

14TH APRIL 1993

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

OPERATING MANUAL FOR:

WYNNU ROAD TO OLD CLEVELAND RD TRUNK WATER MAIN ✓
CATHODIC PROTECTION SYSTEM.

CLIENT:

DEPARTMENT OF WATER SUPPLY AND SEWERAGE
WATER MAINTENANCE SECTION

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DRAWINGS

- JE02/104 Standard Rectifier Wiring Diagram
- 2/14.215 Cathodic Protection Details
- (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 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 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 1200 – Dia 750 mild steel cement lined.

Coating: Fibreglas enamel coated outer coating.

Length: 4.1 km

Location: From Scrub Rd. Belmont to Dairy Swamp Rd. to New Cleveland Rd. Manly Rd. to Wynnum Rd. UBD 28O9 to UBD 29D1.

Construction Drawings:

(4.0) **CATHODIC PROTECTION DETAILS**

- (4.1) Type of Cathodic Protection: Impressed Current.
- (4.2) Rectifier: Standard 32V Volt, 10 amp direct current output enclosed in a stainless steel switchboard. Rectifier has a 240V supply from a nearby SEQEB electricity pole #23612.
Rectifier is located nearby SEQEB pole #23612 in New Cleveland Rd. opposite Dairy Swamp Rd. Tingalpa.
- (4.3) Cathode: The cathode point is located adjacent to the trunk mains at the rectifier site where a type B test point has been installed. The cathode point is 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 21.0 metres from the trunk mains in a horizontal bed. The anode was first backfilled with cokebreeze thereby improving anode – ground resistance. The anodes are identified by a marker post and label. Refer dwg no 2/14.215.
- (4.5) Test Points: Test points are installed on cathodically protected structures to enable testing to ensure full protection of the mains. On these mains seven test points have been installed for details see dwg no 2/14.215.
- (4.6) Associated Drawings:
Cathodic Protection Details – 2/14.215
Cathodic Protection Test Point Details – 2/14.199
Standard Rectifier Wiring Diagram – JE02/104
- (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.

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 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.

12th October 1992
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.

13th October 1992
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.

13th October 1992
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.

file : DAIRY1

BRISBANE CITY COUNCIL

DEPARTMENT OF WATER SUPPLY & SEWERAGE

MECHANICAL & ELECTRICAL

12 JULY 90

MEMORANDUM : ELECTROLYSIS SECTION
EAGLE FARM PUMP STATION

SELLERS HILL TO MANLY - DAIRY SWAMP ROAD,
TRUNK MAINS
CATHODIC PROTECTION

LENGTH OF MAIN - 4.1 KM

JOB CODE : RL 0069 G (INSTALLATION)
RL 0069 C (MATERIALS)

TO ALLOW INSTALLATION OF CATHODIC PROTECTION OF THE ABOVE WATER TRUNK MAIN, INSULATION OF THE TRUNK MAIN INCLUDING ALL TEE OFF BRANCHES IS TO BE PERFORMED BY WATER MAINTENANCE , AS PER ATTACHED MEMO.

WE HAVE ASKED WATER MAINTENANCE TO INSULATE ALL IN LINE FLANGES FIRST , ALLOWING A CURRENT DRAIN SURVEY TO CARRIED OUT PRIOR TO COMPLETE INSULATION OF THE MAIN. AFTER SUCH TESTS ARE PERFORMED INSULATION OF THE REMAINING TEE OFF POINTS WILL TAKE PLACE.

PLEASE CONDUCT THE FOLLOWING :

A / IN CONJUNCTION WITH CONSTRUCTION AND BEFORE BACKFILLING THE TRENCH WHERE INSULATION FLANGES ARE INSTALLED :

1 TEST INSULATION POINTS.

2 INSTALLATION OF TEST POINTS, AS LISTED ON ATTACHED SCHEDULE.

B / BEFORE ANY INSULATION OF TRUNK MAIN BY WATER MAINTENANCE :

1. SOIL RESISTIVITY ALONG LENGTH OF MAIN.
2. A NATURAL POTENTIAL SURVEY ← LEAVE UNTIL TESTS POINTS ARE INSTALLED
3. A CURRENT DRAIN SURVEY
(TO COMPARE WITH CURRENT DRAIN AFTER INSULATION)

C / AFTER INSTALLATION AND TESTING OF THE IN LINE INSULATION POINTS :
(LOCATION : 1 , 2 , 5 , 9 & 15)

1. A CURRENT DRAIN SURVEY.

D / AFTER INSULATION OF ALL IN LINE AND TEE OFF FLANGES.
(LOCATION : 1 TO 15)

1. A CURRENT DRAIN SURVEY.
(NOTE LOCATION AND MAGNITUDE OF DEFECTS)
2. A NATURAL POTENTIAL SURVEY.

THE PURPOSE OF THE THREE CURRENT DRAIN SURVEYS IS TO DOCUMENT THE EFFECT OF INSULATION OF THE IN LINE FLANGES AND SUBSEQUENT INSULATION OF THE DRAW OFF PIPES.

JEFF SAY
TECH OFFICER
M & E SERVICES
225 4207.

APPROVED -
M. JUKES SEPD.

WELLERS HILL To MANLY TRUNK MAINS

DAIRY SWAMP ROAD.

MAIN INSTALLED - 1981/82
 LENGTH OF MAIN - 1.5 KM + 2.6 KM. TOTAL 4.1 KM.
 UBD MAP 29 - 28.

DRAW OFF VALVES OR IN LINE FLANGES ARE LOCATED AT THE FOLLOWING LOCATIONS :
 DRAW OFF POINTS - 4 + 5 = 9.
 IN LINE FLANGES - 5 + 1 = 6.

LOCATION POINT	VALVE No.	SIZE (MM)	VALVE PIT	LOCATION	BETWEEN / NEAR	WATER SUPPLY ZONING PLAN	TEST POINTS
1 *	919	750	YES	WYNNUM RD	MANLY RD	108	0
2 *	920	300	YES	WYNNUM RD	MANLY RD	108	B ON TEE
3 *	921	600	YES	MANLY RD	NEW CLEVELAND RD	108	SHORT
4 *	TEE OFF	750	NO	MANLY RD	NEW CLEVELAND RD	108	-
5 *	922	900	YES	MANLY RD	NEW CLEVELAND RD	108	0
6 *	TEE OFF	300	NO	MANLY RD	NEW CLEVELAND RD	108	-
7 *	TEE OFF	300	NO	DAIRY SWAMP RD	NEW CLEVELAND RD	121	-
8 *	TEE OFF	300	NO	DAIRY SWAMP RD	MARWOOD ST	121	-
9 *	897	300/1200	YES	DAIRY SWAMP RD	ERMELD RD	121	0
10 *	TEE OFF	300	NO	DAIRY SWAMP RD	ERMELD RD	121	-
11 *	TEE OFF	300	NO	DAIRY SWAMP RD	GRASSDALE RD	121	-
12 *	TEE OFF	300	NO	DAIRY SWAMP RD	WRIGHT ST	121/133	0
13 *	TEE OFF	150	NO	DAIRY SWAMP RD	WRIGHT ST	REYNOLDS ST	-
14 *	TEE OFF	300	NO	PAST WRIGHT ST	REYNOLDS ST	132	-
15 *	790	1200	YES	PAST WRIGHT ST		132	0

INSULATION BOLTS ARE REQUIRED TO BE INSTALLED ON THE IN LINE FLANGES WHERE '*' APPEARS.
 INSULATION BOLTS ARE REQUIRED TO BE INSTALLED ON THE DRAW OFF PIPES WHERE '0' APPEARS.

ELECTRICAL BRIDGES ARE REQUIRED AT THE FLANGES WHERE '##' APPEARS.

To	File No.	Page 1
From	Date	22/4/192
Subject DAIRY SWAMP RD TESTING OF TEST POINTS.		

AT RECTIFIER UNIT TP N°4 NEW CLEVELAND RD.
Loop Resistance

2V at 1.0 amp

4V at 1.8 amp

6V at 2.8 amp

8V at 3.6 amp

10V at 4.4 amp.

Anode Reading

6.5V at 2.9 amp

CuSO₄ to Pipe - 1206 mV on - 1292 mV on
Start of Readings End of Readings
- 695 mV off - 770 mV off

Anode Draws 2.54 Amp

AT ERMELO RD AND DAIRY SWAMP RD T.P. N°5

CuSO₄ to Pipe - 1201 mV on
- 650 mV off

To	File No.	Page 2.
From	Date	22/4/92
Subject	DAIRY SWAMP RD.	

AT WRIGHT ST T.P. N°6

CuSO_4 to Pipe - 659 mV on
- 572 mV off

CuSO_4 to Blue - 657 mV on
- 571 mV off

CuSO_4 to White - 622 mV

Zn to Pipe + 586 mV on
+ 671 mV off

AT SCRUB RD. T.P. N°7

CuSO_4 to Pipe - 610 mV on
- 507 mV off

Zn to Pipe + 630 mV on
+ 720 mV off

CuSO_4 to Pipe - 377 mV UNPROTECTED SIDE

To	File No.	Page 3
From	Date	22/4/92
Subject	DAIRY SWAMP RD.	

