

BA-NORTH WEST BOX 7

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# Survey

## OPERATIONS

Tech Library

## Environment Agency

**River/Topographical Survey at  
River Yarrow – Birkacre Weir  
Chorley**

**Survey Report  
October 2001**



12

40



ENVIRONMENT AGENCY

## Information Services Unit

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Please return or renew this item by the due date

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Due Date

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## Contents

1. Watercourse limits
2. Standard Written Report
3. Survey Marker schedule
4. EA O.S. Reference Diagram
5. Survey Station Reference Diagram
6. Cross Section Photograph Locations

## Appendices

- i. Survey Instrument Calibration Certificates
- ii. Topographical/Channel Survey Check List



## Surveyed Watercourses and their limits

### Watercourse

### Limits

River Yarrow

Birkacre Weir, Chorley  
SD 575 144

### Standard Written Report

To: Environment Agency (North West Region – Central Area)  
Lutra House,  
Dodd Way,  
Off Seedlee Road,  
Walton Summit,  
Bamber Bridge,  
Preston,  
Lancashire,  
PR5 8BX.

Nominated Representative : Mr Jeremy James / Heather Airie

From: Survey Operations Limited  
Smith Street  
Skelmersdale  
Lancashire WN8 8LL

Nominated Representative : Mr D Orritt

#### REPORT OF SURVEY

**River Yarrow – Birkacre Weir - Chorley.**

**Date of Survey October 2001**

#### 1.0 SURVEY BRIEF

##### 1.1 Original Survey Brief

The survey was commissioned in September 2001. Its aim is to provide comprehensive topographical and cross sectional survey information.

Cross sections were required to be taken at intervals specified in the survey brief.

The survey was carried out in accordance with the recently implemented Environment Agency National Standard Contract and Specification for Surveying Services, Version 2.1 incorporating the points outlined in the Survey Brief and using procedures covered by our Assurance Manual.

#### 2.0 CONTROL

##### 2.1 Horizontal Control

The basis for the survey, was the Ordnance Survey Active NGPS Network. These stations are located outside the area and are constantly monitored by the OS. The five reference stations used were, Blackpool, Daresbury, Nottingham, Leeds & Point of Lynas.

All observations were undertaken using Leica system 500 differential GPS.

2.2 All horizontal and vertical control for this survey is related to OS Datum Newlyn using G.P.S. and was fixed at times of good satellite geometry with a minimum of Five satellites and an elevation mark of 15 degrees.

### 3.0 Method of Survey

3.1 All vertical control levelling was undertaken using a Leica NA20 level. All sectional measurements were undertaken using a Leica TCR 1105 Total Station. All information is processed using 4ce software and automatically plotted.

3.2 The absolute plan position of any well defined point of detail shall be correct to within 0.3mm r.m.s.e. at the plan scale when checked from the nearest control point. If this is adopted as the 90% tolerance figure for 0.3xDwg Scale in millimetres and a standard distribution assumed then the following figures are applicable:

Scale	90%Accuracy	67%Accuracy	1%Limit
1:500	150mm	91mm	273mm
1:200	60mm	36mm	108mm
1:100	15mm	9mm	27mm

### 4.0 Presentation

4.1 All drawings will be presented in Environment Agency standard sheet format at A0 size. On stable based, clear polyester. All sheets will include Environment Agency standard title box. Digital data will be in the form of ASCII and DXF files.

