



Electrical **Mechanical** **Water Meters**
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2nd January 1996

Brisbane Water Engineering Services

OPERATING MANUAL FOR:

HEROES AVENUE 450 DIA. RISING SEWER MAIN
CATHODIC PROTECTION SYSTEM

CLIENT:

DEPARTMENT OF WATER SUPPLY AND SEWERAGE
SEWERAGE OPERATIONS BRANCH

- (1.0) Introduction
- (2.0) Corrosion and Cathodic Protection
- (3.0) Mains Details
- (4.0) Cathodic Protection
- (4.1) Type of System
- (4.2) Rectifier
- (4.3) Cathode
- (4.4) Anodes
- (4.5) Test Points
- (4.6) Associated Drawings
- (4.7) Associated Standards
- (4.8) Government Regulations
- (5.0) Performed Testing
- (6.0) Conclusion
- (7.0) Maintenance

DRAWINGS

486/6/25-AA1C0021E Standard Rectifier Wiring Diagram

(No Number) Monthly Maintenance Program

(1.0) **INTRODUCTION**

Steel when immersed or covered in water has a tendency to corrode (or rust) as the oxidized form is more stable than the metal.

Because of this, precaution must be taken to stop or minimize 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 practical to achieve a perfect coating and coating damage will always occur with time. Because of this, corrosion may occur at imperfections in the paint coating, causing further deterioration in the coating as well as loss of metal.

As a result of this, the coating defects must be rectified by periodic maintenance or an additional method of protection used to prevent this deterioration and corrosion occurring. This additional protection is achieved by the cathodic protection system.

(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 and 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 slow 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 at which corrosion does not occur. This metal/electrolyte potential is generally measured against a standard reference electrode which allows a reproducible potential at which corrosion does not occur to be quoted.

(3.0) MAINS DETAILS

Size: Dia 450 mm. mild steel cement lined.

Coating:

Length: 850 meters

Location: From Heroes ave pump station to the corner of Indooroopilly Rd. and Swan Rd. Taringa.

Construction

Drawings:

486/7/8-II1C0006E
3028/1090 Heroes Avenue Pump Station 450mm. Rising Main CP System
 Indooroopilly Road Rising Main Plan and Longitudal Section

(4.0) CATHODIC PROTECTION DETAILS

- (4.1) Type of Cathodic Protection: Impressed Current.
- (4.2) Rectifier: Special 32 Volt, 10 amp direct current output enclosed in a stainless steel switchboard. Rectifier has a 240V supply from the nearby Heroes Avenue Submersable Sewerage Pumping Station.
- (4.3) Cathode: The cathode point is located on the 450mm dia main next to rectifier transformer unit , adjacent to Heroes Ave pump station . The cathode point is where the cabling from the rectifier is attached to the structure under cathodic protection.
- (4.4) Anodes: Two 1500 x 75mm silicone iron anodes were installed approximately 66 metres from the rising mains in a vertical bed. The anodes were firstly packaged with cokebreeze thereby improving anode – ground resistance. The anodes are identified by a marker pit and label.
- (4.5) Test Points: Test points are installed on cathodically protected structures to enable testing to ensure full protection of the mains. On this main three test points have been installed for details see dwg no. 486/7/8-LI1C0006E.
- (4.6) Associated Drawings:
486/6/25-AA1C0021E Std Rectifier Wiring Diagram
486/1/22-C0023E Silicone Iron Anode Details
486/6/25-AA1C0026E Instalation Details conduit and Rectifier
486/6/25-AA1C0024E Vertical Ground bed Details.
No Number Maintainence Details.
- (4.7) Associated Standards:
AS 3000 1986 Australia Wiring Rules
AS 2832.1 1985 Pipes, Cables, Ducts, Guide to Cathodic Protection,
Part One.
- (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.

(6.0) CONCLUSION

Full Cathodic protection has been achieved on this section of trunk mains. The cathodic protection system is 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.

2nd January 1996
Electrical Workshop
Cathodic Protection

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.

2nd January 1996
Electrical Workshop
Cathodic Protection

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.

2nd January 1996
Electrical Workshop
Cathodic Protection

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.

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

ELECTRICAL WORKSHOP

INSULATED JOINT TESTING DETAILS:

DATE

DESCRIPTION

MAINS DETAILS:- Heroes ave pump station

LOCATIONS:- Rising main pump 1

SIZE:- 12"

MATERIAL:- mild steel.

COATING:- None.

NUMBER:-

IN GROUND TESTING

BOLT TO FLANGE RESISTANCE:-

NUMBER OF BOLT:-

FLANGE TO FLANGE RESISTANCE:-

INSULATION CHECKER MODEL 702:-

POTENTIAL DIFFERENCE TO REFERENCE CELL

PROTECTED SIDE:-

UNPROTECTED SIDE:-

ABOVE TESTING

BOLT TO FLANGE RESISTANCE:-

7200 Ω

NUMBER OF BOLTS:-

FLANGE TO FLANGE RESISTANCE:- 750 Ω

COMMENTS Unit switched on. 1.5v Zn-Pb

Cu/Zn to Protected side -1050mV

Cu/Zn to Unprotected side -624mV

TESTED BY

Rajith.

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

ELECTRICAL WORKSHOP

INSULATED JOINT TESTING DETAILS:

DATE

DESCRIPTION

MAINS DETAILS:- Heroes ave pump. Station.

LOCATIONS:- Rising main pump 2

SIZE:- 12"

MATERIAL:- Mild Steel

COATING:- none

NUMBER:-

IN GROUND TESTING

BOLT TO FLANGE RESISTANCE:-

NUMBER OF BOLT:-

FLANGE TO FLANGE RESISTANCE:-

INSULATION CHECKER MODEL 702:-

POTENTIAL DIFFERENCE TO REFERENCE CELL

PROTECTED SIDE:-

UNPROTECTED SIDE:-

ABOVE TESTING

BOLT TO FLANGE RESISTANCE:-

> 200 Ω

NUMBER OF BOLTS:-

FLANGE TO FLANGE RESISTANCE:- > 50 Ω

COMMENTS

Unit. Switched on 1.5V 2amps.
Cusolt to protected Pipe - 1055 mV
Cusolt to unProtected Pipe - 039 mV

TESTED BY

R. J. H. *[Signature]*



Brisbane City

To	File No.
From	Date
Subject Heroes ave Pump Station	

Natural Potentials

Test Point 1 Rectifier Pump Station

Cusot to Pipe -286 mv

Cusot to ZN 764 mv

ZN to Pipe +687 mv

ZN Coupon to Pipe 734 mv

Protected Coupon to Pipe 214 mv

Protected Coupon to ZN -472 mv

Test Point 2 Indooroopilly Rd

Cusot to Pipe -366 mv

Cusot to ZN 1117 mv

ZN to Pipe +750

Test Point 3 Indooroopilly Rd

Cusot to Pipe -369 mv

Cusot to ZN 853 mv

ZN to Pipe +440

Brisbane Water Engineering Services

CP Form No.26

Electrical Engineering Unit**Cathodic Protection System General Information Form**Project Heroes Ave Date**LOCATION OF RECTIFIER**NUMBER & STREET NAME: Heroes Ave (Pump stn)SUBURB: TaringaPOSTCODE: 4068UBD MAP REFERENCE: 33 B 8**SYSTEM INFORMATION:**INSTALLATION PROTECTED: Rising MainDIAMETER of MAIN in mm: 450 MSCLLENGTH of MAIN in metres: 850COATING on MAIN: PaintedPRODUCT CARRIED: Sewerage

YEAR MAIN INSTALLED: _____

INSTALLATION EXTREMITIES: From Pump stn
Heroes AveTo cnr of Swan
Indooroopilly Rd.CPS NUMBER: 138

DATE C.P. COMMISSIONED: _____

DRAWING NUMBER: _____

H.V. LINE CROSSINGS: 11 KVFOREIGN STRUCTURES in AREA: TelecomGasSEQEBCOMPILED BY J Taylor

Brisbane Water Engineering Services

CP Form No. 24

Electrical Engineering Unit

System Loop Resistance Form

Project Heroes AVE

Date 14-11-95

System Operating Volts 2 Volts

System Operating Amps 2.7 Amps

TEST VOLTAGE		TEST CURRENT	
(Volts)		(Amps)	
<u>1</u>		<u>1.2</u>	
<u>2</u>		<u>2.7</u>	
<u>3</u>		<u>4.6</u>	
<u>4</u>		<u>> 5.0</u>	

LOOP RESISTANCE	
(Ohms)	

Graph Of System Voltage V's Current

Volts

Amps

TESTED BY J Taylor



Brisbane City

To	File No.
From	Date
Subject Heroes ave Pump Station	

Test Point 1 Rectified pump station

Unit 1.5 volts 2amps

on off

Cusot to Pipe -1179mv -750mv

Cusot to ZN 1126mv

Cusot ZN Coupon 1304 1174

Cusot Protected coupon -736mv 602mv

on off

ZN - Pipe

-026 +160

ZN coupon Pipe +162 +290

Pipe to protected coupon 388 267

Test Point 2 Indooroopilly Rd.

on off

Cusot Pipe -1040 -707

ZN to Pipe +170 +454

ZN to Cusot 1203

Test Point 3 Indooroopilly Rd.

