

Fax

To: Clive England **From:** Steve Chaddock
Fax: 0181 659 3146 **Pages:** 1
Phone: 0181 659 3250 **Date:** 23/11/98
Re: **Schedule of Listed Buildings at the WARGM Site** **CC:** Andrew Pasmore @WARGM

Urgent For Review Please Comment Please Reply Please Recycle

Following, a list of buildings with their Listing Grades, dating from 1993 and held by EFDC and EH, Saville Row. I have checked with A.Derrick that these are correct and, if you have different information from the C&G report, I suggest that it is updated with these numbers and listings:

Building Number	Listing Grade
A200	II
A201 / A202	II*
A221	II
H7	II
L133	II
L135	II
L136	II
L141	II
L145	II
L148	II*
L149	II*
L153	II*
L154	II
L157	I
L165	II
L167	II
L168	II*
L170a	II
L176 / L177	II*

ref 451

WARGM Co.	
Date Rec'd	23 NOV 1998
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INFORMATION ON NRMV LISTED BUILDINGS - FOR INTERNAL NRM USE ONLY
 - PROVIDED BY MICHAEL SEYMOUR - 20/11/09

Friday, November 6 2009

LIST ADDRESSES AND GRADES

Building Name	Number	Street	Parish	District	County	Grade	UID	NGR
MINISTRY OF DEFENCE BUILDING L145 (GROUP F INCORPORATING MILLS)			WALTHAM ABBEY	EPPING FOREST	ESSEX	II	433797	TL3766701338
MINISTRY OF DEFENCE BUILDING L153 (GROUP D INCORORATING MILLS)			WALTHAM ABBEY	EPPING FOREST	ESSEX	II*	433795	TL3771001232
MINISTRY OF DEFENCE BUILDING L149 (GROUP E INCORPORATING MILLS)			WALTHAM ABBEY	EPPING FOREST	ESSEX	II*	433793	TL3774301289
MINISTRY OF DEFENCE BUILDING L148 (GROUP G INCORPORATING MILLS)			WALTHAM ABBEY	EPPING FOREST	ESSEX	II*	433792	TL3768901284
MINISTRY OF DEFENCE NUMBER L168 (ENGINE HOUSE AND MECHANICS' SHOP)			WALTHAM ABBEY	EPPING FOREST	ESSEX	II*	433790	TL3771801050
MINISTRY OF DEFENCE BUILDING L133 AT TL 3674 0144			WALTHAM ABBEY	EPPING FOREST	ESSEX	II	352185	TL3764901442
MINISTRY OF DEFENCE BUILDING L135 AT TL 3766 0144			WALTHAM ABBEY	EPPING FOREST	ESSEX	II	352184	TL3766001440
MINISTRY OF DEFENCE BUILDING L136 AT TL 3764 0142			WALTHAM ABBEY	EPPING FOREST	ESSEX	II	352183	TL3764001420
MINISTRY OF DEFENCE BUILDING L165 AT TL 3777 0108			WALTHAM ABBEY	EPPING FOREST	ESSEX	II	352182	TL3777001080
MINISTRY OF DEFENCE BUILDING L167 AT TL 3777 0112			WALTHAM ABBEY	EPPING FOREST	ESSEX	II	352181	TL3777001120
THE LODGE (MINISTRY OF DEFENCE BUILDING NUMBER A221)			WALTHAM ABBEY	EPPING FOREST	ESSEX	II	352180	TL3781300920
MINISTRY OF DEFENCE BUILDING H7 AT TL 3756 0011			WALTHAM ABBEY	EPPING FOREST	ESSEX	II	352179	TL3756101100
MINISTRY OF DEFENCE BUILDING NUMBER A200 (WALTON HOUSE)			WALTHAM ABBEY	EPPING FOREST	ESSEX	II	352178	TL3770800958
MINISTRY OF DEFENCE BUILDING L170A AT TL 3778 0109			WALTHAM ABBEY	EPPING FOREST	ESSEX	II	352177	TL3778001090
MINISTRY OF DEFENCE BUILDINGS A201 AND A202 AT			WALTHAM ABBEY	EPPING FOREST	ESSEX	II*	352176	TL3786000800

Friday, November 6 2009

LIST ADDRESSES AND GRADES

Building Name	Number	Street	Parish	District	County	Grade	UID	NGR
TL 37860080								
MINISTRY OF DEFENCE BUILDING NUMBERS L176 (BOILER HOUSE) AND L177			WALTHAM ABBEY	EPPING FOREST	ESSEX	II*	352175	TL3773401026
MINISTRY OF DEFENCE BUILDING L154 (EXPENSE MAGAZINE)			WALTHAM ABBEY	EPPING FOREST	ESSEX	II	352174	TL3770801200
MINISTRY OF DEFENCE BUILDING L141			WALTHAM ABBEY	EPPING FOREST	ESSEX	II	352173	TL3765301376
MINISTRY OF DEFENCE BUILDING L157 (GROUP C INCORPORATING MILLS)			WALTHAM ABBEY	EPPING FOREST	ESSEX	I	352172	TL3773701167

ENGLISH HERITAGE



EASTERN REGION

With compliments

ref 473

WARGM Co.	
Date Rec'd	30 NOV 1998
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23 SAVILE ROW, LONDON, W1X 1AB
Telephone 0171 973 3000 Facsimile 0171 973 3001

1. Section 1 of the Planning (Listed Buildings and Conservation Areas) Act 1990 ("the Act") requires the Secretary of State, for the purposes of the Act and with a view to the guidance of local planning authorities in the performance of their functions under the Act in relation to buildings of special architectural or historic interest, to compile lists of such buildings, and may amend any list so compiled.

2. On 22 March 1974, the Secretary of State compiled a list of buildings of special architectural or historic interest situate in the District of Epping Forest (that part comprising the Civil Parish of Waltham Holy Cross).

3. The Secretary of State, having consulted with the Historic Buildings and Monuments Commission for England and such other persons or bodies of persons who appear to him appropriate as having special knowledge of, and interest in, such buildings, considers that the said list should be amended in the manner set out in the Schedule hereto.

NOW THEREFORE the Secretary of State, in exercise of the powers conferred on him by Section 1 of the Act, hereby amends the said list in the manner set out in the Schedule hereto.

(5)

PLANNING (LISTED BUILDINGS AND CONSERVATION AREAS) ACT 1990

11th AMENDMENT OF 5th LIST OF BUILDINGS OF SPECIAL ARCHITECTURAL
OR HISTORIC INTEREST

DISTRICT OF EPPING FOREST (ESSEX)

WHEREAS:

1. Section 1 of the Planning (Listed Buildings and Conservation Areas) Act 1990 ("the Act") requires the Secretary of State, for the purposes of the Act and with a view to the guidance of local planning authorities in the performance of their functions under the Act in relation to buildings of special architectural or historic interest, to compile lists of such buildings, and may amend any list so compiled.

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NOW THEREFORE the Secretary of State, in exercise of the powers conferred on him by Section 1 of the Act, hereby amends the said list in the manner set out in the Schedule hereto.



SCHEDULE

The following buildings shall be added to the list:-

TL3700

ROYAL GUNPOWDER FACTORY

3/10003

MOD Building L133 at TL 3674 0144

GV

II

Magazine. 1879. English bond brick with 2 red brick bands; brick-vaulted ceiling covered with felt and slate. Rectangular plan. One storey. Entrance probably originally had porch, since removed. Blocked segmental-headed windows to north and south; 2 brick buttresses to east. The building was served by the now-filled canal to east, and forms a group with L135 and 136 (qv). (RCHME report, 1993).

TL3700

ROYAL GUNPOWDER FACTORY

3/10004

MOD Building L135 at TL 3766 0144

GV

II

Tray magazine. 1882. English bond brick with red brick bands; slate roof over brick vault. Rectangular plan. One storey. C20 doors: entry was under a covered porch, the step of which retains a hide floor covering fixed by copper nails. Small segmental-headed window to north and 2 brick buttresses to east. The magazine was converted into a workshop in the 1950s. This building was served by the now-filled canal to the west, and groups with L133 and 136 (qv). (RCHME report, 1993).



TL3700

ROYAL GUNPOWDER FACTORY

3/10005

MOD Building L136 at TL 3764 0142

GV

II

Remote accumulator tower. 1879. English bond brick; flat C20 concrete roof. Square plan. 3 storeys. Blind panel and remains of 2 blocked windows to each elevation; stone plaque to southern elevation with inscription "RGPF VR 1879". Inserted floors, staircase and enlarged windows associated with mid C20 conversion to offices. This building was built as a remote accumulator serving the accumulator in L149 (qv), and represents the expansion of a centralised hydraulic network which provided power to press and moulding houses in the north part of the site. (RCHME report, 1993).

TL3700

ROYAL GUNPOWDER FACTORY

3/10007

MOD Building L165 at TL 3771 0108

GV

II

Mineral jelly store. 1914-17. Brick with slate roof. Rectangular plan. One storey. West elevation has 2 double doors and east elevation has 2 cast-iron framed windows. Interior: tie-beam trusses; four iron lockers with iron doors, originally served from northern room, are built into northern wall. Associated with the incorporation of cordite. Cordite was developed by the Government's Explosives Committee, a patent being taken out in 1889 and the initial experimental manufacture being carried out at Waltham Abbey. The development of useable cordite was dependant on the use of acetone as a solvent and mineral jelly as a stabiliser. (RCHME report, 1993).



TL3700

ROYAL GUNPOWDER FACTORY

3/10008

MOD Building L167 at TL 3777 0112

GV

II

Charcoal store, later converted into Reel Drying Stove. 1889, converted c1898. Flemish bond yellow brick with hipped roof. Rectangular plan: originally of 9 x 2 bays, with 7-bay room to north of 2-bay south end; truncated by removal of south room. One storey. Chamfered brick plinth, stepped brick cornice and chamfered abaci to pilasters which separate bays, each spanned by segmental arches over cast-iron framed windows and double doors to west elevation. Other elevations articulated in similar style. Blocked round openings indicate the position of entry for steam pipes. Interior noted as having iron roof trusses. Significant for its association with the manufacture of cordite, which Waltham had pioneered and which in the 1890s took over as the main services explosive. The incorporating mills (qv) switched over from the manufacture of gunpowder to cordite in 1898/9. The drying stove represents the next stage in the manufacturing process after pressing, when cordite was taken here to dry on racks before it was taken to the reeling house for winding. (RCHME report, 1993).

TL3700

ROYAL GUNPOWDER FACTORY

3/10009

The Lodge
(MOD Building No A221)

GV

II

House, built as house for various senior officers at the Royal Gunpowder Factory. Early C19 (not shown on 1806 map). Flemish bond yellow brick with wide overhanging eaves to hipped Welsh slate roof and brick ridge stacks. Double-depth plan. 2 storeys; symmetrical 3-window range. 2-storey double-depth plan with one-storey service wings to west, the south-west wing altered after 1859; NW wing heightened and extended to west, with later infill block linking it to SW wing. Symmetrical 3-window front: later central porch with plat band and gauged brick semi-circular arch over doorway. Gauged brick flat arches over 8/8-pane sashes; later C19 (1886-95) bay window with horned sashes to left. Similar bay window (before c1908) to left-hand return. Flat-roofed extension to rear. Interior: not inspected but known to include panelled doors, buffets in SE dining room and possibly reset dog-leg staircase with winders, stick balusters and turned newels. (RCHME report, 1993).



