

**NRA THAMES REGION
SURVEY GROUP
TERRAIN DATA SUPPLY**

MAPS

PLANS

SURVEYS

&

DATA

August 1993

For Internal Circulation Only

**National Rivers Authority
Information Centre
Head Office**

Class No

Accession No **AINN**



ENVIRONMENT AGENCY

NATIONAL LIBRARY &
INFORMATION SERVICE

HEAD OFFICE

Rio House, Waterside Drive,
Aztec West, Almondsbury,
Bristol BS32 4UD

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ENVIRONMENT AGENCY



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INTRODUCTION TO THE CURRENT EDITION

The NRA SURVEY GROUP (Client) has been set up charged with delivering a number of survey related functions to the NRA and this booklet is intended to help you obtain these services.

The SURVEY GROUP is charged with the following tasks:-

MAINTAINING THE SURVEY ARCHIVE.

This includes:-

- RIVER SURVEYS - Cross sections, long sections, reports, photographs.
- TOPOGRAPHIC SURVEYS - plans of sites, report of survey, photographs.
- THAMES HYDROGRAPHIC SURVEYS - river charts, reports, photographs.
- AERIAL PHOTOGRAPHS - vertical stereo and oblique photography.
- CONTROL INFORMATION - benchmark lists and coordinate data.

ADVISING ON SURVEY RELATED SPECIFICATIONS

The SURVEY GROUP is not resourced to carry out surveys itself. Its function is to ensure that specifications match both the customers requirements and the quality requirements of the NRA. To this end it will provide advice and assistance to staff with the drafting of survey specifications and on the VERIFICATION of surveys.

The SURVEY GROUP also maintains the LIST OF APPROVED SURVEY CONTRACTORS. This is a list of survey companies who have demonstrated that they can match the NRA standards of survey quality. They are regularly audited to ensure that these standards are maintained. Only companies from this list should be invited to tender for NRA survey contracts.

The SURVEY GROUP will also advise and assist with the location and acquisition of geographic and topographic information from other sources and should be consulted before purchases are made to ensure that the best possible sources are used.

MAINTAINING THE LARGE SCALE MAP LIBRARY

The SURVEY GROUP maintains the MAP LIBRARY of Large Scale Ordnance Survey maps and plans. These are held in 'negative' form from which copies can be made cheaply and quickly.

PROVIDING A GEOGRAPHICAL AND TOPOGRAPHICAL DATABASE

The SURVEY GROUP maintains a comprehensive computerised database to all the above information from which data can be recovered quickly and comprehensively.

C O N T A C T S

Survey Manager	Dick Greenaway	0734 535740
Surveyor Archivist		0734 535740
Archivist & Map Librarian	Belinda Mitchell	0734 535748

LEVELS OF SERVICE

MAP LIBRARY

COPIES - Providing that the plans are already held in the library, orders placed before mid-day should be available for collection or posting the same day. Orders placed after mid-day should be available the following morning. Very large orders will take longer to recover and print. The Librarian will provide an estimate of delivery when the order is placed.

In an emergency prints can be made available in as little as an hour.

NEW MAPS - These are obtained from the local Ordnance Survey Agent and delivery times can vary considerably. See the relevant pages for detailed information.

SURVEY ARCHIVE

COPIES OF PLANS & DRAWINGS - These are covered by the same conditions as map copies.

BENCHMARK LISTS & CONTROL INFORMATION

If these are held in the Archive they will be faxed or posted the same day. If they are not held in the Archive they will be ordered from the Ordnance Survey the same day if your order is placed before 1530. If your order is placed after 1530 they will be ordered the following day.

In urgent cases the Ordnance Survey will fax data to the Archivist, in non urgent situations the data will be posted.

COPIES OF 'REPORTS OF SURVEY'

Except in urgent cases these will be available for collection or posting within three working days of the placing of your order.

COPIES OF AERIAL PHOTOGRAPHS

The order for the provision of these will be sent to the supplier within two working days of the placing of your order.

Delivery times from the supplier vary with the company, and an estimate will be obtained when the order is placed.

Laser copies of slightly inferior quality, can be made from prints held in the Archive. If these are acceptable they can be ready for collection or posting within two working days of the order being placed.

Large orders for loans or copies will take longer and the Archivist will provide an estimate of delivery times.

Introduction to The First Edition 1992

This booklet sets out to help people within the NRA Thames Region who are not aware of the range of information and services they can expect from the Technical Support Survey Group.

Many departments have newly recruited staff and have a regular flow of short contract and temporary personnel who we hope will benefit from the information contained below.

The Survey Group was set up in the early 1970's to acquire and store landscape data of many kinds; to add value to it by various techniques and to publish it in the format the customer requires.

The Group uses the latest survey technology supported by computer processing and digital terrain modelling and has amassed a very large collection of data about the rivers and landscape of the Thames Region.

The Group achieved Registration for its Quality Assurance system under BS 5750 in December 1991 and was the first group in the National Rivers Authority to do so.

Dick Greenaway

Principal Surveyor

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QUALITY ASSURANCE CONSULTANCY

1:10,000 Scale

Coverage of the whole Region is held at this scale.

Maps are named for the 10km block within which they lie with a prefix which identifies the 100km block.

The block is published as 4 maps, and each is named for its quadrant.

So:-

100km block	SU	SL	or TQ etc
-------------	----	----	-----------

10km block	5	Eastings
------------	---	----------

	7	Northings
--	---	-----------

Quadrant	NE
----------	----

Thus: Map Name:- SU 57 NE

CONTENTS

MAPPING 1:10,000, 1:2500, 1:1250 Scales

SPECIAL MAPPING

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BENCH MARKS AND CONTROL INFORMATION

COMPUTER TERRAIN MODELLING

QUALITY ASSURANCE CONSULTANCY

MAPPING

The Map Library holds hard copy maps and plans as illustrated in the following pages.

They are all held as transparencies from which paper copies can be made quickly and cheaply.

Typical supply times are 1 to 2 days from receipt of request. - see 'Levels of Service'

Orders are charged at cost to customer's budgets (bring your unit code).

Typical cost - 0.45p per sheet

1:10,000 Scale

Coverage of the whole Region is held at this scale.

Maps are named for the 10km block within which they lie with a prefix which identifies the 100km block.