AT NEW CLEVELAND RD. TP. N°3.

CuSO₄ to Pipe - 1460 mV on
- 850 mV off

Zn to Pipe - 85 mV on
+ 270 mV off.

AT MANLY RD. TP. N°2

CuSO₄ to Pipe - 583 mV on
- 365 mV off

CuSO₄ to Blue - 575 mV on
- 362 mV off

CuSO₄ to White - 691 mV

Zn to Pipe + 539 mV on
+ 757 mV off

AT. WYNNUM RD. TP. N°1

Cu SO₄ to Pipe - 621 mV on
- 425 mV off

Zn to Pipe + 555 mV on
+ 770 mV off.

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

INTERFERENCE SURVEY RESULTS

$\text{CuS}O_4$ to Pipe ON - 1205 mV
 OFF - 730 mV

JOB DESCRIPTION:- DAIRY SWAMP RD.

UNIT READING:- 10V at 4.9 amp

	READING	TEST POINT I.D.	LOCATION	SWING
ON	-520 mV		EARTH STAKE	-118mV
OFF	-402 mV		RECTIFIER UNIT.	
ON	-497 mV		POLE N° 23613	-106mV
OFF	-391 mV		NEW CLEVELAND RD	
ON	-384 mV		POLE N° 23616	-30mV
OFF	-354 mV		NEW CLEVELAND RD	
ON	-391 mV		POLE N° 64328	-11mV
OFF	-380 mV		ERNELO RD	
ON	-355 mV		POLE N° 33694	+50mV
OFF	-405 mV		DAIRY SWAMP RD	
ON	-452 mV		POLE N° 60955	-15mV
OFF	-437 mV		DAIRY SWAMP RD	
ON	-419 mV		POLE N° 15534	-3mV
OFF	-416 mV		ERNELO RD	
ON	-382 mV		POLE N° 23377	+32mV
OFF	-414 mV		WRIGHT ST.	
ON	-296 mV		POLE N° 23368	+61mV
OFF	-357 mV		WRIGHT ST	
ON	-555 mV		POLE N° 22594	+6mV
OFF	-561 mV		WYNNUM RD	
ON	-444 mV		POLE N° 33899	+5mV
OFF	-449 mV		MANY RD	
ON	-533 mV		POLE N° 23601	+39mV
OFF	-577 mV		NEW CLEVELAND RD	

COMPILED BY: *A. Greaves*

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

16-6-92

INTERFERENCE SURVEY RESULTSJOB DESCRIPTION: DAIRY SWAMP RD

CuSO₄.
- 1200mV on - 550mV off
UNIT READING: - 4.0 amp... 8.0 Volts

	READING	TEST POINT I.D.	LOCATION	SWING
ON	- 351mV	SEQEB	WRIGHT ST.	
OFF	- 381mV	MEN	SEQEB POLE N° 23377	+30mV
ON	- 271mV	SEQEB	WRIGHT ST.	
OFF	- 327mV	MEN	SEQEB POLE N° 23368	+56mV
ON	- 502mV	SEQEB	MANLY RD.	
OFF	- 510mV	MEN	SEQEB POLE N° 23461	+68mV
ON	- 566mV	SEQEB	NEW CLEVELAND RD	
OFF	- 605mV	MEN	SEQEB POLE N° 23601	+39mV
ON	- 345mV	SEQEB	DAIRY SWAMP RD	
OFF	- 406mV	MEN	SEQEB POLE N° 33694	+61mV
ON				
OFF				
ON				
OFF				
ON				
OFF				
ON				
OFF				
ON				
OFF				

COMPILED BY:

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DEPARTMENT OF WATER SUPPLY AND SEWERAGE
MECHANICAL AND ELECTRICAL SECTION

INTERFERENCE SURVEY RESULTS

JOB DESCRIPTION:- INTERFERENCE TESTING WITH TELECOM
(ALL RESULTS LEAD TO CABLE)

UNIT READING:- .6:5V..2:9A....

	READING	TEST POINT I.D.	LOCATION	SWING
ON OFF	-590 -560		CNR NEW CLEVELAND ROAD + INGLESTON ROAD	-30mV
ON OFF	-730 -620		OUTSIDE NO 364 NEW CLEVELAND ROAD	-110
ON OFF	-680 -650		OUTSIDE NO 308 NEW CLEVELAND RD	-30mV
ON OFF	-1040 -1120		CNR. NEW CLEVELAND ROAD + MANLY ROAD (OPPOSITE NURSERY)	+80mV
ON OFF	-500 -500		MANLY ROAD:- OUTSIDE BRYAN BYRT FORD	NIL
ON OFF	-410 -410		MANLY RD:- NEXT TO SEQEB POLE 33899	NIL
ON OFF	-540 -540		MANLY RD:- OPPOSITE B.C.C. TEST POINT	NIL
ON OFF	-740 -780		MANLY RD:- OPPOSITE NURSERY	+40
ON OFF	-220 -210		CNR WRIGHT ST + OLD CLEVELAND RD	-10
ON OFF				
ON OFF				
ON OFF				

COMPILED BY: *Mandy McCawen*
17-07-92

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DEPARTMENT OF WATER SUPPLY AND SEWERAGE
MECHANICAL AND ELECTRICAL SECTION

INTERFERENCE SURVEY RESULTS

JOB DESCRIPTION:- INTERFERENCE TESTING : TELECOM TO B.C.C.
(ALL READINGS CuSO_4 TO STRUCTURE)
UNIT READING:- ...1?V....4.6A....

	READING	TEST POINT I.D.	LOCATION	SWING
ON OFF	-800 mV -800 mV		WATER COX - 910 MANLY RD	NIL
ON OFF	-418 -473	N° 4	RECTIFIER Box NEW CLEVELAND RD	+55mV
ON OFF	-332 -338		WATER COX - 396 NEW CLEVELAND RD	+6mV
ON OFF	-482 -536	N° 5	DAIRY SWAMP RD	+54mV
ON OFF	-572 -622	N° 6	WRIGHT ST :- OUTSIDE CARAVAN PARK	+50mV
ON OFF	-578 -530	N° 3	NEW CLEVELAND ROAD -OPPOSITE WECKERS	-40mV
ON OFF	-472 -543	N° 2	MANLY RD - NEXT TO BRIDGE	+71mV
ON OFF	-418 -493	N° 1	WYNNUM RD - OPPOSITE SQUASH COURTS	+75mV
ON OFF				

COMPILED BY: *Mervyn Mc Sweeney*

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DEPARTMENT OF WATER SUPPLY AND SEWERAGE
MECHANICAL AND ELECTRICAL SECTION

INTERFERENCE SURVEY RESULTS

JOB DESCRIPTION:- INTERFERENCE TESTING :- BCC TO ALLGAS

UNIT READING:- 6.5V...2.9A

	READING	TEST POINT I.D.	LOCATION	SWING
ON	-1987			
OFF	-1983		ERMELO RD - OFF OF DAIRY SWAMP RD (RELAND BAY MAIN)	-4mV
ON	-1004		MANLY RD - NEAR BRIDGE	
OFF	-1003		OPPOSITE SIDE OF CREEK TO TEST POINT NPQ	-1mV
ON				
OFF				
ON				
OFF				
ON				
OFF				
ON				
OFF				
ON				
OFF				
ON				
OFF				
ON				
OFF				
ON				
OFF				
ON				
OFF				

COMPILED BY: *M. McCormick*

ALLGAS USES SACRIFICIAL SYSTEM

INTERFERENCE RESULTS

CuSO_4 . - 1180 MV. ON
- 520 MV OFF.

DATE: - 23-6-92
UNIT READING: 8 VAT 3.8A

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

CATHODIC PROTECTION BLEED POINT DETAILS

CPB NUMBER:- CP B5

DATE INSTALLED:- 16-7-92

ON
Pinn S

BCC CATHODIC PROTECTION SYSTEM IDENTIFICATION:-

FOREIGN STRUCTURE OWNER:- SEQEB

F.S. LOCATION:- SEQEB POLE NO 23461 MANNY RD

F.S. IDENTIFICATION:- MEN.

