POWDERMILL LANE HOUSING SITE
POST REMEDIATION SURVEY &
CONFIRMATORY SAMPLING GRID

WALTHAM ABBEY RARDE – NORTH SITE

FOR

DEFENCE LANDS SERVICE
MINISTRY OF DEFENCE

SCALE 1:500 – JOB No 4307 – DATE JAN 1994
REVISION A – FEBRUARY 1995

Steve. Plot is "to scale"

PMLH.

CANALS

POWDERMILL LANE HOUSING SITE
POST REMEDIATION SURVEY & CONFIRMATORY SAMPLING GRID

WALTHAM ABBEY RARDE – NORTH SITE
FOR
DEFENCE LANDS SERVICE MINISTRY OF DEFENCE

SCALE 1:500 – JOB No 4307 – DATE JAN 1994
REVISION A – FEBRUARY 1995

Plot showing position of excavated canals + leats.
Pow. Lan. Hou. Sit.

* MKS 13/1/01

N

537700 E
537800 E
537900 E
538000 E
200900 N
200800 N
200700 N

A B C D E F G
1 2 3 4 5 6 7 8 9

see attached neg.
Trees here
see marked up MKS 8/01 for position
Check position.
+ 40239 . 18.20
+ 40240 16.925
These two trees only.
Culvert IL 19.274
Old River Lea or Lee Drain
Drain
ABBEYVIEW
POWDERMILL LANE
FLAGSTAFF ROAD
HOPPIT ROAD
Mill Head Stream
GARDENS
WALTON
FOOTBRIDGE
FOOTPATH
BRIDGE
VISITOR & GENERAL ENTRANCE
PORTALOO
PORTAKABIN
BH 8
BH 9
BH 10
BH 11
BH 12
A201/2
A203
A227
A238
A239
A807
H5 H6 H11 H66 H12 H14 H15 H31 H23 H24 H25a H25 H26
25 19 12 11 5 55 54 42

TRIAL PIT No: 8 **JOB No:** **JOB NAME:**

Logged *in situ / from ground surface:* by ..... on: .....

Ground level:

Date excavated:

Weather:

Excavator type:

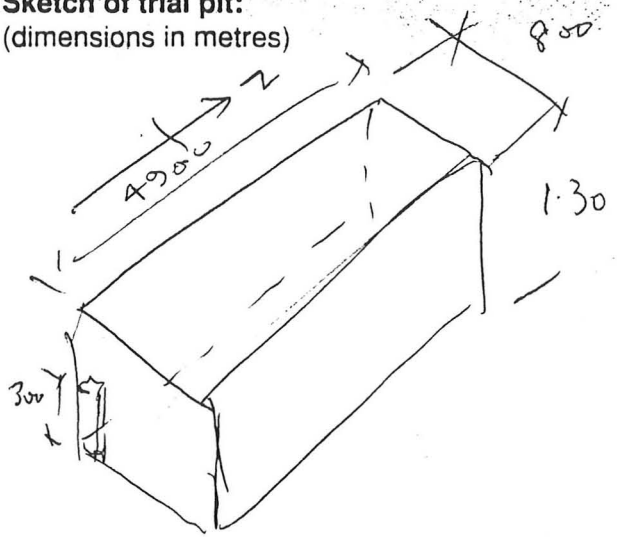
Bucket width:

Pit support system:

Pit stability:
STABLE

Groundwater observations:
150 moisture in bottom hand

Sketch of trial pit:
(dimensions in metres)



Trial pit log:
Depth (m) Soil description and sample depths

1300
1200 SOIL INFILL
Rubble infill (including large concrete HARDCORE) TIMBER, METAL ETC TREE ROOTS OVER TOTAL DEPTH. TO GRAVEL
water
150
GRAVEL
0

TRIAL PIT No: 10 **JOB No:** **JOB NAME:**

Logged *in situ / from ground surface:* by ..... on: .....

Ground level:

Date excavated:

Weather:

Excavator type:

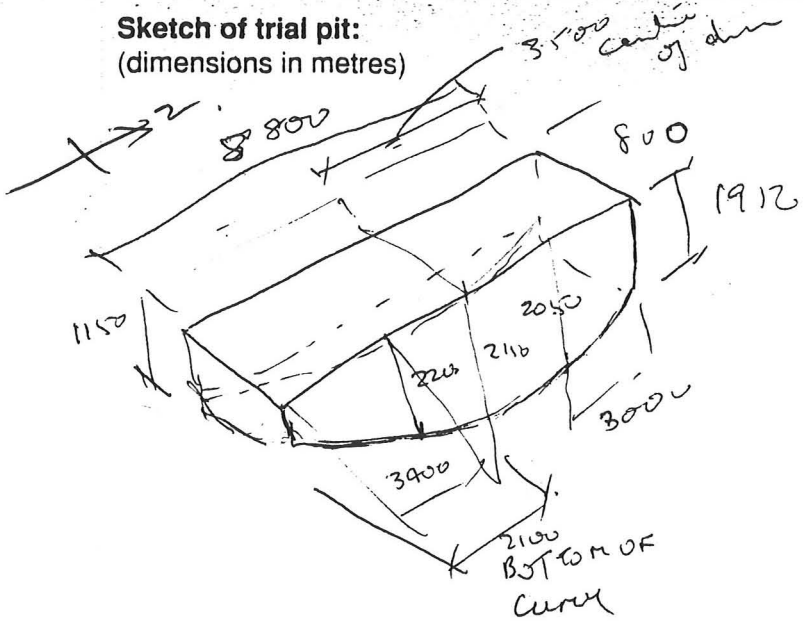
Bucket width:

Pit support system:

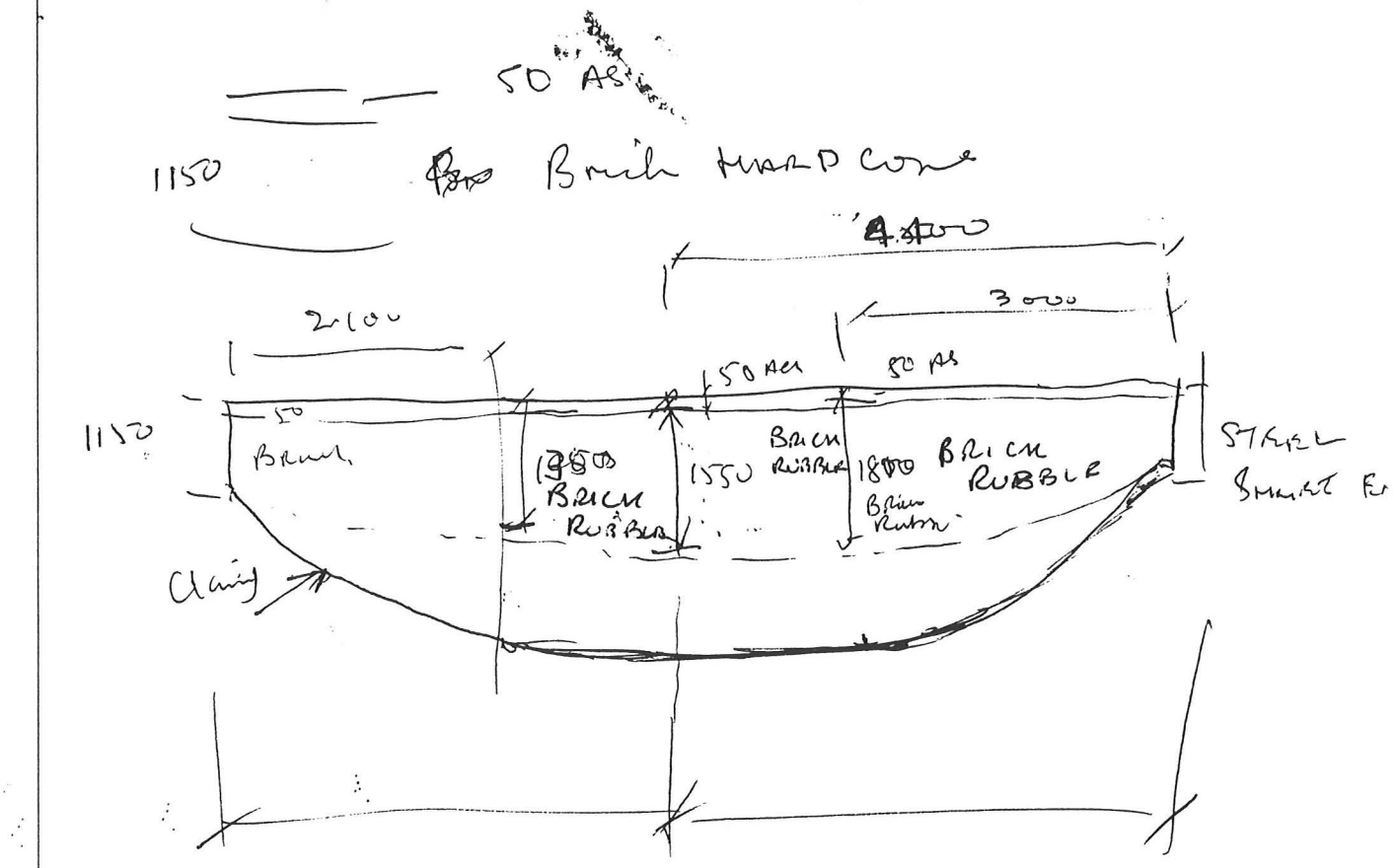
Pit stability:

Groundwater observations:

Sketch of trial pit:
(dimensions in metres)



Trial pit log:
Depth (m) Soil description and sample depths



Brown DARK BROWN clay, going to dark

TRIAL PIT No: 11 **JOB No:** **JOB NAME:**

Logged *in situ / from ground surface:* by ..... on: .....

