

BRISBANE CITY COUNCIL  
DEPARTMENT OF WATER SUPPLY AND SEWERAGE  
MECHANICAL AND ELECTRICAL BRANCH  
ELECTROLYSIS SECTION  
EAGLE FARM PUMPING STATION.

OPERATING MANUAL FOR:

CHILTON ST. TO BRANDON RD. 1060-755 DIA TRUNK WATER MAIN  
CATHODIC PROTECTION SYSTEM

CLIENT:

DEPARTMENT OF WATER SUPPLY AND SEWERAGE  
WATER MAINTENANCE SECTION

4TH MARCH 1994



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## (1.0) INTRODUCTION

Steel when buried or immersed has a tendency to corrode (rust) as the oxidised form is more stable than the metal.

Because of this, precautions must be taken to stop or minimise the corrosion reaction to an acceptable level consistent with the design life of the structure. This is normally achieved by the use of protective coatings which control the corrosion reaction by isolating the steel from its surrounding environment.

However, it is not practicable to expect a perfect coating during construction and coating damage will also occur with time. Because of this, corrosion may occur at imperfections.

## (2.0) CORROSION AND CATHODIC PROTECTION

Corrosion is an electrochemical process in that it is accompanied by a flow of electrical current.

Corrosion occurs on the surface of metals at active areas known as anodes, which are electrically continuous with less active or passive areas known as cathodes. The electric current flows from the anode through the electrolyte to the cathode, with the circuit being completed by the electrical continuity between the cathode and anode. In practice anodes and cathodes are generally part of the same metallic surface and individual anodic areas may be small.

In applying cathodic protection, an external current is applied to the surface so that the entire surface to be protected acts as a cathode. This involves the use of an auxiliary anode and when the current flow from this anode is sufficient, no part of the structure acts as an anode.

An external source of direct current such as a transformer rectifier is used in conjunction with an anode consisting of material with a very low corrosion rate.

While it is the flow of current which achieves the cathodic protection of the surface it is impractical to measure these currents over individual anodic areas to determine when cathodic protection has been achieved. However, with the flow of cathodic protection current, the structure becomes more negative with respect to the surrounding electrolyte. Because of this, it is possible to state values of metal/ electrolyte potential and is generally measured against a standard reference electrode, which permits a reproducible potential at which corrosion does not occur to be quoted.



(3.0)

**MAINS DETAILS**

**Size:** Dia 1060-755mm mild steel cement lined

**Coating:** Low Density Fusion Bonded Polyethylene outer coating.

**Length:** 3250 M

**Location:** Cnr Chilton and Kingman Streets, Sunnybank Hills to cnr Brandon and Nemies Rd.

**Drawings:** Construction:  
486/4/6-W10001P Sheets 1-15.

Included in manual:  
486/4/6-W10002LO Stones Rd. P/Stn to Brandon Rd 755 and 1060 dia. MSCL water main locality plan.

486/6/6-RC1C005E 1060 and 755 dia. MSCL water main C.P. details.



(4.0)

CATHODIC PROTECTION DETAILS

- 4.1 Type of Cathodic Protection: Impressed Current
- 4.2 Rectifier: Standard 32 Volt, 10 Amp direct current output enclosed in a stainless steel switchboard. Rectifier has a 240VAC supply from a nearby SEQEB pole #JU8236. Rectifier is located on the footpath adjacent to Jack Pyle Park, UBD 53C10.
- 4.3 Cathode: The cathode point is located on the 755 dia main opposite the rectifier in Gowan Rd. The cathode is the point where the cabling from the rectifier is attached to the structure under cathodic protection.
- 4.4 Anodes: One 1500 X 75mm silicone iron anode was installed approximately 120 metres from the trunk mains in a vertical bed 5 metres deep. The anodes were first backfilled with a cokebreeze surround to improve anode ground resistance. The anode location is identified by a marker pit and post.
- 4.5 Testpoints: Testpoints are installed on cathodically protected structures to enable testing to confirm that full cathodic protection of the structure is maintained.  
  
On these mains 7 testpoints have been installed. For further details see CP details layout drg.
- 4.6 Associated Drawings:
 

486/6/25-AA1C0021E 486/1/22-C0023E 486/6/25-AA1C0026E  486/6/25-AA1C0024E	Std Rectifier Wiring Diagram Silicone Iron Anode details. Installation details conduit and rectifier. Vertical groundbed details.
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- 4.7 Associated Standards:
 

AS 2832.1  AS 3000	1985 Pipes, Cables, Ducts, Guide to Cathodic Protection. Part 1 1991 Australian Wiring Rules
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- 4.8 Government Regulations:  
Queensland Electricity Acts and Regulations

(5.0)

PERFORMED TESTING

- (1) Natural Potential Survey
- (2) Testing of Insulated Flanges, Joints
- (3) Soil Resistance Testing
- (4) Current Drain Survey
- (5) Pipe Coating Anomaly Survey
- (6) Rectifier Loop Resistance
- (7) Foreign Structure Interference Survey and Mitigation.
- (8) Final Potential Survey and Commissioning.

NOTE: Details of above testing have not been included in this manual but are available upon request.

(6.0) CONCLUSION

Full cathodic protection has been achieved on this section of the trunk mains.

The cathodic protection system is to be registered with the Queensland Electricity Commission and has approval to operate.

(7.0) MAINTENANCE

The cathodic protection system is maintained on a monthly basis after commissioning. These checks involve testing rectifier operation and recording of pipe to soil potentials. Monthly, Six monthly and sixty monthly maintenance procedures are detailed as attached below.

(7.1) CPS Monthly Maintenance Details.

Required:



- 1/ Notify plant operator and/or sign entry logs where necessary.
- 2/ Have appropriate keying.

Labour:

One tradesperson, one vehicle. 20 minutes per site.

Procedure:

- 1/ Identify installation.
- 2/ Check system for operation.
- 3/ Record voltmeter.
- 4/ Record ammeter.
- 5/ Comments.
- 6/ Log entry.



(7.2) CPS 6 Monthly Maintenance Details:

Required:

- 1/ Notify plant operator and/or sign entry logs where necessary.
- 2/ Have appropriate keying.
- 3/ Set of tools. (Electricians)
- 4/ Multimeter.
- 5/ DC clampmeter.
- 6/ Copper sulphate reference cell and leads.
- 7/ Cleaning equipment.
- 8/ Gatic cover lifters.

Labour:

One tradesperson electrical, one laborer, one vehicle.  
Two hours per site.

Procedure:

- 1/ Identify system.
- 2/ Check system for operation.
- 3/ Record voltmeter.
- 4/ Record ammeter.
- 5/ Record "on" potentials for all test points.
- 6/ Record "instant off" potentials for all test points.
- 7/ Record "off" potentials for all test points.
- 8/ Perform loop resistance and record.
- 9/ Check and record anode string currents.
- 10/ Comments.
- 11/ Log entry.



(7.3) CPS 60 Monthly Maintenance Details.

Required:

- 1/ Notify plant operator and/or sign entry logs where necessary.
- 2/ Have appropriate keying.
- 3/ Set of tools. (Electricians)
- 4/ Multimeter.
- 5/ DC clampmeter.
- 6/ Copper sulphate reference cell and leads.
- 7/ Cleaning equipment.
- 8/ Gatic cover lifters.
- 9/ Rectifier load bank.
- 10/ PCS2000 Detection Equipment.

Labour:

One tradesperson electrical, one laborer, one vehicle.  
Eight hours per site.

Procedure:

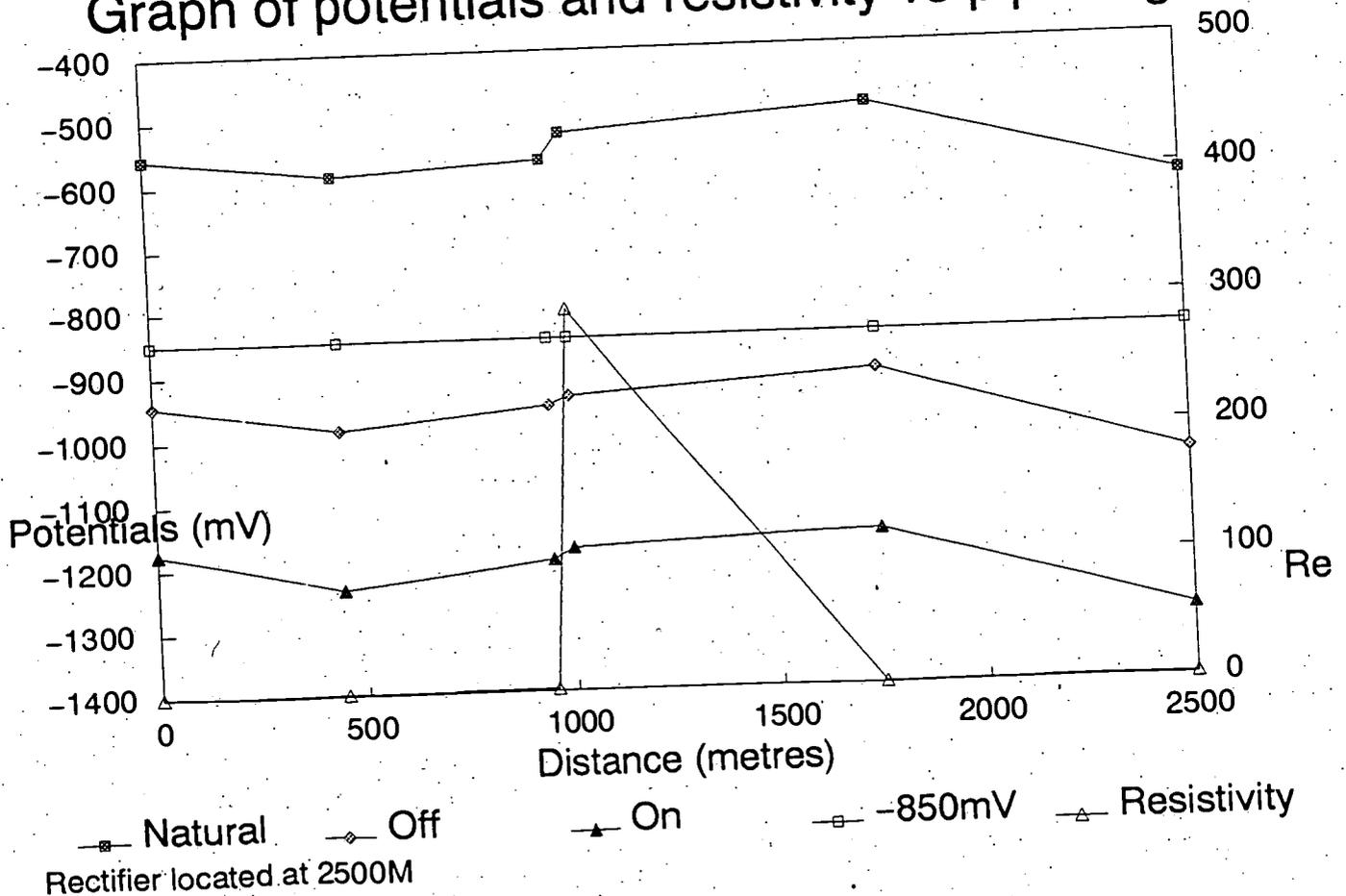
- 1/ Identify system.
- 2/ Check system for operation.
- 3/ Record voltmeter.
- 4/ Record ammeter.
- 5/ Record "on" potentials for all test points.
- 6/ Record "instant off" potentials for all test points.
- 7/ Record "off" potentials for all test points.
- 8/ Perform loop resistance and record.
- 9/ Check and record anode string currents.
- 10/ Load test rectifier for 10 minutes.
- 11/ Check all switchboard and testpoint terminals for tightness.
- 12/ Check all switchboard and testpoints are labelled and I.D. tags attached.
- 13/ Check plans are correctly drawn and modify if necessary.
- 14/ Remove and inspect anodes.
- 15/ Recheck all interference (CPS) bleeds.
- 16/ Pipecamp structure if applicable.
- 17/ Apply for "continue to operate" permit if applicable.



**Brisbane City Council**  
**Dept. W.S.& S.**  
**Metropolitan Division**  
**Eagle Farm Pumping Station**  
**Date: 4th March 1994**  
**Electrical Workshop**  
**System: Chilton St. to Brandon Rd. 1060-755 dia. trunk mains.**  
**Cathodic Protection System reference potential and earth resistivity graph.**

Test Point number	Distances to T.P. (metres)	Potentials to CuSO4			Resistivities at 2 metres (ohm.metres)
		Natural (mV)	Off (mV)	On (mV)	
1	0	-556	-944	-1174	0.188
2	450	-588	-986	-1234	1.13
3	950	-570	-954	-1194	1.5
4	1000	-528	-940	-1176	297
5	1750	-495	-910	-1159	0.188
6	2500	-615	-1047	-1290	0.94
7	3250	-562	-956	-1207	0.188

**Graph of potentials and resistivity vs pipelength**



**Brisbane City Council**  
**Dept. W.S.& S.**  
**Metropolitan Division**  
**Eagle Farm Pump Station**

Cathodic Protection System Loop Resistance

Date: 4th March 1994

Cathodic Protection System:

Chilton St. to Brandon Rd. water trunk mains.

