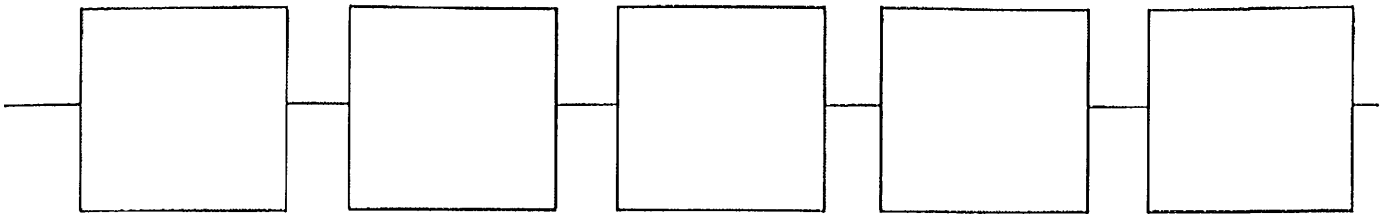

Appendix 1

CAPITA SYMONDS

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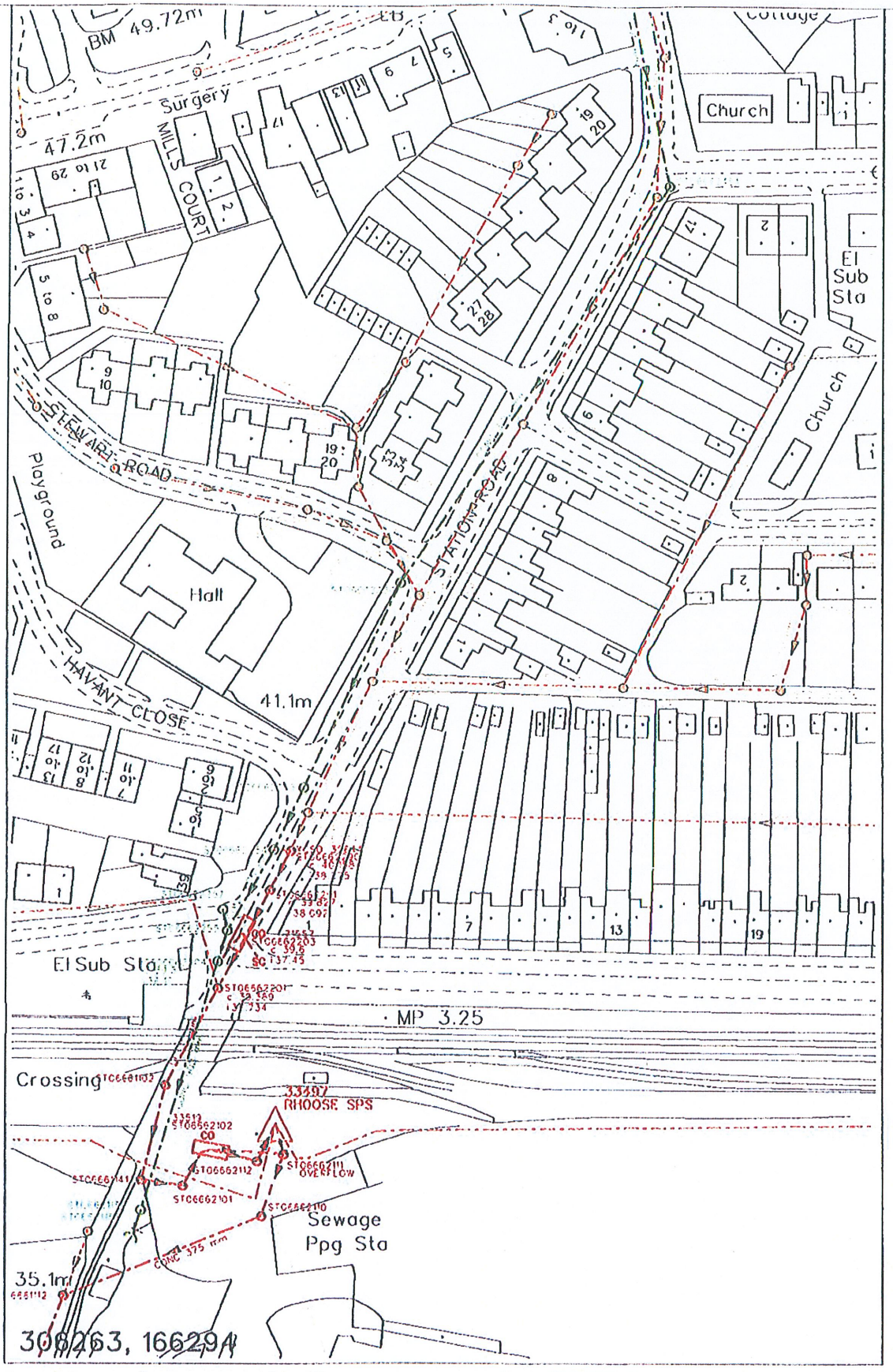


RHOOSE POINT – SURFACE WATER DRAINAGE

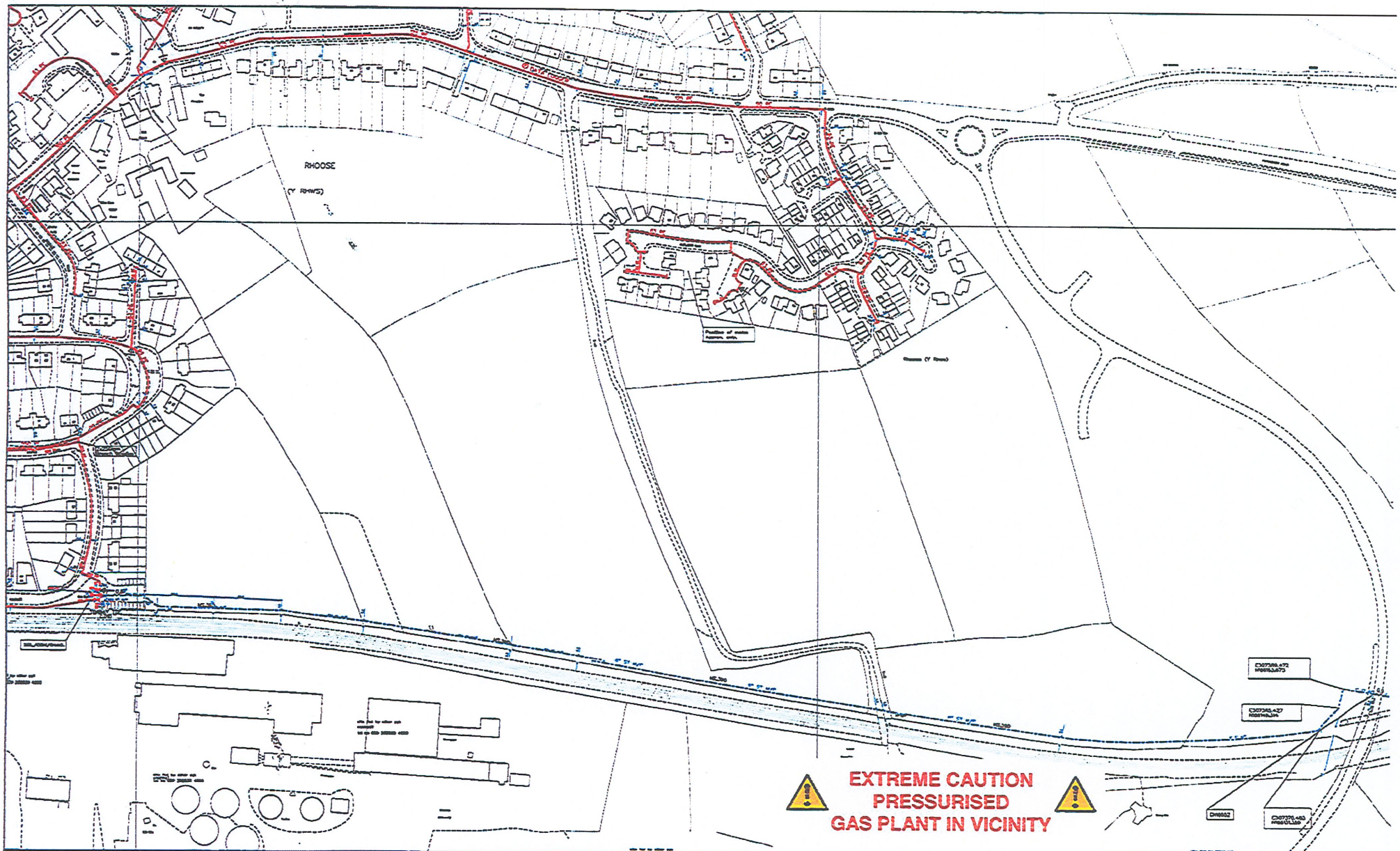
Mar 15 2005

Scale: 1:1250

Dwr Cymru Cyf gives this information as to the position of its underground apparatus by way of general guidance only on the strict understanding that it is based on the best information available and no warranty as to its correctness is relied upon in the event of excavations or other works made in vicinity of the Company's apparatus and any costs of locating the apparatus before carrying out any excavations rests entirely on you. It must be understood that the furnishing of the information is entirely without prejudice to the provision of the New Roads and Street Works Act 1991 and of the Company's right to be compensated for any damage to its apparatus.

Service pipes are not generally shown but their presence should be anticipated

EXACT LOCATIONS OF ALL APPARATUS TO BE DETERMINED ON SITE.