Ground level:

Date excavated:

Weather:

Excavator type:

Bucket width:

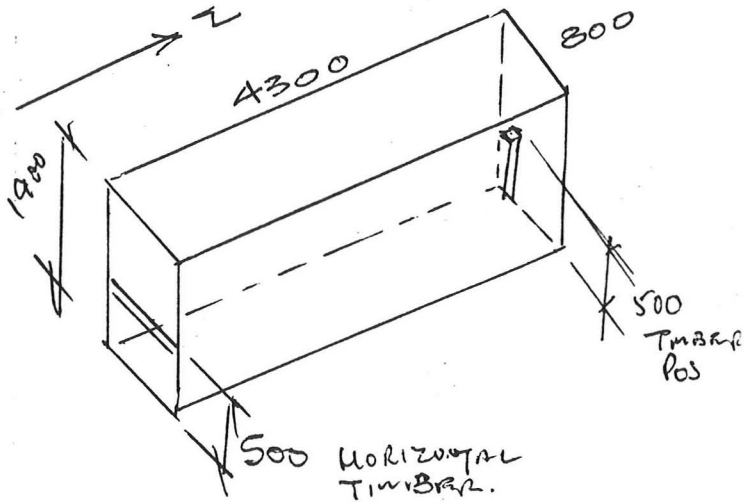
Pit support system:

Pit stability:

Groundwater observations:

NO WATER

Sketch of trial pit:
(dimensions in metres)



Trial pit log:

Depth (m) Soil description and sample depths

G.L. 1900

ASH WITH GRAVEL.

1700

GRAVEL & HARDCORE

1100

SANDY GRAVEL.

450

TIMBER INFILL.

300

CLAY STIFF BROWN

0

TRIAL PIT NO: TP3 JOB NO: JOB NAME:

Logged *in situ / from ground surface:* by ..... on: .....

Ground level:

Date excavated:

Weather:

Excavator type:

Bucket width:

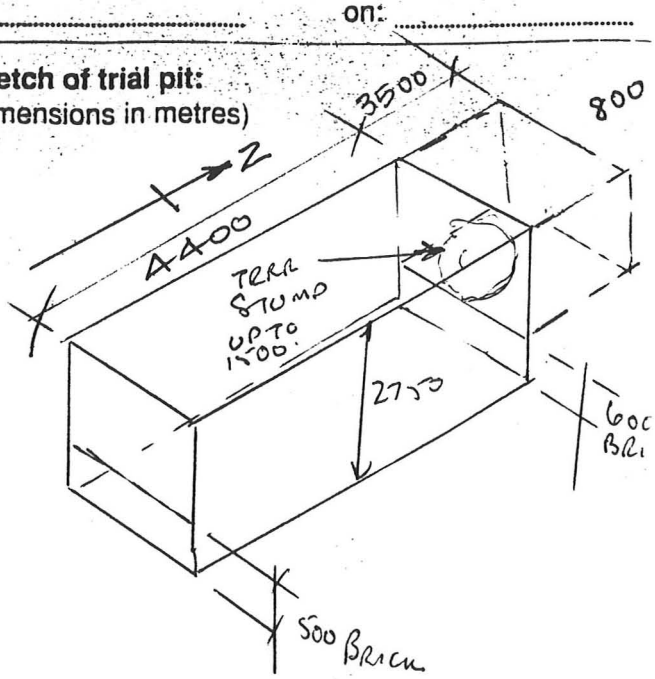
Pit support system:

Pit stability:

Groundwater observations:

NO WATER

Sketch of trial pit:
(dimensions in metres)



Trial pit log:

Depth (m) Soil description and sample depths

2750
ASH BLINDING

2600
GRAVEL.

2000
SOIL / GRAVEL INFILL.

1400
BROKEN HARDCORE WITH SOME SOIL

300
DARK BROWN CLAY

0

DARK BROWN CLAY BOTTOM

TRIAL PIT No: 16 **JOB No:** **JOB NAME:**

Logged *in situ / from ground surface:* by ..... on: .....

Ground level:

Date excavated:

Weather:

Excavator type:

Bucket width:

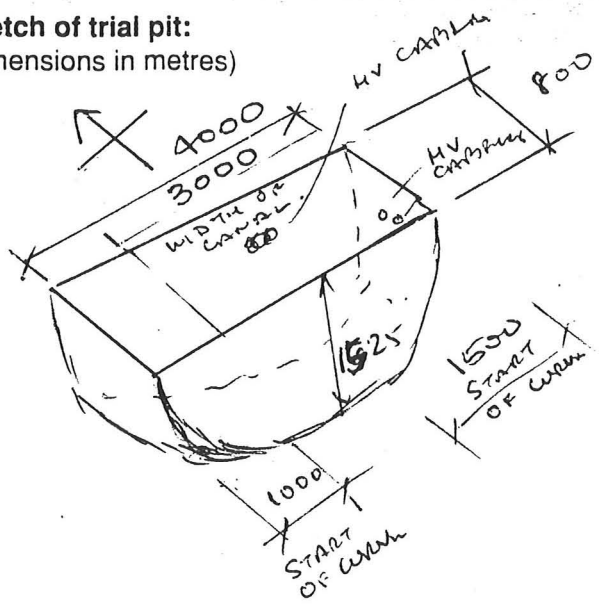
Pit support system:

Pit stability:

Groundwater observations:

50 m. WATER

Sketch of trial pit:
(dimensions in metres)



Trial pit log:

Depth (m) Soil description and sample depths

1525

1 ASH

1425

HARDCORE / SOIL / TREE ROOTS

250

1 - CLAY (MEDIUM BROWN)

0

TRIAL PIT No: TP1 JOB No: JOB NAME:

Logged *in situ / from ground surface:* by ..... on: .....

Ground level:

Date excavated:

Weather:

Excavator type:

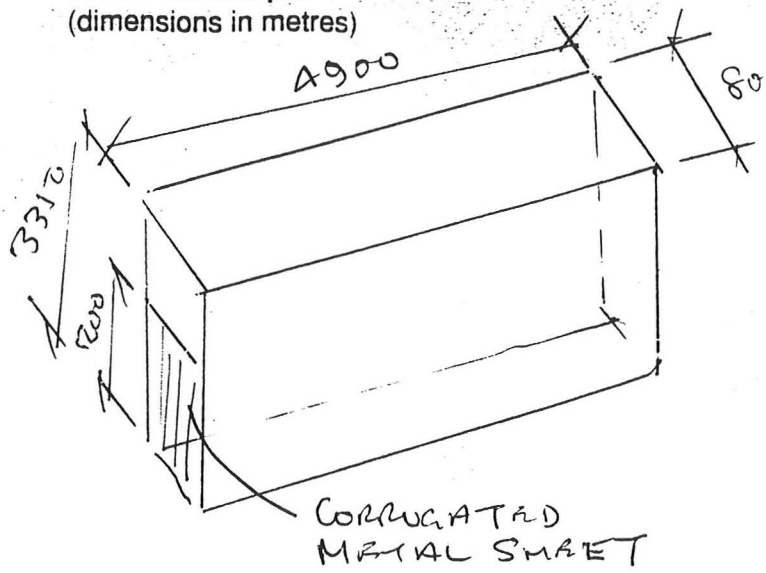
Bucket width:

Pit support system:

Pit stability:

Groundwater observations:

Sketch of trial pit:
(dimensions in metres)



Trial pit log:
Depth (m) Soil description and sample depths

3350
ASH.
3200
– MADE LOAM
3100
FINE LOOSE GRAVEL
1400
RUBBER INFILL
300
CLAY (BROWN)
150
GRAVEL
0

TRIAL PIT No: 21 JOB No: JOB NAME:

Logged *in situ / from ground surface:* by ..... on: .....

