Detail of Drive shaft support  
206/P/34 Detail of pinion wheel of Southerly mill from South  
206/P/35 Detail of pinion wheel of Southerly mill from South  
206/P/36 Detail of pinion wheel of Southerly mill from South  
206/P/37 Detail of pinion wheel of Southerly mill from South
- 2) BB92/26082 From South West  
BB92/27177 From North West (Colour)  
BB92/26188 Detail of pinion wheel of Southerly mill  
BB92/26219 L153 & L145 from South West
- 3) 225/A/2-4 Below Engine House Cast iron fly wheel made up of bolted segments  
225/A/5-8 Chamber below incorporating mills  
225/A/9-11 Below engine house large stone beds for beam engine  
225/A/12-14 Below engine house
- 4) 4788/4 06.05.1993  
4788/5 06.05.1993  
4788/8 06.05.1993  
4788/9 06.05.1993

RELATIONSHIPS WITH OTHER MONUMENTS

ASSOCIATED WITH: L145, L148, L149, L154, L157

CONDITION Fair

DESCRIPTION

- 1) CONSTRUCTIONAL MATERIAL  
Brick
- 2) ROOF MATERIALS AND STRUCTURE  
Slate over timber boards
- 3) POWER SOURCE  
Steam Electricity
- 4) DIMENSIONS ' i) L 46.8 ii) W 8.6
- 5) A stone plaque on the west side of the engine house reads 'Erected 1867-8'.  
  
See attached RCHME Threatened Buildings Section report.

ROYAL COMMISSION ON THE HISTORICAL MONUMENTS OF ENGLAND

MOD Building No. L153  
Group D Incorporating Mills  
The Royal Gunpowder Factory  
Waltham Abbey  
Essex

NBR No: 91457  
NGR: TL 37720 01237

Built in 1867-8, the Group D Incorporating Mills building is similar to the other incorporating mills on the site and was virtually identical to Group C Incorporating Mills building of 1861. It has a T-shaped plan which comprises a central Engine House, with a Boiler House at its east end, and three-bay cross wings on its north and south sides for six gunpowder incorporating mills. There was an open verandah along the west front. On the south side of the Boiler House was a coal yard containing a chimney.

The Engine House, Boiler House and partition walls separating the bays in the incorporating mills are constructed of yellow brick laid in English bond. The roofs and side walls were less substantial, being of wood and canvas with a slight iron framework.

Gearing for the incorporating mills survives in a underground chamber below the mills.

-oo0oo-

Constructed in 1867-8, the Group D Incorporating Mills building is virtually identical to the Group C Incorporating Mills building of 1861, to its south, upon which it was modelled.<sup>1</sup>

Its T-shaped plan comprises a central Engine House, with a Boiler House at its east end, and cross wings on its north and south sides, which are each of three bays, and contained a total of six gunpowder incorporating mills<sup>2</sup> There was an open verandah along the west front. On the south side of the Boiler House was a coal yard containing a chimney at the centre of its west wall.

Both the Engine House and the Boiler House are constructed of yellow brick laid in English bond, with a chamfered brick plinth and brick dentil cornice. Each has a hipped roof with lead coverings.

The Engine House has a rectangular plan, with internal dimensions of approximately 18' by 31'10" (5.49 x 9.7 m), and rises to a height of approximately 30'8" (9.4 metres).<sup>3</sup> It is entered through a doorway from the open verandah on the west side and through a doorway reached by stairs rising up from the Boiler House on the east side. On the upper part of each elevation of the Engine House is a window with a semi-circular head and central keystone; those on the east and west sides are glazed while the north and south windows were originally blind. The Engine House carried a steam engine to drive the edge runners in the incorporating mills in the cross wings.

On the east side of the Engine House is the Boiler House which has a rectangular plan of approximately 21'3" x 53" (6.5 x 16.15 m).<sup>4</sup> Brick pilasters separated the exterior elevations into four bays by one bay. On the north and south sides each bay contained a window with a cambered head and a blind rectangular panel below. The windows were sash except in the westernmost bay on both elevations where they were blind. The east elevation bay originally contained a doorway which probably had a glazed semi-circular headed fanlight with keystone, as in the Boiler House of Group C Incorporating Mills. The roof trusses have round wrought iron tension rods, king rods, and decorative cast iron compression members.

Serving the Boiler House, on its south side was the coal yard with a brick wall and an octagonal chimney which was 75' (22.9

---

The sill of a window on the Engine House bears the inscription "Erected 1867-8".

Although the building faces west-south-west and the cross wings are aligned north-north-west to south-south-east, for clarity in this report the building is described as if it faced west.

Ledger c1908, cat. WASC 1509 (PRO Hayes Repository).

Ledger c1908, cat. WASC 1509 (PRO Hayes Repository).

m) in height and constructed of brick.<sup>5</sup>

The cross wings, originally containing the gunpowder incorporating mills, are of three bays each and are single-storeyed and have a gabled roof. The bays are separated by partition walls, aligned east to west, which are constructed of brick laid in English bond. The front and back walls were of wood and canvas, with shutters in an iron framing, and the roof was of iron framing and boarded outside.<sup>6</sup> There was a small timber cabin on the north side of the north cross wing originally.<sup>7</sup> The outer side of the verandah on the west side of the cross wings and Engine House has slender columns of cast iron. The relatively insubstantial fabric of the sides and roof of the cross wings could be easily replaced should an explosion occur.<sup>8</sup> Drenching apparatus was erected over each pair of runners. In the event of an explosion, a wooden shutter would have been lifted automatically to release 40 gallons (182 l) of water from a cistern in the drenching apparatus of all of the mills in the building.<sup>9</sup>

Published in 1870, "A Handbook of the Manufacture and Proof of Gunpowder as carried on at the Royal Gunpowder Factory, Waltham Abbey" describes the incorporating mills machinery and outlines the procedure for combining the ingredients of saltpetre, sulphur and charcoal to form gunpowder:<sup>10</sup>

The incorporating mill consists of a pair of large heavy edge-runners, of iron or stone, which revolve on a strong circular bed .... The runners are of various sizes, but must weigh from 3½ to 4 tons each. ... The runners are connected together by a powerful spindle of wrought iron, which rests in brass bouches placed in the cross-head, so as to allow the spindle and runners to rise and fall according to the thickness or thinness of the layer of material on the bed. The spindle is placed in the cross-head, so as to bring one runner nearer to it than the other, and therefore to cause them to describe different paths when in motion. ...

The cross-head is fixed on a vertical shaft, on which is fixed, underneath the flooring of the mill, a wheel driven by a pinion on the driving shaft which passes underneath the whole group of mills. By this arrangement the whole of the machinery is kept underneath, and out of reach of damage from explosion. The cross-head is fitted with a bracket on each side to carry a "plough," or wedge-shaped piece of wood shod with felt and leather, which travels round on the bed immediately in front of the runners, and thus keeps the composition from working away from them. The bed has a curb or edge round the outside and inside of the circular path described by the runners, that on the outside being formed by a sloping rim or casing fixed all round the bed, that on the inside by the circular base of the "cheese" or conical socket down which the vertical shaft of the cross-head passes. Both the inside and outside curbs have gun-metal rings round them for the ploughs to work against. Every fitting and bolt is arranged with the greatest care, as neither to break nor become loose from the jolting of the mill, and thus drop into the charge. ...

The operations connected with a charge are as follows:- The charges (either "green charges" from the mixing house, or dust charges from the dusting houses or granulating houses) come to the mills in wooden tubs, and are stored in strong expense magazines or charge houses. In all cases these charges have been carefully sifted before going to the mills, the green charges in the mixing houses after passing through the

---

Ledger c1908, cat. WASC 1509 (PRO, Hayes Repository).

Dyelined drawing of "Incorporating Mills Group C and D 39 & 40", no date, cat. WASC 901/149 (PRO, Hayes Repository).

Ledger c1908, cat. WASC 1509 (PRO, Hayes Repository).

"A Handbook of the Manufacture and Proof of Gunpowder, as carried on at the Royal Gunpowder Factory, Waltham Abbey," by Captain F M Smith, Royal Artillery, Assistant Superintendent, 1870. Printed by Order of the Secretary of State for War, London.

"A Handbook of the Manufacture and Proof of Gunpowder, as carried on at the Royal Gunpowder Factory, Waltham Abbey," by Captain F M Smith, Royal Artillery, Assistant Superintendent, 1870. Printed by Order of the Secretary of State for War, London.

"A Handbook of the Manufacture and Proof of Gunpowder, as carried on at the Royal Gunpowder Factory, Waltham Abbey," by Captain F M Smith, Royal Artillery, Assistant Superintendent, 1870. Printed by Order of the Secretary of State for War, London.

The Handbook states (p40) that, at that time, there were three groups of mills buildings on the site which operated in this way (ie Groups A, C & D), driven by steam.

mixing machine, and the dust charges in the houses from which they come. This sifting is most necessary, as it is the only certain plan of preventing foreign matters getting into the mill bed. The millman takes the other, and then with his rake and brush distributes it evenly over the mill bed. The runners are then moved round a quarter revolution, and the piece of mill cake left under the runners from the former charge is broken up and distributed over the fresh charge. This portion of mill cake is of course finished powder ...

Cannon powder requires to be incorporated for three hours, all small arm powder made with dogwood for five.\* (\*The times of incorporation vary with the power of the mills.) ...

When the process [of incorporation] is finished, the charge is now known as "mill cake," being partly in the state of soft cake and partly of dust, is scraped and swept up from the mill bed, placed in wooden tubs, and transferred to the charge house to await inspection ....

Most of the independent gearing for each of the six mills survives, in a partly-collapsed state, in the underground chamber. Aligned north to south, the chamber is brick barrel-vaulted and is positioned slightly off-centre to the east below the cross wing gable. Protected by a metal trough, surviving machinery includes main drive shafts, with clutches before each gear chamber, control rods and pinions. Below the Engine House are two large stone engine beds, two cast iron fly wheels made up of bolted segments, a central drive, flywheel and small gearing.

Just as most of the machinery in the other steam incorporating mills on the site were dismantled and converted to take cordite incorporating machines by the late nineteenth century, this building also underwent alteration relating to cordite production.<sup>11</sup> Around the late nineteenth century and early twentieth century it is known as "Press House Group D"<sup>12</sup> as well as an "Acetone and Mineral Jelly Weighing Store".<sup>13</sup> The Press House would have been for cordite and both Acetone and Jelly are used in the mixing of cordite. By c1908 it reverts to being known as an Incorporating Mill,<sup>14</sup> and by 1923 it is an Incorporating Mill and a Cordite Store.<sup>15</sup>

The cross wing partition walls have "I" girders and blocked openings in the gables which are likely to belong to shafting for machinery associated with cordite manufacture. An earth traverse was created in 1904-5.<sup>16</sup> In 1906 a shoe porch, constructed of corrugated iron, was added on the south side of the south cross wing.<sup>17</sup> The chimney was demolished in c1908-9.<sup>18</sup>

---

Another building, the Group G Incorporating Mills were converted from black gunpowder incorporating mills to cordite incorporating mills in 1898-9 and it is probable that most of the gunpowder incorporating mills were dismantled and converted in this way at around the same time. The conversion of Group G Incorporating Mills is noted in the "Proceedings of a Court of Enquiry and a Report ... on the Circumstances Attending an Explosion which occurred at the Royal Gunpowder Factory, Waltham Abbey, on the 15th December 1902", cat. WASC 353.

It is labelled "Press House Group D" on a plan by Weller & Grahams Ltd, Litho, London, 3737.2.03, in "Proceedings of a Court of Enquiry and a Report ... on the Circumstances Attending an Explosion which occurred at the Royal Gunpowder Factory, Waltham Abbey, on the 15th December 1902", cat. WASC 353. The Ledger of c1908, however, still refers to it as an Incorporating Mill, cat. WASC 1509 (PRO, Hayes Repository).

It is known as both Acetone & Mineral Jelly Weighing Store and Press House Group D in the OS County Series 1:2500 maps, 2nd ed. 1897 (surveyed 1865-9, revised 1895), sheet refs XLIX.14, XLI.8.12, XLII.5.9.

Almost this was for incorporating cordite rather than gunpowder. Ledger c1908, cat. WASC 1509 (PRO, Hayes Repository). By September 1917 it is known as Incorporating House No. 8/Spare Gear Room No. 3 ("Royal Gunpowder Factory, Waltham Abbey" scale 1:2500.

Site plan of Royal Gunpowder Factory at Waltham Abbey, 1:2500, as named 13 September 1917, revised March 1919 and March 1923, cat. WASC 900/84.

Ledger c1908, cat. WASC 1509 (PRO, Hayes Repository).

Ledger c1908, cat. WASC 1509 (PRO, Hayes Repository).

The building has been altered in various phases in the mid twentieth century relating to its later use as laboratories. Additional windows were added on the north and south elevations of the former Engine House and larger windows were inserted in the north and south bays of the Boiler House. The doorway at the east end of the Boiler House was blocked and replaced by later doorway. The shoe porch of corrugated iron at the south end of the cross wing was replaced by a brick porch with a flat roof. A low flat-roofed Pump House was added at the east end of the north elevation of the Boiler House, and a low flat-roofed addition linked the north cross wing with the south cross wing of building L148. A drawing of 1951 shows the Boiler House, then being used as a Recording Room, Park Room and Preparation Room, was about to be converted into a Burning Rate Laboratory, Charge Preparation and Computing Rooms.<sup>19</sup> Another drawing of 1959 is for proposed alterations to have ground and first floor offices in the former Engine House.<sup>20</sup>

The laboratories were finally closed around 1991 and stripping out began in early 1993.

Surveyed March 1993  
Report by R L Burgess

---

Ledger c1908, cat. WASC 1509 (PRO, Hayes Repository).

Drawing dated 24/4/1951, Cat. L153.B.10. (MOD Central Disposals Unit, Chessington).

Drawing dated 27/4/1959, cat. L153.B.17 (MOD Central Disposals Unit, Chessington).

## THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                   |                                                                                                                                                    |                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L154                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | OLD SERIES                                                        | RCHME NUMBER                                                                                                                                       | N.G.R.<br>TL 37710 01200 |
| NAME/FUNCTION<br>Magazine                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                   | START DATE<br>195?                                                                                                                                 | END DATE                 |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                   |                                                                                                                                                    |                          |
| CARTOGRAPHIC DEPICTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                   | DOCUMENTARY REFERENCES                                                                                                                             |                          |
| > 1940    WASC 900/91A ; L154<br>1954      A - B.34 ; L154<br>c1960    WASC 900/94 ; L154<br>c1963    WASC 900/97 ; L154<br>1972      WASC 900/102 ; L154<br>1972      WASC 900/104 ; L154<br>1976      WASC 900/113 ; L154                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1991      Mott McDonald survey<br>1992      RARDE List ; Magazine |                                                                                                                                                    |                          |
| PHOTOGRAPHY<br>HISTORIC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                   | PHOTOGRAPHY<br>RCHME                                                                                                                               |                          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                   | 1) 206/F/26 From South West<br>206/J/24 From South West<br>206/J/25 Detail of Engine House<br>206/J/27 From South<br>2) BB92/26083 From North West |                          |
| RELATIONSHIPS WITH OTHER MONUMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                   |                                                                                                                                                    |                          |
| ASSOCIATED WITH: L153, L157                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                   |                                                                                                                                                    |                          |
| CONDITION      Fair                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                   |                                                                                                                                                    |                          |
| DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                   |                                                                                                                                                    |                          |
| 1)      CONSTRUCTIONAL MATERIAL<br>Brick in English bond<br><br>2)      ROOF MATERIALS AND STRUCTURE<br>Slate with felt covering over a brick vault<br><br>3)      POWER SOURCE<br>Electricity<br><br>4)      DIMENSIONS    i) L 4.02    ii) W 3.43    iii) HT Eave 3.6<br><br>5)      The magazine is a single storeyed building with a rectangular ground plan. It has gabled ends to the west and east. The building is entered through a raised door on the western side, formerly served by a narrow guage railway on a trestle. The magazine was lit by a small window on the north wall, now blocked. The north and south elevations are blank. The interior of the magazine is lined with wooden boards. To the west of mills L153 and L157 the brick pier foundations of the railway was found. Two narrow slots on the east wall now filled by bricks may have contained trestle supports. |                                                                   |                                                                                                                                                    |                          |



## THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                    |                                                                                                                                                                                                                                                                                                                                                                                                                 |                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L155                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | OLD SERIES<br>162A | RCHME NUMBER                                                                                                                                                                                                                                                                                                                                                                                                    | N.G.R.<br>TL 37783 01200 |
| NAME/FUNCTION<br>Incorporating House No.5<br>Laboratory                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                    | START DATE<br>1914-17?<br>1955                                                                                                                                                                                                                                                                                                                                                                                  | END DATE<br>1945         |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                    |                                                                                                                                                                                                                                                                                                                                                                                                                 |                          |
| <b>CARTOGRAPHIC DEPICTION</b><br><br>1917 WASC 900/70 ; Incorp. House No.5<br>1917 WASC 900/72 ; 162a<br>1919 WASC 900/74 ; 162a<br>c1920 WASC 900/80 ; 162a<br>1923 WASC 900/84 ; 162a<br>> 1940 WASC 900/91A ; L155<br>1954 A - B.34 ; L155<br>c1960 WASC 900/94 ; L155<br>c1963 WASC 900/97 ; L155<br>1972 WASC 900/102 ; L155<br>1972 WASC 900/104 ; L155<br>1976 WASC 900/113 ; L155                                                                                                                                                                                                                                                                                                                                                            |                    | <b>DOCUMENTARY REFERENCES</b><br><br>Plans;<br>L155 B01 - B25 ; Plans and Elevations<br><br>c1925 RGPF Ledger WASC 1680 ; Incorp. House No.5<br>1938 Text Book of Explosives 1938 H.M.S.O Chp XV<br>p99-111 Figs 15.2-9<br>c1945 RGPF Ledger WASC 1508 ; Incorp. House No.5<br><br>1972 ERDE List ; Laboratory/Physical Section<br>1991 Mott McDonald survey<br>1992 RARDE List ; Laboratory/Incorp. House No.5 |                          |
| <b>PHOTOGRAPHY HISTORIC</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                    | <b>PHOTOGRAPHY RCHME</b><br>1) 206/D/25 From South West<br>206/N/21 Detail of Barge porch<br>206/N/22 From South West<br>4) 4788/9 06.05.1993                                                                                                                                                                                                                                                                   |                          |
| <b>RELATIONSHIPS WITH OTHER MONUMENTS</b><br><br>ASSOCIATED WITH: L151, L159, L134, L143, L146, L151, L155, L159                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                    |                                                                                                                                                                                                                                                                                                                                                                                                                 |                          |
| <b>CONDITION</b> Fair                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                    |                                                                                                                                                                                                                                                                                                                                                                                                                 |                          |
| <b>DESCRIPTION</b><br>1) CONSTRUCTIONAL MATERIAL<br>Brick<br><br>2) ROOF MATERIALS AND STRUCTURE<br>Felt<br><br>3) POWER SOURCE<br>Steam Electricity<br><br>4) DIMENSIONS i) L 32.07 ii) W 8.5 iii) HT Eave 3.5<br><br>5) The building is single storeyed with a rectangular ground plan, it has gabled ends to the north and south. the building is divided into seven bays by five internal partition walls in English bond. A blocked bearing box is visible on the south gable wall, on the north wall is a small timber hatch in a similar position. The external walls of the bays are filled by modern timber framed infill. Modern leantos constructed from timber frames with an asbestos skin have been added to the north and south ends. |                    |                                                                                                                                                                                                                                                                                                                                                                                                                 |                          |

## THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY

| NUMBER                      | OLD SERIES                                                                                                                | RCHME NUMBER           | N.G.R.                                                                    |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------|------------------------|---------------------------------------------------------------------------|
| L157                        | 167                                                                                                                       |                        | TL 37750 01174                                                            |
| NAME/FUNCTION               |                                                                                                                           | START DATE             | END DATE                                                                  |
| Group C Incorporating Mills |                                                                                                                           | 1861                   | 1898                                                                      |
| Press House Group C         |                                                                                                                           | 1898                   | by 1917                                                                   |
| Press House No 4            |                                                                                                                           | by 1917                | 1945                                                                      |
| Laboratory                  |                                                                                                                           | 1946                   |                                                                           |
| NO PHOTOGRAPHY<br>AVAILABLE |                                                                                                                           |                        |                                                                           |
| CARTOGRAPHIC DEPICTION      |                                                                                                                           | DOCUMENTARY REFERENCES |                                                                           |
| 1861-1868                   | WASC 900/10A                                                                                                              | Plans;                 |                                                                           |
| 1865                        | WASC 900/13 ; Incorp Mills and Boiler House                                                                               | L157                   | B01 - B35 ; Plans and Elevations                                          |
| 1865                        | WASC 900/14 ; Group C Incorp Mills                                                                                        | 1908                   | RGPF Ledger WASC 1509 + WASC 1764 ;<br>Press House Group C built 1861 p17 |
| 1865                        | WASC 900/38 + SUPP5 975 ; Group C Incorp Mills                                                                            | c1925                  | RGPF Ledger WASC 1680 ; Press House Group C                               |
| 1865                        | WASC 900/41A ; Group C Incorp Mills                                                                                       | c1945                  | RGPF Ledger WASC 1508 ; Press House Group C                               |
| 1865                        | WASC 900/42 ; Group C Incorp Mills                                                                                        | 1938                   | Text Book of Explosives H.M.S.O. Chp XV<br>p99-111, Figs 15.2-9           |
| 1897                        | WASC 900/53C                                                                                                              | 1972                   | ERDE List ; Laboratory/Press House No.4                                   |
| c1910                       | WASC 900/65 ; Press House Group C                                                                                         | 1991                   | Mott McDonald survey                                                      |
| c1910                       | WASC 900/79 ; Press House Group C                                                                                         | 1992                   | RARDE List ; Laboratory/Press House No.4                                  |
| 1917                        | WASC 900/70 ; Press House Group 4                                                                                         | 1993                   | RCHME NBR No.91456                                                        |
| 1917                        | WASC 900/72 ; 167                                                                                                         |                        |                                                                           |
| 1919                        | WASC 900/74 ; 167                                                                                                         |                        |                                                                           |
| c1920                       | WASC 900/80 ; 167                                                                                                         |                        |                                                                           |
| 1923                        | WASC 900/84 ; 167                                                                                                         |                        |                                                                           |
| > 1940                      | WASC 900/91A ; L157                                                                                                       |                        |                                                                           |
| 1954                        | A - B.34 ; L157                                                                                                           |                        |                                                                           |
| c1960                       | WASC 900/94 ; L157                                                                                                        |                        |                                                                           |
| c1963                       | WASC 900/97 ; L157                                                                                                        |                        |                                                                           |
| 1972                        | WASC 900/102 ; L157                                                                                                       |                        |                                                                           |
| 1972                        | WASC 900/104 ; L157                                                                                                       |                        |                                                                           |
| 1976                        | WASC 900/113 ; L157                                                                                                       |                        |                                                                           |
| 1863                        | WASC 901/138 22 April 1863 General Plan D                                                                                 |                        |                                                                           |
| 1864                        | WASC 901/138/1 29 Jan 1864 General Plan &<br>Sections of proposed canals +C<br>WASC 901/149 Incorporating Mills Group C+D |                        |                                                                           |

**PHOTOGRAPHY  
HISTORIC**

WASC 68 Explosion 21.8.1890  
WASC 71 Explosion 21.10.18??  
WASC 72 Explosion 21.10.1897  
PRO Supply 5/860 32-7 Explosion 21-oct-1890  
PRO Supply 5/860 75 1890s  
PRO Supply 5/860 99 Group C Mill No136 Incorporating  
Mill Explosion 10.7.95

**PHOTOGRAPHY  
RCHME**

- 1) 206/P/29 Detail drive shaft beneath Northerly mill  
206/P/30 Detail clutch mechanism  
206/P/31 Detail clutch mechanism  
206/P/32 Detail clutch mechanism  
206/R/22 Gunpowder Steam mill from  
South East
- 2) BB92/26082 From South West  
BB92/26086 From South East  
BB92/26088 From North  
BB92/26175 From South West (Colour)  
BB92/26363 Plans & Elevations  
BB92/26374 Plans Sections Elevations of Boiler House  
BB92/26385 Plans Sections Elevations New  
Incorporating Mills  
BB93/27087 Cast iron drive shaft alley exposed  
BB93/27088 Friction clutch and chamber beneath mill  
BB93/27089 Bedstones in central engine house
- 4) 4788/9 06.05.1993

**RELATIONSHIPS WITH OTHER MONUMENTS**

ASSOCIATED WITH: L145, L148, L149, L153, L154, L156, L158, L174, L187

**CONDITION** Fair

**DESCRIPTION**

- 1) **CONSTRUCTIONAL MATERIAL**  
Brick in English bond
- 2) **ROOF MATERIALS AND STRUCTURE**  
Timber boards
- 3) **POWER SOURCE**  
Steam Electricity
- 4) **DIMENSIONS** i) L 46.05 ii) W 8.4
- 5) A stone plaque on the west side has the following inscription 'Erected 1861'.  
  
See attached RCHME Threatened Buildings Section report.

ROYAL COMMISSION ON THE HISTORICAL MONUMENTS OF ENGLAND

MOD Building No. L157  
Group C Incorporating Mills  
The Royal Gunpowder Factory  
Waltham Abbey  
Essex

NBR No: 91456  
NGR: TL 37750 01174

Built in 1861, the Group C Incorporating Mills building has a T-shaped plan which comprises a central Engine House, with a Boiler House at its east end, and cross wings on its north and south sides for gunpowder incorporating mills. There was an open verandah along the west front. On the south side of the Boiler House was a coal yard containing a tall chimney.

The Engine House, Boiler House and partition walls separating the bays in the incorporating mills are constructed of yellow brick laid in English bond. The roofs and side walls were less substantial, being of wood and canvas or felt, with a slight iron framework.

The original gearing for the machinery of the mills in this building survives more or less intact below the ground.

Originally the cross wings were of two bays each and were later extended by the addition of a third bay at either end. In this secondary form, the building represents a model for the other incorporating mills subsequently built on this part of the site.

-ooOoo-

Group C Incorporating Mills building was constructed in 1861.<sup>21</sup> Its T-shaped plan comprises a central Engine House, with a Boiler House at its east end, and cross wings on its north and south sides, which are each of three bays, and contained a total of six gunpowder incorporating mills<sup>22</sup> There was an open verandah along the west front. On the south side of the Boiler House was a coal yard containing a chimney at the centre of its west wall.

Both the Engine House and the Boiler House are constructed of yellow brick laid in English bond, with a chamfered brick plinth and brick dentil cornice. Each has a hipped roof with lead coverings.

The Engine House has a rectangular plan, with internal dimensions of approximately 18' by 31'10" (5.49 x 9.7 m), and rises to a height of approximately 30'8" (9.4 m).<sup>23</sup> It is entered through a doorway from the open verandah on the west side and through a doorway reached by stairs rising up from the Boiler House on the east side. On the upper part of each elevation of the Engine House is a window with a semi-circular head and central keystone; those on the east and west sides are glazed while the north and south windows were originally blind. The Engine House carried a steam engine to drive the edge runners in the incorporating mills in the cross wings.

On the east side of the Engine House is the Boiler House which has a rectangular plan of approximately 21'2" x 753" (6.45 x 716.15 m).<sup>24</sup> Brick pilasters separated the exterior elevations into four bays by one bay. On the north and south sides each bay contained a window with a cambered head and a blind rectangular panel below. The windows were sash except in the westernmost bay on both elevations where they were blind. A wide doorway in the east elevation bay has a glazed semi-circular

---

The sill of a window on the western side of the Engine House bears the inscription "Erected 1861".

Although the building faces west-south-west and the cross wings are aligned north-north-west to south-south-east, for clarity in this report the building is described as if it faced west.

Ledger c1908, cat. WASC 1509 (PRO Hayes Repository).

Ledger c1908, cat. WASC 1509 (PRO Hayes Repository).

headed fanlight with a keystone, although originally the doorway may have had a different form.<sup>25</sup> A drawing dated 1860 shows a partition between the eastern end bay and the remainder of the Boiler House which carried at least two boilers.<sup>26</sup> The roof contains nine trusses which have round wrought iron tension rods, king rods, and decorative cast iron compression members.

Serving the Boiler House, on its south side was the coal yard with a brick wall and an octagonal chimney which was 75' (22.9 m) in height and constructed of brick.<sup>27</sup>

The cross wings, containing the incorporating mills, were originally of two bays each<sup>28</sup> and were later extended by the addition of a third bay at either end.<sup>29</sup> They are single-storeyed and have a gabled roof. The bays are separated by partition walls, aligned east to west, which are constructed of brick laid in English bond. The walls were of canvas and timber and the roof is of iron and timber with slate coverings.<sup>30</sup> The outer side of the verandah on the west side of the cross wings and Engine House has slender columns of cast iron. The relatively insubstantial fabric of the sides and roof of the cross wings could be easily replaced should an explosion occur.<sup>31</sup> Drenching apparatus would have been erected over each pair of runners. In the event of an explosion, a wooden shutter would have been lifted automatically to release 40 gallons (182 l) of water from a cistern in the drenching apparatus of all of the mills in the building.<sup>32</sup>

---

A drawing of the "Plan, Section and Elevations of Boiler House &c to New Incorporating Mills," signed I. Randall, Clerk of Works, 22/6/1860 has had a separate drawing for a doorway adhered to the east elevation drawing of the Boiler House, cat. L157.B.03 (MOD Central Disposals Unit, Chessington).

Drawing of the "Plan, Section and Elevations of Boiler House &c to New Incorporating Mills," signed I. Randall, Clerk of Works, 22/6/1860, cat. L157.B.03 (MOD Central Disposals Unit, Chessington).

Ledger c1908, cat. WASC 1509 (PRO, Hayes Repository).

An original drawing of "Plans, Sections and part Elevation of New Incorporating Mills," signed I. Randall, Clerk of Works, 22/6/1860, shows only two bays on either side of the Engine House, to which separate pieces of paper with drawings of a third bay have been adhered at either end of the original plan.

Actual construction appears to have followed this two-stage pattern of progression. A site plan of the Gunpowder Factory of 1821, updated in the mid nineteenth century, shows a block plan of the building, with a tramway running along the west side from which five short tramlines/platforms run off at right angles to connect with the building (one to the Engine House at the centre and two to each of the cross wings), which suggests that the wings are only two bays in this representation ("A Survey of the lands and Buildings, the Property of the Ordnance, at the Royal Powder Works, Waltham Abbey, made in compliance with the Master General and Boards Order 6th June 1821," PRO, Hayes Repository).

Plan of Royal Powder Factory, Waltham Abbey, 1865, corrected May 1886, PRO Supply 5/975.

Dyeline drawing of "Incorporating Mills Group C and D, 39 and 40", undated, cat. WASC 901/149 (PRO, Hayes Repository).

"A Handbook of the Manufacture and Proof of Gunpowder, as carried on at the Royal Gunpowder Factory, Waltham Abbey," by Captain F M Smith, Royal Artillery, Assistant Superintendent, 1870. Printed by Order of the Secretary of State for War, London.

"A Handbook of the Manufacture and Proof of Gunpowder, as carried on at the Royal Gunpowder Factory, Waltham Abbey," by Captain F M Smith, Royal Artillery, Assistant Superintendent, 1870. Printed by Order of the Secretary of State for War, London.

Published in 1870, "A Handbook of the Manufacture and Proof of Gunpowder as carried on at the Royal Gunpowder Factory, Waltham Abbey" describes the incorporating mills machinery and outlines the procedure for combining the ingredients of saltpetre, sulphur and charcoal to form gunpowder:<sup>33</sup>

The incorporating mill consists of a pair of large heavy edge-runners, of iron or stone, which revolve on a strong circular bed .... The runners are of various sizes, but must weigh from 3½ to 4 tons each. ... The runners are connected together by a powerful spindle of wrought iron, which rests in brass bouches placed in the cross-head, so as to allow the spindle and runners to rise and fall according to the thickness or thinness of the layer of material on the bed. The spindle is placed in the cross-head, so as to bring one runner nearer to it than the other, and therefore to cause them to describe different paths when in motion.

...

The cross-head is fixed on a vertical shaft, on which is fixed, underneath the flooring of the mill, a wheel driven by a pinion on the driving shaft which passes underneath the whole group of mills. By this arrangement the whole of the machinery is kept underneath, and out of reach of damage from explosion. The cross-head is fitted with a bracket on each side to carry a "plough," or wedge-shaped piece of wood shod with felt and leather, which travels round on the bed immediately in front of the runners, and thus keeps the composition from working away from them. The bed has a curb or edge round the outside and inside of the circular path described by the runners, that on the outside being formed by a sloping rim or casing fixed all round the bed, that on the inside by the circular base of the "cheese" or conical socket down which the vertical shaft of the cross-head passes. Both the inside and outside curbs have gun-metal rings round them for the ploughs to work against. Every fitting and bolt is arranged with the greatest care, as neither to break nor become loose from the jolting of the mill, and thus drop into the charge. ...

The operations connected with a charge are as follows:- The charges (either "green charges" from the mixing house, or dust charges from the dusting houses or granulating houses) come to the mills in wooden tubs, and are stored in strong expense magazines or charge houses. In all cases these charges have been carefully sifted before going to the mills, the green charges in the mixing houses after passing through the mixing machine, and the dust charges in the houses from which they come. This sifting is most necessary, as it is the only certain plan of preventing foreign matters getting into the mill bed. The millman takes the other, and then with his rake and brush distributes it evenly over the mill bed. The runners are then moved round a quarter revolution, and the piece of mill cake left under the runners from the former charge is broken up and distributed over the fresh charge. This portion of mill cake is of course finished powder ....

Cannon powder requires to be incorporated for three hours, all small arm powder made with dogwood for five.\* (\*The times of incorporation vary with the power of the mills.) ...

When the process [of incorporation] is finished, the charge is now known as "mill cake," being partly in the state of soft cake and partly of dust, is scraped and swept up from the mill bed, placed in wooden tubs, and transferred to the charge house to await inspection ....

Most of the independent gearing for each of the six mills survives, in a partly-collapsed state, in the underground chamber. Aligned north to south, and positioned slightly off-centre to the east below the cross wing gable, the chamber is metal-lined. The drive tunnel is 1.05 m wide and 2.09 m in height and the compartment below each mill is 2.14 m in diameter. The drive shaft is supported on intermediate bearing brackets, the feet of which are 0.78 m below the ceiling. The northern section of the drive shaft has been removed. The northern two chambers retain their friction clutches and pinion wheel support arm. "WA94" is painted on the clutch wheel of the northernmost chamber. The chamber immediately to the north of the Engine House is blocked by rubble. South of the Engine House, the drive shaft is in situ, and each of the three compartments below the mills on this side retain a friction clutch and pinion support arm. The engine compartment has been sealed and is rubble-filled.

---

Superintendent, 1870. Printed by Order of the Secretary of State for War, London.

"A Handbook of the Manufacture and Proof of Gunpowder, as carried on at the Royal Gunpowder Factory, Waltham Abbey," by Captain F M Smith, Royal Artillery, Assistant Superintendent, 1870. Printed by Order of the Secretary of State for War, London.

The Handbook states (p40) that, at that time, there were three groups of mills buildings on the site which operated in this way (ie Groups A, C & D), driven by steam.



The first of the incorporating mills buildings to be built in the form of a T-shaped plan comprising a central Engine House, rear Boiler House and cross wings to contain incorporating mills, it represents a model for the later incorporating mills buildings on the site. In particular, the Group D Incorporating Mills building (L153), constructed some seven years later, was an almost-identical copy of the building.