SCALE: 1 : 2500	
USER ID: jl192	
DATE: 12/07/2004	
NRSWA RESPONSE	
GRID REFERENCE : 306916, 166349, ST0666	

LP MAINS
MP MAINS
IP MAINS
LHP MAINS
NHP MAINS

0m 50m
Approximate scale 1 : 2500 printed on A3 Colour Landscape

This plan shows only those pipes owned by Transco plc in its role as a Licensed Gas Transporter (GT). Gas pipes owned by other GTs and also privately owned may be present in this area. Information with regard to such pipes should be obtained from the owners. The information shown on this plan is given without obligation, or warranty, the accuracy thereof cannot be guaranteed. Service pipes, valves, syphons, stub connections, etc., are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Transco plc, its agents or servants for any error or omission. Safe digging practices, in accordance with HS(G)47, must be used to verify and establish the actual position of mains, pipes, services and other apparatus on site before any mechanical plant is used. It is your responsibility to ensure that this information is provided to all persons (either direct labour or contractors) working for you on or near gas apparatus. The information included on

EXTREME CAUTION
PRESSURISED
GAS PLANT IN VICINITY

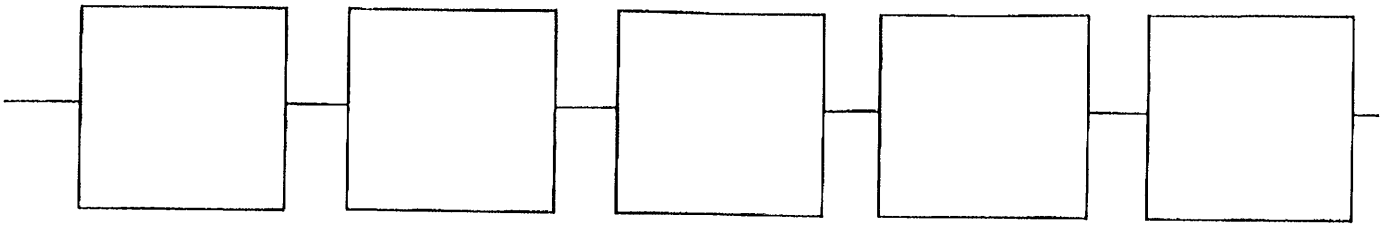
PRIOR TO EXCAVATION WORK STARTING YOU MUST CONTACT THE PLANT PROTECTION TEAM ON 01179-536715

Desktop MAPS Version 4.2.0

Transco

Bristol

This plan is reproduced from or based on the



Appendix 2

CAPITA SYMONDS

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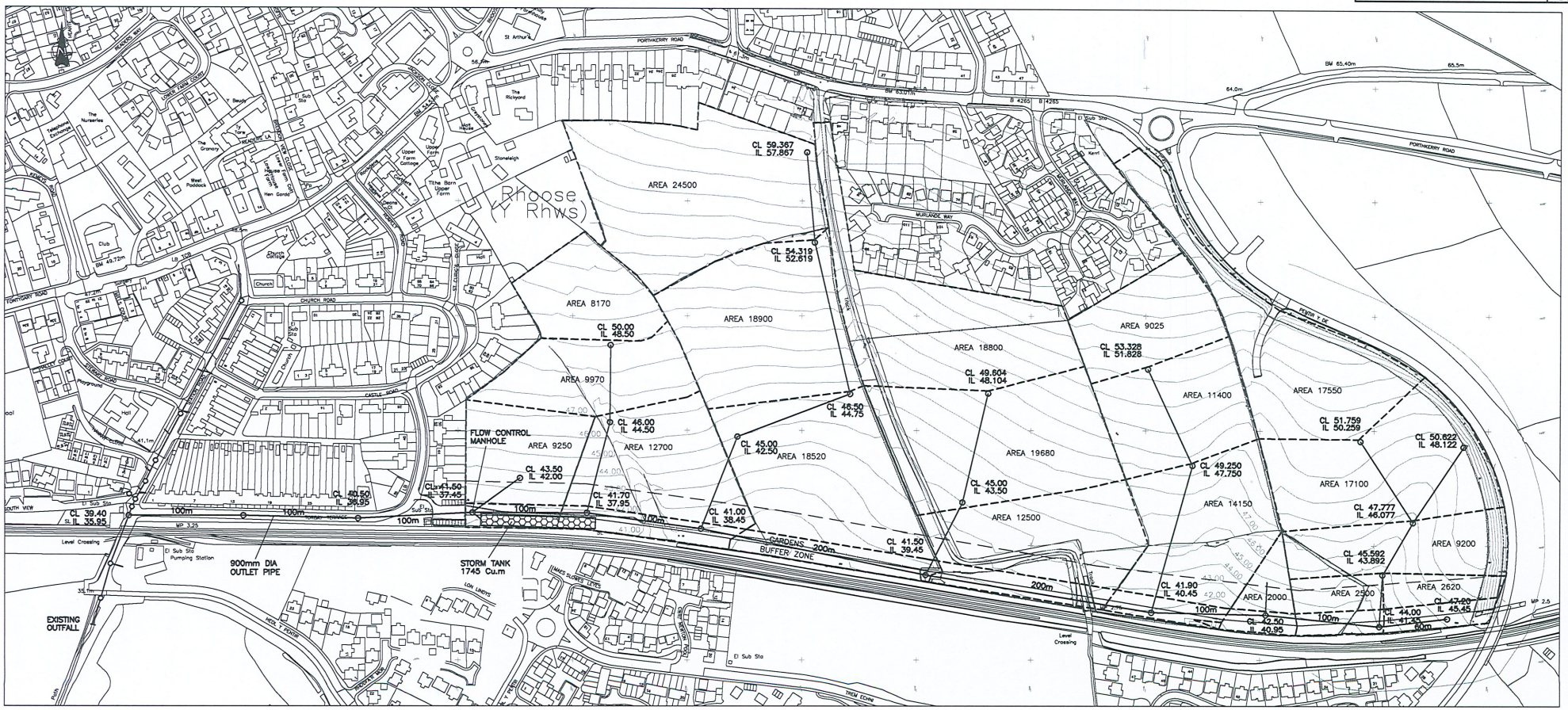
DRG. No.	CG/1990/04	REVISION REF:	-



NOTE.

ADOPTABLE STORM TANK TO BE CONSTRUCTED TO ATTENUATE A 1 IN 30 YEAR STORM, AS SEWERS FOR ADOPTION 6th EDITION.

TOTAL STORAGE REQUIRED FOR 1 IN 100 YEAR STORM, 2320 Cu.m.

STORAGE REQUIRED FOR 1 IN 30 YEAR STORM, 1745 Cu.m.

PRIVATE STORAGE, 575 Cu.m.

ADOPTABLE STORM TANK TO BE APPROX 100m LONG, 9m WIDE AND 2m DEEP.

CONSTRUCTION TO BE AS HYDRO INTERNATIONAL 'STORM CELL' OR SIMILAR.

OUTFLOW TO EXISTING STORM SEWER TO BE LIMITED TO 1000 LITRES /SECOND.

ISSUE	AMENDMENTS	DRAWN	CHK'D	DATE
-	-	-	-	-

WDA

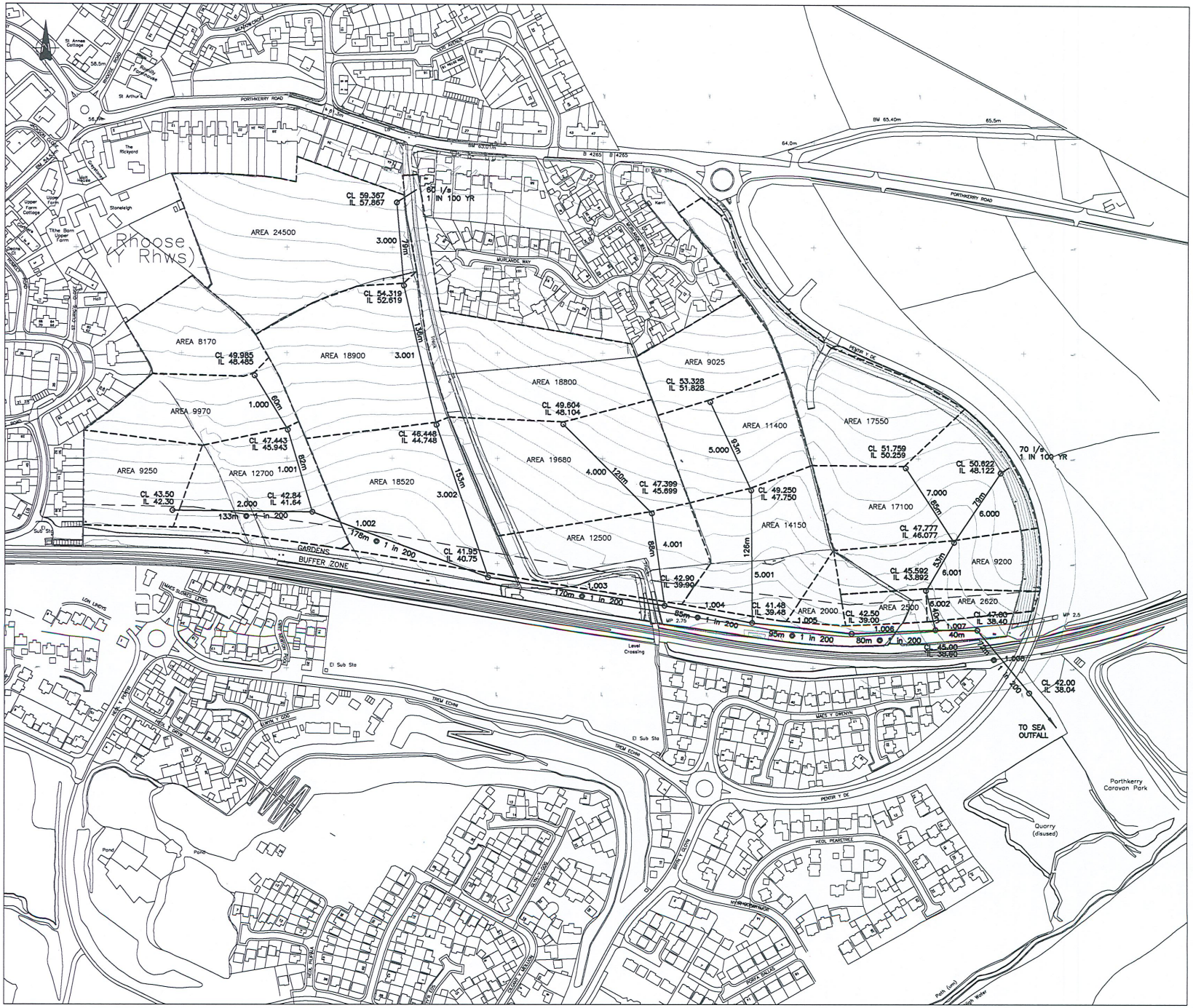
UPPER FARM DEVELOPMENT

RHOOSE POINT

STORM SEWER AND STORAGE TANK LAYOUT

CAPITA SYMONDS
Capita Gwent Consultancy Ltd.
Tŷ Gwent, Lake View, Llantarnam Park, Cwmbran, South Wales. NP44 3HR
Tel: 01633 463333 Fax: 01633 463399