Ground level:

Date excavated:

Weather:

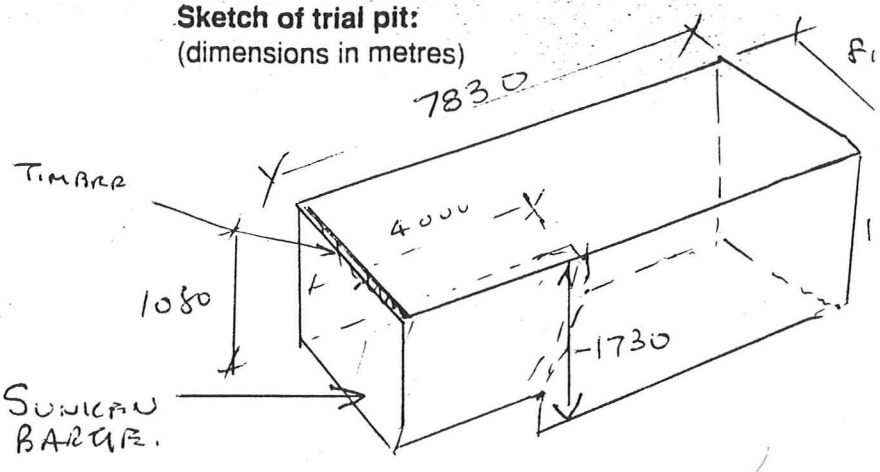
Excavator type:

Bucket width:

Pit support system:

Pit stability:

Sketch of trial pit:
(dimensions in metres)



Groundwater observations:

600 mm

Trial pit log:

Depth (m) Soil description and sample depths

G.L.

670 LOOSE RUBBLE

300 COMPACTED VEGITATION. WITH ROOTS / SOME LOOSE RUBBLE

710 to 760 DARK BROWN CLAY WITH INFILL MATERIAL (RUBBLE)

TRIAL PIT No: 22 **JOB No:** **JOB NAME:**

Logged *in situ / from ground surface:* by ..... on: .....

Ground level:

Date excavated:

Weather:

Excavator type:

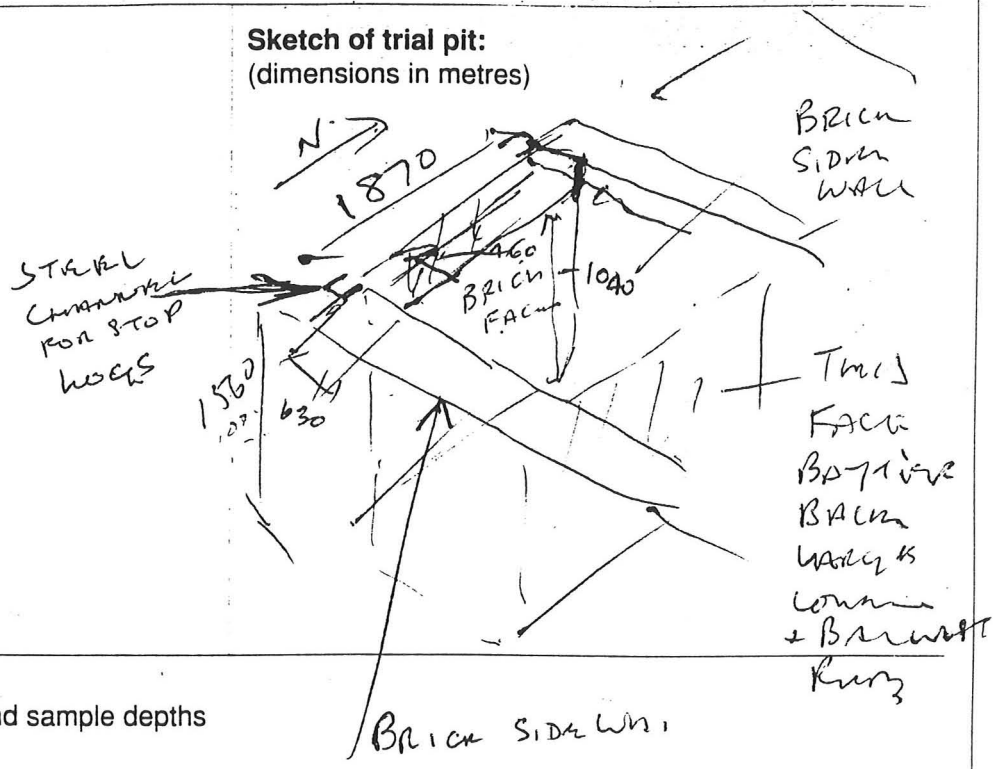
Bucket width:

Pit support system:

Pit stability:

Groundwater observations:

Sketch of trial pit:
(dimensions in metres)



Trial pit log:
Depth (m) Soil description and sample depths

WEST FACE

0 - 520 - CONCRETE RUBBLE

520 - 1560 - BRICK WALL - 460 WIDE

FLOOR - BRICK. - YELLOW STOCKS

EAST FACE

0 - 1560 - CONCRETE RUBBLE INFILL.

BRICK CULVERT

TRIAL PIT Nº: 25

Logged in situ/from ground surface by:..... on:.....

Ground level:

Date excavated:

Weather:

Excavator type:

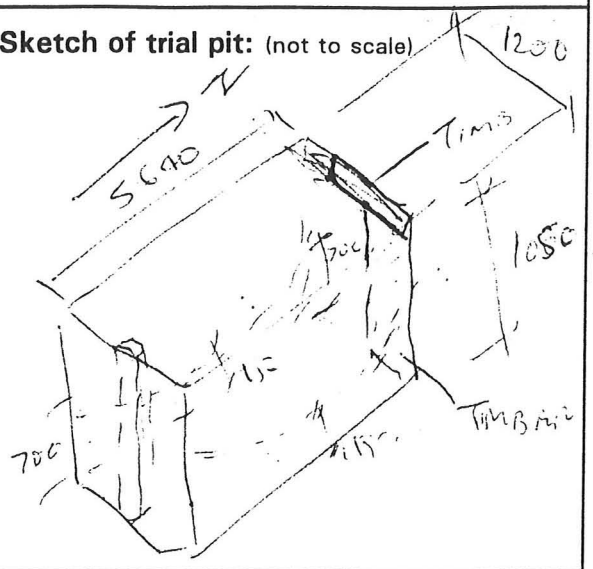
Bucket width:

Pit support system:

Pit stability:

Groundwater observations: 50mm

Sketch of trial pit: (not to scale)



Trial pit log: Depth (m) Soil description and sample depths

West Face

0 - 900 - HARDCORE INFILL - BOAT SMASHED.

900 - 1050 GREY CLAY (STIFF)

BOTTOM OF ~~CA~~ DARK BROWN CLAY.

SIDES BATTER BACK

50mm WATER

Sample(s) ref:

FORMER RARDE WALTHAM ABBEY NORTH SITE

Trial Pit Investigation

Trial log Nº:

BRITISH AEROSPACE DEFENCE
ROYAL ORDNANCE
ENVIRONMENTAL SERVICES GROUP

TRIAL PIT Nº: 26

Logged in situ/from ground surface by:..... on:.....

Ground level: VARIES

Date excavated:

Weather:

Excavator type:

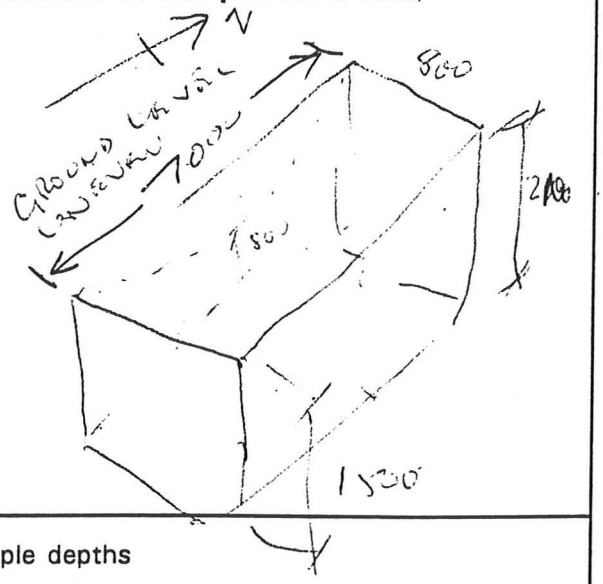
Bucket width:

Pit support system:

Pit stability:

Groundwater observations:

Sketch of trial pit: (not to scale)



Trial pit log: Depth (m) Soil description and sample depths

WEST FACE

0 - 1000 FILL (HARDCORE / SAND BALLAST WITH ROTTING TREE ROOTS

1000 - 1800 DARK GREY CLAY.