TL3700

ROYAL GUNPOWDER FACTORY

3/10012

MOD Building H7 at TL 3756 0011

-

II

Reel Drying Stove. 1904. English bond yellow brick; hipped zinc-covered roofs with almost flat roof to porch. Rectangular 8-bay plan, originally of one room, with "truck porches" to each end. One storey. 8-bay east and west elevations with red brick segmental arches over now-blocked windows. Mid C20 double doors to ends. The porches, to which tramways originally ran, each contain the remains of a "barrier board" to keep out grit and dust. Blocked round openings indicate the position of entry for steam pipes. Interior not inspected but roof replaced after bomb damage c1940. Associated with the manufacture of cordite, which Waltham had pioneered and which in the 1890s took over as the main services explosive. This reel drying stove represents an advance on the earlier example, L165 (qv), in that it was designed to extract acetone after it had been used as a solvent in the manufacturing process. (RCHME report, 1993).

TL3700

ROYAL GUNPOWDER FACTORY

3/10013

MOD Building No A 200 (Walton House)

GV

II

Superintendent's office of 1789, with later C19 extensions. Flemish bond red brick with C19 yellow brick extensions; hipped slate roofs; brick ridge and end stacks. 3-room rectangular plan including bay to north added before Superintendent's office of 1789, extended to right of front before 1821, with later C19 extensions including one of c1887 making U-plan with rear wing. 2 storeys. C18/early C19 front of 3-window range. Gauged brick flat arches over two C20 windows and late C19 plate-glass sash on ground floor, and over 3/6-pane first-floor sashes; stepped brick eaves. c1860 2-window front to right with timber lintel over C20 door to right, and flat gauged brick arches over 6/6-pane sashes. Rear extensions have similar arches over 6/6-pane and plate-glass sashes, and canted bay window to right. Interior not inspected but known to include late C18 box cornice and cast-iron grate to NW room. The Waltham Abbey gunpowder mills were purchased from John Walton by the government in 1787. Walton House forms a group with the contemporary A 201-2 (qv). (RCHME report, 1993).



TL3700

ROYAL GUNPOWDER FACTORY

3/10014

MOD Buildings A201 and A202
at TL 37860080

GV

II*

Mixing House and Saltpetre Mill. 1787-1800; Mixing House extended to north by one bay before 1830; linked by later C19 bay to centre. Reddish/brown Flemish bond brick, hipped to right and with ventilators to two pyramidal roofs on left. One storey. Saltpetre Mill to left has gauged brick flat arches over two C20 windows and concrete lintel over late C18 heavy plank door on right. Mid C19 entrance bay to centre with red brick flat arch over half-glazed mid C20 door. Mixing House has timber lintel over early/mid C19 four-panelled door flanked by segmental arches over C20 two-light windows. Early C19 extension to right has similar window and timber lintel over late C19 four-panel door with overlight set in beaded wood architrave. Stepped brick eaves. Interior of Mixing House includes 3-bay king-post roof with soffit bolts, raking struts and diagonal corner bracing to wall plates; other roofs not visible. Saltpetre and sulphur were mixed with charcoal, the 3 ingredients then being crushed in the incorporating mill. A set of drawings dated 1830 have recorded these buildings and the utensils used therein in great detail. An important and unique survival of a building associated with the late 18th century gunpowder industry. Groups with the contemporary Walton House, A200 (qv). (RCHME report, 1993).

TL3700

ROYAL GUNPOWDER FACTORY

3/10015

MOD Building L170a at TL 3778 0109

GV

II

Expense magazine. 1857. English bond brick coped gable ends to slate roof over brick-vault. Rectangular plan. One storey. Raised doorway to north side formerly served by a railway on a trestle. Associated with buildings L168 and L176 (qv). The earliest expense magazine on the site - the others being L141 and L154 (qv)- which was built to serve the incorporating mill of 1857 (demolished). Built for the temporary storage of gunpowder before it was transported into the northern part of the site for pressing, moulding and drying.



TL3700

ROYAL GUNPOWDER FACTORY

3/10016

MOD Building No L168
(Engine House and Mechanics' Shop)
at TL3772 0105

GV

II*

Mechanic's Shop and Engine House. 1857. Flemish bond yellow brick with hipped slate roof. Single-storeyed rectangular plan with engine house housed in tower to north east; engine house extended c1859 by flat-roofed Motor Room; in c1881 the Mechanic's Shop was extended to the south and the west by a further 2 bays, the remodelling probably including the replacement of original walls. Brick dentil cornices and brick corner pilasters, paired to Mechanic's Shop. North elevation of Mechanic's Shop has late C19 segmental red brick arches over double doors with overlight to right and over four 16/16-pane sashes. Similar fenestration and arches to other elevations. Engine House has semi-circular gauged brick arch with plain imposts and keystone to tall blocked window opening to south; similar arches to 3 small windows to upper stage of west elevation and to doorway and lunette window to south, the latter having bracketted sill inscribed "Erected 1857". Motor Room has concrete lintels over mid C20 door and window. Interior of 1857 structure: octagonal cast-iron columns with ornate capitals; north-east column has rounded section probably originally for swing jib. A matrix of pierced iron joists probably doubled as strengthening-ties and for locating beams for brackets for line shafting and pulleys. Iron roof trusses with decorative compression members. Late C19 king-post roof to southern extension. A plan of 1856 shows foundations for a 30-horsepower Compound Steam Engine. Sited to north of its contemporary boiler house, L176 (qv). The engine drove six incorporating mills in Building L169 (demolished), the first of the steam-powered incorporating mills to have been built on the site, which lay immediately to the south and has left the scar of its gabled roof against the south wall of the Engine House; a concrete floor overlies the "shaft alley" which housed drive shafts etc which transmitted power to the incorporating mills and may have survived. (RCHME report, 1993).



TL3700

ROYAL GUNPOWDER FACTORY

3/10017

MOD Building Nos L176 (Boiler House)
and L177

GV

II*

Boiler House. 1857. English bond yellow brick with central skylight to hipped slate roof. Rectangular plan. One storey, of 6 x 3 bays. Chamfered brick plinth and dentil cornice; paired brick corner pilasters, the east and west elevations articulated by pilasters into 3 bays of 2:2:2-fenestration. Segmental gauged red brick arches over C20 windows to west elevation, originally sashed and with rectangular blind panels below. Similar arches over blind windows to rear (east), 3 blind windows to north (with mid C20 inserted entry) and over 2 cast-iron windows to south flanking mid C20 sliding double doors, all having radiating glazing bars to heads of arches. Lean-to roof to Dynamo House of 1902 (L177) added to centre of east elevation: built of brick with slate roof. Interior: Iron roof trusses with decorative cast-iron compression members. Built at the same time as Building L168 (qv), the Engine House and Mechanic's Shop building, in order to provide power for the earliest of the steam-powered incorporating mills on the site (which has been demolished). It originally had a chimney to its north-east end. The Dynamo House probably signifies a change from steam to electric power, when the incorporating mill's function was changed to cordite reeling. (RCHME report, 1993).

TL3700

ROYAL GUNPOWDER FACTORY

3/10018

MOD Building L145
(Group F Incorporating Mills)

GV

II

Gunpowder Incorporating Mills. 1878, converted for cordite incorporation c1898-9. English bond yellow brick with hipped slate roofs to Engine House and Boiler House; cross wings have brick walls separating the bays which continue as coped gables breaking through the felt and slate roof; mid C20 replacement walling to originally wood and canvas side walls. T plan: central Engine House with Boiler House at east end and 3-bay cross wings on its north and south sides for gunpowder incorporating mills. One storey, with taller Engine House to centre. Chamfered brick plinth and brick dentil cornice to Engine House and Boiler House. Engine House has paired segmental-arched windows set in recessed panels to upper part of east and



west elevations. Boiler house of 4 x 1 bays has inserted mid C20 windows to each bay; gauged red brick semi-circular arch over east door. Interior similar to other incorporating mills, although more altered and lacking the original gearing machinery beneath the cross wing floors. The most altered of an important group of incorporating mills, the plan being closely modelled on the earlier (1861) Group C Incorporating Mills, Building L157 (qv). (RCHME report, 1993).

TL3700

ROYAL GUNPOWDER FACTORY

3/10019

MOD Building L148
(Group G Incorporating Mills)

GV

II*

Gunpowder Incorporating Mills. 1888-9, converted for cordite incorporation c1898-9. English bond yellow brick with hipped slate roofs to Engine House and Boiler House; cross wings have brick walls separating the bays which continue as coped gables breaking through the felt and slate roof; mid C20 replacement walling to originally wood and canvas side walls. T-plan: central Engine House with Boiler House at east end and cross wings at its north and south sides for gunpowder incorporating mills. One storey, with taller engine house to centre, chamfered brick plinth and brick dentil cornice to Engine House and Boiler House. Boiler House of 4x1 bays, the bays articulated by brick pilasters and each originally with segmental brick arches over windows with blind rectangular panels below and east doorway with keyed semi-circular arch. Engine House has rubbed red brick semi-circular arches over paired windows to east and west elevations. Interior noted as having similar roof structure and features to L157 (qv), upon which it was modelled. There was an open verandah along the west front. On the south side of the Boiler House was a coal yard, and the building was served by a tramline to the west. The building was repaired after an explosion in 1902. (RCHME report, 1993).



ROYAL GUNPOWDER FACTORY

TL3700

3/10020

MOD Building L149
(Group E Incorporating Mills)

GV

II*

Building in two main phases, the core built c1869 as "Pellet Powder Buildings" comprising an Accumulator House, Engine House and Boiler House; converted into incorporating mills in 1877-8. English bond yellow brick with red brick dressings; slate roofs. T-shaped plan; originally a roughly square plan. In 1877-8 the coal yard walls were demolished, the rest of the structure; 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; 3-bay cross wings for incorporating mills added to north and south; Pump House added between 1878 and 1895, extended c1904, on north side of Boiler House. One storey, with taller Engine House to centre having brick dentil cornice and pilasters. Accumulator House has datestone 1887-8, probably recording a rebuilding, semi-circular arched doorway, paired semi-circular arched windows to each elevation with false machicolation pattern of bricks above and to corbelled-out cornice. 1877-8 Boiler House of 4x1 bays, the bays articulated by pilasters and the 3 eastern bays on the north and south elevations each containing a pair of semi-circular arched windows with red brick heads and drops, in a style similar to that of the Accumulator House; rubbed red brick semi-circular arch to eastern end. Cross wings each of 3 bays, the original insubstantial walling having been replaced. Pump House, added to centre of north elevation of the Boiler House, has semi-circular headed windows to north elevation and square windows to east and west sides. Interior: Boiler House has trusses with wrought-iron tension rods, decorative cast-iron compression members and cast-iron ventilators. 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. Composite timber and iron roofs to cross wings, the relatively insubstantial fabric being easily replaced should an explosion occur; a drenching apparatus, erected over each pair of runners, would also have been activated. The original gearing for the incorporating mills survives in a chamber below ground level, the manufacturing process being identical to that carried out in L157 (qv), upon which the later incorporating mills were modelled. The accumulator provided hydraulic power to press gunpowder in pellet forms, which resulted in more consistent performance and was particularly important component of the technology of the large-bore guns being developed in this period. (RCHME report, 1993).