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

REFERENCE TYPE:- CuSO₄

POTENTIAL OFF:- -530 mV ON:- -472 mV SW:- +58 mV

BLEED TYPE:-

BLEED MATERIAL:- ZINC

BLEED WEIGHT:- 400 grams

BLEED O/C POTENTIAL:-

BLEED CURRENT OFF:- 6.5 mA ON:- 7.5 mA

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
-530 mV	-690 mV	-160 mV	-690 mV	-653 mV	+37 mV

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

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

INSTALLED/TESTED BY:- J. Greaves

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:- CPB 4

DATE INSTALLED:- 16-7-92

BCC CATHODIC PROTECTION SYSTEM IDENTIFICATION:

FOREIGN STRUCTURE OWNER:- SEQEB

F.S. LOCATION:- SEQEB Pole N° 23601 NEW CLEVELAND RD

F.S. IDENTIFICATION:- MEN

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

REFERENCE TYPE:- CuSO₄

POTENTIAL OFF:- -539mV ON:- -515mV SW:- +24mV

BLEED TYPE:-

BLEED MATERIAL:- ZINC

BLEED WEIGHT:- 400 grams

BLEED O/C POTENTIAL:-

BLEED CURRENT OFF:- 4.2mA ON:- 4.5mA

REFERENCE POTENTIALS AFTER CONNECTION TO FOREIGN STRUCTURE:-

BOND OFF (RECTIFIER OFF)		SW	BLEED ON		SW	RESULTANT SWING
BLEED OFF	BLEED ON		BOND OFF	BOND ON		
-539mV	-774mV	-135mV	-774mV	-766mV	+12mV	-123mV

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

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

INSTALLED/TESTED BY:- 1 year ago

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

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EAGLE FARM PUMPING STATION

CATHODIC PROTECTION BLEED POINT DETAILS

CPB NUMBER:- CP B3

DATE INSTALLED:- 16-7-92

ON
PIMS

BCC CATHODIC PROTECTION SYSTEM IDENTIFICATION:-

FOREIGN STRUCTURE OWNER:- SEQEB

F.S. LOCATION:- SEQEB POLEN N° 33694 DAIRY SWAMP RD

F.S. IDENTIFICATION:- MEN

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

REFERENCE TYPE:- CuSO₄

POTENTIAL OFF:- -369mV ON:- -340 mV SW:- +29mV

BLEED TYPE:-

BLEED MATERIAL:- ZINC

BLEED WEIGHT:- 400 grams

BLEED O/C POTENTIAL:-

BLEED CURRENT OFF:- 7.2 mA ON:- 7.7 mA

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	
-369mV	-470mV	-101 mV	-420mV	-448mV	+22 mV	-79mV

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

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

INSTALLED/TESTED BY:- L Greaves.

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

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DEPT WATER SUPPLY AND SEWERAGE
EAGLE FARM PUMPING STATION

CATHODIC PROTECTION BLEED POINT DETAILS

CPB NUMBER:- CAP B2

DATE INSTALLED:- 16-7-92

BCC CATHODIC PROTECTION SYSTEM IDENTIFICATION:-

FOREIGN STRUCTURE OWNER:- SEQEB

F.S. LOCATION:- SEQEB POLE NO 23377 WRIGHT ST

F.S. IDENTIFICATION:- MEN

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

REFERENCE TYPE:- CuSO₄

POTENTIAL OFF:- -312mV ON:- -291mV SW:- +21mV

BLEED TYPE:-

BLEED MATERIAL:- ZINC

BLEED WEIGHT:- 400 grams

BLEED O/C POTENTIAL:-

BLEED CURRENT OFF:- 2.4mA ON:- 2.4mA

REFERENCE POTENTIALS AFTER CONNECTION TO FOREIGN STRUCTURE:-

BOND OFF (RECTIFIER OFF)		SW	BLEED ON		SW	RESULTANT SWING
BLEED OFF	BLEED ON		BOND OFF	BOND ON		
-312 mV	-883mV	-571 mV	-883mV	-879mV	+4	-567mV

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

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

INSTALLED/TESTED BY:- L Greaves

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

ON
PIMMS

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

CATHODIC PROTECTION BLEED POINT DETAILS

CPB NUMBER:- CPB 1

DATE INSTALLED:- 16-7-92

BCC CATHODIC PROTECTION SYSTEM IDENTIFICATION:-

FOREIGN STRUCTURE OWNER:- SEQEB.

F.S. LOCATION:- SEQEB POLE NO 23368, WRIGHT ST.

F.S. IDENTIFICATION:- MEN.

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

REFERENCE TYPE:- CuSO_4

POTENTIAL OFF:- -355mV ON:- -300mV SW:- +55mV

BLEED TYPE:-

BLEED MATERIAL:- Zinc

BLEED WEIGHT:- 400 grams

BLEED O/C POTENTIAL:-

BLEED CURRENT OFF:- 1.8mA. ON:- 1.8mA.

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	
-355mV	-588mV	-233mV	-588mV	-552mV	+36mV	-192mV

FOREIGN STRUCTURE OWNER AGREEABLE WITH MITIGATION? (Y/N) Y/20

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

INSTALLED/TESTED BY:- L. Greaves

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

DAIRY SWAMP RD RECTIFIER,
ANODE & CATHODE LOCATIONS.

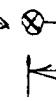
16-#-93

Down km.c.

N.T.S.

• INDICATE PTS.

ANODE POSITION



36m

73m

CATHODE POINT

DAIRY SWAMP ROAD

CLIVEVELAND ROAD

RD

15.1

36m

NE

RECTIFIER location.

SECTION 3 POLE # 236.2

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

ELECTRICAL WORKSHOP

INSULATED JOINT TESTING DETAILS:

DATE 13- 8 - 91

DESCRIPTION

MAINS DETAILS:-

LOCATIONS:- MT GRAVATT-CAPABWA RD NEAR SANDERS ST

SIZE:- 600 MM

MATERIAL:- MILD STEEL

COATING:- /

NUMBER:-

IN GROUND TESTING

BOLT TO FLANGE RESISTANCE:- MORE THAN 200Ω

NUMBER OF BOLT:- 16

FLANGE TO FLANGE RESISTANCE:- 2 ~

INSULATION CHECKER MODEL 702:-

POTENTIAL DIFFERENCE TO REFERENCE CELL

PROTECTED SIDE:-

UNPROTECTED SIDE:-

ABOVE TESTING

BOLT TO FLANGE RESISTANCE:-

NUMBER OF BOLTS:-

FLANGE TO FLANGE RESISTANCE:-

COMMENTS

TESTED BY

1. greaves

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

ELECTRICAL WORKSHOP

INSULATED JOINT TESTING DETAILS:

DATE 16-3-91

DESCRIPTION

MAIN VALUE PITT. 600 ft
MATERIAL: Mild Steel
COATING: -
NUMBER: - 1

IN GROUND TESTING

BOLT TO FLANGE RESISTANCE:- more than 200 Ω
NUMBER OF BOLT:- 16
FLANGE TO FLANGE RESISTANCE:- 2 Ω
INSULATION CHECKER MODEL 702:- OK
POTENTIAL DIFFERENCE TO REFERENCE CELL
PROTECTED SIDE:- -443 mV Cusox
UNPROTECTED SIDE:- -443mV Cusox