System Operating Volts

1

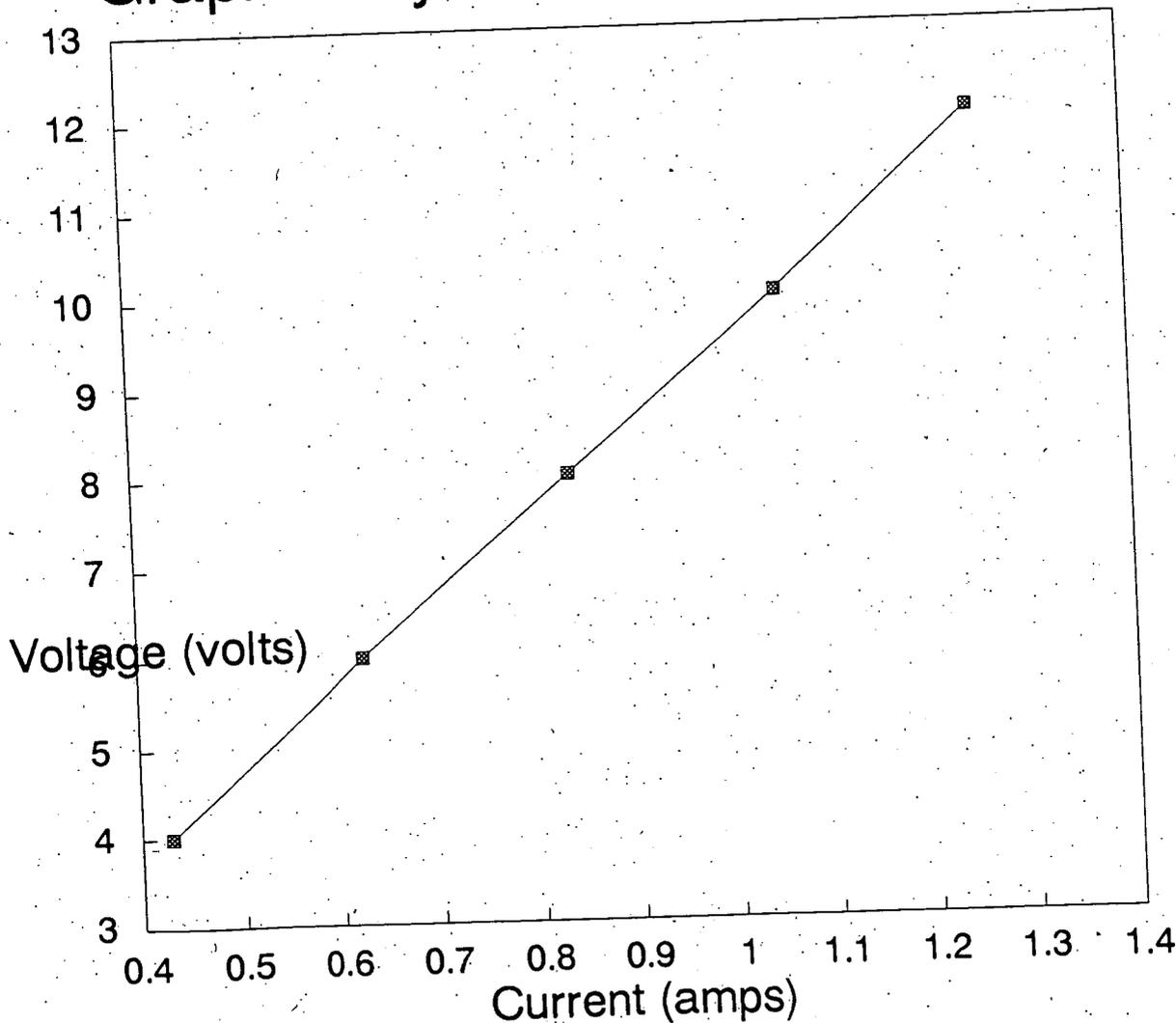
System Operating amps

0.1

Test Voltage:		Test Current:	
(volts)		(amps)	
4		0.43	
6		0.625	
8		0.835	
10		1.05	
12		1.25	

Loop Resistance (ohms)
9.638554

**Graph of System voltage vs current.**





**BRISBANE CITY COUNCIL**  
**DEPARTMENT OF WATER SUPPLY AND SEWERAGE**  
**MECHANICAL AND ELECTRICAL SECTION**

INTERFERENCE SURVEY RESULTS

JOB DESCRIPTION: - Gowran Rd TR

UNIT READING: - 9V 1A

	READING	TEST POINT I.D.	LOCATION	SWING mV
ON OFF	-108 -98	SEQUB JU8327	Gowran Rd	-10
ON OFF	-322 -328	SEQUB 63378	Gowran Rd	+6
ON OFF	-431 -427	LIGHT POLES	HULLAWELL ST	-4
ON OFF	-435 -421	HOUS E TAPS	HULLAWELL ST	-14
ON OFF	-598 -581	PARK TAPS	JACK PYLE PK	-17
ON OFF	-1321 -1321	GAS MAIN	GOWAN RD PAST RUNCORN TAVERN	0
ON OFF	-1328 -1308	GAS MAIN	CNR GOWAN / HULLAWELL	-20
ON OFF	-1112 -1112	MOONIE <del>CONTACT</del>	MOONIE SYMONDS RD	0
ON OFF			MOONIE / AHL / MUGAS	
ON OFF			TELECOM / QEC	
ON OFF	-1048 -1015	GAS MAIN	DIA 61P TR GOWAN RD	-33
ON OFF	-1409 -1402	GAS MAIN	PANATINE	-7

COMPILED BY: JS

FENCE - ADJ TR  
 -604 on  
 -630 off  
 +26mV

BRISBANE CITY COUNCIL  
DEPARTMENT OF WATER SUPPLY AND SEWERAGE  
MECHANICAL AND ELECTRICAL SECTION

INTERFERENCE SURVEY RESULTS

JOB DESCRIPTION: - CHILTON ST TO BRANDON RD  
 24-09-93  
 GOWAN RD

UNIT READING: - .12V.....1A.....

	READING	TEST POINT I.D.	LOCATION	SWING
ON OFF	-310 mV -310 mV		VALVE NEAR RECT	NIL
ON OFF	-128 mV -106 mV		SEWER POLE N° JU 8327	-22 mV
ON OFF	-334 mV -334 mV		N°295	NIL
ON OFF	-348 mV -348 mV		N°288	NIL
ON OFF	-351 mV -351 mV		N°286	NIL
ON OFF	-372 mV -372 mV		N°286 F.H	NIL
ON OFF	-322 mV -322 mV		N°282	NIL
ON OFF	-301 mV -298 mV		N°276	-3 mV
ON OFF	-225 mV -228 mV		N°274	+3 mV
ON OFF	-247 mV -250 mV		N°272	+3 mV
ON OFF	-242 mV -242 mV		N°242 W.V	NIL
ON OFF	-281 mV -281 mV		N°242	NIL

COMPILED BY: *Murray McCann*

BRISBANE CITY COUNCIL  
DEPARTMENT OF WATER SUPPLY AND SEWERAGE  
MECHANICAL AND ELECTRICAL SECTION

INTERFERENCE SURVEY RESULTS

JOB DESCRIPTION: - CHILTON ST TO BRANDON RD

24-09-93

DUBARFY ST

UNIT READING: - 10V.....1A.....

	READING	TEST POINT I.D.	LOCATION	SWING
ON OFF	+99 mV +99 mV		N <sup>o</sup> 25	NIL
ON OFF	+101 mV +101 mV		N <sup>o</sup> 23	NIL
ON OFF	-274 mV -266 mV		N <sup>o</sup> 21	-8mV
ON OFF	-151 mV -151 mV		OPP. N <sup>o</sup> 19, F.H.	NIL
ON OFF	-309 mV -296 mV		OPP N <sup>o</sup> 25, STOP COCK	-13mV
ON OFF	-378 mV -378 mV		N <sup>o</sup> 28	NIL
ON OFF	-327 mV -309 mV		N <sup>o</sup> 30	-18mV
ON OFF	-431 mV -431 mV		N <sup>o</sup> 36 F.H.	NIL
ON OFF	-142 mV -142 mV		N <sup>o</sup> 2 MINTWOOD PL	NIL
ON OFF	-71 mV -71 mV		N <sup>o</sup> 3 MINTWOOD PL	NIL
ON OFF	-302 mV -302 mV		N <sup>o</sup> 14	
ON OFF				

COMPILED BY: *Murray McConville*

BRISBANE CITY COUNCIL  
DEPARTMENT OF WATER SUPPLY AND SEWERAGE  
MECHANICAL AND ELECTRICAL SECTION

INTERFERENCE SURVEY RESULTS

JOB DESCRIPTION:- CHILTON ST TO BRANDON RD  
24-09-93  
DUBARRY ST

UNIT READING:- .10V.....1A.....

	READING	TEST POINT I.D.	LOCATION	SWING
ON OFF	+112 mV +117 mV		N <sup>o</sup> 57	-5mV
ON OFF	+120 mV +127 mV		N <sup>o</sup> 55	-7mV
ON OFF	-295 mV -284 mV		N <sup>o</sup> 53 DOWN LANE	-11mV
ON OFF	-303 mV -293 mV		N <sup>o</sup> 51 DOWN LANE	-10mV
ON OFF	-269 mV -260 mV		N <sup>o</sup> 49 DOWN LANE	-9mV
ON OFF	-263 mV -256 mV		N <sup>o</sup> 47 DOWN LANE	-7mV
ON OFF	-268 mV -265 mV		N <sup>o</sup> 45 DOWN LANE	-3mV
ON OFF	-263 mV -255 mV		N <sup>o</sup> 43	-8mV
ON OFF	+110 mV +116 mV		N <sup>o</sup> 41	-6mV
ON OFF	-193 mV -173 mV		N <sup>o</sup> 31	-20mV
ON OFF	-208 mV -208 mV		N <sup>o</sup> 29	NIL
ON OFF	-218 mV -216 mV		N <sup>o</sup> 27	-2mV

COMPILED BY: *Murray M. ...*

**BRISBANE CITY COUNCIL**  
**DEPARTMENT OF WATER SUPPLY AND SEWERAGE**  
**MECHANICAL AND ELECTRICAL SECTION**

INTERFERENCE SURVEY RESULTS

JOB DESCRIPTION: - CHILTON ST TO BRANDON RD

24-07-93

UNIT READING: - ...10V.....1A.....

GOWAN RD

	READING	TEST POINT I.D.	LOCATION	SWING
ON OFF	-172 mV -172 mV		N <sup>o</sup> 238 F.H.	NIL
ON OFF	-356 mV -356 mV		OPP N <sup>o</sup> 242 F.H	NIL
ON OFF	- -		N <sup>o</sup> 265 UNREADABLE	-
ON OFF	- -		N <sup>o</sup> 267 CAN NOT FIND	-
ON OFF				

COMPILED BY: *Mary McCormack*

10 SECS ON  
25

BRISBANE CITY COUNCIL  
DEPARTMENT OF WATER SUPPLY AND SEWERAGE  
MECHANICAL AND ELECTRICAL SECTION

INTERFERENCE SURVEY RESULTS

JOB DESCRIPTION: - CHILTON ST TO BRANDON RD  
24-09-93  
HELLAWELL RD

UNIT READING:- ...12V.....1A.....

	READING	TEST POINT I.D.	LOCATION	SWING
ON OFF	- -		Nº 3 UNREADABLE	-
ON OFF	-332 mV -350 mV		Nº 7	-2mV
ON OFF	-342 mV -338 mV		Nº 9	-4mV
ON OFF	-369 mV -369 mV		Nº 11	NIL
ON OFF	-372 mV -372 mV		VACANT BLOCK	NIL
ON OFF	-404 mV -404 mV		Nº 17	NIL
ON OFF	-272 mV -262 mV		Nº 34	-10mV
ON OFF	-369 mV -369 mV		Nº 34 F.H	NIL
ON OFF				

COMPILED BY: *Murray Macarick*

**MEMORANDUM**

To	File No.
From	Date 27/09/93
Subject CHILTON STREET TO BRANDON ROAD	

ON POTENTIALS POLARIZED

RECT SET AT	1V	100 mA
LOOP RESISTANCE	4V	430 mA
	6V	625 mA
	8V	835 mA
	10V	1.05A
	12V	1.25A
ANODE CURRENT		190 mA

POTENTIAL CHECK

ZN TO PIPE -190 mV<sub>on</sub> +53 mV<sub>off</sub>

TEST POINT N<sup>o</sup>1

PROTECTED	ZN TO PIPE	-581 mV <sub>on</sub>	-346 mV <sub>off</sub>
	CuSO <sub>4</sub> TO PIPE	-1174 mV <sub>on</sub>	-944 mV <sub>off</sub>
UNPROTECTED	ZN TO PIPE	-549 mV <sub>on</sub>	-549 mV <sub>off</sub>
	CuSO <sub>4</sub> TO PIPE	-354 mV <sub>on</sub>	-365 mV <sub>off</sub>
UNPROTECTED	ZN TO PIPE	-32 mV <sub>on</sub>	-47 mV <sub>off</sub>
	CuSO <sub>4</sub> TO PIPE	-1080 mV <sub>on</sub>	-1093 mV <sub>off</sub>

TEST POINT N<sup>o</sup>2

ZN TO PIPE	-210 mV <sub>on</sub>	+28 mV <sub>off</sub>
CuSO <sub>4</sub> TO PIPE	-1234 mV <sub>on</sub>	-986 mV <sub>off</sub>

TEST POINT N<sup>o</sup>3

PROTECTED IN	ZN TO PIPE	-130 mV <sub>on</sub>	+106 mV <sub>off</sub>
	CuSO <sub>4</sub> TO PIPE	-1194 mV <sub>on</sub>	-954 mV <sub>off</sub>
PROTECTED OUT	ZN TO PIPE	-147 mV <sub>on</sub>	+97 mV <sub>off</sub>
	CuSO <sub>4</sub> TO PIPE	-1195 mV <sub>on</sub>	-954 mV <sub>off</sub>

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BRISBANE CITY COUNCIL  
MEMORANDUM

To	File No.
From	Date 27/09/93
Subject CHILTON STREET TO BRANDON ROAD ON POTENTIALS POLARIZED.	