ZN to Cusot 1065mv

Cusot to Pipe -1031mv -682mv

ZN to Pipe -007 +330

Brisbane Water Engineering Services

CP Form No. 27

Electrical Engineering Unit

Cathodic Protection Interference Survey Results FormProject Heroes Ave Taringa Unit Reading 5 Amps Date 29-11-95

	Reading	Test Point I. D.	Location	Swing
On	-293	MEN Pole 32114	Indooroopilly / Hero's	
Off	-302		Jack Cook Park	+ 9
On	-306	LT Pole	"	
Off	-335		club House	+ 29
On	-437	Discus Launch Pad	"	
Off	-437			0
On	-293	LT Pole	"	
Off	-295		Gailey st Side	+ 2
On	-387	LT Pole	"	
Off	-407		Gailey & Hero's	+ 20
On	-400	FH	Hero's Ave	
Off	-399		Indooroopilly	- 1
On	-514	FH	37 Hero's Ave	
Off	-514			0
On	-346	Water Pipe	29 Hero's Ave	- 51
Off	-295			
On	-331	Fence	23 "	
Off	-331			0
On	-327	Water Meter	23 "	- 9
Off	-318			
On	-370	MEN	"	
Off	-324		Pole	- 46
On	-427	water Meter	11 Hero's Ave	- 64
Off	-363			
On	-385	Water Pipe	7 "	- 44
Off	-341			
On	-270	Valve RTIC	Bellvue & Hero's	- 5
Off	-265			
On	-498	Fence	2 ALPHA & Hero's	- 1
Off	-497			

TESTED BY J. Taylor

Brisbane Water Engineering Services

CP Form No. 27

Electrical Engineering Unit

Cathodic Protection Interference Survey Results FormProject ... Heroes Ave Taringa Unit Reading 5 Amps. Date 29-11-95

	Reading	Test Point I. D.	Location	Swing
On	-364	MEN	Josling / Herbert Pole 33074	-2
Off	-362		" "	
On	-397	LT Pole	" "	-4
Off	-393		Lt. Pole 4200	
On	-350	water meter	.1 Josling	-3
Off	-347			
On	-230	Gas Pipe	" "	-1
Off	-229			
On	-521	Fence	Parks Josling	
Off	-523		S/W Corner Nearest Anode	+2
On	-467	Water Meter	47 Josling	-33
Off	-434			
On	-305	" "	Holms/Mayne	-4
Off	-361			
On	-412	MEN	" "	-112
Off	-300		Pole 666	
On	-477	FH	65 Josling	0
Off	-477			
On	-382	Tap	69 Josling	-3
Off	-379			
On	-340	MEN	Burns	
Off	-302		Pole 40102	-38
On	-584	SHEATH -ING	Pole Burns	
Off	-589		26167	+5
On	-373	MEN HT	Burns	
Off	-366		Pole 379116	-7
On	-392	MEN	Burns	
Off	-390		Pole 379115	-2
On	-262			
Off	-258		Pole 40276	-4

TESTED BY J. Taylor

Brisbane Water Engineering Services

CP Form No. 27

Electrical Engineering Unit

Cathodic Protection Interference Survey Results FormProject HEROES AVE..... Unit Reading 5 Amps Date 29-11-95

	Reading	Test Point I. D.	Location	Swing
On	-260	Tap. Across Creek	UTILITIES Across Park from RTU	0
Off	-260		Suspension SeeSaw Park across Creek	0
On	1063	Slide	UTILITIES Across Creek from RTU	-1
Off	-1063		" "	-4
On	-102	Swing	" "	-1
Off	-101		" "	-4
On	-356	Slide Combo	" "	-1
Off	-352		" "	-1
On	-419	Seating	" "	+1
Off	-418		" "	+1
On	-501	MEN	Pole 874	
Off	-502		29 Josling	-64
On	-392	Phone	PVC Cabling	0
Off	-328		23 Josling	-3
On	-363	FH	11 Josling	-1
Off	-360		" "	+1
On	-463	FH	11/7 Josling	+3
Off	-462		" "	-1
On	-381	GAS Pipe	Pole 5995	
Off	-382		" "	+1
On	-598	Fence	Pole 4179	-1
Off	-601		" "	+3
On	-365	MEN	Lead cables. 4 off	
Off	-364		each -7 on -7 off.	
On	-272	Phone Pit	Josling st	
Off	-270		Pole 4179.	-2

TESTED BY J Taylor

Brisbane Water Engineering Services

CP Form No. 27

Electrical Engineering Unit

Cathodic Protection Interference Survey Results FormProject Heroes AVE Unit Reading 5 Amos Date 29-11-95

	Reading	Test Point I. D.	Location	Swing
On	-77	Radio Post	RTU Hero's	+ 5
Off	-82			
On	-424	1st Street Light	Hero's Bowls club	+ 2
Off	-426			
On	-548	Flag Pole	Hero's Front Bowls club	+ 1
Off	-549			
On	-404	Water Meter	Hero's Bowls club	-11
Off	-393			
On	-573	Elect Mains Cond.	Hero's Bowls club	0
Off	-573			
On	-187	Flag Pole Rear	Hero's Bowls club	+ 1
Off	-139			
On	-430	Water Pipe	- Gailey Flats Next Bowls	+ 1
Off	-431			
On	-136	MEN O/C	Hero's Gailey	- 1
Off	-135			
On		Phone PVC	Hero's	
Off				
On	-392	MEN	Hero's	
Off	-392		Pole 26157	0
On	-1065	Suspension Seesaw	Indooroopilly/Hero's Jack Cook Park	- 105
Off	-960			
On	-371	Light Pole 12 ft	"	+ 1
Off	-372			
On	-422	Swing	"	0
Off	-422			
On	-326	Elect sw/brd	"	+ 31
Off	-357			
On	+54	Tap	"	0
Off	+54			

TESTED BY J. Taylor

Brisbane Water Engineering Services

CP Form No. 27

Electrical Engineering Unit

Cathodic Protection Interference Survey Results FormProject HEROES AVE..... Unit Reading 5 Amos Date 29-11-95

	Reading	Test Point I.D.	Location	Swing
On	-260	Tap. Across Creek	UTILITIES Across Park from RTU	0
Off	-260		Suspension SeeSaw Park across creek	0
On	+063			
Off	-1063			
On	-102	Slide	UTILITIES Across Creek from RTU	-1
Off	-101			
On	-356	Swing	" "	-4
Off	-352			
On	-419	Slide	" "	-1
Off	-418	Combo		
On	-501	Seating	" "	+1
Off	-502			
On	-392	MEN	Pole 874 29 Josling	-64
Off	-328			
On	-	Phone	PVC cabling	0
Off	-			
On	-363	FH	23 Josling	-3
Off	-360			
On	-463	FH	11 Josling	-1
Off	-462			
On	-381	GAS Pipe	"	+1
Off	-382			
On	-598	Fence	11/7 Josling	+3
Off	-601			
On	-365	MEN	Pole 5995	-1
Off	-364			
On		Phone	Lead cables. 4 off	
		Pit	each -7 on -7 off.	
On	-272	MEN	Josling st Pole 4179.	-2
Off	-270			

TESTED BY J Taylor

Brisbane Water Engineering Services

CP Form No. 27

Electrical Engineering Unit

Cathodic Protection Interference Survey Results FormProject Heroes Ave..... Unit Reading 5 Amps..... Date 30-11-95