DRAWN	R.ARTHUR	APR 2006	SCALE: 1:2500
CHECKED	A.T.DAVIES	APR 2006	
DRG. No.	CG/1990/04		REVISION REF. -



DRG. No.	CG/1990/02	REVISION REF:	A

ISSUE	AMENDMENTS	DRAWN	CHK'D	DATE
A	TEXT AMENDED	RJA	ATD	MAY 06

WDA

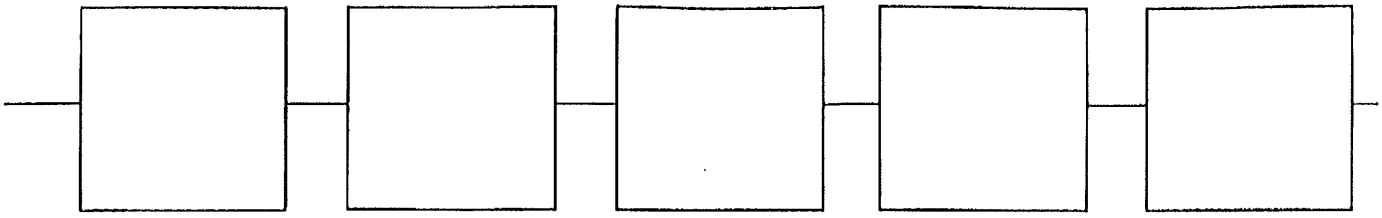
UPPER FARM DEVELOPMENT

RHOOSE POINT

PRELIMINARY DRAINAGE LAYOUT
WITH BUFFER ZONE
TO SEA OUTFALL

CAPITA SYMONDS
Capita Gwent Consultancy Ltd.
Ty Gwent, Lake View, Llantarnam Park, Cwmbran, South Wales. NP44 3HR
Tel: 01633 463333 Fax: 01633 463399

DRAWN	R.ARTHUR	FEB 2006	SCALE: 1:2500
CHECKED	A.T.DAVIES	FEB 2006	
DRG. No.	CG/1990/02		REVISION REF. A



Appendix 3

CAPITA SYMONDS

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AMEC / DCWW AMA SETeam

Rhoose Point Requisition

Hydraulic Impact Assessment Report

410/003249-04
RT-CA-740 01

December 05

MWH

MWH

Document Control Sheet
(Standard format)

Rhoose Point Requisition

Hydraulic Impact Assessment Report

Main Contributors	Aspect/Section	Notes
D Brook	Author	
B Walker	Check	
I Lovering	Review	

Bid/Project Code: 410/003249-04		Document No: RT-CA-740-01		Controlled Copy No: 02 *(in COLOUR – not black)*	
Revision No	**Date**	**Description/Amendment**	**Checked**	**Reviewed**	**Authorised for Issue**
01	13/12/05	First Issue	BW	IL	

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CONTENTS

1. INTRODUCTION

MWH have been commissioned in 2005 by the South East Team Alliance on behalf of Dwr Cymru Welsh Water to investigate the impact of a 600 dwelling development in Rhoose, South Wales.

1.1 Development Proposals

The developer has proposals to construct 600 No. 2, 3 & 4 bed dwellings on the "Upper Farm" site in Rhoose. The area is to the East of Rhoose Town between Porthkerry Road and the railway line.

An off site sewer is required to drain foul sewerage from the development. Storm water run-off from the development has not been considered as part of this investigation.

1.2 Background Information

The following data was used as/for reference in the study:

- Barry West hydraulic model
- Dwr Cymru Welsh Water's AIS & STAM system
- High Level Environmental Study, May 2003, MWH Report No. RT-CA-566

1.3 The Study

The investigation utilises the existing verified Infoworks hydraulic network model of the Barry West catchment. This model was enhanced and reverified in the Rhoose and Porthkerry areas in 2003 to support Dwr Cymru Welsh Water's (DCWW's) AMP3 capital investment program. It has been reviewed and is considered suitable for this impact analysis.

DCWW's Sewer Asset Management (STAM) database and previous catchment design work within the Porthkerry sub-catchment were also reviewed as part of the investigation. Relevant data from this desk study has been included in **Section 3.**

The location of the development is shown in **Figure 1, Appendix A.**

1.4 Catchment Background

The Rhoose sub-catchment is served by a medium sized pumping station. This receives gravity flows from Rhoose via a recently improved CSO on Station Road and pumped flows from stations in Fontygary and the new housing developments at Rhoose Point to the South.

Rhoose pumping station pumps forward to Porthkerry pumping station to the East via a rising main (300mm dia) that runs on the Northern edge of the Railway line. Porthkerry Pumping Station in turn pumps all flows from the area directly to Barry West PS that is the terminal pumping station for the entire catchment.

There have been significant works undertaken in AMP3 to improve these assets to achieve bathing water compliance at Cold Knap beach, Jackson's and Whitmore Bay.

2. HYDRAULIC IMPACT ANALYSIS

2.1 Design Parameters

2.1.1 Foul

The design for this development will be in accordance with "Sewers for Adoption, 5th Edition". This states that the peak design of foul sewers should be calculated at the rate of 4000 l/property/day. This equates to approximately 6 x dry weather flow (DWF) with an allowance for infiltration.

$$\text{Design Flow} = \frac{600 \times 4000}{86400} = 28 \text{ l/s}$$

This flow has been represented by adding 28l/s base flow to the model in the area of the development.

2.1.2 Storm

For the flooding service level analysis the existing Barry West design storms have been used. These represent rainfall events with the following characteristics:

Return Periods: 1 in 1, 1 in 5, 1 in 10 & 1 in 30.

Durations: 60, 180, 240, 360 & 480.

For the analysis of overflow performance the existing Rhoose 11-year stochastically generated rainfall (SGR) series has been used.

2.1.3 Design

Each of the design and SGR storms events were run though the model without the proposed development to determine the existing flooding service levels and downstream CSO performance. Once this had been completed the flows from the development were added draining to various parts of the existing network and the storms rerun.

It should also be noted that the modelled network assumes that there is no silt or defects in the drainage system.

2.2 Existing System Performance

The model predicts some flooding in the Rhoose sub-catchment. This flooding occurs in storm events as low as of 1 in 1 year return period, however the flooding is limited to the upper reaches of the sub-catchment where the model detail is not suitably defined to allow accurate flooding analysis.

Stringent environmental discharge consent drivers exist for the assets in the area. They all spill to bathing waters and thus cannot spill more than 3 spills / bathing season. The spill analysis indicates that the three main assets, Station Road CSO, Rhoose PS & Porthkerry PS are all currently spilling less than 3 times in a bathing season and are thus environmentally compliant.

In addition each asset must achieve Formula A and DWF failure compliance. Formula A is a standard industry calculation of peak flow rate, it equates to approximately 6 x DWF. Formula A compliance applies to assets which have an overflow. It requires that an asset

must pass forward at least Formula A or have sufficient storage available so that it can retain the difference between Formula A and pass forward flow for 2 hours. DWF failure compliance requires that a pumping station asset has sufficient volume available to retain 3xDWF for 2hrs, this is to allow the operators sufficient time to attend the site in an emergency.

An analysis of the calculated Formula A vs pass forward flow indicates that currently each site achieves borderline compliance. The sites also meet the DWF failure volume requirement.

2.3 STAM Data Findings

There are a number of incidents recorded on STAM within the Rhoose and Porthkerry sub-catchments:

- 5 Serious External Flooding (SEF) incidents
- 2 Sewer collapses
- 2 Project Initiation Forms (PIFs)

The SEF incidents and collapses are related to flooding on the Porthkerry Road which, in turn, is linked to the PSs serving Murlande Way housing estate. This is a separate part of the catchment and does not impact on this scheme.

The PIFs relate to odour issues at Rhoose and Porthkerry pumping stations, these issues are currently to be resolved as part of DCWW's AMP4 capital programme.

2.4 Hydraulic Impact Analysis

It is assumed that the flows will be passed directly to Porthkerry Pumping Station's upstream catchment manhole ST07668501, and thus they will only impact this asset.

Options that connect the development to the Rhoose system to the West via either Station Road CSO or directly to Rhoose Pumping Station have been discounted. This is due to both Formula A limitations and potential environmental impact, i.e. by connecting to the system above Station Road CSO the flows will impact the CSO, Rhoose and Porthkerry pumping stations, requiring work at all three to retain compliance.

In all the options considered there will be a need to revise the Environment Agency (EA) discharge consents of any assets affected, this is due to increased population acting at each site.

The impact at Porthkerry PS site due to additional flows from the development can be categorised under two determinants:

1. **Formula A Compliance, Porthkerry PS**

The existing and future Formula A figures will be impacted as follows:

Existing Formula A = 118l/s

Future Formula A = 118 + 28 = 146l/s

Existing Consented Pump Setting = 117l/s

The additional flow from the development will therefore cause a 29l/s Formula A shortfall at the site. In order to maintain compliance either the pump setting will need to be increased to 146l/s or an additional 209m^3 provided (2hrs at the difference between pass forward flow and Formula A as per AMP guidelines).

ii. **Spill Performance, Porthkerry PS**

As mentioned spill performance is a key consideration as this site. The impact of the additional flows on spill frequency, spill volume and spill duration is tabulated below:

Scenario	Bathing Spill Frequency / Annum	Bathing Spill Volume / Annum (m^3)	Bathing Spill Duration / Annum (min)
Existing	1	572	215
Future *	5	1370	840

* The future spill performance of Porthkerry PS is given assuming that the flows are pumped into its upstream catchment.

In order to maintain the existing spill frequency performance the consented pass forward flow will need to be raised to 146l/s or an additional 315m^3 storage provided.

2.5 Hydraulic Impact summary

To accommodate the addition flows within the public sewer network without causing any detriment at Porthkerry PS, thus satisfying the current EA criteria, either the consented pump rate at the site needs to be raised to 146l/s or an additional 315m^3 storage is required.

However we have discounted increasing the pump rate at Porthkerry because of adverse impact further downstream both at Marine Drive and Barry Town PS.

3. OPTIONS FOR CONNECTION

3.1 Assumptions

- A gravity connection to the public sewer network is not considered viable and it is assumed in all the options that the site will drain to a new pumping station pumping into the public sewer network. The location of this facility is assumed to be at the centre of the Southern boundary of the development.
- Within the terms of reference for this report, asset survey, topographic or ground investigations have not been undertaken to support these options.
- We have not undertaken a detailed service investigation. References have been collected for gas, electricity and water. There is a 6" steel gas main running parallel to the existing rising main route.
- Each option will require an overflow from the new pumping station and this will require early consultation / agreement with the Environment Agency.
- It is assumed the overflow required at the development site may be connected into the developments proposed storm system. This requires further discussions with the developer prior to progressing the proposed options.

Please refer to **Figure 2, Appendix A**, for details of each option.

3.2 Option 1, Gravity off line attenuation at Porthkerry Pumping Station

This option involves connecting the development to manhole ST07668501 and the construction of a new off line tank adjacent to Porthkerry PS. The development will be served by a new foul pumping station that will have a capacity of 28l/s and a 2hrs @ 3xDWF failure storage volume of 100m^3.

Assuming that the tank will be connected at high level to the existing overflow line and returns via a flap valve at duty pump on level, this only gives working depth of 2.18m. Given that the storage required is 315m^3 this would require a rectangular structure 12x12m to achieve the required volume. Land aquision will be required locally to the PS site to accommodate the new structures.