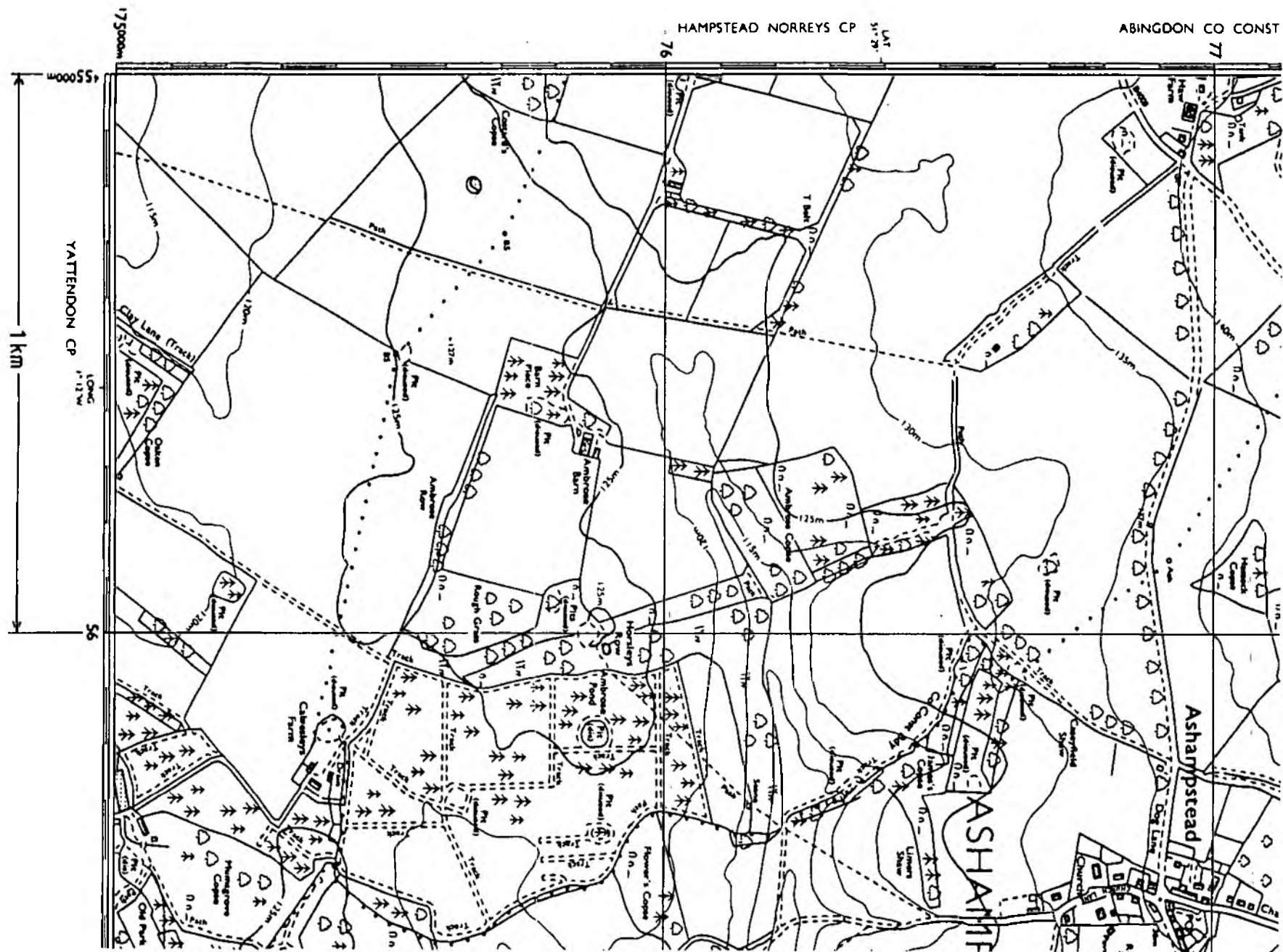
The block is published as 4 maps, and each is named for its quadrant.

So:-

100km block	SU	SL	or TQ etc
10km block	5		Eastings
	7		Northings
Quadrant	NE		

Thus: Map Name:- SU 57 NE

1:10,000 Scale map



1:2500 and 1:1250

The coverage is very extensive but we do not hold full coverage of the Region.

Plans at these scales are provided in two forms:-

Cartridge Paper: which take about 3 weeks to obtain and are usually out of date.

Super plans take 2 - 10 days to obtain. These are digitally produced and are much more up to date. They are more expensive than Cartridge Paper or SUSI plans.

In some circumstances we will buy maps requested to improve the library at no cost to the customer.

1:2500

All rural and some small built up areas, are mapped at this scale. Each plan covers 1km x 1km.

Maps are named for the 100km block (TQ SU etc.) and the co-ordinates of the bottom left hand corner - see example opposite.

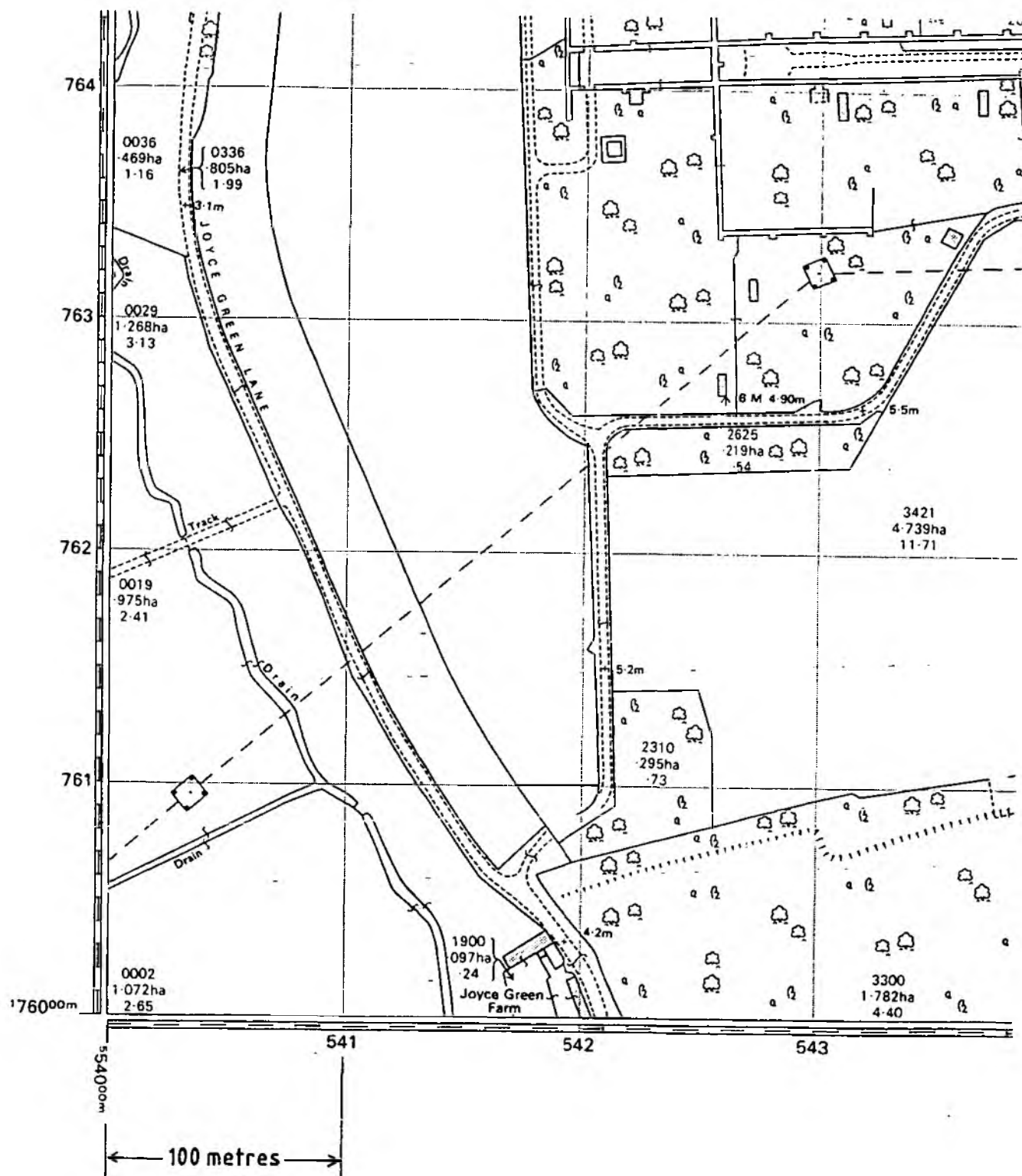
1:1250

Urban areas are mapped at this scale and are NOT available at 1:2500. Each map covers 500m x 500m.

Maps are named for the 100km block; the co-ordinates of the bottom left hand corner of the km square, plus the quadrant.

