

**THE ROYAL GUNPOWDER FACTORY,  
WALTHAM ABBEY, ESSEX  
AN RCHME SURVEY, 1993**

**Aqueducts, Bridges, Canals & Leats**

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## Canals in the SAM

The filled canals in the Scheduled Ancient Monument Areas have been systematically excavated using small excavators supervised by the resident archaeologist.

The excavated canals are recorded on Milton Keynes Survey 'Land Survey : Sheets 1 to 8', which is held on site. Photographic recording of the canals being excavated, and after excavation, are accessible through the site photographic index.

Agreed methodology on the excavation of canals was developed through discussion between W.S. Atkins and English Heritage at regular liaison meetings on site and can be summarised by reference to SK10/2A.

## Construction

Reference to the RCHME Site Survey reveals that the system of waterways on site developed gradually over a number of years and this patchwork development is also evident in the various construction methods employed. Later repairs are usually carried out in the style of the day, but there are five recognisable styles identified on site.

1. Canal banks at 90° and revetted in brick
2. Canal banks at 90° and revetted in corrugated iron
3. Canal banks at 90° and revetted in upright timbers
4. Canal banks at 90° revetted in reinforced concrete piles
5. Canal banks at 45° clay bank with periodic timbers

Provision of a walkway alongside the canal was important in order to allow the barges to be moved around site. In the case of styles 1-4, a tarmac path often survives alongside one bank. Style 5 had a walkway that is now represented by the periodic timbers. These upright timbers supported a boarded walkway along which persons could walk (WALDO 19B)

Many timber piles (Style 3), have been saved and stored in a watertight lorry body beside W68. These have also been tagged to record their context. The usual profile of the timber piles is illustrated at WALD19A. Interestingly this design was later copied by the manufactures of the reinforced concrete piles (Style 4).

## Lessons

Generally the excavation of canals in the SAM has proved successful with few unwanted results.

It has been found that the reduction of the water level on the site, as a result of the construction of the Horsemill Stream Flood relief channel in the 1970's, has had the effect of reducing the supporting qualities of the ground, notably under canal-side buildings.

Excavation of the filled canals sometimes resulted in slippage, the worst example being L108. Having identified this as a potential problem, action could be taken to support the banks with a 45° bank of clay or granite chips.

In flowing water there has been some revetment collapse in isolated areas. These tend to be located on the bend of a canal and so are attributed to natural erosion effects.

### Access Points

Although the methodology followed in the excavation of the canals can be seen to have been successful, it is important to note the careful choice of access points into and out of the canals. Excavators were found to be the least damaging as their tracks spread the load more evenly than tyres and they were under close supervision. Vast quantities of spoil were removed from the canals on site. At a depth of c. 2m, a 100 metre stretch produces about 1120m<sup>3</sup> of spoil which represents 510 dumper loads. This is 510 trips laden and 510 trips unladen : so 1020 dumpers going in and out of the access point for every 100 metres excavated.

### Conclusion

Information exists that could be added to. Construction of a comprehensive report dealing with the canal system, methods of construction, locks, loading points etc. would be a worthwhile venture in the future.

Subject **MIDDLE STREAM**To **Graham Vincent**

Date 19th July 1995

From **Bob Watts**  
Ref **E5275/01/1/03**

Graham,

- 1) The length of canal between Bridge 6 and Bridge 2 has been accidentally pumped down. It is possible now to see the extent of silt clearance achieved through the water. There are substantial banks under bridges and a general level overall.
- 2) Given the quantities of cordite recovered at the time of dredging, and the proximity of the cordite area, it is necessary to ensure this length of canal is cleared. I have therefore instructed that the 2 clay dams at Bridge 2 and Bridge 6 remain, the ramp to the rear of L134 remain (although the hardcore originating from T Area temporary road and used in constructing the ramp, means it will be eventually removed and plugged with clay) and the pumps at Bridge 6, cordite area and Bridge 8 remain on station pending your return.
- 3) The ramp at L134 could be used and, after commissioning of Bridge 2, a ramp could be cut at the front of A214. The sunken barges and Bridge 5 effectively block the canal. An alternative would be to deal with the narrow part of Middle Stream from the bank. Please proceed with silt clearance.

Regards

**BOB WATTS.**Copy:- Steve Chaddock *SC*

Subject L133/L135 CANAL

To **Graham Vincent**

Date 7th July 1995

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From **Bob Watts**  
Ref E5275/01/1/03

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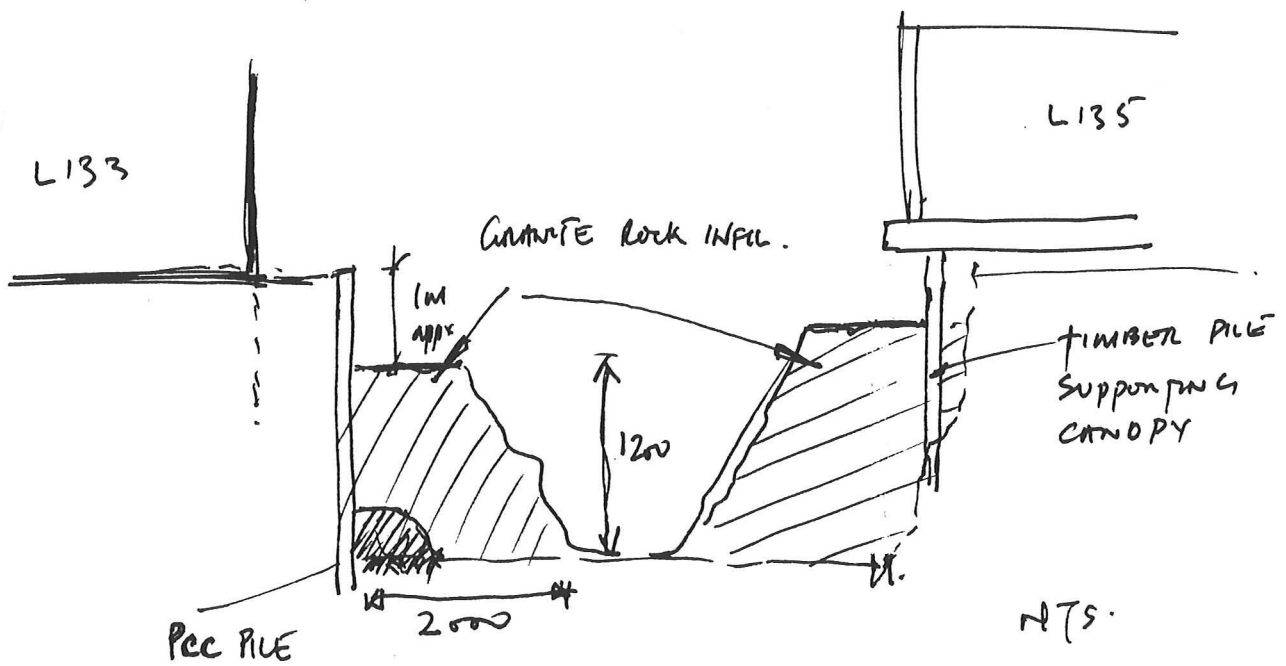
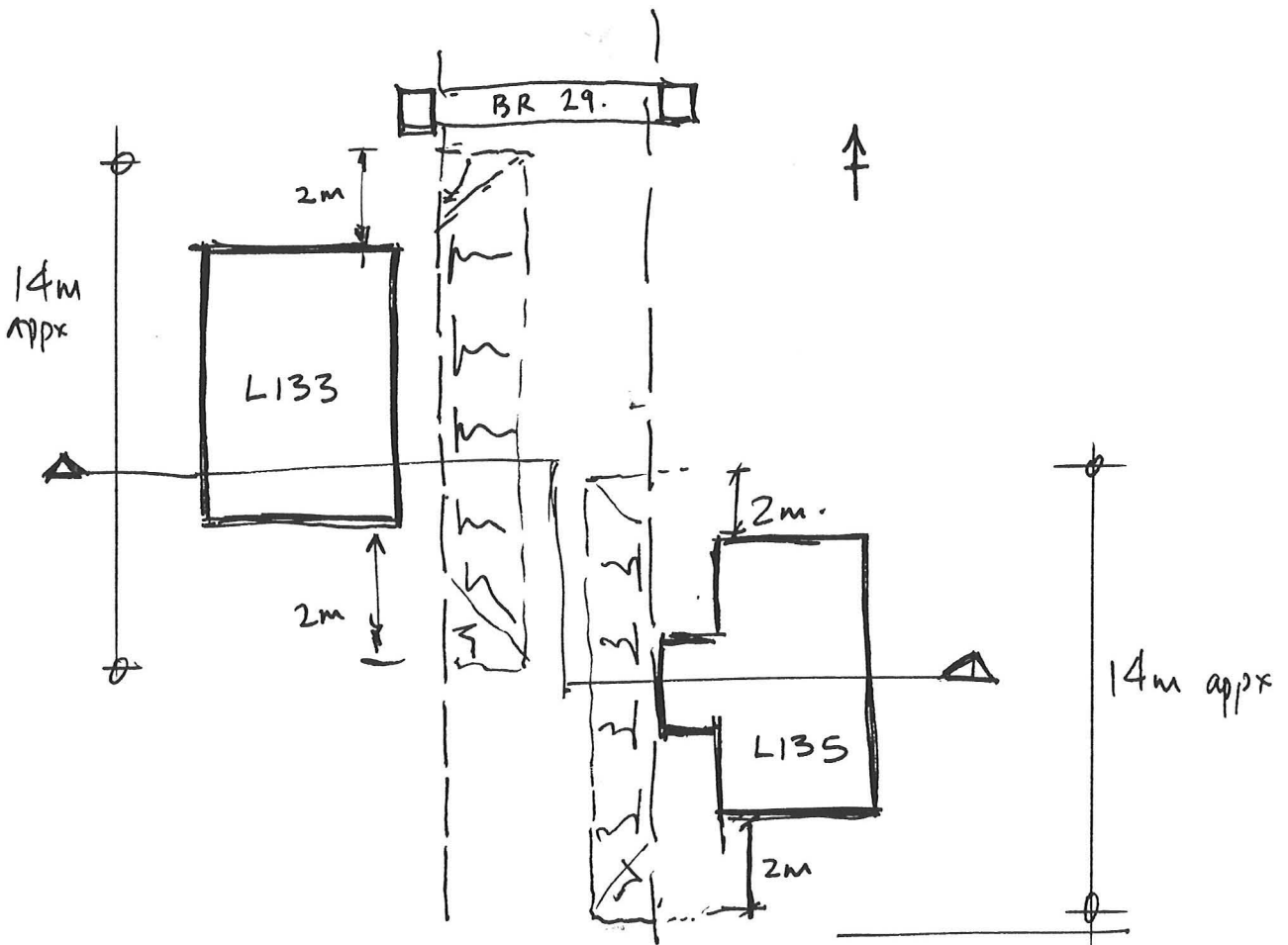
Graham,

Please proceed as per your attached proposal to place granite to stabilise the existing sheet piling.

Regards

BOB WATTS.

Copy:- Steve Chaddock.



APPX QUANT OF GRANITE = 110 Tonnes.

GAV 6/7/91

Waterways



X → SKIM SILT PARTIAL DEPTH  
NOT DOWN TO GRAVEL.  
sk.

~~RAMP~~ RAMP

STOP HERE

TRACK

LOCK  
(CLEAN OUT)

CLEARANCE FROM APPX. HERE  
NORTHWARDS.

WILLOWS

FILLED CANAL

FILLED CANAL  
TO BE EXCAVATED.