### 5.0 Land Use

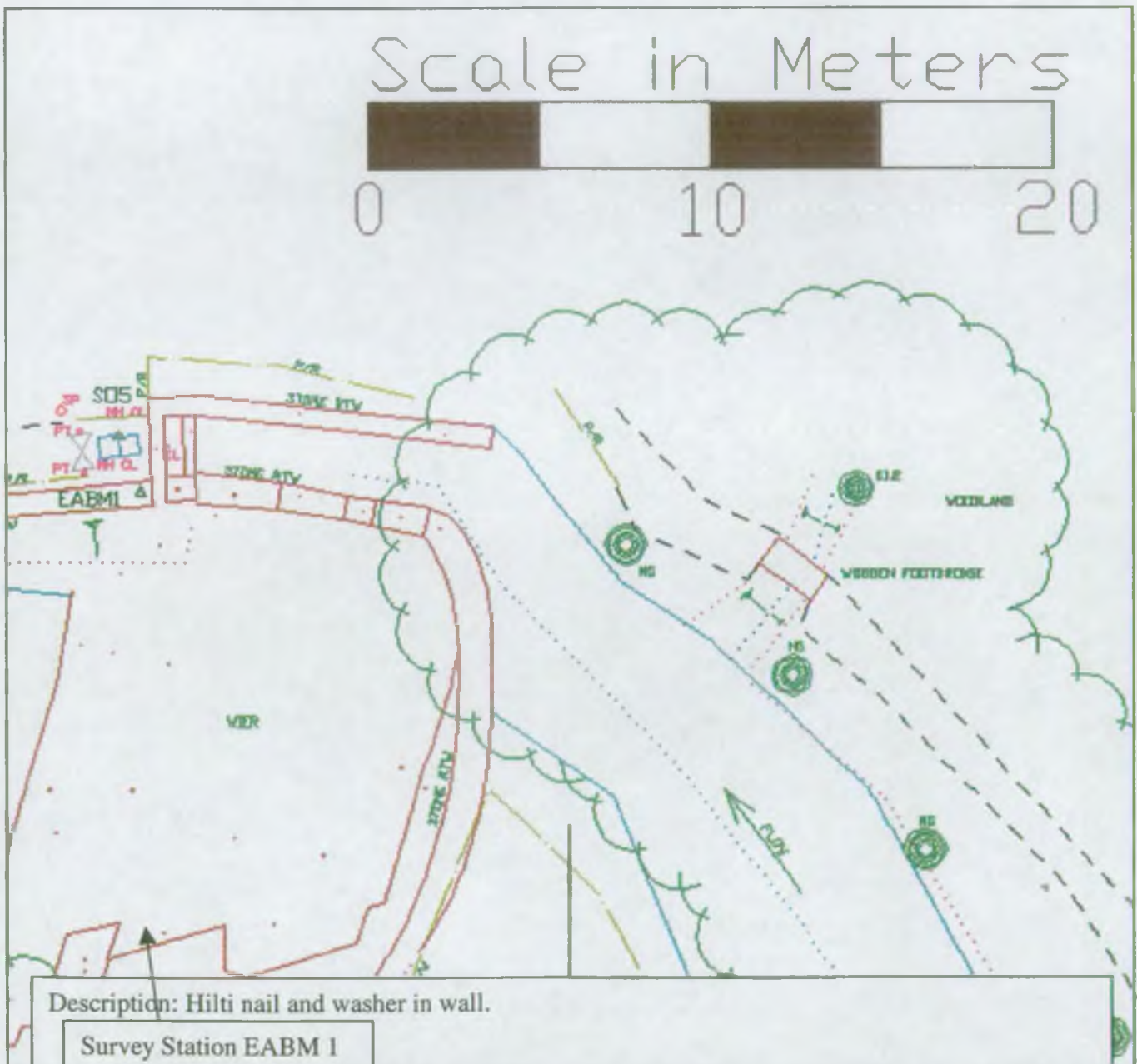
5.1 Land use was detailed on each individual cross section in accordance with Environment Agency land use category annotation.