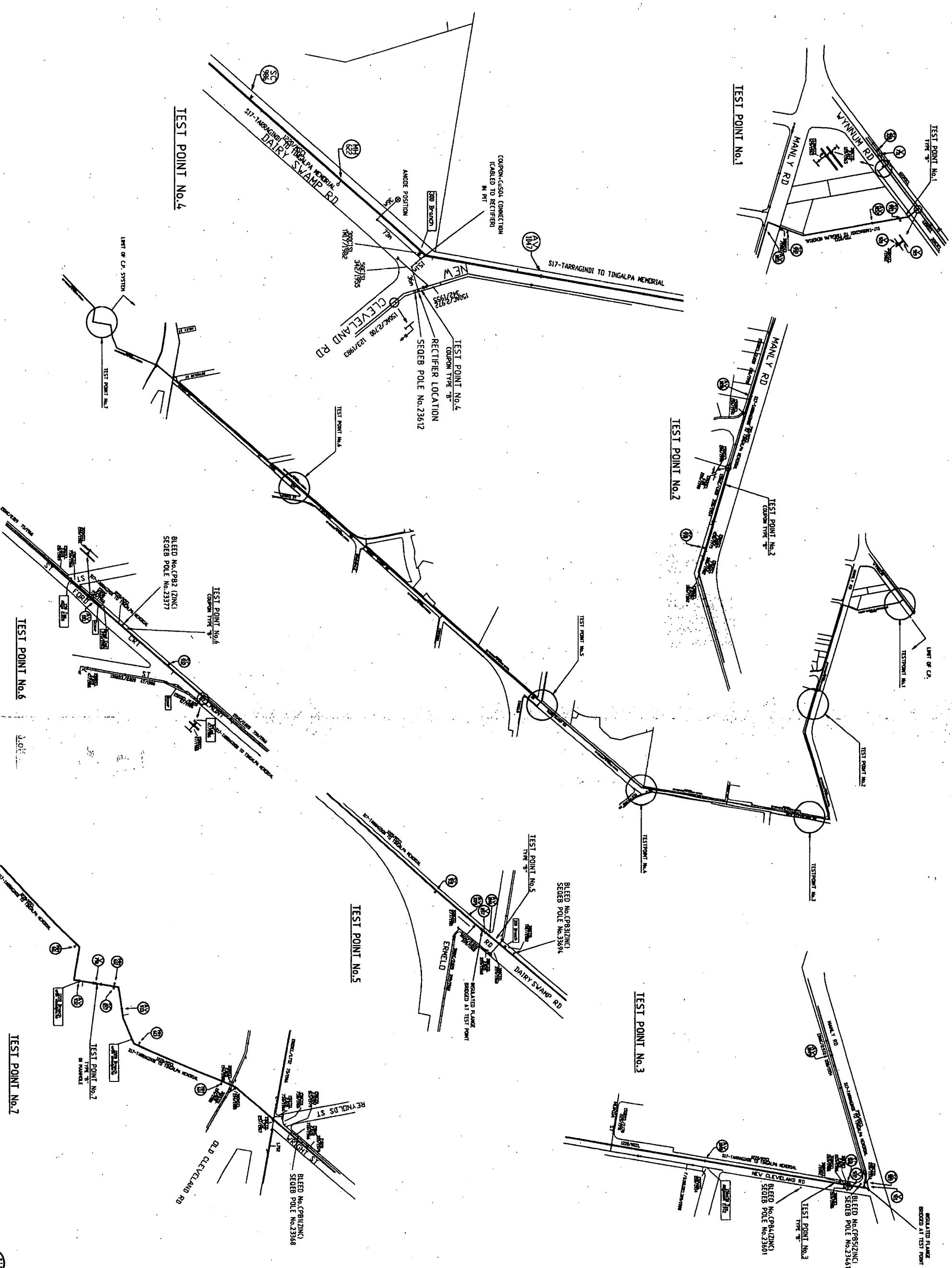
ABOVE TESTING

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

COMMENTS

D. Leyth

TESTED BY



NEW CLEVELAND RD. C.P. SYSTEM
WYNNUM ROAD
TO OLD CLEVELAND ROAD

NOTES

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

ELECTRICAL WORKSHOP

INSULATED JOINT TESTING DETAILS: DIPYDUMPS RD TRUNK
MAINS.

DATE 10-4-91

DESCRIPTION

MAINS DETAILS:- 750 - 600 ft.

LOCATIONS:- WYNNUM RD 015 SQUASH COURTS.

SIZE:- VALVE 919

MATERIAL:-

COATING:- LOCATION # 1.

NUMBER:-

IN GROUND TESTING

BOLT TO FLANGE RESISTANCE:- ALL BOLTS 7200Ω TO FLANGE

NUMBER OF BOLT:-

FLANGE TO FLANGE RESISTANCE:- 50Ω ACROSS JOINT.

INSULATION CHECKER MODEL 702:- 40 ON SCALE & STEADY.

POTENTIAL DIFFERENCE TO REFERENCE CELL UNABLE TO CHECK

PROTECTED SIDE:-

UNPROTECTED SIDE:-

ABOVE TESTING

BOLT TO FLANGE RESISTANCE:-

NUMBER OF BOLTS:-

FLANGE TO FLANGE RESISTANCE:-

} NA

COMMENTS

PASSED OIC.
EXISTING OLD TYPE TEST POINT
INSTALLED.

TESTED BY



INSULATED JOINT DETAILS

DATE: 22-10-90

NUMBER - Takeoff from trunk mains and
mainly Rd and new Cleveland
MAINS DETAILS - LOCATION:- Rd.

SIZE:- 300 & takeoff from 1200 &
MATERIAL:-
COATING:-

INSULATED SIDE

UNINSULATED SIDE

PIPE SIZE -

all bolts > 200 & to flange
36 & across joint one direction
2 & across other direction
127 mm across joint
tie to prot pipe

TEST POINT:- SIZE

TYPE -

INSTALLED TESTING:-

INSTALLED DATE -

CURRENT

VOLTAGE -

PROTECTED SIDE	CuS04	REF	ON
			OFF

UNPROTECTED SIDE	CuS04	REF	ON
			OFF

below

ABOVEGROUND TESTING:- READING (OHMS) - see above
COMMENTS - from specification 77-A-10 joint is

TESTED BY -

mpf

INSULATED JOINT DETAILS

DATE: 27-11-98

NUMBER -

MAINS DETAILS -

LOCATION:- Wynnum Rd near
SIZE:- Squash & fitness centre

MATERIAL:-

COATING:-

INSULATED SIDE

UNINSULATED SIDE

PIPE SIZE -

all bolts > 200.n to
flange.

COATING -

FLANGE SIZE -

2 or across joint one direction
2 or across joint opp. direction

BOLT NO. -

54m across joint

BOLT SIZE -

+ to protected pipe

TEST POINT:- SIZE -

- 529 m from prot side of
pipe to CuS04

TYPE -

- 572 m from unprot pipe to
CuS04.

INSTALLED TESTING:-

INSTALLED DATE -

CURRENT

VOLTAGE

PROTECTED SIDE CuS04 REF

note:-

ON
OFFnot full gasket installed
existing flange
sandblasted to clean
joint.

UNPROTECTED SIDE CuS04 REF

ON
OFF

Below

ABOVEGROUND TESTING:- READING (OHMS) - see above.

COMMENTS - from specification 77.4.10, joint is

TESTED BY -

OK

unjoined

INSULATED JOINT DETAILS

DATE: 15-11-90

NUMBER - 11

MAINS DETAILS -

LOCATION:- DAIRY SWAMP RD NEAR GRASSDALE RD

SIZE:- 1200 mm

MATERIAL:- M S

COATING:- FUSION BONDED PVC

INSULATED SIDE

UNINSULATED SIDE

PIPE SIZE -

300 mm

COATING -

FLANGE SIZE -

BOLT NO. -

12 O/E/F

BOLT SIZE -

BOLT TEST

> 1M-N

TEST POINT:- SIZE -

TYPE -

INSTALLED TESTING:-

25 m

INSTALLED DATE -

CURRENT

VOLTAGE -

PROTECTED SIDE CuS04 REF ON
OFFUNPROTECTED SIDE CuS04 REF ON
OFF

ABOVEGROUND TESTING:- READING (OHMS)

COMMENTS - NEW FULL GASKET FITTED TO FLANGE

TESTED BY -

INSULATED JOINT DETAILS

DATE: 13-11-90

NUMBER - 12

MAINS DETAILS - LOCATION: - WRIGHT ST - OUTSIDE CARAVAN PARK

SIZE: - 1200 mm

MATERIAL: - MS

COATING: - FUSION BONDED POLY

INSULATED SIDE

UNINSULATED SIDE

PIPE SIZE - 300 mm

COATING -

FLANGE SIZE -

BOLT NO. - 12 OFF

BOLT SIZE - 20 mm
BOLT TEST - >1MΩ

TEST POINT: - SIZE -

TYPE -

INSTALLED TESTING: - 20 m

INSTALLED DATE -

CURRENT

VOLTAGE -

PROTECTED SIDE CuS04 REF ON
OFFUNPROTECTED SIDE CuS04 REF ON
OFF

ABOVEGROUND TESTING: - READING (OHMS)

COMMENTS - Tee off pipe cut + new full gasket fitted
between flanges

TESTED BY -

INSULATED JOINT DETAILS

DATE: 5-11-90

NUMBER - 13 A

MAINS DETAILS - LOCATION: WRIGHT ST NEAR OLD CLEVELAND RD

SIZE: 1200 mm

MATERIAL: MS

COATING: FUSION BONDED PVC

INSULATED SIDE

UNINSULATED SIDE

PIPE SIZE - 150 mm

COATING -

FLANGE SIZE -

BOLT NO. - 8 OF 1

BOLT SIZE - 16 mm
BOLT TEST > 1 mΩ.

TEST POINT:- SIZE -

TYPE -

INSTALLED TESTING: 6 Ω (AFTER RAIN)

INSTALLED DATE -

CURRENT

VOLTAGE -

PROTECTED SIDE CuSO₄ REF ON
OFFUNPROTECTED SIDE CuSO₄ REF ON
OFF

ABOVEGROUND TESTING: READING (OHMS)

COMMENTS - Tee off pipe cut & new full gasket fitted
between flanges

TESTED BY -

INSULATED JOINT DETAILS

DATE: 1-11-90

NUMBER - 13

MAINS DETAILS - LOCATION:- WRIGHT ST Cnr OLD CLEVELAND RD & REYNOLDS ST.

SIZE:- 1200 mm

MATERIAL:- MS

COATING:- FUSION BONDED POLY

INSULATED SIDE

UNINSULATED SIDE

PIPE SIZE - 300 mm

COATING -

FLANGE SIZE -

BOLT NO. - 12051

BOLT SIZE - 20 mm
BOLT TIGHT - > 1 m/s.