TL3700

ROYAL GUNPOWDER FACTORY

3/10021

MOD Building L153
(Group D Incorporating Mills)

GV

II*

Gunpowder Incorporating Mills. 1867-8, converted for cordite incorporation c1898-9; mid C20 additions. English bond yellow brick with hipped slate roofs to Engine House and Boiler House; cross wings have brick walls separating the bays which continue as coped gables breaking through the felt and slate roofs; mid C20 replacement walling to originally wood and canvas side walls. T-plan: central Engine House with 4-bay Boiler House at east end and 3-bay cross wings on its north and south sides for gunpowder incorporating mills. One storey, with taller Engine House to centre. Chamfered brick plinth and brick dentil cornice to Engine House and Boiler House. Boiler House of 4 x 1 bays, the bays articulated by brick pilasters and each originally with segmental brick arches over windows with blind rectangular panels below; the windows were sashes except in the westernmost bay on both elevations where they were blind, and have all now been replaced by larger mid C20 windows; east doorway widened and replaced in C20. Engine House has semi-circular arched window with keystone to upper part of each elevation (glazed to north and south, originally blind to east and west) and mid C20 inserted windows. Interior: Boiler House has 9 trusses with wrought-iron tension rods, king rods, and decorative cast-iron compression members. The Engine House carried a steam engine to drive the edge runners in the incorporating mills. Cross wings have composite timber and iron roofs, the relatively insubstantial fabric of both roof and walls being easily replaced should an explosion occur; a drenching apparatus, erected over each pair of runners, would also have been activated. The original gearing for the incorporating mills survives in a brick chamber below ground level. Cross-wing partition walls have cast-iron I-section girders and blocked openings in gables which belong to shafting for machinery which was probably installed for cordite manufacture. 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 wall. The building was served by a tramline to the west. Incorporation involved the combination of saltpetre, sulphur and charcoal to form gunpowder, the drive shaft and machinery transmitting power to the mills being passed underneath the building to minimise the risk of explosion. The incorporating mills each consisted of a pair of large heavy edge runner, of iron, which revolved on a large circular bed. This mill is closely modelled on the earlier (1861) Group C Incorporating Mills, Building L157 (qv). (RCHME report, 1993).



ROYAL GUNPOWDER FACTORY

TL3700

3/10022

MOD Building L157
(Group C Incorporating Mills)

GV

I

Gunpowder Incorporating Mills. 1861, converted for cordite incorporation c1898-9. English bond yellow brick with hipped slate roofs to Engine House and Boiler House; cross wings have brick walls separating the bays which continue as coped gables breaking through the felt and slate roof; mid C20 replacement walling to originally wood and canvas side walls. T-plan: central Engine House with Boiler House at east end and cross wings on its north and south sides for gunpowder incorporating mills; these wings, originally of 2 bays, were each extended by the addition of a third bay soon after construction. One storey, with taller Engine House to centre. Chamfered brick plinth and brick dentil cornice to Engine House and Boiler House. Boiler House of 4x1 bays, the bays articulated by brick pilasters and each originally with segmental brick arches over windows with blind rectangular panels below (sills lowered and double doors inserted to easternmost bay in north elevation c1906-7); the windows were sashes except in the westernmost bay on both elevations where they were blind; wide doorway to east, with keystone to gauged brick semi-circular arch with fanlight. Engine House has semi-circular arched window with keystone to upper part of each elevation (glazed to north and south, originally blind and glazed 1906-7 to east and west); windows to lower part of north and south elevations inserted 1906-7. Interior: Boiler House has 9 trusses with wrought-iron tension rods, king rods, and decorative cast-iron compression members. The Engine House carried a steam engine to drive the edge runners in the incorporating mills. Cross wings have composite timber and iron roofs, the relatively insubstantial fabric being easily replaced should an explosion occur; a drenching apparatus, erected over each pair of runners, would also have been activated. The original gearing for the incorporating mills survives in a chamber below ground level. Cross-wing partition walls have I-section girders and blocked openings in gables which belong to shafting for machinery which was probably installed for cordite manufacture. There was an open verandah along the west front, from which cast-iron columns have survived. On the south side of the Boiler House was a coal yard containing a chimney at the centre of its west wall. The building was served by a tramline to the west. Incorporation - an extremely important process in gunpowder manufacture - involved the grinding and combination of saltpetre, sulphur and charcoal to form gunpowder. Waltham had pioneered many important developments in the process, and this building is the first steam-powered incorporating mill to have survived on the site (and most probably in the world); the drive shaft and machinery transmitting power to the mills was passed underneath the building to minimise the risk of explosion. The incorporating mills each consisted of a pair of large heavy edge runners, of iron, which revolved on a large circular bed. The first and most complete of the incorporating mills to be built in the form of a T-shaped plan comprising a central Engine House, rear Boiler House and cross wings, thus providing a model for later incorporating mills on the site - L153 (qv) is an almost identical copy. (RCHME report, 1993).



ST3700

ROYAL GUNPOWDER FACTORY

3/10023

MOD Building L154 (Expense Magazine)

GV

II

Expense magazine for the storage of gunpowder produced at the incorporating mills. c1861. English bond yellow brick with coped gable ends to felt covering over brick vaulted roof. Rectangular plan. One storey. Chamfered brick plinth. Flat brick arch over doorway in side wall, originally served by iron tramway. Built for the temporary storage of gunpowder, before it was transported into the northern part of the site for pressing, moulding and drying. It was later converted into a store for cordite dough, a stage which preceded incorporation in the mills (after they were converted for cordite incorporating in 1898-9). (RCHME report, 1993)

TL3700

ROYAL GUNPOWDER FACTORY

3/10024

MOD Building L141

GV

II

Sorting House. 1889. English bond yellow brick with red brick bands; brick-coped gables to slate roof over brick-vaulted roof. Rectangular plan. One storey. Inserted concrete lintel over doorway in west gable end, originally served by iron tramway. Segmental brick arches over 4-light windows to north and south elevations. Similar in design to the expense magazine L154 (qv). It is only referred to in the documentary sources as a "sorting house", and was clearly intimately associated with the manufacture of gunpowder and cordite for it to have a raised door served by the railway system. (RCHME report, 1993).

Signed by authority of the
Secretary of State

P J HERON

A Principal in the
Department of National Heritage

Dated: 26th November 1993

Adam Ford

Epping Forest District Council

From the Chief Executive J. W. Burgess D.L.C. (Hons), M.I.L.A.M.

Civic Offices, High Street, Epping, Essex CM16 4BZ
Epping (0992) 560000 Fax (0992) 578018 DX 40409 Eppin



Please note change of
Telephone No (0992) 564000

Central Disposal Unit
Room C2/10
Ministry of Defence
Leatherhead Road
Chessington
Surrey KT9 2LU

If telephoning please ask for:
Mr G Lunnun Ext: 2031
Your Ref: R HOWELL
Our Ref: CE/GL/LE/TP/10/2
Date: 15 December 1993

IMPORTANT THIS COMMUNICATION AFFECTS YOUR PROPERTY

Dear Sir

**Planning (Listed Buildings and Conservation Areas) Act 1990 -
Section 1
11th Amendment of the 5th List of Buildings of Special
Architectural or Historic Interest in the Epping Forest District
Buildings at Royal Gunpowder Factory Site Waltham Abbey**

I would advise you that the Secretary of State for the Environment has included the above buildings in a list of Buildings of Special Architectural or Historic Interest in the Epping Forest District as Grade I, II or II* buildings.

- ... The formal notifications of the listing is enclosed.
- ... Would you please also complete the attached information slips and return them to me as soon as possible.

Yours faithfully

Head of Committee Services



G:\AD\CTOWN-CNT.C30\P18-COMM.TOP

IMPORTANT – THIS COMMUNICATION AFFECTS YOUR PROPERTY
PLANNING (LISTED BUILDINGS AND CONSERVATION AREAS) ACT 1990
BUILDINGS OF SPECIAL ARCHITECTURAL OR HISTORIC INTEREST

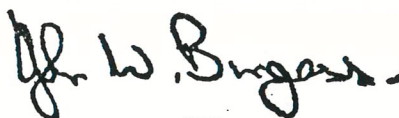
To: Central Disposal Unit
Room C2/10 Ministry of Defence Leatherhead Road Chessington
Surrey KT9 2LU

NOTICE IS HEREBY GIVEN that the building known as:

MOD Building L133 at TL 3674 0144, Royal Gunpowder Factory Site, Waltham Abbey

situated in the District of Epping Forest has on 26 November 1993 been included in a list of buildings of special architectural or historic interest, compiled by the Secretary of State for the Environment under Section 1 of the Planning (Listed Buildings and Conservation Areas) Act 1990.

Date: 9 December 1993



Chief Executive
Epping Forest District Council
Civic Offices
High Street
Epping
Essex CM16 4BZ

CE/GL/TP/10/2

PLEASE READ NOTE OVERLEAF

NOTE

Listing of Buildings of Special Architectural or Historic Interest

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PLANNING (LISTED BUILDINGS AND CONSERVATION AREAS) ACT 1990
BUILDINGS OF SPECIAL ARCHITECTURAL OR HISTORIC INTEREST**

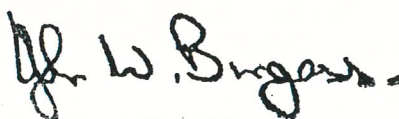
To: Central Disposal Unit
Room C2/10 Ministry of Defence Leatherhead Road Chessington
Surrey KT9 2LU

NOTICE IS HEREBY GIVEN that the building known as:

MOD Building L135 at TL 3766 0144, Royal Gunpowder Factory Site, Waltham Abbey

situated in the District of Epping Forest has on 26 November 1993 been included in a list of buildings of special architectural or historic interest, compiled by the Secretary of State for the Environment under Section 1 of the Planning (Listed Buildings and Conservation Areas) Act 1990.

Date: 9 December 1993



**Chief Executive
Epping Forest District Council
Civic Offices
High Street
Epping
Essex CM16 4BZ**

CE/GL/TP/10/2

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PLANNING (LISTED BUILDINGS AND CONSERVATION AREAS) ACT 1990
BUILDINGS OF SPECIAL ARCHITECTURAL OR HISTORIC INTEREST**

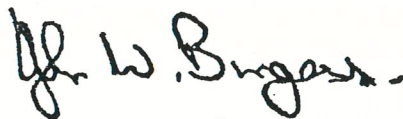
To: Central Disposal Unit
Room C2/10 Ministry of Defence Leatherhead Road Chessington
Surrey KT9 2LU

NOTICE IS HEREBY GIVEN that the building known as:

MOD Building L136 at TL 3764 0142, Royal Gunpowder Factory Site, Waltham Abbey

situated in the District of Epping Forest has on 26 November 1993 been included in a list of buildings of special architectural or historic interest, compiled by the Secretary of State for the Environment under Section 1 of the Planning (Listed Buildings and Conservation Areas) Act 1990.