TEST POINT N <sup>o</sup> 4			
	ZN TO PIPE	-115 mV <sub>an</sub>	+122 mV <sub>off</sub>
	CuSO <sub>4</sub> TO PIPE	-1176 mV <sub>an</sub>	-940 mV <sub>off</sub>
TEST POINT N <sup>o</sup> 5			
	ZN TO PIPE	-145 mV <sub>an</sub>	+80 mV <sub>off</sub>
	CuSO <sub>4</sub> TO PIPE	-1159 mV <sub>an</sub>	-910 mV <sub>off</sub>
TEST POINT N <sup>o</sup> 6 (RECTIFIER)			
	ZN TO PIPE	-190 mV <sub>an</sub>	+53 mV <sub>off</sub>
TEST POINT N <sup>o</sup> 7			
PROTECTED	ZN TO PIPE	-115 mV <sub>an</sub>	+144 mV <sub>off</sub>
	CuSO <sub>4</sub> TO PIPE	-1207 mV <sub>an</sub>	-956 mV <sub>off</sub>
UNPROTECTED	ZN TO PIPE	+705 mV <sub>an</sub>	+705 mV <sub>off</sub>
	CuSO <sub>4</sub> TO PIPE	-386 mV <sub>an</sub>	-386 mV <sub>off</sub>
BRANDON RD	ZN TO PIPE	+354 mV <sub>an</sub>	+354 mV <sub>off</sub>
NEMIES RD	ZN TO PIPE	+756 mV <sub>an</sub>	+756 mV <sub>off</sub>



BRISBANE CITY COUNCIL

## MEMORANDUM

To	File No.
From	Date 22/09/93
Subject CHILTON STREET TO BRANDON ROAD	

ON POTENTIALS - NON POLARIZED

(ALL ANODES CONNECTED)

RECT. SET AT IV 100 mA

TEST POINT N<sup>o</sup>1

PROTECTED	ZN TO PIPE	- 271 mV
	CuSO <sub>4</sub> TO PIPE	- 365 mV
	CuSO <sub>4</sub> TO ZN	- 592 mV
UNPROTECTED	ZN TO PIPE	+ 553 mV
	CuSO <sub>4</sub> TO PIPE	- 363 mV
	CuSO <sub>4</sub> TO ZN	- 915 mV
UNPROTECTED	ZN TO PIPE	- 22 mV
	CuSO <sub>4</sub> TO PIPE	- 1112 mV
	CuSO <sub>4</sub> TO ZN	- 1093 mV

TEST POINT N<sup>o</sup>2

	ZN TO PIPE	+ 96 mV
	CuSO <sub>4</sub> TO PIPE	- 938 mV
	CuSO <sub>4</sub> TO ZN	- 1033 mV

TEST POINT N<sup>o</sup>3

PROTECTED IN	ZN TO PIPE	+ 174 mV
	CuSO <sub>4</sub> TO PIPE	- 925 mV
	CuSO <sub>4</sub> TO ZN	- 1095 mV
PROTECTED OUT	ZN TO PIPE	+ 162 mV
	CuSO <sub>4</sub> TO PIPE	- 924 mV
	CuSO <sub>4</sub> TO ZN	- 1082 mV



**MEMORANDUM**

To	File No.
From	Date 22/09/93
Subject: CHILTON STREET TO BRANDON ROAD ON POTENTIALS - NON POLARIZED (ALL ANODES CONNECTED)	

TEST POINT N<sup>o</sup> 4

Zn TO PIPE + 190 mV  
 CuSO<sub>4</sub> TO PIPE - 884 mV  
 CuSO<sub>4</sub> TO Zn - 1100 mV

TEST POINT N<sup>o</sup> 5

Zn TO PIPE + 157 mV  
 CuSO<sub>4</sub> TO PIPE - 852 mV  
 CuSO<sub>4</sub> TO Zn - 1010 mV

TEST POINT N<sup>o</sup> 6

Zn TO PIPE + 131 mV

TEST POINT N<sup>o</sup> 7

PROTECTED Zn TO PIPE + 202 mV

CuSO<sub>4</sub> TO PIPE - 862 mV

CuSO<sub>4</sub> TO Zn - 1081 mV

UNPROTECTED Zn TO PIPE + 709 mV

CuSO<sub>4</sub> TO PIPE - 368 mV

CuSO<sub>4</sub> TO Zn - 1076 mV

BRANDON RD Zn TO PIPE + 357 mV

NEMIES RD Zn TO PIPE + 763 mV



**MEMORANDUM**

To	File No.
From	Date 22/09/93
Subject CHILTON STREET TO BRANDON ROAD	

EARTHING OR SACRIFICIAL ANODE CONNECTION

(RECTIFIER UNIT SWITCHED OFF)

TEST POINT N°1 - PROTECTED SIDE

ZN TO PIPE (ANODE DISCONNECTED)	- 1 mV
CuSO <sub>4</sub> TO PIPE (ANODE DISCONNECTED)	- 585 mV
OPEN CIRCUIT POTENTIAL	- 418 mV
ANODE CURRENT	20 mA
ZN TO PIPE (ANODE CONNECTED)	- 78 mV
CuSO <sub>4</sub> TO PIPE (ANODE CONNECTED)	- 662 mV

TEST POINT N°3

PROTECTED IN:

ZN TO PIPE (ANODE DISCONNECTED)	+ 388 mV
CuSO <sub>4</sub> TO PIPE (ANODE DISCONNECTED)	- 692 mV
ZN TO PIPE (ANODE CONNECTED)	+ 367 mV
CuSO <sub>4</sub> TO PIPE (ANODE CONNECTED)	- 696 mV

PROTECTED OUT:

ZN TO PIPE (ANODE DISCONNECTED)	+ 376 mV
CuSO <sub>4</sub> PIPE (ANODE DISCONNECTED)	- 691 mV
OPEN CIRCUIT POTENTIAL	- 234 mV
ANODE CURRENT	6 mA
ZN TO PIPE (ANODE CONNECTED)	+ 362 mV
CuSO <sub>4</sub> TO PIPE (ANODE CONNECTED)	- 700 mV



**MEMORANDUM**

To	File No.
From	Date 22/09/93
Subject CHILTON ST. TO BRANDON RD EARTHING OR SACRIFICIAL ANODE CONNECTION	

TEST POINT N° 4

Zn TO PIPE (ANODE DISCONNECTED)	+ 402 mV
CUSO <sub>4</sub> TO PIPE (ANODE DISCONNECTED)	- 672 mV
OPEN CIRCUIT POTENTIALS	342 mV
ANODE CURRENT	87 mA
Zn TO PIPE (ANODE CONNECTED)	+ 371 mV
CUSO <sub>4</sub> TO PIPE (ANODE CONNECTED)	- 697 mV



To	File No.
From	Date 22/09/93
Subject CHILTON STREET TO BRANDON ROAD	

ON POTENTIALS - NON POLARIZED

(NO EARTHING OR SACRIFICIAL ANODES CONNECTED)

RECT SET AT 1V 100mA

TEST POINT N<sup>o</sup>1

PROTECTED	ZN TO PIPE	- 281 mV
	CuSO <sub>4</sub> TO PIPE	- 876 mV
	CuSO <sub>4</sub> TO ZN	- 588 mV
UNPROTECTED	ZN TO PIPE	+ 560 mV
	CuSO <sub>4</sub> TO PIPE	- 309 mV
	CuSO <sub>4</sub> TO ZN	- 869 mV
UNPROTECTED	ZN TO PIPE	- 4 mV
	CuSO <sub>4</sub> TO PIPE	- 1033 mV
	CuSO <sub>4</sub> TO ZN	- 1031 mV

TEST POINT N<sup>o</sup>2

ZN TO PIPE	+ 32 mV
CuSO <sub>4</sub> TO PIPE	- 934 mV
CuSO <sub>4</sub> TO ZN	- 1014 mV

TEST POINT N<sup>o</sup>3

PROTECTED IN	ZN TO PIPE	+ 139 mV
	CuSO <sub>4</sub> TO PIPE	- 958 mV
	CuSO <sub>4</sub> TO ZN	- 1098 mV
PROTECTED OUT	ZN TO PIPE	+ 128 mV
	CuSO <sub>4</sub> TO PIPE	- 958 mV
	CuSO <sub>4</sub> TO ZN	- 1085 mV



BRISBANE CITY COUNCIL  
MEMORANDUM

To	File No.
From	Date 22/09/93
Subject CHILTON STREET TO BRANDON ROAD AN POTENTIALS - NON POLARIZED (NO ANODES CONNECTED)	

TEST POINT N<sup>o</sup> 4

ZN TO PIPE	+ 166 mV
CuSO <sub>4</sub> TO PIPE	- 899 mV
CuSO <sub>4</sub> TO ZN	- 1061 mV

TEST POINT N<sup>o</sup> 5

ZN TO PIPE	+ 122 mV
CuSO <sub>4</sub> TO PIPE	- 855 mV
CuSO <sub>4</sub> TO ZN	- 1003 mV

TEST POINT N<sup>o</sup> 6

ZN TO PIPE	+ 98 mV
------------	---------

TEST POINT N<sup>o</sup> 7

## PROTECTED

ZN TO PIPE	+ 128 mV
CuSO <sub>4</sub> TO PIPE	- 966 mV
CuSO <sub>4</sub> TO ZN	- 1098 mV

## UNPROTECTED

ZN TO PIPE	+ 715 mV
CuSO <sub>4</sub> TO PIPE	- 378 mV
CuSO <sub>4</sub> TO ZN	- 1092 mV

## BRANDON RD

ZN TO PIPE	+ 351 mV
------------	----------

## NEMIES RD

ZN TO PIPE	+ 768 mV
------------	----------



MEMORANDUM

To	File No.
From	Date 30/09/93
Subject CHILTON STREET TO BRANDON ROAD	

NATURAL POTENTIALS

(NO EARTHINGS OR SACRIFICIAL ANODES CONNECTED)

TEST POINT N<sup>o</sup> 1

PROTECTED	ZN TO PIPE	+64 mV
	CuSO <sub>4</sub> TO PIPE	-556 mV
	CuSO <sub>4</sub> TO ZN	-610 mV
UNPROTECTED	ZN TO PIPE	+560 mV
	CuSO <sub>4</sub> TO PIPE	-338 mV
	CuSO <sub>4</sub> TO ZN	-904 mV
UNPROTECTED	ZN TO PIPE	-10 mV
	CuSO <sub>4</sub> TO PIPE	-1084 mV
	CuSO <sub>4</sub> TO ZN	-1067 mV

TEST POINT N<sup>o</sup> 2

ZN TO PIPE	+438 mV
CuSO <sub>4</sub> TO PIPE	-538 mV
CuSO <sub>4</sub> TO ZN	-1004 mV

TEST POINT N<sup>o</sup> 3 (CuSO<sub>4</sub> LOCATED NEXT TO KERB)

PROTECTED IN	ZN TO PIPE	+503 mV
	CuSO <sub>4</sub> TO PIPE	-570 mV
	CuSO <sub>4</sub> TO ZN	-1068 mV
PROTECTED OUT	ZN TO PIPE	+493 mV
	CuSO <sub>4</sub> TO PIPE	-563 mV
	CuSO <sub>4</sub> TO ZN	-1057 mV



**MEMORANDUM**

To	File No.
From	Date 22/09/93
Subject: CHILTON ST TO BRANDON RD (NATURAL POTENTIALS CONTINUED)	

TEST POINT N<sup>o</sup>4 (CuSO<sub>4</sub> LOCATED BESIDE ROADWAY)

ZN TO PIPE + 532 mV  
 CuSO<sub>4</sub> TO PIPE - 528 mV  
 CuSO<sub>4</sub> TO ZN - 1058 mV

TEST POINT N<sup>o</sup>5 (CuSO<sub>4</sub> LOCATED NEXT TO KERB)

ZN TO PIPE + 496 mV  
 CuSO<sub>4</sub> TO PIPE - 495 mV  
 CuSO<sub>4</sub> TO ZN - 990 mV

TEST POINT N<sup>o</sup>6 (RECTIFIER UNIT - NO CuSO<sub>4</sub> AVAILABLE)

ZN TO PIPE + 485 mV

TEST POINT N<sup>o</sup>7 (CuSO<sub>4</sub> LOCATED NEXT TO KERB)

PROTECTED  
 ZN TO PIPE + 529 mV  
 CuSO<sub>4</sub> TO PIPE - 562 mV  
 CuSO<sub>4</sub> TO ZN - 1091 mV

UNPROTECTED  
 ZN TO PIPE + 715 mV  
 CuSO<sub>4</sub> TO PIPE - 371 mV  
 CuSO<sub>4</sub> TO ZN - 1085 mV

BRANDON RD ZN TO PIPE + 355 mV

NEMIES RD ZN TO PIPE + 769 mV

Brisbane City Council  
Dept. W.S. & S.  
Eagle Farm Pump Station  
5 Bunya Street,  
Eagle Farm. Q 4009  
Ph. 07 2680811  
Fx. 07 2680847

Contact: Kerry Mc Govern  
Ph.: 2680840

Subject: Coating defect survey for Chilton Street to Brandon Road Trunk Mains.

Equipment Used: Pipecamp pcs2000 coating anomaly equipment.

Length of mains: Approx. 3.25 kms.

Size of mains: 755 dia and 1060 dia.

Operator: Murry Mc Cormick/Jim Steele.

Date of Survey: 6th July 1993.

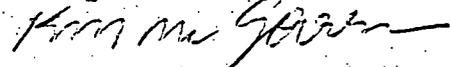
Procedure: Equipment was set up as per operation manual while operator traversed Pipeline route. Potentials were measured at each test point and defects calculated from defect potentials in relation to test point to test point potential change.

Evaluation: Over the length of the mains two defects were located in close proximity to each other near the creek in Nemies Road Runcorn.

The first defect was located adjacent to the scour valve with a defect size of 25% of test point potential shift and the second some 20 to 30 metres away, again with a defect size of 25%.

Conclusion: On the basis of defect size both defects should be excavated to repair any coating damage which in turn will reduce the amount of current required to cathodically protect this trunk mains.

Kerry Mc Govern



Electrical leading hand Eagle Farm Pump Station.  
28th July 1993



DEPARTMENT OF WATER SUPPLY AND SEWERAGE  
MECHANICAL AND ELECTRICAL BRANCH  
METROPOLITAN DIVISION  
EAGLE FARM PUMPING STATION

ELECTRICAL WORKSHOP

INSULATED JOINT TESTING DETAILS: BRANDON RD - CHILTON ST TRUNK MAINS,  
KINGMAN ST. INSULATED JOINT.

DATE 18-8-93.

DESCRIPTION

MAINS DETAILS:- 755 & 1060  $\phi$   
LOCATIONS:-  
SIZE:-  
MATERIAL:- MISCL  
COATING:- SINTER COAT.  
NUMBER:- V1023 & V1024.