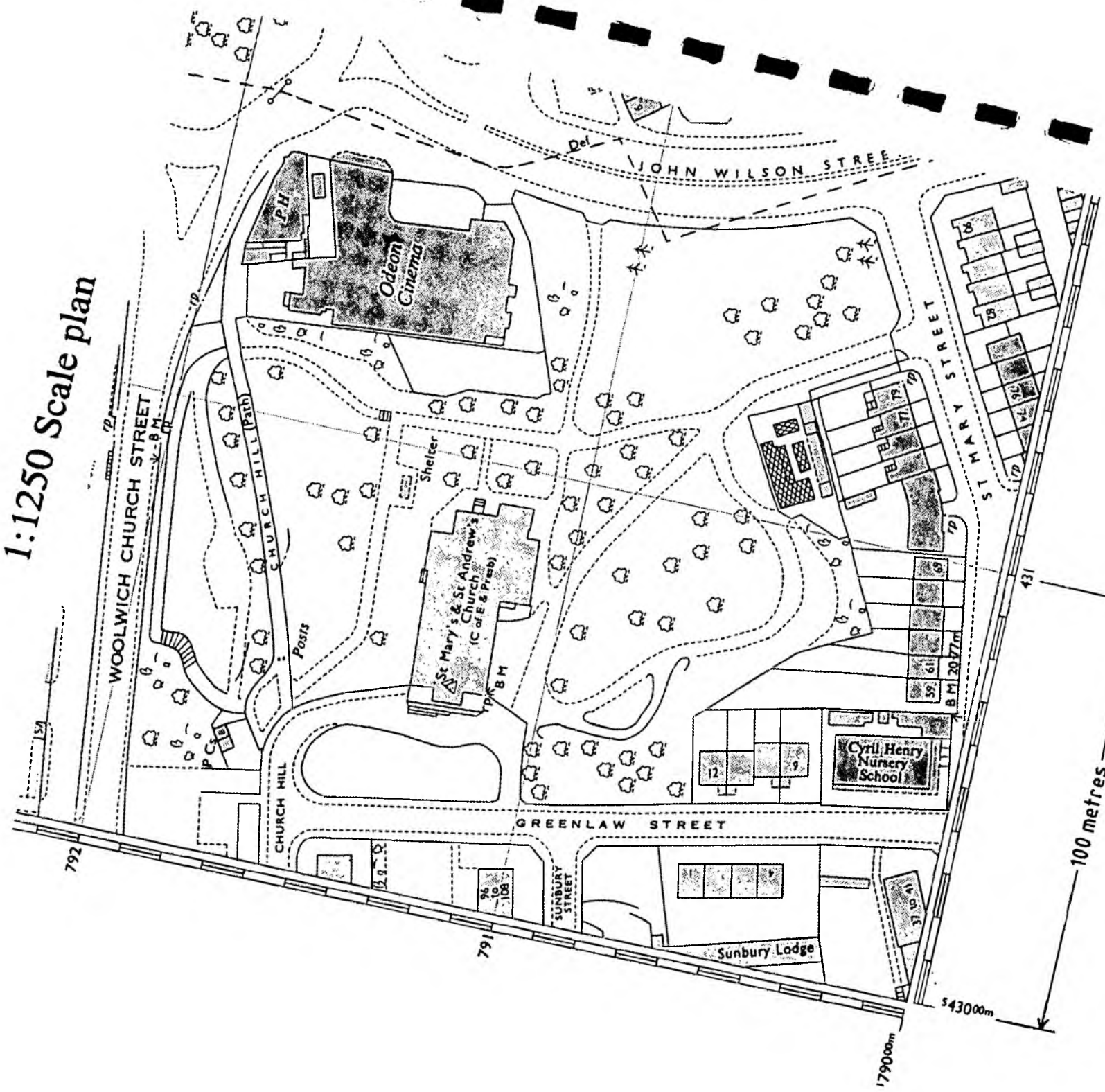
See example on page 11.

1:2500 Scale plan



Map Name TQ 5476

1:1250 Scale plan



Map Name TQ 4379 SW

Special Mapping

Digital Mapping

Ordnance Survey Digital Maps at 1:10,000 scale and smaller for the whole of the Thames Region are held by the GIS Group. Some areas are held at larger scales or can be acquired for special projects. It can be acquired via disc and tape and loaded into CAD and mapping systems.

Contact: Mike Shankster Tel: 0734 535759

SUSI (Supply of Unpublished Survey Information)

These are copies of the Ordnance Survey's own record maps updated either digitally or by hand.

They typically take about 3 weeks to acquire.

Contact: Map Librarian Tel: 0734 535740

Compiled Mapping

These are composite maps of a particular area and can be produced at various scales. An example would be at 1:2500 following a river corridor compiled from the 1:1250 and 1:2500 Ordnance Survey plans covering the area.

The compiled plans are produced on transparent sheets from which cheap paper or film copies can be made.

Contact: Map Librarian Tel: 0734 535750

SURVEYS

&

SURVEY DATA

As stated in the Introduction, the Survey Group exists to help NRA staff commission surveys from the In House Provider or from Contracting Companies and to ensure the maintenance of adequate quality.

The SURVEY GROUP offers specialist advice on the following types of surveys. These are, historically, the most common types of survey required by the NRA. Specialist advice can also be obtained for other types of surveying and data gathering.

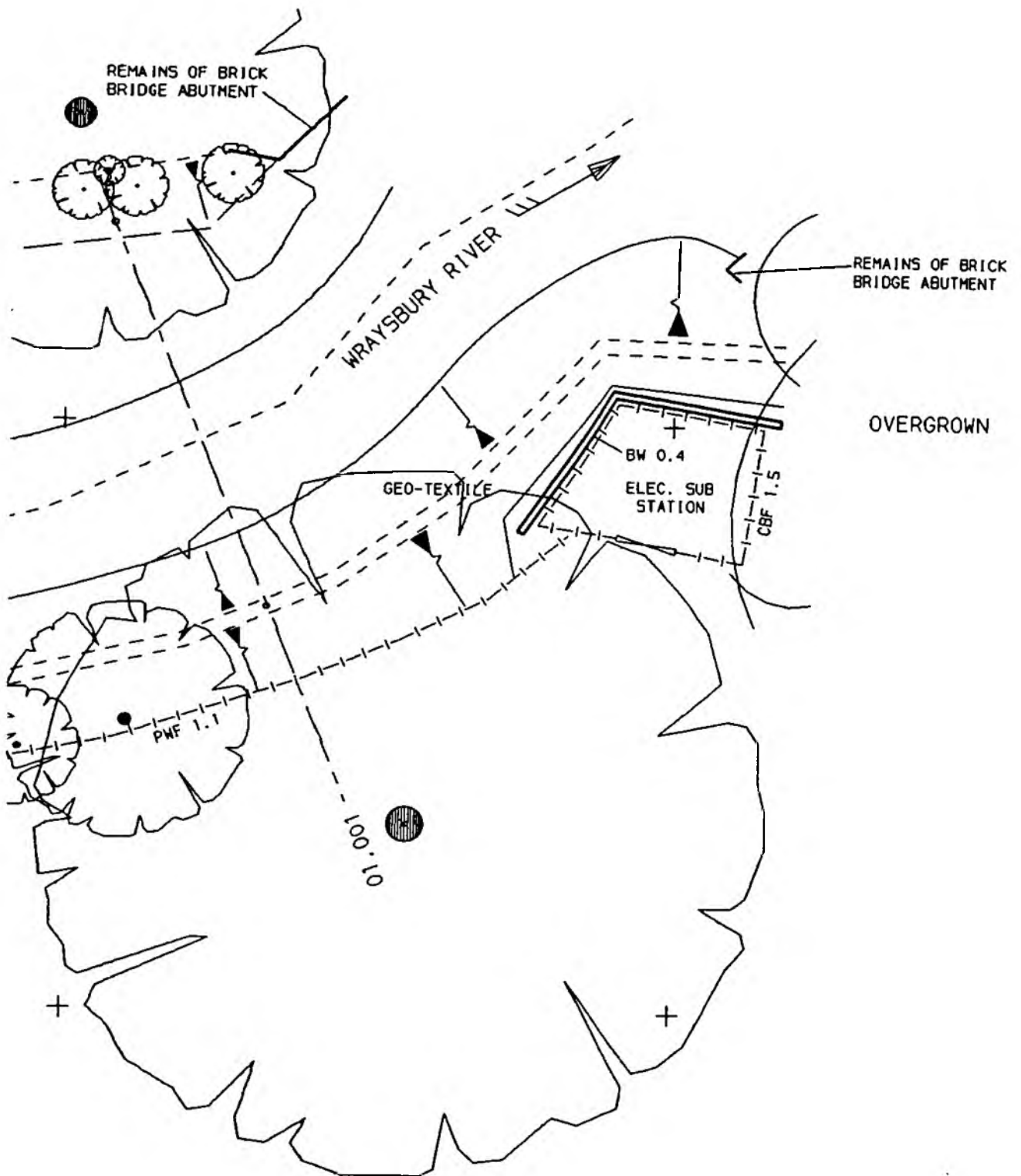
Topographic Surveys:	to produce plans of areas
Hydrographic Surveys:	to produce 'charts' of areas covered by deep water.
Channel Surveys:	to provide crossections and longitudinal sections of watercourses.
Deformation Monitoring Surveys:	to produce high accuracy information on structures to allow detection of movement within the structure.
Aerial Photography:	to provide both high quality vertical photography for photogrammetric mapping and oblique photography for site recording and publicity purposes.
Photogrammetry:	to provide mapping and digital terrain models of large areas from aerial photographs.