Date: 9 December 1993



Chief Executive
Epping Forest District Council
Civic Offices
High Street
Epping
Essex CM16 4BZ

CE/GL/TP/10/2

PLEASE READ NOTE OVERLEAF

NOTE

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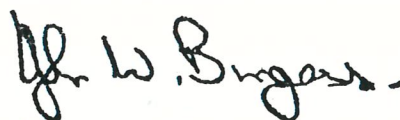
To: Central Disposal Unit
Room C2/10 Ministry of Defence Leatherhead Road Chessington
Surrey KT9 2LU

NOTICE IS HEREBY GIVEN that the building known as:

MOD Building L165 at TL 3771 0108, Royal Gunpowder Factory Site, Waltham Abbey

situated in the District of Epping Forest has on 26 November 1993 been included in a list of buildings of special architectural or historic interest, compiled by the Secretary of State for the Environment under Section 1 of the Planning (Listed Buildings and Conservation Areas) Act 1990.

Date: 9 December 1993



Chief Executive
Epping Forest District Council
Civic Offices
High Street
Epping
Essex CM16 4BZ

CE/GL/TP/10/2

PLEASE READ NOTE OVERLEAF

NOTE
Listing of Buildings of Special Architectural or Historic Interest

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BUILDINGS OF SPECIAL ARCHITECTURAL OR HISTORIC INTEREST

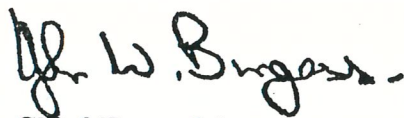
To: Central Disposal Unit
Room C2/10 Ministry of Defence Leatherhead Road Chessington
Surrey KT9 2LU

NOTICE IS HEREBY GIVEN that the building known as:

MOD Building L167 at TL 3777 0112, Royal Gunpowder Factory Site, Waltham Abbey

situated in the District of Epping Forest has on 26 November 1993 been included in a list of buildings of special architectural or historic interest, compiled by the Secretary of State for the Environment under Section 1 of the Planning (Listed Buildings and Conservation Areas) Act 1990.

Date: 9 December 1993



Chief Executive
Epping Forest District Council
Civic Offices
High Street
Epping
Essex CM16 4BZ

CE/GL/TP/10/2

PLEASE READ NOTE OVERLEAF

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BUILDINGS OF SPECIAL ARCHITECTURAL OR HISTORIC INTEREST**

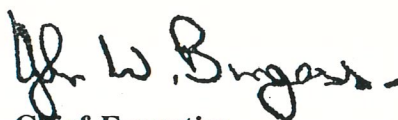
To: Central Disposal Unit
Room C2/10 Ministry of Defence Leatherhead Road Chessington
Surrey KT9 2LU

NOTICE IS HEREBY GIVEN that the building known as:

The Lodge (MOD Building No A221), Royal Gunpowder Factory Site, Waltham Abbey

situated in the District of Epping Forest has on 26 November 1993 been included in a list of buildings of special architectural or historic interest, compiled by the Secretary of State for the Environment under Section 1 of the Planning (Listed Buildings and Conservation Areas) Act 1990.

Date: 9 December 1993



Chief Executive
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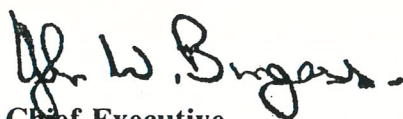
To: Central Disposal Unit
Room C2/10 Ministry of Defence Leatherhead Road Chessington
Surrey KT9 2LU

NOTICE IS HEREBY GIVEN that the building known as:

MOD Building H7 at TL 3756 0011, Royal Gunpowder Factory Site, Waltham Abbey

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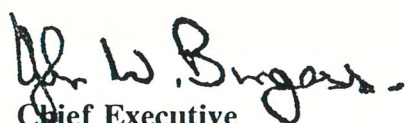
To: Central Disposal Unit
Room C2/10 Ministry of Defence Leatherhead Road Chessington
Surrey KT9 2LU

NOTICE IS HEREBY GIVEN that the building known as:

MOD Building No A200 (Walton House), Royal Gunpowder Factory Site, Waltham Abbey

situated in the District of Epping Forest has on 26 November 1993 been included in a list of buildings of special architectural or historic interest, compiled by the Secretary of State for the Environment under Section 1 of the Planning (Listed Buildings and Conservation Areas) Act 1990.

Date: 9 December 1993



Chief Executive
Epping Forest District Council
Civic Offices
High Street
Epping
Essex CM16 4BZ

CE/GL/TP/10/2

PLEASE READ NOTE OVERLEAF

NOTE
Listing of Buildings of Special Architectural or Historic Interest

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You should, however, note that it is an offence to carry out any of these works without obtaining listed building consent. A conviction for this offence could result in a fine or even imprisonment. Nevertheless where works which were urgently necessary in the interests of safety or of health or for the preservation of the building were carried out without consent it is a defence to prove that –

- (a) it was not practicable to secure safety or health or the preservation of the building by works of repair or works for affording temporary support or shelter;
- (b) the works carried out were limited to the minimum measures immediately necessary; and
- (c) notice in writing justifying in detail the carrying out of the works was given to the local planning authority as soon as reasonably practicable.

Certain buildings are exempt from the requirement to obtain listed building consent, notably ecclesiastical buildings which are for the time being used for ecclesiastical purposes (but it should also be noted that this exemption does not apply to a building used or available for use as a residence by a minister of religion and that the exemption may be restricted or excluded by an order of the Secretary of State under Section 60 of the 1990 Act).

Although there is no statutory right of appeal as such against the listing of a building, you are not precluded at any time from writing to the Secretary of State claiming that the building should cease to be listed, on the ground that it is not in fact of special architectural or historic interest; and any such claim, with the evidence supporting it, will be carefully considered by the Secretary of State in consultation with his statutory advisers. A guidance note on the procedure is available from the Secretary of State. In addition, where listed building consent is refused by a local planning authority or is granted subject to conditions, there is a right of appeal to the Secretary of State for the Environment; and one of the grounds for an appeal may be that the building is not of special architectural or historic interest.

If at any time you propose to take any action which may affect the character of your building, you would be well advised to refer to the provisions of the Planning (Listed Buildings and Conservation Areas) Act 1990 and of the Planning (Listed Buildings and Conservations Areas) Regulations 1990 (S.I. 1990/1519). Further details can be obtained from your local planning authority.

**IMPORTANT - THIS COMMUNICATION AFFECTS YOUR PROPERTY
PLANNING (LISTED BUILDINGS AND CONSERVATION AREAS) ACT 1990
BUILDINGS OF SPECIAL ARCHITECTURAL OR HISTORIC INTEREST**

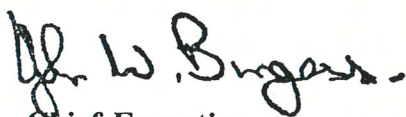
To: Central Disposal Unit
Room C2/10 Ministry of Defence Leatherhead Road Chessington
Surrey KT9 2LU

NOTICE IS HEREBY GIVEN that the building known as:

MOD Buildings A201 and A202 at TL 3786 0080, Royal Gunpowder Factory Site,
Waltham Abbey

situated in the District of Epping Forest has on 26 November 1993 been included in a list of buildings of special architectural or historic interest, compiled by the Secretary of State for the Environment under Section 1 of the Planning (Listed Buildings and Conservation Areas) Act 1990.

Date: 9 December 1993



Chief Executive
Epping Forest District Council
Civic Offices
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Epping
Essex CM16 4BZ

CE/GL/TP/10/2

PLEASE READ NOTE OVERLEAF

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PLANNING (LISTED BUILDINGS AND CONSERVATION AREAS) ACT 1990
BUILDINGS OF SPECIAL ARCHITECTURAL OR HISTORIC INTEREST

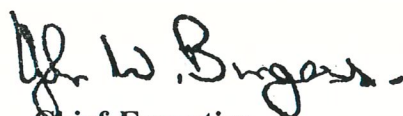
To: Central Disposal Unit
Room C2/10 Ministry of Defence Leatherhead Road Chessington
Surrey KT9 2LU

NOTICE IS HEREBY GIVEN that the building known as:

MOD Building L170a at TL 3778 0109, Royal Gunpowder Factory Site, Waltham Abbey

situated in the District of Epping Forest has on 26 November 1993 been included in a list of buildings of special architectural or historic interest, compiled by the Secretary of State for the Environment under Section 1 of the Planning (Listed Buildings and Conservation Areas) Act 1990.

Date: 9 December 1993



Chief Executive
Epping Forest District Council
Civic Offices
High Street
Epping
Essex CM16 4BZ

CE/GL/TP/10/2

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NOTE

Listing of Buildings of Special Architectural or Historic Interest

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BUILDINGS OF SPECIAL ARCHITECTURAL OR HISTORIC INTEREST

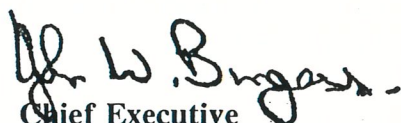
To: Central Disposal Unit
Room C2/10 Ministry of Defence Leatherhead Road Chessington
Surrey KT9 2LU

NOTICE IS HEREBY GIVEN that the building known as:

MOD Building No L168 (Engine House and Mechanics' Shop) at TL 3772 0105,
Royal Gunpowder Factory Site, Waltham Abbey

situated in the District of Epping Forest has on 26 November 1993 been included in a list of buildings of special architectural or historic interest, compiled by the Secretary of State for the Environment under Section 1 of the Planning (Listed Buildings and Conservation Areas) Act 1990.

Date: 9 December 1993



Chief Executive
Epping Forest District Council
Civic Offices
High Street
Epping
Essex CM16 4BZ

CE/GL/TP/10/2

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NOTE
Listing of Buildings of Special Architectural or Historic Interest

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PLANNING (LISTED BUILDINGS AND CONSERVATION AREAS) ACT 1990
BUILDINGS OF SPECIAL ARCHITECTURAL OR HISTORIC INTEREST

To: Central Disposal Unit
Room C2/10 Ministry of Defence Leatherhead Road Chessington
Surrey KT9 2LU

NOTICE IS HEREBY GIVEN that the building known as:

MOD Building No L176 (Boiler House) and L177, Royal Gunpowder Factory Site,
Waltham Abbey

situated in the District of Epping Forest has on 26 November 1993 been included in a list of buildings of special architectural or historic interest, compiled by the Secretary of State for the Environment under Section 1 of the Planning (Listed Buildings and Conservation Areas) Act 1990.