IN GROUND TESTING

BOLT TO FLANGE RESISTANCE:- ALL  $> 50 \Omega$  EXCEPT STUD BOLTS  $> 8 \Omega$   
NUMBER OF BOLT:-  
FLANGE TO FLANGE RESISTANCE:-  $25 \Omega$   
INSULATION CHECKER MODEL 702:- PASSED OK  
POTENTIAL DIFFERENCE TO REFERENCE CELL  $280 \text{ mV}$   
PROTECTED SIDE:-  
UNPROTECTED SIDE:- } SEE BELOW.

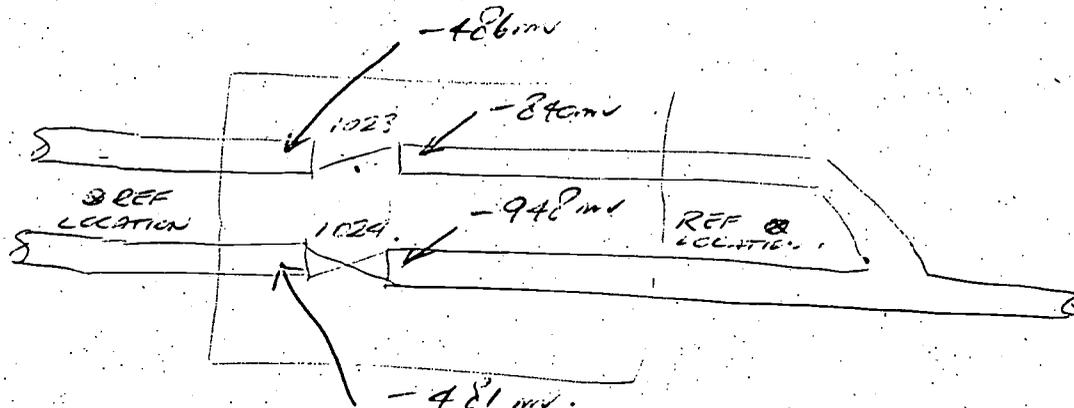
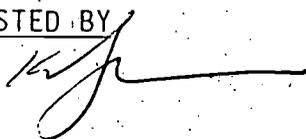
ABOVE TESTING

BOLT TO FLANGE RESISTANCE:-  
NUMBER OF BOLTS:-  
FLANGE TO FLANGE RESISTANCE:-

COMMENTS

2 x STUD BOLTS FAILED, REMOVED AND RECHECKED  
OK.

TESTED BY





DEPARTMENT OF WATER SUPPLY AND SEWERAGE  
MECHANICAL AND ELECTRICAL BRANCH  
METROPOLITAN DIVISION  
EAGLE FARM PUMPING STATION

ELECTRICIAL WORKSHOP

INSULATED JOINT TESTING DETAILS: BRANDON RD - CHILTON ST.

DATE 19/8/93

DESCRIPTION

MAINS DETAILS:- 755  $\phi$  TO 1060  $\phi$   
LOCATIONS:- CUR NEMIES RD & BRANDON RD  
SIZE:- 900  $\phi$   
MATERIAL:- MSCL  
COATING:- SINTERCOAT  
NUMBER:- TEST POINT NO. 7.

IN GROUND TESTING

BOLT TO FLANGE RESISTANCE:- ALL  $> 50 \Omega$   
NUMBER OF BOLT:- 24  
FLANGE TO FLANGE RESISTANCE:-  $> 50 \Omega$   
INSULATION CHECKER MODEL 702:- OK  
POTENTIAL DIFFERENCE TO REFERENCE CELL  
PROTECTED SIDE:- -909mv - CuSO<sub>4</sub>  
UNPROTECTED SIDE:- -700mv - CuSO<sub>4</sub>

ABOVE TESTING

BOLT TO FLANGE RESISTANCE:-  
NUMBER OF BOLTS:-  
FLANGE TO FLANGE RESISTANCE:-

COMMENTS

1 BOLT FAILED, REPAIRED ON SITE

TESTED BY





DEPARTMENT OF WATER SUPPLY AND SEWERAGE

MECHANICAL AND ELECTRICAL BRANCH

METROPOLITAN DIVISION

EAGLE FARM PUMPING STATION

ELECTRICIAL WORKSHOP

INSULATED JOINT TESTING DETAILS:

DATE 30-06-93

DESCRIPTION

MAINS DETAILS:- CHILTON ST TO BRANDON RD  
LOCATIONS:- CHR CHILTON + HINSMAN STS  
SIZE:- 150  
MATERIAL:- STEEL - CONCRETE LINED  
COATING:- PVC  
NUMBER:-

IN GROUND TESTING

BOLT TO FLANGE RESISTANCE:-  $700 \Omega$   
NUMBER OF BOLT:- 16  
FLANGE TO FLANGE RESISTANCE:-  $300 k \Omega$   
INSULATION CHECKER MODEL:- 702  
POTENTIAL DIFFERENCE TO REFERENCE CELL  
PROTECTED SIDE:- 17 mV ZN  
UNPROTECTED SIDE:- 182 mV ZN  
872 mV ZN

-465 mV  $CuSO_4$   
-347 mV  $CuSO_4$   
-350 mV  $CuSO_4$

ABOVE TESTING

BOLT TO FLANGE RESISTANCE:-  
NUMBER OF BOLTS:-  
FLANGE TO FLANGE RESISTANCE:-

COMMENTS

TESTED BY

M. McCORMICK *Murray McCormick*



DEPARTMENT OF WATER SUPPLY AND SEWERAGE  
MECHANICAL AND ELECTRICAL BRANCH  
METROPOLITAN DIVISION  
EAGLE FARM PUMPING STATION

ELECTRICIAL WORKSHOP

INSULATED JOINT TESTING DETAILS:

DATE 30-06-93

DESCRIPTION

MAINS DETAILS:- CHILTON ST TO BRANDON RD  
LOCATIONS:- CNR SIGNATA ST & HELLAWELL RD  
SIZE:- 750  
MATERIAL:- STEEL - CEMENT LINED  
COATING:- PVC  
NUMBER:-

IN GROUND TESTING

BOLT TO FLANGE RESISTANCE:- > 30 Ω  
NUMBER OF BOLT:- 16  
FLANGE TO FLANGE RESISTANCE:- 15M Ω  
INSULATION CHECKER MODEL 702:-  
POTENTIAL DIFFERENCE TO REFERENCE CELL  
PROTECTED SIDE:- 413 mV (Zn)  
UNPROTECTED SIDE:- 584 mV (Zn)

ABOVE TESTING

BOLT TO FLANGE RESISTANCE:-  
NUMBER OF BOLTS:-  
FLANGE TO FLANGE RESISTANCE:-

COMMENTS

3 BOLTS FAILED FIRST TEST  
6 INCHES OF WATER IN VALVE PIT  
NO SECOND REFERENCE - VALVE PIT IN ROAD

TESTED BY

M. M<sup>c</sup>CORMICK *Murphy M<sup>c</sup>Cormick*



DEPARTMENT OF WATER SUPPLY AND SEWERAGE  
MECHANICAL AND ELECTRICAL BRANCH  
METROPOLITAN DIVISION  
EAGLE FARM PUMPING STATION

ELECTRICAL WORKSHOP

INSULATED JOINT TESTING DETAILS:

DATE 30-06-93

DESCRIPTION

MAINS DETAILS:- CHILTON ST TO BRANDON RD  
LOCATIONS:- CUR NEMIES + BRANDON RD  
SIZE:- 750  
MATERIAL:- STEEL - CEMENT LINED  
COATING:- PVC  
NUMBER:-

IN GROUND TESTING

BOLT TO FLANGE RESISTANCE:-  $> 25 \Omega$   
NUMBER OF BOLT:- 24  
FLANGE TO FLANGE RESISTANCE:-  $100 M \Omega$   
INSULATION CHECKER MODEL 702:-  
POTENTIAL DIFFERENCE TO REFERENCE CELL  
PROTECTED SIDE:- N.A  
UNPROTECTED SIDE:- N.A

ABOVE TESTING

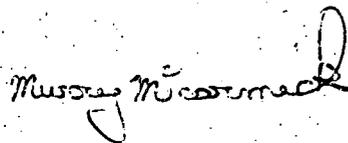
BOLT TO FLANGE RESISTANCE:-  
NUMBER OF BOLTS:-  
FLANGE TO FLANGE RESISTANCE:-

COMMENTS

CABLES IN VALVE PIT - PROTECTED SIDE ARE NOT CONNECTED TO PIPE  
UNPROTECTED SIDE DO NOT EXIST.