TRACK

CANAL

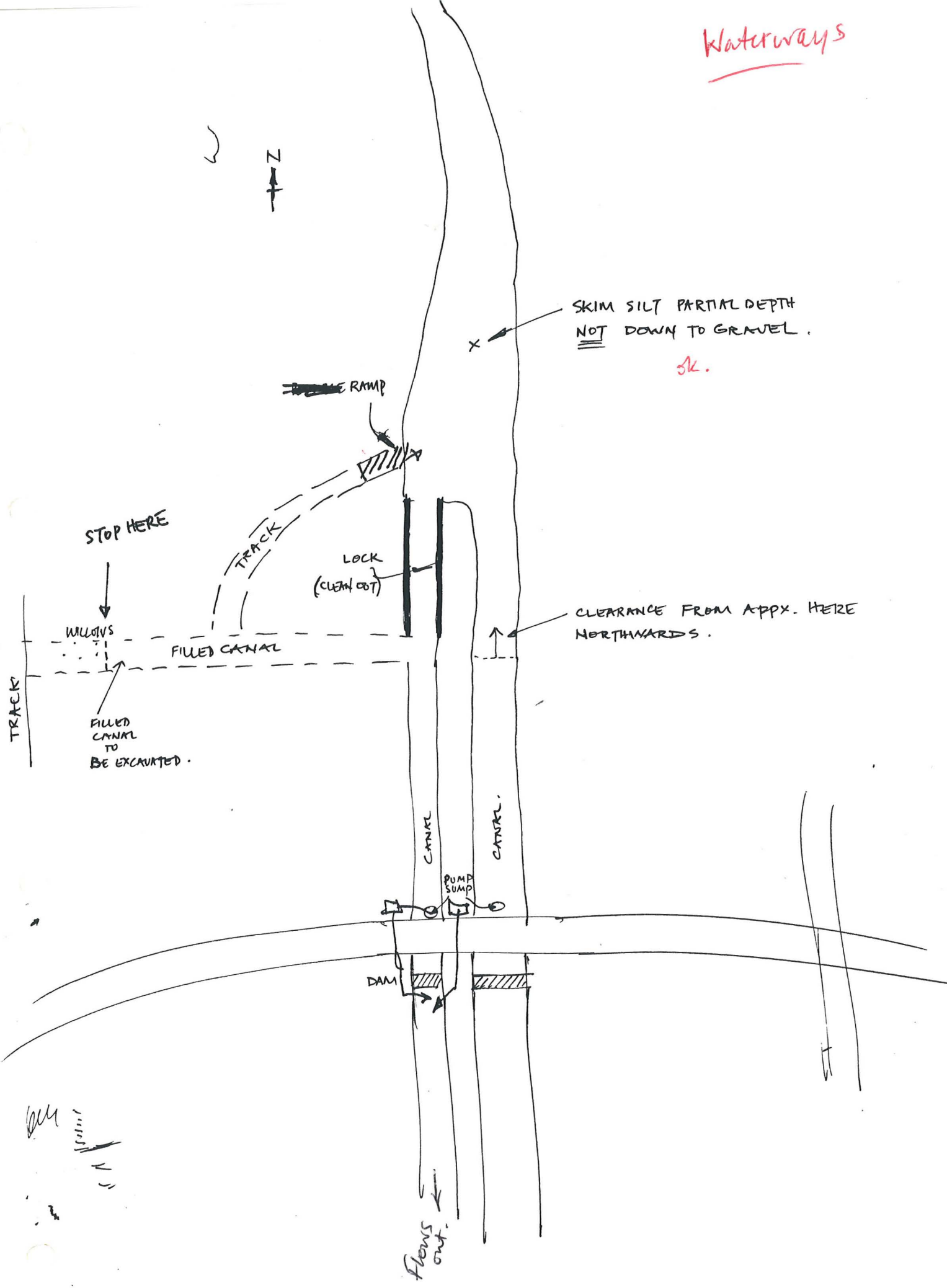
CANAL

PUMP  
SUMP

DAM

flows  
out.

all  
willows



Waterways



X → SKIM SILT PARTIAL DEPTH  
NOT DOWN TO GRAVEL.  
sk.

Only access route possible?

Selection of canal bank section with least well preserved timber revetment wall:

- 2 uprights.
- 1 horizontal.

Other options mean more destruction to canal walls.

Also: existing track to north side of lock assumes this access point.

← CLEARANCE FROM APPX. HEIRE NORTHWARDS.

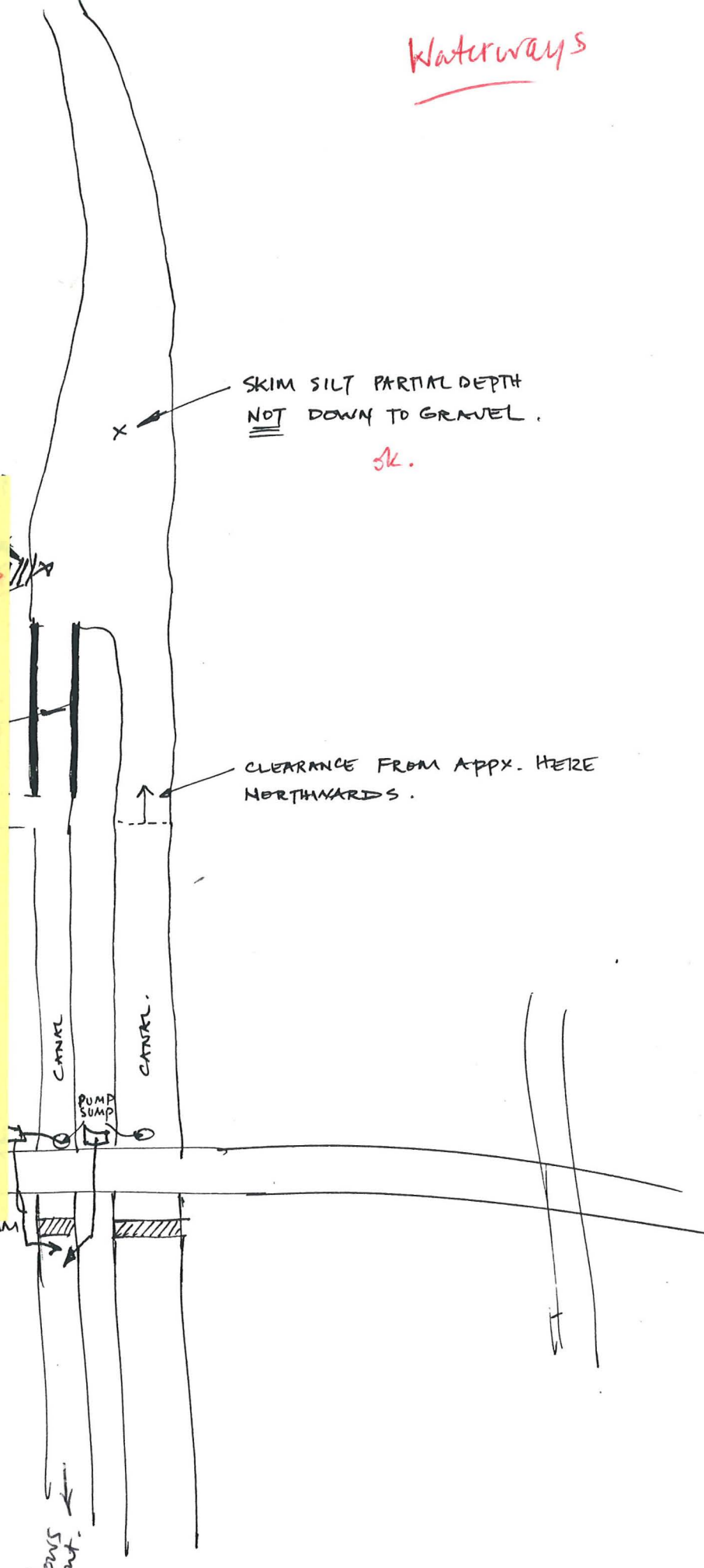
CANAL  
CANAL

PUMP SUMP

DAM

Flows out.

TRACK





Subject **CANAL CROSSINGS**To **Graham Vincent**

Date 19th July 1995

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From **Bob Watts**  
Ref **E5275/01/1/03**

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Graham,

There are 4 No. canal crossings:-

- i) Burning Ground East.
- ii) Burning Ground West.
- iii) Long Walk/Burning Ground.
- iv) Long Walk/E14 - Traverse 76 - Intersection 21.

Made with 450 $\emptyset$  p.c. pipe bedded on ballast, clay, Terram, stone, Type 1. Please order 30 No. 2.5m long 450mm $\emptyset$  p.c. pipes. Arisings from Long Walk/Intersection 21 and temporary Burning Ground access can be used as temporary road elsewhere if required.

Regards

**BOB WATTS.**

Copy:- Steve Chaddock

Subject **REMAINING DREDGING OF  
WATERWAYS - NORTH P AREA**

To **Graham Vincent**

Date **6th July 1995**

From **Bob Watts**  
Ref **E5275/51/1/01**

Graham,

Please see attached plan for agreed extent of waterway to be dredged. Please proceed as discussed ie.

- 1) Install 3 No, clay dams.
  - i) (a) ) at Bridge 2, clear of the bridge bearing plate positions. Use the canal intersection here to form a ramp.
  - ii) (b) ) at the rear of the temporary building at a position which coincides with the poor quality brickwork.
  - iii) (c) ) as shown.
- 2) On completion of silt removal the clay dam can be scooped out and used to form an angle to the bank, the remainder can be spread over the bed. This will obviate the need to muck the material away.
- 3) Insert a clay plug at canal ramp when lower slope cleaned out.
- 4) Proceed with excavating canal to hard standing and fill with clay.
- 5) Complete terram and ballast application to North P Area banks.
- 6) Please allocate additional resources to this activity.

Regards

**BOB WATTS.**

Copy:- **Steve Chaddock**



# ACCESS ROUTES TO WATERWAYS ON THE EAST SIDE OF THE HERONARY FOR PLANT AND REMOVAL OF SPOIL



WET WATERWAYS



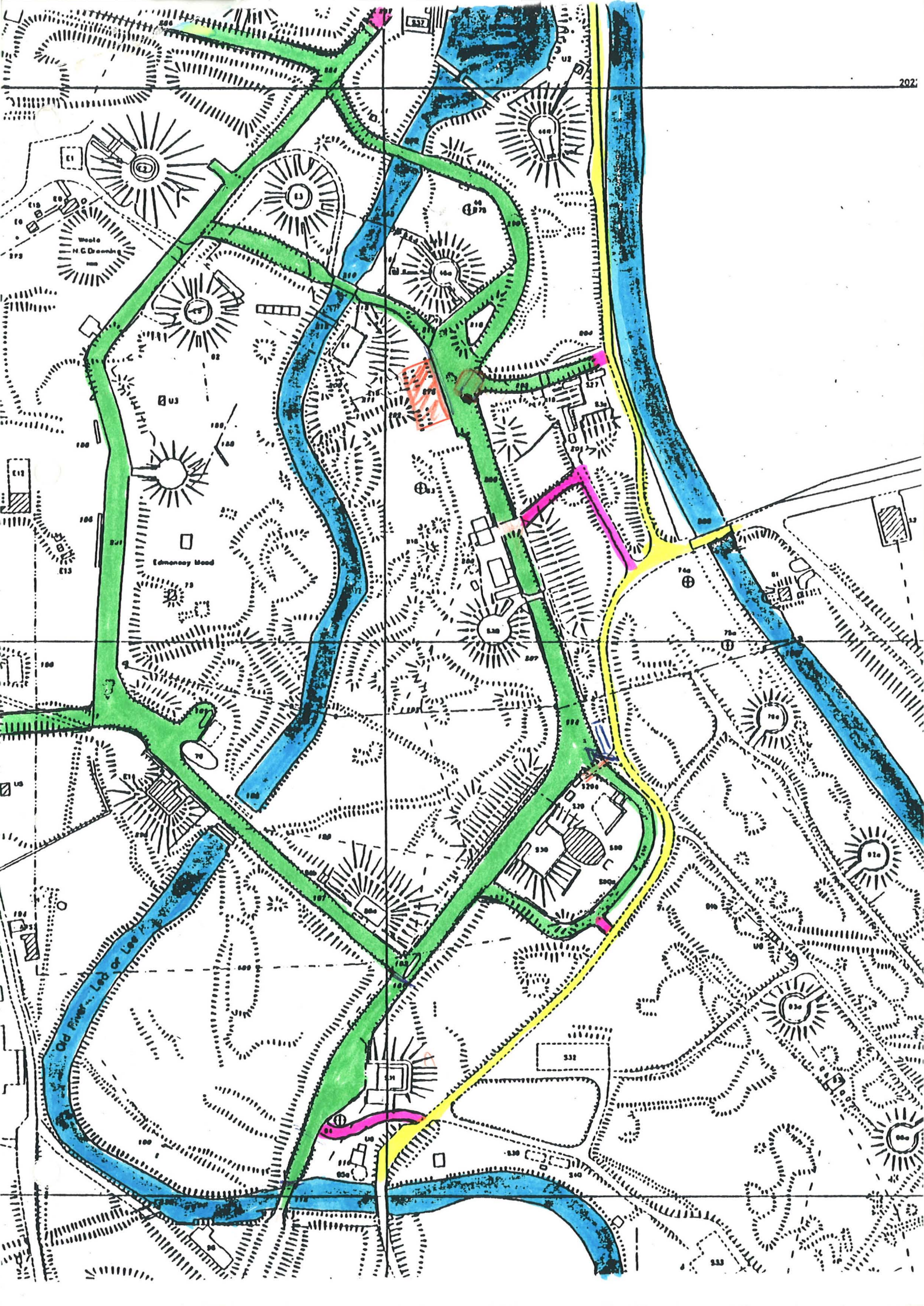
DRY WATERWAYS



SERVICABLE ROADS



ACCESS ROUTES



**THE ROYAL GUNPOWDER FACTORY,  
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AN RCHME SURVEY, 1993**

**Aqueducts, Bridges, Canals & Leats**

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Subject **WET CANAL BEDS**To **Graham Vincent**Date **21st June 1995**

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**From** **Bob Watts**  
**Ref** **E5275/58/1/02**

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Graham,

Wet canal beds, which have been scraped and cleaned out, do not require sampling. After remediation of the bed the issue of the dry banks will require resolution. The need for capping, sampling, or further excavation to dry banks and the immediate horizontal surfaces will depend on the condition, location and heritage/nature aspects.