Date: 9 December 1993



Chief Executive
Epping Forest District Council
Civic Offices
High Street
Epping
Essex CM16 4BZ

CE/GL/TP/10/2

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NOTE
Listing of Buildings of Special Architectural or Historic Interest

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BUILDINGS OF SPECIAL ARCHITECTURAL OR HISTORIC INTEREST**

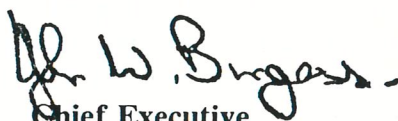
To: Central Disposal Unit
Room C2/10 Ministry of Defence Leatherhead Road Chessington
Surrey KT9 2LU

NOTICE IS HEREBY GIVEN that the building known as:

MOD Building L148 (Group G Incorporating Mills), Royal Gunpowder Factory Site,
Waltham Abbey

situated in the District of Epping Forest has on 26 November 1993 been included in a list of buildings of special architectural or historic interest, compiled by the Secretary of State for the Environment under Section 1 of the Planning (Listed Buildings and Conservation Areas) Act 1990.

Date: 9 December 1993



**Chief Executive
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Civic Offices
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Epping
Essex CM16 4BZ**

CE/GL/TP/10/2

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BUILDINGS OF SPECIAL ARCHITECTURAL OR HISTORIC INTEREST

To: Central Disposal Unit
Room C2/10 Ministry of Defence Leatherhead Road Chessington
Surrey KT9 2LU

NOTICE IS HEREBY GIVEN that the building known as:

MOD Building L145 (Group F Incorporating Mills), Royal Gunpowder Factory Site,
Waltham Abbey

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Date: 9 December 1993



Chief Executive
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CE/GL/TP/10/2

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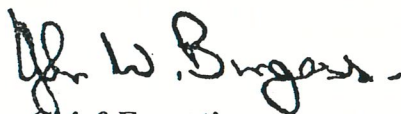
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NOTICE IS HEREBY GIVEN that the building known as:

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Date: 9 December 1993



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PLANNING (LISTED BUILDINGS AND CONSERVATION AREAS) ACT 1990
BUILDINGS OF SPECIAL ARCHITECTURAL OR HISTORIC INTEREST**

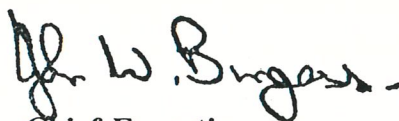
To: Central Disposal Unit
Room C2/10 Ministry of Defence Leatherhead Road Chessington
Surrey KT9 2LU

NOTICE IS HEREBY GIVEN that the building known as:

MOD Building L153 (Group D Incorporating Mills), Royal Gunpowder Factory Site,
Waltham Abbey

situated in the District of Epping Forest has on 26 November 1993 been included in a list of buildings of special architectural or historic interest, compiled by the Secretary of State for the Environment under Section 1 of the Planning (Listed Buildings and Conservation Areas) Act 1990.

Date: 9 December 1993



Chief Executive
Epping Forest District Council
Civic Offices
High Street
Epping
Essex CM16 4BZ

CE/GL/TP/10/2

PLEASE READ NOTE OVERLEAF

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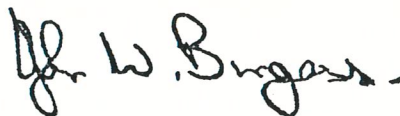
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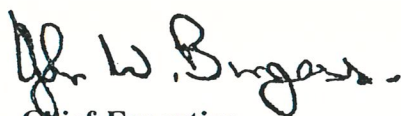
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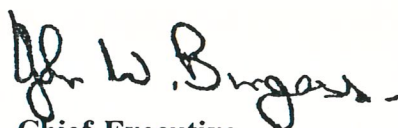
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ROYAL GUNPOWDER FACTORY

TL3700
3/10022

MOD Building L157
(Group C Incorporating Mills)

GV

I

Gunpowder Incorporating Mills. 1861, converted for cordite incorporation c1898-9. English bond yellow brick with hipped slate roofs to Engine House and Boiler House; cross wings have brick walls separating the bays which continue as coped gables breaking through the felt and slate roof mid C20 replacement walling to originally wood and canvas side walls. T-plan: central Engine House with Boiler House at east end and cross wings on its north and south sides for gunpowder incorporating mills; these wings, originally of 2 bays, were each extended by the addition of a third bay soon after construction. One storey, with taller Engine House to centre. Chamfered brick plinth and brick dentil cornice to Engine House and Boiler House. Boiler House of 4x1 bays, the bays articulated by brick pilasters and each originally with segmental brick arches over windows with blind rectangular panels below (sills lowered and double doors inserted to easternmost bay in north elevation c1906-7); the windows were sashes except in the westernmost bay on both elevations where they were blind; wide doorway to east, with keystone to gauged brick semi-circular arch with fanlight. Engine House has semi-circular arched window with keystone to upper part of each elevation (glazed to north and south, originally blind and glazed 1906-7 to east and west); windows to lower part of north and south elevations inserted 1906-7. Interior: Boiler House has 9 trusses with wrought-iron tension rods, king rods, and decorative cast-iron compression members. The Engine House carried a steam engine to drive the edge runners in the incorporating mills. Cross wings have composite timber and iron roofs, the relatively insubstantial fabric being easily replaced should an explosion occur; a drenching apparatus, erected over each pair of runners, would also have been activated. The original gearing for the incorporating mills survives in a chamber below ground level. Cross-wing partition walls have I-section girders and blocked openings in gables which belong to shafting for machinery which was probably installed for cordite manufacture. There was an open verandah along the west front, from which cast-iron columns have survived. On the south side of the Boiler House was a coal yard containing a chimney at the centre of its west wall. The building was served by a tramline to the west. Incorporation - an extremely important process in gunpowder manufacture - involved the grinding and combination of saltpetre, sulphur and charcoal to form gunpowder. Waltham had pioneered many important developments in the process, and this building is the first steam-powered incorporating mill to have survived on the site (and most probably in the world); the drive shaft and machinery transmitting power to the mills was passed underneath the building to minimise the risk of explosion. The incorporating mills each consisted of pair of large heavy edge runners, of iron, which revolved on a large circular bed. The first and most complete of the incorporating mills to be built in the form of a T-shaped plan comprising a central Engine House, rear Boiler House and cross wings, thus providing a model for

later incorporating mills on the site - L153 (qv) is an almost identical copy. (RCHME report, 1993).

Listing NGR: TL3773701167

ROYAL GUNPOWDER FACTORY

TL3700
3/10024
GV

MOD Building L141

II

Sorting House. 1889. English bond yellow brick with red brick bands; brick-coped gables to slate roof over brick-vaulted roof. Rectangular plan. One storey. Inserted concrete lintel over doorway in west gable end, originally served by iron tramway. Segmental brick arches over 4-light windows to north and south elevations. Similar in design to the expense magazine L154 (qv). It is only referred to in the documentary sources as a "sorting house", and was clearly intimately associated with the manufacture of gunpowder and cordite for it to have a raised door served by the railway system. (RCHME report, 1993).

Listing NGR: TL3765301376

ST3700
3/10023
GV

ROYAL GUNPOWDER FACTORY
MOD BuildingL154 (Expense Magazine)
II

Expense magazine for the storage of gunpowder produced at the incorporating mills. c1861. English bond yellow brick with coped gable ends to felt covering over brick-vaulted roof. Rectangular plan. One storey. Chamfered brick plinth. Flat brick arch over doorway in side wall, originally served by iron tramway. Built for the temporary storage of gunpowder, before it was transported into the northern part of the site for pressing, moulding and drying. It was later converted into a store for cordite dough, a stage which preceded incorporation in the mills (after they were converted for cordite incorporating in 1898-9). (RCHME report, 1993)

Listing NGR: TL3770801200

ROYAL GUNPOWDER FACTORY

TL3700
3/10017

MOD Building Nos L176 (Boiler House)
and L177
II*

GV

Boiler House. 1857. English bond yellow brick with central skylight to hipped slate roof. Rectangular plan. One storey, of 6 x 3 bays. Chamfered brick plinth and dentil cornice; paired brick corner pilasters, the east and west elevations articulated by pilasters into 3 bays of 2:2:2-fenestration. Segmental gauged red brick arches over C20 windows to west elevation, originally sashed and with rectangular blind panels below. Similar arches over blind windows to rear (east), 3 blind windows to north (with mid C20 inserted entry) and over 2 cast-iron windows to south flanking mid C20 sliding double doors, all having radiating glazing bars to heads of arches. Lean-to roof to Dynamo House of 1902 (L177) added to centre of east elevation: built of brick with slate roof. Interior: Iron roof trusses with decorative cast-iron compression members. Built at the same time as Building L168 (qv), the Engine House and Mechanic's Shop building, in order to provide power for the earliest of the steam-powered incorporating mills on the site (which has been demolished). It originally had a chimney to its north-east end. The Dynamo House probably signifies a change from steam to electric power, when the incorporating mill's function was changed to cordite reeling. (RCHME report, 1993).

Listing NGR: TL3773401026

ROYAL GUNPOWDER FACTORY

TL3700
3/10013
GV

MOD Building No A 200 (Walton House)
II

Superintendent's office of 1789, with later C19 extensions. Flemish bond red brick with C19 yellow brick extensions; hipped slate roofs; brick ridge and end stacks. 3-room rectangular plan including bay to north added before superintendents office of 1789, extended to right of front before 1821, with later C19 extensions including one of c1887 making U-plan with rear wing. 2 storeys. C18/early C19 front of 3-window range. Gauged brick flat arches over two C20 windows and late C19 plate-glass sash on ground floor, and over 3/6-pane first-floor sashes; stepped brick eaves. c1860 2-window front to right with timber lintel over C20 door to right, and flat gauged brick arches over 6/6-pane sashes. Rear extensions have similar arches over 6/6-pane and plate-glass sashes, and canted bay window to right. Interior not inspected but known to include late C18 box cornice and cast-iron grate to NW room. The Waltham Abbey gunpowder mills were purchased from John Walton by the government in 1787. Walton House forms a group with the contemporary A 201-2 (qv). (RCHME report, 1993).

Listing NGR: TL3770800958

ROYAL GUNPOWDER FACTORY

TL3700
3/10012

MOD Building H7 at TL 3756 0011

II

Reel Drying Stove. 1904. English bond yellow brick; hipped zinc-covered roofs with almost flat roof to porch. Rectangular 8-bay plan, originally of one room, with "truck porches" to each end. One storey. 8-bay east and west elevations with red brick segmental arches over now-blocked windows. Mid C20 double doors to ends. The porches, to which tramways originally ran, each contain the remains of a "barrier board" to keep out grit and dust. Blocked round openings indicate the position of entry for steam pipes. Interior not inspected but roof replaced after bomb damage c1940. Associated with the manufacture of cordite, which Waltham had pioneered and which in the 1890s took over as the main services explosive. This reel drying stove represents an advance on the earlier example, L165 (qv), in that it was designed to extract acetone after it had been used as a solvent in the manufacturing process. (RCHME report, 1993).