	Reading	Test Point I.D.	Location	Swing
On	-283	Water Value	6 ALPHA	-1
Off	-282			
On	-354	Water Meter	14 ALPHA	0
Off	-354			
On	-350	F H	20 ALPHA	0
Off	-350			
On	-288	Water Meter	20 ALPHA	0
Off	-288			
On	+60	Water Meter	26 ALPHA	0
Off	+60			
On	-348	MEN	26 ALPHA	0
Off	-348	Pole		
On	-810	Flag Pole	Taringa Works Dept	-1
Off	-809			
On	+17	Water Meter	"	0
Off	+17			
On	-308	Water Meter	SEQEB ALPHAST	0
Off	-308			
On	-557	Fence	" "	-1
Off	-556			
On	-352	Conduite	Indooroopilly Rd. Pole 32113	0
Off	-352			
On	-437	Fence	Jack Cook Park Indooroopilly Rd.	+13
Off	-450			
On	-603	sheath	"	0
Off	-603		Pole 18007	
On	-215	MEN	"	
Off	-220		Pole 18006	+5
On	0	Gas		
Off	0		@ Pole 18004	0

TESTED BY *J Taylor*

Brisbane Water Engineering Services

CP Form No. 27

Electrical Engineering Unit

Cathodic Protection Interference Survey Results FormProject Heroes Ave..... Unit Reading 5 Amps..... Date 30-11-95

	Reading	Test Point I. D.	Location	Swing
On	-124	Water Meter	94 Indoorsopilly	+22
Off	-156		"	
On	-86	Tap	96 "	+14
Off	-100		"	
On	-122	MEN Pole 379077	"	+22
Off	-144		"	
On	-10	Gas	98 "	+6
Off	-16		"	
On	-002	Water Tap	95 "	-1
Off	-001		"	
On	-521	House Top	95 "	+2
Off	-523		"	
On	-65	Valve RTIC	westerham Indoorsopilly	+5
Off	-70		"	
On	-47	FH	87 Indoorsopilly	0
Off	-47		"	
On	-386	FH	89 "	0
Off	-386		"	
On	-274	Water Tap + Earth	85 "	+18
Off	-292		"	
On	-349	Water Meter	83 "	+3
Off	-352		"	
On	-19	Gas	81 "	+2
Off	-21		"	
On	-452	Valve RTIC	Bellevue "	0
Off	-452		"	
On	-005	Co Water Pipe	73 "	+1
Off	-006		"	
On	-184	Water Meter	69 "	+26
Off	-210		"	

TESTED BY J Taylor

Brisbane Water Engineering Services

CP Form No.18

Electrical Engineering Unit

Standard Cathodic Protection Test Point Data Gathering FormProject Heroes AveDate 3-7-95TP Location RTU Pump StnTP No. 1Mains Size 450 mm dia. MSCLTP Type Coupon**POTENTIAL TESTING**

CATHODE TO CATHODE RETURN (RESISTANCE)

0.1 Ω

ZINC REFERENCE TO PIPE

+ 687CuSo₄ REFERENCE TO PIPE- 286ZINC TO CuSo₄**EARTH TESTING**TEST NO. 1

PIN SPACING

5 mtrs

RESISTIVITY

25 ohm meters

MEGGER READING

0.1 scale × 8TEST NO 2

PIN SPACING

2 mtrs

RESISTIVITY

133 ohm meters

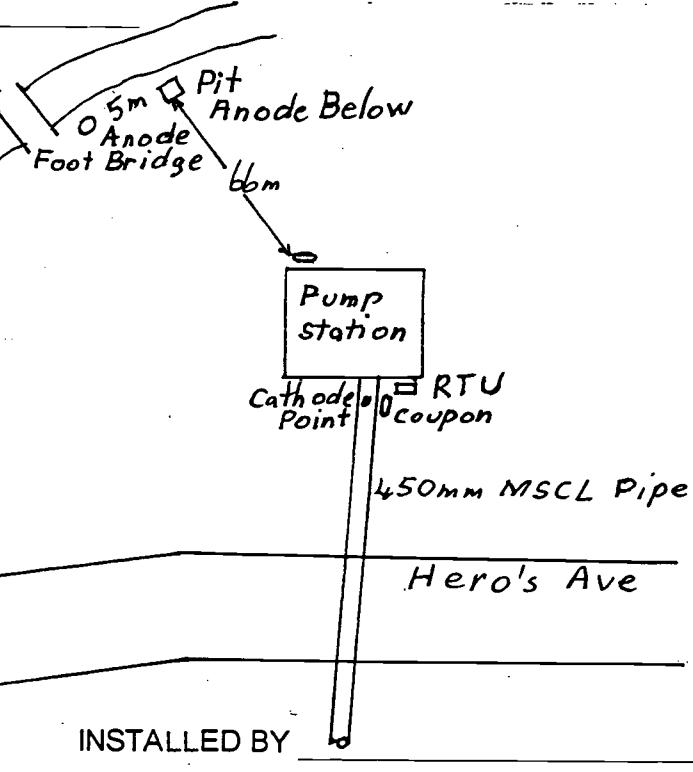
MEGGER READING

0.1 scale 106TEST NO 3

PIN SPACING

RESISTIVITY

MEGGER READING

 COMMENTS / LOCATION DRAWING

Brisbane Water Engineering Services

CP Form No.18

Electrical Engineering Unit**Standard Cathodic Protection Test Point Data Gathering Form**Project Heroes Ave Date 3-7-95TP Location 98 Indooroopilly Rd. TP No. 2Mains Size 450mm dia. MSCL TP Type B**POTENTIAL TESTING**

CATHODE TO CATHODE RETURN (RESISTANCE)

0.1 Ω

ZINC REFERENCE TO PIPE

+750 mVCuSo₄ REFERENCE TO PIPE-366 mVZINC TO CuSo₄-1117 mV**EARTH TESTING**TEST NO. 1

PIN SPACING

5 mtrs

RESISTIVITY

44 ohm mtrs

MEGGER READING

0.1 Scale 14TEST NO. 2

PIN SPACING

2 mtrs

RESISTIVITY

48 ohm mtrs

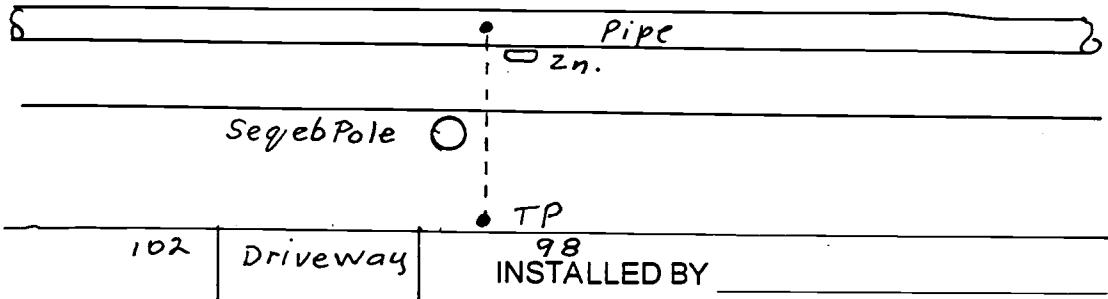
MEGGER READING

0.1 Scale 38TEST NO. 3

PIN SPACING

RESISTIVITY

MEGGER READING

 COMMENTS / LOCATION DRAWING

Brisbane Water Engineering Services

CP Form No.18

Electrical Engineering Unit

Standard Cathodic Protection Test Point Data Gathering FormProject Heroes Ave. Date 3 - 7 - 95TP Location Indooroopilly & Swan Rds TP No. 3Mains Size 450 mm dia. MSCL TP Type B**POTENTIAL TESTING**

CATHODE TO CATHODE RETURN (RESISTANCE)