TESTED BY

M. MCCORMICK

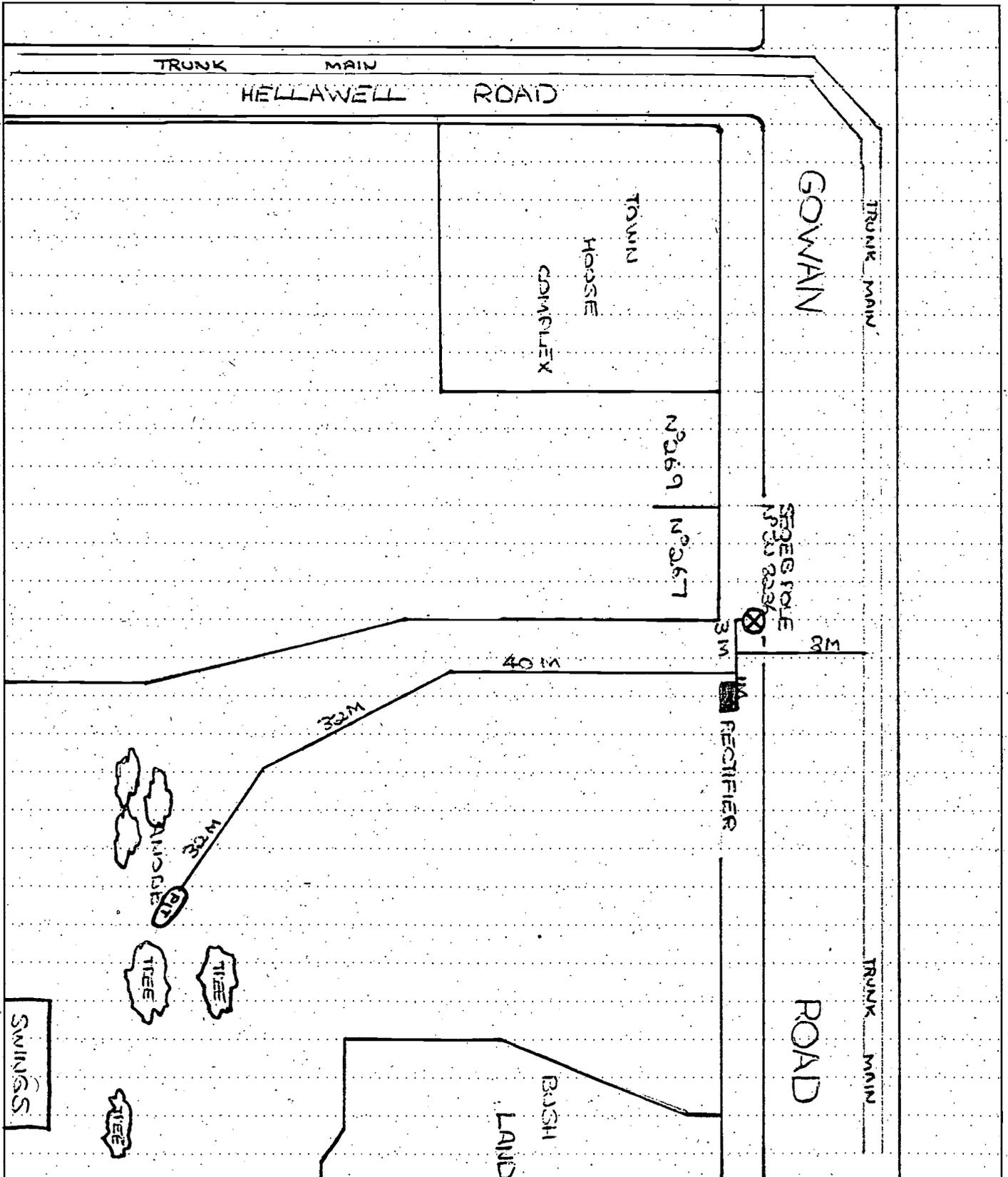




MEMORANDUM

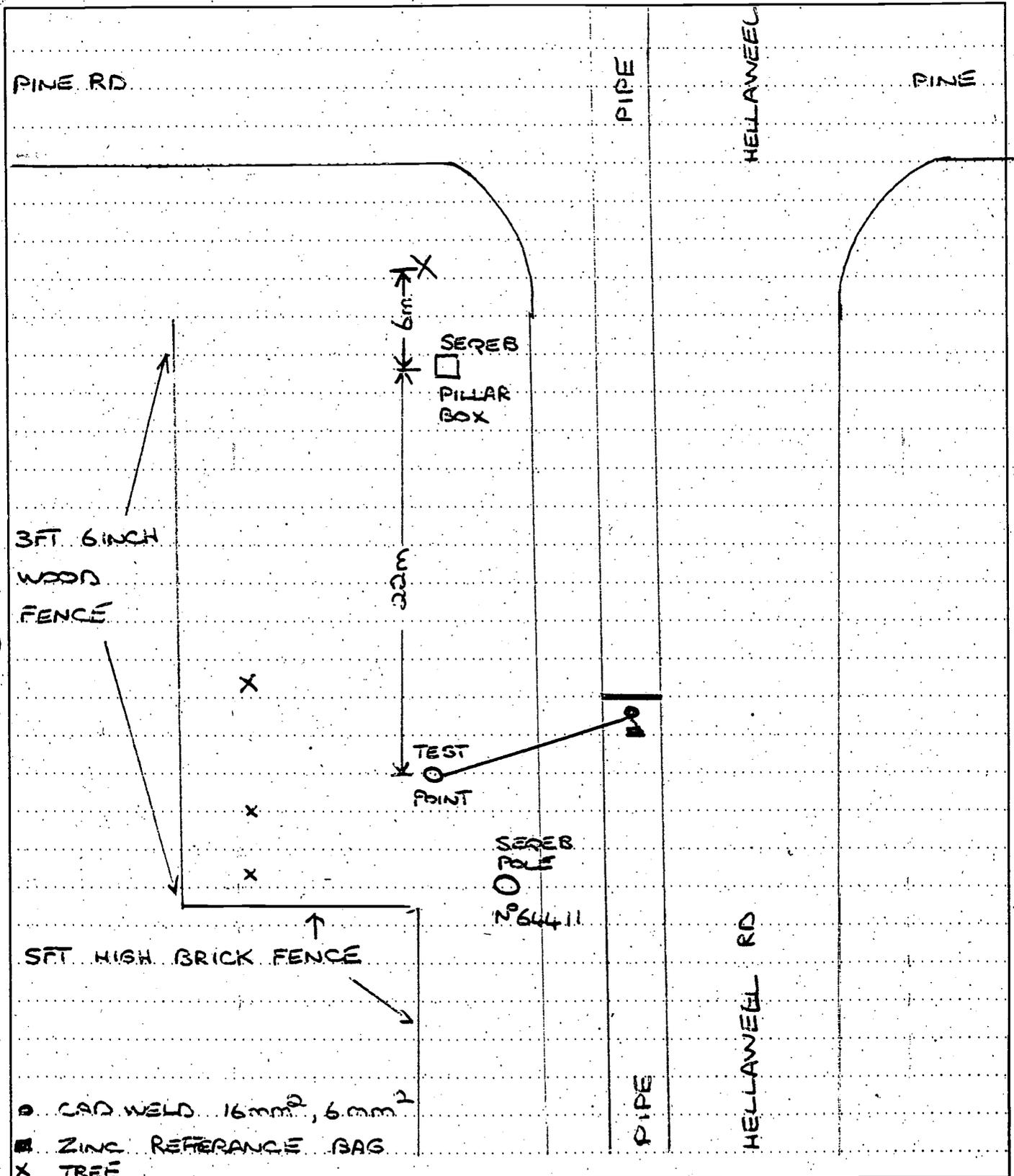
ATTACHED DRAWING N°1

To	File No.
From	Date 22/09/93
Subject: CHILTON STREET TO BRANDON ROAD CONDUIT LAYOUT DIAGRAM	



BRISBANE CITY COUNCIL  
MEMORANDUM

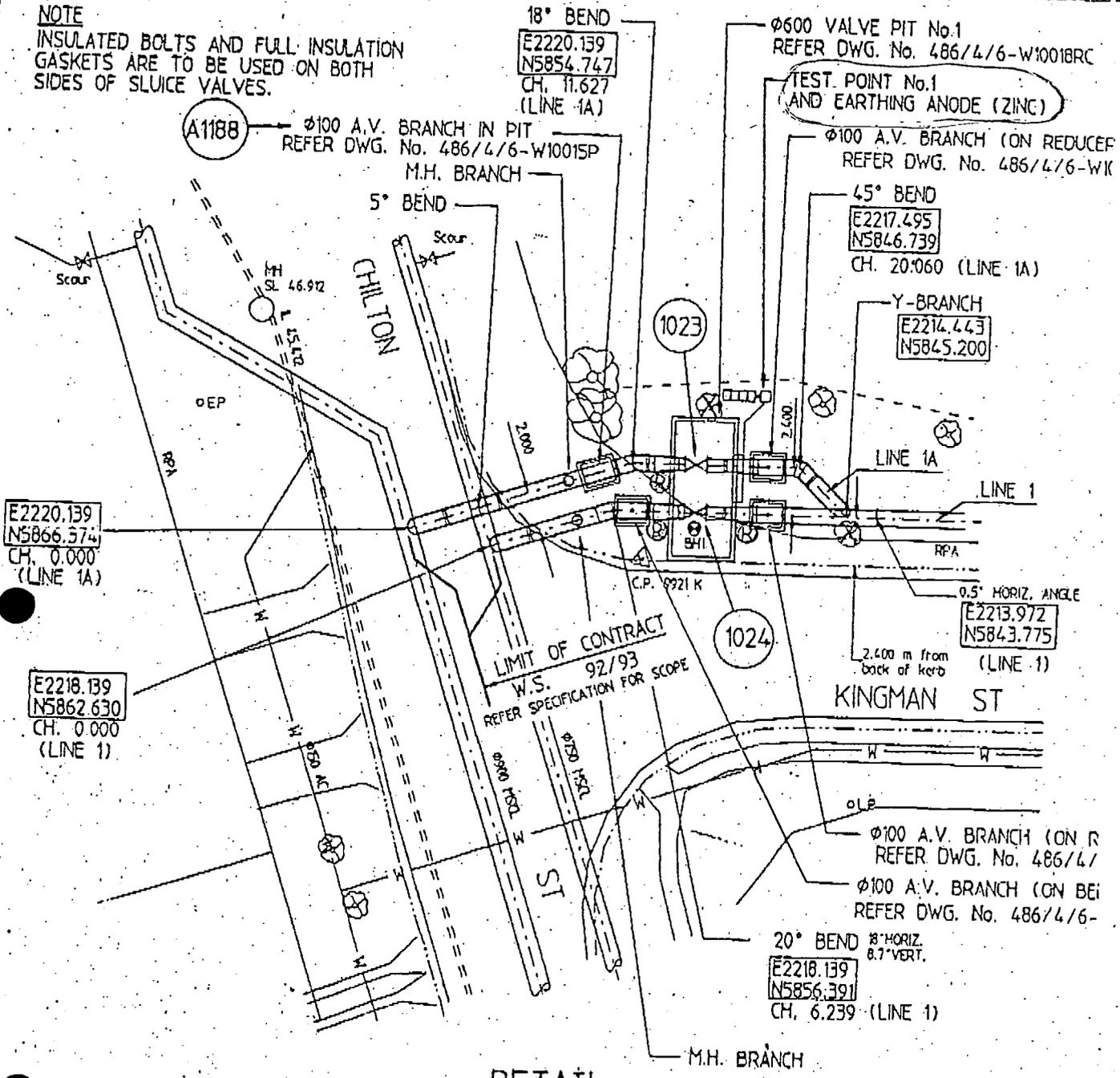
To	File No.
From	Date 12/03/93
Subject CHILTON ST. TO BRANDON RD. TRUNK MAIN TEST POINT N°5, CNR. HELLAWELL & PINE RDS.	



Printed on 100% recycled paper.



**NOTE**  
INSULATED BOLTS AND FULL INSULATION GASKETS ARE TO BE USED ON BOTH SIDES OF SLUICE VALVES.



E2220.139  
N5866.374  
CH. 0.000  
(LINE 1A)

E2218.139  
N5862.630  
CH. 0.000  
(LINE 1)

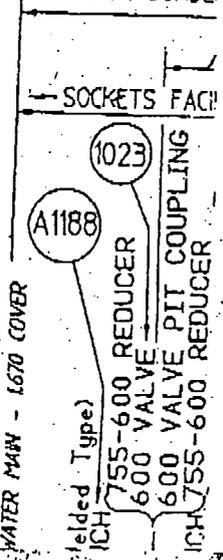
E2218.139  
N5856.391  
CH. 6.239 (LINE 1)

E2213.972  
N5843.775  
(LINE 1)

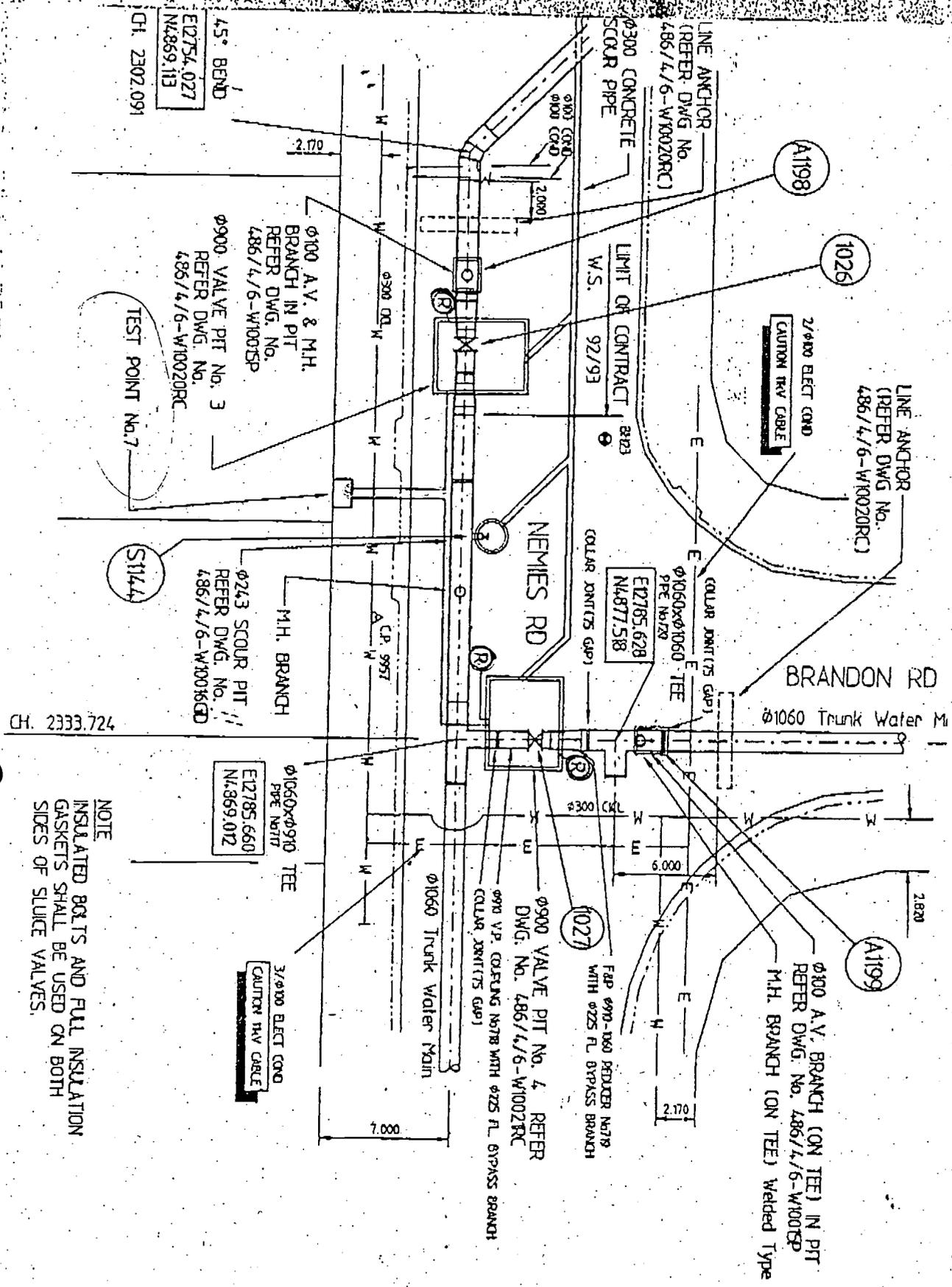
**DETAIL**  
SCALE 1:200

DIA. 755 MILD STEEL I  
(LOW DENSITY FUSION BONDED)

- = ○ STORMWATER
- E — E — ELECTRICITY
- S — S — SAN SEWER
- T — T — TELECOM
- G — G — GAS
- W — W — WATER
- △ C.P. 9900 SURVEY CONTROL POINT 9900
- ⊕ BH. 10 BORE HOLE No. 10







45° BEND  
 EI2754.027  
 N4869.113  
 CH. 2302.091

Ø100 A.V. & M.H. BRANCH IN PIT  
 REFER DWG. No. 486/4/6-W1002SP  
 Ø900 VALVE PIT No. 3  
 REFER DWG. No. 486/4/6-W1002ORC  
 TEST POINT No. 7

Ø24.3 SCOUR PIT  
 REFER DWG. No. 486/4/6-W10036GD  
 M.H. BRANCH  
 CP 9957

Ø1060xØ910 PIPE WITH  
 EI2785.660  
 N4869.012

3/100 ELECT COND  
 CAUTION TRV GABLE

Ø900 VALVE PIT No. 4 REFER DWG. No. 486/4/6-W1002RC  
 Ø910 V.P. COUPLING N478 WITH Ø25 FL. BYPASS BRANCH  
 COLLAR JOINTS GAP1  
 Ø900-1060 REDUCER N478 WITH Ø25 FL. BYPASS BRANCH