Small timber cabins, one at either end of the cross wings, are late nineteenth-century and in 1898 an additional timber truck shed was added beside the cabin on the north side.<sup>34</sup>

Just as most of the machinery in the other steam incorporating mills on the site were dismantled and converted to take cordite incorporating machines by the late nineteenth century, this building also underwent alteration relating to cordite production.<sup>35</sup> A map of c1902 labels the building as "Press House Group C" rather than the "Incorporating Mill" description given to some of the other mill buildings shown on the same map.<sup>36</sup> The gunpowder incorporating machinery would have been removed at ground floor level and that in the underground chamber would have become redundant. The layout and operations of the building after conversion is not entirely clear but cordite was probably pressed here before being taken to be dried in a separate Reel Drying Stove (H7 or H8). The cross wing partition walls have "I" girders and blocked openings in the gables which are likely to belong to shafting for machinery associated with cordite manufacture. The boilers were removed in c1906-7 and it may have been at this time that further beams and iron posts were added to support a crane in the Boiler House.<sup>37</sup> The chimney was demolished in c1908-9 and thereafter the building may have been operated by a central power source such as the Accumulator Tower building A214 sited approximately 150 metres to the south-south-west.<sup>38</sup>

Further alterations were carried out in 1906-7.<sup>39</sup> A floor was inserted half-way up the Engine House to create offices for heads of branches, and new windows were inserted on the lower part of the Engine House north and south elevations and in the formerly blind windows above. The Boiler House became a Semi Scale Laboratory and had the windows on its north and south elevations enlarged by lowering their sills by approximately 0.60 metre, the easternmost window on the north elevation was replaced by steel double doors, and the doorway on its east elevation was partially blocked and converted into a window. A detached single-storeyed building of 13'10" (4.2 m) square was built on the north side of the Boiler House as a Workshop and

---

The Ledger of c1908 states that the cabin at the north end was built in 1861 but it adjoins the end bay which is later. It states that the cabin at the south end was built in 1896 and that the truck shed was added in 1898. Cat. WASC 1509 (PRO, Hayes Repository).

Another building, the Group G Incorporating Mills were converted from black gunpowder incorporating mills to cordite incorporating mills in 1898-9 and it is probable that most of the gunpowder incorporating mills were dismantled and converted in this way at around the same time. The conversion of Group G Incorporating Mills is noted in the "Proceedings of a Court of Enquiry and a Report ... on the Circumstances Attending an Explosion which occurred at the Royal Gunpowder Factory, Waltham Abbey, on the 15th December 1902", cat. WASC 353.

Plan by Weller & Grahams Ltd, Lith, London, 3737.2.03, in "Proceedings of a Court of Enquiry and a Report ... on the Circumstances Attending an Explosion which occurred at the Royal Gunpowder Factory, Waltham Abbey, on the 15th December 1902," cat. WASC 353.

Drawing of plans, sections and elevations of Building No. L157, Waltham Abbey ERDE, dated 26/2/1962, cat. L157.B.21 (MOD Central Disposals Unit, Chessington). The crane is described on the drawing as having 3 ton gantry with long E cross travel.

Ledger c1908, cat. WASC 1509 (PRO, Hayes Repository).

Drawing of plans, sections and elevations of Building No. L157, Waltham Abbey ERDE, dated 26/2/1962, cat. L157.B.21 (MOD Central Disposals Unit, Chessington).



Compressor House. The rooms in the cross wings were variously used as Chem. and Crystal Laboratories, Testing and Prep. Rooms. The truck house at the north end of the north cross wing appears to have been removed at this date.

Surveyed March 1993  
Report by R L Burgess

| THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY |                                                                                            |                                              |                                          |
|---------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------|------------------------------------------|
| NUMBER<br>L158                              | OLD SERIES                                                                                 | RCHME NUMBER                                 | N.G.R.<br>TL 37747 01181                 |
| NAME/FUNCTION<br>Workshop                   |                                                                                            | START DATE<br>197?                           | END DATE                                 |
| NO PHOTOGRAPHY<br>AVAILABLE                 |                                                                                            |                                              |                                          |
| CARTOGRAPHIC DEPICTION                      |                                                                                            | DOCUMENTARY REFERENCES                       |                                          |
| 1972                                        | WASC 900/102 ; L158                                                                        | 1972                                         | ERDE List ; Workshop for L157            |
| 1972                                        | WASC 900/104 ; L158                                                                        | 1991                                         | Mott McDonald survey                     |
| 1976                                        | WASC 900/113 ; L158                                                                        | 1992                                         | RARDE List ; Ancillary Building for L157 |
| PHOTOGRAPHY<br>HISTORIC                     |                                                                                            | PHOTOGRAPHY<br>RCHME                         |                                          |
|                                             |                                                                                            | 1) 206/J/28 From West<br>206/J/29 From South |                                          |
| RELATIONSHIPS WITH OTHER MONUMENTS          |                                                                                            |                                              |                                          |
| ASSOCIATED WITH: L157                       |                                                                                            |                                              |                                          |
| CONDITION      Demolished                   |                                                                                            |                                              |                                          |
| DESCRIPTION                                 |                                                                                            |                                              |                                          |
| 1)                                          | CONSTRUCTIONAL MATERIAL<br>Brick                                                           |                                              |                                          |
| 4)                                          | DIMENSIONS i) L 4.22 ii) W 4.22                                                            |                                              |                                          |
| 5)                                          | The building , rectangular in plan, was demolished in 1992, a concrete floor slab remains. |                                              |                                          |

## THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY

|                                                                                                                                                                                                                                                                                                                                                                                         |                    |                                                                                                                                                                                                                                                                                                                                                                                                           |                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L159                                                                                                                                                                                                                                                                                                                                                                          | OLD SERIES<br>167A | RCHME NUMBER                                                                                                                                                                                                                                                                                                                                                                                              | N.G.R.<br>TL 37800 01144 |
| NAME/FUNCTION<br>Press House No.5<br>Laboratory                                                                                                                                                                                                                                                                                                                                         |                    | START DATE<br>1915<br>1956-7                                                                                                                                                                                                                                                                                                                                                                              | END DATE<br>1956         |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                                                                                             |                    |                                                                                                                                                                                                                                                                                                                                                                                                           |                          |
| <b>CARTOGRAPHIC DEPICTION</b><br><br>1917 WASC 900/70 ; Press House No.5<br>1917 WASC 900/72 ; 167a<br>1919 WASC 900/74 ; 167a<br>c1920 WASC 900/80 ; 167a<br>1923 WASC 900/84 ; 167a<br>> 1940 WASC 900/91A ; L159<br>1954 A - B.34 ; L159<br>c1960 WASC 900/94 ; L159<br>c1963 WASC 900/97 ; L159<br>1972 WASC 900/102 ; L159<br>1972 WASC 900/104 ; L159<br>1976 WASC 900/113 ; L159 |                    | <b>DOCUMENTARY REFERENCES</b><br><br>Plans;<br>L159 B01 - B42 ; Plans and Elevations 1915 to 1967<br><br>c1925 RGPF Ledger WASC 1680 ; Press House No.5<br>c1945 RGPF Ledger WASC 1508 ; Press House No.5<br><br>1938 Text Book of Explosives H.M.S.O. Chp XV<br>p99-111 Figs 15.2-9<br>1972 ERDE List ; Organic Laboratory<br>1991 Mott McDonald survey<br>1992 RARDE List ; Laboratory/Press House No.5 |                          |
| <b>PHOTOGRAPHY HISTORIC</b><br><br>WASC 1448 From North mid/late 1940's<br>WASC 1748 From North<br>PRO Supply 5/861 288-91 Ignition of MDY 20-10 No.5<br>Presshouse 1-may-1915<br>PRO Supply 5/861 343-4 Ignition of MD 5-may-1918<br>PRO Supply 5/861 348 Large press bay 1<br>PRO Supply 5/861 383 30-jan-1930 Cordite press bay 1                                                    |                    | <b>PHOTOGRAPHY RCHME</b><br><br>1) 206/J/30 from South<br>206/J/31 From South West<br>206/R/30 From South East<br><br>4) 4788/9 06.05.1993                                                                                                                                                                                                                                                                |                          |
| <b>RELATIONSHIPS WITH OTHER MONUMENTS</b><br><br>ASSOCIATED WITH: L134, L143, L151, L155, L159                                                                                                                                                                                                                                                                                          |                    |                                                                                                                                                                                                                                                                                                                                                                                                           |                          |
| CONDITION                                                                                                                                                                                                                                                                                                                                                                               |                    | Fair                                                                                                                                                                                                                                                                                                                                                                                                      |                          |

DESCRIPTION

- 1) CONSTRUCTIONAL MATERIAL  
Brick
- 2) ROOF MATERIALS AND STRUCTURE  
Timber boards covered in felt
- 3) POWER SOURCE  
Steam Electricity
- 4) DIMENSIONS i) L 61.0 ii) W 9.74 iii) HT Eave 3.45
- 5) The building is single storeyed with a rectangular ground plan. It has gable walls on the north and south side. It is divided into seven bays by five internal partition walls in English bond. No evidence was seen in the walls for the presence of bearing boxes. The windows along the west wall may have been inserted. A timber leanto corridor has been added to the eastern side.

## THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L160                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | OLD SERIES<br>173                   | RCHME NUMBER                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | N.G.R.<br>TL 37820 01156 |
| NAME/FUNCTION<br>Coal Store (Coal = Charcoal?)<br>Charcoal Picking House<br>Office/Laboratory/CMJ House                                                                                                                                                                                                                                                                                                                                                                                                        | START DATE<br>1887<br>1900?<br>1951 | END DATE<br>1900?<br>1951                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                          |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                          |
| <p><b>CARTOGRAPHIC DEPICTION</b></p> <p>1897 WASC 900/53C<br/> c1910 WASC 900/65 ; Coal Store<br/> c1910 WASC 900/79 ; Coal Store<br/> 1917 WASC 900/70 ; C.M.J. House<br/> 1917 WASC 900/72 ; 175<br/> 1919 WASC 900/74 ; 175<br/> c1920 WASC 900/80 ; 175<br/> 1923 WASC 900/84 ; 175<br/> &gt; 1940 WASC 900/91A ; L160<br/> 1954 A - B.34 ; L160<br/> c1960 WASC 900/94 ; L160<br/> c1963 WASC 900/97 ; L160<br/> 1972 WASC 900/102 ; L160<br/> 1972 WASC 900/104 ; L160<br/> 1976 WASC 900/113 ; L160</p> |                                     | <p><b>DOCUMENTARY REFERENCES</b></p> <p>Plans;<br/> L160 B01 - B05 ; Plans and Elevations 1891 to 1947</p> <p>1908 RGPF Ledger WASC 1509 + WASC 1764 ;<br/> Charcoal Picking House built 1891 p19</p> <p>c1925 RGPF Ledger WASC 1680 ; Charcoal Picking<br/> House</p> <p>c1945 RGPF Ledger WASC 1508 ; Charcoal Picking<br/> House</p> <p>1972 ERDE List ; Office and Laboratory/CMJ House<br/> 1991 Mott McDonald survey<br/> 1992 RARDE List ; Office and Laboratory/CMJ House</p> |                          |
| <p><b>PHOTOGRAPHY<br/>HISTORIC</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                     | <p><b>PHOTOGRAPHY<br/>RCHME</b></p> <p>1) 206/J/32 From South<br/> 206/J/33 From South West<br/> 206/R/26 Eastern elevation<br/> 206/R/27 From South East</p> <p>2) BB92/26101 From South East</p>                                                                                                                                                                                                                                                                                    |                          |
| <p><b>RELATIONSHIPS WITH OTHER MONUMENTS</b></p> <p>ASSOCIATED WITH: L159</p>                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                          |
| <p>CONDITION Fair</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                          |

DESCRIPTION

1) CONSTRUCTIONAL MATERIAL  
Concrete and Brick

2) ROOF MATERIALS AND STRUCTURE  
Gabled Gambrel roof with slates and ridge tiles supported on Queen post trusses.

3) POWER SOURCE  
Electricity

4) DIMENSIONS i) L 16.75 ii) W 10.64 iii) HT Eave 2.75

5) The building is single storeyed with a rectangular ground plan. The base of the building is cast concrete over which is a upper brick wall. The gables of the building are covered by corrugated iron with a large window in the centre. The building is supported by integral buttresses in concrete and brick there are six on the south and north sides and four on the east and west elevations. Three windows have been inserted into the north and south elevations while two windows and a door have been inserted into the east and west elevations. The interior has been divided into office accomodation, most of the interior is covered by an inserted suspended ceiling.

It is thought that the building was originally constructed as a charcoal store. The term 'coal' was often applied in the nineteenth century to describe charcoal.

## THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L161                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | OLD SERIES<br>174 | RCHME NUMBER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | N.G.R.<br>TL 37870 01147 |
| NAME/FUNCTION<br>Charcoal Establishment<br>Boat Builders Shed<br>Garage/Metal Store                                                                                                                                                                                                                                                                                                                                                                                                                         |                   | START DATE<br>Pre 1855<br>1885<br>1969                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | END DATE                 |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                          |
| <b>CARTOGRAPHIC DEPICTION</b><br><br>1897 WASC 900/53C<br>c1910 WASC 900/65 ; Boat Builders Shed<br>c1910 WASC 900/79 ; Boat Builders Shed<br>1917 WASC 900/70 ; Boat Builder Shed<br>1917 WASC 900/72 ; Boat Builder Shed<br>1919 WASC 900/74 ; 174<br>c1920 WASC 900/80 ; 174<br>1923 WASC 900/84 ; 174<br>> 1940 WASC 900/91A ; L161<br>1954 A - B.34 ; L161<br>c1960 WASC 900/94 ; L161<br>c1963 WASC 900/97 ; L161<br>1972 WASC 900/102 ; L161<br>1972 WASC 900/104 ; L161<br>1976 WASC 900/113 ; L161 |                   | <b>REFERENCES</b><br><br>Plans;<br>WASC 901/109 Drying Chamber Charcoal Establishment<br>1855 WASC 901/113 3 Feb 1855 Plans Sections showing proposed Alterations & C+C to Charcoal Establishment<br>L161 B01 - B13 ; Plans and Elevations 1885 to 1972<br><br>1908 RGPF Ledger WASC 1509 + WASC 1764 ; Boat Builders Shed built 1885 p19<br>c1925 RGPF Ledger WASC 1680 ; Boat Builders Shed<br>c1945 RGPF Ledger WASC 1508 ; Boat Builders Shed<br><br>1972 ERDE List ; Garage/Metal Store<br>1991 Mott McDonald survey<br>1992 RARDE List ; Garage/Metal Store<br>1992 FBRC Storage |                          |
| PHOTOGRAPHY<br>HISTORIC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                   | PHOTOGRAPHY<br>RCHME                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                          |
| <b>RELATIONSHIPS WITH OTHER MONUMENTS</b><br><br>ASSOCIATED WITH: L127, L162, L163, L197                                                                                                                                                                                                                                                                                                                                                                                                                    |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                          |
| CONDITION      Demolished                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                          |
| <b>DESCRIPTION</b><br><br>5)      Site unavailable for inspection beneath rubble grader                                                                                                                                                                                                                                                                                                                                                                                                                     |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                          |



**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

|                |                   |              |                          |
|----------------|-------------------|--------------|--------------------------|
| NUMBER<br>L162 | OLD SERIES<br>175 | RCHME NUMBER | N.G.R.<br>TL 37850 01138 |
|----------------|-------------------|--------------|--------------------------|

|                                                                                |                            |                  |
|--------------------------------------------------------------------------------|----------------------------|------------------|
| NAME/FUNCTION<br>Charcoal Picking House<br>Labour Pool Store, Green Houses 1/2 | START DATE<br>1887<br>197? | END DATE<br>197? |
|--------------------------------------------------------------------------------|----------------------------|------------------|

NO PHOTOGRAPHY  
AVAILABLE

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>CARTOGRAPHIC DEPICTION</b></p> <p>1897 WASC 900/53C<br/> c1910 WASC 900/65 ; Charcoal Picking House<br/> c1910 WASC 900/79 ; Charcoal Picking House<br/> 1917 WASC 900/70 ; Charcoal Picking House<br/> 1917 WASC 900/72 ; 175b<br/> 1919 WASC 900/74 ; 175b<br/> c1920 WASC 900/80 ; 175b<br/> 1923 WASC 900/84 ; 175b<br/> &gt; 1940 WASC 900/91A ; L162<br/> 1954 A - B.34 ; L162<br/> c1960 WASC 900/94 ; L162<br/> c1963 WASC 900/97 ; L162<br/> 1972 WASC 900/102 ; L172<br/> 1972 WASC 900/104 ; L162<br/> 1976 WASC 900/113 ; L162</p> | <p><b>DOCUMENTARY REFERENCES</b></p> <p>Plans;<br/> L162 B01,B02 ; Plans and Elevations 1886 to 1980</p> <p>1908 RGPF Ledger WASC 1509 + WASC 1764 ;<br/> Charcoal Picking House built 1887 p19</p> <p>c1925 RGPF Ledger WASC 1680 ; Charcoal Picking<br/> House</p> <p>c1945 RGPF Ledger WASC 1508 ; Charcoal Picking<br/> House</p> <p>1972 ERDE List ; Labour Pool Store<br/> 1991 Mott McDonald survey<br/> 1992 RARDE List ; Labour Pool Store, Green Houses<br/> 1/2</p> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                         |                      |
|-------------------------|----------------------|
| PHOTOGRAPHY<br>HISTORIC | PHOTOGRAPHY<br>RCHME |
|-------------------------|----------------------|