0 - 1+ 440 mV- 369 mV- 855 mV

ZINC REFERENCE TO PIPE

CuSo₄ REFERENCE TO PIPEZINC TO CuSo₄**EARTH TESTING**TEST NO. 1

PIN SPACING

5 mtrs

RESISTIVITY

172 ohm mtrs

MEGGER READING

0.1 Scale 55TEST NO. 2

PIN SPACING

2 mtrs

RESISTIVITY

462 ohm mtrs

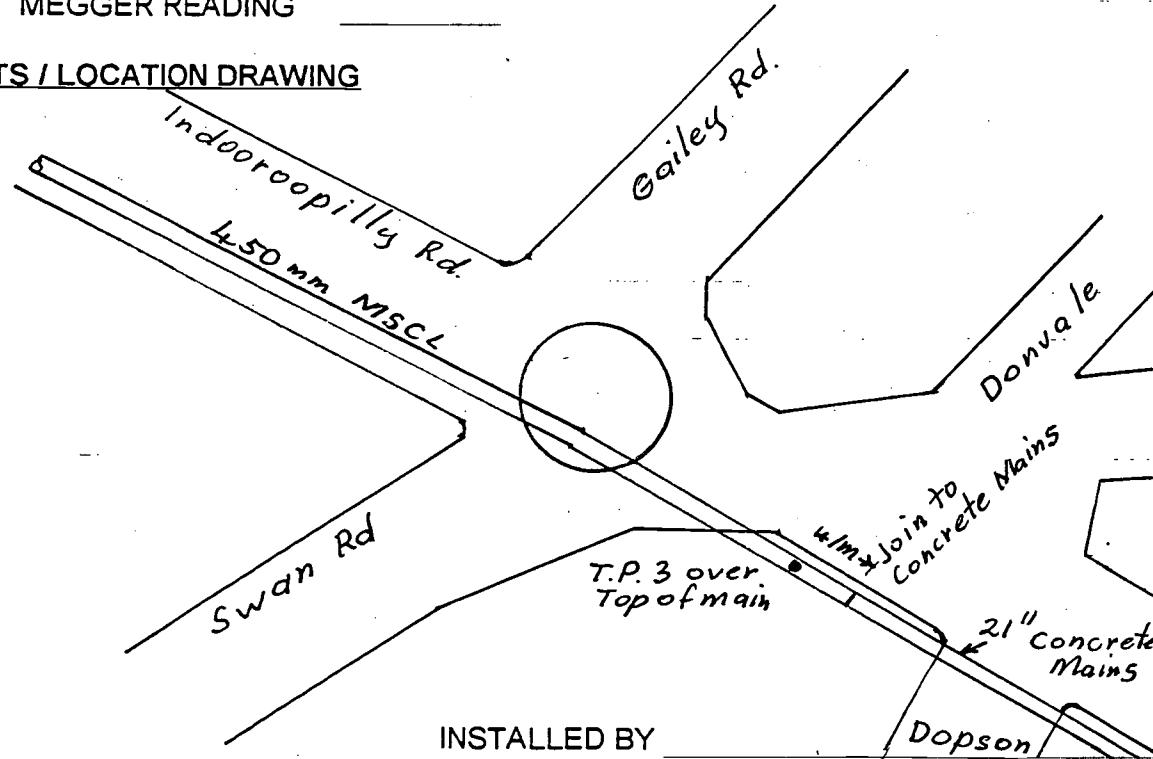
MEGGER READING

0.1 Scale 368TEST NO. 3

PIN SPACING

RESISTIVITY

MEGGER READING

 COMMENTS / LOCATION DRAWING

Brisbane Water Engineering Services

CP Form No. 27

Electrical Engineering Unit

Cathodic Protection Interference Survey Results FormProject Heroes Ave..... Unit Reading 5 Amps..... Date 4-12-95

	Reading	Test Point I. D.	Location	Swing
On	-28	Water Meter	51 Indooroopilly	+ 4
Off	-32			
On	-778	GAS	47 "	-4
Off	-774			
On	+88	GAS	@ TP.2 "	0
Off	+88			
On	-119	Water Tap	106 "	+16
Off	-135			
On	-194	Water Meter	110 "	+2
Off	-196			
On	-186	Mains Side Isolation	110 "	+21
Off	-207			
On	-112	Water Meter	112 "	+27
Off	-139			
On	-201	Water Meter	120 "	+14
Off	-215			
On	-148	MEN Pole 660	"	+35
Off	-183			
On	-27	FH	ALEXANDRA "	+24
Off	-51			
On	-273	Water Meter	127 "	+7
Off	-280			
On	-339	Water Meter	123 "	0
Off	-339			
On	-336	FH	121 "	-6
Off	-330			
On	-337	Water Meter House side	117 "	0
Off	-337			
On	-246	Water Meter Mains side	117 "	-3
Off	-243			

TESTED BY J Taylor

Brisbane Water Engineering Services

CP Form No. 27

Electrical Engineering Unit

Cathodic Protection Interference Survey Results Form

Project Heroes Ave Taringa. Unit Reading 5 Amps. Date 4-12-95

	Reading	Test Point I.D.	Location	Swing
On	-249	FH	103 Indooroopilly	0
Off	-249		"	
On	-218	Water Meter	103 "	-2
Off	-220		"	
On	-258	Valve RTIC	CNR Alexandra.	+1
Off	-259		"	
On	-223	Flats Tap	CNR "	+4
Off	-227		"	
On	-198	FH	CNR "	+1
Off	-199		"	
On	-218	Water Meter	20 "	0
Off	-218		"	
On	-30	water Meter	23 "	+3
Off	-33		"	
On	-140	water meter	28 "	+5
Off	-145		"	
On	-34	water meters	32 "	0
Off	-34		"	
On	-231	Water meter house	32 "	+1
Off	-232		"	
On	-18	FH	42 "	0
Off	-18		"	
On	-54	MEN Pole T 50573	More St	-9
Off	-45		"	
On	+42	Garden Tap	Forrest Pl. "	+1
Off	+41		"	
On	-158	mtr. concreted in	24 "	+3
Off	-161		"	
On	-191	Water Meter	33 Alexandra.	+9
Off	-200		"	

TESTED BY J Taylor

Brisbane Water Engineering Services

CP Form No. 27

Electrical Engineering Unit

Cathodic Protection Interference Survey Results FormProject Heroes Ave Taringa Unit Reading 3V 5A Date 6-12-95

	Reading	Test Point I.D.	Location	Swing
On	-379	water pipe	102 Gailey.	+10
Off	-389			
On	-445	Prop Pole Flats	High View "	+5
Off	-450			
On	-440	Valve RTIC	" "	0
Off	-440			
On	-405	water mtr	116 "	+6
Off	-411			
On	-329	EARTH AB Pole X25837	Pole 3 80544 "	+6
Off	-335			
On	-303	Water Tap	122 "	+5
Off	-308			
On	-527	Fence	" "	0
Off	-527	Foot Path		
On	-318	Water Tap	140 "	-1-
Off	-317			
On	-387	Earth A.B. Pole T26111	X12816 "	0
Off	-387			
On	-388	Water Meter	152 "	0
Off	-388			
On	-387	Path Light	152 "	0
Off	-387	Pole		
On	-262	Water mtr	158 "	0
Off	-260			
On	-372	Earth A.B. Pole A2233	Pole 26109 "	+6
Off	-378			
On	-3	MEN Pole 16285	Shop Center "	0
Off	-3			
On	-258	Water Mains	" "	0
Off	-258			

TESTED BY J Taylor

Brisbane Water Engineering Services

CP Form No. 27

Electrical Engineering Unit

Cathodic Protection Interference Survey Results FormProject Heroes Ave Taringa Unit Reading 3V 5A Date 6-12-95

	Reading	Test Point I.D.	Location	Swing
On	-10	Water Mtr	Cnr Bellevue ELLERSLIE	0
Off	-10			
On	-68	Gas	35 OXFORD	0
Off	-68			
On	-153	Water mtr	21 "	+9
Off	-162			
On	-194	Water mtr	19 "	+5
Off	-199			
On	-27	Water mtr	15 "	0
Off	-27			
On	-40	MEN Pole 380996	"	0
Off	-40			
On	-222	Water mtr	38 "	0
Off	-222			
On	-227	Water Pipe	34 "	+3
Off	-230			
On	-102	Water mtr	28 "	0
Off	-102			
On	-144	Water MTR	24	+4
Off	-148			
On	-166	water mtr	16	-2
Off	-164			
On	-274	Water mtr	Cnr 8	+28
Off	-302			
On				
Off				
On				
Off				
On				
Off				

TESTED BY J Taylor

Brisbane Water Engineering Services

CP Form No. 27

Electrical Engineering Unit

Cathodic Protection Interference Survey Results FormProject Heroes AVE Taringa Unit Reading 3V. 5A Date 6-12-95

	Reading	Test Point I. D.	Location	Swing
On	-74	MEN Pole 16431	ALEXANDRA	0
Off	-74	Water Meter	25 "	+3
On	-178	Earth Stake	21 "	+4
Off	-181	water Pipe	17 "	+3
On	-202	water Meter	15 "	+1
Off	-206	Pipe @ RTU. VALVE	Hero's Ave	-285
On	-217	Tap.	66 Gailey St	0
Off	-220	Earth AB Pole AL589	"	+9
On	-359	Tap	70 "	-2
Off	-359	T/Com	84 "	
On	-356	Gas	Prospect "	-1
Off	-365	Fence	" "	0
On	-637	Gas	" "	0
Off	-635	Fence	" "	0
On	-454	Fence F/Path	" "	0
Off	-454	Earth AB Pole A2161	Pole 2G119 "	+9
On	-533	Gas MTR.	102 "	0
Off	-533			