Ø100 A.V. BRANCH (ON TEE) IN PIT  
 REFER DWG. No. 486/4/6-W1002SP  
 M.H. BRANCH (ON TEE) Welded Type

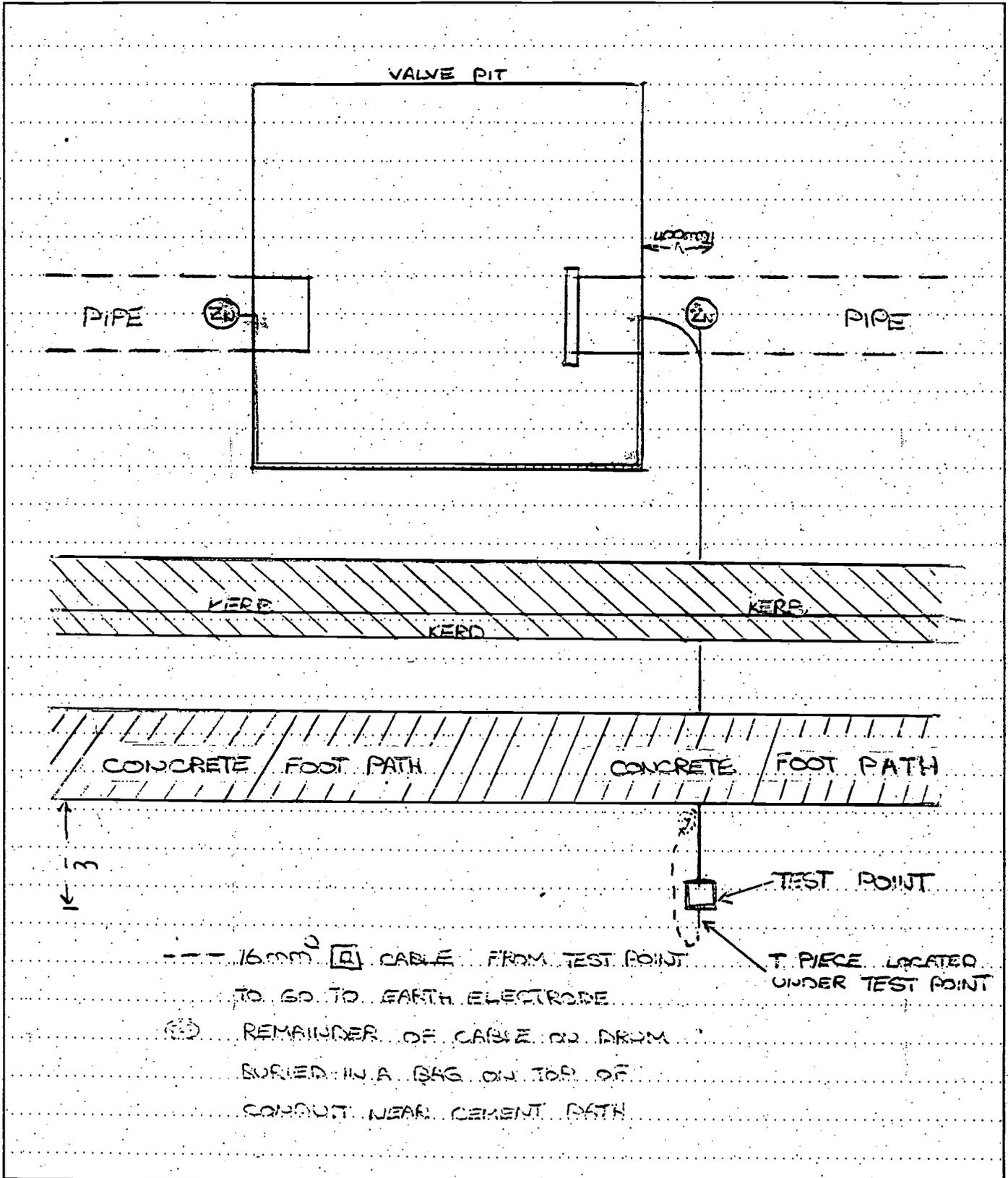
NOTE  
 INSULATED BOLTS AND FULL INSULATION GASKETS SHALL BE USED ON BOTH SIDES OF SLUICE VALVES.

CH. 2333.724



BRISBANE CITY COUNCIL  
MEMORANDUM

To	File No.
From	Date 9/02/93
Subject STONES RD TO BRANDON RD TRUNK MAIN SIGNATA ST TEST POINT (Nº3)	

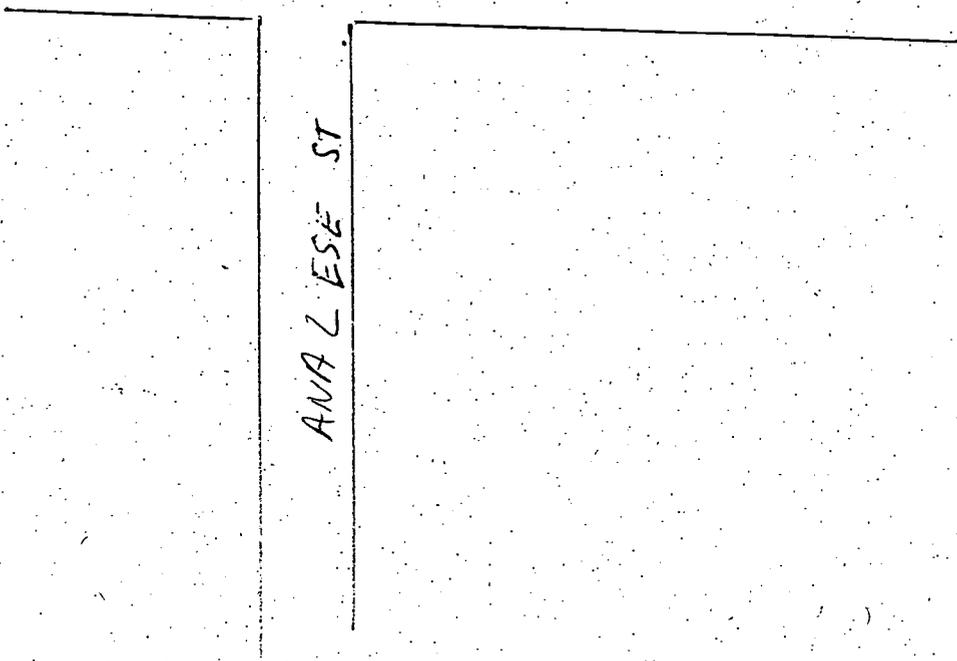
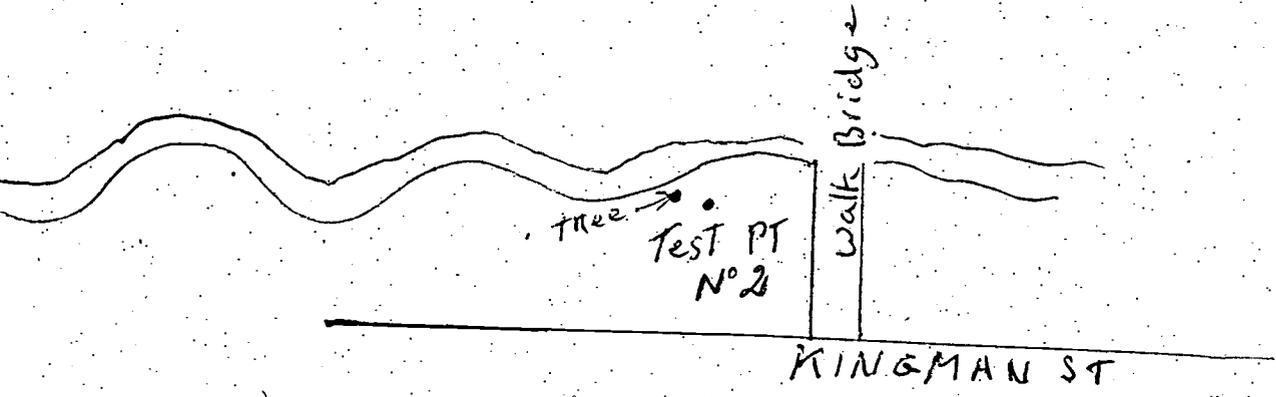


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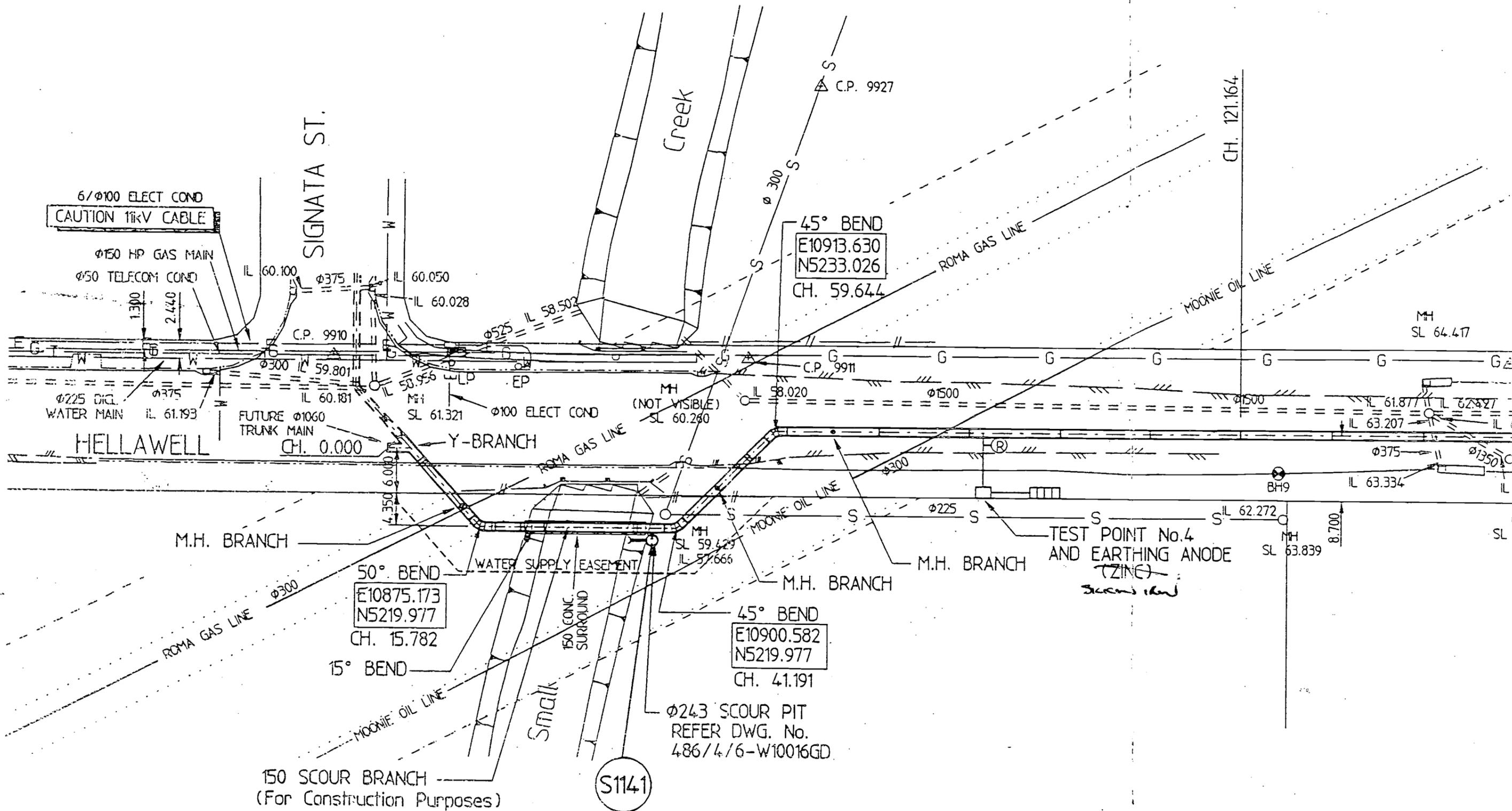


BCC  
WS + J  
M + E

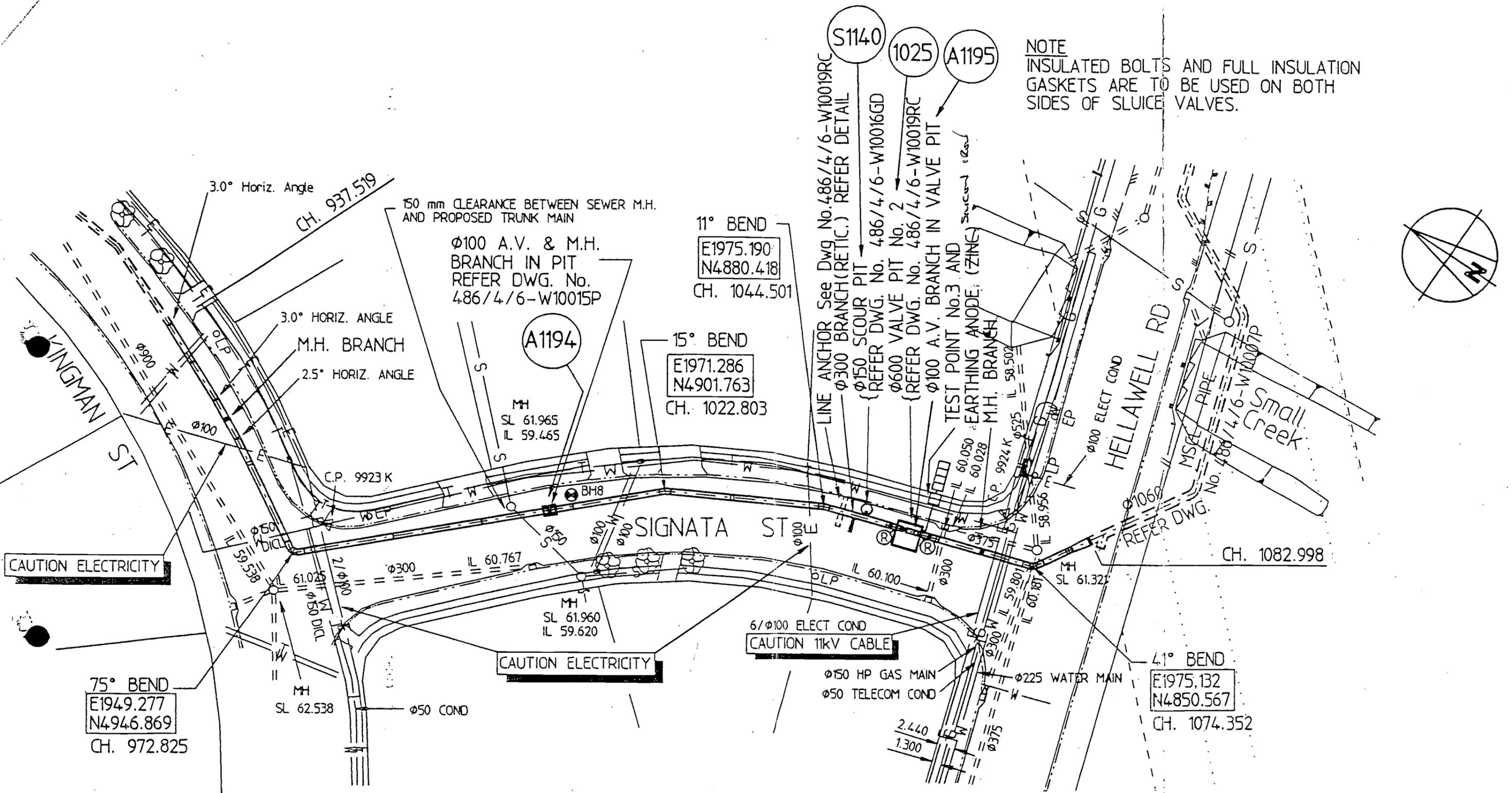
STONE'S RD TO BRANDON R<sub>e</sub>  
TRUNK MAINS