BOTTOM DARK GREY / DARK BROWN CLAY.

EAST FACE

0 - - - 1500 FILL / HARDCORE / BRICKS ETC. (BATTERED BACK DUE TO ~~WEAR~~ UNSTABLE).

1500 - 1800 DARK GREY STIFF CLAY.

WATER AT BOTTOM

Sample(s) ref:

FORMER RARDE WALTHAM ABBEY NORTH SITE

Trial Pit Investigation

Trial log Nº:

BRITISH AEROSPACE DEFENCE
ROYAL ORDNANCE
ENVIRONMENTAL SERVICES GROUP

TRIAL PIT Nº: 27

Logged in situ/from ground surface by: TDW on: 21/9/94

Ground level:

Date excavated:

Weather:

Excavator type:

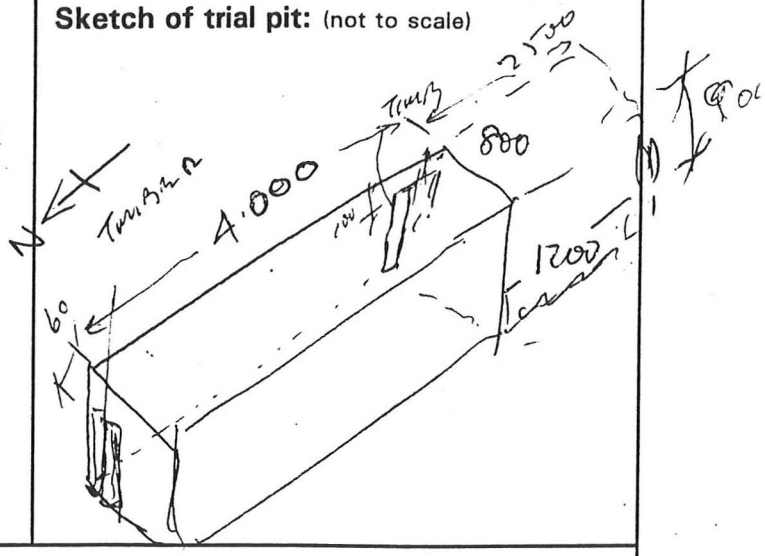
Bucket width:

Pit support system:

Pit stability:

Groundwater observations:

Sketch of trial pit: (not to scale)



Trial pit log: Depth (m) Soil description and sample depths

WATER LEVEL 800 DOWN FROM G.L

0 - 100 A&M.

100 - 900 SOFT BROWN CLAY - (WITH TREE ROOTS.)

900 - 1200 DARK GREY CLAY.

BOTTOM LIGHT BROWN CLAY

Sample(s) ref:

FORMER RARDE WALTHAM ABBEY NORTH SITE

Trial Pit Investigation

Trial log Nº:

BRITISH AEROSPACE DEFENCE
ROYAL ORDNANCE
ENVIRONMENTAL SERVICES GROUP

TRIAL PIT Nº: 29

Logged in situ/from ground surface by: TW on: 21/9/94

Ground level:

Date excavated:

Weather:

Excavator type:

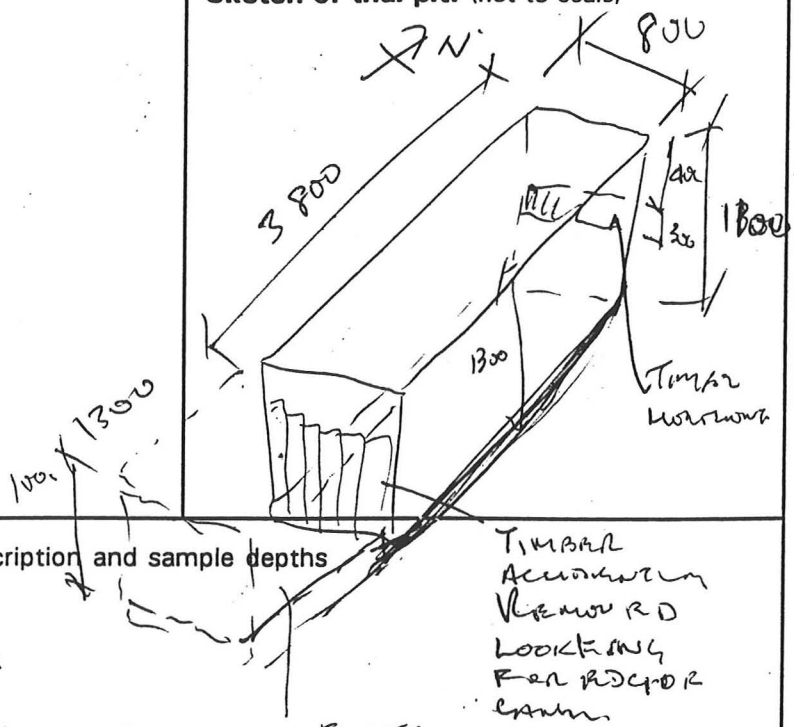
Bucket width:

Pit support system:

Pit stability:

Groundwater observations:

Sketch of trial pit: (not to scale)



Trial pit log: Depth (m) Soil description and sample depths

0 - 150 ASM

150 - 300 HARDCORE

300 - 1000 DARK GREY STIFF CLAY

1000 - 1100 PEAT. (*

1100 - 1300 DARK GREY. STIFF CLAY,

BOTTOM. LIGHTER GREY CLAY GOING ONTO DARK BROWN

NO WATER ENCOUNTERED.

Sample(s) ref:

FORMER RARDE WALTHAM ABBEY NORTH SITE

Trial Pit Investigation

Trial log Nº:

BRITISH AEROSPACE DEFENCE
ROYAL ORDNANCE
ENVIRONMENTAL SERVICES GROUP

WS Atkins memorandum

Subject **EXCAVATION OF CANAL BANKS INSPECTION 14/12/94**

To **Graham Vincent**

From **Bob Watts**

Date 16th December 1994

Ref E5275/58/1/01

Graham,

Attached is a plan showing extent of area walked. Items of work agreed with SC are as follows:-

North from Burning Ground/Long Walk access.

i) Scrap earthing tape and cable at BG entrance, recover to scrap pile.

ii) Generally rear of trees furthest from the canal bank have not been raked. This needs to be done.

iii) Bridge 16 - Cut fallen tree away from bank, rake around abutments. Do not sample horizontal band in the Burning Ground.

iv) Bridge 14 - Remove scrap timber. Northern end excavate soil against abutments, excavate small mound of material and place in canal.

v) Building S31 - Remove tree stump adjacent concrete piles and scrape South bank. Clear on top of bank. Rake around North bank tree, remove loose rotten timbers.

vi) Rake around abutments to Bridge 26 remove Elder. Beware stability.

vii) Cut around barge with machine, complete by hand to form a plinth of material on which the barge will stand.

viii) Remove cut timber by dumper to road the rake area below.

ix) Cut roots of tree stump in bank and remove, scrape through. Rake South East facing mound to 88a and place arisings in canal.

x) Canal around S30/S90 - Remove sheet asbestos, rake horizontal area above brickwork, rake bank top nearest S30.

xi) Clean out S90, assess roof stability, use protective boarded scaffold if necessary.

xii) Scrutiny and clearance of S90 island.

xiii) By scaffold bridge to S90, cut and remove cable, rake top of canal on roadside.

xiv) S29a - SC to collect artifacts and deposit remainder as scrap.

xv) Clean out S30 drains and remove muck and loose tarmac on top of concrete which forms canal walkway.

xvi) Rake South East facing mound opposite S30, trowel out channel formed in path. Steam main route here. Clean around steam main post in bank.

xvii) Pipe bridge 51 - Bag up loose asbestos (priority) against abutments and on canal banks. Re-scrape banks in this area. This line is indicated as having been scraped already, check for asbestos between Pipe bridge 51 and road.

xviii) Clean out drain on path of canal bank.
xix) Rake S28 mound into canal and blast mound opposite.
xx) Prop and rake under bridge to S28. Clean S28 margins cut out stumps. Shovel muck away from North Eastern bridge approach.
xxi) Clean around bridge 31 abutments. Evidence of asbestos.

Regards

BOB WATTS.