TESTED BY *J Taylor*

Brisbane Water Engineering Services

CP Form No. 27

Electrical Engineering Unit

Cathodic Protection Interference Survey Results FormProject Heroes AveUnit Reading 3V 5ADate 6-12-95

Reading	Test Point I.D.	Location	Swing
On	PVC	Telecom Shopping Center Gailey ST	
Off			
On	-299	Water mtr 151 Gailey St	0
Off	-299		
On	-316	Water mtr 19 Gailey St.	+2
Off	-318		
On	-450	LT Pole " "	0
Off	-450	T379677	
On	-523	LT Pole "	
Off	-530	T379676	+7
On	Polarized	Value RMC	0
Off		Pole 380165 "	
On	-381	F H	+1
Off	-382	Pole 380164 "	
On	-265	F H 34 Bellevue Pde	+10
Off	-275		
On	-274	Water mtr hse 32 "	+32
Off	-306		
On	-238	Water mtr 30 "	+24
Off	-262		
On	-001	Tap Hse 12 "	0
Off	-001		
On	-585	Fence 6 "	0
Off	-585		
On	-178	Earth Trans pole 50185 "	0
Off	-178		
On	-174	Water meter 601 Lot 1 "	+3
Off	-177		
On	-25	Water Meter 25 "	0
Off	-25		

TESTED BY J. Taylor

Brisbane Water Engineering Services

CP Form No. 27

Electrical Engineering Unit

Cathodic Protection Interference Survey Results Form

Project Heroes AVE

Unit Reading 3 V 5 A

Date 7-12-95

TESTED BY F Taylor

Brisbane Water Engineering Services

CP Form No. 27

Electrical Engineering Unit

Cathodic Protection Interference Survey Results FormProject Heroes AYEUnit Reading 3V 5ADate 7-12-95

	Reading	Test Point I.D.	Location	Swing
On	-355	Water mtr	5 Westerham	0
Off	-355		" "	0
On	-514	Fence	5 "	0
Off	-514		" "	0
On	-470	Water mtr	9 "	0
Off	-470		" "	0
On	-258	Water mtr	15 "	0
Off	-258		" "	0
On	-12	FH	17 "	+1
Off	-13		" "	0
On	-178	Water mtr	17 "	0
Off	-178		" "	0
On	-360	MEN Pole 16999	" "	+1
Off	-364		" "	+1
On	-307	Gas	Cnr Indooroopilly "	-5
Off	-312		" "	0
On	-447	Valve RTLC	Cnr Bradstead "	+1
Off	-448		" "	0
On	+607	Water meter	Poinciana Brashead. Mews	0
Off	+607		" "	0
On	-110	FH	12 "	0
Off	-110		" "	0
On	-104	Water meter	-14 "	-1
Off	-103		" "	0
On	-001	Gas	14 "	0
Off	-001		" "	0
On	-245	Water meter	20 "	-1
Off	-246		" "	0
On	-214	Water Meter	30 "	0
Off	-214		" "	0

TESTED BY J Taylor

Brisbane Water Engineering Services

CP Form No. 17

Electrical Engineering Unit

Cathodic Protection Anode Bed Testing

Project Heroes AVEDate 11-12-95

ANODE MATERIAL:	<u>Silicon Iron</u>	BURIAL:	<u>Vertical</u>
ANODE SIZE/WEIGHT:	<u>1.5 m x 75 mm</u>	TEST POINT TYPE:	<u>Pit</u>
ANODE PACKAGING:	<u>Canister</u>	SOIL RESISTIVITY:	<u>6.28 ohm mtrs @ 5 mtrs</u>
ANODE DEPTH:	<u>5 mtrs</u>	SIGNAGE:	

RESISTANCE TO GROUND:

ANODE NO.1	<u>1.4 ohm.</u>
ANODE No.2	<u>1.0 ohm</u>
ANODE No.3	
ANODE No.4	
ANODE No.5	
TOTAL	<u>•</u>

ANODE CURRENT

ANODE No.1	<u>1.37 Amps</u>
ANODE No.2	<u>3.45 Amps</u>
ANODE No.3	
ANODE No.4	
ANODE No.5	
TOTAL	<u>5.10 Amps</u>

LOCATION DRAWINGAs Per TP No.1TESTED BY J Taylor

BRISBANE CITY COUNCIL
DEPT WATER SUPPLY AND SEWERAGE
EAGLE FARM PUMPING STATION

CATHODIC PROTECTION BLEED POINT DETAILS

CPB NUMBER:-

49

DATE INSTALLED:-

13/12/95

BCC CATHODIC PROTECTION SYSTEM IDENTIFICATION:- HEROES AVE

FOREIGN STRUCTURE OWNER:-

F.S. LOCATION:- CROWN PARK

F.S. IDENTIFICATION:- STEEL LIGHTING TOWER NEXT TO CLUB Hse

REFERENCE POTENTIALS TO F.S. PRIOR TO BLEED CONNECTION:-

REFERENCE TYPE:- CUSOU

POTENTIAL OFF:- 454 ON:- 417 SW:- +37

BLEED TYPE:- GALVANIC

BLEED MATERIAL:- ZINC

BLEED WEIGHT:- 650

BLEED O/C POTENTIAL:- 199

BLEED CURRENT OFF:- — ON:- —

REFERENCE POTENTIALS AFTER CONNECTION TO FOREIGN STRUCTURE:-

BOND OFF (RECTIFIER OFF)		BLEED ON				RESULTANT SWING
BLEED OFF	BLEED ON	SW	BOND OFF	BOND ON	SW	
-449	-633	-184	-633	-620	+13	-171

FOREIGN STRUCTURE OWNER AGREEABLE WITH MITIGATION? (Y/N)

IDENTIFICATION TAG INSTALLED? (Y/N)
COMMENTS:-

INSTALLED/TESTED BY:-

*J Taylor*NOTE: PLEASE FILE ONE COPY AND FORWARD SECOND COPY TO CORROSION TECH
OFFICER.

BRISBANE CITY COUNCIL
DEPT WATER SUPPLY AND SEWERAGE
EAGLE FARM PUMPING STATION

CATHODIC PROTECTION BLEED POINT DETAILS

CPB NUMBER:- 48

DATE INSTALLED:- 13/12/95

BCC CATHODIC PROTECTION SYSTEM IDENTIFICATION:- HEROES AVE

FOREIGN STRUCTURE OWNER:- TOOOWONG HARRIERS ATHLETIC CLUB

F.S. LOCATION:- INDOORIPILLY RD.

F.S. IDENTIFICATION:- SW/B EARTH ON WOODEN POLE

REFERENCE POTENTIALS TO F.S. PRIOR TO BLEED CONNECTION:-

REFERENCE TYPE:- CuSO₄

POTENTIAL OFF:- 466 ON:- 430 SW:- +36 mV

BLEED TYPE:- GALZANI C

BLEED MATERIAL:- ZINC

BLEED WEIGHT:- 650 mg

BLEED O/C POTENTIAL:- 621 mV

BLEED CURRENT OFF:- 3mA ON:- 3mA

REFERENCE POTENTIALS AFTER CONNECTION TO FOREIGN STRUCTURE:-

BOND OFF (RECTIFIER OFF)		BLEED ON			RESULTANT SWING
BLEED OFF	BLEED ON	SW	BOND OFF	BOND ON	
-462	-643	-181	-643	-609	-34

FOREIGN STRUCTURE OWNER AGREEABLE WITH MITIGATION? (Y/N)

IDENTIFICATION TAG INSTALLED? (Y/N)
COMMENTS:-

INSTALLED/TESTED BY:-

*J Taylor*NOTE: PLEASE FILE ONE COPY AND FORWARD SECOND COPY TO CORROSION TECH
OFFICER.

BRISBANE CITY COUNCIL
DEPT WATER SUPPLY AND SEWERAGE
EAGLE FARM PUMPING STATION

CATHODIC PROTECTION BLEED POINT DETAILS

CPB NUMBER:- 50

DATE INSTALLED:- 13-12-95

BCC CATHODIC PROTECTION SYSTEM IDENTIFICATION:- *Heroes Ave*

FOREIGN STRUCTURE OWNER:- *SEQEB*

F.S. LOCATION:- 120 Indooroopilly Rd.