3.3 Option 2, Pumped off line attenuation at Porthkerry Pumping Station

This option involves connecting the development to manhole ST07668501 and a new foul pumping station as option 1.

However since the storage at Porthkerry PS has a pumped return back to the main sump the structure can be constructed more efficiently. A shaft of internal dimensions 7.5m dia, approximately 8m depth would give the required volume. Return pumps set at 10l/s would drain the tank in 8.75hrs. Land acquisition will be required locally to the PS site as option 1.

3.4 Option 3, Online Storage upstream of Porthkerry Pumping Station

This option involves connecting the development to manhole ST07668501 and the construction of a new on line tank. The development will be served by a new foul pumping station as in option 1.

Rather than construct the storage at the pumping station an alternative would be to locate it in the network upstream of the site. There are a number of locations where the storage could be constructed. The tank could be constructed using a bank of large diameter, concrete / GRP pipes or culvert sections. A weir / throttle wall at the downstream end with a setting of approximately 120l/s would be required. Land acquisition will be required for locating the new structures.

3.5 Option 4, Intercept Rhoose Pumping Station Rising main

Since the existing rising main from Rhoose pumping station runs along the Southern boundary of the development site, rather than construct a new rising main running parallel with it to manhole ST07668501, an alternative would be to intercept it.

This would involve breaking the existing main, diverting it into a new pumping station that would also serve the new development. The new station would pump back into the downstream section of existing rising main. It would require a pump capacity that at least matches Rhoose PS's current pump capacity of approximately 120l/s and would require storage of 315m^3 between pump on level and overflow level.

3.6 Evaluation of Options

The following table gives an indication of the principal works and risks associated with each option:

Principal Works	Opt 1	Opt 2	Opt 3	Opt 4
28l/s PS, with 100m^3 storage capacity	Y	Y	Y	
1200m of 200mm dia rising main	Y	Y	Y	
Screened outfall to watercourse	Y	Y	Y	Y
315m^3 online gravity attenuation storage at Porthkerry PS	Y			
315m^3 offline attenuation at Porthkerry PS with pumped return.		Y		
315m^3 online attenuation in Porthkerry catchment.			Y	
120l/s PS, with 315m^3 storage capacity				Y
Existing rising main bypass and connections				Y
Risks				
Connection to manhole ST07668501 (Subject to agreement with Cardiff International Airport)	Y	Y	Y	
New rising main crossing Rhoose Point access road.	Y	Y	Y	
Land purchase within Porthkerry Park	Y	Y	Y	
Planning restrictions within Porthkerry Park.	Y	Y	Y	
Environmental Issues within Porthkerry Park.	Y	Y	Y	
Additional M&E works at Rhoose PS				Y
Environment Agency Consents	Y	Y	Y	Y

4. CONCLUSIONS

Four options to connect the new development have been presented above.

The first three are variations of the same basic idea, i.e. pump the flow to the downstream gravity system and provide attenuation to mitigate its detriment. In each case the volume required is fundamentally the same, 100m^3 DWF failure volume at the new pumping station and approximately 315m^3 at Porthkerry PS. These options have a number of common risks associated with them namely: potential construction within Porthkerry Park; construction near the end of Cardiff Airport runway and a crossing of the new road running to Rhoose Point which may need to be constructed using no-dig technology.

The fourth option takes advantage of the development's proximity to the existing main from Rhoose PS. By breaking the rising main and diverting it into the new pumping station, we can provide the additional storage needed in a new sump. There could be a number of advantages to this option:

- The overall storage needed would be reduced.
- The 1200m of new rising main (with associated risks) would not be required.
- There would be no need to construct multiple assets i.e. a new pumping station and a separate storage tank.
- The option open would allow decommissioning of both pumping stations serving the Murlande Way housing estate to the North in the future. These stations are linked to flooding incidents along Porthkerry Road.

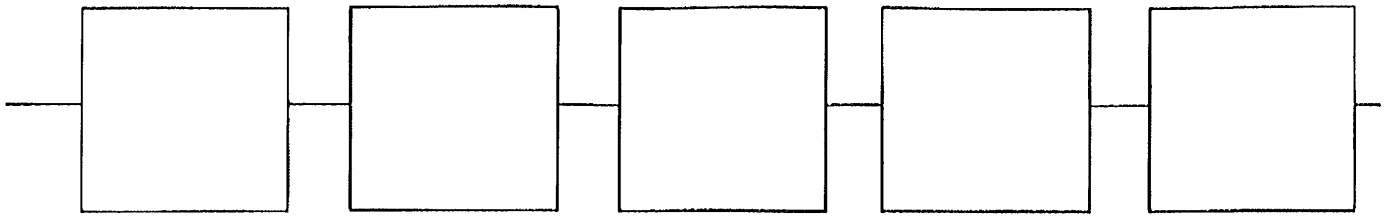
The new station's controls would need to tie in with the existing radio control system that is provided for all the major stations in the Porthkerry sub-catchment. The pump rate at Rhoose PS would probably increase due to the reduction in delivery pressure. This presumes the pumps are still running efficiently and would need to be confirmed by performance testing.

The proposed pump rate and storage volume given is approximate. Determination of this pump rate would be possible in design once the impact of breaking the rising main on Rhoose PS is determined. It would also be recommended that any new pumping station be connected to the rising main on a bypass, thus allowing DCWW operational staff to isolate the station without affecting Rhoose PS.

A new overflow screened to 6mm would be required at the new pumping station in all options. It is assumed that the development's storm drainage will provide a route to discharge that can be utilised by the overflow. Further discussions are required with the developer in respect to his proposals for storm drainage.

Without an estimate of cost it is difficult to recommend an option. However, based on the quantity of principal works is it likely that Option 4 would represent the most economic option, and carry the least scheme risk.

Appendix A Figures



Appendix 4

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UNDERGROUND
SURVEYS

C.C.T.V SURVEY REPORT

Alun Davis Associates
Station Rd, Rhoose
Dated 31.01.2006
310.72mtrs

CG 17 - 18 WARRINGTON BUSINESS PARK
LONG LANE
WARRINGTON
CHESHIRE
WA2 8TX
TEL: 01925 444664
FAX: 01925 444663
E-MAIL: gus@undergroundsurveys.co.uk
WEB PAGE: www.undergroundsurveys.co.uk

Underground Surveys Limited
Long Lane
Warrington, Cheshire
Tel: 01925 444664, Fax: 01925 444663

Project-information

Project name:	Contract number:	Contact:	Date:
Alun Davies	7232	Private	07.02.2006

Client	**Alun Davies Associates**
Contact:	
Position:	**Capita Symonds**
Road	**Ty Gwent, Lake View**
Town	**Llantarnam**
County	**Cwmbran NP44 3HR**
Telephone:	
Fax:	
Mobile:	
E-Mail:	

Site	
Contact:	
Position:	
Road	**Station Road**
Town	**Rhoose**
County	
Telephone:	
Fax:	
Mobile:	
E-Mail:	

Contractor	**Underground Surveys Limited**
Contact:	**Kelly Richardson**
Position:	**Office Manager**
Road	**Unit CG17 & 18 Warrington Business Park**
Town	**Long Lane**
County	**Warrington, Cheshire**
Telephone:	**01925 444664**
Fax:	**01925 444663**
Mobile:	**07789 243 238**
E-Mail:	**kelly@undergroundsurveys.co.uk**

Underground Surveys Limited
Long Lane
Warrington, Cheshire
Tel: 01925 444664, Fax: 01925 444663

Defect Grade Description

Project name:	Contract number:	Contact:	Date:
Alun Davies	7232	Private	07.02.2006

1: Occurances without damage: for example, laterals, joints etc.

NO DEFECTS WERE DETECTED.

2: Constructional deficiencies or occurances with insignificant influence to tightness, hydraulic or static pressure of pipe: f.e. wide joints, badly torched intakes, minor deformation of plastic pipes, minor erosions etc.

REHABILITATION CAN BE SCHEDULED LONG-TERM.

3: Constructional deficiencies diminishing static, hydraulic and tightness: f.e. open joints, untorched intakes, cracks, minor drainage obstructions such as calcide build ups, protruding laterals, minor damages to pipe wall, individual root penetrations, corroded pipe walls etc.

REHABILITATION IS NECESSARY MEDIUM-TERM WITHIN 3 TO 5 YEARS.

4: Constructional damages with nonsufficient static safety, hydraulic or tightness: f.e. axial/radial pipebursts, pipe deformations, visually noticeable infiltration/exfiltration, cavities in pipe-wall, severe protruding, laterals severe root penetrations, severe corrosion of pipe wall etc.

REHABILITATION PROCEDURE IS URGENT AND HAS TO BE COMPLETED WITHIN 1 TO 2 YEARS. NECESSITY FOR EMERCENCY OPERATIONS HAS TO BE EXAMINED.

5: Pipe is already or will shortly be impermeable: f.e. collapsed pipe, deeply rooted pipe or other drainage obstructions. Pipe loses water or danger of backwater in basements etc.

REHABILITATION IS URGENT AND SHORT-TERM. IN ORDER TO PREVENT FURTHER DAMAGE, NECESSARY TEMPORARY SPOT REPAIR HAS TO BE CONDUCTED ON EMERGENCY LEVEL.