Each Task will generate a Report of Survey which will include much additional information such as photographs of the site and structures and details of landownership. Data will be presented both as transparencies, from which prints may be made, and as digital data for computer use.

All Surveys will be required to be carried out using 'state of the art' computerised techniques which are compatible with the CAD systems used by the NRA and its Consultants.

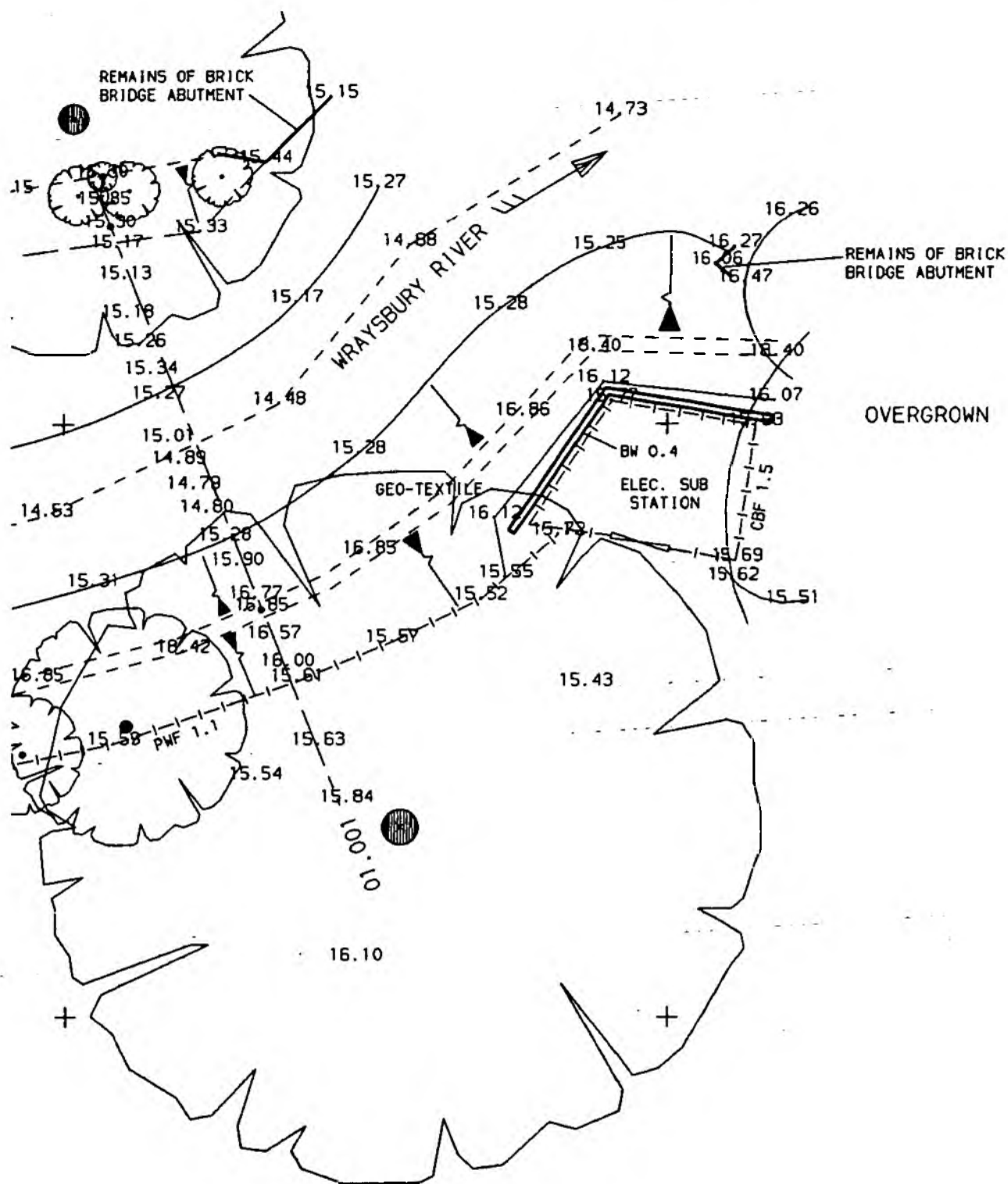
Examples of the first three types of survey appear on the following pages:-