Regards

**BOB WATTS.**Copy:- **Steve Chaddock**



**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER BR26	OLD SERIES	RCHME NUMBER 103	N.G.R. TL 37602 01884
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NAME/FUNCTION Footbridge	START DATE 1904?	END DATE
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NO PHOTOGRAPHY  
AVAILABLE

CARTOGRAPHIC DEPICTION

DOCUMENTARY REFERENCES

PHOTOGRAPHY  
HISTORIC

PHOTOGRAPHY  
RCHME

1) 206/I/24 From West  
206/T/15 From East

2)BB92/26170 From South East

RELATIONSHIPS WITH OTHER MONUMENTS

ASSOCIATED WITH: 88

CONDITION      Poor

DESCRIPTION

1)      CONSTRUCTIONAL MATERIAL  
         Angle iron

4)      DIMENSIONS i) L 9.4m ii) W 1.73m iii) HT 2.3m

5)      The footbridge is constructed from angles with a timber deck and steps. The bridge is also utilised to carry service pipes over the canal.

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER BR13	OLD SERIES	RCHME NUMBER 106	N.G.R. TL 37546 01935
NAME/FUNCTION Aqueduct	START DATE 1940	END DATE	
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION		DOCUMENTARY REFERENCES 1993 Roughton <u>Bridge Assessments</u> p98-105 Drg No13/1-2	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME  1)206/H/35 From South West 206/T/11 From South	
RELATIONSHIPS WITH OTHER MONUMENTS  ASSOCIATED WITH: RCHME 107 OVERLIES: Old River Lee			
CONDITION      Good			
DESCRIPTION 1)      CONSTRUCTIONAL MATERIAL Cast concrete  4)      DIMENSIONS i) L 10.97m ii) W 15.55m  5)      The aqueduct carries the extended canal RCHME 107 over the Old River Lee. Cast into the concrete on the west side is the date 1940.			

THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY			
NUMBER	OLD SERIES	RCHME NUMBER 107	N.G.R. TL 37520 01965 37602 01884
NAME/FUNCTION Canal		START DATE 1904? + 1940	END DATE 1960s
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME	
RELATIONSHIPS WITH OTHER MONUMENTS ASSOCIATED WITH: E14, 88, 88b, RCHME 106 CUTS: 76 OVERLIES: Old River Lea			
CONDITION Fair			
DESCRIPTION 1) CONSTRUCTIONAL MATERIAL Earthwork 4) DIMENSIONS i) L 111m ii) W 4.9m iii) depth 1.1m 5) The canal forms part of the high level system. The eastern section was constructed around 1904 to serve the Cordite Paste Store [88]. This was extended in 1940 to link the basin near traverse 76 to the formerly dead end branch at the paste house 88.			

Cleared + reshaped October 1994

Site Photography =

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER <b>BR14</b>	OLD SERIES	RCHME NUMBER 112	N.G.R. TL 37565 01800
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NAME/FUNCTION Aqueduct	START DATE 1878-9	END DATE
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NO PHOTOGRAPHY  
AVAILABLE

CARTOGRAPHIC DEPICTION

DOCUMENTARY REFERENCES  
1993 Roughton Bridge Assessments p105-111 Drg no14  
April 1993 Built 1878

PHOTOGRAPHY  
HISTORIC

PHOTOGRAPHY  
RCHME

- 1) 206/D/17 From south  
206/D/18 From east along trough  
206/H/23 From east
- 2) BB92/26105 Cast Iron Aqueduct view from East  
BB92/26168 Aqueduct built 1878-9 view from North East  
BB92/26169 Aqueduct built 1878-9 view from North along trough  
BB92/26461 Sketch of Aqueduct for proposed extension to Factory

RELATIONSHIPS WITH OTHER MONUMENTS

ASSOCIATED WITH:      OVERLIES: Old River Lee

CONDITION      Good

DESCRIPTION

- 1) CONSTRUCTIONAL MATERIAL  
Cast iron
- 4) DIMENSIONS i) L 9.32m ii) W 3.25m iii) trough depth 1.3m
- 5) The aqueduct carries a high level canal over the Old River Lee. The trough is constructed from two side plates each a solid casting. The trough base plates are bolted to an internal flange at the base of each of the plates. The bridge sits on brick piers at either side of the canal. The canal trough could be sealed by dropping boards into vertical slots within the brickwork. The aqueduct carried a timber walkway to either side. On the outside of each of the side plates is a cast device of a queens crown over a shield bearing the letters VR 1878.9.

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER BR 16	OLD SERIES	RCHME NUMBER 113	N.G.R. TL 37548 01761
NAME/FUNCTION Bridge	START DATE 1878.9	END DATE	
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION		DOCUMENTARY REFERENCES 1993 Roughton <u>Bridge Assessments</u> p119-126 Drg No16/1-2 May 1993 Built 1878	
PHOTOGRAPHY HISTORIC	PHOTOGRAPHY RCHME 1)206/H/24 From South 206/Q/26 Brick lined channel beneath bridge 2)BB92/26104 View from South West built 1878 BB92/26459 Drawing showing various brick bridges 30.5.1878		
RELATIONSHIPS WITH OTHER MONUMENTS ASSOCIATED WITH: RCHME 112			
CONDITION      Good			
DESCRIPTION 1)      CONSTRUCTIONAL MATERIAL Brick 4)      DIMENSIONS i) L 7.3m ii) W 3.1m iii) HT parapet to canal base 4.75m 5)      The bridge was built when the high level canal system was extended in 1878. The bridge is brick with earthen embankments to either side. On either side of the parapet is a stone plaque with the following inscription 'RGPF VR 1878'.			

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER BR 10	OLD SERIES	RCHME NUMBER 117	N.G.R. TL 37597 01800
NAME/FUNCTION Bridge	START DATE 1878.9	END DATE	
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION		DOCUMENTARY REFERENCES 1993 Roughton <u>Bridge Assessments</u> p78-84 Drg No 10/1-2 April 1993 Built 1878	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME 1)206/J/3 Bridge from West	
RELATIONSHIPS WITH OTHER MONUMENTS  ASSOCIATED WITH: RCHME 112, RCHME 113 OVERLIES: Old River Lea			
CONDITION      Good			
DESCRIPTION 1)      CONSTRUCTIONAL MATERIAL Brick  4)      DIMENSIONS i) L 10.5m ii) W 3.8m iii) HT parapet to water 4.4m  5)      The bridge was built when the high level canal system was extended in 1878. The bridge is brick with earthen embankments to either side. On either side of the parapet is a stone plaque with the following inscription 'RGPF VR 1878'.			

THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY			
NUMBER	OLD SERIES	RCHME NUMBER 119	N.G.R. TL 37480 01487
NAME/FUNCTION Leat		START DATE	END DATE
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME	
RELATIONSHIPS WITH OTHER MONUMENTS  ASSOCIATED WITH: RCHME 120, RCHME 133			
CONDITION      Poor			
DESCRIPTION 1)      CONSTRUCTIONAL MATERIAL Earthwork  4)      DIMENSIONS i) L 20.5m ii) W 7m iii) depth 1.2m  5)      Leat part water filled, the western end has been partially filled by dumping.  <i>Partially excavated Nov 1994.</i>			

Site Photography =

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER BL33	OLD SERIES	RCHME NUMBER 120	N.G.R. TL 37465 01487
NAME/FUNCTION Bridge		START DATE	END DATE
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME	
RELATIONSHIPS WITH OTHER MONUMENTS  ASSOCIATED WITH: RCHME 119			
CONDITION: Poor			
DESCRIPTION 1) CONSTRUCTIONAL MATERIAL Brick and railway sleepers  4) DIMENSIONS i) L 7m ii) W 4.5m  5) Rough brick bridge constructed from unmortared bricks, a concrete pipe and railway sleepers. There is an earthwork causeway to either side.			



THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY			
NUMBER <i>BR34.</i>	OLD SERIES	RCHME NUMBER 122	N.G.R. TL37800 01095
NAME/FUNCTION Bridge		START DATE	END DATE <i>May 1993.</i>
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME	
RELATIONSHIPS WITH OTHER MONUMENTS  ASSOCIATED WITH: RCHME 300			
CONDITION <i>Fair</i>			
DESCRIPTION 1)      CONSTRUCTIONAL MATERIAL Timber and brick  4)      DIMENSIONS i) L      ii) W 2.5m      iii) HT 1.95m  5)      The present bridge is constructed from timber and was used to carry steam pipes over the canal. Immediately north of this bridge are the brick piers of a former footbridge, incorporated into these piers are a vertical slots into which boards could be placed to seal the channel. The bricks of the footbridge are similar to those used in the 1878 bridges.  <i>Timber footbridge demolished in May 1993 during excavation of buried canal to East</i>			

*Brick abutments also mentioned above remain.*

THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY			
NUMBER BR30	OLD SERIES	RCHME NUMBER 123	N.G.R. TL 37805 01065
NAME/FUNCTION Footbridge		START DATE 196?	END DATE
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME 1) 206/E/7 From south	
RELATIONSHIPS WITH OTHER MONUMENTS  ASSOCIATED WITH: RCHME 300			
CONDITION      Fair			
DESCRIPTION 1)      CONSTRUCTIONAL MATERIAL Brick, RSJ, timber  4)      DIMENSIONS i) L    ii) W 1.7m    iii) HT 2.65m  5)      The footbridge consists of a RSJ supported on a brick pier either side of the canal. This beam carries a timber deck with hand rails, there are wooden steps at either end.			

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER <i>BR31</i>	OLD SERIES	RCHME NUMBER 126	N.G.R. TL 37765 01017
NAME/FUNCTION Footbridge		START DATE	END DATE
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME 1) 206/E/8 From west	
RELATIONSHIPS WITH OTHER MONUMENTS  ASSOCIATED WITH: RCHME 300			
CONDITION      Good			
DESCRIPTION 1) CONSTRUCTIONAL MATERIAL Angle iron  4) DIMENSIONS i) L      ii) W 1.4m iii) HT 2m  5) Footbridge north of the power house A210.  <i>Footbridge demolished June 1994          to gether with service bridge to east known as BR63</i>			

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER BR2	OLD SERIES	RCHME NUMBER 130	N.G.R. TL 37735 01000
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NAME/FUNCTION Bailey type Bridge	START DATE 196?	END DATE
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NO PHOTOGRAPHY  
AVAILABLE

CARTOGRAPHIC DEPICTION

DOCUMENTARY REFERENCES  
1993 Roughton Bridge Assessments p21-29 Drg No.02  
May 1993 Built Late 1960's or Early 1970's.

PHOTOGRAPHY  
HISTORIC

PHOTOGRAPHY  
RCHME

RELATIONSHIPS WITH OTHER MONUMENTS

ASSOCIATED WITH: RCHME 300

CONDITION Good

DESCRIPTION

- 1) CONSTRUCTIONAL MATERIAL  
Steel
- 4) DIMENSIONS i) L 12.37m ii) W 4.11m iii) HT 1.55m
- 5) Bridge

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER <i>BR1.</i>	OLD SERIES	RCHME NUMBER 132	N.G.R. TL 37725 00877
NAME/FUNCTION Cast iron bridge		START DATE 1832	END DATE
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION		DOCUMENTARY REFERENCES 1993 Roughton <u>Bridge Assessments</u> p13-20 Drg No01 May 1993 Built 1832	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME  1) 206/E/22 From North East 2) BB92/26065 From East	
RELATIONSHIPS WITH OTHER MONUMENTS  ASSOCIATED WITH: RCHME 278, RCHME 300			
CONDITION      Good			
DESCRIPTION 1)      CONSTRUCTIONAL MATERIAL Cast iron  4)      DIMENSIONS i) L 7m ii) W 3.9m  5)      The bridge is supported on cast iron ribs set on brick abutments. The date 1832 is cast on the bridge's side. The bridge has also been used to carry service pipes that are slung along the eastern side. The eastern rib of the bridge is partly damaged.			

*Cast iron service pipes removed one replaced with  
PRC pipe.*

*Abutments repaired. August 1994.*

THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY			
NUMBER BR3	OLD SERIES	RCHME NUMBER 133	N.G.R. TL 37690 00992
NAME/FUNCTION Footbridge		START DATE	END DATE
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION		DOCUMENTARY REFERENCES 1993 Roughton <u>Bridge Assessments</u> p30-36 Drg No03 May 1993 Built date unknown	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME 1) 206/E/24 From North	
RELATIONSHIPS WITH OTHER MONUMENTS  ASSOCIATED WITH: RCHME 119			
CONDITION      Good			
DESCRIPTION 1)      CONSTRUCTIONAL MATERIAL RSJ and timber  4)      DIMENSIONS i) L 6.85m ii) W 1.64m  5)      Modern footbridge constructed from an RSJ with a timber deck fixed to it. The bridge is also used to carry services over the leat.			