### 6.0 Comments

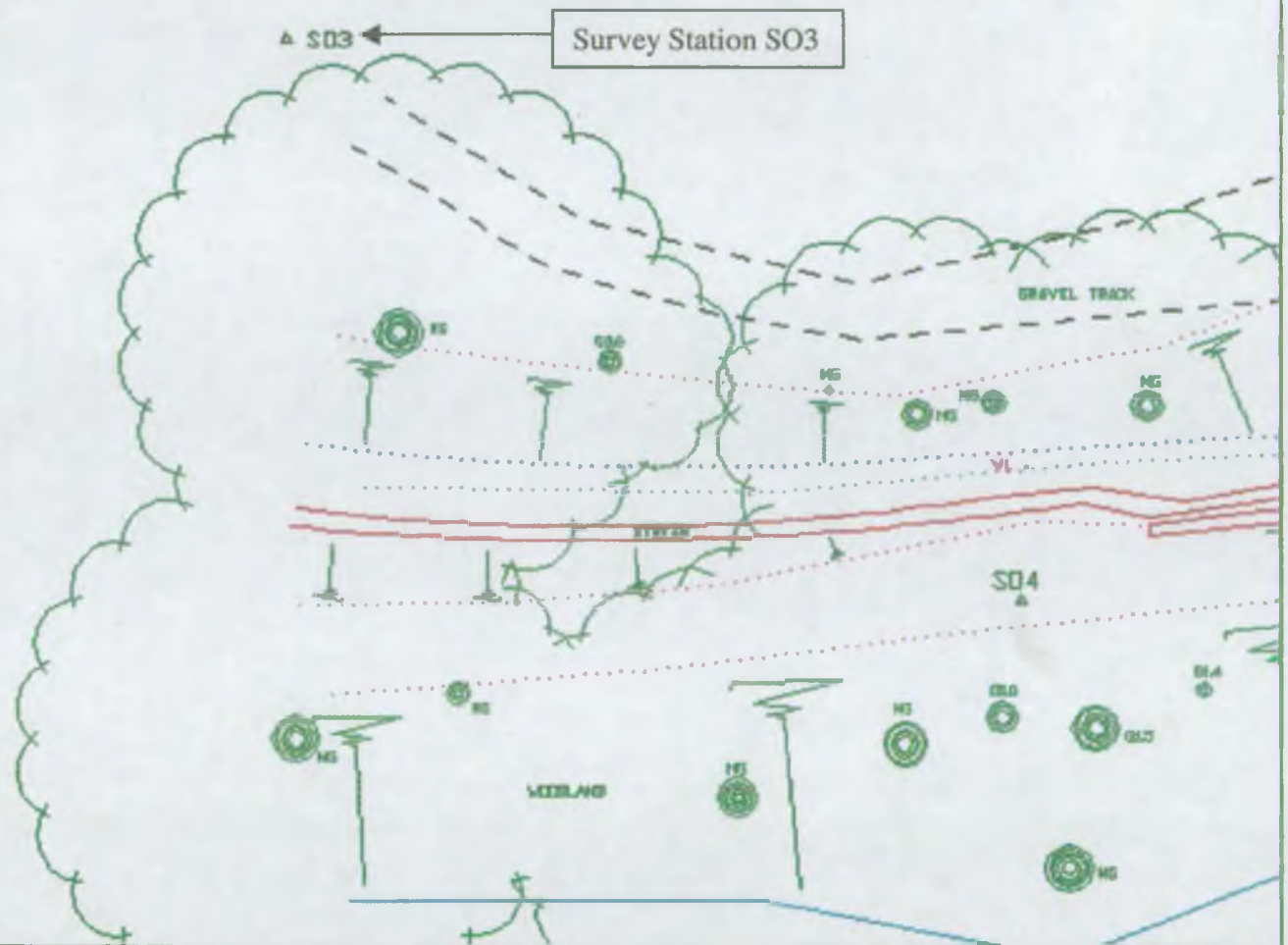
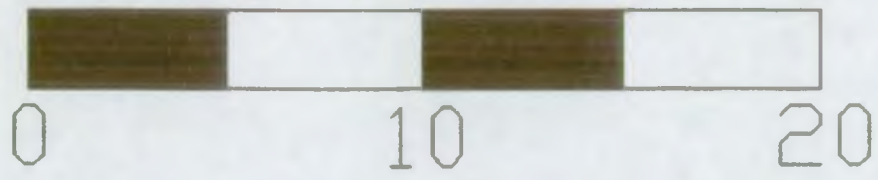
6.1 No problems were encountered.