Underground Surveys Limited
Long Lane
Warrington, Cheshire
Tel: 01925 444664, Fax: 01925 444663

Inspection report

Date:	Job nr.:	Weather:	Operator:	section number:	PLR:
31.01.2006	01	Dry	AR	1	ST06663451X
Present:	Vehicle:	Camera:	Preset:	Cleaned:	Grade:
	Y339 GCA	IPEX CRAWLER SYSTEM		Not known	

Road:	STATION ROAD	Division:		start MH:	ST06662352
Place:	RHOOSE	District:		end MH:	ST06663451
Location:	Light road	Tape No.:	01	Total length:	111.73 m

Purpose:	Structural defects	Size/Shape:	Circular 675
Use:	Surface water	Material:	Concrete Pipe length: 4m
Catchment:		Lining:	NONE
		Category:	C

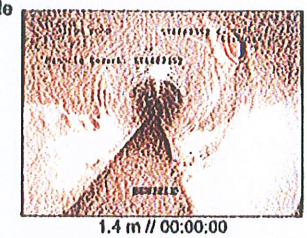
Comment:

Location details:

1:825 | position | code | observation | grade

Depth: 1.45

position	code	observation	grade
ST06662352 0.00	ST	Start of Survey	0
1.40	MH	Manhole Remark: ST06662352	0
1.40	WL	Water level, 5 % height/diameter	0
1.40	CN	Connection, at 01 o'clock, dia 150 mm	0
41.55	CN	Connection, at 12 o'clock, dia 150 mm	0
42.54	CN	Connection, at 01 o'clock, dia 150 mm	0
74.89	CN	Connection, at 01 o'clock, dia 150 mm	0
111.73	MH	Manhole Remark: ST06663451	0
ST06663451 111.73	FH	Finish Survey	0



1.4 m // 00:00:00

111.73 m // 00:00:00

Underground Surveys Limited
Long Lane
Warrington, Cheshire
Tel: 01925 444664, Fax: 01925 444663

Inspection photos

Place:	Road:	Date:	section number:	PLR:
RHOOSE	STATION ROAD	31.01.2006	1	ST06663451X

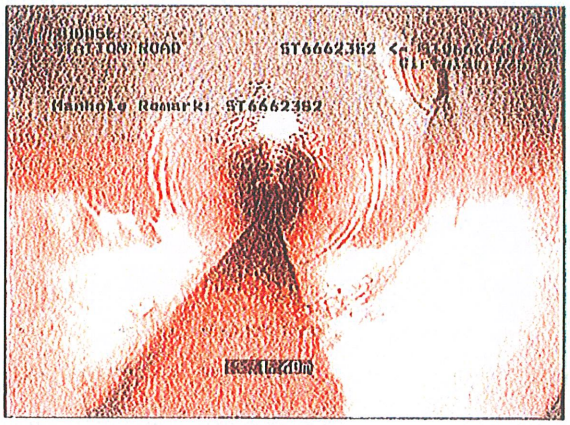


Photo: 2a, Tape No.: 01, 00:00:00
1.4m, Manhole Remark: ST06662352

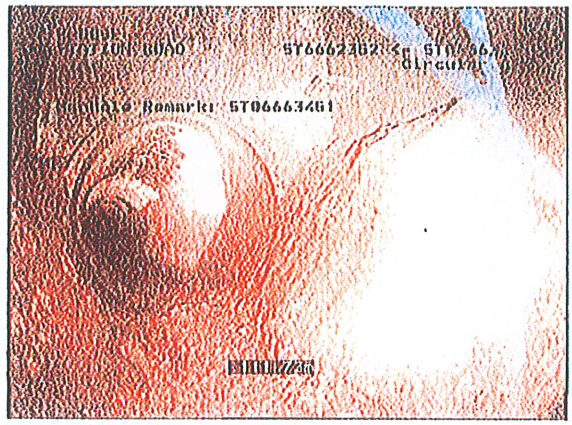


Photo: 8a, Tape No.: 01, 00:00:00
111.73m, Manhole Remark: ST06663451

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Inspection report

Date:	Job nr.:	Weather:	Operator:	section number:	PLR:
31.01.2006	02	Dry	AR	2	ST06662352X
Present:	**Vehicle:**	**Camera:**	**Preset:**	**Cleaned:**	**Grade:**
	Y339 GCA	IPEX CRAWLER SYSTEM		Not known	

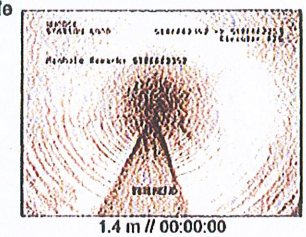
Road:	STATION ROAD	Division:		start MH:	ST06662352
Place:	RHOOSE	District:		end MH:	ST06662253
Location:	Light road	Tape No.:	01	Total length:	46.17 m

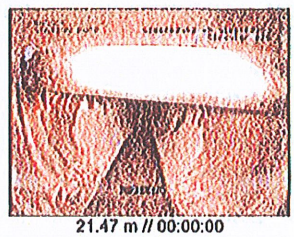
Purpose:	Structural defects	Size/Shape:	Circular 675
Use:	Surface water	Material:	Concrete Pipe length: 4m
Catchment:		Lining:	NONE
		Category:	C

Comment:

Location details:

1:350 position	code	observation	grade
Depth: 1.45			
ST06662352 0.00	ST	Start of Survey	0
1.40	MH	Manhole Remark: ST06662352	0
1.40	WL	Water level, 5 % height/diameter	0
20.47	CN	Connection, at 03 o'clock, dia 150 mm	0
21.47	OB	Obstruction, 30 % height/diameter loss, Remark: PIPE THROUGH CULVERT	2
ST06662253 46.17	MH	Manhole Remark: ST06662253	0
46.17	FH	Finish Survey	0


1.4 m // 00:00:00


21.47 m // 00:00:00


46.17 m // 00:00:00

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Inspection photos

Place:	Road:	Date:	section number:	PLR:
RHOOSE	STATION ROAD	31.01.2006	2	ST06662352X

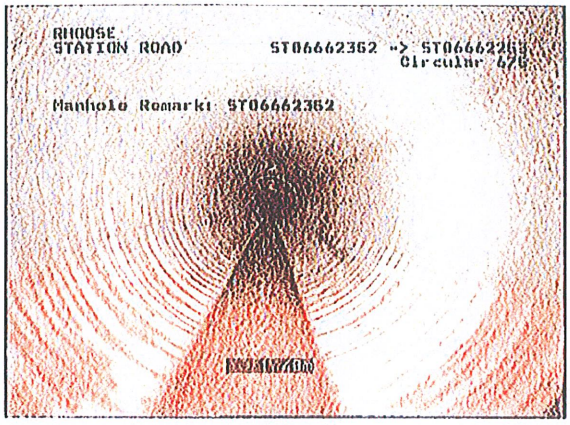

Photo: 11a, Tape No.: 01, 00:00:00
1.4m, Manhole Remark: ST06662352

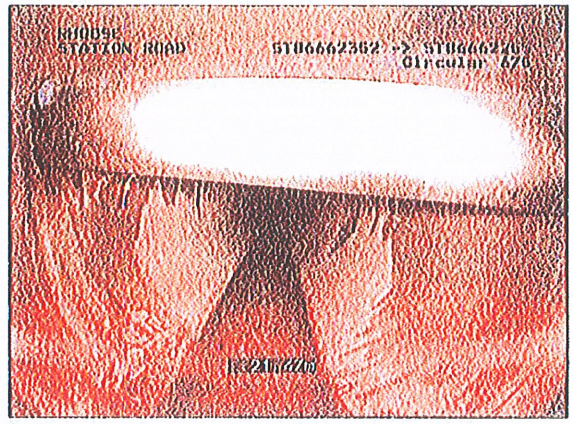

Photo: 14a, Tape No.: 01, 00:00:00
21.47m, Obstruction, 30 % height/diameter loss, Remark: PIPE THROUGH CULVERT

Photo: 15a, Tape No.: 01, 00:00:00
46.17m, Manhole Remark: ST06662253

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Inspection report

Date:	Job nr.:	Weather:	Operator:	section number:	PLR:
31.01.2006	03	Dry	AR	3	ST06662253X
Present:	**Vehicle:**	**Camera:**	**Preset:**	**Cleaned:**	**Grade:**
	Y339 GCA	IPEX CRAWLER SYSTEM		Not known	

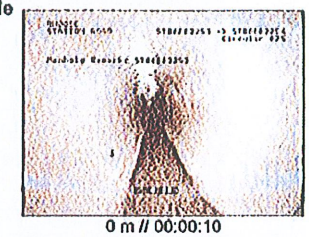
Road:	STATION ROAD	Division:		start MH:	ST06662253
Place:	RHOOSE	District:		end MH:	ST06662254
Location:	Light road	Tape No.:	01	Total length:	20.24 m

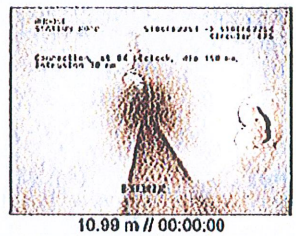
Purpose:	Structural defects	Size/Shape:	Circular 675
Use:	Surface water	Material:	Concrete Pipe length: 4m
Catchment:		Lining:	NONE
		Category:	C

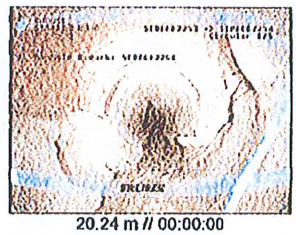
Comment:

Location details:

1:150	position	code	observation	grade
ST06662253	0.00	ST	Start of Survey	0
	0.00	MH	Manhole Remark: ST06662253	0
	0.00	WL	Water level, 5 % height/diameter	0
	10.99	CNI	Connection, at 04 o'clock, dia 150 mm, intrusion 30 mm	4
	20.24	MH	Manhole Remark: ST06662254	0
ST06662254	20.24	FH	Finish Survey	0


0 m // 00:00:10


10.99 m // 00:00:00


20.24 m // 00:00:00

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Inspection photos

Place:	Road:	Date:	section number:	PLR:
RHOOSE	STATION ROAD	31.01.2006	3	ST06662253X

Photo: 18a, Tape No.: 01, 00:00:10
0m, Manhole Remark: ST06662253

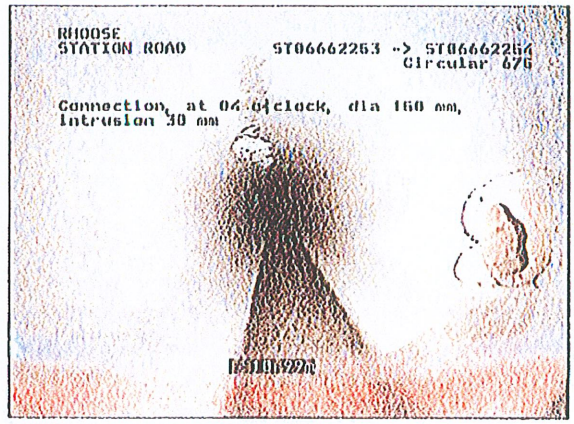

Photo: 20a, Tape No.: 01, 00:00:00
10.99m, Connection, at 04 o'clock, dia 150 mm, Intrusion 30 mm

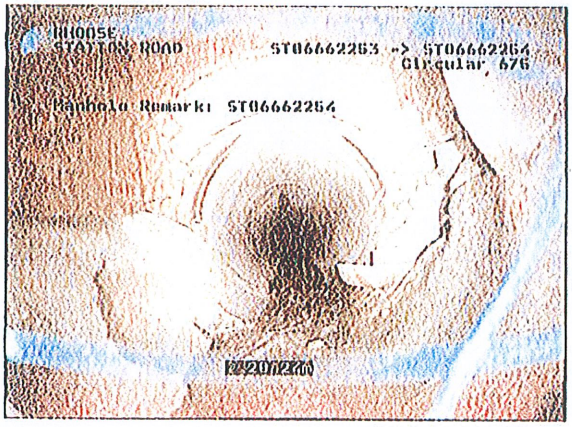

Photo: 21a, Tape No.: 01, 00:00:00
20.24m, Manhole Remark: ST06662254

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Inspection report

Date:	Job nr.:	Weather:	Operator:	section number:	PLR:
31.01.2006	04	Dry	AR	4	ST06662254X
Present:	Vehicle: Y339 GCA	Camera: IPEX CRAWLER SYSTEM	Preset:	Cleaned: Not known	Grade:

Road:	STATION ROAD	Division:		start MH:	ST06662254
Place:	RHOOSE	District:		end MH:	ST06662255
Location:	Light road	Tape No.:	01	Total length:	18 m

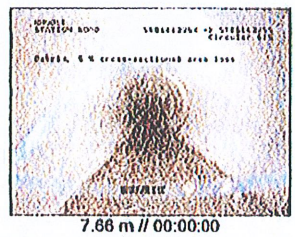
Purpose:	Structural defects	Size/Shape:	Circular 675
Use:	Surface water	Material:	Concrete Pipe length: 4m
Catchment:		Lining:	NONE
		Category:	C

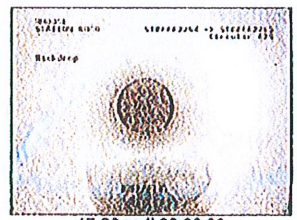
Comment:

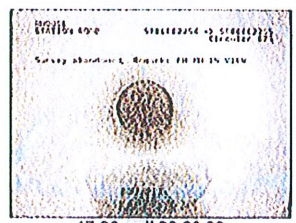
Location details:

1:150	position	code	observation	grade
ST06662254	0.00	ST	Start of Survey	0
	0.00	MH	Manhole Remark: ST06662254	0
	0.00	WL	Water level, 5 % height/diameter	0
	7.66	DE	Debris, 5 % cross-sectional area loss	1
	8.74	CN	Connection, at 01 o'clock, dia 150 mm	0
	10.89	CN	Connection, at 11 o'clock, dia 150 mm	0
	17.28	BD	Backdrop	0
	17.28	JN	Junction at 06 o'clock, dia 600 mm	0
	17.28	SA	Survey abandoned, Remark: FH MH IN VIEW	0


0 m // 00:00:00


7.66 m // 00:00:00


17.28 m // 00:00:00


17.28 m // 00:00:00

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Inspection photos

Place:	Road:	Date:	section number:	PLR:
RHOOSE	STATION ROAD	31.01.2006	4	ST06662254X

Photo: 24a, Tape No.: 01, 00:00:09
0m, Manhole Remark: ST06662254

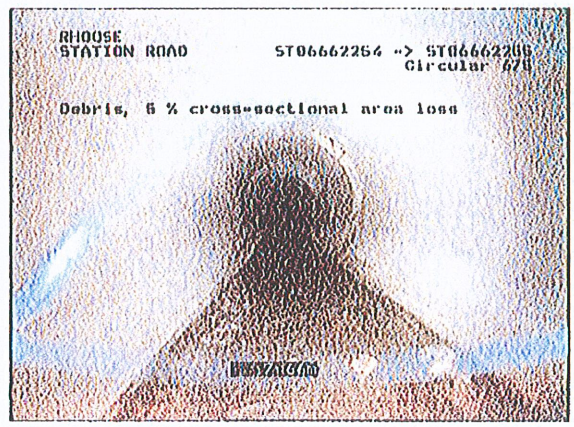

Photo: 26a, Tape No.: 01, 00:00:00
7.66m, Debris, 5 % cross-sectional area loss

Photo: 29a, Tape No.: 01, 00:00:00
17.28m, Backdrop

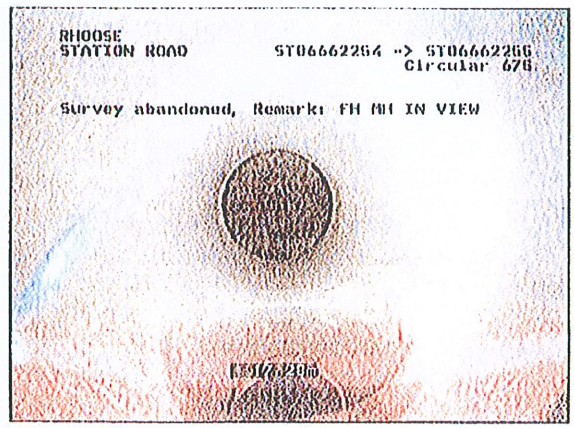

Photo: 31a, Tape No.: 01, 00:00:00
17.28m, Survey abandoned, Remark: FH MH IN VIEW

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Inspection report

Date:	Job nr.:	Weather:	Operator:	section number:	PLR:
31.01.2006	05	Dry	AR	5	ST06662255X
Present:	**Vehicle:**	**Camera:**	**Preset:**	**Cleaned:**	**Grade:**
	Y339 GCA	IPEX CRAWLER SYSTEM		Not known	

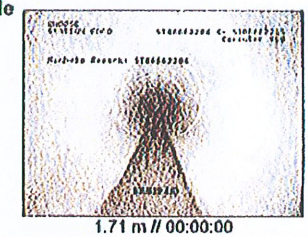
Road:	STATION ROAD	Division:		start MH:	ST06662204
Place:	RHOOSE	District:		end MH:	ST06662255
Location:	Light road	Tape No.:	01	Total length:	7.22 m

Purpose:	Structural defects	Size/Shape:	Circular 900
Use:	Surface water	Material:	Concrete Pipe length: 4m
Catchment:		Lining:	NONE
		Category:	C

Comment: NON CRITICAL SEWERS

Location details: HIGH PEAK RURAL

1:75	position	code	observation	grade
Depth: 3.55				
ST06662204	0.00	ST	Start of Survey	0
	1.71	MH	Manhole Remark: ST06662204	0
	1.71	WL	Water level, 5 % height/diameter	0
ST06662255	7.22	MH	Manhole Remark: ST06662255	0
	7.22	FH	Finish Survey	0



1.71 m // 00:00:00

7.22 m // 00:00:00

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Inspection photos

Place:	Road:	Date:	section number:	PLR:
RHOOSE	STATION ROAD	31.01.2006	5	ST06662255X

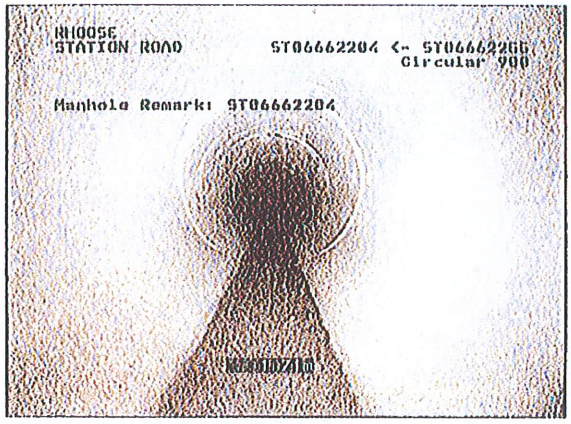

Photo: 33a, Tape No.: 01, 00:00:00
1.71m, Manhole Remark: ST06662204

Photo: 35a, Tape No.: 01, 00:00:00
7.22m, Manhole Remark: ST06662255

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Inspection report

Date:	Job nr.:	Weather:	Operator:	section number:	PLR:
31.01.2006	06	Dry	AR	6	ST06662204X
Present:	Vehicle: Y339 GCA	Camera: IPEX CRAWLER SYSTEM	Preset:	Cleaned: Not known	Grade:

Road:	STATION ROAD	Division:		start MH:	ST06662204
Place:	RHOOSE	District:		end MH:	ST06661156
Location:	Light road	Tape No.:	01	Total length:	52.74 m

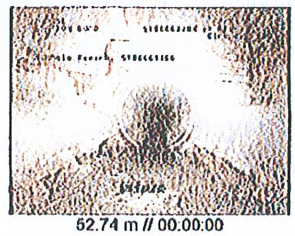
Purpose:	Structural defects	Size/Shape:	Circular 900
Use:	Surface water	Material:	Concrete Pipe length: 4m
Catchment:		Lining:	NONE
		Category:	C

Comment: FH MH DAMAGED INVERT

Location details:

1:400	position	code	observation	grade
Depth: 3.55				
ST06662204	0.00	ST	Start of Survey	0
	1.70	MH	Manhole Remark: ST06662204	0
	1.70	WL	Water level, 5 % height/diameter	0
ST06661156	52.74	MH	Manhole Remark: ST06661156	0
	52.74	FH	Finish Survey	0

1.7 m // 00:00:00



52.74 m // 00:00:00

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Inspection photos

Place:	Road:	Date:	section number:	PLR:
RHOOSE	STATION ROAD	31.01.2006	6	ST06662204X

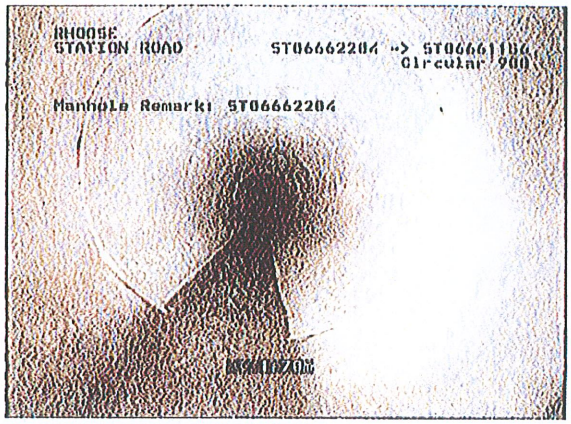

Photo: 38a, Tape No.: 01, 00:00:00
1.7m, Manhole Remark: ST06662204

Photo: 40a, Tape No.: 01, 00:00:00
52.74m, Manhole Remark: ST06661156

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Inspection report

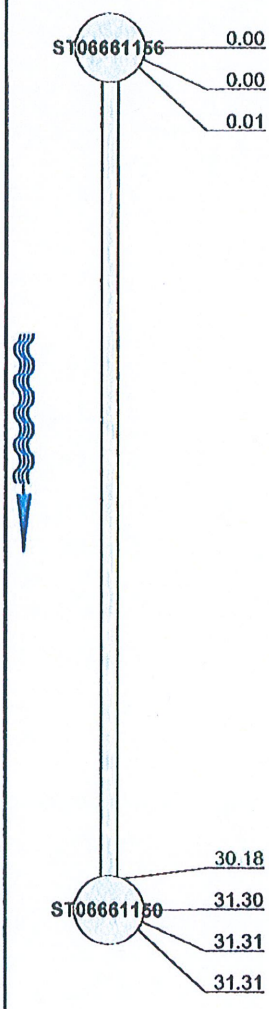
Date:	Job nr.:	Weather:	Operator:	section number:	PLR:
31.01.2006	07	Dry	AR	7	ST06661156X
Present:	**Vehicle:**	**Camera:**	**Preset:**	**Cleaned:**	**Grade:**
	Y339 GCA	IPEX CRAWLER SYSTEM		Not known	