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER BR 17	OLD SERIES	RCHME NUMBER 134	N.G.R. TL 37676 00931
NAME/FUNCTION Footbridge		START DATE	END DATE
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION		DOCUMENTARY REFERENCES 1993 Roughton Bridge Assessments p127-136 Drg No.17 April 1993 Built Date Unknown	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME 1) 206/K/6 From South 206/S/33 From South 206/S/34 From West	
RELATIONSHIPS WITH OTHER MONUMENTS ASSOCIATED WITH: Millhead Steam RCHME 296			
CONDITION      Good			
DESCRIPTION 1)      CONSTRUCTIONAL MATERIAL Angle iron and timber 4)      DIMENSIONS i) L      ii) W 1.3m 5)      Footbridge to west of lecture theatre A203			

THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY			
NUMBER	OLD SERIES	RCHME NUMBER 135	N.G.R. TL 37650 00994
NAME/FUNCTION Sluice at south end of Millhead stream		START DATE	END DATE 195?
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC <i>WASC 325/1</i> <i>Old Waltham Abbey: K. Bascombe RUPF Photo</i>		PHOTOGRAPHY RCHME 1) 206/K/5 From South	
RELATIONSHIPS WITH OTHER MONUMENTS  PART OF: Millhead Stream RCHME 296			
CONDITION      Fair			
DESCRIPTION 1)      CONSTRUCTIONAL MATERIAL Brick  4)      DIMENSIONS i) L 14.6m ii) W 8.8m iii) depth 2m  5)      The sluices at the southern end of Millhead stream are brick built capped by sandstone blocks. The flow of water from Millhead stream was controlled by sluice boards slotted into diagonal slots in the brick work. There was no access between the upper and lower system for barges at this point.			

*Excavated H. 95. during asbestos contain. removal.  
Section drawn.  
Report commissioned by C.A.T.*

*- demonstrates earlier sluice phase.*



**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER BL9	OLD SERIES	RCHME NUMBER 151	N.G.R. TL 37726 01675
NAME/FUNCTION Footbridge		START DATE	END DATE
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME	
RELATIONSHIPS WITH OTHER MONUMENTS ASSOCIATED WITH: The Old River Lea			
CONDITION      Fair			
DESCRIPTION 1)      CONSTRUCTIONAL MATERIAL Angle irons  4)      DIMENSIONS i) L 11.9m ii) W 1.59m  5)      Footbridge constructed from angle irons with timber deck, carries services along north side.			

THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY			
NUMBER	OLD SERIES	RCHME NUMBER 155	N.G.R. TL 37680 01500
NAME/FUNCTION Pond		START DATE	END DATE
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME	
RELATIONSHIPS WITH OTHER MONUMENTS  ASSOCIATED WITH:			
CONDITION      Fair			
DESCRIPTION 1)      CONSTRUCTIONAL MATERIAL Earthwork  4)      DIMENSIONS i) L 31m ii) W 19m  5)      The pond is rectangular in shape, in the centre of the pond is a low island 7.5m x7.5m. The pond is partly filled by rubbish.			

*Site Photo of Pond.*

THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY			
NUMBER	OLD SERIES	RCHME NUMBER 156	N.G.R. TL 37583 01600 37645 01473
NAME/FUNCTION Leat		START DATE	END DATE
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME	
RELATIONSHIPS WITH OTHER MONUMENTS ASSOCIATED WITH: <i>RCHM 157, 158, 151, 160</i>			
CONDITION      Fair			
DESCRIPTION 1)      CONSTRUCTIONAL MATERIAL Earthwork  5)      Remains of a low level leat to the east of L109, the northern end of the leat is dry while the southern end still retains some water. <i>Excavated Nov - Dec 1994.</i>			

*Site Photography.*

THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY			
NUMBER BR 28	OLD SERIES	RCHME NUMBER 170	N.G.R. TL 37442 01640
NAME/FUNCTION Aqueduct		START DATE 1806-27?	END DATE
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME	
RELATIONSHIPS WITH OTHER MONUMENTS  ASSOCIATED WITH:			
CONDITION      Good			
DESCRIPTION 1)      CONSTRUCTIONAL MATERIAL Brick  4)      DIMENSIONS i) L 6.4m ii) W 12.5 iii) HT 2.25m +  5)      The brick aqueduct carries the canal to press house 103 over a low level leat. The aqueduct has sandstone sills. Concrete bases on the tow path probably mark the site of a footbridge.			

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER	OLD SERIES	RCHME NUMBER 179	N.G.R. TL 37530 01635
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NAME/FUNCTION Canal	START DATE 1878	END DATE 1950s?
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NO PHOTOGRAPHY  
AVAILABLE

CARTOGRAPHIC DEPICTION	DOCUMENTARY REFERENCES
------------------------	------------------------

PHOTOGRAPHY HISTORIC	PHOTOGRAPHY RCHME
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RELATIONSHIPS WITH OTHER MONUMENTS  
ASSOCIATED WITH: L108, L109 OVERLIES: RCHME 181

CONDITION      Poor

DESCRIPTION

1) CONSTRUCTIONAL MATERIAL  
Earthwork

5) The canal was constructed during the extension of the higher level canal system in 1878. The canal was retained within an earthen embankment. The canal was reveted in timber along the western towpath was a narrow gauge railway serving L105 and L108. At the southern end of the canal lock RCHME 225 gave access into the lower water system. The canal is carried over leat RCHME 181 by a brick aqueduct RCHME180.

Most of the canal has been infilled by rubble and rubbish and a tarmac road laid over the top.

*Canal excavated in July - August 1994.*

*Site Photography.*

# Application for Scheduled Monument Consent

Ancient Monuments and Archaeological Areas Act 1979 (as amended) Section 2

To be completed by or on behalf of the applicant in **BLOCK CAPITALS** or **typescript**.

## 1. Applicant

Full name	MR. DAVID STANNERS		
Address	DEFENCE LANDS SERVICE 3, CENTRAL DISPOSALS UNIT,		
	LEATHERHEAD ROAD, CHESSINGTON,		
	SURREY		
Postcode	KT9 2LU	Tel No.	081 391 3502

## 2. Occupier of the Monument (if not the applicant)

Full name			
Address	AS ABOVE		
Postcode		Tel No.	

## 3. Monument to which the application relates

Name (if any) of the monument	ROYAL GUNPOWDER FACTORY, WALTHAM ABBEY,		
Address or location	POWDERMILL LANE		
	WALTHAM ABBEY		
	ESSEX EN9 1AY		
County		National Grid Reference	
Monument Number	21567		TL37600 01800

## 4. Description of the proposed works

URGENT REPAIRS TO CANAL RETAINING WALL BENEATH PORCH STRUCTURE OF FORMER PASTE STORE/METAL STORE (BUILDING L108). REPAIRS TO COLLAPSED SECTION INVOLVES FILLING OF VOID WITH CONCRETE AND REPLACEMENT OF BANK TIMBERS.



NOTE - The Secretary of State may refuse to entertain an application for scheduled monument consent unless it is accompanied by one or other of the following certificates signed by or on behalf of the applicant.

**Forms of Certificate  
for the Purposes of Paragraph 2(1) of Schedule 1 to the Act**

**Certificate in accordance with paragraph 2(1)(a)**

It is hereby certified that no person other than the applicant was the owner (x) of the monument to which the accompanying application relates at the beginning of the period of twenty-one days which ended on the date of the application.

Signature \_\_\_\_\_



Date 25/10/94

**Certificate in accordance with paragraph 2(1)(b)**

It is hereby certified that the applicant has given the requisite notice (w) of the accompanying application to all the persons other than the applicant who, at the beginning of the period of twenty-one days which ended on the date of the application, were owners (x) of the monument to which the application relates, namely (y):

Name

Address

Signature \_\_\_\_\_

Date \_\_\_\_\_



**Certificate in accordance with paragraph 2(1)(c)**

It is hereby certified -

(1) that the applicant is unable to issue a certificate in accordance with either paragraph 2(1) (a) or 2(1) (b) of Schedule 1 to the Ancient Monuments and Archaeological Areas Act 1979;

(2) that the applicant has given the requisite notice (w) of the accompanying application to the following persons who, at the beginning of the period of twenty-one days which ended on the date of the application, were owners (x) of the monument to which the application relates, namely (y):

Name	Address
------	---------

and

(3) that the applicant has taken such steps as are reasonably open to him to ascertain the names and addresses of the remainder of the persons who at the beginning of that period were owners (x) of that monument and has been unable to do so.

Signature \_\_\_\_\_ Date \_\_\_\_\_

**Certificate in accordance with paragraph 2(1)(d)**

It is hereby certified that the applicant is unable to issue a certificate in accordance with paragraph 2(1) (a) of Schedule 1 to the Ancient Monuments and Archaeological Areas Act 1979, but has taken such steps as are reasonably open to him to ascertain the names and addresses of the other persons who, at the beginning of the period of twenty-one days which ended on the date of the application, were owners (x) of the monument to which the application relates and has been unable to do so.

Signature \_\_\_\_\_ Date \_\_\_\_\_

---

(w) Form AM112A

(x) "Owner means a person who is for the time being owner in respect of the fee simple in the monument or is entitled to a tenancy of the monument granted or extended for a term of years certain, of which not less than seven years remain unexpired.

(y) Insert names and addresses.

**ROYAL GUNPOWDER FACTORY WALTHAM ABBEY**  
**(FORMER RARDE NORTH SITE)**

National Monument N° 21567.

**I CONDITION OF MONUMENT.**

A full condition survey was recently completed and is available for reference either on site or with Anglia Team of English Heritage at Fortress House. There are 205 roofed structures on site with an additional 264 ruinous or buried buildings known within the 75 hectares. The majority of the buildings inside the Scheduled Monument boundary (which encompasses approximately two thirds of the site) are ruinous or buried with around 30 roofed structures. The monument includes most of the extensive canal system which is either filled with waste material or survives as earthworks. The rest of the infrastructure; the narrow gauge railway, electricity and telephone lines, steam mains etc, has on the whole disappeared.

Approximately 70% of the monument is covered by plantation woodland of Alder, Willow, Ash and invasive Sycamore. The woodland and the buildings have been neglected for over half a century. The woodland area of the site is listed as a Site of Special Scientific Interest.

**II LAND USE OF THE MONUMENT.**

Until 1991 the site was used as an explosive manufacturing site, producing gunpowder and then later Cordite and high explosives. After the Second World War the site became a Government Research and Development Establishment.

Since 1991 the site has undergone an intensive decontamination and remediation exercise which is due to end next year. There will be no public access until all this work has been completed. It is hoped to open the site as a museum to the explosive industry and have limited public access to the SSSI.

### III Description of Proposed Works

Building L108, former Paste Store/Metal Store, is located on the Western bank of the North South canal RCHM179. The retaining timbers directly beneath the porch of this building have been pushed out by a localised slump of the clay bank, possibly endangering the structural stability of the overlying building.

It is proposed by the site structural engineers, Rawlings Associates, to carry out the following:

- Remove collapsed timbers.
- Hand excavate clay behind the collapsed section.
- Hand excavate through base of canal to a depth specified in drawing SK01.
- Fill excavated areas with mass concrete.
- Replace retaining timbers.

### IV Initial Impact on the Monument

This urgent intervention will prevent further collapse of the canal banks and safeguard the stability of the overlying building. No known archaeology will be affected and the concrete will be hidden by replaced puddle clay and timbers.

All ground works will be overseen by one of the Site Archaeologists who will liaise with English Heritage when necessary.