### Survey Marker Schedule

Ref	Easting	Northing	Level
SO1	357530.772	414692.805	62.522
SO2	357473.020	414642.026	56.808
SO3	357450.413	414642.027	49.001
SO4	357469.315	414627.214	47.747
SO5	357499.392	414633.145	47.453
SO5A	357542.106	414574.881	49.559



Scale in Meters



Description: Road nail and washer in track adjacent to river.

N.G. Easting : 357450.413  
 Local Grid : N/A

N.G. Northing : 414642.027  
 Local Grid : N/A

Newlyn Datum Level : 49.001  
 Local Datum Level : N/A

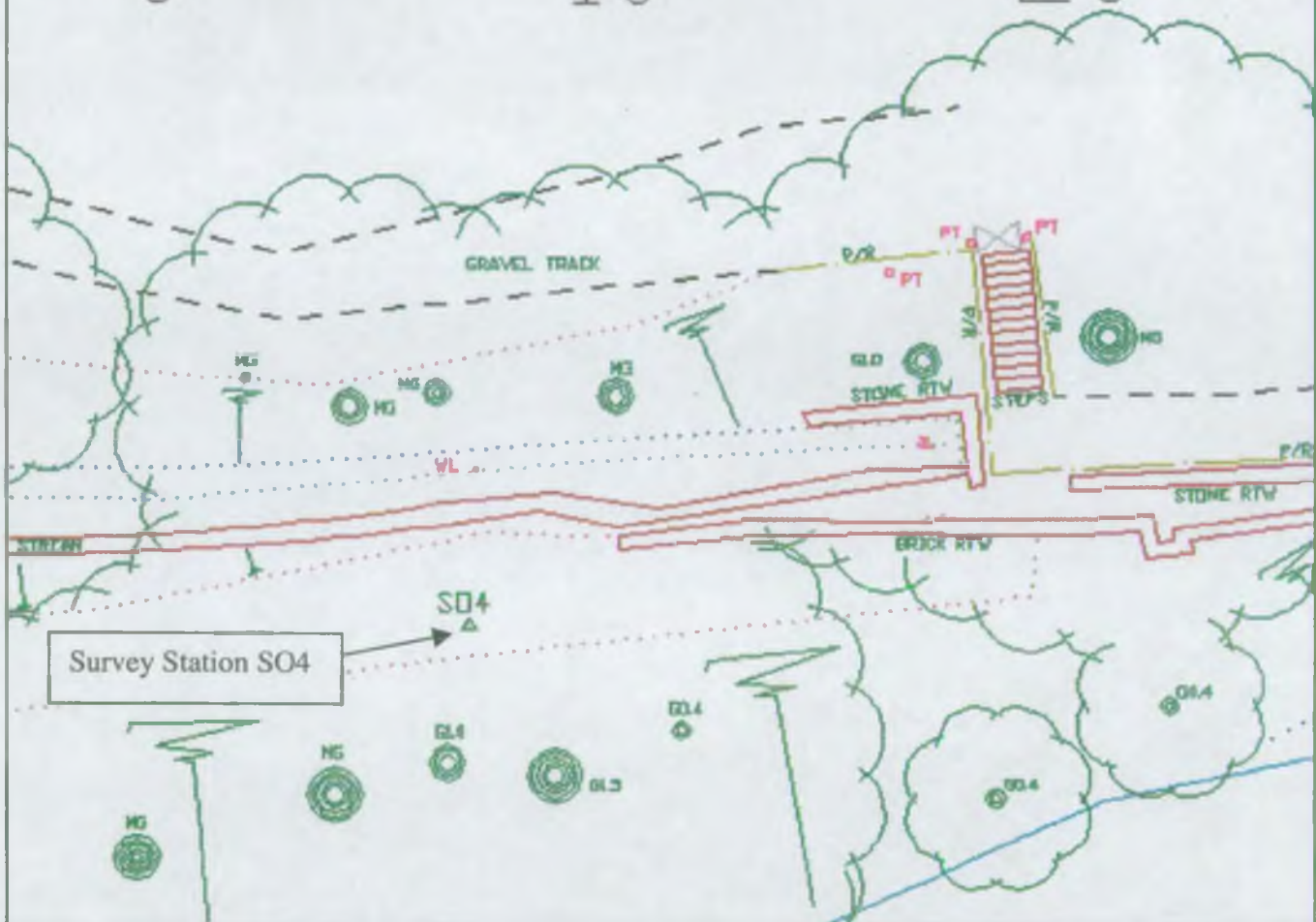
Date of construction : October 2001  
 Type of marker : Road nail