TOPOGRAPHIC SURVEY



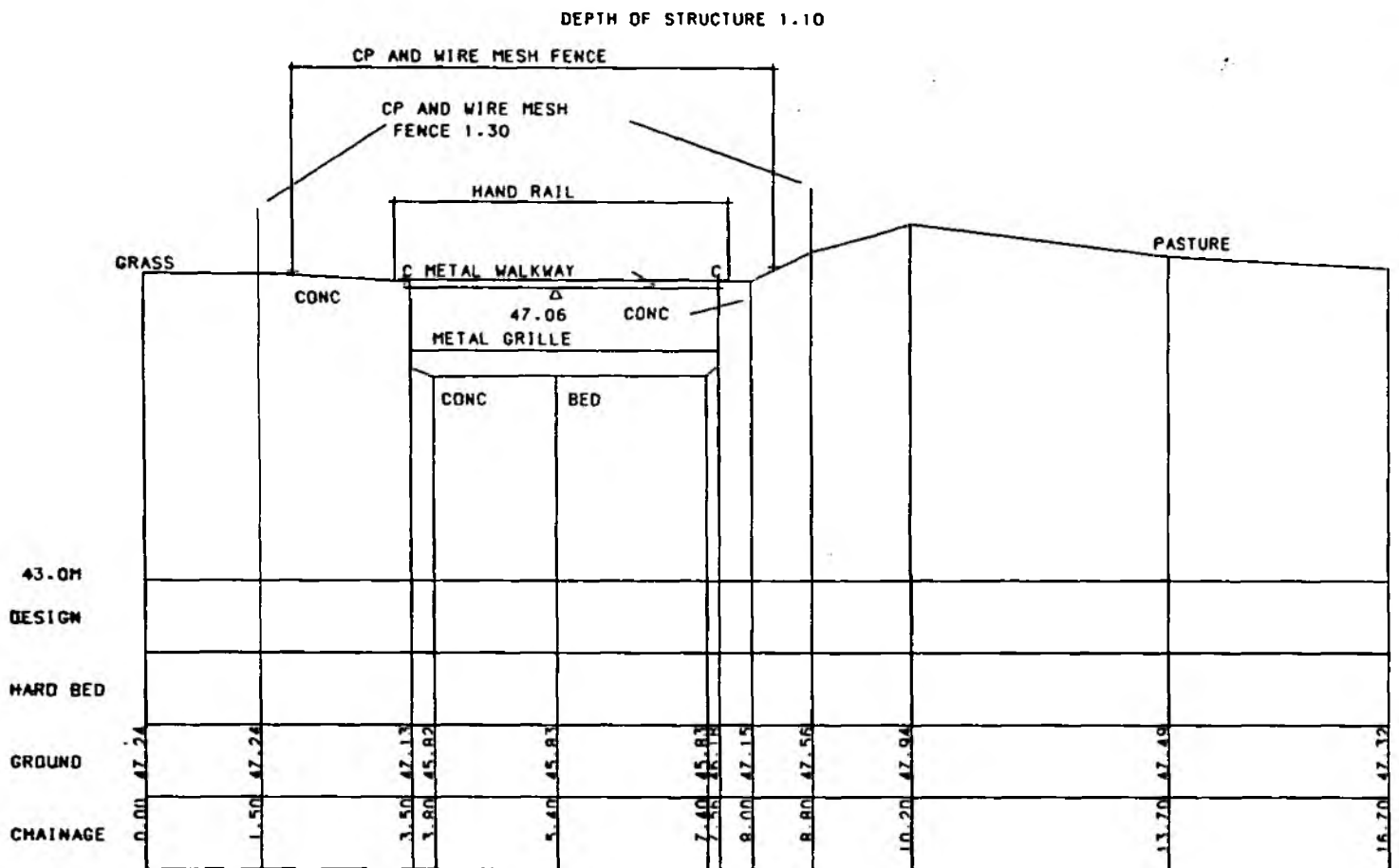
without heights

TOPOGRAPHIC SURVEY



same area with heights

CHANNEL SURVEY

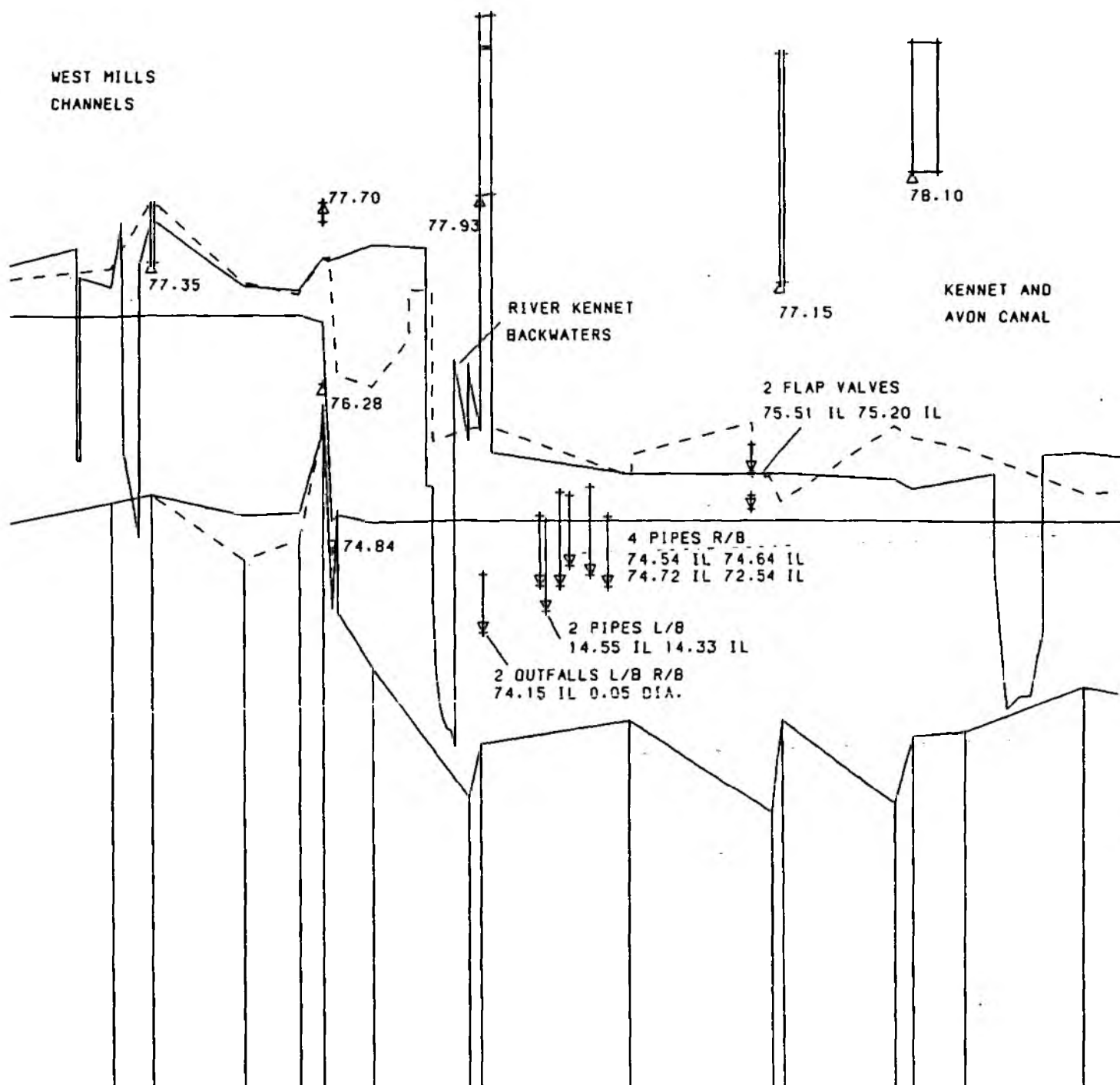


SECTION NO. 01.003
FOOTBRIDGE/GRILL

Cross section extract

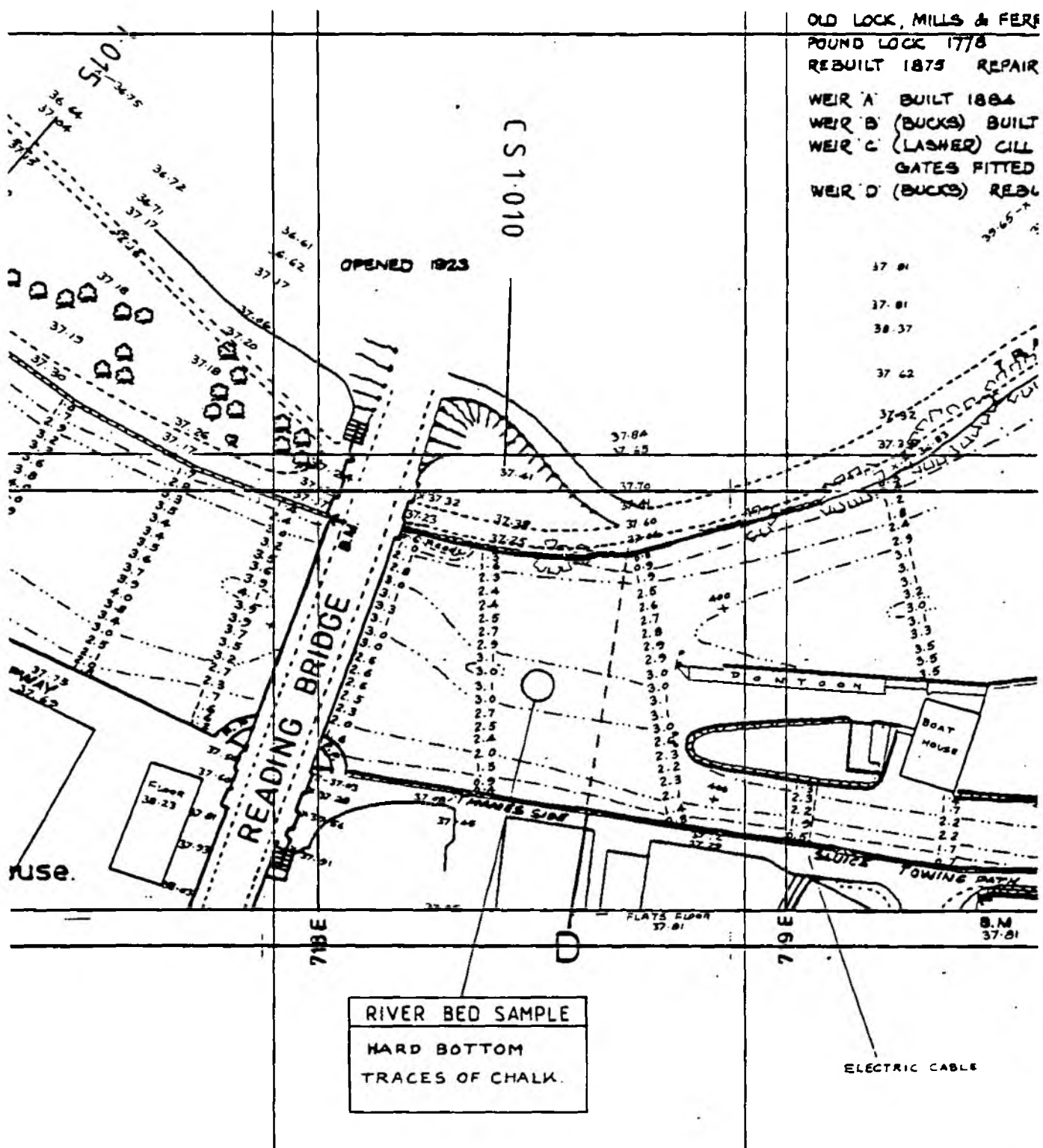
CHANNEL SURVEY

KENNET AND
AVON CANAL



Long section extract

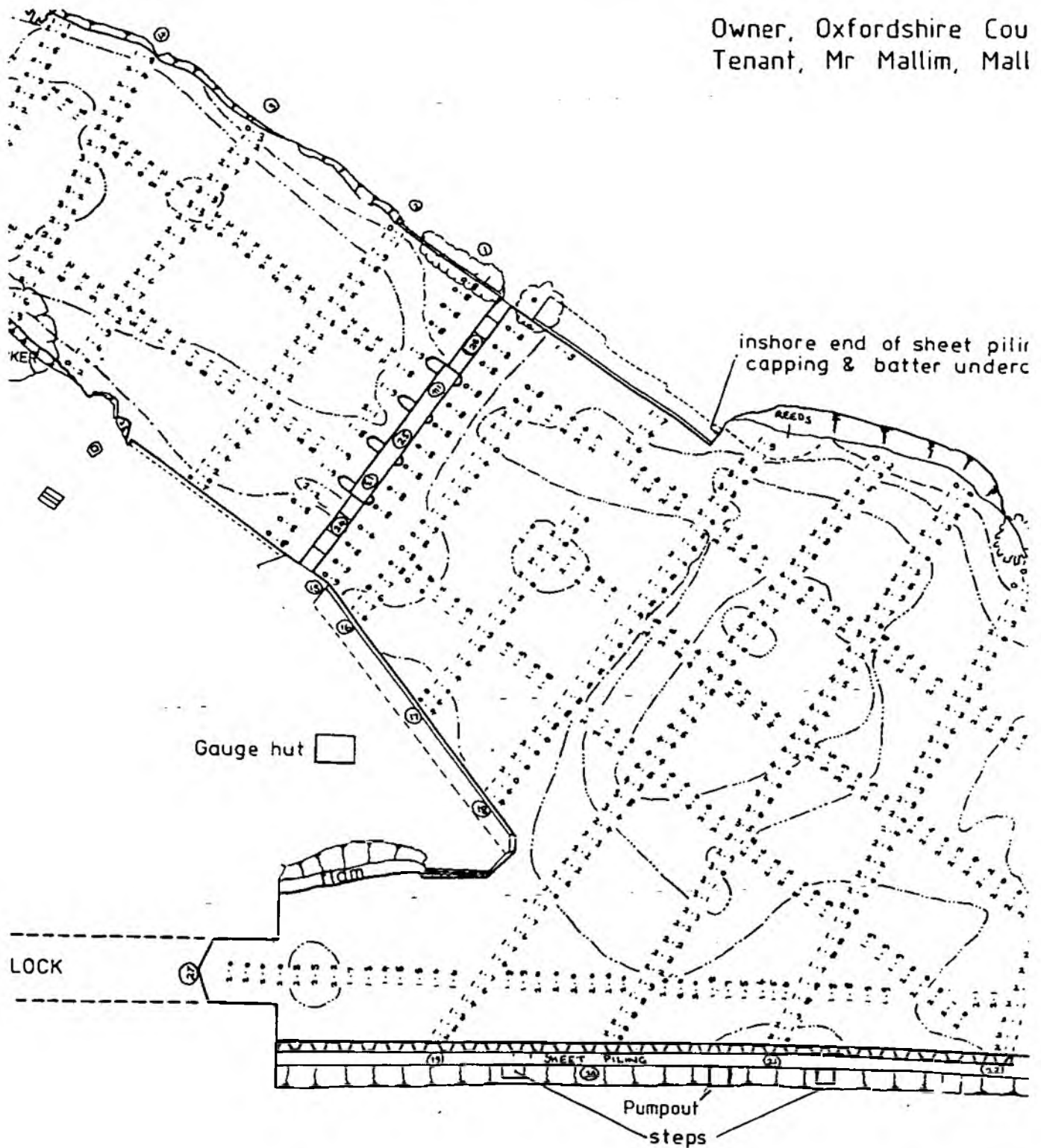
HYDROGRAPHIC SURVEY



Reach Survey extract

HYDROGRAPHIC SURVEY

Owner, Oxfordshire Cou
Tenant, Mr Mallim, Mall



Weir Survey extract

DEFORMATION SURVEY

Horizontal Pier Co-ordinates					NRA Survey				
Phase One									
DATE	11/12/90 LOW TIDE	18/04/91 LOW TIDE		12/12/91 LOW TIDE		16/07/92 LOW TIDE			
STN.	FIRST VALUES	Diff from A mm		Diff from A mm		Diff from A mm		Diff from A mm	
P1 BRS	591.869 X 519.862 Y	.870 .860	+1 -2	.869 .863	0 +1	.872 .860	+3 -2		
P2 BRS	591.884 X 524.252 Y	.886 .250	+2 -2	.885 .254	+1 +2	.889 .250	+5 -2		