Adam Ford

Consultant Archaeologist

October 1994

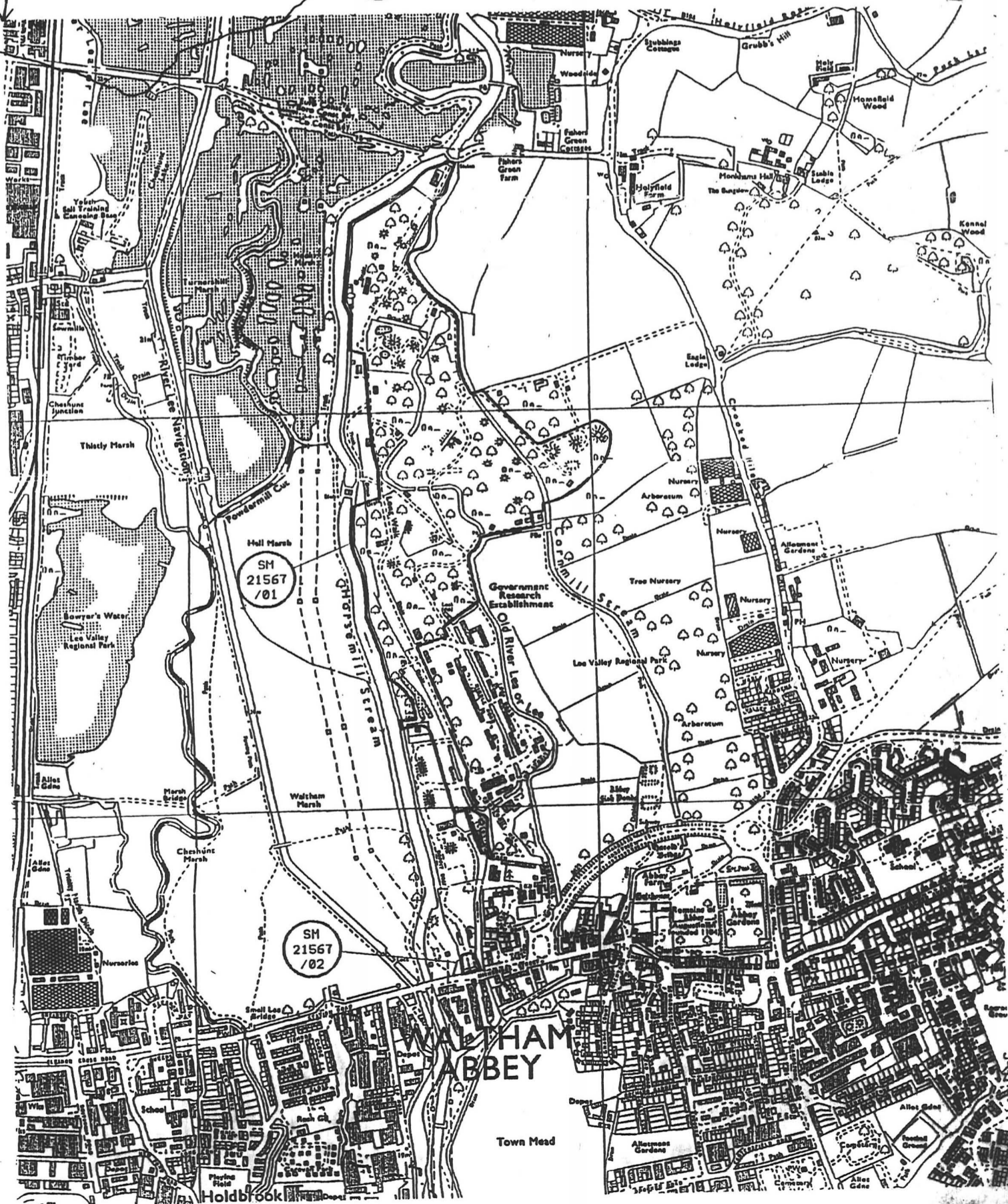
**WALTHAM ABBEY  
ROYAL  
GUNPOWDER FACTORY**

Chelmsford

Greater  
London



Waltham Abbey town  
showing RGPF north  
site



Not to Scale



Job RAM : L108 METAL &  
PASTE STORE

Date 10 OCTOBER 1994 Job no. K2026

Designed by KRR

Sheet no. SK01

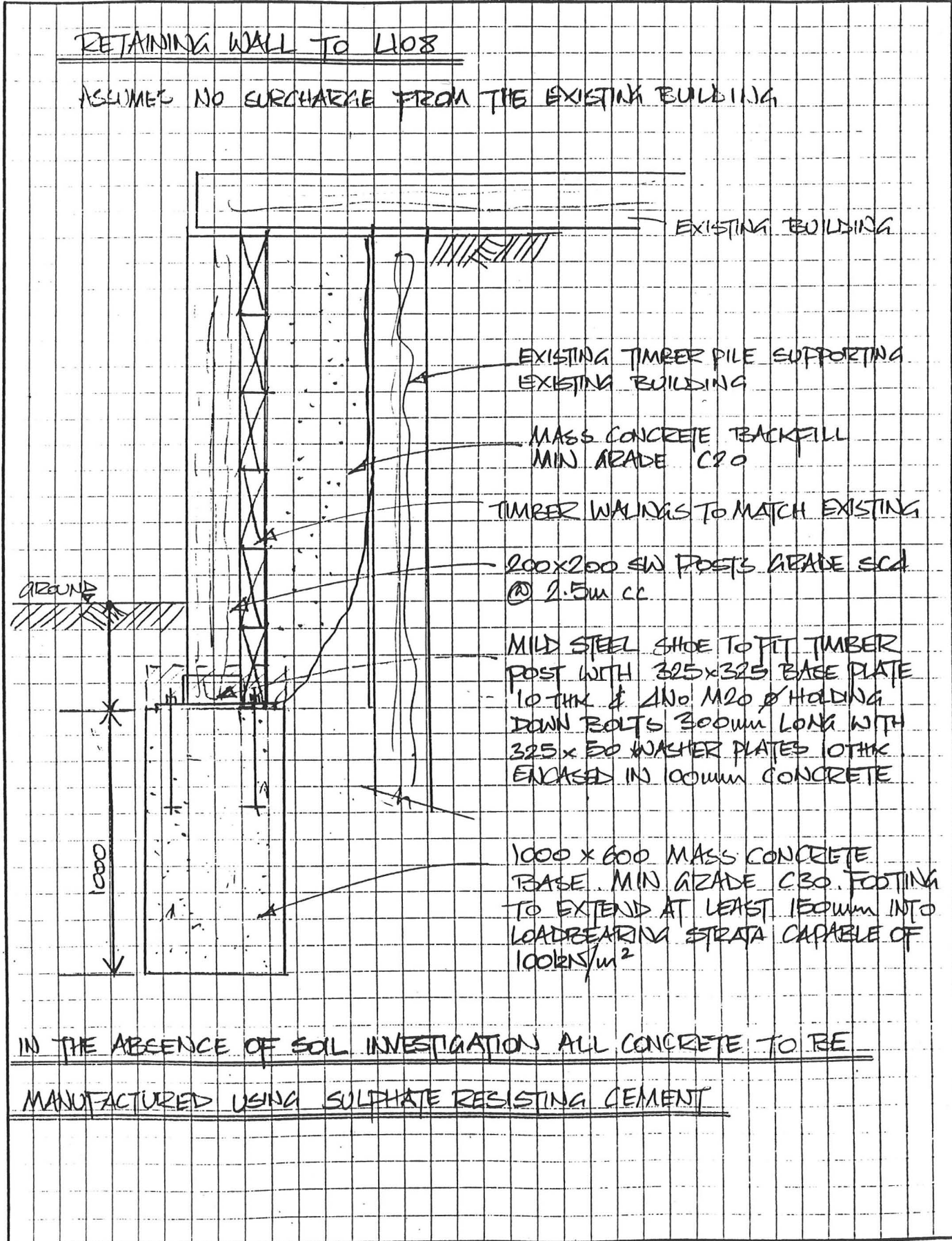


FIG 4.

THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY			
NUMBER BR27.	OLD SERIES	RCHME NUMBER 180	N.G.R. TL 37552 01598
NAME/FUNCTION Aqueduct		START DATE 1878	END DATE
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME	
RELATIONSHIPS WITH OTHER MONUMENTS  PART OF: RCHME 179 OVERLIES: RCHME 181			
CONDITION      Fair			
DESCRIPTION 1)      CONSTRUCTIONAL MATERIAL Brick  4)      DIMENSIONS i) L north to south 2.8m ii) W 12.1m  5)      The brick aqueduct carries canal RCHME 179 over leat RCHME 181. The aqueduct is brick faced on its west and eastern sides with tie rods running through.			

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER	OLD SERIES	RCHME NUMBER 181	N.G.R. TL 37456 01586 37670 01623 37691 01566
NAME/FUNCTION Leat		START DATE	END DATE
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME	
RELATIONSHIPS WITH OTHER MONUMENTS  UNDERLIES: RCHME 181			
CONDITION      Fair			
DESCRIPTION 1)      CONSTRUCTIONAL MATERIAL Earthwork  4)      DIMENSIONS    ii) W 6.2m  5)      Low level earthwork leat.			



THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY			
NUMBER <b>BR 22</b>	OLD SERIES	RCHME NUMBER 182	N.G.R. TL 37437 02290
NAME/FUNCTION Footbridge		START DATE 189?	END DATE
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME 1)206/B/33 From North West	
RELATIONSHIPS WITH OTHER MONUMENTS  ASSOCIATED WITH: 27, RCHME 285			
CONDITION      Poor			
DESCRIPTION 1)      CONSTRUCTIONAL MATERIAL Angle irons and timber deck  4)      DIMENSIONS i) L 10.95m ii) W 1.59m  5)      The footbridge is constructed from angle irons with timber steps and deck, now rotten. It has been partly buried by gravel dredged from the river Lee.			

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER BR 29.	OLD SERIES	RCHME NUMBER 184	N.G.R. TL 37654 01449
NAME/FUNCTION Footbridge	START DATE	END DATE	
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME 1)206/C/16 From South	
RELATIONSHIPS WITH OTHER MONUMENTS ASSOCIATED WITH: L133,L132,L136,L139			
CONDITION      Fair			
DESCRIPTION 1)      CONSTRUCTIONAL MATERIAL Angle iron and timber deck  4)      DIMENSIONS i) L      ii) W      iii) HT  5)			

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER BR 35.	OLD SERIES	RCHME NUMBER 191	N.G.R. TL 37424 01922
NAME/FUNCTION Footbridge	START DATE	END DATE	
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION	DOCUMENTARY REFERENCES		
PHOTOGRAPHY HISTORIC	PHOTOGRAPHY RCHME		
RELATIONSHIPS WITH OTHER MONUMENTS  ASSOCIATED WITH: 83b, RCHME 119			
CONDITION      Bad			
DESCRIPTION 1)      CONSTRUCTIONAL MATERIAL Timber  4)      DIMENSIONS i) L 5.6m ii) W 1.4m  5)      Timber trestles survive on the west and east side of the leat.			

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER BR36	OLD SERIES	RCHME NUMBER 202	N.G.R. TL 37643 02044
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NAME/FUNCTION Footbridge	START DATE 189?	END DATE
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NO PHOTOGRAPHY  
AVAILABLE

CARTOGRAPHIC DEPICTION

DOCUMENTARY REFERENCES

PHOTOGRAPHY  
HISTORIC

PHOTOGRAPHY  
RCHME

RELATIONSHIPS WITH OTHER MONUMENTS

ASSOCIATED WITH: RCHME 209

CONDITION Fair

DESCRIPTION

- 1) CONSTRUCTIONAL MATERIAL  
Angle irons with timber deck
- 4) DIMENSIONS i) L 8.5m ii) W 1.3m iii) HT 2.25m
- 5) The footbridge is constructed from angle irons with a timber deck. The bridge was also used to carry steam pipes over the canal suspended on iron hoops suspended on either side of the bridge.

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER RL37	OLD SERIES	RCHME NUMBER 212	N.G.R. TL 37575 02116
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NAME/FUNCTION Pipe bridge	START DATE	END DATE
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NO PHOTOGRAPHY  
AVAILABLE

CARTOGRAPHIC DEPICTION	DOCUMENTARY REFERENCES
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PHOTOGRAPHY HISTORIC	PHOTOGRAPHY RCHME
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**RELATIONSHIPS WITH OTHER MONUMENTS**

ASSOCIATED WITH: RCHME 209

CONDITION      Poor

**DESCRIPTION**

- 1) CONSTRUCTIONAL MATERIAL  
Timber
- 4) DIMENSIONS i) L 13.2m ii) W 2.2m iii) HT 2.35m
- 5) This bridge supported on timber trestles on the north and south bank carried pipeline RCHME 209 over the old river Lee. It also carried a walk way along its eastern side.

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER BR15	OLD SERIES	RCHME NUMBER 214	N.G.R. TL 37584 02131
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NAME/FUNCTION Cast Iron Aqueduct Bridge	START DATE 1878-9 1940?	END DATE 1940? 197?
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NO PHOTOGRAPHY  
AVAILABLE

CARTOGRAPHIC DEPICTION

DOCUMENTARY REFERENCES

1903 WASC 901/198 27.May.1903 Aqueduct No5  
(corrected to No2)  
1903 WASC 901/199 3.June.1903 Aqueduct No5  
1993 Roughton Bridge Assessments p111-118  
Drg No.15 April 1993 Built 1878

PHOTOGRAPHY  
HISTORIC

PHOTOGRAPHY  
RCHME

- 1) 206/M/31 From west  
206/M/32 Royal Cipher from west  
206/M/34 From south
- 2) BB92/26214 From south west  
BB92/26215 From south

RELATIONSHIPS WITH OTHER MONUMENTS

ASSOCIATED WITH: Old River Lea

CONDITION      Good

DESCRIPTION

1) CONSTRUCTIONAL MATERIAL  
Cast Iron

4) DIMENSIONS i) L 9.8m ii) W 3.1m iii) Trough depth 1.45m

5) The cast iron trough carried a high level canal over the old river Lee. The trough is set on brick piers on the north and south bank of the Lee, the piers capped by granite templates on which the aqueduct rests. The aqueduct is formed from two side plates each a single casting. In the centre of each plate is a cast device consisting of a queens crown the letters VR and a date 1878-9. The bottom plate of the trough is bolted to an in internal flange at the base of each of the side plates. Each side of the trough formerly carried a timber walkway.