Scale in Meters



0 10 20



Description: Peg in river bank adjacent to site.

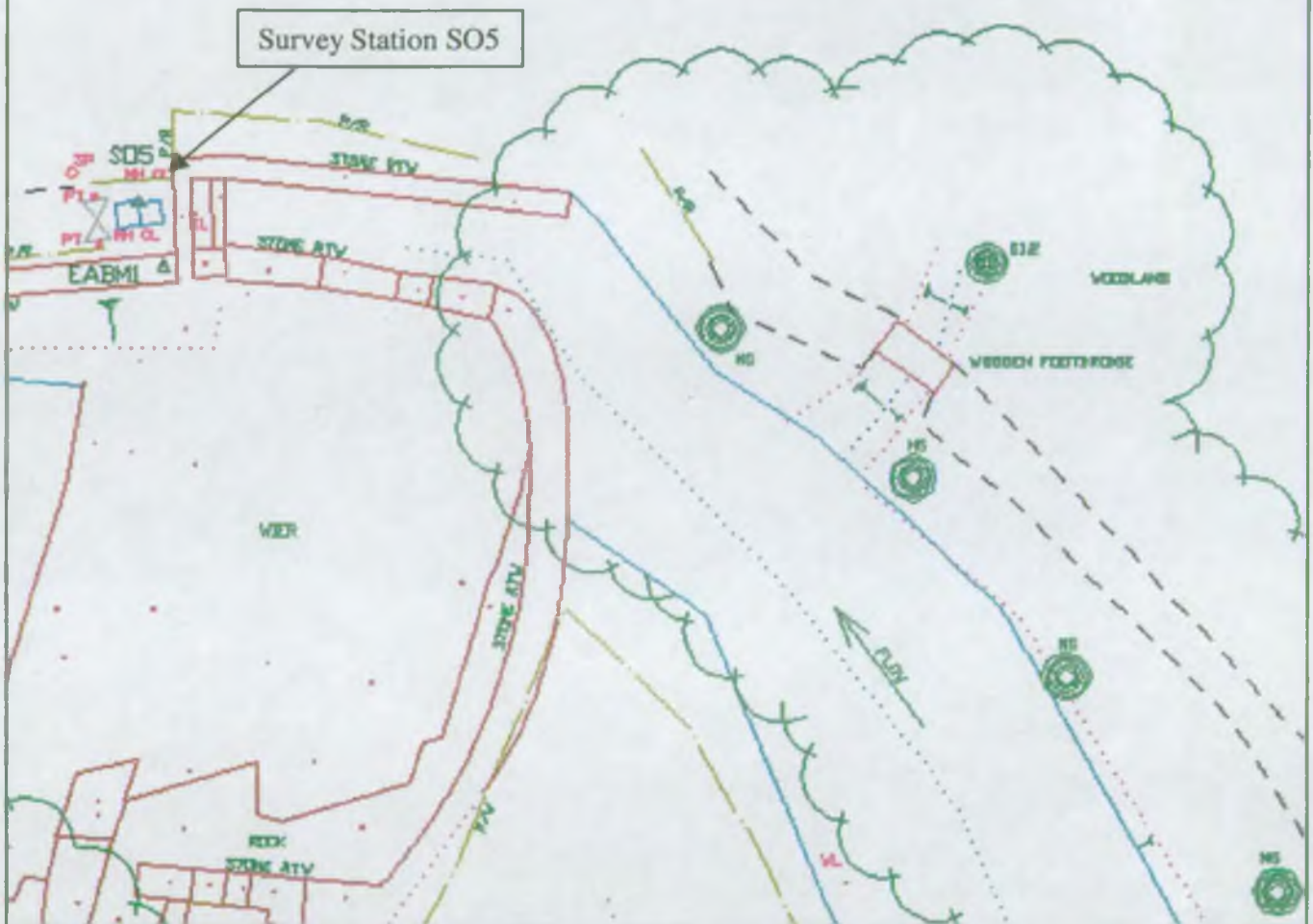
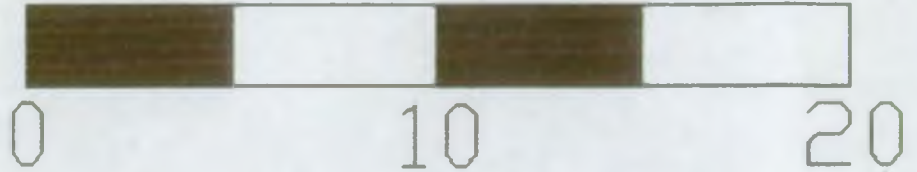
N.G. Easting : 357469.315  
 Local Grid : N/A