Copy:- Steven Chaddock


Extent of Canal
Inspected
Horsenul Stream
Cannuk Stream
Cannuk Stream

WS Atkins memorandum

Subject **CANAL INTERSECTIONS**

To **Graham Vincent**

From **Bob Watts**

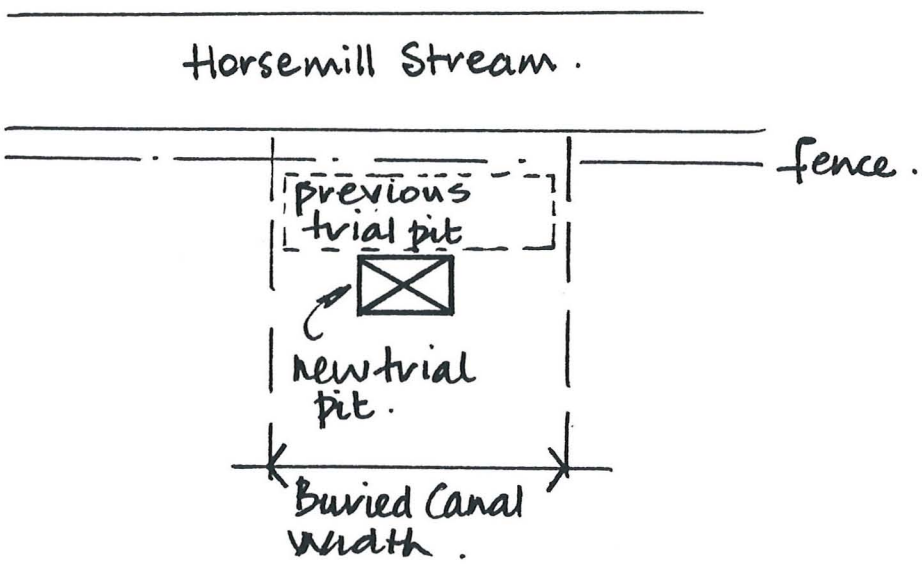
Date 6th December 1994

Ref E5275/56/1/01

Graham,

1) Further to my memo of 30th November 1994 Programme Activities paragraph 3 (iv). I agree that Sean Roberts can undertake this work at the agreed rate of £7 per hour. The intersections to be sampled are 8, 10, 11, 15, 17, 27, 29 and 31, for Asbestos and Waste Tip analysis for explosives.

2) Working from the trial pit logs he should expose material previously undisturbed by R.O. by cutting further into the site and sampling at Ca. ½ to 1.0m depth.



Regards

BOB WATTS.

Copy:- Peter Mayell - R.O.
Adam Ford - Site Archaeologist.

WS Atkins memorandum

Subject **CANAL Jj**

To **Graham Vincent**

From **Bob Watts**

Date 6th December 1994

Ref E5275/01/1/03

Graham,

1) When clearance on suspect material adjacent L111 is to hand please have labourers excavate remaining fill into canal for removal by EX60.

2) Please use fire pump to jet out barges. Steve Chaddock will attend. Before moving first barge North ensure all material in 1) above, and silt, is removed.

3) Causeway to remain until barges all repositioned then excavate and replace with clay before portadam is removed. Causeway at L108 to be inspected for removal.

4) When jetting last barge to be moved South use sheet ply to prevent silt inundating first barge placed in position. Excavate silt arisings.

5) Clear lock sediment into canal (jetted?) for silt excavation before removal of portadam. I note Morris Contractors are fixing supports for the lock gates. Cut tree from lock gate.

6) Move steel tank and pipe and all arisings via canal Jj.

Regards

BOB WATTS.

Copy:- 19/1/01
Adam Ford - Site Archaeologist

WS Atkins memorandum

Subject Canal Intersections

To Adam Ford.

From Bob Watts.

Date 18/10/94

Ref E5275/56/1/01.

Adam,

On 20 October Technotrade, a Geotechnical Investigation company, will be sinking bore holes at canal intersections 8, 10, 11, 15, 16, 17, 21, 22, 25, 26, 27 and 29. The objective is to obtain information on the geological formations to permit effective sheet piled cofferdams to be erected and replacement bank details to be designed.

The boreholes will be approximately 10 metres deep and 150mm diameter. The final positioning will be flexible and I would appreciate your advice regarding any archaeological remains in the vicinity of these intersections.

Regards

Bob Watts.

WS Atkins memorandum

Subject Canal Intersection
No 31 Grand Magazine

To Graham Vincent.

From Bobwatts.

Date 18/10/94

Ref E5275/56/1/01

Graham,

Please excavate fill material from fence line to start of trees (one young sycamore to remove). Remove fence and posts from concrete beam, excavate blocks from water edge, replace fence, Darfen will retension when they undertake work at Edmonsey. Apply clay to opening, backfill with as raised ballast against excavation faces. Arisings, if they continue to be demolition rubble only, to have 1 to 50 m^3 waste tip explosives analysis and then to clean muckaway

Regards

Bobwatts

Copy 27/1/01.
Adam Ford.

AF

a division of WS Atkins Consultants Limited

Mr.R.Watts
c/o Royal Ordnance (South Site)
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Essex EN9 1AY
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Your ref
Our ref
Date

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Ashley Road
Epsom
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Telex 266701 (Atkins G)
Fax (0372) 740055

Ext no

Mr.I.Dobie
Woods Warren
Fletcher House
Sunrise Parkway
Linford Wood
Milton Keynes
MK14 6QE

3rd October 1994

Our Ref: E5275/56/1/01

Dear Ian,

WALTHAM ABBEY RARDE NORTH SITE
POWDERMILL LANE HOUSING
BANK REINSTATEMENT.

1) Thank you for coming to site on 30th September 1994.

2) Please find enclosed a copy of the hand written logs of the canal intersection pits.

3) The following are my notes taken generally and for each location:-

a) Generally MKS will survey far enough back into the site to record all major level changes and a minimum of 10m each side of the canal banks, a 5m grid of levels is required. Trees >150mm dia will be recorded, water level and depth, bank profile above and below water, definite features (fences, paths and slabs etc.), obstructions and canal route where possible.

b) Cofferdams should be installed well clear of the location to be excavated, overshooting by 5 to 10m to enable a good key at the intersection between existing and new banks, and a successful return clear of obstructions. Bank brickwork should not be destroyed but slabs may require cracking to obtain access and clearance to drive piles and excavate.

c) Trees along the rig route will require trimming and fence removal is required where access width is narrow.

d) The stretch of bank from 22 to 29 may be excavated between the intersections if NRA are able to lower the water level of Horsemill Stream. Alternatively it could be sheet piled prior to excavation.

e) Intersection Nº 8
i) Site level considerably higher than water level due to bank originating from stream dredgings.
ii) Some tree felling on the stream bank necessary for excavation of canal and piling rig movement.
iii) No vehicle access problems.

f) Intersection Nº 10
i) RO will take down fence to allow vehicle access.
ii) As 3e i) and ii).

g) Intersection Nº 11
i) Survey 15 to 20m eastwards into the site to foot of bank.
ii) As 3e i) and ii).
iii) As 3f i).

h) Intersection Nº15
i) As 3e i), ii) and iii).
ii) As 3g i).

i) Intersection Nº 17
i) As 3e i) and ii).
ii) As 3f i).
iii) Beware beached barge, cordon off.

j) Intersection Nº 21
i) As 3e ii) and iii).
ii) Beware buried barge.

k) Intersection Nº 22
i) As 3e ii) and iii).
ii) Narrow culvert, break up concrete pieces used as fill to enable removal.

l) Intersection Nº 25
i) Provide access ramp from 'T' Area temporary road and crusher run to intersection point.
ii) Remove precast piles if preventing pile returns.

m) Intersection Nº 26

i) Provide an access ramp from 'T' Area temporary road to canal 'O' bed. Excavate further material from canal to permit closer crane access. Line canal bed with temporary protection against crane tracks.

ii) Site level considerably lower than water level.

n) Intersection Nº 27

i) As 3e ii).

ii) Provide an access ramp from canal bed to site perimeter track.

o) Intersection Nº 29

i) As 3e i) and ii).

p) Intersection Nº 16

i) As 3e ii).

ii) Provide an access road and necessary ramps from Burning Ground.

4) I hope this is the information you required.

Yours sincerely,

P.P. W. R. WATTS.

R.E.WATTS.

Copy:- Mr.G.Vincent - Graham, details of access, fence removal and excavation for your information.
Mr.A.Ford.