F.S. IDENTIFICATION:- Pole 660

REFERENCE POTENTIALS TO F.S. PRIOR TO BLEED CONNECTION:-

REFERENCE TYPE:- Cu CuSO₄

POTENTIAL OFF:- -148 ON:- +183 SW:- +35

BLEED TYPE:- *Sacrificial*

BLEED MATERIAL:- Zn.

BLEED WEIGHT:- 650 Gms

BLEED O/C POTENTIAL:- +792 mV

BLEED CURRENT OFF:- 2.40mA ON:-

REFERENCE POTENTIALS AFTER CONNECTION TO FOREIGN STRUCTURE:-

BOND OFF (RECTIFIER OFF)		BLEED ON			RESULTANT SWING
BLEED OFF	BLEED ON	SW	BOND OFF	BOND ON	
-179	-317	+38	-317	-337	-20 -158

FOREIGN STRUCTURE OWNER AGREEABLE WITH MITIGATION? (Y/N)

IDENTIFICATION TAG INSTALLED? (Y/N)
COMMENTS:-

INSTALLED/TESTED BY:-

J Taylor

NOTE: PLEASE FILE ONE COPY AND FORWARD SECOND COPY TO CORROSION TECH OFFICER.

BRISBANE CITY COUNCIL
DEPT WATER SUPPLY AND SEWERAGE
EAGLE FARM PUMPING STATION

CATHODIC PROTECTION BLEED POINT DETAILS

CPB NUMBER:- 51

DATE INSTALLED:- 13-12-95

BCC CATHODIC PROTECTION SYSTEM IDENTIFICATION:- Heroes Ave

FOREIGN STRUCTURE OWNER:- Seg 6

F.S. LOCATION:- 96 Indooroopilly Rd.

F.S. IDENTIFICATION:- Pole 379077

REFERENCE POTENTIALS TO F.S. PRIOR TO BLEED CONNECTION:- -225 mV

REFERENCE TYPE:- Cu Cu SO₄

POTENTIAL OFF:- -100 mV ON:- -122 mV SW:- +22 mV

BLEED TYPE:- Galvanic

BLEED MATERIAL:- Zn

BLEED WEIGHT:- 650 Gms

BLEED O/C POTENTIAL:- 731 mV

BLEED CURRENT OFF:- 2.15mA ON:-

REFERENCE POTENTIALS AFTER CONNECTION TO FOREIGN STRUCTURE:-

BOND OFF (RECTIFIER OFF)			BLEED ON			RESULTANT SWING
BLEED OFF	BLEED ON	SW	BOND OFF	BOND ON	SW	
-176	-477	-301	-477	-502	-25	-326

FOREIGN STRUCTURE OWNER AGREEABLE WITH MITIGATION? (Y/N)

IDENTIFICATION TAG INSTALLED? (Y/N)

COMMENTS:-

INSTALLED/TESTED BY:-

J Taylor

NOTE: PLEASE FILE ONE COPY AND FORWARD SECOND COPY TO CORROSION TECH OFFICER.

Brisbane Water Engineering Services

Electrical Engineering Unit

Cathodic Protection Interference Results Form

CP Form No. 29

Project HeroesAve

Unit Reading3.1/2Amps 5 Amps

Date 1/3-1/2-95

TESTED BY .

J. Taylor



Brisbane Water Engineering Services

Electrical Mechanical Water Meters
5 Bunya Street Eagle Farm Q 4009
Ph. (07) 3403 1849
Fx. (07) 3403 1898

Fax transmission

to:Roy Carlton

company/location:Gas Corp

fax no: 38670325

PHONE:38670223 /015-025-800

from:Kerry Mc Govern

unit: Electrical Engineering Unit

ph no:34031838

fax no:(07) 3403 1839

date: 3 January 1996

no of pages: (including this page) **2**

re:Interference Test Results for HEROES AVENUE TARINGA

message:

In relation to our phone conversation, following is the preliminary results of interference testing of our cathodic system to your structure.

If further on-site testing and / or witnessing of testing by you is required, please contact the undersigned to arrange those tests.

Could you please reply by FAX or LETTER of your acceptance of the above testing for our records.

Regards,

Kerry Mc Govern
Electrical Supervisor

Electrical Mechanical Water Meters

5 Bunya Street Eagle Farm Q 4009

Ph. (07) 3403 1849

Fx. (07) 3403 1898

Brisbane Water Engineering Services

Fax transmission

to: Darryl Ringuet

company/location: SEQEB

fax no: 32676228

PHONE: 34075369

from: Kerry Mc Govern

unit: Electrical Engineering Unit

ph no: 34031838

fax no: (07) 3403 1839

date: 2 January 1996

no of pages: (including this page) 8

re: Interference Test Results for HEROES AVENUE TARINGA

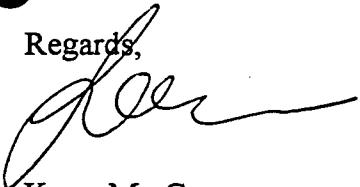
message:

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Regards,



Kerry Mc Govern
Electrical Supervisor

Electrical Mechanical Water Meters
5 Bunya Street Eagle Farm Q 4009
Ph. (07) 3403 1849
Fx. (07) 3403 1898

Brisbane Water Engineering Services

Fax transmission

to: Jim McMonagle

company/location: TELSTRA

fax no: 32524664

PHONE: 38380116

from: Kerry Mc Govern

unit: Electrical Engineering Unit

ph no: 34031838

fax no: (07) 3403 1839

date: 3 January 1996

no of pages: (including this page)

8

re: Interference Test Results for HEROES AVENUE TARINGA

message:

In relation to our phone conversation, following is the preliminary results of interference testing of our cathodic system to your structure.

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Could you please reply by FAX or LETTER of your acceptance of the above testing for our records.

Regards,



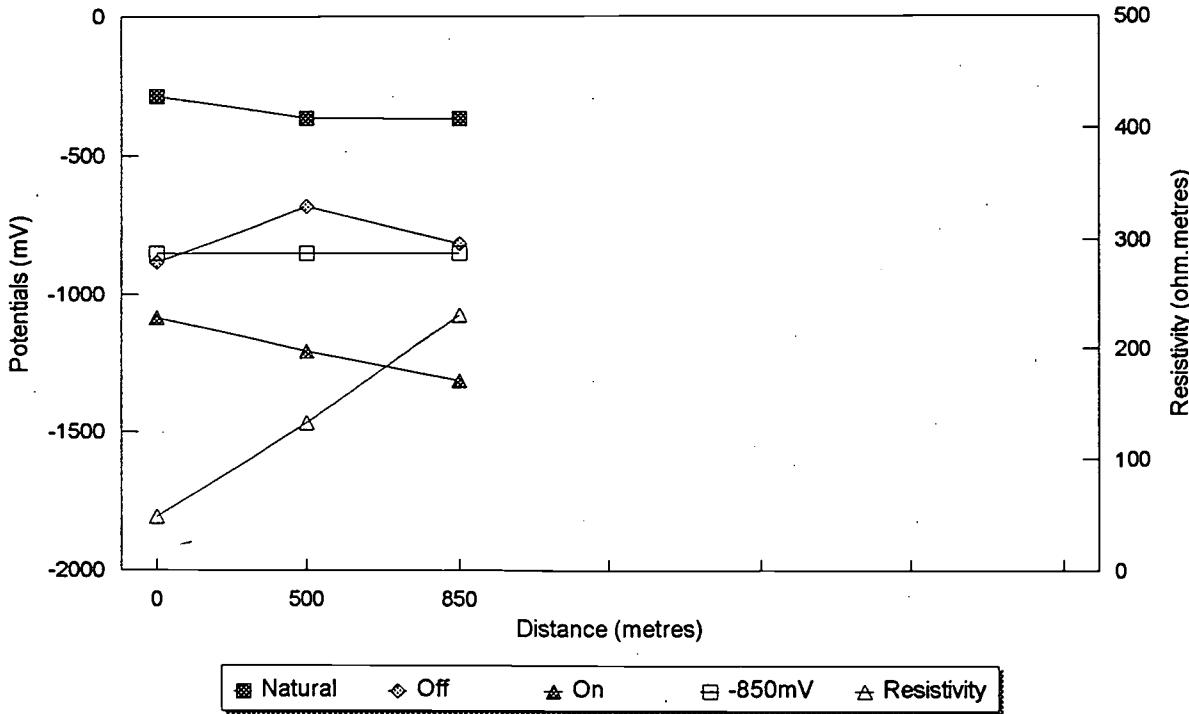
Kerry Mc Govern
Electrical Supervisor

Brisbane Water Engineering Services

CP Form No. 23

Electrical Engineering Unit**Cathodic Protection System Potential Recording Form****Project** HEROES AVE**Date** 1/1/96