N.G. Northing : 414627.214  
 Local Grid : N/A

Newlyn Datum Level : 47.747  
 Local Datum Level : N/A

Date of construction : October 2001  
 Type of marker : Peg

Scale in Meters



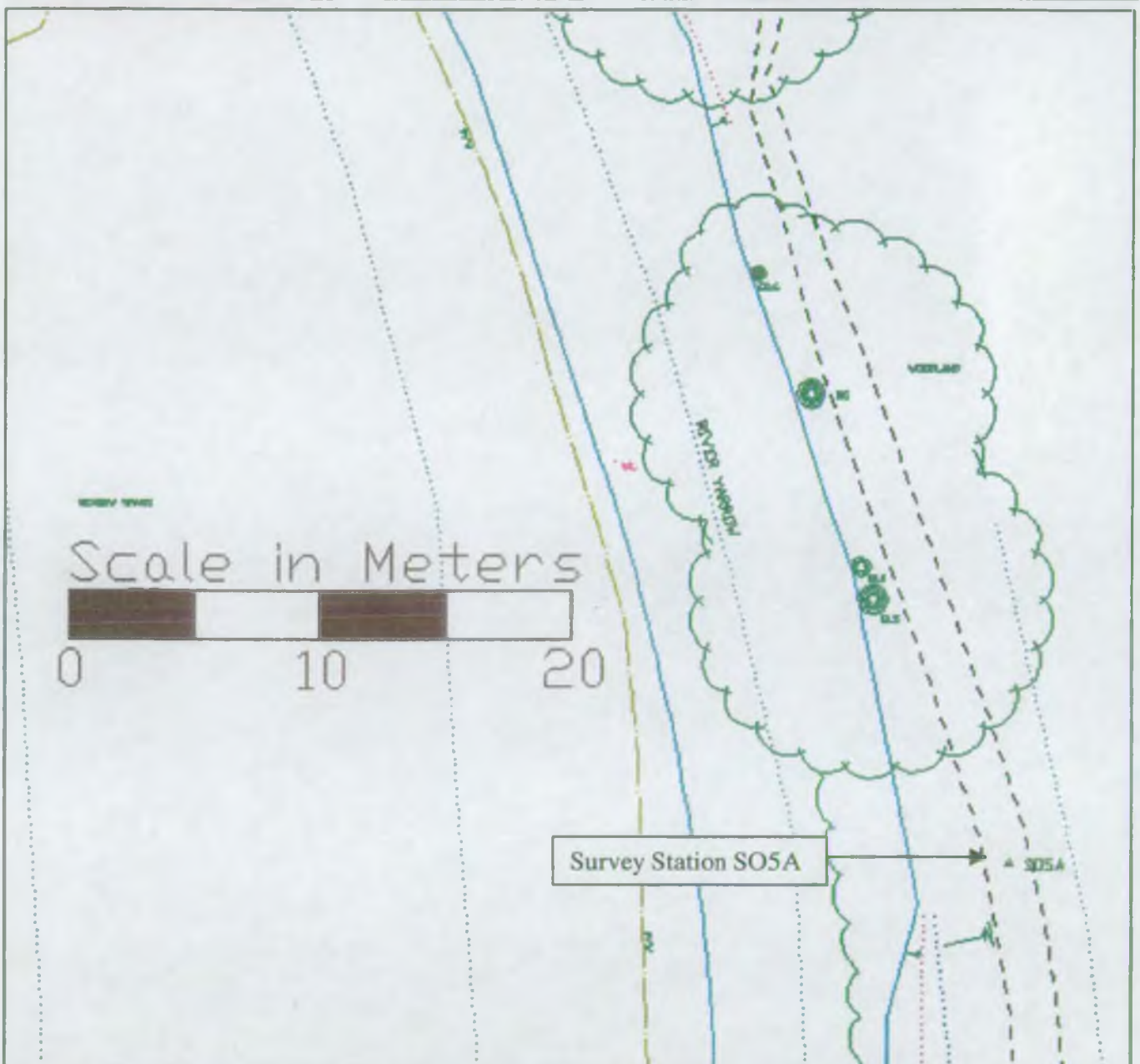
Description: Punch mark in corner of Manhole cover rim.