ROYAL GUNPOWDER FACTORY

TL3700
3/10009

The Lodge
(MOD Building No A221)

GV

II

House, built as house for various senior officers at the Royal Gunpowder Factory. Early C19 (not shown on 1806 map). Flemish bond yellow brick with wide overhanging eaves to hipped Welsh slate roof and brick ridge stacks. Double-depth plan. 2 storeys; symmetrical 3-window range. 2-storey double-depth plan with one-storey service wings to west, the south-west wing altered after 1859; NW wing heightened and extended to west, with later infill block linking it to SW wing. Symmetrical 3-window front : later central porch with plat band and gauged brick semi-circular arch over doorway. Gauged brick flat arches over 8/8-pane sashes; later C19 (1886-95) bay window with horned sashes to left. Similar bay window (before c1908) to left-hand return. Flat-roofed extension to rear. Interior: not inspected but known to include panelled doors, buffets in SE dining room and possibly reset dog-leg staircase with winders, stick balusters and turned newels. (RCHME report, 1993).

Listing NGR: TL3781300920

ROYAL GUNPOWDER FACTORY

TL3700
3/10008
GV

MOD Building L167 at TL 3777 0112
II

Charcoal store, later converted into Reel Drying Stove. 1889, converted c1898. Flemish bond yellow brick with hipped roof. Rectangular plan: originally of 9 x 2 bays, with 7-bay room to north of 2-bay south end; truncated by removal of south room. One storey. Chamfered brick plinth, stepped brick cornice and chamfered abaci to pilasters which separate bays, each spanned by segmental arches over cast-iron framed windows and double doors to west elevation. Other elevations articulated in similar style. Blocked round openings indicate the position of entry for steam pipes. Interior noted as having iron roof trusses. Significant for its association with the manufacture of cordite, which Waltham had pioneered and which in the 1890s took over as the main services explosive. The incorporating mills (qv) switched over from the manufacture of gunpowder to cordite in 1898/9. The drying stove represents the next stage in the manufacturing process after pressing, when cordite was taken here to dry on racks before it was taken to the reeling house for winding. (RCHME report, 1993).

Listing NGR: TL3777001120

ROYAL GUNPOWDER FACTORY

TL3700
3/10007
GV

MOD Building L165 at TL 3771 0108

II

Mineral jelly store. 1914-17. Brick with slate roof Rectangular plan. One storey. West elevation has 2 double doors and east elevation has 2 cast-iron framed windows. Interior: tie-beam trusses; four iron lockers with iron doors, originally served from northern room, are built into northern wall. Associated with the incorporation of cordite. Cordite was developed by the Government's Explosives Committee, a patent being taken out in 1889 and the initial experimental manufacture being carried out at Waltham Abbey. The development of useable cordite was dependant on the use of acetone as a solvent and mineral jelly as a stabiliser. (RCHME report, 1993).

Listing NGR: TL3777001080

ROYAL GUNPOWDER FACTORY

TL3700
3/10005
GV

MOD Building L136 at TL 3764 0142
II

Remote accumulator tower. 1879. English bond brick; flat C20 concrete roof. Square plan. 3 storeys. Blind panel and remains of 2 blocked windows to each elevation; stone plaque to southern elevation with inscription "RGPF VR 1879". Inserted floors, staircase and enlarged windows associated with mid C20 conversion to offices. This building was built as a remote accumulator serving the accumulator in L149 (qv), and represents the expansion of a centralised hydraulic network which provided power to press and moulding houses in the north part of the site. (RCHME report, 1993).

ROYAL GUNPOWDER FACTORY

TL3700
3/10004
GV

MOD Building L135 at TL 3766 0144
II

Tray magazine. 1882. English bond brick with red brick bands; slate roof over brick vault. Rectangular plan. One storey. C20 doors: entry was under a covered porch, the step of which retains a hide floor covering fixed by copper nails. Small segmental-headed window to north and 2 brick buttresses to east. The magazine was converted into a workshop in the 1950s. This building was served by the now-filled canal to the west, and groups with L133 and 136 (qv). (RCHME report, 1993).

Listing NGR: TL3766001440

ROYAL GUNPOWDER FACTORY

TL3700
3/10003
GV

MOD Building L133 at TL 3674 0144
II

Magazine. 1879. English bond brick with 2 red brick bands; brick-vaulted ceiling covered with felt and slate. Rectangular plan. One storey. Entrance probably originally had porch, since removed. Blocked segmental-headed windows to north and south; 2 brick buttresses to east. The building was served by the now-filled canal to east, and forms a group with L135 and 136 (qv). (RCHME report, 1993).

Listing NGR: TL3764901442

ROYAL GUNPOWDER FACTORY

TL3700

3/10016

GV

MOD Building No L168
(Engine House and Mechanics' Shop)
at TL3772 0105
II*

Mechanic's Shop and Engine House. 1857. Flemish bond yellow brick with hipped slate roof. Single-storeyed rectangular plan with engine house housed in tower to north east; engine house extended c1859 by flat-roofed Motor Room; in c1881 the Mechanic's Shop was extended to the south and the west by a further 2 bays, the remodelling probably including the replacement of original walls. Brick dentil cornices and brick corner pilasters, paired to Mechanic's Shop. North elevation of Mechanic's Shop has late C19 segmental red brick arches over double doors with overlight to right and over four 16/16-pane sashes. Similar fenestration and arches to other elevations. Engine House has semi-circular gauged brick arch with plain impost and keystone to tall blocked window opening to south; similar arches to 3 small windows to upper stage of west elevation and to doorway and lunette window to south, the latter having bracketted sill inscribed "Erected 1857". Motor Room has concrete lintels over mid C20 door and window. Interior of 1857 structure: octagonal cast-iron columns with ornate capitals; north-east column has rounded section probably originally for swing jib. A matrix of pierced iron joists probably doubled as strengthening-ties and for locating beams for brackets for line shafting and pulleys. Iron roof trusses with decorative compression members. Late C19 king-post roof to southern extension. A plan of 1856 shows foundations for a 30-horsepower Compound Steam Engine. Sited to north of its contemporary boiler house, L176 (qv). The engine drove six incorporating mills in Building L169 (demolished), the first of the steam-powered incorporating mills to have been built on the site, which lay immediately to the south and has left the scar of its gabled roof against the south wall of the Engine House; a concrete floor overlies the "shaft alley" which housed drive shafts etc which transmitted power to the incorporating mills and may have survived. (RCHME report, 1993).

Listing NGR: TL3771801050

ROYAL GUNPOWDER FACTORY

TL3700
3/10019

MOD Building L148
(Group G Incorporating Mills)
II*

GV

Gunpowder Incorporating Mills. 1888-9, converted for cordite incorporation c1898-9. English bond yellow brick with hipped slate roofs to Engine House and Boiler House; cross wings have brick walls separating the bays which continue as coped gables breaking through the felt and slate roof; mid C20 replacement walling to originally wood and canvas side walls. T-plan: central Engine House with Boiler House at east end and cross wings at its north and south sides for gunpowder incorporating mills. One storey, with taller engine house to centre, chamfered brick plinth and brick dentil cornice to Engine House and Boiler House. Boiler House of 4x1 bays, the bays articulated by brick pilasters and each originally with segmental brick arches over windows with blind rectangular panels below and east doorway with keyed semi-circular arch. Engine House has rubbed red brick semi-circular arches over paired windows to east and west elevations. Interior noted as having similar roof structure and features to L157 (qv), upon which it was modelled. There was an open verandah along the west front. On the south side of the Boiler House was a coal yard, and the building was served by a tramline to the west. The building was repaired after an explosion in 1902.
(RCHME report, 1993).

Listing NGR: TL3768901284

ROYAL GUNPOWDER FACTORY

TL3700
3/10020

MOD Building L149
(Group E Incorporating Mills)

GV

II*

Building in two main phases, the core built c1869 as "Pellet Powder Buildings" comprising an Accumulator House, Engine House and Boiler House; converted into incorporating mills in 1877-8. English bond yellow brick with red brick dressings; slate roofs. T-shaped plan: originally a roughly square plan. In 1877-8 the coal yard walls were demolished, the rest of the structure; 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; 3-bay cross wings for incorporating mills added to north and south; Pump House added between 1878 and 1895, extended c1904, on north side of Boiler House. One storey, with taller Engine House to centre having brick dentil cornice and pilasters. Accumulator House has datestone 1887-8, probably recording a rebuilding, semi-circular arched doorway, paired semi-circular arched windows to each elevation with false machicolation pattern of bricks above and to corbelled-out cornice. 1877-8 Boiler House of 4x1 bays, the bays articulated by pilasters and the 3 eastern bays on the north and south elevations each containing a pair of semi-circular arched windows with red brick heads and drops, in a style similar to that of the Accumulator House; rubbed red brick semi-circular arch to eastern end. Cross wings each of 3 bays, the original insubstantial walling having been replaced. Pump House, added to centre of north elevation of the Boiler House, has semi-circular headed windows to north elevation and square windows to east and west sides. Interior: Boiler House has trusses with wrought-iron tension rods, decorative cast-iron compression members and cast-iron ventilators. 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. Composite timber and iron roofs to cross wings, the relatively insubstantial fabric being easily replaced should an explosion occur; a drenching apparatus, erected over each pair of runners, would also have been activated. The original gearing for the incorporating mills survives in a chamber below ground level, the manufacturing process being identical to that carried out in L157 (qv), upon which the later incorporating mills were modelled. The accumulator provided hydraulic power to press gunpowder in pellet forms, which resulted in more consistent performance and was particularly important component of the technology of the large-bore guns being developed in this period.
(RCHME report, 1993).

Listing NGR: TL3774301289

ROYAL GUNPOWDER FACTORY

TL3700
3/10021

MOD Building L153
(Group D Incorporating Mills)

GV

II*

Gunpowder Incorporating Mills. 1867-8, converted for cordite incorporation c1898-9; mid C20 additions. English bond yellow brick with hipped slate roofs to Engine House and Boiler House; cross wings have brick walls separating the bays which continue as coped gables breaking through the felt and slate roofs; mid C20 replacement walling to originally wood and canvas side walls. T-plan: central Engine House with 4-bay Boiler House at east end and 3-bay cross wings on its north and south sides for gunpowder incorporating mills. One storey, with taller Engine House to centre. Chamfered brick plinth and brick dentil cornice to Engine House and Boiler House. Boiler House of 4 x 1 bays, the bays articulated by brick pilasters and each originally with segmental brick arches over windows with blind rectangular panels below; the windows were sashes except in the westernmost bay on both elevations where they were blind, and have all now been replaced by larger mid C20 windows; east doorway widened and replaced in C20. Engine House has semi-circular arched window with keystone to upper part of each elevation (glazed to north and south, originally blind to east and west) and mid C20 inserted windows. Interior: Boiler House has 9 trusses with wrought-iron tension rods, king rods, and decorative cast-iron compression members. The Engine House carried a steam engine to drive the edge runners in the incorporating mills. Cross wings have composite timber and iron roofs, the relatively insubstantial fabric of both roof and walls being easily replaced should an explosion occur; a drenching apparatus, erected over each pair of runners, would also have been activated. The original gearing for the incorporating mills survives in a brick chamber below ground level. Cross-wing partition walls have cast-iron I-section girders and blocked openings in gables which belong to shafting for machinery which was probably installed for cordite manufacture. 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 wall. The building was served by a tramline to the west. Incorporation involved the combination of saltpetre, sulphur and charcoal to form gunpowder, the drive shaft and machinery transmitting power to the mills being passed underneath the building to minimise the risk of explosion. The incorporating mills each consisted of pair of large heavy edge runner, of iron, which revolved on a large circular bed. This mill is closely modelled on the earlier (1861) Group C Incorporating Mills, Building L157 (qv). (RCHME report, 1993).