Road:	STATION ROAD	Division:		start MH:	ST06661156
Place:	RHOOSE	District:		end MH:	ST06661150
Location:	Light road	Tape No.:	01	Total length:	31.31 m

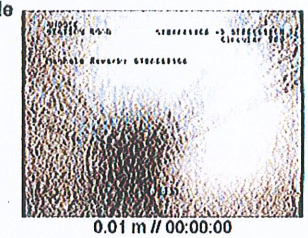
Purpose:	Structural defects	Size/Shape:	Circular 900
Use:	Surface water	Material:	Concrete Pipe length: 4m
Catchment:		Lining:	NONE
		Category:	C

Comment: FH MH UNCHARTED

Location details:

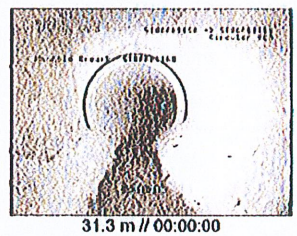


1:250 position	code	observation	grade
ST06661156 0.00	MH	Manhole Remark: ST06661156	0
0.00	WL	Water level, 5 % height/diameter	0
0.01	ST	Start of Survey	0
30.18	DE	Debris, 10 % cross-sectional area loss	1
ST06661150 31.30	MH	Manhole Remark: ST06661150	0
31.31	GO	General Observation, Remark: UNCHARTED MANHOLE	0
31.31	FH	Finish Survey	0

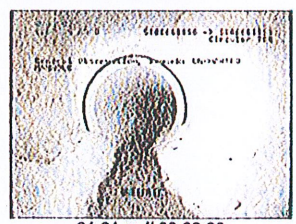


0.01 m // 00:00:00

30.18 m // 00:00:00



31.3 m // 00:00:00



31.31 m // 00:00:00

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Inspection photos

Place:	Road:	Date:	section number:	PLR:
RHOOSE	STATION ROAD	31.01.2006	7	ST06661156X

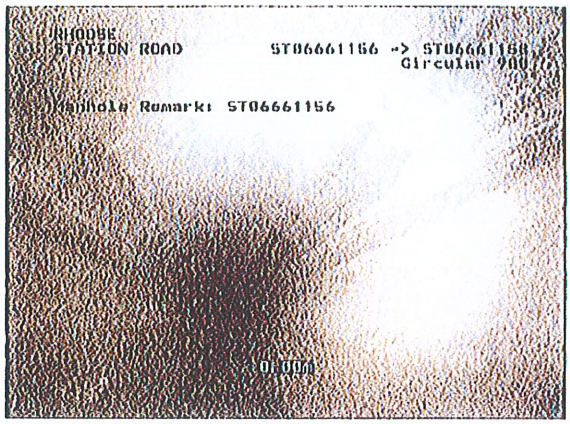

Photo: 42a, Tape No.: 01, 00:00:00
0.01m, Start of Survey

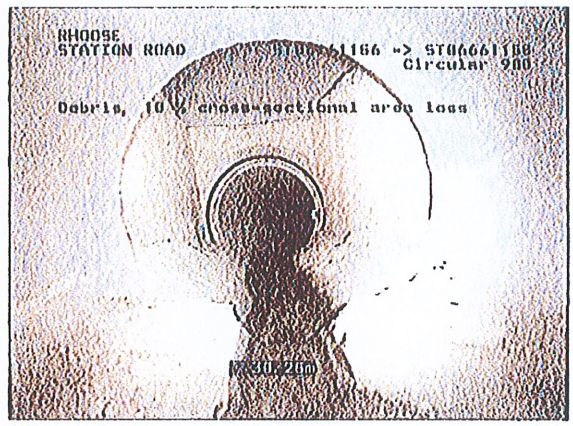

Photo: 45a, Tape No.: 01, 00:00:00
30.18m, Debris, 10 % cross-sectional area loss

Photo: 46a, Tape No.: 01, 00:00:00
31.3m, Manhole Remark: ST06661150

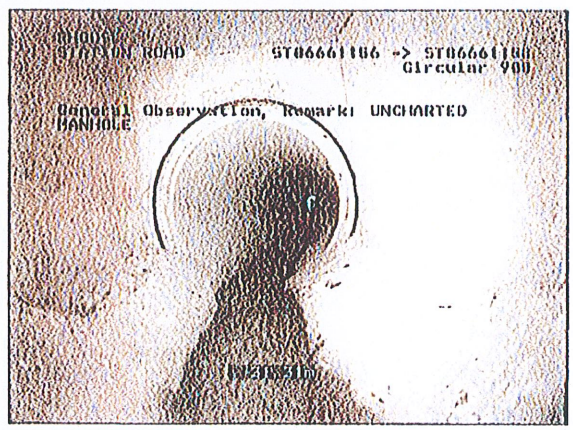

Photo: 47a, Tape No.: 01, 00:00:00
31.31m, General Observation, Remark: UNCHARTED
MANHOLE

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Inspection report

Date:	Job nr.:	Weather:	Operator:	section number:	PLR:
31.01.2006	08	Dry	AR	8	ST06661150X
Present:	Vehicle: Y339 GCA	Camera: IPEX CRAWLER SYSTEM	Preset:	Cleaned: Not known	Grade:

Road:	STATION ROAD	Division:		start MH:	ST06661150
Place:	RHOOSE	District:		end MH:	ST06661158
Location:	Light road	Tape No.:	01	Total length:	24.03 m

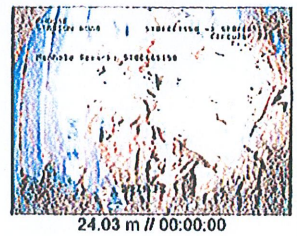
Purpose:	Structural defects	Size/Shape:	Circular 725
Use:	Surface water	Material:	Concrete Pipe length: 4m
Catchment:		Lining:	NONE
		Category:	C

Comment:

Location details:

1:200	position	code	observation	grade
ST06661150	0.00	ST	Start of Survey	0
	0.00	MH	Manhole Remark: ST06661150	0
	0.00	WL	Water level, 5 % height/diameter	0
ST06661158	24.03	DE	Debris, 10 % cross-sectional area loss	1
	24.03	MH	Manhole Remark: ST06661158	0
	24.03	GO	General Observation, Remark: OUTFALL	0
	24.03	FH	Finish Survey	0

0 m // 00:00:07



24.03 m // 00:00:00

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Inspection photos

Place:	Road:	Date:	section number:	PLR:
RHOOSE	STATION ROAD	31.01.2006	8	ST06661150X

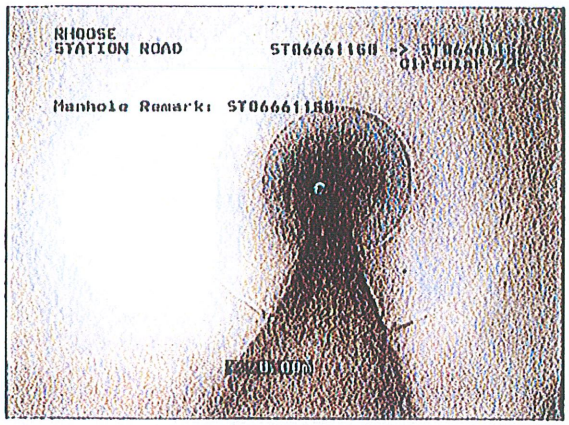


Photo: 50a, Tape No.: 01, 00:00:07
0m, Manhole Remark: ST06661150

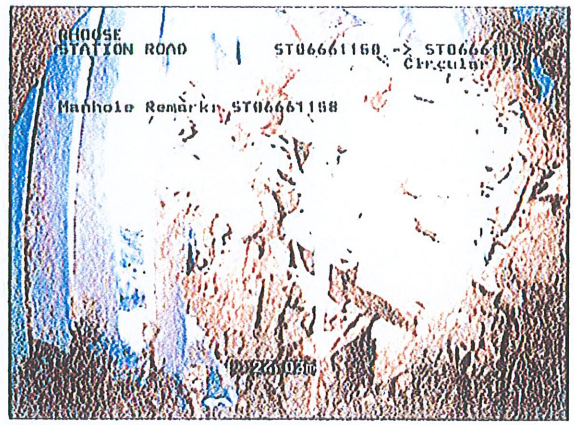
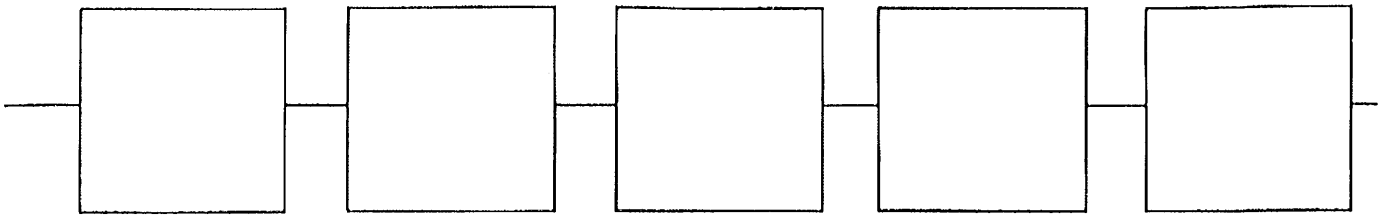