N.G. Easting : 357499.392  
 Local Grid : N/A

N.G. Northing : 414633.149  
 Local Grid : N/A

Newlyn Datum Level : 47.453  
 Local Datum Level : N/A

Date of construction : October 2001  
 Type of marker : Puch mark



Description: Road nail in track adjacent to site.

N.G. Easting : 357542.106  
Local Grid : N/A

N.G. Northing : 414574.881  
Local Grid : N/A

Newlyn Datum Level : 49.559  
Local Datum Level : N/A

Date of construction : October 2001  
Type of marker : Road nail



Cross Section – (YA100000)  
Looking Downstream



Cross Section – (YA100025)  
Looking Downstream



Cross Section – (YA100025)  
Looking Across



Cross Section – (YA100025)  
Looking Downstream



Cross Section – (YA100025)  
Looking Upstream



Cross Section – (YA100025)  
Looking Upstream



Cross Section – (YA100025)  
Looking Upstream



Cross Section – (YA100050)  
Looking Downstream



Cross Section – (YA100075)  
Looking Downstream



Cross Section – (YA100100)  
Looking Downstream



# Certificate of Conformity

Date: 15/2/01

Certificate No. S15272

Manufacturer: Leica

Model: TCR1105

Serial No.: 621941

Plant No.: \_\_\_\_\_

This is to certify that the equipment detailed hereon has been inspected and unless otherwise stated conforms in all respects to the manufacturer's original specifications.

Signed \_\_\_\_\_

For Leica Geosystems Limited

Milton Keynes ✓

Edinburgh



Certificate No. FS 28231

1389G.01/01

**Leica**  
Geosystems

**ENVIRONMENT AGENCY ISSUE 06/99.1**

**SELF CERTIFICATION CHANNEL SURVEY CHECK LIST**

Job number		Surveyor	
Task			
Checker		Date	

COPIES OF THE FOLLOWING WILL BE PROVIDED TO THE CHECKER YES

Survey Request & mapping		Equipment list	
OS & EA Control Sheets			
Vertical Control Field Sheets			
Channel Profile Sheets			

VERTICAL CONTROL NO YES

Check control values against Control Data		
Check level comparisons between heighting by GPS and from BMs		
Check other level misclosures and Two Peg Test results		