**RELATIONSHIPS WITH OTHER MONUMENTS**

ASSOCIATED WITH: L127, L161, L163, L197, RCHME 224

**CONDITION** Demolished

**DESCRIPTION**  
Site unavailable for inspection beneath dump.

# ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY

|                                                                                                                                                                                       |            |                                                                                                                                                               |                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L163                                                                                                                                                                        | OLD SERIES | RCHME NUMBER                                                                                                                                                  | N.G.R.<br>TL 37878 01138 |
| NAME/FUNCTION<br>Concrete Air Raid Shelter                                                                                                                                            |            | START DATE<br>1940                                                                                                                                            | END DATE<br>1945         |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                           |            |                                                                                                                                                               |                          |
| CARTOGRAPHIC DEPICTION<br><br>c1960    WASC 900/94 ; L163<br>c1963    WASC 900/97 ; L163<br>1972    WASC 900/102 ; L163<br>1972    WASC 900/104 ; L163<br>1976    WASC 900/113 ; L163 |            | DOCUMENTARY REFERENCES<br><br>1972    ERDE List ; Concrete Air Raid Shelter<br>1991    Mott McDonald survey<br>1992    RARDE List ; Concrete Air Raid Shelter |                          |
| PHOTOGRAPHY<br>HISTORIC                                                                                                                                                               |            | PHOTOGRAPHY<br>RCHME                                                                                                                                          |                          |
| RELATIONSHIPS WITH OTHER MONUMENTS<br><br>ASSOCIATED WITH: L127, L161, L162, L197                                                                                                     |            |                                                                                                                                                               |                          |
| CONDITION    Demolished                                                                                                                                                               |            |                                                                                                                                                               |                          |
| DESCRIPTION<br><br>Site unavailable for inspection beneath dump.                                                                                                                      |            |                                                                                                                                                               |                          |

| THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                            |                                             |
|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------------------------------------------|
| NUMBER<br>L164                              | OLD SERIES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | RCHME NUMBER               | N.G.R.<br>37706 01280                       |
| NAME/FUNCTION<br>Oven Room nr L148          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | START DATE<br>1959         | END DATE                                    |
| NO PHOTOGRAPHY<br>AVAILABLE                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                            |                                             |
| CARTOGRAPHIC DEPICTION                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | DOCUMENTARY REFERENCES     |                                             |
| c1960                                       | WASC 900/94 ; L164                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Plans;                     |                                             |
| c1963                                       | WASC 900/97 ; L164                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | L164                       | B01,B02 ; Plans and Elevations 1959 to 1975 |
| 1972                                        | WASC 900/102 ; L164                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                            |                                             |
| 1972                                        | WASC 900/104 ; L164                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1972                       | ERDE List ; Oven Room near L148             |
| 1976                                        | WASC 900/113 ; L164                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1991                       | Mott McDonald survey                        |
|                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1992                       | RARDE List ; Oven Room near L148            |
| PHOTOGRAPHY<br>HISTORIC                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | PHOTOGRAPHY<br>RCHME       |                                             |
|                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1) 206/M/2 From South East |                                             |
|                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 4) 4788/4 06.05.1993       |                                             |
| RELATIONSHIPS WITH OTHER MONUMENTS          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                            |                                             |
| ASSOCIATED WITH: L148, L144, L150           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                            |                                             |
| CONDITION      Good                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                            |                                             |
| DESCRIPTION                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                            |                                             |
| 1)                                          | CONSTRUCTIONAL MATERIAL<br>Brick                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                            |                                             |
| 2)                                          | ROOF MATERIALS AND STRUCTURE<br>Corrugated Asbestos                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                            |                                             |
| 3)                                          | POWER SOURCE<br>Electricity                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                            |                                             |
| 4)                                          | DIMENSIONS i) L 6.06 ii) W 2.67 iii) HT 2.7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                            |                                             |
| 5)                                          | The building is single storeyed, rectangular in plan with a single pitch gabled roof. The south west and north elevations are built of brick and are blank. Attached to the south wall is a thermometer reading 0-100*c and a sign reading 'Explosives ...lbs'. The eastern side consists of a metal frame with a corrugated asbestos covering over, with double louvered doors to the north and a single door to the south. The interior is lined with concrete shelves each with a plug point. Two blackboards on the inside have the following written on them 'Oven No 1-4'. |                            |                                             |

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

|                                                                                                                                                                                                                                                                                                                |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L165                                                                                                                                                                                                                                                                                                 | OLD SERIES<br>190a | RCHME NUMBER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | N.G.R.<br>TL 37712 01086 |
| NAME/FUNCTION<br>Mineral Jelly Store No 2                                                                                                                                                                                                                                                                      |                    | START DATE<br>1916?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | END DATE                 |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                    |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                          |
| <p>CARTOGRAPHIC DEPICTION</p> <p>1919 WASC 900/74<br/> c1920 WASC 900/80<br/> 1923 WASC 900/84<br/> &gt; 1940 WASC 900/91A<br/> 1954 A - B.34 ; L165<br/> c1960 WASC 900/94 ; L165<br/> c1963 WASC 900/97 ; L165<br/> 1972 WASC 900/102 ; L165<br/> 1972 WASC 900/104 ; L165<br/> 1976 WASC 900/113 ; L165</p> |                    | <p>DOCUMENTARY REFERENCES</p> <p>Plans;<br/> 1918 WASC 901/300 17 Aug 1918 Ether pipe line to Mineral Jelly store No2. Reads "Cancelled"<br/> 1918 WASC 901/300A 13 Sept 1918 Ether pipe to Mineral Jelly store No2<br/> 1918 WASC 901/301 17 Aug 1918 Ether pipe line to M.J Store No2 details of pump house &amp; trestles<br/> L165 B01,B02 ; Plans and Elevations 1916<br/> c1925 RGPF Ledger WASC 1680 ; Mineral Jelly Store No.2<br/> c1945 RGPF Ledger WASC 1508 ; Mineral Jelly Store No.2<br/> 1972 ERDE List ; Laboratory<br/> 1991 Mott McDonald survey<br/> 1992 RARDE List ;Mineral Jelly Store</p> |                          |
| <p>PHOTOGRAPHY<br/>HISTORIC</p>                                                                                                                                                                                                                                                                                |                    | <p>PHOTOGRAPHY<br/>RCHME</p> <p>1) 206/J/14 From South West<br/> 206/R/32 From South East<br/> 206/R/33 Metal doors on North wall from West<br/> 2) BB92/26080 From South West<br/> BB92/26081 From North East<br/> 4) 4788/12 06.05.1993</p>                                                                                                                                                                                                                                                                                                                                                                    |                          |
| <p>RELATIONSHIPS WITH OTHER MONUMENTS</p> <p>ASSOCIATED WITH: The Incorporation of Cordite</p>                                                                                                                                                                                                                 |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                          |
| CONDITION                                                                                                                                                                                                                                                                                                      |                    | Good                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                          |

DESCRIPTION

1) CONSTRUCTIONAL MATERIAL  
Brick

2) ROOF MATERIALS AND STRUCTURE  
Slate oner timber boards with tie beam trusses

3) POWER SOURCE  
Electricity

4) DIMENSIONS i) L 9.5 ii) W 5.7 iii) HT 6.0

5) The building is single storeyed with a rectangular ground plan, it has gabled ends to the north and south. On the west elevation are two double doors giving into the two internal rooms. Each of these rooms is lit by cast iron framed window on the eastern side. The south elevation is featureless. Built into the northern wall and enclosed by a timber framed shed are four iron lockers closed by iron doors. These lockers were apparently served from the northern room of the building.

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

|                                                                                                                                                                                                                                                                                                                                                       |            |                                                                                                                                                                                                                                                         |                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L166                                                                                                                                                                                                                                                                                                                                        | OLD SERIES | RCHME NUMBER                                                                                                                                                                                                                                            | N.G.R.<br>TL 37700 01436 |
| NAME/FUNCTION<br>Laboratory & Office Adjoining L134,L137                                                                                                                                                                                                                                                                                              |            | START DATE<br>1969-70?                                                                                                                                                                                                                                  | END DATE                 |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                                                           |            |                                                                                                                                                                                                                                                         |                          |
| CARTOGRAPHIC DEPICTION<br><br>c1963 WASC 900/97 ; L166<br>1972 WASC 900/102 ; L166<br>1972 WASC 900/104 ; L166<br>1976 WASC 900/113 ; L166                                                                                                                                                                                                            |            | DOCUMENTARY REFERENCES<br><br>Plan;<br>L166 B01 - 9/2/1970 ; Office Building Linking L137 & L134<br><br>1972 ERDE List ; Laboratories and Offices<br>1991 Mott McDonald survey<br>1992 RARDE List ; Laboratories and Offices<br><br>1992 FBRC ; Offices |                          |
| PHOTOGRAPHY<br>HISTORIC                                                                                                                                                                                                                                                                                                                               |            | PHOTOGRAPHY<br>RCHME                                                                                                                                                                                                                                    |                          |
| RELATIONSHIPS WITH OTHER MONUMENTS<br><br>ABUTTS: L134 and L137                                                                                                                                                                                                                                                                                       |            |                                                                                                                                                                                                                                                         |                          |
| CONDITION      Good                                                                                                                                                                                                                                                                                                                                   |            |                                                                                                                                                                                                                                                         |                          |
| DESCRIPTION<br>1)      CONSTRUCTIONAL MATERIAL<br>Timber Frame<br><br>2)      ROOF MATERIALS AND STRUCTURE<br>Felt<br><br>3)      POWER SOURCE<br>Electricity<br><br>4)      DIMENSIONS i) L 20.2m ii) W    iii) HT Eave 2.73m<br><br>5)      The building is a modern prefabricated structure with a rectangular ground plan. It joins L134 to L137. |            |                                                                                                                                                                                                                                                         |                          |

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L167                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | OLD SERIES<br>180                                          | RCHME NUMBER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | N.G.R.<br>TL 37772 01128 |
| NAME/FUNCTION<br>?Charcoal Store<br>Reel Drying Store<br>Dining Room & Mineral Jelly Store<br>Glass & Chemical Store                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | START DATE<br>1889<br>?1898<br>dining room by 1906<br>195? | END DATE<br>1898<br>1904?<br>195?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                          |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                          |
| <p><b>CARTOGRAPHIC DEPICTION</b></p> <p>1897 WASC 900/53C<br/>Undated map c1900 Reel Drying Store</p> <p>c1910 WASC 900/65 ; Dining Room &amp; Mineral Jelly Store</p> <p>c1910 WASC 900/79 ; Dining Room &amp; Mineral Jelly Store</p> <p>1917 WASC 900/70 ; Dining Room &amp; Mineral Jelly Store</p> <p>1917 WASC 900/72 ; 180</p> <p>1919 WASC 900/74 ; 180</p> <p>c1920 WASC 900/80 ; 180</p> <p>1923 WASC 900/84 ; 180</p> <p>&gt; 1940 WASC 900/91A ; L167</p> <p>1954 A - B.34 ; L167</p> <p>c1960 WASC 900/94 ; L167</p> <p>c1963 WASC 900/97 ; L167</p> <p>1972 WASC 900/102 ; L167</p> <p>1972 WASC 900/104 ; L167</p> <p>1976 WASC 900/113 ; L167</p> |                                                            | <p><b>DOCUMENTARY REFERENCES</b></p> <p>Plans;<br/>L167 B01 - B03 ; Plans and Elevations 1888 to 1952</p> <p>1908 RGPF Ledger WASC 1509 + WASC 1764 ; Dining Room and Mineral Jelly Store built 1889 p20</p> <p>c1925 RGPF Ledger WASC 1680 ; Dining Room and Mineral Jelly Store</p> <p>c1945 RGPF Ledger WASC 1508 ; Dining Room and Mineral Jelly Store</p> <p>1972 ERDE List ; Glass and Chemical Store</p> <p>1991 Mott McDonald survey</p> <p>1992 RARDE List ; Glass and Chemical Store</p> <p>1993 RCHME NBR No.91453</p> |                          |
| <p><b>PHOTOGRAPHY HISTORIC</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                            | <p><b>PHOTOGRAPHY RCHME</b></p> <p>1) 206/J/10 From South West<br/>206/R/23 Chemical &amp; glassware store from South East</p> <p>2) BB92/26080 From South West<br/>BB92/26084 From North West<br/>BB92/26085 From South West</p> <p>3) 225/C/14-5 South elevation<br/>225/C/16 South West</p>                                                                                                                                                                                                                                    |                          |



RELATIONSHIPS WITH OTHER MONUMENTS

ASSOCIATED WITH: Steam Incorporating Mills

CONDITION Good

DESCRIPTION

- 1) CONSTRUCTIONAL MATERIAL  
Brick
- 2) ROOF MATERIALS AND STRUCTURE  
Slate over timber boards
- 3) POWER SOURCE  
Steam Electricity
- 4) DIMENSIONS i) L 22.65 ii) W 9.31 iii) HT Eave 3.4
- 5) See attached RCHME Threatened Buildings Section report.

ROYAL COMMISSION ON THE HISTORICAL MONUMENTS OF ENGLAND

MOD Building No. L167  
?Charcoal Store  
The Royal Gunpowder Factory  
Waltham Abbey  
Essex

NBR No: 91453  
NGR: T1 37772 00128

Built in 1889, probably as a Charcoal Store, this building is single-storeyed with a rectangular plan and is constructed of yellow brick laid in Flemish bond. It had a hipped roof.

Originally of nine bays by two bays, the building comprised a seven-bay room at the northern end and a smaller room in the two bays at the south end.

It functioned as a Reel Drying Stove by 1897.

The building has later been truncated and the south room was removed.

-oo0oo-

Situated approximately 15 metres south-east of the "Group C" Incorporating Mills (L157), the building appears to have been constructed in 1889 as a New Charcoal Store.<sup>40</sup> The Gas Works, with Charcoal Burning Houses, was sited approximately 100 metres to the north-east of the building.

Constructed of yellow brick laid in Flemish bond, the building has a chamfered brick plinth, a stepped brick cornice, and chamfered "capitals" to the brick piers which separate the bays and which support a cambered arch spanning each bay.

The building is single-storeyed and has a height of 3.4 metres to the eave. It has a rectangular plan, aligned north to south,<sup>41</sup> which was originally of nine bays by two bays. The northernmost bay on both the east and west elevations is wider (3.65 metres between piers) than the remaining bays on those elevations (2.25 metres between piers). Separating the seven bays at the north end from the two bays at the south end was an internal brick wall with a doorway and another opening above. The roof was hipped and it has trusses of angle-and round-iron. The roof coverings are slate.

The two-bay south room has since been demolished and the former internal brick wall is now the south exterior. The present truncated building is of seven bays by two bays (22.65 x 9.31 metres). Following truncation, the south end hip of the roof was removed.

It is not clear how the original building was lit. There are windows in each of the bays on the east and north elevations and in each of the three bays on either side of a central door on the west elevation. The windows have cambered brick heads and cast iron glazing bars. The absence of brick closers around the windows and the use of a different mortar here suggests the possibility that the windows may be secondary insertions.

By c1895 the building functioned as a Reel Drying Stove.<sup>42</sup> This relates to the production of cordite at the Gunpowder Factory. Cordite reels would have been brought here for drying before reeling in a separate building (eg H10). At this time steam pipes were fitted in the building for drying the cordite reels which would have been laid out on racks. Steam pipes entered the

---

Drawing of "New Charcoal Store" of 1888-9, cat. L167.B.01 (MOD Central Disposals Unit, Chessington). OS County Series 1:2500 maps, 2nd ed. 1897 (surveyed 1865-9, revised 1895), sheet refs XLIX.14, XLI.8.12, XLII.5.9.

The building is aligned north-north-east to south-south-west but for clarity in this report it is described as if it was aligned north to south.

"Royal Gunpowder Factory, Waltham Abbey, General Plan", 1865, corrected May 1886, cat. SUPP5/975 (PRO, Kew).

building on either side of the door on the west elevation and at the north-west and south-east corners. The pipes have been removed and the holes where they entered the building have been blocked.

By c1908 the small two-bay room at the south end was used as a Mineral Jelly Store and the northern part was a Dining Room.<sup>43</sup> Like the earlier Reel Drying function, the Mineral Jelly is associated with cordite production on the site. In c1908 the Mineral Jelly Store is described as having wood blocks on the floor and the Dining Room had floorboards. By that date, a timber porch, with a slate-covered lean-to roof, had been added against the central bay of the west side of the Dining Room. It is possible that the present windows were added at this time. Given the quite different functions of the two rooms, it is also likely that circulation between the two rooms was no longer required and the doorway and window in the internal brick wall were blocked at this time.<sup>44</sup>

At a later date, some time after 1923, the two-bay south room was removed.<sup>45</sup> A brick buttress, positioned off-centre to the west on the south elevation, was probably added at this time. The timber porch has also been removed. In 1972 and 1992 the building is described as a Glass and Chemical Store.<sup>46</sup>

Surveyed March 1993  
Report by R L Burgess

---

Ledger c1908, cat. WASC 1509 (PRO, Hayes Repository).

The present south elevation has an arch of header brick at the ground level, presumably originally the head of a doorway, and another arch above, presumably the head of a window.

"Royal Gunpowder Factory, Waltham Abbey" site plan 1:2500, as named 13th September 1917, revised March 1923, cat. WASC 900/84.

1972 ERDE Building Lists, 1992 RARDE Building Lists.

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

| NUMBER                       | OLD SERIES | RCHME NUMBER | N.G.R.         |
|------------------------------|------------|--------------|----------------|
| L168                         | 195        |              | TL 37720 01050 |
| NAME/FUNCTION                | START DATE | END DATE     |                |
| Millwrights, Engineers Store | 1857-1859  | 1881         |                |
| Engine House                 | 1881       | 1900?        |                |
| Stores/Machine Shop Store    | 1900?      | 1965?        |                |
| Whiskers Factory             | 1965?      |              |                |
| NO PHOTOGRAPHY<br>AVAILABLE  |            |              |                |

CARTOGRAPHIC DEPICTION

1861-1868 WASC 900/10A ; 71,72,75  
 1865 WASC 900/13 ; Incorp Mills/ Engine Room / Millwrights Shed  
 1865 WASC 900/14 ; Engine Room / Millwrights Shed  
 1865 WASC 900/38 + SUPP5 975 ; Engine Room / Millwrights Shed  
 1865 WASC 900/41A  
 1865 WASC 900/42  
 1897 WASC 900/53C  
 c1910 WASC 900/65 ; Machinery Shop  
 c1910 WASC 900/79 ; Machinery Shop  
 1917 WASC 900/70 ; Machinery Shop  
 1917 WASC 900/72 ; 195  
 1919 WASC 900/74 ; 195  
 c1920 WASC 900/80 ; 195  
 1923 WASC 900/84 ; 195  
 > 1940 WASC 900/91A ; L168  
 1954 A - B.34 ; L168  
 c1960 WASC 900/94 ; L168  
 c1963 WASC 900/97 ; L168  
 1972 WASC 900/102 ; L168  
 1972 WASC 900/104 ; L168  
 1976 WASC 900/113 ; L168

DOCUMENTARY REFERENCES

Plans;  
 L168 B01 - B15 ; Plans and Elevations 1856 to 1966  
 1856 WASC 901/102 17 Nov 1856 Plan Sections Elevations showing proposed additions to New Steam mills (Group A corrected from Group B)  
 1856 WASC 901/103 19 Jan 1856 Elevations Sections of proposed New Mills & Charge magazines (Group A corrected from Group B)  
 1856 WASC 901/104 19 Jan 1856 Plan showing dimensions & position of proposed new buildings Has "Group A Mills" written on reverse  
 1856 WASC 901/105 14 Jan 1856 Plan of Engine House & foundations for A compound Steam Engine of Thirty Horses power  
 WASC 901/106 Ground plan & Elevations showing 6 Incorporating Mills arranged to be driven by one Steam Engine  
 1856 PRO Supply 5 310 Correspondence with Messrs Hick & Sons Soho Iron Works Bolton for supply of Steam engine beams, pipes and incorporating mills - Compound or double cylinder 30 HP 6 foot stroke  
 1861 Illustrated London News June 8th 1861 Gunpowder Explosion Near Waltham  
 1874 WASC 901/107A 1st July 1874 no title WASC 901/117 Sketch showing proposed additions to the Artificers shops  
 1887 WASC 901/143 30 April 1887 Group A Mills reconstruct fence to coal yard  
 1908 RGPF Ledger WASC 1509 + WASC 1764 ; Machinery Shop, Motor Room built 1857  
 c1925 RGPF Ledger WASC 1680 ; Machinery Shop, Motor Room  
 c1945 RGPF Ledger WASC 1508 ; Machinery Shop, Motor Room  
 1972 ERDE List ; BWD and acceptance Stores  
 1991 Mott McDonald survey  
 1992 RARDE List ; Stores/Machine Shop Store  
 1993 RCHME NBR No: 91461

PHOTOGRAPHY  
 HISTORIC

PRO Supply 5/860 6 Explosion 27-may-1861  
 WASC 1467 Converted to Whisker factory mid 1960's x3

PHOTOGRAPHY  
 RCHME

- 1) 206/J/15 From South West  
 206/L/9 From East  
 206/R/20 Millwrights shop from South West  
 206/R/21 Engine house from South East
- 2) BB92/26077 From North  
 BB92/26078 From East  
 BB92/26144 From North  
 BB92/26145 From North
- 3) 225/B/26-29 Exterior views  
 225/B/31 Exterior view  
 225/B/32-5 Roof details  
 225/B/36 Interior showing columns  
 225/C/2-4 Roof details
- 4) 4788/2 06.05.1993  
 4788/6 06.05.1993  
 4788/12 06.05.1993

RELATIONSHIPS WITH OTHER MONUMENTS

ASSOCIATED WITH: L169, L170a, L176 UNDERLIES:

CONDITION      Good

DESCRIPTION

- 1)      CONSTRUCTIONAL MATERIAL  
        Brick
- 2)      ROOF MATERIALS AND STRUCTURE  
        Slate over Iron frame
- 3)      POWER SOURCE  
        Electricity
- 4)      DIMENSIONS i) L 22.45 ii) W 19.5 iii) HT 6.0
- 5)      A stone on the north side of the engine house is inscribed 'Erected 1857.  
  