TEST POINT:- SIZE -

TYPE -

INSTALLED TESTING:- 35 m

INSTALLED DATE -

CURRENT

VOLTAGE -

PROTECTED SIDE CuSO₄ REF ON
OFFUNPROTECTED SIDE CuSO₄ REF ON
OFF

ABOVEGROUND TESTING:- READING (OHMS)

COMMENTS - Tee off pipe cut & new full gasket fitted
between flanges

TESTED BY -

INSULATED JOINT DETAILS

DATE: 24-10-90

NUMBER - 14

MAINS DETAILS - LOCATION:- PAST WRIGHT ST ON EMBANKMENT
 SIZE:- 1200 mm
 MATERIAL:- MS
 COATING:- FUSION BONDED POLY

INSULATED SIDE

UNINSULATED SIDE

PIPE SIZE - 300 mm

COATING -

FLANGE SIZE -

BOLT NO. - 12 OFF

BOLT SIZE - 20 mm

BOLT TEST - > 1 mV

TEST POINT:- SIZE -

TYPE -

INSTALLED TESTING: - > 200 mV

INSTALLED DATE -

CURRENT

VOLTAGE -

PROTECTED SIDE	CuS04	REF	ON
			OFF

UNPROTECTED SIDE	CuS04	REF	ON
			OFF

ABOVEGROUND TESTING: - READING (OHMS)

COMMENTS - Tee off pipe cut & new full gasket fitted between flanges.

TESTED BY -

INSULATED JOINT DETAILS

DATE: 25-9-90

NUMBER - 10

MAINS DETAILS - LOCATION:- DAIRY SWAMP RD NEAR ERNESTO RD.

SIZE:- 1200 mm

MATERIAL:- MS

COATING:- FUSION BONDED POLY

	INSULATED SIDE	UNINSULATED SIDE
PIPE SIZE -	300 mm	
COATING -		
FLANGE SIZE -		
BOLT NO. -	12 OFF	
BOLT SIZE -	20 mm	
BOLT TEST	71 M2	
TEST POINT:-	SIZE -	
	TYPE -	

INSTALLED TESTING: - > 20 m

INSTALLED DATE -

	CURRENT	VOLTAGE -
PROTECTED SIDE CuS04 REF	ON OFF	
UNPROTECTED SIDE CuS04 REF	ON OFF	

ABOVEGROUND TESTING:- READING (OHMS)

COMMENTS - Flange not removed; half gasket fitted originally;
 corrosion between gaskets removed w/- Bachman blade;
 TESTED BY - gap sealed w/- silicon sealant



BRISBANE CITY COUNCIL
EAGLE FARM PUMP STATION
CORROSION SECTION

TEST POINT N°1

STANDARD CATHODIC PROTECTION TEST POINT DATA GATHERING

DATE: 1-4-92

TEST POINT TYPE: Type B

LOCATION: WYNNUM RD OFF
MAINS SIZE: TINGALPA SQUASH
750MM COURTS.

POTENTIAL TESTING

CATHODE TO CATHODE RETURN (RESISTANCE): 0.1Ω

ZINC REFERENCE TO PIPE: +446 mV

CuSO₄ REFERENCE TO PIPE: -438 mV

ZINC TO CuSO₄: -885 mV

EARTH TESTING

PIN SPACING: 2M MEGGER READING: 22x 1 RESISTIVITY: 27.63 Ω/metre

PIN SPACING: 3M MEGGER READING: 15x 1 RESISTIVITY: 28.26 Ω/metre

PIN SPACING: 4M MEGGER READING: 5x 1 RESISTIVITY: 12.56 Ω/metre

SACRIFICIAL ANODE
(IF INSTALLED)

ANODE TYPE:

ANODE SIZE:

ANODE TO PIPE POTENTIAL:

ZINC REF TO PIPE:
(ANODE CONNECTED)

CuSO₄ REF TO PIPE:
(ANODE CONNECTED)

SACRIFICIAL ANODE CURRENT:

BLEED RESISTOR SIZE:
(IF INSTALLED)

INSTALLED BY:

L. Greaves

COMMENTS:

1 COPY TO FILE

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TEST Point N°2

BRISBANE CITY COUNCIL
EAGLE FARM PUMP STATION
CORROSION SECTION

STANDARD CATHODIC PROTECTION TEST POINT DATA GATHERING

DATE: 2-4-92

TEST POINT TYPE: Coupon

LOCATION: Manly Rd between
MAINS SIZE: Belmont & New Cleveland
Rds
750MPOTENTIAL TESTING

CATHODE TO CATHODE RETURN (RESISTANCE): 0.15V

ZINC REFERENCE TO PIPE: +338mV

CuSO₄ REFERENCE TO PIPE: -441mVZINC TO CuSO₄: -765mVCuSO₄ to White - 655mVCuSO₄ to Red/Blue - 443mV

Zinc to White + 114mV

Zinc to Red/Blue + 337mV

EARTH TESTING

PIN SPACING: 2M

MEGGER READING: 30x·1

RESISTIVITY: 37.68Ω/metre

PIN SPACING: 3M

MEGGER READING: 16x·1

RESISTIVITY: 30.14Ω/metre

PIN SPACING: 4M

8x·1

20.09Ω/metre

SACRIFICIAL ANODE
(IF INSTALLED)

ANODE TYPE:

ANODE SIZE:

ANODE TO PIPE POTENTIAL:

ZINC REF TO PIPE:

(ANODE CONNECTED)

CuSO₄ REF TO PIPE:

(ANODE CONNECTED)

SACRIFICIAL ANODE CURRENT:

BLEED RESISTOR SIZE:

(IF INSTALLED)

INSTALLED BY: L. Greaves

COMMENTS:

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BRISBANE CITY COUNCIL
EAGLE FARM PUMP STATION
CORROSION SECTION

TEST POINT N° 3

STANDARD CATHODIC PROTECTION TEST POINT DATA GATHERING

DATE:

TEST POINT TYPE: Type B

LOCATION: MANLY RD & NEW
MAINS SIZE: CLEVELAND RD
750 mm

POTENTIAL TESTING

CATHODE TO CATHODE RETURN (RESISTANCE): 0.15V

ZINC REFERENCE TO PIPE: +157 mV

CuSO₄ REFERENCE TO PIPE: -545 mV

ZINC TO CuSO₄: -702 mV.

EARTH TESTING

PIN SPACING: 2M

MEGGER READING: 6 x 1

RESISTIVITY: 7.53 n/metre

PIN SPACING: 3M

MEGGER READING: 4 x 1

RESISTIVITY: 7.53 n/metre

PIN SPACING: 4M

4 x 1

10.04 n/metre

SACRIFICIAL ANODE
(IF INSTALLED)

ANODE TYPE:

ANODE SIZE:

ANODE TO PIPE POTENTIAL:

ZINC REF TO PIPE:
(ANODE CONNECTED)

CuSO₄ REF TO PIPE:
(ANODE CONNECTED)

SACRIFICIAL ANODE CURRENT:

BLEED RESISTOR SIZE:
(IF INSTALLED)

INSTALLED BY: L. Greaves

COMMENTS:

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1 COPY TO T.O.

BRISBANE CITY COUNCIL
EAGLE FARM PUMP STATION
CORROSION SECTION

TEST POINT N°4.

STANDARD CATHODIC PROTECTION TEST POINT DATA GATHERING

DATE:

TEST POINT TYPE: Coupon Type

LOCATION: NEW CLEVELAND RD
MAINS SIZE: IN RECT. UNIT.
750MM

POTENTIAL TESTING

CATHODE TO CATHODE RETURN (RESISTANCE): 0.35V

ZINC REFERENCE TO PIPE: +716 mV

CuSO₄ REFERENCE TO PIPE: -532 mV

ZINC TO CuSO₄: -1248 mV

CuSO₄ to White - 632 mV
CuSO₄ to Red/Blue - 532 mV
Zn to White + 613 mV
Zn to Red/Blue + 716 mV

EARTH TESTING

PIN SPACING: 2M

MEGGER READING: 188x-1 RESISTIVITY: 236.12 ohm/metre

PIN SPACING: 3M

MEGGER READING: 114x-1 RESISTIVITY: 214.77 ohm/metre

PIN SPACING: 4M

MEGGER READING: 51x-1 RESISTIVITY: 138.16 ohm/metre

SACRIFICIAL ANODE
(IF INSTALLED)

ANODE TYPE: SILICONE IRON

ANODE SIZE: 1500 x 75

ANODE TO PIPE POTENTIAL:

ZINC REF TO PIPE:

(ANODE CONNECTED)

CuSO₄ REF TO PIPE:
(ANODE CONNECTED)

SACRIFICIAL ANODE CURRENT:

BLEED RESISTOR SIZE:
(IF INSTALLED)

INSTALLED BY: 2 years

COMMENTS:

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1 COPY TO T.O.

BRISBANE CITY COUNCIL
EAGLE FARM PUMP STATION
CORROSION SECTION

TEST POINT N°5

STANDARD CATHODIC PROTECTION TEST POINT DATA GATHERING

DATE: 24-3-92

TEST POINT TYPE: TYPE B.

LOCATION:

MAINS SIZE:

750mm

Dairy Swamp Rd &

Ermero Rd.