Listing NGR: TL3771001232

ROYAL GUNPOWDER FACTORY

TL3700
3/10018

MOD Building L145
(Group F Incorporating Mills)

GV

II

Gunpowder Incorporating Mills. 1878, converted for cordite incorporation c1898-9. English bond yellow brick with hipped slate roofs to Engine House and Boiler House; cross wings have brick walls separating the bays which continue as coped gables breaking through the felt and slate roof; mid C20 replacement walling to originally wood and canvas side walls. T-plan: central Engine House with Boiler House at east end and 3-bay cross wings on its north and south sides for gunpowder incorporating mills. One storey, with taller Engine House to centre. Chamfered brick plinth and brick dentil cornice to Engine House and Boiler House. Engine House has paired segmental-arched windows set in recessed panels to upper part of east and west elevations. Boiler house of 4 x 1 bays has inserted mid C20 windows to each bay; gauged red brick semi-circular arch over east door. Interior similar to other incorporating mills, although more altered and lacking the original gearing machinery beneath the cross wing floors. The most altered of an important group of incorporating mills, the plan being closely modelled on the earlier (1861) Group C Incorporating Mills, Building L157 (qv). (RCHME report, 1993).

Listing NGR: TL3766701338

~~EP 1201~~

WASE 172 Arch
Cab

FILE REFERENCE: AA 53709/1

Listed Buildings

SCHEDULE ENTRY COPY

ENTRY IN THE SCHEDULE OF MONUMENTS COMPILED AND MAINTAINED BY THE SECRETARY OF STATE UNDER SECTION 1 OF THE ANCIENT MONUMENTS AND ARCHAEOLOGICAL AREAS ACT 1979 AS AMENDED.

MONUMENT: Waltham Abbey Royal Gunpowder Factory

PARISH: WALTHAM ABBEY

COUNTY: ESSEX

DISTRICT: EPPING FOREST

NATIONAL MONUMENT NO: 21567

NATIONAL GRID REFERENCE(S): TL37640177
TL37670059

DESCRIPTION OF THE MONUMENT

The monument is situated on the northern outskirts of Waltham Abbey and includes intact buildings, ruins, earthworks and buried remains of parts of the Royal Armament Research and Development Establishment, formerly known as the Royal Gunpowder Factory. The remains are associated with the manufacture of gunpowder, guncotton, nitroglycerine, cordite paste and tetryl, and include a number of ancillary buildings and structures associated with these manufacturing processes. Intact buildings, ruins, earthworks and buried remains of parts of a complex concerned with producing and testing modern high explosives, parts of an extensive water management system and parts of an associated tramway and railway network are also included. The scheduling occupies two separate areas.

The site is set within and around a series of watercourses, most of which are man-made and channel the River Lea as it flows from N to S. Although the manufacture of gunpowder in the Waltham Abbey area dates back to the 1560s, there is no documentary evidence for production at this site before the mid-17th century. Between 1702 and 1787 the site was in the possession of the Walton family who developed many improvements to the gunpowder manufacturing process here. Cartographic evidence from this period indicates that these early works occupied the area known as Millhead to the W of Middle Road and Powdermill Way in the southern part of the main constraint area. Here the mills and other buildings were set on either side of a large leat fed by a branch of the Lea. Water from this leat (the Millhead Stream) was drawn off at regular intervals along its course to power the mills and was returned to the river by means of two parallel tailraces either side of the leat. These mills included stamping mills which blended the raw materials of saltpetre, sulphur and charcoal, a corning house and a glazing house, and a number of stoves for drying the finished product. There were also associated ancillary buildings, including powder magazines.

Some of these early mills were horse-powered and, in 1963, construction work in the Millhead area recovered the remains of at least two horse mills surviving beneath the ground surface. An engraving of the site in 1735 indicates that, by this date, water-powered mills either side of Millhead Stream were already in use, but water-power did not entirely replace horse-power until 1814. A number of mills along Millhead Stream, including Smeaton's Mill and Head Mills, have been located during excavation work and recent ground clearance. These remains indicate structures with a complex history

(Continued ..)

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On behalf of the Secretary of State for National Heritage.

DESCRIPTION OF THE MONUMENT (Continued)

retaining evidence for several phases of construction. The remains of Smeaton's Mill were found to include the brick foundations of a mill building which also forms the inner edge of the tailrace situated to the E of Millhead Stream. Within this mill a central wheelpit is visible, although rubble-filled. Irregular scarps on the platform between the E tailrace and Millhead Stream indicate the presence of further building remains beneath the ground surface. The remains of the mill buildings in the Millhead area are also visible above ground. The Dusting House, for example, in use between the early 18th and mid-20th century, shows a number of alterations and rebuilding phases and is represented by brick foundations either side of a central wheelpit. The wheel was powered by water from Millhead Stream and its flow was regulated by a sluice gate. The Dusting House was latterly provided with a concrete traverse (blast wall). Traverses, both standing structures and foundations, are present throughout much of the site and are constructed from a number of different materials, including brick, earth, and corrugated iron. They served an important function in minimising the damage caused to buildings by explosions elsewhere on the site. A number of roofed buildings also survive within the Millhead area, including the 18th century offices, a powder and barrel store, and washing house. These buildings are of exceptionally rare types and are intrinsic to the site's history and development. They are not, however, included in the scheduling but are protected as Listed Buildings. An important surviving group of steam-powered incorporating mills, the earliest dating from 1857, is situated to the E and SE of the area of the scheduling. This part of the site also includes associated expense magazines, ancillary structures and two accumulator towers. These buildings are Listed Grade II, II* and I and are not included in the scheduling.

In 1787 the site was purchased by the government who implemented an extensive programme of modernisation. Map evidence indicates that by the early 19th century the site had expanded northwards and eastwards, but the Millhead area continued to play an active role in gunpowder manufacture. In the N part of the site, served by an extension to the canal system, horse-powered corning houses were constructed. In the NE part of the site an oval, battered brick traverse, present on an 1806 map, remains standing. It was originally associated with a gunpowder corning mill that fell into disuse by c.1827. The mill was re-equipped with a water-powered hydraulic pump and a gunpowder press in the mid-19th century. The structures associated with this press include a single storey brick building which retains its water-driven hydraulic pump and its cast-iron water-wheel attached to the external S wall. To the N of this structure are the foundations of the press house, which retains its cast-iron gunpowder press in situ.

At the N extremity of the site, well away from other danger buildings and served by the canal, the finished powder was stored in the Grand Magazine. The final building on this site was of brick and is now partly ruined.

The saltpetre refinery which served the mills is situated approximately 265m to the S of the Millhead area in a separate constraint area N of Highbridge Street; map evidence indicates that refinery buildings were present at the site by the 1780s. Here, the saltpetre was prepared, concentrated and crystallised ready for incorporation with the other raw materials. The buried remains of the refinery survive beneath the ground surface and are included in the scheduling.

In the early 19th century, after the sale of its factories in Faversham and Ireland, the Royal Gunpowder Factory at Waltham Abbey became the only government owned gunpowder manufacturing site in the country.

By the middle of the 19th century there was a growing interest in two new

(Continued ..)

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DESCRIPTION OF THE MONUMENT (Continued)

explosives, guncotton and nitroglycerine, and in 1863 an experimental plant for the production of guncotton was set up at the site. Cartographic evidence indicates that this plant was situated on the site of the original saltpetre refinery and included a guncotton processing building. It is thought that some of the buildings associated with the saltpetre process were also adapted and reused.

The production of guncotton increased dramatically and in 1885 a new site was acquired at Quinton Hill to the south of Waltham Abbey for a larger capacity plant for the production of guncotton and nitroglycerine, a liquid explosive. In 1891 the manufacture of cordite, a mixture of guncotton and nitroglycerine, was introduced at the main site. The importance of the role of gunpowder, both as an explosive and as a propellant declined with these new innovations and, as a result, a number of buildings formerly used for gunpowder manufacture were adapted and new buildings erected, for the production of cordite.

In 1895-6 a nitroglycerine factory was also built in the northern part of the site to cater for the increased demand for cordite. The manufactured guncotton from Quinton Hill was transported by barge to the main site where it was dried in stoves, mixed with nitroglycerine and washed to produce cordite.

The remains of this process survive right across the site, particularly in the N and NE. Some of the most prominent features are the standing and earthwork remains of the guncotton drying stoves. These stoves typically survive as circular brick or concrete walls revetted with an earthen traverse. A timber round-house was originally located within the centre of these traverses where the wet guncotton was dried on racks for a period of approximately eight days. The concrete platform upon which the round-houses were sited is visible within a number of the stoves and several retain their metal drying racks. In 1936 a rectangular stove with 18 bays was erected for the drying of guncotton. Known as the Quinan Stove, it replaced an earlier circular stove and is thought to be the only surviving example of its type. The drying stoves were heated by hot, dry air and, in most cases, pairs of stoves were connected by cast-iron pipes to an associated engine or fan house. This system of pipework survives in parts and its remains are included in the scheduling. In several parts of the site the pipes are carried over canals by bridges which are also included in the scheduling. Many of the fan houses survive in the form of concrete floor slabs and sandstone blocks which retain vertical mounting bolts. The system of canals was extended to serve the early guncotton drying stoves, to transport the wet guncotton to the stoves and to move the dried guncotton to the mixing houses. These canals survive as partly infilled earthworks and as buried features. The guncotton stoves, which are aligned NW-SE and lie adjacent to Cornmill Stream, were also served by a narrow gauge railway network.

The 1895-6 nitroglycerine factory at the site includes the nitrator, where the nitroglycerine was produced, washing houses, a wash water settling house, mixing house and their associated traverses. A number of the support stanchions for the lead-lined gutters which carried the nitroglycerine from one process building to the next remain in situ. The nitroglycerine was moved by gravity and, therefore, the nitrator is situated on one of the highest points of the factory. In 1941, due to increased demand for explosives during World War II, a second nitroglycerine factory was constructed in the E part of the site, known as New Hill. The remains of this factory are similar in layout and construction to the 1895-6 plant, but it is thought that this second factory never became operational.

In 1910 a small plant was established at the site for the small-scale manufacture of tetryl, a booster explosive. The visible remains of this plant

(Continued ..)

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DESCRIPTION OF THE MONUMENT (Continued)

include two pairs of rectangular drying stoves which were built in 1940 and are situated in the E part of the site, to the S of New Hill. These pairs of stoves survive as standing buildings separated by breeze-block traverses. The storage lockers where the tetryl was dried remain within the buildings. The stoves were served by the light railway network. Other standing and earthwork remains of the tetryl plant include cleaning houses and a corning house. Part of the tetryl plant was situated to the NW of the area of the scheduling and immediately to the W of the site's 1895-6 nitroglycerine plant. These buildings have been demolished and, as there are not thought to be any distinctive buried remains of this part of the plant, this area is not included in the scheduling.