        See attached RCHME Threatened Buildings Section report.

ROYAL COMMISSION ON THE HISTORICAL MONUMENTS OF ENGLAND

MOD Building No. L168  
Engine House and Mechanics Shop      NBR No: 91461  
The Royal Gunpowder Factory      NGR: TL 37720 01050  
Waltham Abbey  
Essex

Building L168 was constructed in 1857 as a Mechanics Shop and an Engine House to power the mills of the first of the Incorporating Mills buildings to have been built at the Gunpowder Factory site, namely Group A Incorporating Mills (L169) which was adjacent to the east of L168 but which has since been demolished.

It is constructed of yellow brick laid in English bond. Originally it comprised a single-storeyed block with a rectangular plan of ... bays by three bays on the western side and a tower with a rectangular plan at the north-east side. The former was the Mechanics Shop and the tower was the Engine House.

In 1859 a single-storeyed Motor Room was on the south side of the Engine House. In 1861 there was an explosion in the adjacent Group A Incorporating Mills and it is likely that building L168 suffered some damage at this time also. Later, probably in c1881, the was extended to the south by a further two bays and the whole was extended to the west by two bays. By 1960 a square structure had been added on the south side of the 1881 extension but it has since been removed.

-ooOoo-

Building L168 was built in 1857 as a Mechanics Shop and Engine House.<sup>47</sup> It is situated approximately 10 metres to the north of a Boiler House Building (L176) of contemporary date. Its engine drove six incorporating mills in a building which was adjacent on its east<sup>48</sup> side, namely Group A Incorporating Mills (L169), the first of the Incorporating Mills buildings to have been built at the Gunpowder site.

The building originally comprised a single-storeyed block with a rectangular plan of approximately 32' x 63' (9.6 x 18.9 m) on the western side and at the north-east side a tower, 24'6" (approximately 7.4 m) in height, with a rectangular plan of approximately 18' x 41' (5.4 x 12.3 m).<sup>49</sup> It is constructed of yellow brick laid in English bond and has brick pilasters at the building's corners and brick dentil cornices. The original roofs are hipped and have coverings of slate and zinc.<sup>50</sup>

The Engine House had a tall window with a semi-circular head on the south elevation. Also with semi-circular heads with keystones are three small windows on the upper part of the west elevation and, on the north elevation, a doorway and a small window above, the sill of which is inscribed "Erected 1857". The Engine House carried a Compound Steam Engine of 30 horse power.<sup>51</sup> A proposal drawing for the Engine House specifies that there was to be a fly wheel of 18' (5.4 m) diameter, a spur mortise wheel on a crank shaft, a spur wheel on a motion shaft, a spur wheel on fly wheel arms, a spur mortise pinion on a second motion shaft, steam pipes for supplying the incorporating mills, and escape pipes from a hot water pump.<sup>52</sup>

---

Ledger c1908, cat. WASC 1509 (PRO, Hayes Repository).

The building is aligned north-east to south-west but for clarity in this report it is described as if it was aligned east to west.

Ledger c1908, cat. WASC 1509 (PRO, Hayes Repository).

Ledger c1908, cat. WASC 1509 (PRO, Hayes Repository).

"Plan of Engine House and Foundations for a Compound Steam Engine of Thirty Horses Power to be Erected for The Honourable Board of Ordnance at Waltham Abbey, 1856.", prepared by Soho Iron Works, Bolton, 14 January 1856, cat. WASC 901/105 (PRO, Hayes Repository).

"Plan of Engine House and Foundations for a Compound Steam Engine of Thirty Horses Power to be Erected for The Honourable Board of Ordnance at Waltham Abbey, 1856.", prepared by Soho Iron Works, Bolton, 14 January 1856, cat. WASC 901/105 (PRO, Hayes Repository).



The single-storeyed western block was the Mechanics Shop, also known as Engineers/Carpenters Shop, Artificers Shop, Millwrights Shed and Machinery Shop.<sup>53</sup> Its windows may originally have been of a style similar to those in the Engine House, that is, with semi-circular heads with keystones.<sup>54</sup> Its south elevation originally had a door and a pair of windows.<sup>55</sup> On the interior its main compartments are separated by a rank of cast iron columns which are octagonal in section and which have ornate capitals. The north-east column, although octagonal, has a rounded section which was probably for carrying a swing jib. There is a matrix of pierced iron joists which may have doubled as building ties and for locating beams for brackets for line shafting and pulleys. The roof trusses are of round and tee iron and have decorative compression members which are similar to those found in a number of other buildings built at the site at around this time.<sup>56</sup>

In c1859 a single-storeyed block with a flat roof was added on the south side of the Engine House.<sup>57</sup> It functioned as a Motor Room to the engine in the Engine House.

In 1861 there was an explosion in the adjacent Group A Incorporating Mills and it is likely that building L168 suffered some damage at this time also.<sup>58</sup>

Later, probably in c1881<sup>59</sup>, the Mechanics Shop was extended to the south by a further two bays and the whole was extended to the west by two bays.<sup>60</sup> The north elevation may have been replaced at this time also. The brickwork matches the original. The new windows have cambered heads of red brick and carry sash windows. The former western and southern wall would have been removed and it was presumably only then that a series of three columns were added to support a metal gulley between the original roof and a sloped monopitch roof of the extension to the west. Unlike the iron roof of the original part of

---

Repository).

For example, a proposal plan it is labelled as Mechanics Shop in a drawing of "Ground Plan and Elevations Shewing 6 Incorporating Mills arranged to be driven by One Steam Engine," no date, ?uncatalogued (?L169/LE168/6), (PRO, Hayes Repository). A drawing of "Plan, Sections and Elevations Shewing the Proposed Additions to the New Steam Mills", signed I. Randall, Clerk of Works, 1856, gives it as Engineers Shop and Carpenters Shop, ?uncatalogued, (PRO, Hayes Repository). A site plan of 1821, updated in the mid nineteenth century, shows the building as Artificers Shop, "A Survey of the Lands and Buildings, the Property of the Ordnance, at the Royal Powder Works, Waltham Abbey, made in compliance with the Master General and Boards Order 6th June 1821 [updated c1850s-60s], (PRO, Hayes Repository). A General Plan of "Royal Gunpowder Factory, Waltham Abbey", 1865 corrected 1886, gives it as Millwrights Shed, cat SUPP5/975 (PRO Kew). The Ledger of c1908 labels it as "Machinery Shop", cat. WASC 1509 (PRO, Hayes Repository).

A woodcut in the Illustrated London News, vol. xxxviii, 8 June 1861, p519, shows the windows of the Mechanics Shop as being of that style.

Drawing showing west elevation, dated 1856-7, ?uncatalogued (PRO, Hayes Repository).

For example in the Boiler House Building L176 to the south.

Ledger c1908, cat. WASC 1509 (PRO, Hayes Repository).

Illustrated London News, vol. xxxviii, 8 June 1861, p537 and woodcut p519.

Ledger c1908, cat. WASC 1509 (PRO, Hayes Repository).

A drawing of "Plan, Sections and Elevations Shewing the Proposed Additions to the New Steam Mills", signed I. Randall, Clerk of Works, 1856, but later altered, ?uncatalogued, (PRO, Hayes Repository).

the range, the roof of the southern extension has a pair of timber trusses which have transverse longitudinal tie beams carrying king posts with expanded heads and feet, and raking struts. The southernmost truss carries a hip and its transverse beam is supported by a cast iron column which is round in plan. The redundant southern hip of the iron roof survives within the present roof structure.

After 1923 a timber hut with a square plan had been added on the south side of the 1881 extension.<sup>61</sup> It was demolished after 1960.<sup>62</sup>

After 1959-60 the building underwent minor alteration.<sup>63</sup> The former Motor Room had timber stud partitions added to create a storeman's office, reception and passage and a false ceiling was inserted. In the former Mechanics Shop a new concrete floor was laid, probably over a wooden one<sup>64</sup>, a new doorway opening was fitted on the south elevation, a doorway to the Engine House was blocked, a doorway to the former Motor Room was converted into a window and a new doorway added.<sup>65</sup>

The Group A Incorporating Mills building, which had been converted to Cordite Reeling Houses by 1897, and later became a services shop, was demolished in 1992.<sup>66</sup> Concrete foundations and a scar of its gable roof against the Engine House are all that remain of building L169.

Surveyed March 1993  
Report by R L Burgess

---

"Royal Gunpowder Factory, Waltham Abbey" site plan 1:2500, as named 13 September 1917, revised March 1919 and March 1923, cat. WASC 900/84.

A drawing showing plans and elevations for "Building L168 - Proposed Rehabilitation", drawn 1/7/1959, shows that the hut and its foundations were to be removed, ?uncatalogued (MOD Central Disposals Unit, Chessington). However, the hut still appears on a site plan of "Waltham Abbey ERDE, Record Survey, Drawing No. LSG/7, MOW, London, dated August 1960 (MOD Central Disposals Unit, Chessington).

Drawing showing plans and elevations for "Building L168 - Proposed Rehabilitation", drawn 1/7/1959, ?uncatalogued (MOD Central Disposals Unit, Chessington).

Ledger c1908, cat. WASC 1509 (PRO, Hayes Repository).

Drawing showing plans and elevations for "Building L168 - Proposed Rehabilitation", drawn 1/7/1959, ?uncatalogued (MOD Central Disposals Unit, Chessington).

OS County Series 1:2500 maps, 2nd ed. 1897 (surveyed 1865, revised 1895), sheet refs XLIX.14, XLI.8.12, XLII.5.9).

## THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY

|                                                                                                                                                                |                                               |                                      |                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|--------------------------------------|--------------------------|
| NUMBER<br>L169                                                                                                                                                 | OLD SERIES<br>194                             | RCHME NUMBER                         | N.G.R.<br>TL 37750 01060 |
| NAME/FUNCTION<br>Group A Incorp. Mills<br>Cordite Reeling House<br>Cordite Press House No. 6<br>Cordite Press House Group A - demolished<br>Store/ Press House | START DATE<br>1857<br>1898<br>by 1908<br>1955 | END DATE<br>1898?<br>by 1908<br>1955 |                          |

NO PHOTOGRAPHY  
AVAILABLE

| CARTOGRAPHIC DEPICTION                               | REFERENCES                                                                                                                  |
|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| 1861-1868 WASC 900/10A                               | Plans;                                                                                                                      |
| 1865 WASC 900/13 ; Incorp Mills                      | L169 B01 - B25 ; Plans and Elevations 1856 to 1964                                                                          |
| 1865 WASC 900/14 ; Group A Incorp. Mills             | 1856 WASC 901/102 17 Nov 1856 Plan Sections                                                                                 |
| 1865 WASC 900/38 + SUPP5 975 ; Group A Incorp. Mills | Elevations showing proposed additions to New Steam mills (Group A corrected from Group B)                                   |
| 1865 WASC 900/41A ; Group A Incorp. Mills            | 1856 WASC 901/103 19 Jan 1856 Elevations Sections of proposed New Mills & Charge magazines (Group A corrected from Group B) |
| 1865 WASC 900/42                                     | 1856 WASC 901/104 19 Jan 1856 Plan showing dimensions & position of proposed new buildings                                  |
| 1897 WASC 900/53C                                    | Has "Group A Mills" written on reverse                                                                                      |
| c1910 WASC 900/65 ; Press House Group A              | WASC 901/106 Ground plan & Elevations showing 6 Incorporating Mills arranged to be driven by one Steam Engine               |
| c1910 WASC 900/79 ; Press House Group A              | WASC 901/107 Not Dated Boiler House                                                                                         |
| 1917 WASC 900/70 ; Press House No.6                  | 1861 Illustrated London News June 8th 1861 p519                                                                             |
| 1917 WASC 900/72 ; 194                               | Gunpowder Explosion Near Waltham Abbey                                                                                      |
| 1919 WASC 900/74 ; 194                               | Account of explosion in:Parliament 1874                                                                                     |
| c1920 WASC 900/80 ; 194                              | Explosives Select Committee - Report with minutes of evidence and appendix p49                                              |
| 1923 WASC 900/84 ; 194                               | 1874 WASC 901/107A 1st July 1874 no title                                                                                   |
| > 1940 WASC 900/91A                                  | 1908 RGPF Ledger WASC 1509 + WASC 1764 ;                                                                                    |
| 1954 A - B.34                                        | Press House Group A built 1857 p21                                                                                          |
| c1960 WASC 900/94                                    | c1925 RGPF Ledger WASC 1680 ; Press House Group A                                                                           |
| c1963 WASC 900/97                                    | c1945 RGPF Ledger WASC 1508 ; Press House Group A                                                                           |
| 1972 WASC 900/102                                    | 1972 ERDE List ; Store and Press House                                                                                      |
| 1972 WASC 900/104                                    | 1991 Mott McDonald survey                                                                                                   |
| 1976 WASC 900/113                                    | 1992 FARDE List ; Store and Press House                                                                                     |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>PHOTOGRAPHY<br/>HISTORIC</p> <p>PRO Supply 5/860 6 Explosion 27-may-1861<br/> PRO Supply 5/860 99 1898 Removal of edge runners<br/> PRO Supply 5/860 105, 106 1898 Removal of edge runners</p>                                                                                                                                                                                                                                                                                                                                                                                    | <p>PHOTOGRAPHY<br/>RCHME</p> <p>2) BB92/26455 Plan showing 6 Incorporating Mills<br/> BB92/26465 Plans Sections Elevations for Group A<br/> Steam Mills<br/> BB92/26467 Plan of Engine House for 30 Horse power<br/> Steam Engine</p> <p>4) 4788/2 06.05.1993<br/> 4788/6 06.05.1993<br/> 4788/12 06.05.1993</p> |
| <p>RELATIONSHIPS WITH OTHER MONUMENTS</p> <p>ASSOCIATED WITH: L168, L170A, L176</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                  |
| <p>CONDITION Demolished</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                  |
| <p>DESCRIPTION</p> <p>1) CONSTRUCTIONAL MATERIAL<br/> Brick and Concrete</p> <p>4) DIMENSIONS i) L 42.3 ii) W 23.3</p> <p>5) The latest building on the site was demolished in 1992 a concrete floor slab remains.</p> <p>Historic artefacts - It is thought unlikely that the underground central machine drive shaft tunnel survives for its full height. As a semi-circular blocked opening, relieving arch is visible on the east wall of L168. However if slab L169 is lifted the base of the shaft and some remains of the gunpowder mills drive shaft may be encountered.</p> |                                                                                                                                                                                                                                                                                                                  |

## THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                      |                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L170a                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | OLD SERIES<br>192                                 | RCHME NUMBER                                                                                                                                                                                                                                                                                                                                                                                                         | N.G.R.<br>TL 37781 01095 |
| NAME/FUNCTION<br>Magazine<br>No.1 Rework Magazine<br>Dough Store No.4<br>Experimental Stove                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | START DATE<br>1857<br>1898?<br>by 1917<br>by 1923 | END DATE<br>1898?<br>by 1917<br>by 1923                                                                                                                                                                                                                                                                                                                                                                              |                          |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                      |                          |
| <p>CARTOGRAPHIC DEPICTION</p> <p>1861-1868 WASC 900/10A<br/> 1865 WASC 900/13 ; Magazine<br/> 1865 WASC 900/14 ; Magazine<br/> 1865 WASC 900/38 + SUPP5 975 ; Magazine<br/> 1865 WASC 900/41A<br/> 1865 WASC 900/42<br/> 1897 WASC 900/53C<br/> c1910 WASC 900/65 ; Rework Magazine<br/> c1910 WASC 900/79 ; Rework Magazine<br/> 1917 WASC 900/70 ; Dough Store No.4<br/> 1917 WASC 900/72 ; 192<br/> 1919 WASC 900/74 ; 192<br/> c1920 WASC 900/80 ; 192<br/> 1923 WASC 900/84 ; 192 Experimental Stove<br/> &gt; 1940 WASC 900/91A ; L170<br/> 1954 A - B.34 ; L170<br/> c1960 WASC 900/94 ; L170<br/> c1963 WASC 900/97 ; L170<br/> 1972 WASC 900/102 ; L170<br/> 1972 WASC 900/104 ; L170<br/> 1976 WASC 900/113 ; L170</p> |                                                   | <p>DOCUMENTARY REFERENCES</p> <p>1908 RGPF Ledger WASC 1509 + WASC 1764 ;<br/> Rework Magazine built 1857 p21<br/> c1925 RGPF Ledger WASC 1680 ; Rework Magazine<br/> c1945 RGPF Ledger WASC 1508 ; Rework Magazine</p> <p>1972 ERDE List ; Store Shed<br/> 1991 Mott McDonald survey<br/> 1992 RARDE List ; Store Shed</p> <p>Illustrated London News June 8 1861 p519 engraving<br/> showing explosion in L169</p> |                          |
| <p>PHOTOGRAPHY<br/>HISTORIC</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                   | <p>PHOTOGRAPHY<br/>RCHME</p> <p>1) 206/J/12 From South West<br/> 206/T/31 From West</p>                                                                                                                                                                                                                                                                                                                              |                          |
| <p>RELATIONSHIPS WITH OTHER MONUMENTS</p> <p>ASSOCIATED WITH: 193, L168, L169, L176</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                      |                          |
| <p>CONDITION      Good</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                      |                          |

DESCRIPTION

1) CONSTRUCTIONAL MATERIAL  
Brick

2) ROOF MATERIALS AND STRUCTURE  
Felt over timber boards supported on RSJ

3) POWER SOURCE  
Electricity

4) DIMENSIONS i) L 4.4 ii) W 14.5 iii) HT 3.45

5) The magazine is a single storeyed building with a rectangular ground plan and gabled ends to the east and west. It is entered through a raised door on the north side formerly served by a railway on a trestle. There is a single window on the east elevation. The building has a brick vault with a slate roof over.