POTENTIAL TESTING

CATHODE TO CATHODE RETURN (RESISTANCE): 0.1Ω

ZINC REFERENCE TO PIPE: - 750 mV

CuSO₄ REFERENCE TO PIPE: - 462 mV

ZINC TO CuSO₄: - 1214 mV

EARTH TESTING

PIN SPACING: 2M MEGGER READING: 213 X 01 RESISTIVITY: 26.75 Ω/metre

PIN SPACING: 3M MEGGER READING: 411 X 01 RESISTIVITY: 77.43 Ω/metre
4M 60 X 01 15.07 Ω/metre

SACRIFICIAL ANODE
(IF INSTALLED)

ANODE TYPE:

ANODE SIZE:

ANODE TO PIPE POTENTIAL:

ZINC REF TO PIPE:

(ANODE CONNECTED)

CuSO₄ REF TO PIPE:

(ANODE CONNECTED)

SACRIFICIAL ANODE CURRENT:

BLEED RESISTOR SIZE:

(IF INSTALLED)

INSTALLED BY: L. Greaves

COMMENTS:

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BRISBANE CITY COUNCIL
EAGLE FARM PUMP STATION
CORROSION SECTION

TEST POINT N°6

STANDARD CATHODIC PROTECTION TEST POINT DATA GATHERING

DATE: 8-4-92

TEST POINT TYPE: Coupon

LOCATION: WRIGHT ST opp.
MAINS SIZE: CARAVAN PARK.
750MM

POTENTIAL TESTING

CATHODE TO CATHODE RETURN (RESISTANCE): 0.15V

ZINC REFERENCE TO PIPE: +483mV

CuSO₄ REFERENCE TO PIPE: -523mV

ZINC TO CuSO₄:

+1002mV

CuSO₄ to White -607mV

CuSO₄ to Red/Blue -521mV

Zinc to White +396mV

Zinc to Red/Blue +483mV

EARTH TESTING

PIN SPACING: 2M

MEGGER READING: 130x⁻¹

RESISTIVITY: 163.28 ohm/metre

PIN SPACING: 3M

MEGGER READING: 60x⁻¹

RESISTIVITY: 113.04 ohm/metre

PIN SPACING: 4M

MEGGER READING: 35x⁻¹

RESISTIVITY: 87.92 ohm/metre

SACRIFICIAL ANODE
(IF INSTALLED)

ANODE TYPE:

ANODE SIZE:

ANODE TO PIPE POTENTIAL:

ZINC REF TO PIPE:
(ANODE CONNECTED)

CuSO₄ REF TO PIPE:
(ANODE CONNECTED)

SACRIFICIAL ANODE CURRENT:

BLEED RESISTOR SIZE:
(IF INSTALLED)

INSTALLED BY: L. Greaves

COMMENTS:

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BRISBANE CITY COUNCIL
EAGLE FARM PUMP STATION
CORROSION SECTION

TEST POINT N° 7

STANDARD CATHODIC PROTECTION TEST POINT DATA GATHERING

DATE: 26-3-92

TEST POINT TYPE: VALVE PIT.

LOCATION: SCRUB RD BELMONT
MAINS SIZE: BEHIND SEQEB SUB.
750MM

POTENTIAL TESTING

CATHODE TO CATHODE RETURN (RESISTANCE):

ZINC REFERENCE TO PIPE: + 617 mV

CuSO₄ REFERENCE TO PIPE: - 515 mV

ZINC TO CuSO₄: - 1135 mV

EARTH TESTING

PIN SPACING: 2 M

MEGGER READING: 210 X 01 RESISTIVITY: 26.37 Ω/metre

PIN SPACING: 3 M

MEGGER READING: 750 X 01 RESISTIVITY: 141.3 Ω/metre

SACRIFICIAL ANODE
(IF INSTALLED)

ANODE TYPE:

ANODE SIZE:

ANODE TO PIPE POTENTIAL:

ZINC REF TO PIPE:

(ANODE CONNECTED)

CuSO₄ REF TO PIPE:
(ANODE CONNECTED)

SACRIFICIAL ANODE CURRENT:

BLEED RESISTOR SIZE:
(IF INSTALLED)

INSTALLED BY: L. Greaves.

COMMENTS:

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14TH APRIL 1993

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

OPERATING MANUAL FOR:

**WYNNU ROAD TO OLD CLEVELAND RD TRUNK WATER MAIN
CATHODIC PROTECTION SYSTEM.**

CLIENT:

**DEPARTMENT OF WATER SUPPLY AND SEWERAGE
WATER MAINTENANCE SECTION**

MANUAL CONTENTS

- (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

JE02/104

Standard Rectifier Wiring Diagram

2/14.215

Cathodic Protection Details

(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 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 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 1200 – Dia 750 mild steel cement lined.

Coating: Fibreglas enamel coated outer coating.

Length: 4.1 km.

Location: From Scrub Rd. Belmont to Dairy Swamp Rd. to New Cleveland Rd. Manly Rd. to Wynnum Rd. UBD 28O9 to UBD 29D1.

Construction Drawings:

(4.0) **CATHODIC PROTECTION DETAILS**

- (4.1) Type of Cathodic Protection: Impressed Current.
- (4.2) Rectifier: Standard 32V Volt, 10 amp direct current output enclosed in a stainless steel switchboard. Rectifier has a 240V supply from a nearby SEQEB electricity pole #23612. Rectifier is located nearby SEQEB pole #23612 in New Cleveland Rd. opposite Dairy Swamp Rd. Tingalpa.
- (4.3) Cathode: The cathode point is located adjacent to the trunk mains at the rectifier site where a type B test point has been installed. The cathode point is 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 21.0 metres from the trunk mains in a horizontal bed. The anode was first backfilled with cokebreeze thereby improving anode – ground resistance. The anodes are identified by a marker post and label. Refer dwg no 2/14.215.
- (4.5) Test Points: Test points are installed on cathodically protected structures to enable testing to ensure full protection of the mains. On these mains seven test points have been installed for details see dwg no 2/14.215.
- (4.6) Associated Drawings:
Cathodic Protection Details – 2/14.215
Cathodic Protection Test Point Details – 2/14.199
Standard Rectifier Wiring Diagram – JE02/104
- (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.

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 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.

12th October 1992
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.

13th October 1992
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.

13th October 1992
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/ Pipcamp structure if applicable.
- 17/ Apply for "continue to operate" permit if applicable.

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

Cathodic Protection System Loop Resistance

Date: 22nd April 1993

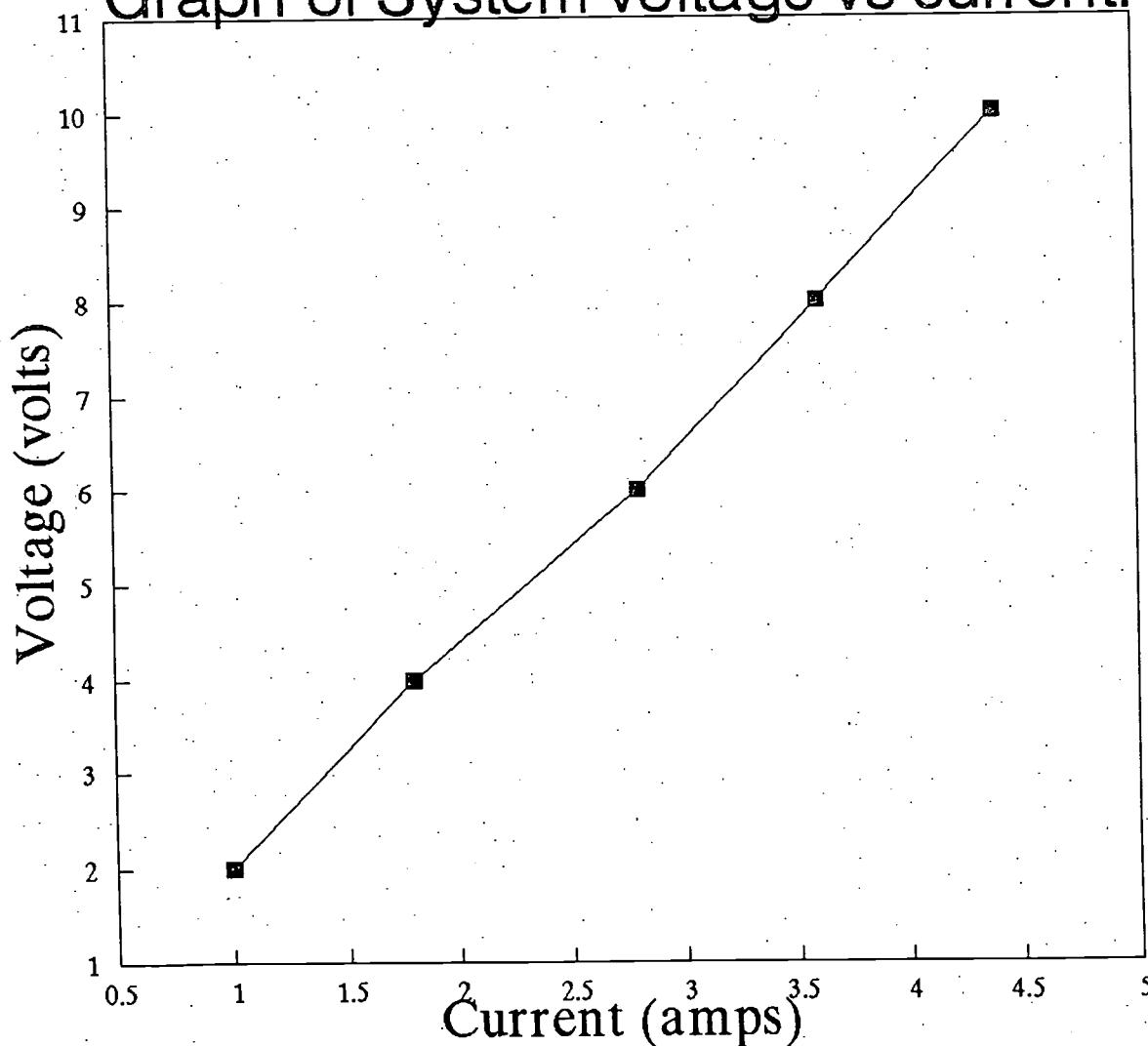
Cathodic Protection System: Dairyswamp Rd. 750mm to 1200mm diameter trunk main.