P3 BRS	591.902 X 528.728 Y	.904 .727	+2 -1	.903 .730	+1 +2	NOT POSS	-		
P4 BRS	580.774 X 529.118 Y	.776 .119	+2 +1	.776 .121	+2 +3	.777 .117	+3 -1		
P5 BRS	580.786 X 533.478 Y	.787 .480	+1 +2	.788 .480	+2 +2	.789 .478	+3 0		
P6 BRS	580.776 X 537.939 Y	.777 .941	+1 +2	.777 .942	+1 +3	NOT POSS	-		
P7 BRS	569.693 X 538.333 Y	.693 .332	0 -1	.694 .333	+1 0	.693 .330	0 -3		
P8 BRS	569.692 X 542.687 Y	.692 .688	0 +1	.692 .688	0 +1	.693 .685	+1 -2		
P9 BRS	569.696 X 547.140 Y	.697 .142	+1 +2	.697 .143	+1 +3	NOT POSS	-		
BRS = Building Research Socket					P1=SE Gate Abutment(nr.weir)				
X AXIS PARALLEL TO GATE. Y AXIS PARALLEL TO ABUTMENT.									

Deformation table extract

AERIAL PHOTOGRAPHY

The SURVEY GROUP commissions and archives high quality stereo aerial photography of rivers and their flood plains to provide a detailed photographic record of the area and to produce heightened flood plain plans and computer models by photogrammetry.