WS Atkins Environment

a division of WS Atkins Consultants Limited

Mr.R.Watts
c/o Royal Ordnance (South Site)
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Your ref Waltham Abbey
Our ref Essex EN9 1AY
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Fax (0372) 740055

Ext no

See Distribution

26th September 1994

Our Ref: E5275/23/1/02

WALTHAM ABBEY RARDE NORTH SITE
TREATMENT TO CANAL BANKS TO REMOVE CONTAMINATED FILL AND ACHIEVE ASBESTOS AND CONTAMINATION ENCAPSULATION.

RECORD OF MEETING HELD AT 0900 Hours
23rd SEPTEMBER 1994 ON SITE TO DISCUSS THE PROPOSALS DISTRIBUTED 6th SEPTEMBER 1994.

1) Present:-

Jeremy Dagley	-	English Nature
Gordon Wyatt	-	English Nature
Deborah Priddy	-	English Heritage
Bob Stebbings	-	RSC
Adam Ford	-	Site Archaeologist
Graham Vincent	-	Royal Ordnance
Bob Watts	-	WS Atkins

2) There were two aspects to the discussions. The effect of the proposals on the SSSI and the Scheduled Monument.

3) English Nature

a) Bob Stebbings had produced a note on EN likely requirements in respect of tree protection. These are:-

i) Root zone to be taken as area of canopy. Where canopy is small in relation to maturity of tree, root zone to be assumed at 5 - 6m radius for a mature tree.

ii) The material to be backfilled over the Terram lined slopes in the root zone of a tree to be a sandwich construction consisting of 50mm topsoil on 75mm gravel on 100mm topsoil on Terram on cut slope.

iii) Do not exceed precontamination depth of cover to roots.

b) During the meeting and later on site it was agreed:-

i) Horizontal margin area to be scraped to a depth not exceeding fine root depth, approximately 50mm, using hand tools such as hoes. Fill to be placed on top of Terram membrane which will be cut around the tree, to the depth specified in 3 (ii).

ii) Low pH of gravel (all in ballast), approximately pH5, will not be detrimental to tree roots.

iii) Care must be taken not to cut through existing root systems.

iv) Bob Stebbings (BS) will spray mark trees requiring special attention due to their importance, using a unique colour and a mark up a plan.

v) Wood chippings may be sprayed onto the surfaces.

vi) EN will trial root growth on Terram membrane.

vii) After exposure of roots the approximate time to recover will be 4 weeks.

viii) Zoning of the work will target the Heronry first.

ix) BS agreed pruning to tree resting on L111.

4) <u>English Heritage</u>

a) The extent of the puddle clay removal and horizontal scraping of bank top horizontal areas North of L136 was a concern. Also the angle of cut was such as to take excavation past the widest line of timbers running parallel to the canal. Damage to brickwork and structures had also occurred during the execution of the works.

b) It was agreed that future bank excavation would be angled at or near 45° with excavation not extending beyond the widest timbers. Puddle clay must be preserved where possible. Where excavation is proposed a pre inspection will be carried out by Bob Watts, Adam Ford and R.O. officer in charge. Supervision of operations to be increased by R.O. and AF (Archaeologist). This may require recruitment of an Archaeological assistant as two gang working on this task is envisaged. The R.O.

operatives engaged in the work to be given a "teach in" on the necessary approach to the work. Dedicated teams to be established.

c) AF will identify locations of buildings and structures on canal banks to be avoided during excavation.

d) Horizontal margin area to be only brushed off if walkways, paths or other structures exist, otherwise a minimal scrape to identify any contamination and provide clearance will be carried out. Where contamination is visible before operations commence a deeper excavation may be appropriate. Detail to be agreed during pre inspection.

e) BW to obtain proposals from Structural Engineer for stabilising existing building L108.

f) AF will produce a method statement, for consideration by EH, detailing procedures to be observed for canal bank excavation and treatment. This will form an amendment to the existing SMC on canals.

BOB WATTS.

Copy:-

All attending
Peter Mayell - Royal Ordnance
Dan Bone - CIVIX
15/1/01

AF - PM. 58/1/01.

MEMO

BRITISH AEROSPACE DEFENCE
ROYAL ORDNANCE
ENVIRONMENTAL SERVICES GROUP

TO: R. Watts

FROM: G.G. Vincent

DATE: 26th September 1994

SUBJECT: CANAL WORKS

We have ceased work associated with final canal shaping with a view to re-starting after inspection by yourself, Adam ford and us. Resources have been temporarily delayed on other works.

Can we carry out an inspection jointly on Wednesday 28th September along the canal route Building 88A Westwards.

Supervision of these works
I intend to place an E & O charge-hand with the works to ensure compliance with EH/EN requirements.

Regards,

(who (Steve?) must be well supported by RO. staff.

Graham Vincent

Completed walk round. to just past Bldg 62.

CC: P. Mayell
Team

Ps. I have moved Bob Edwards from South part of site to assist Alan Heath in the North part of the site.

WS Atkins memorandum

Subject **CANAL Aa, NORTH OF L136**

To **Graham Vincent**

From **Bob Watts**

Date 26th September 1994

Ref E5275/01/1/03

Graham,

Following inspection of the area the following work items are outstanding:-

a) Remove hydraulic pipe LHS near L136. Why?

b) Spade clearance to several hard surfaces.

c) Raking of loose material around trees both in the bank and on the level.

d) Refill cut outs on LHS opposite and adjacent L111 with ballast on Terram.

e) Prune tree resting on L111 to Bob Stebbings specification.

f) Cut of/out tie rods from removed revetments.

g) Remove telegraph poles at North end, access only from burning ground, scrape canal out and batter sides. Leave curved timber work in situ. Beware bridge abutments. Work to conclusions of meeting of 23rd September 1994 (circulated).

h) Complete excavation South end after barge lifting and collection of cordite. Done

i) Shovel up rubbish tip to East of L136.

j) Inform when complete, set out pegs on 25m grid.

Regards

BOB WATTS

Copy:- Adam Ford

WS Atkins memorandum

Subject **WALTHAM ABBEY NORTH SITE TREATMENT TO THE BANKS OF POOLS, PONDS AND CANALS.**

To **See Distribution**

From **Bob Watts**

Date 21st September 1994

Ref E5275/22/1/01

A meeting has been arranged on Friday 23rd September 1994 at 0900 hours on site, to discuss the treatment of banks to pools, ponds and canals and the implications of drawing SK10/1 and SK10/2. I look forward to seeing you there.

Regards

BOB WATTS.

Distribution

Bob Stebbings	-	RSC
Deborah Priddy	-	EH
Gordon Wyatt	-	EN
Graham Vincent	-	R.O.
Adam Ford	-	Archaeologist

WS Atkins memorandum

Subject **PMLH BANK REINSTATEMENT**

To **Adam Ford**

From **Bob Watts**

Date 7th September 1994

Ref E5275/54/1/01

Adam,

Line of piling will be decided Friday 9th September 1994 at 1200 hours onwards with Andrew Warren of Woods Warren. Please be available to advise. Piling will now commence Monday 12th September 1994.

Regards

BOB WATTS

Copy:- Graham Vincent

WS Atkins Environment

a division of WS Atkins Consultants Limited

Mr.R.Watts
c/o Royal Ordnance (South Site)
Sewardstone Road
Waltham Abbey
Essex EN9 1AY
Tel: 0992 651611
Fax: 0992 651611

Your ref
Our ref
Date

Woodcote Grove
Ashley Road
Epsom
Surrey KT18 5BW England

Telephone (0372) 726140
Telex 266701 (Atkins G)
Fax (0372) 740055

Ext no

Ms.D.Priddy
Anglian Team
English Heritage
Fortress House
23 Savile Row
London W1X 1AB

6th September 1994

Our Ref: E5275/23/1/02

Dear Deborah,

WALTHAM ABBEY RARDE NORTH SITE
TREATMENT TO CANAL BANKS TO REMOVE CONTAMINATED FILL AND ACHIEVE ASBESTOS AND CONTAMINATION ENCAPSULATION

1) Excavated canals are exhibiting residual contaminated fill located behind collapsing canal steel sheeting and timbering. Significant quantities of asbestos are visible along with disgarded laboratory glassware and the like.

2) It is necessary to sacrifice the canal timbering to remove fill located in the former void below the canal side walkways. Attached sketch SK10/2 dated 5th September 1994 details the extent of excavation and the remediation proposed. The application of the Terram membrane and clean imported hoggin should ensure asbestos fibres are not released into the atmosphere. Confirmatory analysis undertaken from samples taken from scraped and cleaned surfaces will indicate the presence and extent of any additional contamination issues, explosive or non-explosive.