Around 1940 the canal which the trough carried was filled and the aqueduct converted into a bridge. This conversion was effected by placing longitudinal RSJs at the top of the trough and laying a timber deck over. the former canal trough was then used to house a number of service pipes.

## THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY

NUMBER	OLD SERIES	RCHME NUMBER 225	N.G.R. TL 37630 01475
NAME/FUNCTION Canal Lock		START DATE 1878	END DATE
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME 2)BB92/26205 View from South East BB92/26206 View from South East	
RELATIONSHIPS WITH OTHER MONUMENTS  ASSOCIATED WITH: RCHME 179			
CONDITION      Good			
<p>DESCRIPTION</p> <p>1)      CONSTRUCTIONAL MATERIAL          Grey engineering brick in English bond, granite, timber gates</p> <p>3)      POWER SOURCE          Muscle</p> <p>4)      DIMENSIONS i) L 21m ii) W 3.8m iii) depth 2.6m</p> <p>5)      The canal lock controls access between the upper and lower canal systems within the factory. It was built in 1878 when the upper system was enlarged. The lock consists of a chamber 9.4m in length with three rubbing posts on either side. Entry into the chamber was controlled by double gates at either end. Water was let into the lock through two valves at the northern end outside the chamber. The valves were controlled by screw threads either side of the gates, these were fixed to granite blocks inscribed 'IN'. By opening the valves it allowed water to discharge through a pipe into the chamber. The northern doors are 1.5m in height, the doors at the southern end are 2.5m in height. The discharge of water from the lower southern end was also controlled by valve mechanism. A pipe either side of the chamber connected to valves on the outside and by turning the wheel on top of the valve it could be opened. The wheel and thread was also mounted on a granite block in this case inscribed 'OUT'. The lock could be sealed by dropping boards into vertical slots at the northern end of the chamber.</p> <p>The bricks used in the construction of the lock were made by 'Joseph Hamble West Bromwich', in common with a number of 1878 dated bridges within the RGPF.</p>			



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WARGMCo Ltd  
Powdermill Lane Fax: 01992 710341  
Waltham Abbey  
Essex EN9 1BN

**WALTHAM ABBEY  
ROYAL GUNPOWDER  
MILLS COMPANY LIMITED**

**MEMO**

**To:** Andy Coombes

**From:** Andrew Passmore

---

**Fax:**

**Date:** 28/07/98

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**Phone:**

**CC:**

---

**Re:** Tree damage to SAM

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Andy

Unfortunately I have to be on the Lower Island Site tomorrow, and I do not know when I will be on site. Please can you quote to carefully fell the damaged tree from the Lock RCHME 225 (it is within the Scheduled Ancient Monument). It will need to be removed in sections, so that there is no further damage to the lock gates and their supporting timbers, the communications pole, and the wooden revetment/handrail. Please can you fax your quote to Turner & Townsend ASAP, and also give me a copy of your quote. If necessary please use my computer and the office fax. I can be contacted on my mobile, which is 07775 515670.

Andrew

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Essex EN9 1BN

**WALTHAM ABBEY  
ROYAL GUNPOWDER  
MILLS COMPANY LIMITED**

**MEMO**

**To:** Robert Saunders **From:** Andrew Passmore  
**Fax:** **Date:** 27/07/98  
**Phone:** **CC:**  
**Re:** Tree damage to SAM

Robert

Recently (sometime in the three weeks preceding 24 July 1998) a Crack Willow has split (as part of its natural lifecycle) and fallen onto the lock [RCHME 225]. The tree (which was due for removal this Autumn) is currently resting on the sides of the lock and the top of the southern pair of gates. These gates themselves are unstable and are held up by wooden supports and acro-props, which were placed in position during the decontamination works.

The tree is likely to be causing damage to the lock gates and their opening mechanisms by means of its downward pressure on them. The tree has also damaged an *in situ* telegraph pole, as well as the timber revetment to the bank between the lock and canal [RCHME 156].

Steven Chaddock is liaising with Turner & Townsend over the logistics of our next move. This will involve the careful removal of fallen branches of the tree by a tree surgeon who will be monitored by the Archaeological Assistant; the latter will also record the damage to the monuments mentioned above.

We have asked Andy Coombes, our woodland consultant, to quote for the work. He will inspect the tree on Wednesday when he comes on site, and will then send a quote to Turner and Townsend for approval.

Andrew

Andrew  
28/7/98  
What is the cost of the collateral damage caused by the fallen tree?  
[Signature]



**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER <del>323</del> 13866	OLD SERIES	RCHME NUMBER 227	N.G.R. TL 37698 01486
NAME/FUNCTION Pipebridge	START DATE		END DATE
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME	
RELATIONSHIPS WITH OTHER MONUMENTS ASSOCIATED WITH: RCHME 300			
CONDITION Fair			
DESCRIPTION 1) CONSTRUCTIONAL MATERIAL Concrete piers and L irons  3) POWER SOURCE  4) DIMENSIONS i) L    ii) W    iii) HT  5) Gantry bridge carrying steam pipes over canal RCHME 300, also used to carry electricity cables across the canal.			

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER <i>BR 8</i>	OLD SERIES	RCHME NUMBER 228	N.G.R. TL 37680 02106
NAME/FUNCTION Road bridge		START DATE	END DATE
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION		DOCUMENTARY REFERENCES 1993 Roughton Bridge Assessments p63-71 Drg Nos 08/1-2 April 1993 Built Date unknown	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME	
RELATIONSHIPS WITH OTHER MONUMENTS ASSOCIATED WITH: Cornmill stream, RCHME 300			
CONDITION      Good			
<p>DESCRIPTION</p> <p>1)      CONSTRUCTIONAL MATERIAL          Concrete</p> <p>4)      DIMENSIONS i) L 7.5m ii) W 3.05m</p> <p>5)      The bridge is constructed from concrete slabs over RSJs supported on concrete piers. The bridge crosses a small <del>leat from Cornmill stream</del> <i>leat from River Lea</i>, there is no sluice control into the RGPF site at this point. Carries eastern perimeter road over canal RCHME 300.</p>			

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER B219	OLD SERIES	RCHME NUMBER 230	N.G.R. TL 37516 01795
NAME/FUNCTION Road Bridge		START DATE 1806-27	END DATE
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION  1827 MPH271;177 and 178 Brick bridge for carriages		DOCUMENTARY REFERENCES  1993 Roughton <u>Bridge Assessments</u> p140-142 Built Date Unknown	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME	
RELATIONSHIPS WITH OTHER MONUMENTS  ASSOCIATED WITH: Old River Lea, RCHME 296			
CONDITION      Poor			
DESCRIPTION 1) CONSTRUCTIONAL MATERIAL Brick in English bond and concrete  4) DIMENSIONS i) L 4.8m ii) W 3.1m iii) HT 2.5  5) Brick bridge to the west of Dining room 96. At the core of this bridge is a brick bridge with a sandstone keystone. The bridge has been widened by the addition of a concrete slab on the south side. The bridge carries the road over a leat joined to the Old River Lea, the flow of water into the leat could be closed by dropping of boards into slots on the north side of the bridge.			

THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY			
NUMBER BR11	OLD SERIES	RCHME NUMBER 238	N.G.R. TL 37715 02041
NAME/FUNCTION Cattlegate bridge		START DATE 1971	END DATE
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION		DOCUMENTARY REFERENCES 1993 Roughton <u>Bridge Assessments</u> p85-91 Drg No.11 May 1993 Built Aprox 1971  Drg No S-B.49	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME	
RELATIONSHIPS WITH OTHER MONUMENTS  ASSOCIATED WITH: Cornmill Stream			
CONDITION      Good			
DESCRIPTION 1)      CONSTRUCTIONAL MATERIAL Steel  4)      DIMENSIONS i) L 15.41m ii) W 4.13m  5)      'Bailey' type bridge constructed from five segments each 3.02m in length set on brick abutments. MK II in welded letters appears at either end of the bridge.			

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER <i>BR20</i>	OLD SERIES	RCHME NUMBER 250	N.G.R. TL 37610 02175
NAME/FUNCTION Cast Iron Aqueduct		START DATE ?1914	END DATE
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION 1914 WASC 901/196 1923 WASC 900/84		DOCUMENTARY REFERENCES 1993 Roughton <u>Bridge Assessments</u> p143-149 Drg No.20 May 1993 Build Date Unknown	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME  1) 206/O/24 From West 206/O/25 Interior from South 206/O/29 Interior from North  2) BB92/26289 Cast Iron Aqueduct	
RELATIONSHIPS WITH OTHER MONUMENTS  Associated with: RCHME 290			
CONDITION Fair			
DESCRIPTION 1) CONSTRUCTIONAL MATERIAL Cast Iron  4) DIMENSIONS i) L 14m ii) W 3.8m iii) HT 1.31m  5) The cast iron aqueduct was constructed to carry a new canal cut over the Old River Lea to the west of Newton's Pool RCHME 276. The aqueduct was supported on brick piers in English bond either side of the Old River Lea. Vertical slots on the interior of the brick work mark the positions of blocking boards that would enable the aqueduct to be isolated for maintenance or in the event of a leak. Unlike the other two cast aqueducts within the factory this one was of a composite construction, the cast iron side plates resting on RSJs to either side of the bridge. Each side of the aqueduct was composed of six cast iron plates bolted together and to these were inturn bolted the cast iron base plates, now largely missing. These were of a two piece construction, with a lower upwardly curving plate with a flat bed plate laid on the top. Iron brackets bolted to the side plates formerly carried a wooden walkway linking to the tow paths either side of the aqueduct.  The base of the trough is 0.9m above the surface of the Old River Lea, the estimated water level within the trough around 1.7m above the surface of the river.  Historic artifacts: the missing base plates may survive beneath the aqueduct in the Old River Lea			



**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER BR24	OLD SERIES	RCHME NUMBER 254	N.G.R. TL 37585 02200
NAME/FUNCTION Footbridge		START DATE 1914?	END DATE
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME  1)206/O/30 From North West  2)BB92/26287 Footbridge from South	
RELATIONSHIPS WITH OTHER MONUMENTS  ASSOCIATED WITH: RCHME 290			
CONDITION      Fair			
DESCRIPTION 1)      CONSTRUCTIONAL MATERIAL Iron and timber  4)      DIMENSIONS i) L 9.48m ii) W 0.97m iii) HT 3.6m (above canal base)  5)      The bridge is attached to its brick and cast concrete piers by vertical bolts set into a sandstone slab. The bridge is semi-circular in shape. The span is formed by a curved T iron, as is the hand rail joined by rivetted bracing irons. The deck of the bridge is timber. A boot scraper is provided by the south west corner of the bridge.			

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER BR23	OLD SERIES	RCHME NUMBER 255	N.G.R. TL 37782 02035 37870 01814
NAME/FUNCTION Iron Footbridge		START DATE	END DATE
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME 1)206/O/31 From South 206/O/32 Detail beneath Bridge	
RELATIONSHIPS WITH OTHER MONUMENTS  ASSOCIATED WITH: RCHME 283			
CONDITION			
DESCRIPTION 1) CONSTRUCTIONAL MATERIAL Cast Iron  4) DIMENSIONS i) L 9.48m ii) W 0.97m iii) HT 3.6m (above canal base)  5) The bridge is attached to its brick and cast concrete piers by vertical bolts set into a sandstone slab. The bridge is semi-circular in shape. The span is formed by a curved T iron, as is the hand rail joined by rivetted bracing irons. The deck of the bridge is timber. A boot scraper is provided by the south west corner of the bridge.			

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER	OLD SERIES	RCHME NUMBER 264	N.G.R. TL 37545 02367
NAME/FUNCTION Narrow Gauge Railway		START DATE	END DATE
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME 1)206/Q/4 From North	
RELATIONSHIPS WITH OTHER MONUMENTS  ASSOCIATED WITH			
CONDITION			
DESCRIPTION 1) CONSTRUCTIONAL MATERIAL  4) DIMENSIONS i) L    ii) W    iii) HT    iv)DIA  5)			

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER BRC	OLD SERIES	RCHME NUMBER 269	N.G.R. TL 37675 01395
NAME/FUNCTION Road Bridge		START DATE	END DATE
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION		DOCUMENTARY REFERENCES 1993 Roughton <u>Bridge Assessments</u> p50-57 Drg No.06 June 1993 Built Approx 1955 Drg No.XD1/2	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME 1)206/Q/20 From South	
RELATIONSHIPS WITH OTHER MONUMENTS ASSOCIATED WITH:RCHME 300			
CONDITION      Good			
DESCRIPTION 1)      CONSTRUCTIONAL MATERIAL Concrete  4)      DIMENSIONS i) L 12.53m ii) W 4.26m  5)      Modern road bridge constructed from reinforced concrete with metal handrails.			