The GROUP maintains a computer index of air photography held in the Archive and by other Regional groups and has access to a National Index of other air photographs.

The index is entered with the Grid Square which is derived in the same way as for 1:2500 plans.

The areas covered to date (Summer 1993 are shown on the map opposite.)

The Standard specification for photography commissioned by the Survey Group is:-

1:3000 Contact scale

Colour

Stereo pairs

Taken with Forward Motion Compensated cameras.

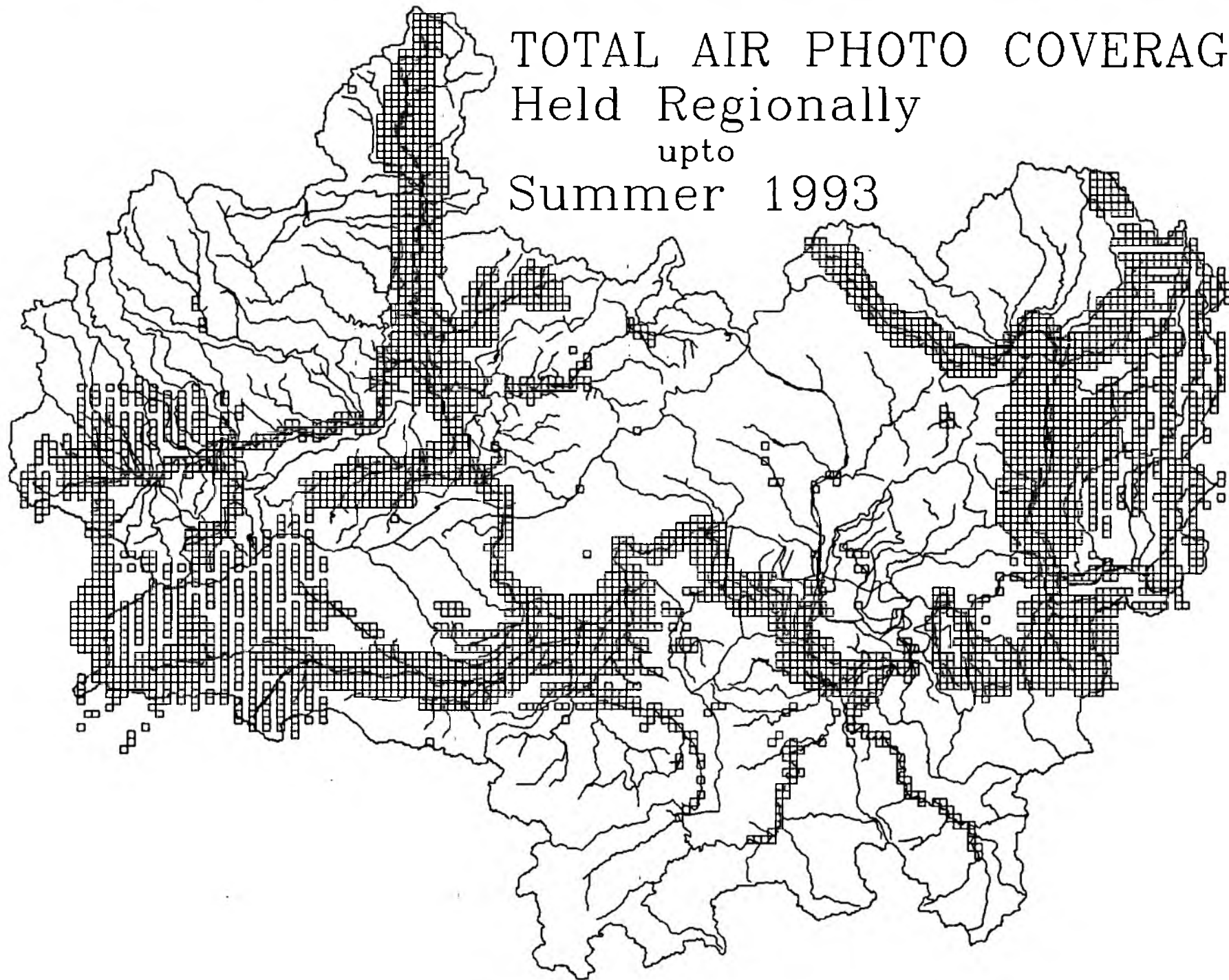
Flown during the winter at times of minimum ground cover.

Oblique photography can also be commissioned for special purposes and considerable quantities of oblique photographs are indexed in the Archive Index.

Library copies are available for inspection or loan and additional copies can be obtained.

An entry of photographs held by other departments is held in the index.

TOTAL AIR PHOTO COVERAGE
Held Regionally
upto
Summer 1993



BENCH MARKS AND CONTROL INFORMATION

OS Bench Marks

The SURVEY GROUP holds a large library of Ordnance Survey Bench Mark Lists and maintains a computerised index which allows data to be recovered quickly and easily.

This information is available free and on demand.

NRA Bench Marks

The Ordnance Survey ceased to maintain the Bench Mark Network in the mid 1970's.

Since then many Bench Marks have been damaged, displaced or removed.

The Survey Section began to put in place an NRA BM network in 1989 and it is already extensive and growing rapidly. The Survey Group (Client) will continue to expand this network.

NRA BM Data is included automatically when Bench Marks are ordered.

Lists are held for each KM square and named for the bottom left hand corner of the square - see example.

Other Control Information

We hold a limited amount of O.S. Trig Information and information on co-ordinated points obtained as part of survey tasks.

These also are indexed by kilometer square.

 * - WARNING : THERE ALREADY EXISTS A NRA BENCH MARK WITHIN THIS KM SQUARE - *

ALL BENCH MARKS ON THIS LIST FALL WITHIN KM SQ : SU1385

DATUM: NEWLYN

DESCRIPTION OF BENCH MARK	N.G. REF	ALTITUDE	HEIGHT	DATE	TYPE
EVEN SWINDON JUNIOR SCHOOL SE FACE EAST ANGLE	1385 8537	95.770	0.000	1966	O.S
NBM BUILDING CORPORATION YARD SOUTH FACE SE ANGLE	1356 8554	93.890	0.000	1966	O.S
NBM FACTORY NE FACE EAST ANGLE	1363 8580	92.350	0.000	1966	O.S
NBM NO.150 BODBOURNE ROAD SOUTH FACE SE ANGLE	1390 8523	97.770	0.000	1966	O.S
NBM WALL EAST SIDE RODBOURNE ROAD WALL JUNCTION WEST FACE	1394 8512	99.550	0.000	1966	O.S
NO.109 MORRISON STREET NW FACE WEST ANGLE	1365 8521	95.630	0.000	1966	O.S
NO.128 BRUCE STREET NE FACE EAST ANGLE	1378 8552	94.700	0.000	1966	O.S
NO.38 BRUCE STREET NE FACE NORTH ANGLE	1370 8536	95.160	0.000	1966	O.S
NO.67 MONTAGU STREET SE FACE EAST ANGLE	1356 8500	96.830	0.000	1966	O.S
NO.91 CHENEY MANOR ROAD WEST FACE NW ANGLE	1387 8581	94.260	0.000	1966	O.S
NRA RIVET NO.52 ON BRIDGE PARAPET	1315 8514	92.430	0.000	* NRA	

COMPUTER

TERRAIN

MODELLING

The Survey Section have been employing computer techniques for surveying since the 1970's and had built up a large archive of digital data on the watercourses and landscapes of the Thames Region. On reorganisation, control of this data passed to the SURVEY GROUP (Client). The Group can provide copies of this data and can arrange to have merging and modelling carried out to meet customer's requirements.