PLOTS NO YES

Does survey meet specification? IS IT DOWNSTREAM?		
Check Title Box is complete		
Check control values and descriptions on longitudinal sections		
Check for incomplete features		
Check for correct sequence of section numbers on longitudinal section		
Check height labels on cross-section for gross errors		
Check cross-section feature heights with longitudinal section heights		

CROSS SECTION LABELLING SHEET

Fence type/height	1 2 3 4 5 6
Bridge widths	1 2 3 4 5 6
Soffits/Invert heights	1 2 3 4 5 6
Skew Diagrams	1 2 3 4 5 6
Bed Material	1 2 3 4 5 6

EABM

Check originating control values	and EA BM value
Check grid square	Check diagram

CHECK KEY PLAN

NO

YES

Correct sequence of sections		
Co-ordinates, scale, north point		
Legend on longitudinal section		

REPORT

NO

YES

Standard written format used		
Landowner plan or schedule		
EABM & TBM photographs adequate		
Structure photographs adequate		

REMEDIAL ACTION

Please action the following:

COMMENT

Remedial action completed and accepted.

Checker

Signature .....

**ENVIRONMENT AGENCY ISSUE 06/99.1**

**SELF CERTIFICATION LEVELLING CHECK LIST**

Job number		Surveyor	
Task			
Checker		Date	

COPIES OF THE FOLLOWING WILL BE PROVIDED TO THE CHECKER

YES

Control Data	
Vertical Control Field Sheets	
TBM Lists	
Specification/Brief	
Equipment List	

VERTICAL CONTROL

NO

YES

Check control data used against datasheets		
For electronic reduction check values input to instruments		
Check level misclosure between OSBMs if used (<20mm)		
Check other level misclosures		
Check Two Peg Test results		
Check field book heights against witness diagrams		
Check field book heights against photo heights/threshold height plots		

REPORT

NO

YES

Standard written format used		
Schedule of photo points. Threshold height schedules		
Photographs and labels adequate		

EABM

Check originating Control values .....	And EABM value .....
Check grid square .....	Check diagrams .....

**REMEDIAL ACTION**

Please action the following

[Empty rectangular box for remedial action details]

**Comment**

[Empty rectangular box for comments]

**Remedial action completed:**

Date: ..... Signature .....

Checkers Signature .....

**ENVIRONMENT AGENCY ISSUE 06/99.1**

**SELF CERTIFICATION TOPOGRAPHIC SURVEY CHECK LIST**

JOB NUMBER		SURVEYOR	
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TASK	
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CHECKER		DATE	
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COPIES OF THE FOLLOWING WILL BE PROVIDED TO THE CHECKER YES

Survey Specification & Brief and Site Mapping	
Field Book	
Vertical Control Datasheets	
O.S. Horizontal Control Datasheets	
Traverse Diagram	
Computed traverse misclosure printout	
File listing of Survey Stations	
Standard Report	
Instruments used with Calibration dates	

TECHNICAL CHECK NO YES

Check Control Values used against Datasheets		
Check level misclosure(s)		
Check traverse misclosure(s)		
Check differences between spirit/triangulation heights		
Check details of instrument field check		
Check Co-ordinate values quoted correctly on all documents i.e. Witness Diagrams, File Header, Final Plot, Schedule Stations.		

EABM

Check originating Control Data _____
Check grid square _____ Check Diagrams _____

**PLOTS**

**NO**

**YES**

Check survey meets specification of survey request form		
Check title box is complete		
Check incomplete features		
Compare neighbouring heights for gross error		
Check labelling	Fence type/height	
	Street furniture	
	Surfaces	
	Key block plan & co-ordinates provided	
	Services	
	Standard Legend Symbols used	
	North Point	

**REPORT**

**NO**

**YES**

Standard written format used		
Witness diagrams		
Photograph labels complete: Photographs adequate		
Control Diagram and Schedule of stations		

**REMEDIAL ACTION**

Please action the following:

Comment:

Remedial action required?

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

Remedial action completed. Checkers Signature \_\_\_\_\_