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER 325.	OLD SERIES	RCHME NUMBER 270	N.G.R. TL 37736 01256
NAME/FUNCTION Footbridge		START DATE	END DATE
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION		DOCUMENTARY REFERENCES 1993 Roughton <u>Bridge Assessments</u> p45-49 Built approx 1957 1993 Roughton <u>Bridge Assessments</u> Drg No.L-B.10 Drawn 22/7/1957	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME 1)206/Q/21 From North	
RELATIONSHIPS WITH OTHER MONUMENTS ASSOCIATED WITH: RCHME 300			
CONDITION      Good			
DESCRIPTION 1)      CONSTRUCTIONAL MATERIAL Steel with timber deck  4)      DIMENSIONS i) L 9.78 ii) W 1.58  5)      Footbridge resting on two RSJs with a timber deck and handrails to either side.			

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER <i>BK4</i>	OLD SERIES	RCHME NUMBER 271	N.G.R. TL 37793 01115
NAME/FUNCTION Bailey type road bridge		START DATE 1940?	END DATE
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION		DOCUMENTARY REFERENCES	
		1993 Roughton <u>Bridge Assessments</u> p37-44 Drg No.4 May 1993 Build date Unknown	
		1993 Roughton <u>Bridge Assessments</u> Drg No L-B.17 Drawn 10.9.1965	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME 1)206/Q/25 From South West	
RELATIONSHIPS WITH OTHER MONUMENTS			
ASSOCIATED WITH: RCHME 300			
CONDITION      Good			
DESCRIPTION			
1)      CONSTRUCTIONAL MATERIAL Steel with timber deck			
4)      DIMENSIONS i) L 12.37 ii) W 5.43			
5)      Bailey type road bridge with attached footbridge to the north. Also used to carry service pipes. The letters MKII are in welded letters on either end of the bridge.			

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER	OLD SERIES	RCHME NUMBER 276	N.G.R. TL 37640 02222
NAME/FUNCTION Newton's Pool		START DATE	END DATE
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION		DOCUMENTARY REFERENCES	
<p>PHOTOGRAPHY HISTORIC</p> <p>WASC 1655/11 Newtons Pool Edmonsea 1897          PRO Supply 5/860 101-3 1897          RCHME Neg No. BB92/16721 (also PRO Supply 5/861          photo No. 385) Snow scene Newton's Pool 22.12.38          WASC 1126/7 Newtons pool ERDE          WASC 1441 Newtons pool x2          WASC 1524/27-28 Mr Jeff Munns wiring up detonator          for underwater charge          WASC 1524/29 Button-pressed underwater explosion          WASC 1524/30 Button-pressed underwater explosion          Breaking surface          WASC 1524/31 Button-pressed underwater explosion          Plume beginning          WASC 1524/32 Button pressed underwater explosion          Plume growing          WASC 1524/33 Button-pressed underwater explosion          Plume at maximum height          WASC 1524/34 Button-pressed underwater explosion          Plume collapsing          WASC 1524/35 Button-pressed underwater explosion          Plume collapsing wave forming          WASC 1524/36 Button-pressed underwater explosion          Plume nearly collapsed, wave growing          WASC 1524/37 Button-pressed underwater explosion          Plume collapsed          WASC 1524/38 Button-pressed underwater explosion          End of test          WASC 1524/39-40 Mr Brian Hammant processing the          polaroid instant pictures of the          oscilloscope traces from underwater          explosion.          WASC 1524/41 Mr Brian Hammant briefing visitors on          underwater explosions          WASC 1569 Newtons Pool taken 03.1972</p>		<p>PHOTOGRAPHY RCHME</p> <p>2) BB92/26212 From South East          BB92/26265 From South East (colour)</p> <p>4) 4686/32 06.05.1993          4686/34 06.05.1993          4787/6 06.05.1993          4787/7 06.05.1993          4787/8 06.05.1993          4787/9 06.05.1993          4787/17 06.05.1993</p>	

RELATIONSHIPS WITH OTHER MONUMENTS

ASSOCIATED WITH: RCHME 280 Cornmill Stream, RCHME 304, S34, S35, S36, S37, S38, S50

CONDITION Fair

DESCRIPTION

1)

5)

Site Photos.

Pool excavated + drained. in Sept. 1993  
Refilled. Sept 1993.



THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY			
NUMBER	OLD SERIES	RCHME NUMBER 278	N.G.R. TL 37810 01010 TL 37835 01150
NAME/FUNCTION Canal		START DATE	END DATE
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME  206/M/3 4 Mar 1993 The canal cleared 206/R/28-9 Early tramway rails found in canal	
RELATIONSHIPS WITH OTHER MONUMENTS  ASSOCIATED WITH: RCHME 300, RCHME 333, RCHME 132			
CONDITION      Filled re-excavated February 1993			
DESCRIPTION 1)      CONSTRUCTIONAL MATERIAL Timber reveted sides  4)      DIMENSIONS i) L <i>7m</i> ii) W <i>9m</i> iii) depth  5)			

*Site Photos.*

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER	OLD SERIES	RCHME NUMBER 280	N.G.R. TL 37680 02616 37890 01688
NAME/FUNCTION Cornmill Stream	START DATE	END DATE	
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION	DOCUMENTARY REFERENCES		
PHOTOGRAPHY HISTORIC	PHOTOGRAPHY RCHME		
RELATIONSHIPS WITH OTHER MONUMENTS ASSOCIATED WITH:RCHME 276 PART OF: High Level System			
CONDITION			
DESCRIPTION 1) CONSTRUCTIONAL MATERIAL Earthwork 4) DIMENSIONS i) L ii) W iii) Depth 5)			

THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY			
NUMBER	OLD SERIES	RCHME NUMBER 281	N.G.R. TL 37558 02569 37626 02523
NAME/FUNCTION Canal		START DATE pre 1783	END DATE 1957-1960
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION  1783      WASC 900/01 + MR 593		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME	
RELATIONSHIPS WITH OTHER MONUMENTS  ASSOCIATED WITH: Cornmill/Horsemill Streams RCHME 296, 1, 2a, 4, 8      PART OF: High Level System			
CONDITION Filled			
DESCRIPTION 1)      CONSTRUCTIONAL MATERIAL Earthwork  4)      DIMENSIONS i) L      ii) W      iii) Depth  5)  <i>Test trenched October 1994</i>			

THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY			
NUMBER	OLD SERIES	RCHME NUMBER 282	N.G.R. TL 37654 02630 37455 01372
NAME/FUNCTION Horsemill Stream		START DATE	END DATE
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME	
RELATIONSHIPS WITH OTHER MONUMENTS ASSOCIATED WITH:                      PART OF: High Level System			
CONDITION			
DESCRIPTION 1)        CONSTRUCTIONAL MATERIAL Earthwork  4)        DIMENSIONS i) L        ii) W        iii) Depth  5)        An artificial leat on the west side of the site formerly in a raised embankment between the Grand Magazine [1] and the sluices [RCHME 135] at its southern end.			

THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY			
NUMBER	OLD SERIES	RCHME NUMBER 283	N.G.R. TL 37622 02519 +
NAME/FUNCTION Canal		START DATE 1903	END DATE 1960-1970
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION  1923      WASC 900/84		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME	
RELATIONSHIPS WITH OTHER MONUMENTS  ASSOCIATED WITH: RCHME 281, RCHME 284, 8, 14, 18, 22, 23, 29, RCHME 255, RCHME 264 PART OF: High Level System			
CONDITION Earthwork			
DESCRIPTION			
1) CONSTRUCTIONAL MATERIAL Earthwork			
4) DIMENSIONS i) L. <u>29m</u> ii) W <u>6m</u> iii) <u>Depth</u>			
5)			
Canal feature excavated ie banks scraped and base uncovered between Nov and Jan 1994/5. Artifacts recovered.			

37505  
02234.

Site Photography =

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER	OLD SERIES	RCHME NUMBER 284	N.G.R. TL 37582 02208 37412 02247
NAME/FUNCTION Canal		START DATE 1904	END DATE 1960s
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME	
RELATIONSHIPS WITH OTHER MONUMENTS			
ASSOCIATED WITH: 36, RCHME 283, RCHME 285, RCHME 287,      PART OF: High Level System			
CONDITION Partially Filled/Earthwork			
DESCRIPTION			
1) CONSTRUCTIONAL MATERIAL Earthwork			
4) DIMENSIONS i) L 175m ii) W 7m iii) Depth			
5) Canal banks and base scraped / reshaped October -December 1994. Artifacts collected.			

Site Photography--

THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY			
NUMBER	OLD SERIES	RCHME NUMBER 285	N.G.R. TL 37484 02485 37450 02250
NAME/FUNCTION Canal		START DATE 1904?	END DATE 1960s
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION  1923    WASC 900/84		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME	
RELATIONSHIPS WITH OTHER MONUMENTS  ASSOCIATED WITH: RCHME 182, RCHME 282, RCHME 284, 16a, 18a, 22a    PART OF: High Level System			
CONDITION Filled/Partial Earthwork			
DESCRIPTION 1)    CONSTRUCTIONAL MATERIAL Earthwork  4)    DIMENSIONS i) <i>26m</i> ii) <i>6m</i> iii) <i>Depth</i>  5) <i>Test pits sunk August - September 1994 in front of       G.C. Stoves 16a, 18a.</i>			

*Site Photography.*

THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY			
NUMBER	OLD SERIES	RCHME NUMBER 286	N.G.R. TL 37400 02317 37404 02260
NAME/FUNCTION Canal		START DATE 1886-7	END DATE 1897-1923
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION  1897 WASC 900/53C		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME 8.6.95 Site Photos	
RELATIONSHIPS WITH OTHER MONUMENTS  ASSOCIATED WITH: 24, 25, 26, 27, 28, RCHME 282 PART OF: High Level System			
CONDITION Filled - with concrete hardcore (2m <sup>2</sup> )			
DESCRIPTION 1) CONSTRUCTIONAL MATERIAL Earthwork  4) DIMENSIONS i) L ii) W iii) Depth  5) Partially filled by 1923 appears still as access to Boat houses until late 1950s  <i>Test trenches at openings October 1994</i>			

Contains RCHME 559 + 560 (in southern boat house)

Excavation of southern interface with Horsewell Stream led to discovery of two barges (above). Difficulties with moving heavy barges resulted in back filling with clay.



THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY			
NUMBER	OLD SERIES	RCHME NUMBER 287	N.G.R. TL 37614 02259 37500 02100
NAME/FUNCTION Canal		START DATE c1850	END DATE 1957-1960
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION  1865      WASC 900/38 + SUPP5 975		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME	
RELATIONSHIPS WITH OTHER MONUMENTS  ASSOCIATED WITH: S34, E3, E2, E5, RCHME 284, RCHME 289, RCHME 290    PART OF: High Level System			
CONDITION Partly filled			
DESCRIPTION 1)      CONSTRUCTIONAL MATERIAL Earthwork  4)      DIMENSIONS i) <i>200m</i> ii) <i>7m</i> iii) <i>Depth</i>  5)  The canal was probably built around 1850 to link the newly constructed Press House 76 to the Granulating House S34. The eastern end of the canal immediately north of S34 has been filled and covered by a tarmac and concrete surface. It may however be traced as an earthwork feature for 30m to the west of S34.			

*Site Photography.*

*Canal was excavated ~~for~~ completely in September 1993 and has undergone secondary scrape October/Nov 1994. Artifacts collected.*

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER	OLD SERIES	RCHME NUMBER 288	N.G.R. TL 27386 01972 37530 01956
NAME/FUNCTION Canal		START DATE by 1851	END DATE 1957-1960
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION  1865 WASC 900/38 + SUPP5 975		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME	
RELATIONSHIPS WITH OTHER MONUMENTS  ASSOCIATED WITH: 76, E14, RCHME 107, RCHME 282, RCHME 291 PART OF: High Level System			
CONDITION Partially Filled/Earthwork			
DESCRIPTION 1) CONSTRUCTIONAL MATERIAL Earthwork 4) DIMENSIONS i) L 110m ii) W 7m iii) Depth 5)  Completely excavated Feb 1994. Artifacts Recovered			

Site Photography.

THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY			
NUMBER	OLD SERIES	RCHME NUMBER 289	N.G.R. TL 37548 02159 37665 01957 37517 01675
NAME/FUNCTION Canal		START DATE 1878-9	END DATE 1957-1960
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION  1865 WASC 900/38 + SUPP5 975		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME	
RELATIONSHIPS WITH OTHER MONUMENTS  ASSOCIATED WITH: RCHME 287, E3, RCHME 214, RCHME 215, RCHME 275, 63, RCHME 290, 74, 75, S28, S30, S29, 89, 90, 91, S31, RCHME 112, RCHME 113, L102, L103, RCHME 292, RCHME 293, RCHME 294 PART OF: High Level System			
CONDITION Earthwork			
DESCRIPTION 1) CONSTRUCTIONAL MATERIAL Earthwork  4) DIMENSIONS i) L 570m ii) W 7m iii) Depth  5) v. long canal Completely excavated + reshaped by Jen 1995 excavations intermittent since Sept 1993.			

Site Photography.