3) The Terram membrane also preserves the original clay puddling and clean fill interface all as discussed previously. Adam Ford will make the SMC application if necessary. Please contact me if you wish to discuss.

Yours sincerely,

R.E.WATTS.

WS Atkins Environment

a division of WS Atkins Consultants Limited

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Your ref Waltham Abbey
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Ms.D.Priddy
Anglian Team
English Heritage
Fortress House
23 Savile Row
London W1X 1AB

6th September 1994

Our Ref: E5275/23/1/02

Dear Deborah,

WALTHAM ABBEY RARDE NORTH SITE
TREATMENT TO BANKS OF PONDS AND POOLS TO ACHIEVE ASBESTOS AND CONTAMINATION ENCAPSULATION

1) As part of the remediation works 4 No. ponds located around existing Building Nº E2 were excavated down to gravel and the banks scraped. Over a period of months it has been noted that following rain, visible asbestos has appeared at the surface.

2) It is considered that there is a practical limit to the extent of excavation which can be undertaken to remove all asbestos and it is proposed to proceed as shown in SK10/1 dated 5th September 1994 attached. The application of the Terram membrane and clean imported hoggin should ensure asbestos fibres are not released into the atmosphere. Confirmatory analysis undertaken on samples taken from scraped and cleaned surfaces will indicate the presence and extent of any additional contamination issues, explosive or non-explosive.

3) There does not appear to be any heritage aspects associated with these works, however please contact me if you wish to discuss. Adam Ford is considering the necessity for an SMC application.

Yours sincerely,

R.E.WATTS.

WS Atkins memorandum

Subject **TREATMENT TO BANKS OF PONDS AND POOLS**

To **Adam Ford**

From **Bob Watts**

Date 6th September 1994

Ref E5275/23/1/02

Adam,

Herewith sketch SK10/1 dated 5th September 1994 showing details of works proposed for the 4 No. ponds around E2 and Newtons Pool where applicable. I assume present SMC's cover this work. If not please advise and make an application to DNH.

Regards

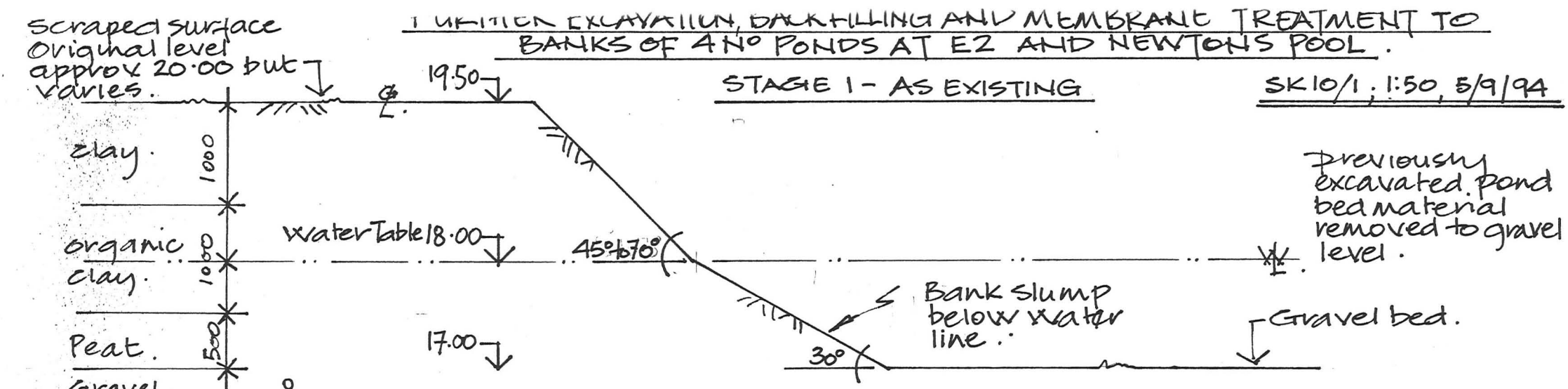
BOB WATTS.

No Problem
AF

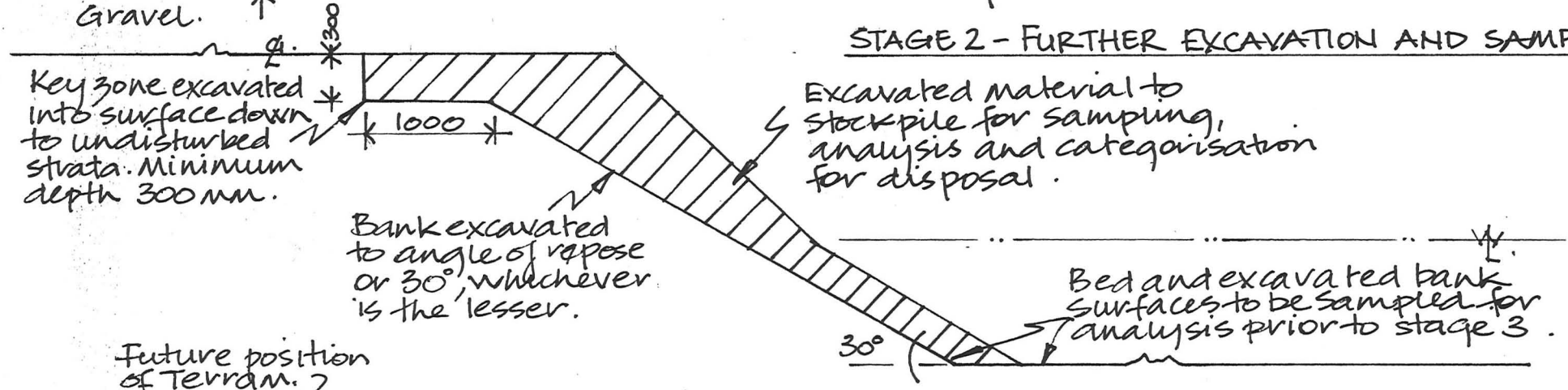
TYPICAL EXCAVATION, BACKFILLING AND MEMBRANE TREATMENT TO BANKS OF 4 No PONDS AT E2 AND NEWTONS POOL.

SK10/1, 1:50, 5/9/94

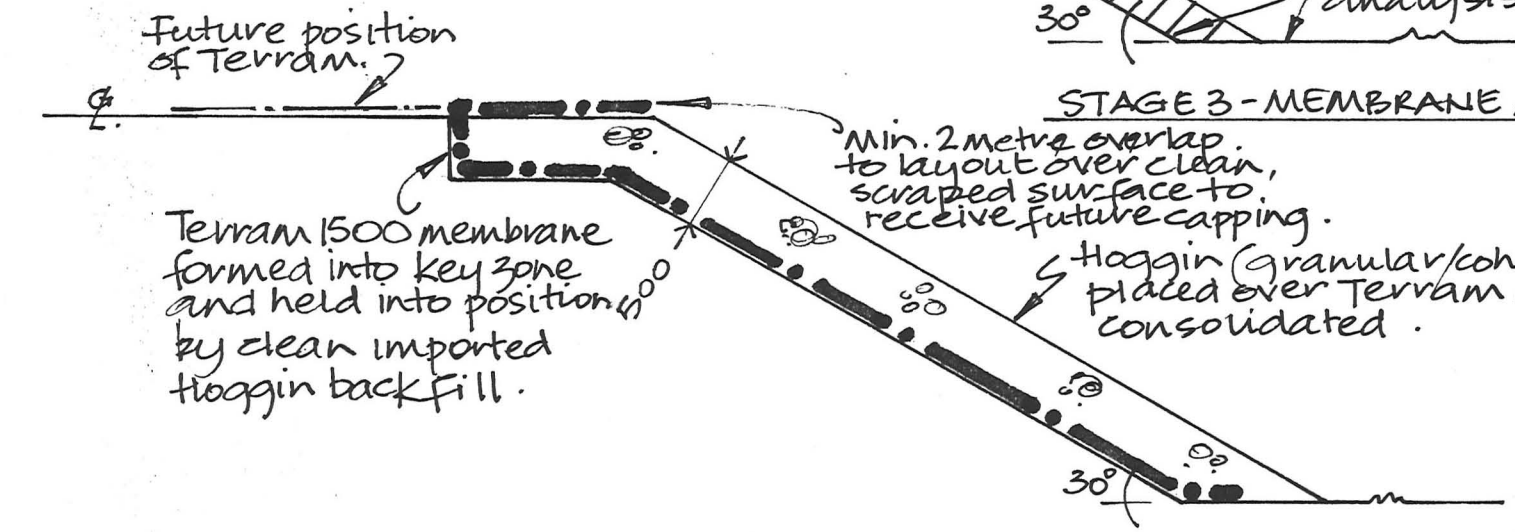
STAGE 1 - AS EXISTING

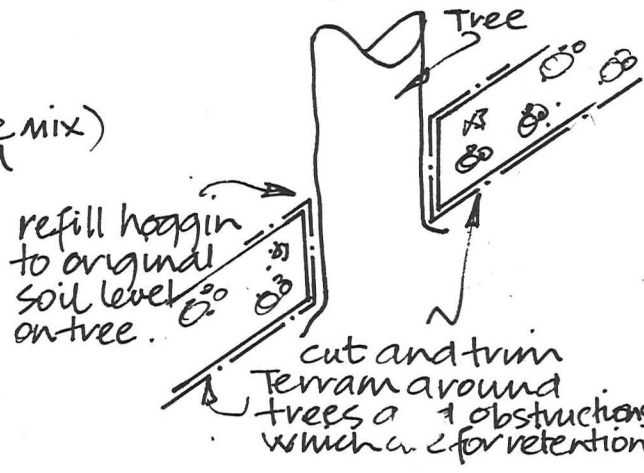


STAGE 2 - FURTHER EXCAVATION AND SAMPLING.