The MOSS Ground Modelling System is available to manipulate data to produce:-

Contour plots

Sections through the modelled area

Areas

Volumes

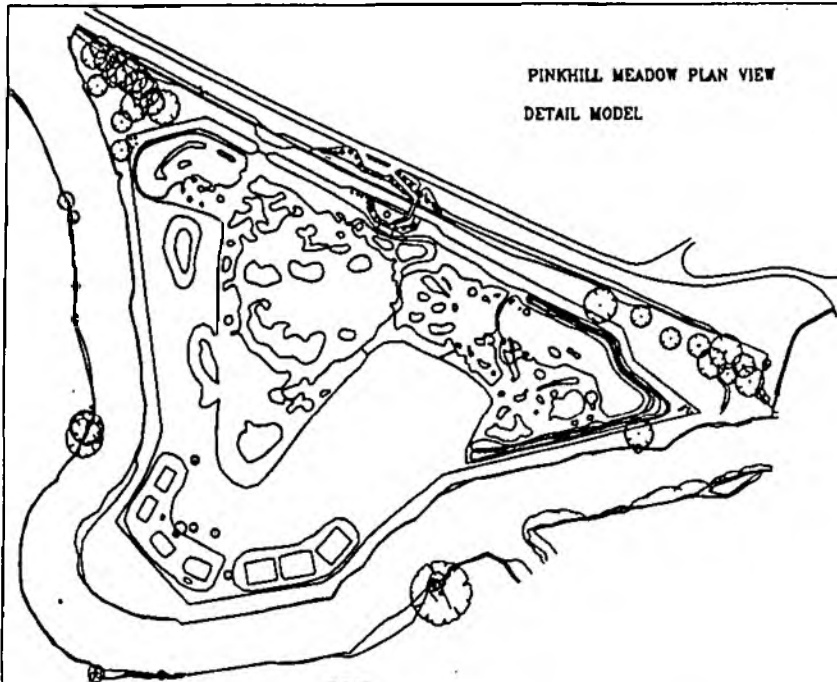
Perspective Views

The quality of the modelled output depends on the density of the survey data and this should be borne in mind when commissioning surveys and modelling.

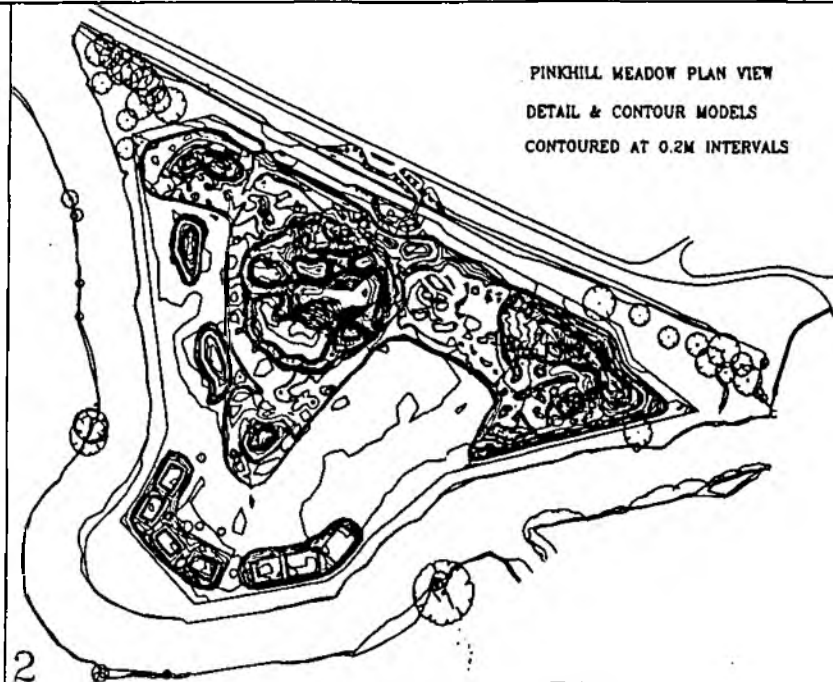
The digital data can be interfaced to other computer systems such as ONDA, AUTOCAD, MEDUSA etc for further analysis.

Digitally produced surveys can be replotted at any scale required, but the scale of the original should be remembered when using the results.

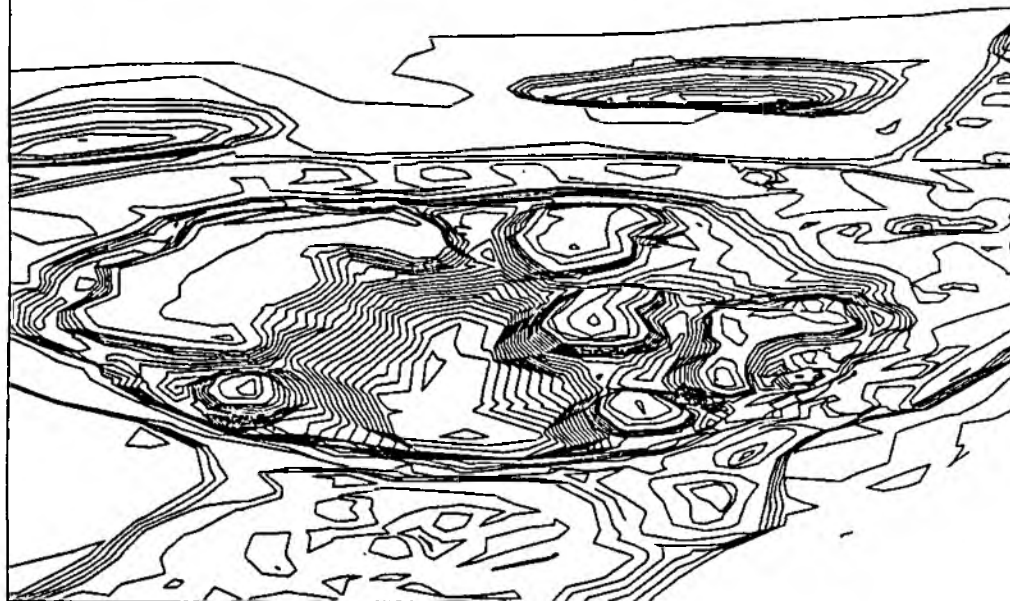
PINKHILL MEADOW PLAN VIEW
DETAIL MODEL



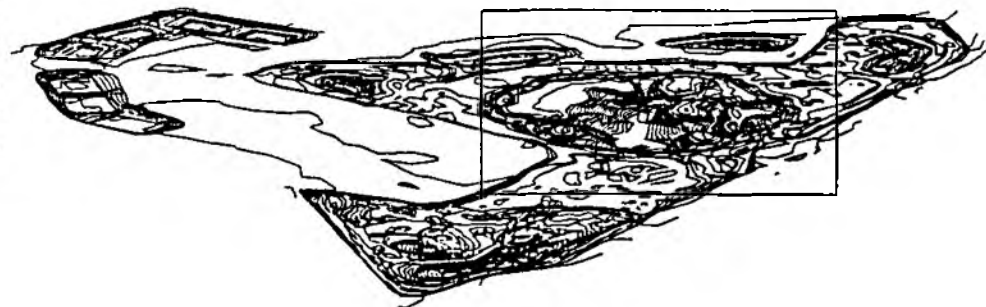
PINKHILL MEADOW PLAN VIEW
DETAIL & CONTOUR MODELS
CONTOURED AT 0.2M INTERVALS



1 2
4 3



PINKHILL MEADOW PERSPECTIVE VIEW WITH ROTATION
CONTOUR MODEL ZOOMED TO FIT WINDOW
THE RECTANGLE SHOWS THE AREA COVERED
BY WINDOW NUMBER 4.



Quality

Assurance

Consultancy

The NRA Survey Group was the first Group within the NRA to obtain Registration for its Quality System under BS 5750.

Since that time members of the Group have qualified as Lead Auditors and have built up considerable experience of implementing, operating and auditing formal Quality Systems.

This expertise is available to any Group considering implementing a Quality System.