Test Point number	Distances to T.P. (metres)	Potentials to CuSO ₄			Resistivities at 2 metres (ohm.metres)
		Natural (mV)	Off (mV)	On (mV)	
1	0	-286	-881	-1086	47.7
2	500	-366	-680	-1208	133.1
3	850	-369	-814	-1316	230.9
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Graph of potentials and resistivity vs pipelength

Brisbane Water Engineering Services

Electrical Engineering Unit

Ph. 34031838 Fx. 34031839

5 Bunya Street

Eagle Farm Q 4009

Cathodic Protection System Loop Resistance

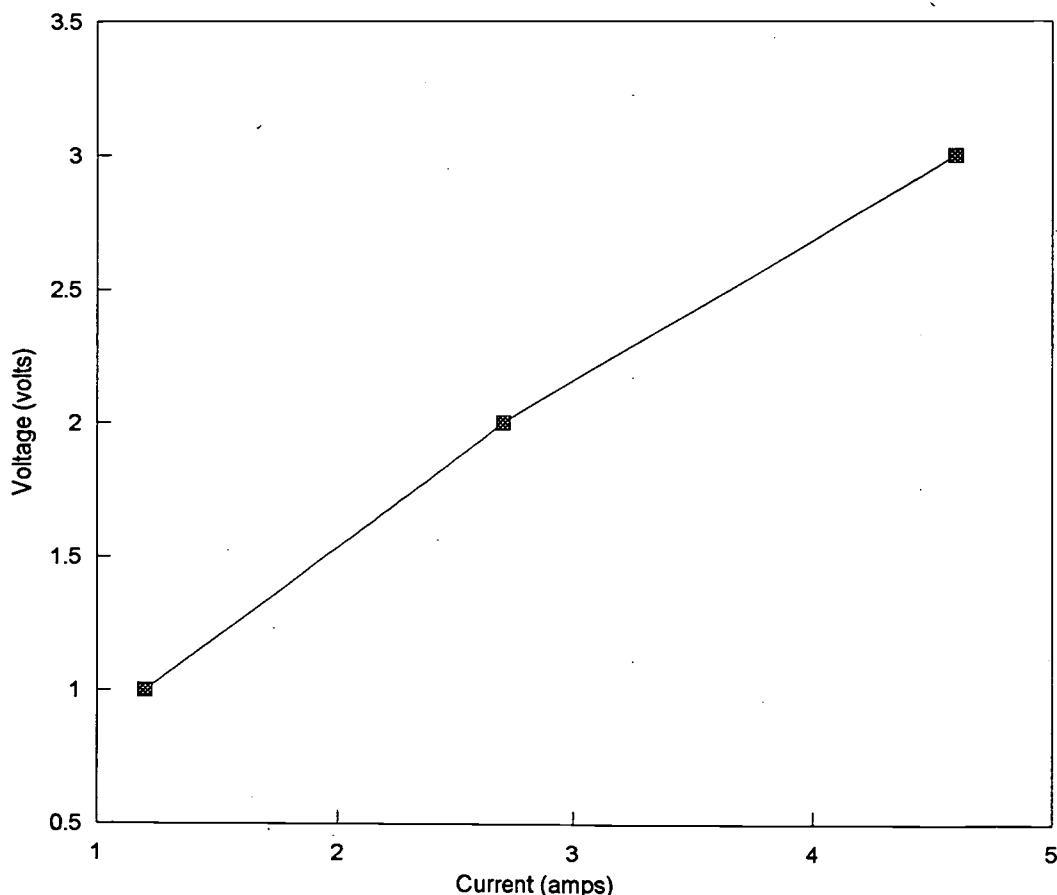
Date 14 th December 1995

Cathodic Protection System: HEROES AVE

System Operating Volts: 3 System Operating amps 4.6

Test Voltage:		Test Current:
(volts)		(amps)
1		1.2
2		2.7
3		4.6

Loop Resistance (ohms)
0.588235

Graph of System voltage vs current.

TESTED BY

J .TAYLOR



Brisbane City

MEMORANDUM

To	File No.
From	Date 8/11/96
Subject Heroes Ave Interference Testing with John Lambert From Telstra.	

Pit at Pump Stn - 883 mV on - 883 mV off NIL
Indooroopilly Rd / Bellview / Burns - 881 mV on - 883 mV off NIL
Darling Point 60 Bellview Tce - 885 mV on - 885 mV off NIL

BRISBANE CITY COUNCIL

MEMORANDUM

Brisbane City

To	File No.
From	Date 8/11/96
Subject Heroes Ave Interference Testing with John Lambert From Telstra.	

Pit at Pump Stn -883 mV on -883 mV off NIL
 Indooroopilly Rd/Bellview/Burns -881 mV on -883 mV off NIL
 Darling Point 60 Bellview Tce -885 mV on -885 mV off NIL

Facsimile transmission from

BRISBANE CITY COUNCIL
TECHNOLOGY SERVICES BRANCH
TECHNICAL SERVICES SECTION



Brisbane City Council
69 Ann Street
BRISBANE
QUEENSLAND
GPO Box 1434
BRISBANE
AUSTRALIA 4001

TO : Sewer Maintenance	ATTENTION : Jamie Alonso-Templado 377-8934	FAX NO. 368 2336
DATE : 8/5/95	NO. OF PAGES (including this page) 5	FROM : Jeff Say 225 4207
RE : Cathodic Protection Test Point Installations		

File : hwsew.fax

As part of the installation of Cathodic Protection on Heroes Av and Witton Rd Pump Station Rising Mains, the following Test Points are required to be installed:

HEROES AV.

Refer to attached Drawing : 486/7/8-LI1C0006E

Test Point No.2 Indooroopilly Rd / Westerham St
 Test Point No.3 Indooroopilly Rd / Swann Rd

WITTON RD.

Refer to attached Drawing : 486/7/8-KI1C0005E

Test Point - Witton Rd Pump Station
 Test Point - Radnor St / Riverview Rd (see note)

Note : An in-line valve was to be installed before the tee into the Lambert Rd Rising Main as per attached Drawing. It is proposed that the Test Point be installed at this point along with in line insulation to electrically isolate the Witton Rd Main. Please advise the status of the valve installation.

The installation of the above Test Points is proposed to be installed ASAP and we request available timings for Sewerage Maintenance to proceed in conjunction with Eagle Farm.

Charge No's.. Heroes Av. - STLA5050 / 21700204

Witton Rd - STLA5040 / 21700204

Should you require any additional information or wish to have an on site meeting, please contact me on 225 4207.

Regards,

.....
 Jeff Say.

Facsimile

To

B.C.L.

From CAN CONSTRUCTION
PLAN AND RECORDS
LOCATIONS

CAN DEVELOPMENT
PLANNING & DESIGN

KERRY McGAVENN

Facsimile

Company

Location

Distrib.

File

Date

Total Pages

3

LOCKED BAG 3529
BRISBANE
QLD 9008
AUSTRALIA

Telephone 8374134
Message Bank
Facs:07 8374370

HEROES AVE
TARINGA

Disclaimer

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This plan is issued as a guide only, for detailed information contact:

Line Depot : ZILLMERE

Telephone : (008) 807711

Date : 4/3/95

Signed: *GM*



CAN DEVELOPMENT
PLANNING & DESIGN

LOCKED BAG 3529
BRISBANE
QLD 9008
AUSTRALIA

Telephone 8374134
Message Bank
Facs:07 8374370

Telstra Corporation Limited
ACN 051 775 556
Telstra Corporation Limited
ACN 051 775 556

Facsimile

To	Kerry McGovern Electrical Engineering Unit	External plant Technology Corrosion and Earthing Group
Company	Brisbane City Council Eagle Farm	144 Arthur St.Fortitude Valley 4006 Australia
Facsimile	34031898	Telephone 07 38380116 Facsimile 07 32524664
From	J.J.McMonagle	
Subject	Interference Tests Heroes Ave. Taringa	
Date	22 January 1996	
File	330/11/139	Total Pages 1
Attention	John Taylor	

As discussed, Taylor/Mc Monagle on 22/1/96 interference tests were conducted on Telstra cables in the vicinity of the Brisbane City Council Cathodic Protection System located at Heroes Ave. Taringa on 8/1/96.