STAGE 3 - MEMBRANE APPLICATION AND BACKFILLING.





WS Atkins memorandum

Subject **TREATMENT TO CANAL BANKS TO REMOVE CONTAMINATED FILL**

To **Adam Ford**

From **Bob Watts**

Date 6th September 1994

Ref E5275/23/1/02

Adam,

Herewith sketch SK10/2 dated 5th September 1994 showing details of works proposed for all canals excluding those with brickwork walls as banks. I assume present SMC's cover this work. If not please advise and make an application to DNH.

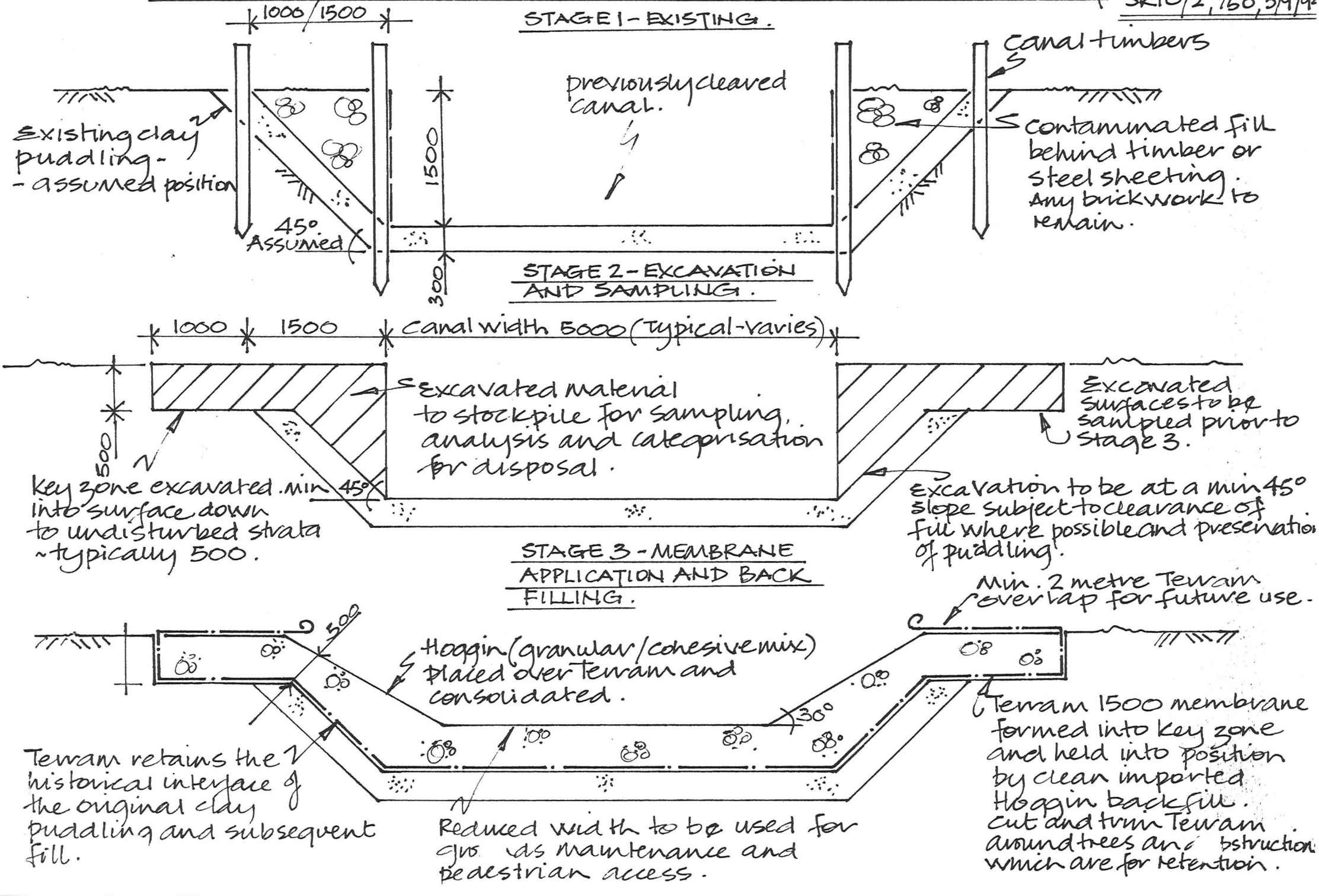
Regards

BOB WATTS.

Advice Needed. ADF

FURTHER EXCAVATION TO CANAL BANKS TO REMOVE CONTAMINATED FILL AND SUBSEQUENT FILLING AND MEMBRANE TREATMENT

SK10/2, 1/50, 5/9/94



WS Atkins memorandum

Subject **ROAD CROSSINGS OVER CANALS** To **Graham Vincent**

From **Bob Watts**

Date 17th August 1994 Ref E5275/01/1/02

Graham,

1) Generally where placing fill in canals to permit road crossing please install a length of 450mm reinforced concrete pipe on granular bed and surround to permit flow of water between sections.

2) In respect of Mill Head the present fill to Hoppit Road will be removed. This permits placement of a pipe length in this location also.

Regards

BOB WATTS.

Copy:- Adam Ford

WS Atkins memorandum

Subject **CANAL NORTH 22a**

To **Graham Vincent**

From **Bob Watts**

Date 17th August 1994

Ref E5275/01/1/02

Graham,

To confirm following our inspection 16th August 1994.

1) Excavate asbestos contaminated fill from canal in front of Guncotton stoves 16a and 18a. Samples will be taken for explosives and asbestos analysis from clean faces before backfill on Terram is placed.

2) Trench at Northern extent of tree clearance to locate line of canal.

3) Peg out buried stoves.

4) **URGENT** Remove asbestos on surface from removed steam line and replace ballast.

5) Remove sheet asbestos adjacent temporary road.

6) Clear fencing contractors arisings Grand Magazine.

7) Remove material at junction of Horsemill Stream fence and gated Grand Magazine fence.

8) Empty pit opposite Grand Magazine gates.

Regards

BOB WATTS.

Copy:- Adam Ford

WS Atkins memorandum

Subject **CANAL EXCAVATION ARISINGS MILLHEAD**

To **Graham Vincent**

From **Bob Watts**

Date 12th August 1994

Ref E5275/27/1/01

Graham,

1) Material excavated to date appears uncontaminated. Historically the buildings in this area were concerned with Gunpowder manufacture. The records suggest they were demolished into the associated waterways. Previous investigation in ESG17/93 did not detect anything of concern. Later explosives and chemical analysis determined the material excavated could be classified as uncontaminated and suitable for disposal to landfill as building demolition arisings.

2) Would you please arrange disposal of the material to landfill as uncontaminated subject to :-

a) Monitoring by Adam Ford for artifacts.

b) Visual monitoring by R.O. for asbestos, oil/hydrocarbons and explosives, reassessment of the situation will be carried out as necessary.

Regards

BOB WATTS.

Copy:- Adam Ford

WS Atkins memorandum

Subject Rubble filled drain parallel to towpath.

To Graham Vincent

From Bob Watts

Date 11/2/94.

Ref E5275.

Graham. Following conversation with Trevor Wilson. Where excavated trenches are cleared, to extent possible without damaging mature tree roots and affecting stability of new. Refill with LVRPA clay upto 150-300 of ground level. This will stabilise trench and allow subsequent top soil placement (as suggested by Trevor).

Bob Watts

Copy A-F.

Waterways