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

|                                                                                                                                                                        |            |                                                                                                                                    |                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| NUMBER<br>L170                                                                                                                                                         | OLD SERIES | RCHME NUMBER                                                                                                                       | N.G.R.<br>TL 37776 01094<br>TL 37781 01095 |
| NAME/FUNCTION<br>Sewer Pump House                                                                                                                                      |            | START DATE                                                                                                                         | END DATE                                   |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                            |            |                                                                                                                                    |                                            |
| CARTOGRAPHIC DEPICTION<br><br>c1960 WASC 900/94 ; L170<br>c1963 WASC 900/97 ; L170<br>1972 WASC 900/102 ; L170<br>1972 WASC 900/104 ; L170<br>1976 WASC 900/113 ; L170 |            | DOCUMENTARY REFERENCES<br><br>1972 ERDE List ; Sewer Pump House<br>1991 Mott McDonald survey<br>1992 RARDE List ; Sewer Pump House |                                            |
| PHOTOGRAPHY<br>HISTORIC                                                                                                                                                |            | PHOTOGRAPHY<br>RCHME<br><br>1) 206/J/11 From South West<br>206/R/31 Pump House from South West                                     |                                            |

|                                                                           |
|---------------------------------------------------------------------------|
| RELATIONSHIPS WITH OTHER MONUMENTS<br><br>ASSOCIATED WITH: L126, H17, H31 |
|---------------------------------------------------------------------------|

|                     |
|---------------------|
| CONDITION      Good |
|---------------------|

|                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DESCRIPTION<br>1)      CONSTRUCTIONAL MATERIAL<br>Brick in english bond<br><br>2)      ROOF MATERIALS AND STRUCTURE<br>Slate over Brick vault<br><br>4)      DIMENSIONS i) L 4.15 ii) W 3.8 iii) HT 4.1<br><br>5)      The pump house is a single storey building. The building is sited a low mound and concrete slab. It is entered through a single blue door on the south elevation and is lit by a window on the north wall. |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

|                                    |                                                                 |                        |                          |
|------------------------------------|-----------------------------------------------------------------|------------------------|--------------------------|
| NUMBER<br>L172                     | OLD SERIES                                                      | RCHME NUMBER           | N.G.R.<br>TL 37786 01072 |
| NAME/FUNCTION<br>Store             | START DATE                                                      |                        | END DATE                 |
| NO PHOTOGRAPHY<br>AVAILABLE        |                                                                 |                        |                          |
| CARTOGRAPHIC DEPICTION             |                                                                 | DOCUMENTARY REFERENCES |                          |
| 1954                               | A - B.34 ; L172                                                 | Plan;                  |                          |
| c1960                              | WASC 900/94 ; L172                                              | L172                   | Bo1 - 22/5/1957 ; Detail |
| c1963                              | WASC 900/97 ; L172                                              |                        |                          |
| 1972                               | WASC 900/102 ; L172                                             | 1972                   | ERDE List ; Store        |
| 1972                               | WASC 900/104 ; L172                                             | 1991                   | Mott McDonald survey     |
| 1976                               | WASC 900/113 ; L172                                             | 1992                   | RARDE List ; Store       |
| PHOTOGRAPHY<br>HISTORIC            | PHOTOGRAPHY<br>RCHME                                            |                        |                          |
| RELATIONSHIPS WITH OTHER MONUMENTS |                                                                 |                        |                          |
| ASSOCIATED WITH:                   |                                                                 |                        |                          |
| CONDITION                          | Demolished                                                      |                        |                          |
| DESCRIPTION                        |                                                                 |                        |                          |
| 1)                                 | CONSTRUCTIONAL MATERIAL<br>Brick wall                           |                        |                          |
| 4)                                 | DIMENSIONS i) L 12.8 ii) W 7.6                                  |                        |                          |
| 5)                                 | The building has been demolished a concrete floor slab remains. |                        |                          |



## THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY

|                                                                                                                                                                                                                                                               |            |                                                                                                                                                                                                                                         |                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L173                                                                                                                                                                                                                                                | OLD SERIES | RCHME NUMBER                                                                                                                                                                                                                            | N.G.R.<br>TL 37694 01036 |
| NAME/FUNCTION<br>Telephone Exchange                                                                                                                                                                                                                           |            | START DATE<br>1952?                                                                                                                                                                                                                     | END DATE                 |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                   |            |                                                                                                                                                                                                                                         |                          |
| <b>CARTOGRAPHIC DEPICTION</b><br><br>c1960    WASC 900/94 ; L173<br>c1963    WASC 900/97 ; L173<br>1972     WASC 900/102 ; L173<br>1972     WASC 900/104 ; L173<br>1976     WASC 900/113 ; L173                                                               |            | <b>DOCUMENTARY REFERENCES</b><br><br>Plans;<br>L173    B01 - B08 ; Plans and Elevations 1952-3<br><br>1972    ERDE List ; Disused Telephone Exchange<br>1991    Mott McDonald survey<br>1992    RARDE List ; Disused Telephone Exchange |                          |
| <b>PHOTOGRAPHY HISTORIC</b>                                                                                                                                                                                                                                   |            | <b>PHOTOGRAPHY RCHME</b><br><br>1) 206/J/18 From South                                                                                                                                                                                  |                          |
| <b>RELATIONSHIPS WITH OTHER MONUMENTS</b><br><br>ASSOCIATED WITH:                                                                                                                                                                                             |            |                                                                                                                                                                                                                                         |                          |
| CONDITION      Demolished                                                                                                                                                                                                                                     |            |                                                                                                                                                                                                                                         |                          |
| <b>DESCRIPTION</b><br>1)      CONSTRUCTIONAL MATERIAL<br>Brick walls<br><br>3)      POWER SOURCE<br>Electricity<br><br>4)      DIMENSIONS i) L 12.2 ii) W 13.0<br><br>5)      The building, T shaped in plan, was demolished in 1992 a concrete slab remains. |            |                                                                                                                                                                                                                                         |                          |

## THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L176                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | OLD SERIES<br>204 | RCHME NUMBER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | N.G.R.<br>TL 37734 01024 |
| NAME/FUNCTION<br>Boiler House<br>Store EFDC/Riggers Shop                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                   | START DATE<br>1857<br>1958                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | END DATE<br>1958         |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                          |
| <p><b>CARTOGRAPHIC DEPICTION</b></p> <p>1861-1868 WASC 900/10A ; 73<br/>         1865 WASC 900/13 ; Boiler House<br/>         1865 WASC 900/14 ; Boiler House<br/>         1865 WASC 900/38 + SUPP5 975 ; Boiler House<br/>         1865 WASC 900/41A ; Boiler House<br/>         1865 WASC 900/42<br/>         1897 WASC 900/53C<br/>         c1910 WASC 900/65 ; Boiler House<br/>         c1910 WASC 900/79 ; Boiler House<br/>         1917 WASC 900/70 ; Group A Boiler House<br/>         1917 WASC 900/72 ; 204<br/>         1919 WASC 900/74 ; 204<br/>         c1920 WASC 900/80 ; 204<br/>         1923 WASC 900/84 ; 204<br/>         &gt; 1940 WASC 900/91A ; L176<br/>         1954 A - B.34 ; L176<br/>         c1960 WASC 900/94 ; L176<br/>         c1963 WASC 900/97 ; L176<br/>         1972 WASC 900/102 ; L176<br/>         1972 WASC 900/104 ; L176<br/>         1976 WASC 900/113 ; L176</p> |                   | <p><b>DOCUMENTARY REFERENCES</b></p> <p>Plans;<br/>         L176 B01,B02 ; Plans and Elevations 1902 to 1958</p> <p>1908 RGPF Ledger WASC 1509 + WASC 1764 ;<br/>         Boiler House built 1857 p23<br/>         c1925 RGPF Ledger WASC 1680 ; Boiler House<br/>         c1945 RGPF Ledger WASC 1508 ; Boiler House</p> <p>1972 ERDE List ; Store EFDC/Riggers Shop<br/>         1991 Mott McDonald survey<br/>         1992 RARDE List ; Store EFDC/Riggers Shop</p> <p>1992 FBRC; Storage</p> <p>1993 RCHME NBR No.91452</p> |                          |
| <p><b>PHOTOGRAPHY<br/>HISTORIC</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   | <p><b>PHOTOGRAPHY<br/>RCHME</b></p> <p>1) 206/J/16 From South West<br/>         206/J/19 North wall from North<br/>         206/R/19 From South West</p> <p>2) BB92/26143 Interior of Boiler house from North<br/>         BB92/26079 From North West</p> <p>3) 225/B/22 Interior<br/>         225/B/23 Interior<br/>         225/B/24 Exterior</p> <p>4) 4788/2 06.05.1993<br/>         4788/6 06.05.1993<br/>         4788/12 06.05.1993</p>                                                                                   |                          |

RELATIONSHIPS WITH OTHER MONUMENTS

ASSOCIATED WITH: L168, L169, L170a ABUTTED BY: L177

CONDITION Good

DESCRIPTION

- 1) CONSTRUCTIONAL MATERIAL  
Brick
- 2) ROOF MATERIALS AND STRUCTURE  
Slate over Timber Roof Frame
- 3) POWER SOURCE  
Formerly Steam , Electricity
- 4) DIMENSIONS i) L 17.6 ii) W 11.0 iii) HT 6.0
- 5) See attached RCHME Threatened Buildings Section report.

ROYAL COMMISSION ON THE HISTORICAL MONUMENTS OF ENGLAND

MOD Building No. L176  
Boiler House  
The Royal Gunpowder Factory  
Waltham Abbey  
Essex

NBR No: 91452  
NGR: TL 37734 01024

Built in c1857 as a Boiler House for the earliest of the incorporating mills buildings (L168) on the Gunpowder Factory site, this building is single-storeyed with a rectangular plan and is constructed of yellow brick laid in English bond. Originally it had a brick chimney attached at its north side.

In 1902 a Dynamo House was added at the centre of the east elevation. In 1903 a Smith's Shop was built in the re-entrant angle on the south side of the Dynamo House, against the east wall of the Boiler House. The latter addition has since been demolished.

-ooOoo-

Building L168 was built in c1857 as a Boiler House.<sup>1</sup> It is situated approximately 10 metres north of the western fork of the main canal and approximately 15 metres south of a contemporary Engine House and Mechanics Shop building (no. L168).<sup>2</sup> In conjunction with the latter building, it powered Group A Incorporating Mills (L176, now demolished) which adjoined the east side of L168.

It has a rectangular plan, of six bays by three bays<sup>3</sup> (17.6 x 11 m), which is aligned north to south.<sup>4</sup> It is single-storeyed and rises to height of approximately six metres. Originally it had an octagonal chimney on its north side and a coal yard on the east side.

Constructed of yellow brick laid in English bond, the building has a chamfered brick plinth and a brick dentil cornice. There are brick pilasters at the corners of the building on each side as well as an evenly-spaced pair of pilasters on each of the west and east elevations. The windows have cambered heads of rubbed red-brick. Originally the windows were sash and each had a rectangular blind panel below.<sup>5</sup> There were three windows on the north elevation and windows flanking a central door on the south elevation. In pairs between the pilasters, there are six windows on the west elevation and six blind windows on the east elevation. The blind windows on the north side appear to be an original feature, as they are shown as such in a drawing of the building of 1856-7.<sup>6</sup>

---

Although the building is shown on a map of 1821, it is likely that such a representation is part of an updating of the map in the 1850s-60s, "A Survey of the Lands and Buildings, the Property of the Ordnance, at the Royal Powder Works, Waltham Abbey, made in compliance with the Master General and Boards Order 6th June 1821" (PRO, Hayes Repository). A drawing of the plan has alterations which are dated 1856 and 1857 (PRO, Hayes Repository). The Ledger of c1908 dates the building to 1857, cat. WASC 1509 (PRO, Hayes Repository)

Ledger c1908, cat. WASC 1509 (PRO, Hayes Repository).

The bays are described with reference to the number of windows (ie six by three), although pilasters divide the sides into three main bays by a single main bay.

The building is aligned north-north-west to south-south-east but for the clarity of this report it is described as if it was aligned north to south.

Undated elevation drawing, cat. LE179/1 (PRO, Hayes Repository).

Drawing of plan with alterations dated 1856 and 1857 (PRO, Hayes Repository).

The floor was of stone.<sup>7</sup> The roof truss is of iron and incorporates decorative cast iron compression members. The roof is hipped and has slate coverings and a central skylight. The chimney was brick-built.

In 1902 new boilers were installed in building no. L176 and a Dynamo House with a lean-to roof was built at the centre of the east elevation.<sup>8</sup> Constructed of brick, with a concrete floor and slate roof, it had two dynamos and an accumulator shelf. Also known as the Switchboard House, this addition points to a change in the building from steam power to electric power at this time and may coincide with a conversion in building no. L169 from gunpowder incorporating to cordite reeling.<sup>9</sup>

In the following year, 1903, a Smith's Shop was built in the south-east angle between the Boiler House and Dynamo House.<sup>10</sup> Of a similar size as the Dynamo House, it also had a lean-to roof and was constructed of brick, with a concrete floor and corrugated iron roof.

The building has undergone several other alterations. The windows on the west elevation were enlarged by replacing the sashes with taller windows which extend to incorporate the former blind rectangular panels below. One of the blind windows on the east elevation was opened up and the open windows on the north elevation were made blind. A wide doorway was inserted at the centre of the north elevation. The Smith's Shop has been demolished some time after 1923.<sup>11</sup> By 1958 the Boiler House was used as a Store and a Riggers Shop.

Surveyed March 1993  
Report by R L Burgess

---

Ledger c1908, cat. WASC 1509 (PRO, Hayes Repository).

Uncatalogued ink drawing showing Dynamo House and seating plan for new boilers (with a pit to suit footplates) Group A, (?old cat. no. 827), and Ledger c1908, cat. WASC 1509 (PRO, Hayes Repository).

In the OS County Series 1:2500 maps, 2nd ed. 1897 (surveyed 1865, revised 1895), sheet refs XLIX.14, XLI.8.12, XLII.5.9) Building L169 is labelled as Reeling Houses Group A.

Ledger c1908, cat. WASC 1509 (PRO, Hayes Repository).

The building is shown as the Smith's Shop in a 1:2500 site plan of the Royal Gunpowder Factory at Waltham Abbey, revised March 1923, cat. WASC 900/84.

## THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                       |                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L177                                                                                                                                                                                                                                                                                                                                                                                                                                                              | OLD SERIES<br>205 | RCHME NUMBER                                                                                                                                                                                                                                                                                                                                                                                                                          | N.G.R.<br>TL 37734 01024 |
| NAME/FUNCTION<br>Switch Board House<br>Battery Charge House                                                                                                                                                                                                                                                                                                                                                                                                                 |                   | START DATE<br>1902<br>1945?                                                                                                                                                                                                                                                                                                                                                                                                           | END DATE<br>1945?        |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                       |                          |
| <p>CARTOGRAPHIC DEPICTION</p> <p>c1910 WASC 900/65 ; Switch Board House<br/> c1910 WASC 900/79 ; Switch Board House<br/> 1917 WASC 900/70<br/> 1917 WASC 900/72 ; 205<br/> 1919 WASC 900/74<br/> c1920 WASC 900/80 ; 205<br/> 1923 WASC 900/84 ; 205<br/> &gt; 1940 WASC 900/91A ; L177<br/> 1954 A - B.34 ; L177<br/> c1960 WASC 900/94 ; L177<br/> c1963 WASC 900/97 ; L177<br/> 1972 WASC 900/102 ; L177<br/> 1972 WASC 900/104 ; L177<br/> 1976 WASC 900/113 ; L177</p> |                   | <p>DOCUMENTARY REFERENCES</p> <p>Plan;<br/> L177 B01 - 7/3/1902 ; Dynamo House</p> <p>1908 RGPF Ledger WASC 1509 + WASC 1764 ;<br/> Switch Board House built 1902 p23<br/> c1925 RGPF Ledger WASC 1680 ; Switch Board<br/> House<br/> c1945 RGPF Ledger WASC 1508 ; Switch Board<br/> House</p> <p>1972 ERDE List ; Paint Spraying/Barttery Charging<br/> 1991 Mott McDonald survey<br/> 1992 RARDE List ; Battery Charging House</p> |                          |
| <p>PHOTOGRAPHY<br/>HISTORIC</p>                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   | <p>PHOTOGRAPHY<br/>RCHME</p> <p>1) 206/J/20 From North</p> <p>3) 225/B/30 Exterior</p>                                                                                                                                                                                                                                                                                                                                                |                          |
| <p>RELATIONSHIPS WITH OTHER MONUMENTS</p> <p>ABUTTS:L176</p>                                                                                                                                                                                                                                                                                                                                                                                                                |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                       |                          |
| CONDITION                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   | Good                                                                                                                                                                                                                                                                                                                                                                                                                                  |                          |

DESCRIPTION

1) CONSTRUCTIONAL MATERIAL  
Brick

2) ROOF MATERIALS AND STRUCTURE  
Slate over timber boards supported purlins on Iron frames with glass roof lights.