In the early years of World War II, the Royal Gunpowder Factory was in the forefront of explosives production, but the erection of new larger factories during this period led to a gradual transfer of production. The contribution of the Waltham Abbey site declined, with the high explosive RDX and tetryl remaining as its principal products. The Royal Gunpowder Factory closed in 1945, but reopened in the following year as an experimental station for the research and testing of modern high explosives and propellants. A number of existing buildings at the site were adapted and reused for these experiments and some new construction work also occurred. Evidence for these activities remains visible throughout the N part of the site, particularly at the New Hill nitroglycerine factory and within several of the 19th and early 20th century engine houses. Firing points were established within these structures and the steel plating, to minimise the consequent damage, survives within several buildings. The internal walls of these buildings are marked as a result of explosives testing.

Seven powder barges and three punts, which transported both the raw materials and the finished products around the site, survive in the canal beds. These barges, built of timber, copper and leather, are rare survivals in context and are included in the scheduling.

Some of the electricity insulators at the site are thought to date from c.1890 and indicate that electricity was being produced at the site prior to the construction of the central power house in 1914-15. These insulators and the poles upon which they are located provide important evidence for the early introduction of electricity at the Waltham Abbey site and they are, therefore, included in the scheduling.

The library and lecture theatre building, built in the 1960s, the late 18th century superintendent's office and the contemporary mixing house and saltpetre mill building which all occupy part of the Millhead area; the old police gatehouse and the old gas meter building, both situated on the site of the original saltpetre refinery; the lamp posts, fence posts, railings, sign posts, fire hydrants and the surfaces of all roads and pathways are excluded from the scheduling, but the ground beneath all these features is included.

ASSESSMENT OF IMPORTANCE

Gunpowder was the only explosive available for military use and for blasting in mines and quarries until the mid-19th century. Water-powered manufacturing mills were established in England from the mid-16th century, although powder had been prepared by hand for at least 200 years. The industry expanded until the late 19th century when high explosives began to replace gunpowder. Its manufacture declined dramatically after World War I with British production ceasing in 1976.

(Continued ..)

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On behalf of the Secretary of State for National Heritage.

ASSESSMENT OF IMPORTANCE (Continued)

The technology of gunpowder manufacture became increasingly complex through time with the gradual mechanisation of what were essentially hand worked operations. Waterwheels were introduced in the 16th century, and steam engines and water turbines from the 19th century. Pressing and corning were also introduced between the 16th and 19th centuries to improve the powders. Pressing improved the explosive power of the mill cake and corning broke the pressed cake into different sizes and graded it with respect to its fineness. Additional techniques were developed throughout the 17th, 18th and 19th centuries to improve the quality and consistency of the finished product, and this in turn resulted in a variety of types of powders; ranging from large coarse grained blasting powders (used in mines and quarries) to fine varieties (used, for example, in sporting guns).

Gunpowder manufacturing sites are a comparatively rare class of monument with around 60 examples known nationally. Demand for gunpowder centred on the London area (for military supply), other ports (for trade) and the main metal-mining areas. Most gunpowder production was, therefore, in Cumbria, the south west, and the south east, around the Thames estuary. The south east of England was perhaps the most important of these areas. The first water-powered mills were established here from the mid-16th century onwards and many of the major technological improvements were pioneered in the mills at Waltham Abbey and Faversham. All sites of gunpowder production which retain significant archaeological remains and survive well will normally be identified as nationally important.

The Waltham Abbey gunpowder mills are important for three main reasons: because many of the processes used in this international industry were invented and developed at Waltham, because the works survive in a remarkably complete state and because many of the structures themselves are rare nationally and internationally.

Most of the structures on the site survive in a remarkably complete state, in several cases only the matchwood components of the buildings are absent. Unusually a sequence of complete transport and power systems which connect the structures also survives in a complete condition. Although some similar structures are known at other sites, the Waltham examples are all in a much more complete state than elsewhere and quite a number (such as the press house and the Quinan Stove, for example) are thought to be unique survivals. Not only do the structures survive well, but several of them (like Smeaton's Mill, for example) were the prototypes for technologies which subsequently became standard and were exported around the world. Since the site survives so completely it is possible to trace the entire history of the gunpowder industry through the alterations and adaptations made to the structures here. At an industrial site there is also a remarkable collection of documentary information which, most unusually, allows the functions of the various buildings and structures to be understood in great detail.

The Waltham Abbey site is further distinguished from others by the quality of the surviving remains of the guncotton, nitroglycerine and cordite industries, which replaced gunpowder for most military purposes at the turn of the 19th century. Again the structures of these related industries survive in a near complete condition. Many of them are thought to be unique to this site (the drying kilns of the late 1870s, for example) and, as with the gunpowder industry remains, there are several structures which were the earliest examples in the world, within which the whole industry was invented and developed. These structures also have accompanying documentation which adds to the significance of the surviving remains.

Finally, the site at Waltham has several other features of interest such as
(Continued ..)

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On behalf of the Secretary of State for National Heritage.

Continued from previous page ..

NATIONAL MONUMENT NO: 21567

ASSESSMENT OF IMPORTANCE (Continued)

the unique surviving components of the tetryl works and the interesting adaptations undertaken to the site during the initial years of the British rocketry programme.

MAP EXTRACT

The site of the monument is shown on the attached map extract outlined in black and highlighted in red.

MONUMENT INCLUDED IN THE SCHEDULE ON 26th November 1993

SIGNED BY: C Edwards

On behalf of the Secretary of State for National Heritage.

21567

MPP45/ AA 53709/1

ACKNOWLEDGEMENT OF RECEIPT OF SCHEDULE ENTRY

Please help us by completing the following and returning it to English Heritage using the pre-paid envelope provided.

I acknowledge receipt of notification of scheduling.

I hereby confirm that

I am the owner
occupier

(please delete if not applicable)
of the whole of the area of the monument indicated on the attached
map extract

of that part of the area of the monument which I have indicated on
the attached map extract

Signed

Name

Address

Date

DETAILS OF OTHER PART OWNERS/OCCUPIERS

(PLEASE IGNORE THIS PART OF THE FORM IF IT IS INAPPROPRIATE OR IF YOU HAVE
ALREADY SUPPLIED US WITH THE INFORMATION)

Name

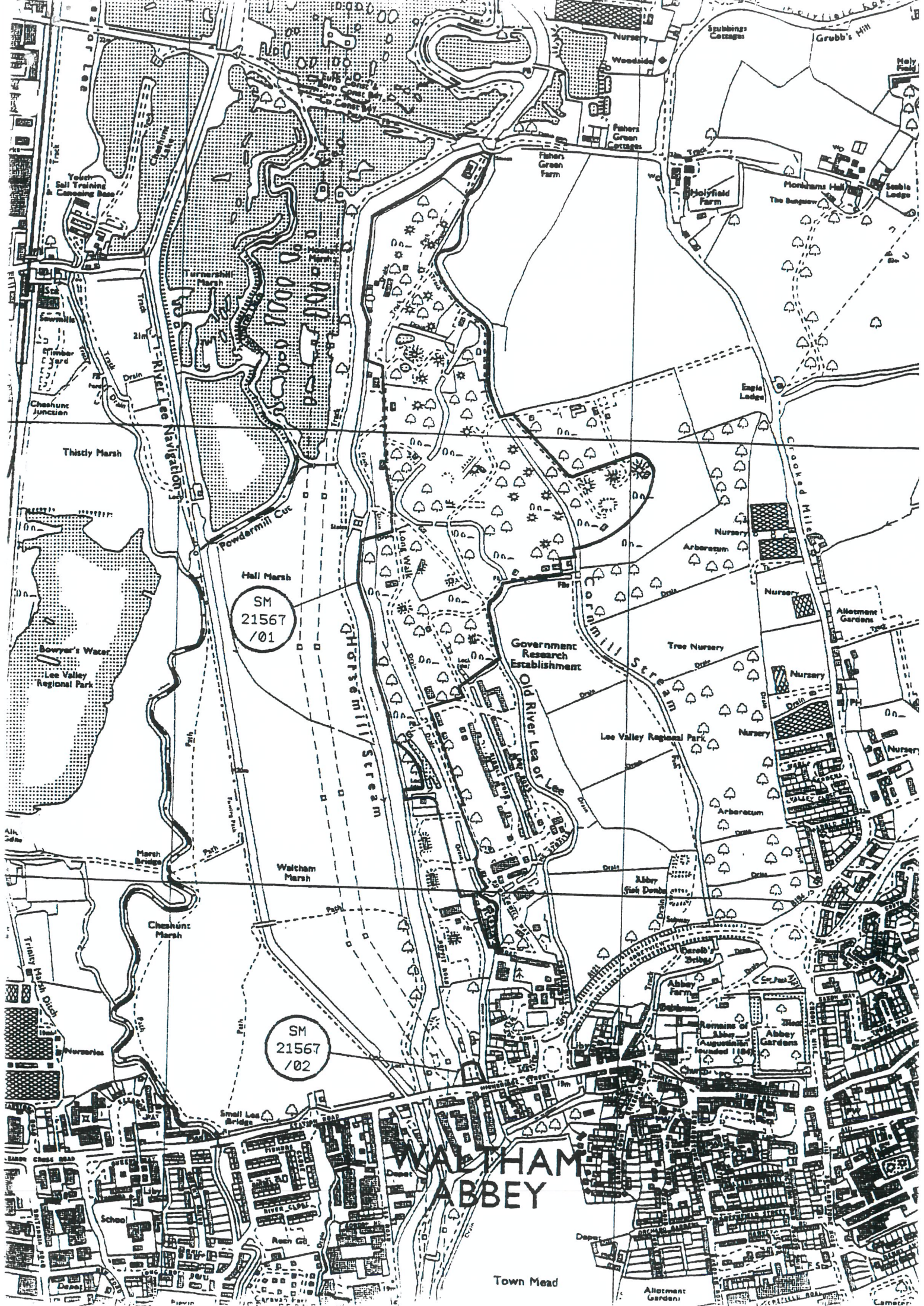
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WALTHAM ABBEY

Town Mead

Allotment Gardens

Remains of Abbey (Abbot's Palace) founded 1184

Government Research Establishment

Lee Valley Regional Park

Tree Nursery

Nursery

Arboretum

Nursery

Fishers Green Cottages

Nursery

Stubbing Cottages

Grubb's Hill

Montezuma Hall

The Bungalow

Seabrook Lodge

Holyfield Farm

Fishers Green Farm

Woodside

Eagle Lodge

Nursery

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Thistly Marsh

Hall Marsh

Waltham Marsh

Cheshunt Marsh

Bowyer's Water
Lee Valley Regional Park

Turnershill Marsh

Youth Sail Training & Cruising Base

Cheshunt Junction

Seawalls

Timber Yard

Drain

Track

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Lee Valley Navigation

Cheshunt Stream

Colindale Stream

Crooked Mill

Alk. Coln.

Marsh Bridge

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