Photo: 53a, Tape No.: 01, 00:00:00
24.03m, Manhole Remark: ST06661158

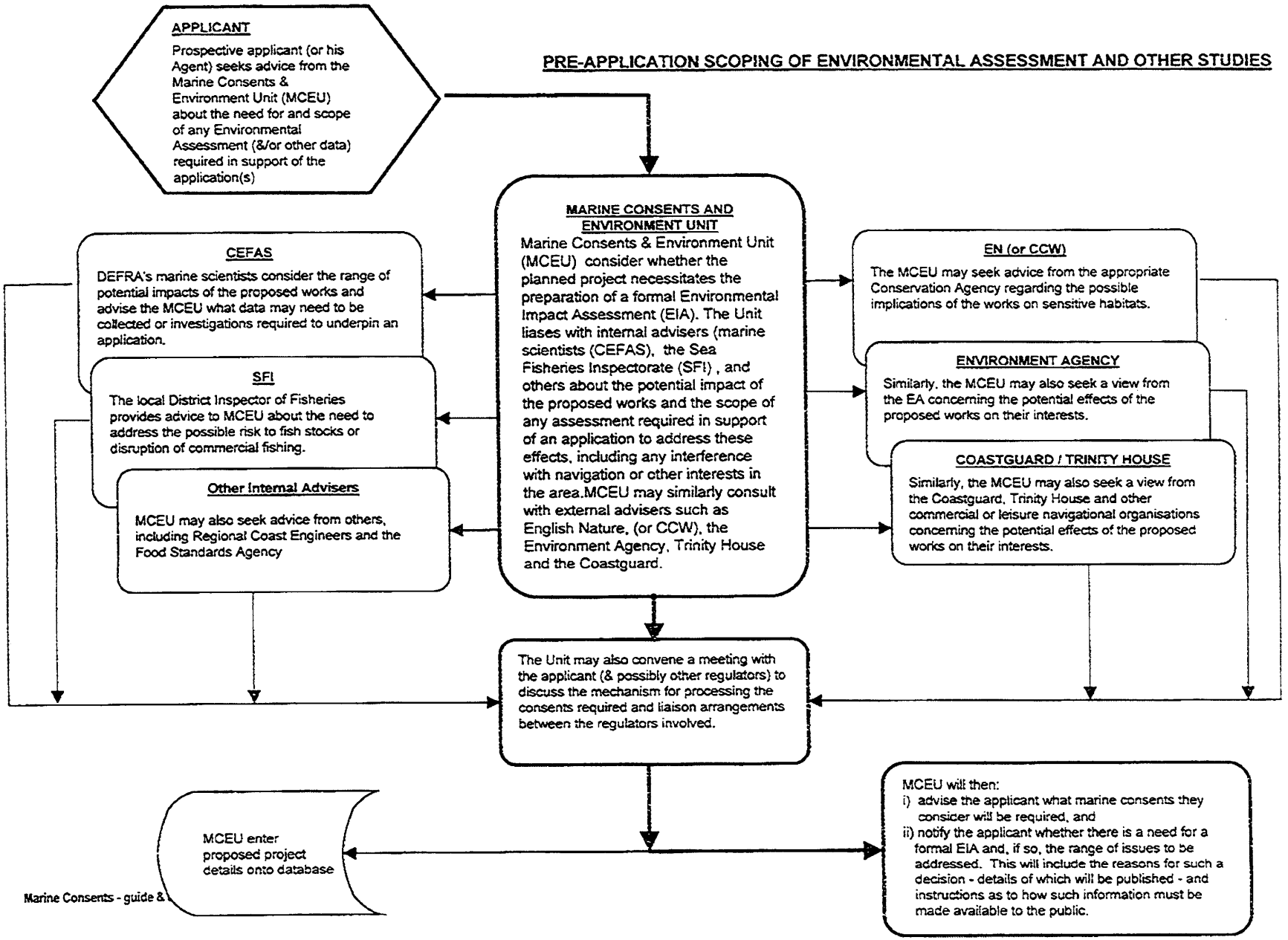


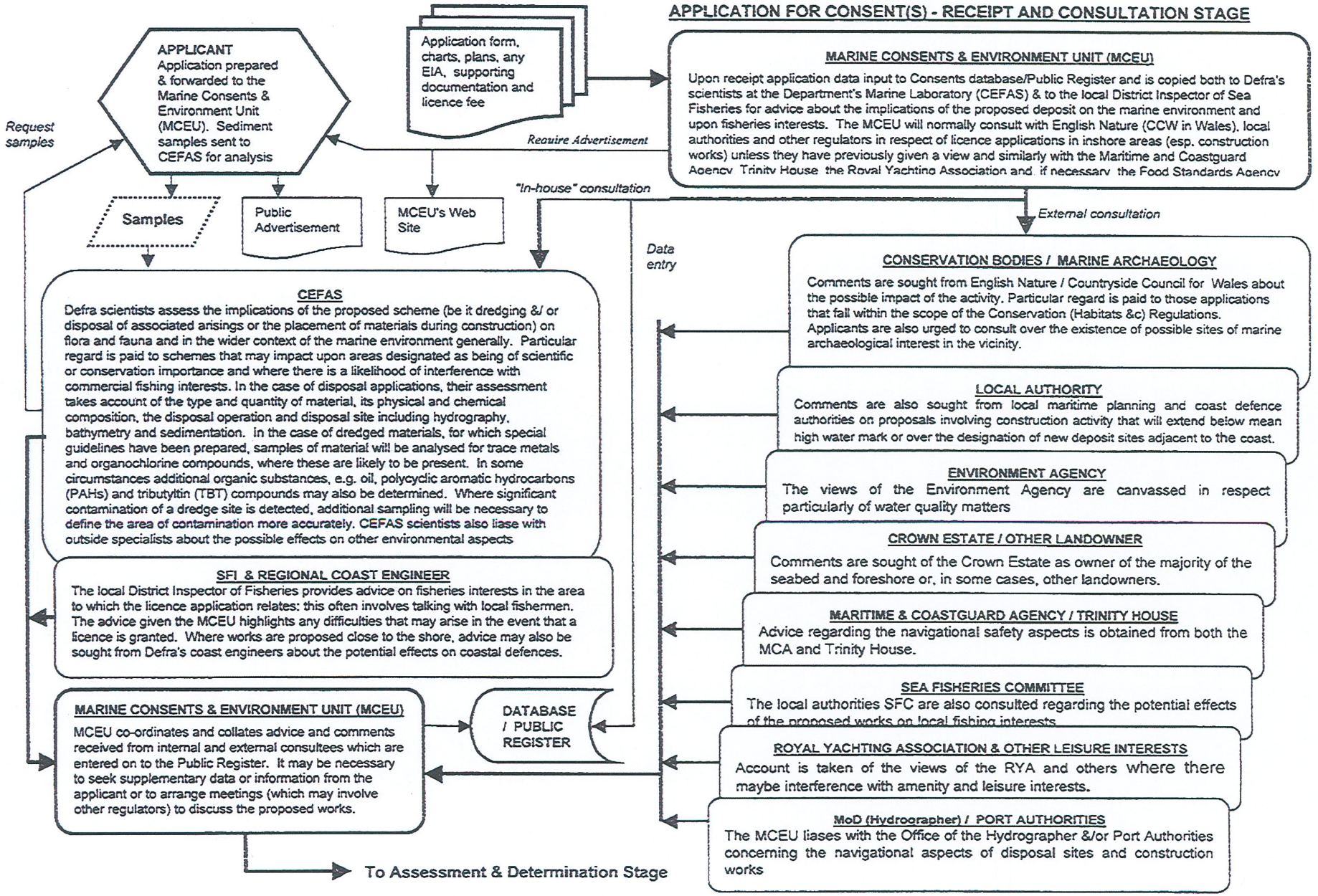
Appendix 5

CAPITA SYMONDS

successful**people**successful**projects**successful**performance**

PRE-APPLICATION SCOPING OF ENVIRONMENTAL ASSESSMENT AND OTHER STUDIES




APPLICATION FOR CONSENT(S) - RECEIPT AND CONSULTATION STAGE
APPLICANT
Application prepared & forwarded to the Marine Consents & Environment Unit (MCEU). Sediment samples sent to CEFAS for analysis
Request samples
Application form, charts, plans, any EIA, supporting documentation and licence fee
Require Advertisement
MARINE CONSENTS & ENVIRONMENT UNIT (MCEU)
Upon receipt application data input to Consents database/Public Register and is copied both to Defra's scientists at the Department's Marine Laboratory (CEFAS) & to the local District Inspector of Sea Fisheries for advice about the implications of the proposed deposit on the marine environment and upon fisheries interests. The MCEU will normally consult with English Nature (CCW in Wales), local authorities and other regulators in respect of licence applications in inshore areas (esp. construction works) unless they have previously given a view and similarly with the Maritime and Coastguard Agency, Trinity House, the Royal Yachting Association and, if necessary, the Food Standards Agency
"In-house" consultation
External consultation
Samples
Public Advertisement
MCEU's Web Site
Data entry
CEFAS
Defra scientists assess the implications of the proposed scheme (be it dredging &/ or disposal of associated arisings or the placement of materials during construction) on flora and fauna and in the wider context of the marine environment generally. Particular regard is paid to schemes that may impact upon areas designated as being of scientific or conservation importance and where there is a likelihood of interference with commercial fishing interests. In the case of disposal applications, their assessment takes account of the type and quantity of material, its physical and chemical composition, the disposal operation and disposal site including hydrography, bathymetry and sedimentation. In the case of dredged materials, for which special guidelines have been prepared, samples of material will be analysed for trace metals and organochlorine compounds, where these are likely to be present. In some circumstances additional organic substances, e.g. oil, polycyclic aromatic hydrocarbons (PAHs) and tributyltin (TBT) compounds may also be determined. Where significant contamination of a dredge site is detected, additional sampling will be necessary to define the area of contamination more accurately. CEFAS scientists also liase with outside specialists about the possible effects on other environmental aspects
SFI & REGIONAL COAST ENGINEER
The local District Inspector of Fisheries provides advice on fisheries interests in the area to which the licence application relates: this often involves talking with local fishermen. The advice given the MCEU highlights any difficulties that may arise in the event that a licence is granted. Where works are proposed close to the shore, advice may also be sought from Defra's coast engineers about the potential effects on coastal defences.
MARINE CONSENTS & ENVIRONMENT UNIT (MCEU)
MCEU co-ordinates and collates advice and comments received from internal and external consultees which are entered on to the Public Register. It may be necessary to seek supplementary data or information from the applicant or to arrange meetings (which may involve other regulators) to discuss the proposed works.
DATABASE / PUBLIC REGISTER
To Assessment & Determination Stage
CONSERVATION BODIES / MARINE ARCHAEOLOGY
Comments are sought from English Nature / Countryside Council for Wales about the possible impact of the activity. Particular regard is paid to those applications that fall within the scope of the Conservation (Habitats &c) Regulations. Applicants are also urged to consult over the existence of possible sites of marine archaeological interest in the vicinity.
LOCAL AUTHORITY
Comments are also sought from local maritime planning and coast defence authorities on proposals involving construction activity that will extend below mean high water mark or over the designation of new deposit sites adjacent to the coast.
ENVIRONMENT AGENCY
The views of the Environment Agency are canvassed in respect particularly of water quality matters
CROWN ESTATE / OTHER LANDOWNER
Comments are sought of the Crown Estate as owner of the majority of the seabed and foreshore or, in some cases, other landowners.
MARITIME & COASTGUARD AGENCY / TRINITY HOUSE
Advice regarding the navigational safety aspects is obtained from both the MCA and Trinity House.
SEA FISHERIES COMMITTEE
The local authorities SFC are also consulted regarding the potential effects of the proposed works on local fishing interests
ROYAL YACHTING ASSOCIATION & OTHER LEISURE INTERESTS
Account is taken of the views of the RYA and others where there maybe interference with amenity and leisure interests.
MoD (Hydrographer) / PORT AUTHORITIES
The MCEU liases with the Office of the Hydrographer &/or Port Authorities concerning the navigational aspects of disposal sites and construction works