No adverse effects were found on Telstra's cables and providing the operating current of this system does not exceed 5 Amps Telstra has no objection to the operation of this system.

Thank you for your co-operation in conducting the interference tests.

Regards

J.J. McMonagle

J.J. McMonagle

National Manager

External Plant Technology

THE SOUTH EAST QUEENSLAND
ELECTRICITY CORPORATION

TECHNICAL SERVICES DIVISION

TESTS & INVESTIGATIONS GROUP

COMPRISED: TESTS & INVESTIGATIONS MANAGER
 CABLE & SAFETY TESTS SECTION
 FIELD INVESTIGATIONS SECTION
 FIELD TESTS SECTION
 EQUIPMENT TESTS SECTION
 APPROVALS LABORATORY

PH. (07) 3407 5315
 PH. (07) 3407 5369
 PH. (07) 3407 5433
 PH. (07) 3407 5449
 PH. (07) 3407 5416
 PH. (07) 3407 5323

Ref. No.: _____

Building One
Blinzinger Road
BANYO QLD 4014Date: 22/1/96

FAX: (07) 3407 5986

No. of pages following: 1ATT'N: KERRY MC GOVERNLOCATION: _____

_____FAX NO.: 07 34031839FROM: DARRYL RINGUET BANYO TESTSREMARKS: _____

Brisbane Water Engineering Services

Fax transmission

to: Darryl Ringuet
company/location: SEQEB
fax no: 32676228
PHONE: 34075369

from: Kerry McGovern
unit: Electrical Engineering Unit
ph no: 34031838 **fax no:** (07) 3403 1839

date: 2 January 1996

no of pages: (including this page) 8

re: Interference Test Results for HEROES AVENUE TARINGA

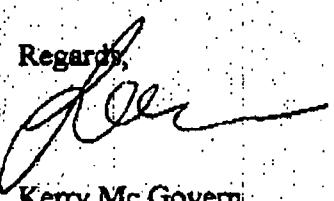
message:

In relation to our phone conversation, following is the preliminary results of interference testing of our cathodic system to your structure.

If further on-site testing and / or witnessing of testing by you is required, please contact the undersigned to arrange those tests.

Could you please reply by FAX or LETTER of your acceptance of the above testing for our records.

Regards,


Kerry McGovern
Electrical Supervisor

As discussed over phone I have no objections to this system. I understand that test points CP8 48 - 51 are located at the SEQEB structures that have > +10 mV swing.


D Ringuet

Roy /



Brisbane Water Engineering Services

Electrical Mechanical Water Meters
5 Bunya Street Eagle Farm Q 4009
Ph. (07) 3403 1849
Fx. (07) 3403 1898

Fax transmission

to: Roy Carlton

company/location: Gas Corp

fax no: 073490300

PHONE: /015-025-800

date: 3 January 1996

from: Kerry Mc Govern

unit: Electrical Engineering Unit

ph no: 3403 1838

fax no: (07) 3403 1839

re: Interference Test Results for HEROES AVENUE TARINGA

message:

In relation to our phone conversation, following is the preliminary results of interference testing of our cathodic system to your structure.

If further on-site testing and / or witnessing of testing by you is required, please contact the undersigned to arrange those tests.

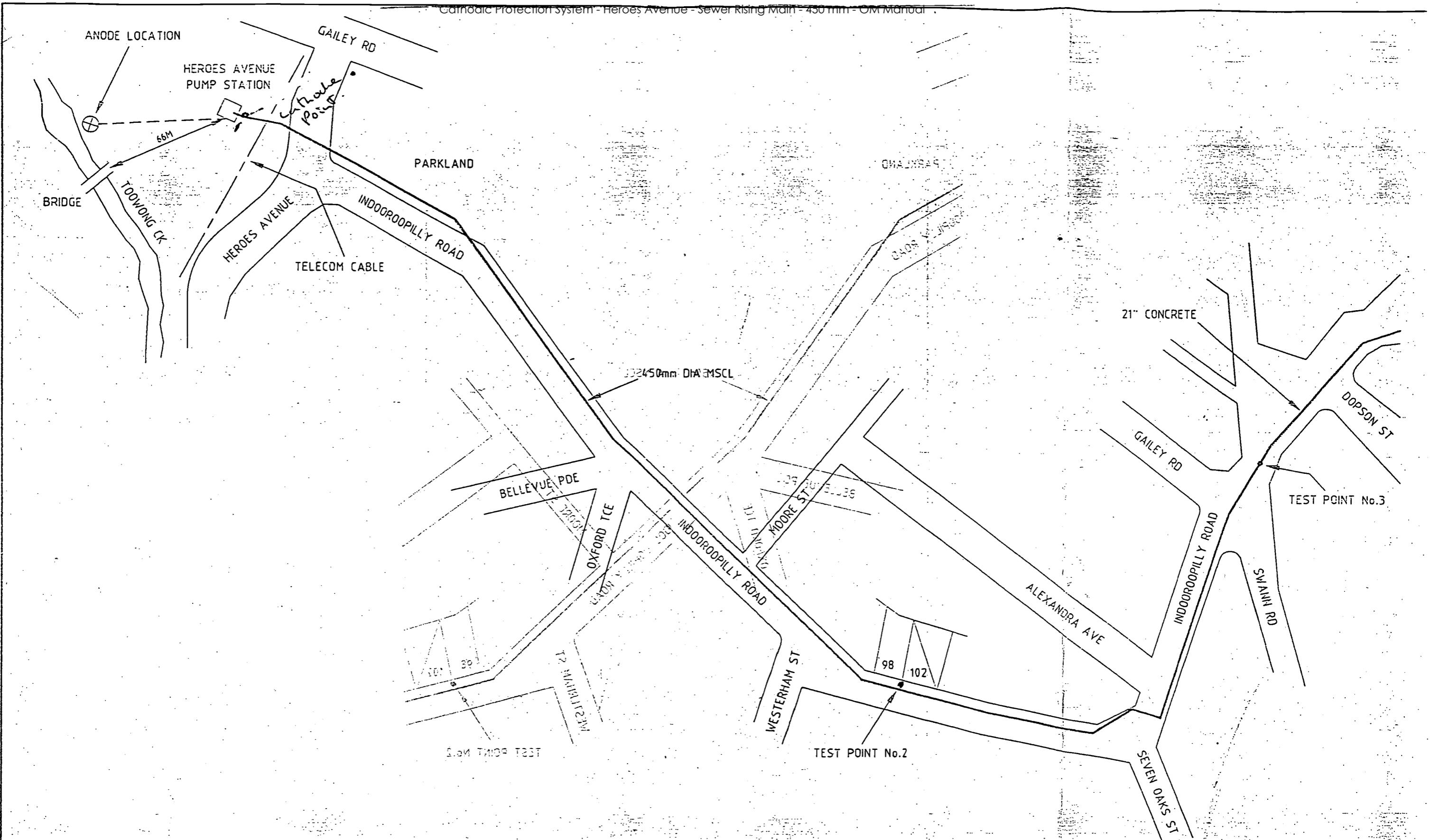
Could you please reply by FAX or LETTER of your acceptance of the above testing for our records.

Regards,

Within acceptable limits

Roy

Kerry Mc Govern
Electrical Supervisor



			MANAGER DATE: 0 31.10.94	TO DIRECTOR OF PLANNING & DESIGN DATE: 0 29.9.94	DESIGN DRAWN R.LISTON 1.9.94	PROJECT No. 3 HEROES AVENUE PUMP STATION	TITLE 450mm DIA RISING MAIN C.P. SYSTEM	BRISBANE CITY COUNCIL DEPARTMENT OF WATER SUPPLY AND SEWERAGE Brisbane City MECHANICAL & ELECTRICAL SERVICES
No	DATE 0	AMENDMENT ISSUED FOR CONSTRUCTION	BY R.L.	DIRECTOR OF CONSTRUCTION DATE: 0 29.9.94	DIRECTOR OF M&E SERVICES DATE: 0 29.9.94	DIRECTOR OF SEW. OPERATIONS/W.S. DISTRIBUTION DATE: 0 29.9.94		
						ENGINEER IN CHARGE 0 29.9.94 ROBERTSON	SCALE: NTS No. 1 OF 1 SHEETS	
						SUPERVISING ENGINEER 0 29.9.94 S. SMITH	DRAWING No. 486/7/8-LI1C0006E	AMEND. 0
CADD FILE No.: 78C0006E								