System Operating Volts: 6.5 System Operating amps 3

Test Voltage: (volts)	Test Current: (amps)
2	1
4	1.8
6	2.8
8	3.6
10	4.4

Loop Resistance (ohms)
2.5

Graph of System voltage vs current.



Brisbane City Council

Dept. W.S.& S.

Metropolitan Division

Eagle Farm Pumping Station

Date: 30th April 1993

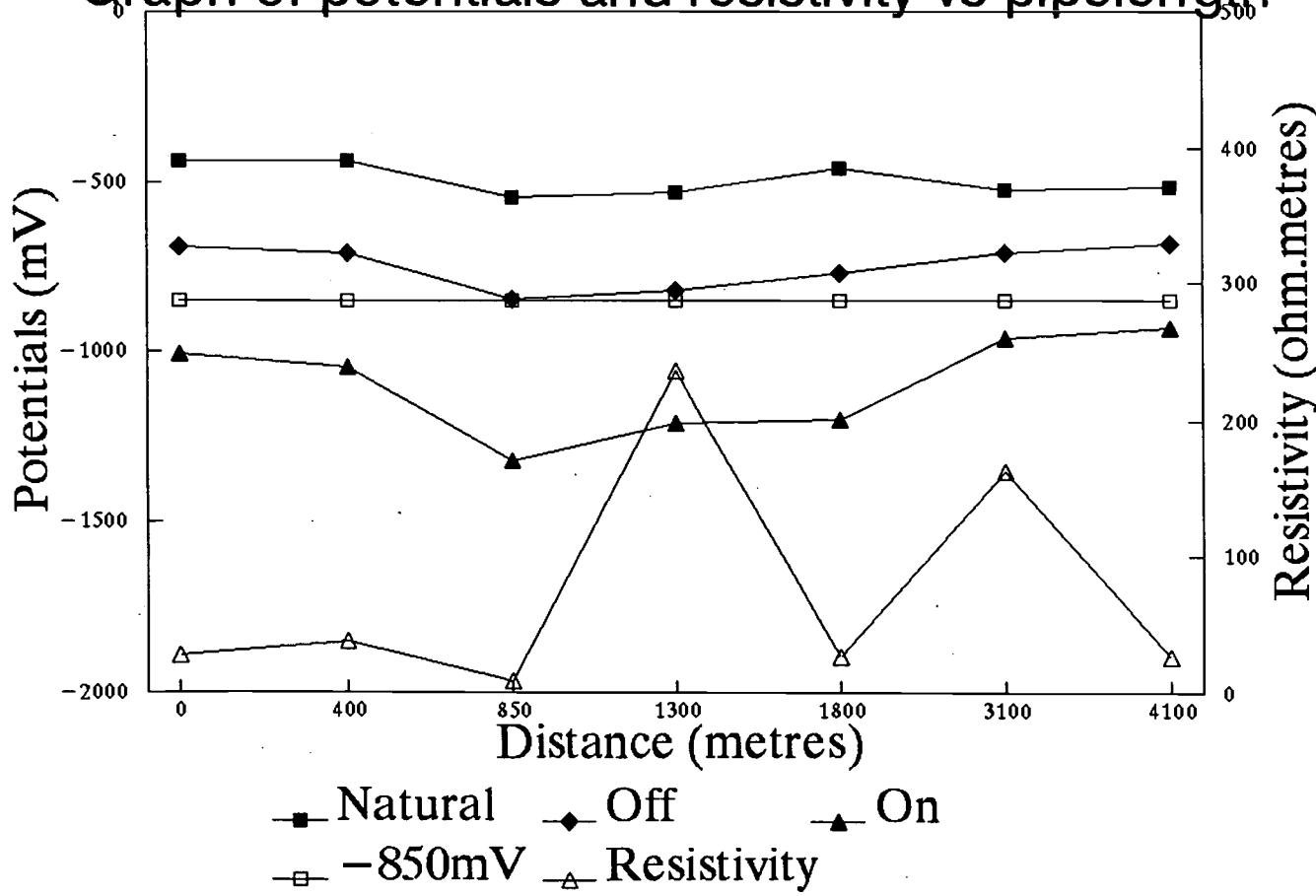
Electrical Workshop

System: Dairyswamp Rd. 750mm to 1200mm diameter trunk main.

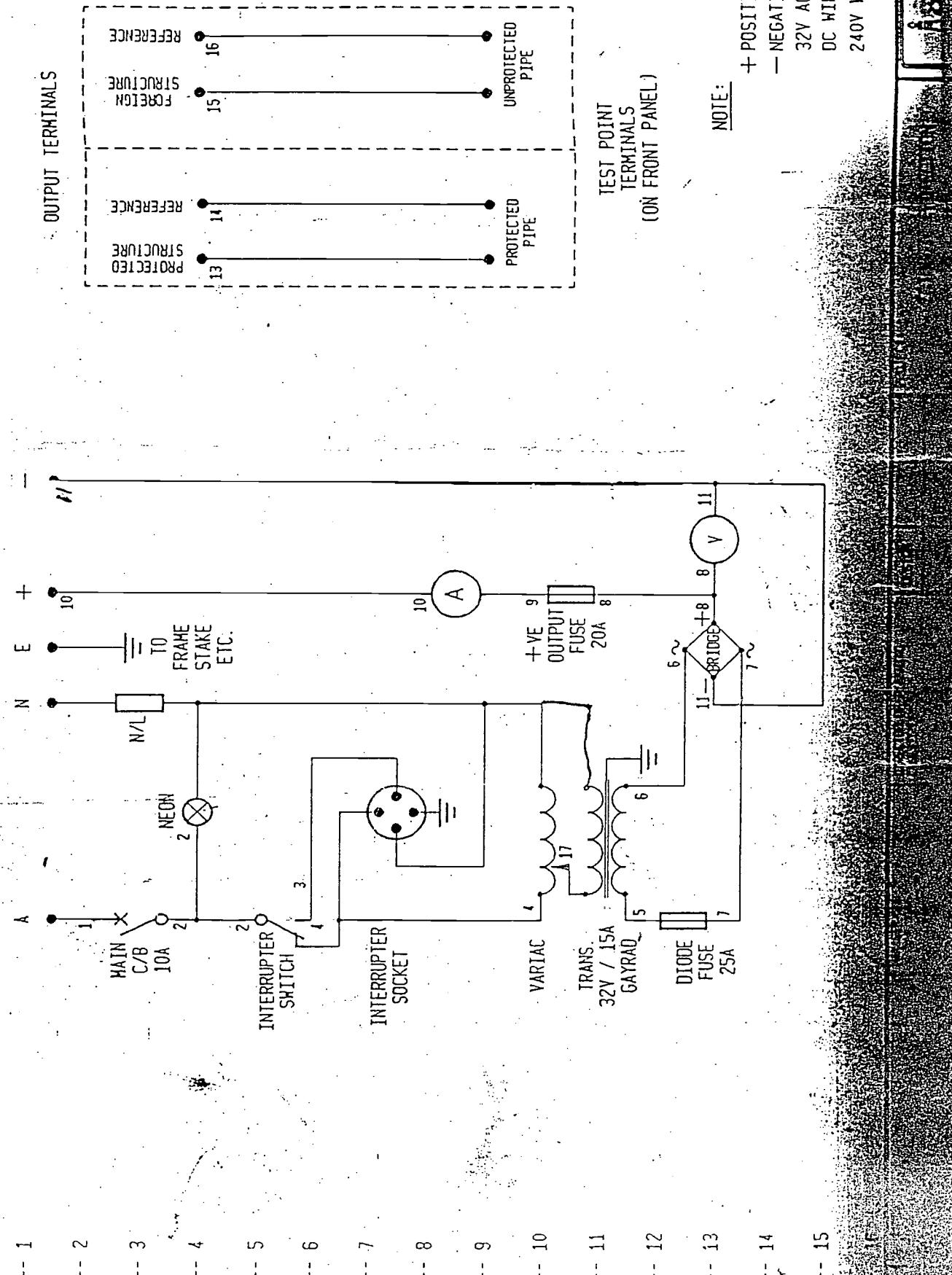
Cathodic Protection System reference potential and earth resistivity graph.