3) POWER SOURCE  
Steam, Electricity

4) DIMENSIONS i) L 8.1 ii) W 5.2 iii) HT 6.0

5) A date stone on the north elevation reads '1902-3'. The building is a single storey and has a rectangular plan, the roof is a single gable. The building has two windows on the east elevation and two windows and a double door on the northern elevation.

See attached RCHME Threatened Buildings Section report

## THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |                                                                                                                                                                                                                      |                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L179                                                                                                                                                                                                                                                                                                                                                                                                                                                    | OLD SERIES | RCHME NUMBER                                                                                                                                                                                                         | N.G.R.<br>TL 37672 01458 |
| NAME/FUNCTION<br>Store                                                                                                                                                                                                                                                                                                                                                                                                                                            |            | START DATE<br>196?                                                                                                                                                                                                   | END DATE                 |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                                                                                                                                                                       |            |                                                                                                                                                                                                                      |                          |
| CARTOGRAPHIC DEPICTION<br><br>c1960    WASC 900/94 ; L179<br>c1963    WASC 900/97 ; L179<br>1972    WASC 900/102 ; L179<br>1972    WASC 900/104 ; L179<br>1976    WASC 900/113 ; L179                                                                                                                                                                                                                                                                             |            | DOCUMENTARY REFERENCES<br><br>Plan;<br>L179    B02 - no date ; Building to Convert to Acid Store<br><br>1972    ERDE List ; Blacksmith Shop<br>1991    Mott McDonald survey<br>1992    RARDE List ; Blacksmiths Shop |                          |
| PHOTOGRAPHY<br>HISTORIC                                                                                                                                                                                                                                                                                                                                                                                                                                           |            | PHOTOGRAPHY<br>RCHME<br><br>1) 206/D/36 From East                                                                                                                                                                    |                          |
| RELATIONSHIPS WITH OTHER MONUMENTS<br><br>ASSOCIATED WITH: L134                                                                                                                                                                                                                                                                                                                                                                                                   |            |                                                                                                                                                                                                                      |                          |
| CONDITION      Good                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                                                                                                                                                                                                                      |                          |
| DESCRIPTION<br>1)      CONSTRUCTIONAL MATERIAL<br>Corrugated Iron and Fibre Glass<br><br>2)      ROOF MATERIALS AND STRUCTURE<br>Corrugated Iron<br><br>3)      POWER SOURCE<br>Electricity<br><br>4)      DIMENSIONS i) L 3.65 ii) W 3.6 iii) HT 2.3<br><br>5)      The building is single storeyed with a rectangular ground plan. It is constructed on a timber frame covered by corrugated iron and asbestos. There is a single wooden door on the east side. |            |                                                                                                                                                                                                                      |                          |



## THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L180                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | OLD SERIES<br>208 | RCHME NUMBER                                                                                                                                                                                                                                                                                                                                                                                                                                                             | N.G.R.<br>TL 37770 01038 |
| NAME/FUNCTION<br>Pipe Fitters Shop & Store<br>Paint Spraying/Welding Shop                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                   | START DATE<br>1902<br>194?                                                                                                                                                                                                                                                                                                                                                                                                                                               | END DATE<br>194?         |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                          |
| <p><b>CARTOGRAPHIC DEPICTION</b></p> <p>c1910 WASC 900/65 ; Pipe Fitters Shop &amp; Store<br/> c1910 WASC 900/79 ; Pipe Fitters Shop &amp; Store<br/> 1917 WASC 900/70 ; Pipe Fitters Shop &amp; Store<br/> 1917 WASC 900/72 ; 208<br/> 1919 WASC 900/74 ; 208<br/> c1920 WASC 900/80 ; 208<br/> 1923 WASC 900/84 ; 208<br/> &gt; 1940 WASC 900/91A ; L180<br/> 1954 A - B.34 ; ; L180<br/> c1960 WASC 900/94 ; L180<br/> c1963 WASC 900/97 ; L180<br/> 1972 WASC 900/102 ; L180<br/> 1972 WASC 900/104 ; L180<br/> 1976 WASC 900/113 ; L180</p> |                   | <p><b>DOCUMENTARY REFERENCES</b></p> <p>Plan;<br/> L180 B01 - 18/10/1904 ; Painter shop</p> <p>1908 RGPF Ledger WASC 1509 + WASC 1764 ; Pipe Fitters Shop &amp; Store built 1905 p23<br/> c1925 RGPF Ledger WASC 1680 ; Pipe Fitters Shop &amp; Store<br/> c1945 RGPF Ledger WASC 1508 ; Pipe Fitters Shop &amp; Store</p> <p>1972 ERDE List ; Paint Spraying and Welding Shop<br/> 1991 Mott McDonald survey<br/> 1992 RARDE List ; Paint Spraying and Welding Shop</p> |                          |
| <p><b>PHOTOGRAPHY HISTORIC</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                   | <p><b>PHOTOGRAPHY RCHME</b></p> <p>4) 4788/12 06.05.1993</p>                                                                                                                                                                                                                                                                                                                                                                                                             |                          |
| <p><b>RELATIONSHIPS WITH OTHER MONUMENTS</b></p> <p>ASSOCIATED WITH: L182</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                          |
| <p><b>CONDITION</b></p> <p>Fair</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                          |

DESCRIPTION

- 1) CONSTRUCTIONAL MATERIAL  
Brick
- 2) ROOF MATERIALS AND STRUCTURE  
Slate over boards supported on timber purlins.
- 3) POWER SOURCE  
Electricity
- 4) DIMENSIONS i) L 10.10 ii) W 10.0 iii) HT 6.0
- 5) The building is single storeyed with a rectangular ground plans, it has gabled ends to the east and west. The northern elevation has two single doors, the southern elevation has single door in the west side is a modern double door. The west and east elevations each have three windows. Internally the building is divided into two rooms.

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

|                                    |                                                                                                                                                                                                                                                 |                                                                            |                                     |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|-------------------------------------|
| NUMBER<br>L182                     | OLD SERIES                                                                                                                                                                                                                                      | RCHME NUMBER                                                               | N.G.R.<br>TL 37770 01038            |
| NAME/FUNCTION<br>Mess Room         |                                                                                                                                                                                                                                                 | START DATE<br>1942?                                                        | END DATE                            |
| NO PHOTOGRAPHY<br>AVAILABLE        |                                                                                                                                                                                                                                                 |                                                                            |                                     |
| CARTOGRAPHIC DEPICTION             |                                                                                                                                                                                                                                                 | DOCUMENTARY REFERENCES                                                     |                                     |
| 1954                               | A - B.34 ; L182                                                                                                                                                                                                                                 | Plans;                                                                     |                                     |
| c1960                              | WASC 900/94 ; L182                                                                                                                                                                                                                              | L182                                                                       | B01,B02 ; Plans and Elevations 1942 |
| c1963                              | WASC 900/97 ; L182                                                                                                                                                                                                                              |                                                                            |                                     |
| 1972                               | WASC 900/102 ; L182                                                                                                                                                                                                                             | 1972                                                                       | ERDE List ; BWD                     |
| 1972                               | WASC 900/104 ; L182                                                                                                                                                                                                                             | 1991                                                                       | Mott McDonald survey                |
| 1976                               | WASC 900/113 ; L182                                                                                                                                                                                                                             | 1992                                                                       | RARDE List ; Mess Room              |
| PHOTOGRAPHY<br>HISTORIC            |                                                                                                                                                                                                                                                 | PHOTOGRAPHY<br>RCHME                                                       |                                     |
|                                    |                                                                                                                                                                                                                                                 | 1) 206/J/22 From South West<br>206/P/15 From West<br>4) 4788/12 06.05.1993 |                                     |
| RELATIONSHIPS WITH OTHER MONUMENTS |                                                                                                                                                                                                                                                 |                                                                            |                                     |
| CONSISTS OF: L180, L181            |                                                                                                                                                                                                                                                 |                                                                            |                                     |
| CONDITION Fair                     |                                                                                                                                                                                                                                                 |                                                                            |                                     |
| DESCRIPTION                        |                                                                                                                                                                                                                                                 |                                                                            |                                     |
| 1)                                 | CONSTRUCTIONAL MATERIAL<br>Brick                                                                                                                                                                                                                |                                                                            |                                     |
| 2)                                 | ROOF MATERIALS AND STRUCTURE<br>Flat concrete slab                                                                                                                                                                                              |                                                                            |                                     |
| 3)                                 | POWER SOURCE<br>Electricity                                                                                                                                                                                                                     |                                                                            |                                     |
| 4)                                 | DIMENSIONS i) L 32.5 ii) W 4.7 iii) HT 3.9                                                                                                                                                                                                      |                                                                            |                                     |
| 5)                                 | The building is a single storey with a rectangular ground plan. traces of wavy camouflage paint may be discerned on the exterior of the building. Attached to the east end of the building is L181 the west end was used as a gas bottle store. |                                                                            |                                     |

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

|                                                                                                                                                                                                                                                           |            |                                                                                                                                                                 |                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L183                                                                                                                                                                                                                                            | OLD SERIES | RCHME NUMBER                                                                                                                                                    | N.G.R.<br>TL 37760 01112 |
| NAME/FUNCTION<br>Solvent Store                                                                                                                                                                                                                            |            | START DATE<br>1971?                                                                                                                                             | END DATE                 |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                               |            |                                                                                                                                                                 |                          |
| CARTOGRAPHIC DEPICTION<br><br>1976      WASC 900/113 ; L183                                                                                                                                                                                               |            | DOCUMENTARY REFERENCES<br><br>Plan;<br>L183      B01 - 20/11/1971 ; Solvent Store<br><br>1991      Mott McDonald survey<br>1992      RARDE List ; Solvent Store |                          |
| PHOTOGRAPHY<br>HISTORIC                                                                                                                                                                                                                                   |            | PHOTOGRAPHY<br>RCHME<br><br>1) 206/J/9 Floor slab from south                                                                                                    |                          |
| RELATIONSHIPS WITH OTHER MONUMENTS<br><br>ASSOCIATED WITH:                                                                                                                                                                                                |            |                                                                                                                                                                 |                          |
| CONDITION      Demolished                                                                                                                                                                                                                                 |            |                                                                                                                                                                 |                          |
| DESCRIPTION<br>1)      CONSTRUCTIONAL MATERIAL<br>Brick<br><br>3)      POWER SOURCE<br>Electricity<br><br>4)      DIMENSIONS i) L 11.3 ii) W 7.7<br><br>5)      The building rectangular in plan it was demolished in 1992 a concrete floor slab remains. |            |                                                                                                                                                                 |                          |

## THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |            |                                                                                                                                                                                                                                                                                       |                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L185                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | OLD SERIES | RCHME NUMBER                                                                                                                                                                                                                                                                          | N.G.R.<br>TL 37600 01334 |
| NAME/FUNCTION<br>Green Hut /Sport & Social Club /Laboratory                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            | START DATE<br>1962?                                                                                                                                                                                                                                                                   | END DATE                 |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |                                                                                                                                                                                                                                                                                       |                          |
| <b>CARTOGRAPHIC DEPICTION</b><br><br>c1960    WASC 900/94 ; L185<br>c1963    WASC 900/97 ; L185<br>1972     WASC 900/102 ; L185<br>1972     WASC 900/104 ; L185<br>1976     WASC 900/113 ; L185                                                                                                                                                                                                                                                                                                                                                                                                                                                       |            | <b>DOCUMENTARY REFERENCES</b><br><br>Plans;<br>L185    B01 - B03 ; Plans and Elevations 1949 to 1954<br><br>1972    ERDE List ; Green Hut/Sports and Social<br>Club/Laboratory<br>1991    Mott McDonald survey<br>1992    RARDE List ; Green Hut/Sports and Social<br>Club/Laboratory |                          |
| <b>PHOTOGRAPHY HISTORIC</b><br><br>WASC 1453 Main Lab from rear                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |            | <b>PHOTOGRAPHY RCHME</b><br><br>1) 206/F/30 From South East                                                                                                                                                                                                                           |                          |
| <b>RELATIONSHIPS WITH OTHER MONUMENTS</b><br><br>ASSOCIATED WITH:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |            |                                                                                                                                                                                                                                                                                       |                          |
| CONDITION      Fair                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |                                                                                                                                                                                                                                                                                       |                          |
| <b>DESCRIPTION</b><br>1)    CONSTRUCTIONAL MATERIAL<br>Timber frame and Boards<br><br>2)    ROOF MATERIALS AND STRUCTURE<br>Corrugated Asbestos over timber boards supported by a King post truss with braces.<br><br>3)    POWER SOURCE<br>Steam Electricity<br><br>4)    DIMENSIONS i) L 14.8 ii) W 5.97 iii) HT 4.6<br><br>5)    The building is a single storey, rectangular in plan, with gabled ends to the north and south. It is timber framed and covered by timber boards. On the east elevation are two double and one single windows, to the south is a single window, the west has three double windows a single door and a double door. |            |                                                                                                                                                                                                                                                                                       |                          |

## THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |            |                                                                                                                                                                                           |                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| NUMBER<br>L186                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | OLD SERIES | RCHME NUMBER                                                                                                                                                                              | N.G.R.<br>TL37620 01345 |
| NAME/FUNCTION<br>Locker Magazine                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            | START DATE<br>1950                                                                                                                                                                        | END DATE                |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |            |                                                                                                                                                                                           |                         |
| CARTOGRAPHIC DEPICTION<br><br>1954     A - B.34 ; L186<br>c1960    WASC 900/94 ; L186<br>c1963    WASC 900/97 ; L186<br>1972     WASC 900/102 ; L186<br>1972     WASC 900/104 ; L186<br>1976     WASC 900/113 ; L186                                                                                                                                                                                                                                                                                                                                                                            |            | DOCUMENTARY REFERENCES<br><br>1972     ERDE List ; Locker Magazine<br>1991     Mott McDonald survey<br>1992     RARDE List ; Locker Magazine<br>1992     FBRC Class 1 Explosives Magazine |                         |
| PHOTOGRAPHY<br>HISTORIC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            | PHOTOGRAPHY<br>RCHME<br>1) 206/F/31 From South West                                                                                                                                       |                         |
| RELATIONSHIPS WITH OTHER MONUMENTS<br><br>ASSOCIATED WITH: L191?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |                                                                                                                                                                                           |                         |
| CONDITION     Good                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |                                                                                                                                                                                           |                         |
| DESCRIPTION<br>1)     CONSTRUCTIONAL MATERIAL<br>Brick<br><br>2)     ROOF MATERIALS AND STRUCTURE<br>Corrugated Asbestos over timber<br><br>3)     POWER SOURCE<br>Electricity<br><br>4)     DIMENSIONS i) L 13.4 ii) W 2.6 iii) HT 2.9<br><br>5)     The locker magazine is a single storey building, rectangular in plan with gabled ends north and south. There are two doors on the west elevation. Within the building are six explosive lockers on the west side. It is thought that the magazine was last used in 1982. The building is earthed by a copper strip attached to the walls. |            |                                                                                                                                                                                           |                         |

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

|                                                                                                                                                                                                                  |            |                                                                                                                                                                                    |                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L187                                                                                                                                                                                                   | OLD SERIES | RCHME NUMBER                                                                                                                                                                       | N.G.R.<br>TL 37738 01197 |
| NAME/FUNCTION<br>Locker Magazine                                                                                                                                                                                 |            | START DATE<br>1950                                                                                                                                                                 | END DATE<br>1982?        |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                      |            |                                                                                                                                                                                    |                          |
| CARTOGRAPHIC DEPICTION<br><br>1954    A - B.34 ; L187<br>c1960    WASC 900/94 ; L187<br>c1963    WASC 900/97 ; L187<br>1972    WASC 900/102 ; L187<br>1972    WASC 900/104 ; L187<br>1976    WASC 900/113 ; L187 |            | DOCUMENTARY REFERENCES<br><br>1972    ERDE List ; Locker Magazine<br>1991    Mott McDonald survey<br>1992    FARDE List ; Locker Magazine<br>1992    FBRC Class 1 Explosives Store |                          |
| PHOTOGRAPHY<br>HISTORIC                                                                                                                                                                                          |            | PHOTOGRAPHY<br>RCHME                                                                                                                                                               |                          |
| RELATIONSHIPS WITH OTHER MONUMENTS<br><br>ASSOCIATED WITH: L157, L156, L158, L174                                                                                                                                |            |                                                                                                                                                                                    |                          |
| CONDITION Demolished                                                                                                                                                                                             |            |                                                                                                                                                                                    |                          |
| DESCRIPTION<br>1)        CONSTRUCTIONAL MATERIAL<br>Brick<br><br>4)        DIMENSIONS i) L 11.5 ii) W 3.0<br><br>5)        Building demolished concrete slab remains.                                            |            |                                                                                                                                                                                    |                          |

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

|                                    |                                                                                                                                                                                                                                                                                                                                                            |                                                     |                                  |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|----------------------------------|
| NUMBER<br>L188                     | OLD SERIES                                                                                                                                                                                                                                                                                                                                                 | RCHME NUMBER                                        | N.G.R.<br>TL 37750 01327         |
| NAME/FUNCTION<br>Locker Magazine   |                                                                                                                                                                                                                                                                                                                                                            | START DATE<br>1950                                  | END DATE                         |
| NO PHOTOGRAPHY<br>AVAILABLE        |                                                                                                                                                                                                                                                                                                                                                            |                                                     |                                  |
| CARTOGRAPHIC DEPICTION             |                                                                                                                                                                                                                                                                                                                                                            | DOCUMENTARY REFERENCES                              |                                  |
| 1954                               | A - B.34 ; L188                                                                                                                                                                                                                                                                                                                                            | 1972                                                | ERDE List ; Locker Magazine      |
| c1960                              | WASC 900/94 ; L188                                                                                                                                                                                                                                                                                                                                         | 1991                                                | Mott McDonald survey             |
| c1963                              | WASC 900/97 ; L188                                                                                                                                                                                                                                                                                                                                         | 1992                                                | RARDE List ; Locker Magazine     |
| 1972                               | WASC 900/102 ; L188                                                                                                                                                                                                                                                                                                                                        | 1992                                                | FBRC Class 1 Explosives Magazine |
| 1972                               | WASC 900/104 ; L188                                                                                                                                                                                                                                                                                                                                        |                                                     |                                  |
| 1976                               | WASC 900/113 ; L188                                                                                                                                                                                                                                                                                                                                        |                                                     |                                  |
| PHOTOGRAPHY<br>HISTORIC            |                                                                                                                                                                                                                                                                                                                                                            | PHOTOGRAPHY<br>RCHME<br>1) 206/G/34 From South West |                                  |
| RELATIONSHIPS WITH OTHER MONUMENTS |                                                                                                                                                                                                                                                                                                                                                            |                                                     |                                  |
| ASSOCIATED WITH: L192, L149?       |                                                                                                                                                                                                                                                                                                                                                            |                                                     |                                  |
| CONDITION                          | Good                                                                                                                                                                                                                                                                                                                                                       |                                                     |                                  |
| DESCRIPTION                        |                                                                                                                                                                                                                                                                                                                                                            |                                                     |                                  |
| 1)                                 | CONSTRUCTIONAL MATERIAL<br>Brick in English bond                                                                                                                                                                                                                                                                                                           |                                                     |                                  |
| 2)                                 | ROOF MATERIALS AND STRUCTURE<br>Corrugated Asbestos                                                                                                                                                                                                                                                                                                        |                                                     |                                  |
| 3)                                 | POWER SOURCE<br>Steam Electricity                                                                                                                                                                                                                                                                                                                          |                                                     |                                  |
| 4)                                 | DIMENSIONS i) L 13.45 ii) W 2.6 iii) HT Gable 2.9                                                                                                                                                                                                                                                                                                          |                                                     |                                  |
| 5)                                 | The building is single storeyed with arectangular ground plan and gabled ends north and south. It has has two red doors on the south elevation. Internally are six me'al lockers numbered '21-26', the temperature within the building was maintained by steam and electric heating. On the exterior a lightning conductor is connected to an earth point. |                                                     |                                  |



## THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                                                                                                                                                                                                                                                                                                       |                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L191                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | OLD SERIES | RCHME NUMBER                                                                                                                                                                                                                                                                                          | N.G.R.<br>TL 37640 01348 |
| NAME/FUNCTION<br>Stability Test Laboratory                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            | START DATE<br>1949-1952                                                                                                                                                                                                                                                                               | END DATE                 |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |                                                                                                                                                                                                                                                                                                       |                          |
| <b>CARTOGRAPHIC DEPICTION</b><br><br>c1960    WASC 900/94 ; L191<br>c1963    WASC 900/97 ; L191<br>1972    WASC 900/102 ; L191<br>1972    WASC 900/104 ; L191<br>1976    WASC 900/113 ; L191                                                                                                                                                                                                                                                                                                                                                                                                                                  |            | <b>DOCUMENTARY REFERENCES</b><br><br>Plans;<br>L191    B01 - B13 ; Plans and Elevations 1949 to 1983<br><br>1972    ERDE List ; Stability Test Laboratory<br>1991    Mott McDonald survey<br>1992    RARDE List ; Stability Test Laboratory<br><br>1992    FBRC ; Ovens and Laboratory for Explosives |                          |
| <b>PHOTOGRAPHY HISTORIC</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            | <b>PHOTOGRAPHY RCHME</b><br>1) 206/F/29 From South West                                                                                                                                                                                                                                               |                          |
| <b>RELATIONSHIPS WITH OTHER MONUMENTS</b><br><br>ASSOCIATED WITH: L186, L198                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |                                                                                                                                                                                                                                                                                                       |                          |
| <b>CONDITION</b> Good                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |                                                                                                                                                                                                                                                                                                       |                          |
| <b>DESCRIPTION</b><br>1)    CONSTRUCTIONAL MATERIAL<br>Brick<br><br>2)    ROOF MATERIALS AND STRUCTURE<br>Flat concrete slab with felt covering<br><br>3)    POWER SOURCE<br>Steam Electricity<br><br>4)    DIMENSIONS i) L 11.0 ii) W 6.65 iii) HT 3.3<br><br>5)    The building is single storeyed with a rectangular ground plan. On the east and west elevations are a single door and two metal framed windows and on the north elevation are three metal framed windows. On the south elevation are two single doors and access into a heating maintainance chamber. A lightning conductor is attached to the building. |            |                                                                                                                                                                                                                                                                                                       |                          |

## THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |                                                                                                                                                                                                                                                           |                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L192                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | OLD SERIES | RCHME NUMBER                                                                                                                                                                                                                                              | N.G.R.<br>TL 37752 01345 |
| NAME/FUNCTION<br>Locker Magazine                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |            | START DATE<br>1954                                                                                                                                                                                                                                        | END DATE                 |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |            |                                                                                                                                                                                                                                                           |                          |
| CARTOGRAPHIC DEPICTION<br><br>c1960    WASC 900/94 ; L192<br>c1963    WASC 900/97 ; L192<br>1972    WASC 900/102 ; L192<br>1972    WASC 900/104 ; L192<br>1976    WASC 900/113 ; L192                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |            | DOCUMENTARY REFERENCES<br><br>Plans;<br>L192    B01 - B03 ; Plans and Elevations 1954 to 1983<br><br>1972    ERDE List ; Locker Magazine<br>1991    Mott McDonald survey<br>1992    RARDE List ; Locker Magazine<br><br>1992    FBRC ; Class 1 Explosives |                          |
| PHOTOGRAPHY<br>HISTORIC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            | PHOTOGRAPHY<br>RCHME<br><br>1) 206/G/33 From South East                                                                                                                                                                                                   |                          |
| RELATIONSHIPS WITH OTHER MONUMENTS<br><br>ASSOCIATED WITH: L188, L146?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |                                                                                                                                                                                                                                                           |                          |
| CONDITION      Good                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |                                                                                                                                                                                                                                                           |                          |
| DESCRIPTION<br>1)      CONSTRUCTIONAL MATERIAL<br>Brick in English bond<br><br>2)      ROOF MATERIALS AND STRUCTURE<br>Corrugated Asbestos<br><br>3)      POWER SOURCE<br>Steam Electricity<br><br>4)      DIMENSIONS i) L 13.43 ii) W 2.6 iii) HT Gable 2.9<br><br>5)      The locker magazine is a single storey building rectangular in plan with gabled ends west and east. The magazine is entered through two red painted doors on the south elevation. Internally are five metal lockers numbered '7-12', each locker is earthed. A wooden shelf runs along the North wall. The temperature in the magazine was maintained by steam and electric heating. |            |                                                                                                                                                                                                                                                           |                          |

## THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |                                                                                                                                                                                                               |                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L193                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | OLD SERIES | RCHME NUMBER                                                                                                                                                                                                  | N.G.R.<br>TL 37782 01235 |
| NAME/FUNCTION<br>Locker Magazine                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            | START DATE<br>1954                                                                                                                                                                                            | END DATE                 |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |                                                                                                                                                                                                               |                          |
| CARTOGRAPHIC DEPICTION<br><br>c1960    WASC 900/94 ; L193<br>c1963    WASC 900/97 ; L193<br>1972    WASC 900/102 ; L193<br>1972    WASC 900/104 ; L193<br>1976    WASC 900/113 ; L193                                                                                                                                                                                                                                                                                                                                                   |            | DOCUMENTARY REFERENCES<br><br>Plan;<br>L193    B01 - 24/8/1983 ; Electrical Heating Layout<br><br>1972    ERDE List ; Locker Magazine<br>1991    Mott McDonald survey<br>1992    RARDE List ; Locker Magazine |                          |
| PHOTOGRAPHY<br>HISTORIC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |            | PHOTOGRAPHY<br>RCHME<br><br>1) 206/G/27 From South                                                                                                                                                            |                          |
| RELATIONSHIPS WITH OTHER MONUMENTS<br><br>ASSOCIATED WITH: L151, L152                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |                                                                                                                                                                                                               |                          |
| CONDITION    Good                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |            |                                                                                                                                                                                                               |                          |
| DESCRIPTION<br>1)    CONSTRUCTIONAL MATERIAL<br>Brick<br><br>2)    ROOF MATERIALS AND STRUCTURE<br>Corrugated Asbestos<br><br>3)    POWER SOURCE<br>Steam Electricity<br><br>4)    DIMENSIONS i) L 8.32 ii) W 2.59 iii) HT 3.0<br><br>5)    The magazine is single storeyed and is rectangular in plan. It has gabled ends north and south. It was entered through two doors on the west side. Internally are three metal explosive lockers numbered '28A-C'. There is a wooden shelf along the east wall and below this heating pipes. |            |                                                                                                                                                                                                               |                          |

| THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY        |                                                                                                                                                                                                                                                                                                                 |                             |                             |
|----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-----------------------------|
| NUMBER<br>L194                                     | OLD SERIES                                                                                                                                                                                                                                                                                                      | RCHME NUMBER                | N.G.R.<br>TL 37705 01420    |
| NAME/FUNCTION<br>Locker magazine<br>Chemical Store |                                                                                                                                                                                                                                                                                                                 | START DATE<br>1954          | END DATE<br>198?            |
| NO PHOTOGRAPHY<br>AVAILABLE                        |                                                                                                                                                                                                                                                                                                                 |                             |                             |
| CARTOGRAPHIC DEPICTION                             |                                                                                                                                                                                                                                                                                                                 | DOCUMENTARY REFERENCES      |                             |
| c1960                                              | WASC 900/94 ; L194                                                                                                                                                                                                                                                                                              | 1972                        | ERDE List ; Locker Magazine |
| c1963                                              | WASC 900/97 ; L194                                                                                                                                                                                                                                                                                              | 1991                        | Mott McDonald survey        |
| 1972                                               | WASC 900/102 ; L194                                                                                                                                                                                                                                                                                             | 1992                        | RARDE List ; Chemical Store |
| 1972                                               | WASC 900/104 ; L194                                                                                                                                                                                                                                                                                             |                             |                             |
| 1976                                               | WASC 900/113 ; L194                                                                                                                                                                                                                                                                                             | 1992                        | FBRC ; Chemical Store       |
| PHOTOGRAPHY<br>HISTORIC                            |                                                                                                                                                                                                                                                                                                                 | PHOTOGRAPHY<br>RCHME        |                             |
|                                                    |                                                                                                                                                                                                                                                                                                                 | 1) 206/G/37 From South West |                             |
| RELATIONSHIPS WITH OTHER MONUMENTS                 |                                                                                                                                                                                                                                                                                                                 |                             |                             |
| ASSOCIATED WITH: L134, L137, L166                  |                                                                                                                                                                                                                                                                                                                 |                             |                             |
| CONDITION      Fair                                |                                                                                                                                                                                                                                                                                                                 |                             |                             |
| DESCRIPTION                                        |                                                                                                                                                                                                                                                                                                                 |                             |                             |
| 1)                                                 | CONSTRUCTIONAL MATERIAL<br>Brick                                                                                                                                                                                                                                                                                |                             |                             |
| 2)                                                 | ROOF MATERIALS AND STRUCTURE<br>Corrugated Asbestos and Translucent Plastic                                                                                                                                                                                                                                     |                             |                             |
| 3)                                                 | POWER SOURCE<br>Steam Electricity                                                                                                                                                                                                                                                                               |                             |                             |
| 4)                                                 | DIMENSIONS i) L 8.33 ii) W 2.6 iii) HT Gable 2.85                                                                                                                                                                                                                                                               |                             |                             |
| 5)                                                 | The building is single storeyed with a rectangular ground plan, it has gabled ends north and south. The magazine was entered through two doors to the west. The conversion of the magazine into a store has entailed the removal of the metal lockers and the insertion of a number of translucent roof panels. |                             |                             |

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |                                                                                                                                                                                                                   |                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L196                                                                                                                                                                                                                                                                                                                                                                                                                                                               | OLD SERIES | RCHME NUMBER                                                                                                                                                                                                      | N.G.R.<br>TL 37589 01389 |
| NAME/FUNCTION<br>Acid Store<br>Locker Magazine                                                                                                                                                                                                                                                                                                                                                                                                                               |            | START DATE<br>1954                                                                                                                                                                                                | END DATE<br>198?         |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |                                                                                                                                                                                                                   |                          |
| CARTOGRAPHIC DEPICTION<br><br>c1960    WASC 900/94 ; L196<br>c1963    WASC 900/97 ; L196<br>1972    WASC 900/102 ; L196<br>1972    WASC 900/104 ; L196<br>1976    WASC 900/113 ; L196                                                                                                                                                                                                                                                                                        |            | DOCUMENTARY REFERENCES<br><br>Plan;<br>L196    B01 - 24/12/1954 ; Acid Store for Main<br>Laboratory<br><br>1972    ERDE List ; Acid Store<br>1991    Mott McDonald survey<br>1992    RARDE List ; Locker Magazine |                          |
| PHOTOGRAPHY<br>HISTORIC                                                                                                                                                                                                                                                                                                                                                                                                                                                      |            | PHOTOGRAPHY<br>RCHME<br><br>1) 206/C/1 From South West                                                                                                                                                            |                          |
| RELATIONSHIPS WITH OTHER MONUMENTS<br><br>ASSOCIATED WITH: L122                                                                                                                                                                                                                                                                                                                                                                                                              |            |                                                                                                                                                                                                                   |                          |
| CONDITION    Good                                                                                                                                                                                                                                                                                                                                                                                                                                                            |            |                                                                                                                                                                                                                   |                          |
| DESCRIPTION<br>1)    CONSTRUCTIONAL MATERIAL<br>Brick in English bond<br><br>2)    ROOF MATERIALS AND STRUCTURE<br>Concrete slab<br><br>3)    POWER SOURCE<br>Electricity<br><br>4)    DIMENSIONS i) L 2.75 ii) W 2.44 iii) HT 2.55<br><br>5)    The magazine is a single storeyed and almost square in plan. It was entered from a single door on the west side, there is a single small window on the north elevation. Internally are concrete shelves the floor is tiled. |            |                                                                                                                                                                                                                   |                          |

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

|                                                                                                                                                                                                                                                                                                                                                                |                 |                                                                                                                                                                                                                                                                                                      |                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L197                                                                                                                                                                                                                                                                                                                                                 | OLD SERIES<br>9 | RCHME NUMBER                                                                                                                                                                                                                                                                                         | N.G.R.<br>TL 37833 01186 |
| NAME/FUNCTION<br>Air Raid Shelter<br>Store                                                                                                                                                                                                                                                                                                                     |                 | START DATE<br>1942?                                                                                                                                                                                                                                                                                  | END DATE<br>1945         |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                                                                    |                 |                                                                                                                                                                                                                                                                                                      |                          |
| <p>CARTOGRAPHIC DEPICTION</p> <p>&gt; 1940 WASC 900/91A ; L197<br/>         1954 A - B.34 ; L197<br/>         c1960 WASC 900/94 ; L197<br/>         c1963 WASC 900/97 ; L197<br/>         1972 WASC 900/102 ; L197<br/>         1972 WASC 900/104 ; L197<br/>         1976 WASC 900/113 ; L197</p>                                                             |                 | <p>DOCUMENTARY REFERENCES</p> <p>Plan;<br/>         L197 B01 - 11/12/47 ; Pipe Trench &amp; Drainage</p> <p>1972 ERDE List ; Store/Air Raid Shelter semi<br/>         cylindrical</p> <p>1991 Mott McDonald survey</p> <p>1992 RARDE List ; Store/Air Raid Shelter semi<br/>         cylindrical</p> |                          |
| PHOTOGRAPHY<br>HISTORIC                                                                                                                                                                                                                                                                                                                                        |                 | PHOTOGRAPHY<br>RCHME                                                                                                                                                                                                                                                                                 |                          |
| <p>RELATIONSHIPS WITH OTHER MONUMENTS</p> <p>ASSOCIATED WITH:</p>                                                                                                                                                                                                                                                                                              |                 |                                                                                                                                                                                                                                                                                                      |                          |
| CONDITION Demolished                                                                                                                                                                                                                                                                                                                                           |                 |                                                                                                                                                                                                                                                                                                      |                          |
| <p>DESCRIPTION</p> <p>1) CONSTRUCTIONAL MATERIAL<br/>         Concrete</p> <p>3) POWER SOURCE<br/>         Electricity</p> <p>4) DIMENSIONS i) L 9.12 ii) W 3.8</p> <p>5) The building has been demolished a concrete floor slab remains.</p> <p align="center">This building is presumed to have been identical in<br/>         form to H11 and RCHME 167</p> |                 |                                                                                                                                                                                                                                                                                                      |                          |

## THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |            |                                                                                                                                                                                                                                                                  |                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| NUMBER<br>L198                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | OLD SERIES | RCHME NUMBER                                                                                                                                                                                                                                                     | N.G.R.<br>TL 37644 01334 |
| NAME/FUNCTION<br>Stability Laboratory                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            | START DATE<br>1956                                                                                                                                                                                                                                               | END DATE<br>198?         |
| NO PHOTOGRAPHY<br>AVAILABLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |                                                                                                                                                                                                                                                                  |                          |
| <b>CARTOGRAPHIC DEPICTION</b><br><br>c1960      WASC 900/94 ; L198<br>c1963      WASC 900/97 ; L198<br>1972        WASC 900/102 ; L198<br>1972        WASC 900/104 ; L198<br>1976        WASC 900/113 ; L198                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            | <b>DOCUMENTARY REFERENCES</b><br><br>Plans;<br>L198      B01 - B17 ; Plans and Elevations 1956 to 1982<br><br>1972      ERDE List ; Laboratory<br>1991      Mott McDonald survey<br>1992      RARDE List ; Laboratory<br><br>1992      FBRC ; Class 1 Explosives |                          |
| <b>PHOTOGRAPHY HISTORIC</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            | <b>PHOTOGRAPHY RCHME</b><br><br>1) 206/F/28 From South West                                                                                                                                                                                                      |                          |
| <b>RELATIONSHIPS WITH OTHER MONUMENTS</b><br><br>ASSOCIATED WITH: L191                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |                                                                                                                                                                                                                                                                  |                          |
| CONDITION      Good                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |            |                                                                                                                                                                                                                                                                  |                          |
| <b>DESCRIPTION</b><br>1)      CONSTRUCTIONAL MATERIAL<br>Brick<br><br>2)      ROOF MATERIALS AND STRUCTURE<br>Flat concrete with felt covering and raised roof lights<br><br>3)      POWER SOURCE<br>Steam Electricity<br><br>4)      DIMENSIONS i) L 9.2 ii) W 10.7 iii) HT 2.95<br><br>5)      The building is a single storey with a rectangular plan. The east and west elevations of the building are featureless in the north elevation is a single door. To the south are double glass doors giving access into a central court surrounded by laboratory benches lit by raised roof lights. Attached to the east and west walls of the building are two tall poles of a lightning conductor connected by wire at their tops. |            |                                                                                                                                                                                                                                                                  |                          |