- STORMWATER
- ELECTRICITY
- SAN SEWER
- TELECOM



**PLAN**  
SCALE 1:500

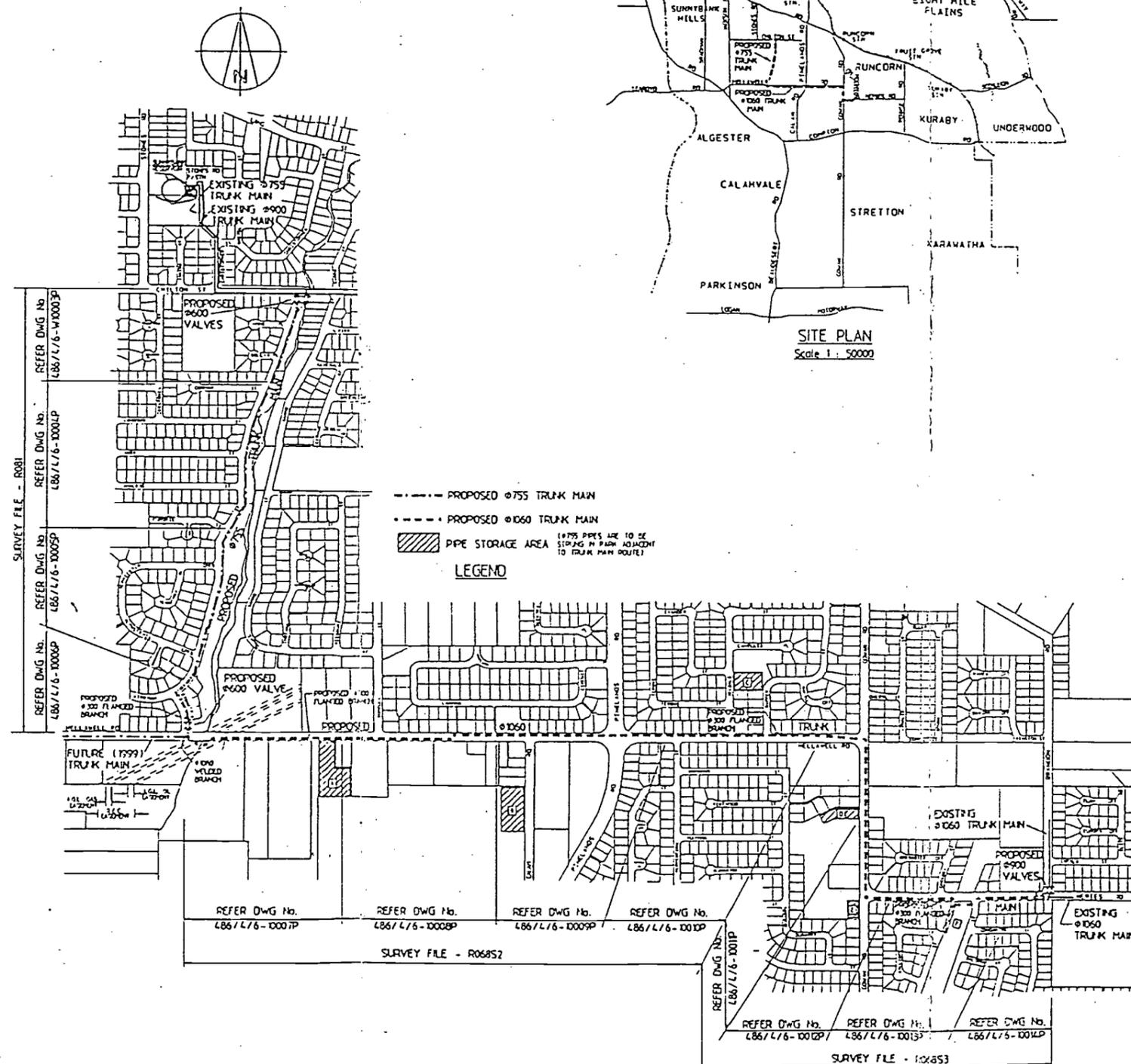
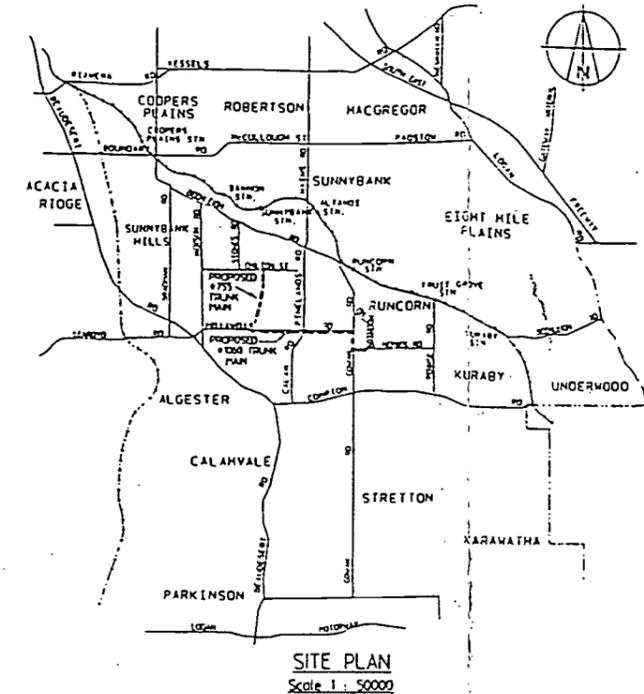
DIA. 755 MILD STEEL CEMENT LINED PIPE (LOW DENSITY FUSION BONDED POLYETHYLENE COATED)

IMPRESSED CURRENT CATHODIC PROTECTION

SOCKETS TAPPING

FOR DETAILS OF  $\phi 1060$  MSCL PIPE  
REFER DWG. No. 486/4/6-W1000

DRAWING LIST		
DRAWING NUMBER	DRAWING TITLE	PFE CHANGE
486/L/6-W1002L0	LOCALITY PLAN	
486/L/6-W10003P	Ø755 PLAN AND LONGITUDINAL SECTION	0.000 - 211.364
486/L/6-W10004P	Ø755 PLAN AND LONGITUDINAL SECTION	211.364 - 579.464
486/L/6-W10005P	Ø755 PLAN AND LONGITUDINAL SECTION	579.464 - 937.519
486/L/6-W10006P	Ø755 PLAN AND LONGITUDINAL SECTION	937.519 - 1082.998
486/L/6-W10007P	Ø1060 PLAN AND LONGITUDINAL SECTION	0.000 - 336.921
486/L/6-W10008P	Ø1060 PLAN AND LONGITUDINAL SECTION	336.921 - 692.810
486/L/6-W10009P	Ø1060 PLAN AND LONGITUDINAL SECTION	692.810 - 1057.173
486/L/6-W10010P	Ø1060 PLAN AND LONGITUDINAL SECTION	1057.173 - 1416.632
486/L/6-W10011P	Ø1060 PLAN AND LONGITUDINAL SECTION	1416.632 - 1683.824
486/L/6-W10012P	Ø1060 PLAN AND LONGITUDINAL SECTION	1683.824 - 1925.922
486/L/6-W10013P	Ø1060 PLAN AND LONGITUDINAL SECTION	1925.922 - 2256.533
486/L/6-W10014P	Ø1060 PLAN AND LONGITUDINAL SECTION	2256.533 - 2336.267
486/L/6-W10015P	PIPE LIST AND ANCHOR BLOCK DETAILS	
486/L/6-W10016CD	SCOUR PIT DETAILS	
486/L/6-W10017LO	EASEMENT PLAN	
486/L/6-W10018RC	TWIN 600 dia VALVE PIT No.1	
486/L/6-W10019RC	600 dia VALVE PIT No.2	
486/L/6-W10020RC	900 dia VALVE PIT No.3	



CONTROL POINTS DATA				
FILENAME	POINT NO.	EASTING	NORTHING	DESCRIPTION
R081	9921K	226.45	5855.763	SCREW/KERB
-	9922K	2207.535	5832.174	HLTI/KERB
-	9920K	2194.792	5793.740	SCREW/KERB
-	9910K	2176.551	5738.843	SCREW/KERB
-	9909K	2143.632	5645.938	SCREW/KERB
-	9978K	2108.195	5549.792	SCREW/KERB
-	9907K	2095.204	5430.049	SCREW/KERB
-	9906K	2089.65	5366.828	SCREW/KERB
-	9905K	2048.010	5279.480	SCREW/CON.
-	9904K	2047.512	5192.970	SCREW/CON.
-	9903K	2043.659	5149.728	BOLT/CONCRETE
-	9902K	2019.144	5079.304	SCREW/CON.
-	9901K	2000.000	5000.000	BOLT/CONCRETE
-	9923K	1954.429	4943.509	SCREW/KERB
-	9924K	1981.143	4856.528	SCREW/CON.
R06852	9910	10856.790	5242.731	TRAV. LINE SPIKE
-	9911	10910.036	5242.785	TRAV. LINE PEG
-	9927	10977.350	5278.840	TRAV. LINE PEG
-	9912	11010.379	5242.886	TRAV. LINE PEG
-	9914	11201.650	5242.977	TRAV. LINE PEG
-	9915	11201.050	5243.078	
-	9916	11290.179	5243.168	T.L. HLTI HOLE
-	9917	11405.106	5243.285	TRAV. LINE PEG
-	9918	11526.12	5243.386	
-	9922	11542.823	5243.423	TRAV. LINE PEG
-	9926	11545.779	5274.660	TRAV. LINE PEG
-	9921	11612.408	5243.473	TRAV. LINE PEG
-	9923	11721.535	5243.603	TRAV. LINE PEG
-	9924	11823.235	5224.582	T.L. SCREW/CON.
-	9925	11822.407	5244.384	TRAV. LINE PEG
-	9950	11903.591	5242.731	T.L. NAL/CON.
-	9951	12051.123	5242.755	T.L. NAL/CON.
-	9952	12188.849	5242.746	T.L. NAL/CON.
-	9953	12352.123	5226.673	T.L. SCREW/CON.
R07853	9953	12352.123	5226.673	T.L. SCREW/CON.
-	9954	12352.527	5248.276	T.L. NAL/CON.
-	9955	12371.735	4864.950	T.L. NAL/CON.
-	9956	12577.887	4881.512	T.L. NAL/CON.
-	9957	12779.10	4864.499	T.L. NAL/CON.