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER	OLD SERIES	RCHME NUMBER 290	N.G.R. TL 37584 02194 37633 02099
NAME/FUNCTION Canal		START DATE June 1914	END DATE 1947.
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION  1923 WASC 900/84		DOCUMENTARY REFERENCES  1914 WASC 901/196 23.June.1914 NGF Edmonsey new cut from No2 Mixing House to opposite No14 Guncotton Stove	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME	
RELATIONSHIPS WITH OTHER MONUMENTS  ASSOCIATED WITH: RCHME 254, RCHME 250, 46, 46R, 46a PART OF: High Level System			
CONDITION Earthwork			
DESCRIPTION 1) CONSTRUCTIONAL MATERIAL Earthwork  4) DIMENSIONS i) L 130m ii) W 5m iii) Depth  5) Reshaped + excavated by Nov 1994 Artifacts collected.			

Site Photography

THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY			
NUMBER	OLD SERIES	RCHME NUMBER 291	N.G.R. TL 37511 01984 37408 02161
NAME/FUNCTION Canal		START DATE 1801-1806	END DATE 1950s.
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION  1827 WASC 900/04 + MPH 271		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME	
RELATIONSHIPS WITH OTHER MONUMENTS  ASSOCIATED WITH: RCHME 288, 62, RCHME 287, RCHME 282 PART OF: High Level System			
CONDITION Partially filled/Earthwork			
DESCRIPTION 1) CONSTRUCTIONAL MATERIAL Earthwork  4) DIMENSIONS. i) L 240m ii) W 8m iii) Depth  5) Northern most 120m unexcavated The rest scraped + exposed Oct - Dec 1994.			

Site Photography.

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER	OLD SERIES	RCHME NUMBER 292	N.G.R. TL 37586 02071 37627 02088
NAME/FUNCTION Dusting House (RCHME 275) Leat		START DATE 1878	END DATE 1940s ?
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION 1865 WASC 900/38 + SUPP5 975		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME	
RELATIONSHIPS WITH OTHER MONUMENTS ASSOCIATED WITH: RCHME 275, RCHME 289, RCHME 212, RCHME 293 PART OF: High Level to Low Level System			
CONDITION			
DESCRIPTION 1) CONSTRUCTIONAL MATERIAL Earthwork 4) DIMENSIONS i) L 50m ii) W 4m iii) Depth 5) Left as earthwork. (Nov 1994)			

Site Photography =

THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY			
NUMBER	OLD SERIES	RCHME NUMBER	N.G.R.
		293	TL 37636 02094 37680 02108
NAME/FUNCTION		START DATE	END DATE
Leat		1878	1950s
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION		DOCUMENTARY REFERENCES	
1865 WASC 900/38 + SUPP5 975			
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME	
RELATIONSHIPS WITH OTHER MONUMENTS			
ASSOCIATED WITH: RCHME 280, S27, RCHME 289, RCHME 290 PART OF: High Level System			
CONDITION Earthwork			
DESCRIPTION			
1) CONSTRUCTIONAL MATERIAL Earthwork			
4) DIMENSIONS i) L 5m ii) W 4.5m iii) Depth			
5) Excavated October 1993 reshaped Nov 1994. Artifacts collected.			

Site Photography.

THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY			
NUMBER	OLD SERIES	RCHME NUMBER 294	N.G.R. TL 37420 01640 37679 01693
NAME/FUNCTION Press House Cut-Canal		START DATE 1801-1806	END DATE 1960
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION 1827 WASC 900/04 + MPH 271		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME	
RELATIONSHIPS WITH OTHER MONUMENTS  ASSOCIATED WITH: 103, 104, 105, 106, L101, L100, RCHME 170, RCHME 289, RCHME 179, 107, 108, RCHME 282 PART OF: High Level System			
CONDITION Earthwork			
DESCRIPTION 1) CONSTRUCTIONAL MATERIAL Earthwork 4) DIMENSIONS i) L <sup>270m</sup> <del>25m</del> ii) W <sup>7m</sup> iii) Depth ✓ 5) As yet unexcavated fully. (Nov 1994)			

Site Photo.



THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY			
NUMBER	OLD SERIES	RCHME NUMBER 295	N.G.R. TL 37490 01952 37513 01909
NAME/FUNCTION Canal		START DATE 1850-1886	END DATE 1940s?
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION  1865 WASC 900/38 + SUPP5 975		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME	
RELATIONSHIPS WITH OTHER MONUMENTS  ASSOCIATED WITH: RCHME 288, RCHME 212 PART OF: Low Level System			
CONDITION Earthwork			
DESCRIPTION 1) CONSTRUCTIONAL MATERIAL Earthwork 4) DIMENSIONS i) L 6m ii) W 3.5m iii) Depth 5)  Left as earthwork. (Nov 1994)			

Site Photography.

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER	OLD SERIES	RCHME NUMBER 296	N.G.R. TL 37440 01770 37517 01796
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NAME/FUNCTION Leat	START DATE 1806-1827	END DATE 1950-60
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NO PHOTOGRAPHY  
AVAILABLE

CARTOGRAPHIC DEPICTION  1827      WASC 900/04 + MPH 271	DOCUMENTARY REFERENCES
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PHOTOGRAPHY HISTORIC	PHOTOGRAPHY RCHME
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RELATIONSHIPS WITH OTHER MONUMENTS

ASSOCIATED WITH: RCHME 230, RCHME 119, RCHME 212    PART OF: Low Level System

CONDITION Earthwork

DESCRIPTION

1) CONSTRUCTIONAL MATERIAL  
Earthwork

4) DIMENSIONS i) L *8m* ii) W *4m* iii) Depth

5)

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER	OLD SERIES	RCHME NUMBER 297	N.G.R. TL 37406 01750 37438 01744
NAME/FUNCTION Mill Leat		START DATE 1806-1827	END DATE
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION  1827    WASC 900/04 + MPH 271		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME	
RELATIONSHIPS WITH OTHER MONUMENTS  ASSOCIATED WITH: RCHME 119, 97, 98, RCHME 282    PART OF: Low Level System			
CONDITION Earthwork			
DESCRIPTION 1)    CONSTRUCTIONAL MATERIAL Earthwork 4)    DIMENSIONS i) L <i>2.5m</i> ii) W <i>3.5m</i> iii) Depth 5)  <i>Excavated Sept/Oct 1994 revealing brick foot bridge and remains of Bldg 97.</i>			

THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY			
NUMBER	OLD SERIES	RCHME NUMBER 298	N.G.R. TL 37445 01635 37456 01526
NAME/FUNCTION Leat		START DATE 1957-1960	END DATE
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION c1960 WASC 900/94		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME	
RELATIONSHIPS WITH OTHER MONUMENTS ASSOCIATED WITH: RCHME 119, RCHME 294, RCHME 170 PART OF: Low Level System			
CONDITION Earthwork			
DESCRIPTION 1) CONSTRUCTIONAL MATERIAL Earthwork 4) DIMENSIONS i) L ii) W iii) Depth 5)			

*Site Photography*

THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY			
NUMBER	OLD SERIES	RCHME NUMBER 299	N.G.R. TL 37420 01961 37714 00978
NAME/FUNCTION Leat		START DATE 1806-1827 (extend) 1850-1886	END DATE <i>1750s</i>
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION  1827      WASC 900/04 + MPH 271 1865      WASC 900/38 + SUPP5 975		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME	
RELATIONSHIPS WITH OTHER MONUMENTS  ASSOCIATED WITH: RCHME 296, RCHME 297, RCHME 170, RCHME 294, 116, 117, RCHME 298, 159, 157, 165, 181, 183, 190, 196, 197, 202, RCHME 133, RCHME 122    PART OF: Low Level System			
CONDITION Earthwork			
DESCRIPTION 1)      CONSTRUCTIONAL MATERIAL Earthwork  4)      DIMENSIONS i) L      ii) W      iii) Depth  5) <i>Excavated (not completely) Sept - Nov 1994</i>			

*Site Photos*

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER	OLD SERIES	RCHME NUMBER 300	N.G.R. TL 37656 01460 37716 01506
NAME/FUNCTION Leat		START DATE 187?	END DATE
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION 1865 WASC 900/38 + SUPP5 975		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME	
<p>RELATIONSHIPS WITH OTHER MONUMENTS</p> <p>ASSOCIATED WITH: RCHME 122, RCHME 123, RCHME 126, RCHME 130, RCHME 228, RCHME 156, RCHME 280, L130 PART OF: Low Level System</p>			
CONDITION Water			
<p>DESCRIPTION</p> <p>1) CONSTRUCTIONAL MATERIAL Earthwork</p> <p>4) DIMENSIONS i) L    ii) W    iii) Depth</p> <p>5)</p>			

THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY			
NUMBER	OLD SERIES	RCHME NUMBER 301	N.G.R. TL 37507 01200 37588 01213 37544 00988
NAME/FUNCTION Tail Race		START DATE pre 1783	END DATE 1950s
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION 1783 WASC 900/01 + MR 593		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME	
RELATIONSHIPS WITH OTHER MONUMENTS  ASSOCIATED WITH: RCHME 222, RCHME 219, RCHME 218, RCHME 272, RCHME 296, 165a, 182, 191, 197, 211, RCHME 135 PART OF: Low Level System			
CONDITION Earthwork			
DESCRIPTION 1) CONSTRUCTIONAL MATERIAL Earthwork  4) DIMENSIONS i) L ii) W iii) Depth  5) Excavated to canal Lock from Hoppit Pool. April - July 1994			

Site Photog.

THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY			
NUMBER	OLD SERIES	RCHME NUMBER 302	N.G.R. TL 37640 00614
NAME/FUNCTION Canal		START DATE	END DATE
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION		DOCUMENTARY REFERENCES	
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME	
RELATIONSHIPS WITH OTHER MONUMENTS			
ASSOCIATED WITH:		PART OF:	
CONDITION: Filled			
DESCRIPTION			
1)	CONSTRUCTIONAL MATERIAL Earthwork		
4)	DIMENSIONS i) L    ii) W    iii) Depth		
5)	This canal was situated to the south of the Hospitals [H25 & H26] and defined an area between it and High Bridge Street as the early Saltpetre Refinery. The canal has been filled, its eastern entrance sealed by sheet piling.		
<i>Excavated Feb - March 1984</i> <i>Site Photos.</i>			



**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER	OLD SERIES	RCHME NUMBER 355	N.G.R. TL 37600 01205 TL 37710 01200
NAME/FUNCTION Canal	START DATE	END DATE	
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION	DOCUMENTARY REFERENCES		
PHOTOGRAPHY HISTORIC	PHOTOGRAPHY RCHME		
RELATIONSHIPS WITH OTHER MONUMENTS  Underlies: L148			
CONDITION	Buried		
DESCRIPTION  5)			

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER	OLD SERIES	RCHME NUMBER 356	N.G.R. TL 37732 00882 TL 37818 00871
NAME/FUNCTION Canal		START DATE 1801-06	END DATE
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION		DOCUMENTARY REFERENCES	
1806 WO78/1352 1830 WO55/2694 1830 WASC 900/05 C1835 WASC 900/07 1865 WASC 900/38 1865 WASC 900/41A 1865 WASC900/42 1897 WASC 900/53C C1901 WASC 900/65 C1910 WASC 900/79 1917 WASC 900/70 1917 WASC 900/72 1919 WASC 900/74 C1920 WASC 900/80 1923 WASC 900/84			
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME	
RELATIONSHIPS WITH OTHER MONUMENTS			
ASSOCIATED WITH: RCHME 357			
CONDITION	Buried		
DESCRIPTION			
4) DIMENSIONS i) L    ii) W    iii) HT			
5) Buried canal to the north and parallel to the administrative buildings A230-A234.			
<i>Excavated - Sept 1973</i> <i>Site Photos</i>			

**THE ROYAL GUNPOWDER FACTORY - WALTHAM ABBEY**

NUMBER	OLD SERIES	RCHME NUMBER 357	N.G.R. TL 37809 00864 TL 37829 01016
NAME/FUNCTION Leat	START DATE 1806-27	END DATE c1908	
NO PHOTOGRAPHY AVAILABLE			
CARTOGRAPHIC DEPICTION		DOCUMENTARY REFERENCES	
1827 WASC 900/04 1830 WO55/2694 1830 WASC 900/05 C1835 WASC 900/07 1865 WASC 900/38 1865 WASC 900/41A 1865 WASC900/42 1897 WASC 900/53C			
PHOTOGRAPHY HISTORIC		PHOTOGRAPHY RCHME	
RELATIONSHIPS WITH OTHER MONUMENTS			
ASSOCIATED WITH: RCHME 356, A221			
CONDITION	Buried		
DESCRIPTION			
4) DIMENSIONS i) L    ii) W    iii) HT			
5) Former leat around the perimeter of the Senior Officers House [A221]. Its course roughly followed the line of the modern perimeter fence.			

*Excavated to adjacent Bldg A210*

*May - June 1994*

*Site photos.*