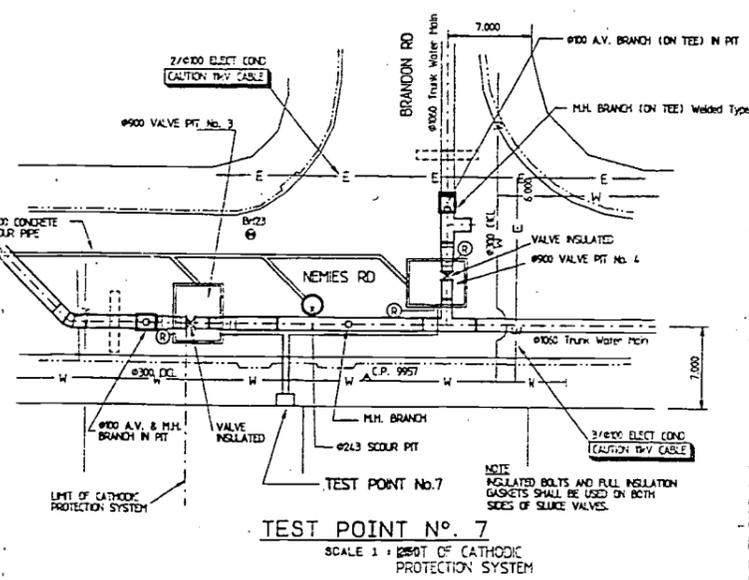
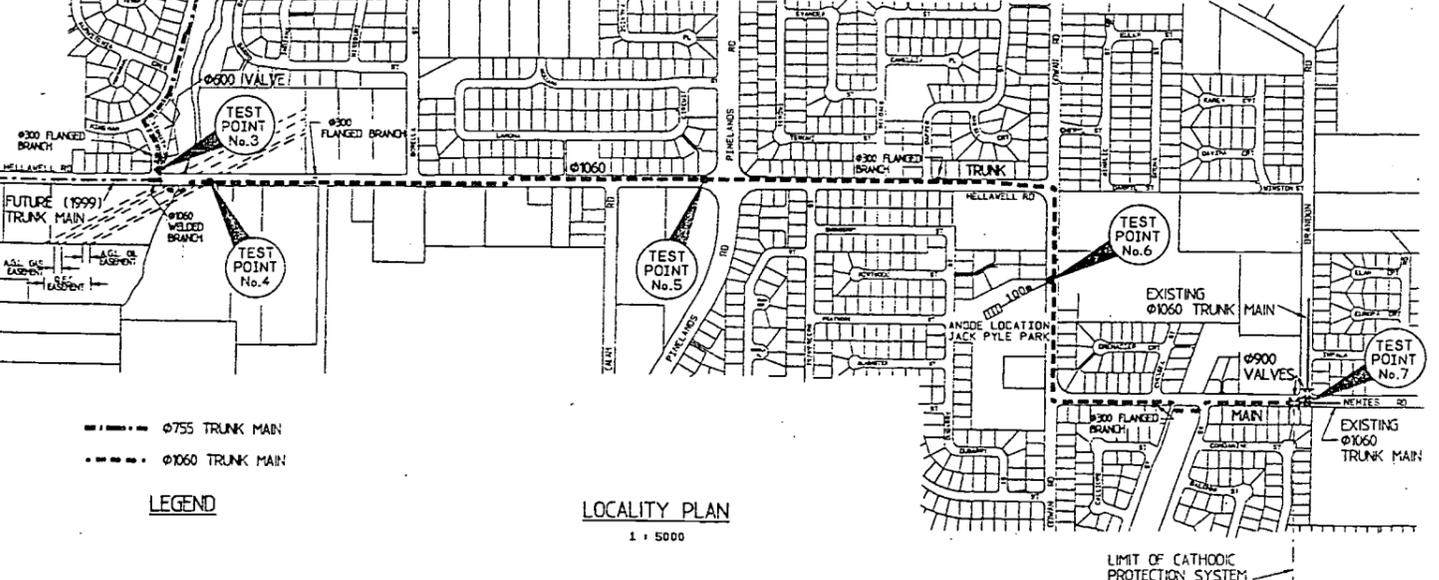
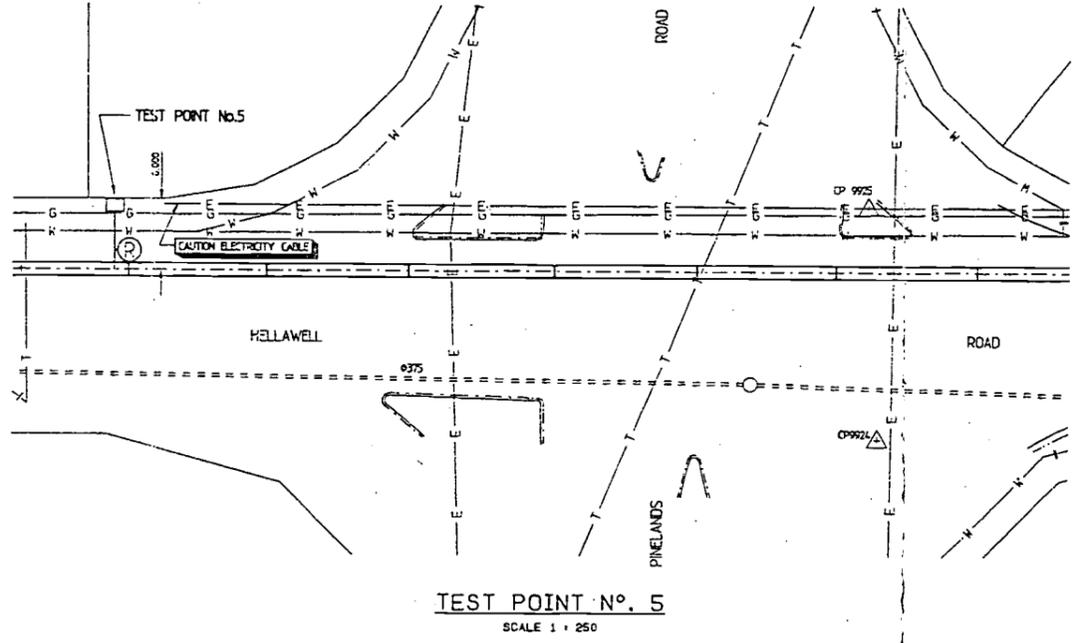
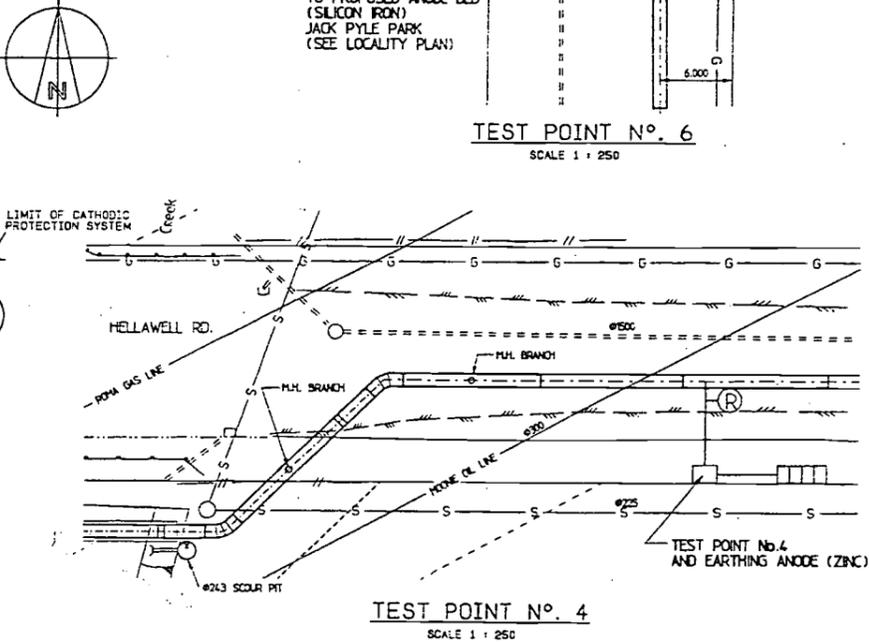
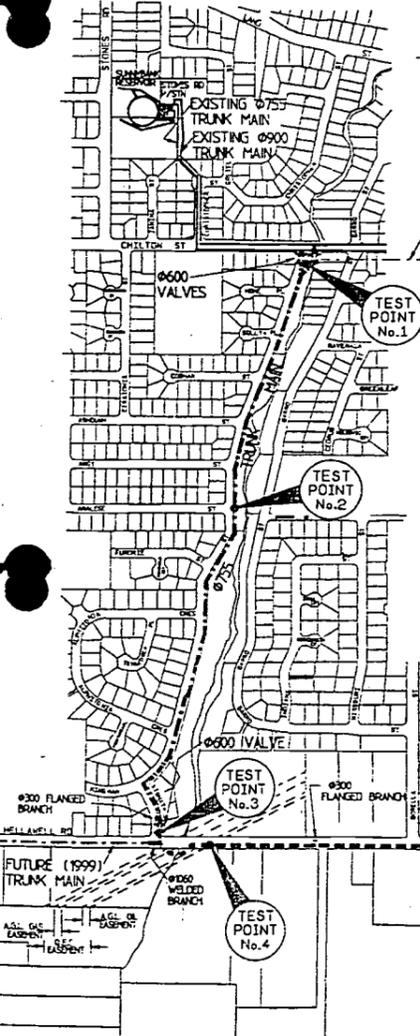
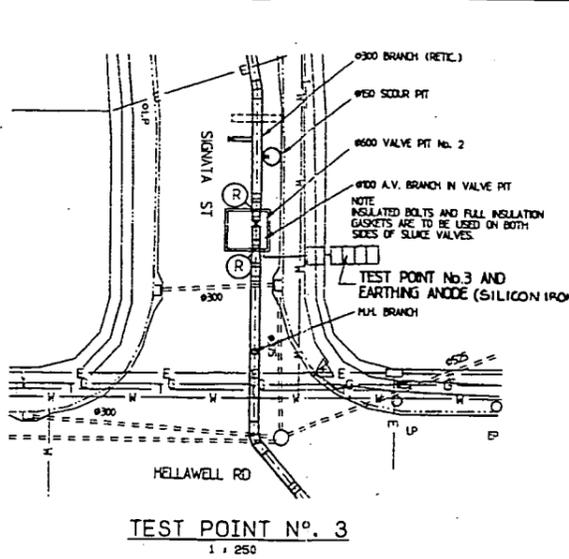
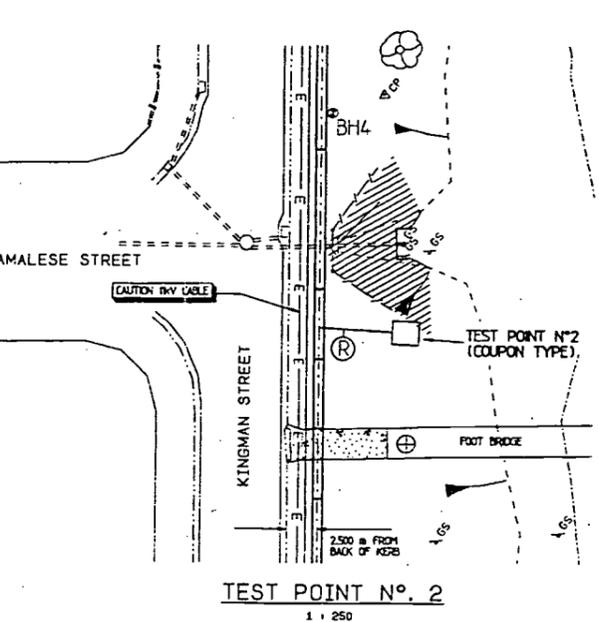
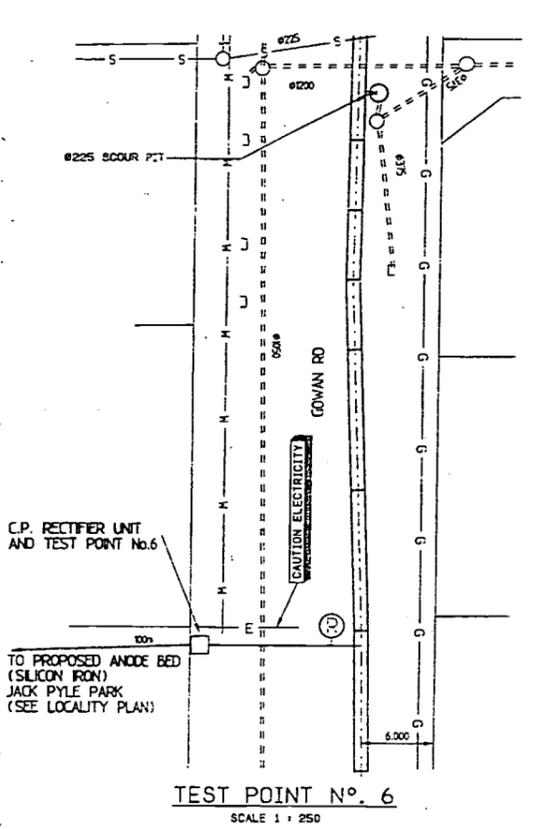
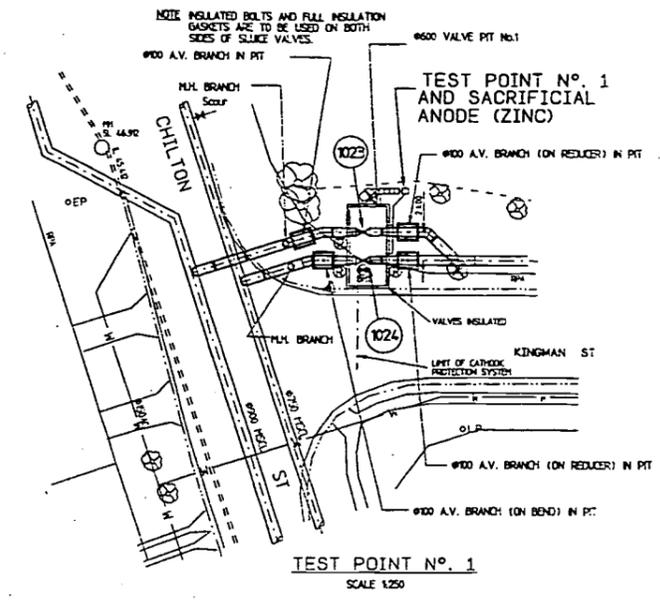
LOCALITY PLAN Scale 1:5000  
SCALE OF METRES

**NOT TO SCALE**

AMENDMENT & ISSUE REGISTER		
MANAGER	DIRECTOR OF PLANNING & DESIGN	
DATE	DATE	
DIRECTOR OF CONSTRUCTION	DIRECTOR OF WATER & SERVICES	DIRECTOR OF TRUNK MAINS OPERATIONS & MAINTENANCE
DATE	DATE	DATE
DESIGN R.J.	OCT '91	ENGINEER IN CHARGE
DRAWN G.S.	NOV '91	SUPERVISOR
TRACED		JOB NO.
CHKD T.A.B.	JUN '92	FIELD BOOK
A.H. DATUM	SURVEYED	
REFERENCES CADD FILE No. 46W10002 DESIGN FILE No. 029		
BRISBANE CITY COUNCIL DEPARTMENT OF WATER SUPPLY & SEWERAGE PLANNING & DESIGN BRANCH		
PROJECT MAJOR DISTRIBUTION MAPS LOGAN CITY TRUNK MAIN AMPLIFICATION		
TITLE STORES ROAD P.S. TO BRANDON ROAD 755 dia & 1060 dia MSCL WATER MAIN LOCALITY PLAN		
SCALE AS SHOWN	N 1 OF 5 SHEETS	DATE
DRAWN BY 486/L/6-W10002L0	AMFC	0

NOTES

REFER DRAWINGS - 486/1/6-W0000.LO TO 486/1/6-W0002C FOR TRUNK MAIN DETAILS.



AMENDMENT & ISSUE REGISTER		
NO	DESCRIPTION	DATE
0	HISTORICAL RECORD	JUN
1	UPDATE AMENDMENT/ISSUE TO/ISSUE FOR INITIALS	

MANAGER	DIRECTOR OF PLANNING & DESIGN		
DATE	DATE		
DIRECTOR OF CONSTRUCTION	DIRECTOR OF M&E SERVICES	DIRECTOR OF SEW OPERATIONS/SAWS DISTRIBUTION	
DATE	DATE	DATE	
DESIGN	J.S.	13.5.93	ENGINEER IN CHARGE
DRAWN	H.G.S.	13.5.93	SUPERVISING ENGINEER
TRACED			SENIOR ENGINEER
D-K/D		15.3.94	FIELD BOOK
A.H. DATUM	SURVEYED		
CAD FILE N <sup>o</sup>	66C005-		

BRISBANE CITY COUNCIL  
DEPARTMENT OF WATER SUPPLY & SEWERAGE  
MECHANICAL & ELECTRICAL BRANCH

PROJECT  
STONES RD. P.S TO BRANDON RD.  
GOWAN RD. C.P. SYSTEM

TITLE  
755 & 1060 DIA. M.S.C.  
WATER TRUNK MAIN C.P. DETAILS

SCALE AS SHOWN | N<sup>o</sup> 1 OF 1 SHEETS  
DRAWING N<sup>o</sup> | AMEND  
486/6/6-RC1C0005E | 0