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	-438	-690	-1010	27
2	400	-441	-710	-1045	37
3	850	-545	-845	-1320	8
4	1300	-532	-820	-1210	236
5	1800	-462	-770	-1198	26
6	3100	-523	-710	-960	163
7	4100	-515	-685	-930	26
8					
9					
10					
11					
12					
13					
14					

Graph of potentials and resistivity vs pipelength



Rectifier located at 1300M.



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

INTERFERENCE SURVEY RESULTS

CuSO_4 to Pipe on - 1205 mV
 OFF - 730 mV

JOB DESCRIPTION: - DAIRY SWAMP RD.

UNIT READING: - 10V at 4.9 amp

	READING	TEST POINT I.D.	LOCATION	SWING
ON	-520mV		EARTH STAKE	
OFF	-402mV		RECTIFIER UNIT.	-118mV
ON	-497mV		POLE N° 23613	
OFF	-391mV		NEW CLEVELAND RD	-106mV
ON	-384mV		POLE N° 23616	
OFF	-354mV		NEW CLEVELAND RD	-30mV
ON	-391mV		POLE N° 64328	
OFF	-380mV		ERMELO RD	-11mV
ON	-355mV		POLE N° 33694	
OFF	-405mV		DAIRY SWAMP RD	+50mV
ON	-452mV		POLE N° 60955	
OFF	-437mV		DAIRY SWAMP RD	-15mV
ON	-419mV		POLE N° 15534	
OFF	-416mV		ERMELO RD	-3mV
ON	-382mV		POLE N° 23377	
OFF	-414mV		WRIGHT ST.	+32mV
ON	-296mV		POLE N° 23368	
OFF	-357mV		WRIGHT ST	+61mV
ON	-555mV		POLE N° 22594	
OFF	-561mV		WYNNUM RD	+6mV
ON	-444mV		POLE N° 33899	
OFF	-449mV		MANY RD	+5mV
ON	-538mV		POLE N° 23601	
OFF	-577mV		NEW CLEVELAND RD	+39mV

COMPILED BY: ... L. Greaves

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

16-6-92

INTERFERENCE SURVEY RESULTS

CuSO₄

JOB DESCRIPTION: - DAIRY SWAMP RD

-1200mV on -550mV off

UNIT READING: - 4.0 amp 8.0 Volts

	READING	TEST POINT I.D.	LOCATION	SWING
ON	-351mV	SEQEB	WRIGHT ST.	
OFF	-381mV	MEN	SEQEB POLE N° 23377	+30mV
ON	-271mV	SEQEB	WRIGHT ST.	
OFF	-327mV	MEN	SEQEB POLE N° 23368	+56mV
ON	-502mV	SEQEB	MANLY RD.	
OFF	-510mV	MEN	SEQEB POLE N° 23461	+68mV
ON	-566mV	SEQEB	NEW CLEVELAND RD	
OFF	-605mV	MEN	SEQEB POLE N° 23601	+39mV
ON	-345mV	SEQEB	DAIRY SWAMP RD	
OFF	-406mV	MEN	SEQEB POLE N° 33694	+61mV
ON				
OFF				
ON				
OFF				
ON				
OFF				
ON				
OFF				
ON				
OFF				

COMPILED BY:

DATE: 23-6-92 UNIT READING: 8V at 3.8A

CuSO_4 . - 1180 mV ON.
- 530 mV OFF.

INTERFERENCE RESULTS

COMPILED BY: A. Green

INTERRUPTER: - 20 SECS OFF
10 SECS ON

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

INTERFERENCE SURVEY RESULTS

JOB DESCRIPTION: - INTERFERENCE TESTING WITH TELECOM
 (ALL RESULTS LEAD TO CABLE)

UNIT READING: - 6.5V...2.9A....

	READING	TEST POINT I.D.	LOCATION	SWING
ON	-590		CNR NEW CLEVELAND ROAD	
OFF	-560		+ INGLESTON ROAD	-30mV
ON	-730		OUTSIDE NO 364 NEW	
OFF	-620		CLEVELAND ROAD	-110
ON	-680		OUTSIDE NO 308 NEW	
OFF	-650		CLEVELAND RD	-30mV
ON	-1040		CNR. NEW CLEVELAND ROAD	
OFF	-1120		+ MANLY ROAD (OPPOSITE NURSERY)	+80mV
ON	-500		MANLY ROAD:- OUTSIDE BRYAN	
OFF	-500		BYRT FORD	NIL
ON	-410		MANLY RD:- NEXT TO SEQES	
OFF	-410		POLE 33899	NIL
ON	-540		MANLY RD:- OPPOSITE B.C.C.	
OFF	-540		TEST POINT	NIL
ON	-740		MANLY RD:- OPPOSITE NURSERY	
OFF	-780			+40
ON	-220		CNR WRIGHT ST & OLD	
OFF	-210		CLEVELAND RD	-10
ON				
OFF				
ON				
OFF				

COMPILED BY: *Mervyn McConville*
 17-07-92

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

INTERFERENCE SURVEY RESULTS

JOB DESCRIPTION: - INTER FERENCE TESTING : TELECOM TO B.C.C.
 (ALL READINGS CGSO₄ TO STRUCTURE)
 UNIT READING:- ..10.V....4:6A....

	READING	TEST POINT I.D.	LOCATION	SWING
ON OFF	-800 mV -800 mV		WATER COX - 910 MANLY RD	NIL
ON OFF	-418 -473	N° 4	RECTIFIER BOX NEW CLEVELAND RD	+55mV
ON OFF	-332 -338		WATER COX - 396 NEW CLEVELAND RD	+6mV
ON OFF	-482 -536	N° 5	DAIRY SWAMP RD	+54mV
ON OFF	-572 -622	N° 6	WRIGHT ST : - OUTSIDE CARAVAN PARK	+50mV
ON OFF	-578 -530	N° 3	NEW CLEVELAND ROAD -OPPOSITE WECKERS	-40mV
ON OFF	-472 -543	N° 2	MANLY RD - NEXT TO BRIDGE	+71mV
ON OFF	-418 -493	N° 1	WYNNUM RD - OPPOSITE SQUASH COURTS	+75mV
ON OFF				

COMPILED BY: *Mary McCormick*

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

INTERFERENCE SURVEY RESULTS

JOB DESCRIPTION:- INTERFERENCE TESTING :- BCC TO ALL GAS

UNIT READING:- 6.5V...2.9A

COMPILED BY: M. M. SAWYER

ALL GFS USES SACRIFICAL SYSTEM

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

CATHODIC PROTECTION BLEED POINT DETAILS

CPB NUMBER:- CPB 1

DATE INSTALLED:- 16-7-92

BCC CATHODIC PROTECTION SYSTEM IDENTIFICATION:-

FOREIGN STRUCTURE OWNER:- SEQEB.

F.S. LOCATION:- SEQEB POLE N° 23368. WRIGHT ST.

F.S. IDENTIFICATION:- MEN.

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

REFERENCE TYPE:- CuSO₄

POTENTIAL OFF:- -355mV ON:- -300mV SW:- +55 mV

BLEED TYPE:-

BLEED MATERIAL:- Zinc

BLEED WEIGHT:- 400 grams

BLEED O/C POTENTIAL:-

BLEED CURRENT OFF:- 1.8mA. ON:- 1.8mA.

REFERENCE POTENTIALS AFTER CONNECTION TO FOREIGN STRUCTURE:-

BOND OFF (RECTIFIER OFF)		BLEED ON			RESULTANT SWING
BLEED OFF	BLEED ON	SW	BOND OFF	BOND ON	
-355mV	-588mV	-233 _{mV}	-588mV	-552mV	+36 -192mV

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

IDENTIFICATION TAG INSTALLED? (Y/N) Yes

COMMENTS:- on PIMMS

INSTALLED/TESTED BY:- L. Greaves

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:- CP B2

DATE INSTALLED:- 16-7-92

BCC CATHODIC PROTECTION SYSTEM IDENTIFICATION:-

FOREIGN STRUCTURE OWNER:- SEQEB

F.S. LOCATION:- SEQEB POLE N° 23377 WRIGHT ST

F.S. IDENTIFICATION:- MEN.

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

REFERENCE TYPE:- CuSO₄

POTENTIAL OFF:- -312mV ON:- -291mV SW:- +21mV

BLEED TYPE:-

BLEED MATERIAL:- ZINC

BLEED WEIGHT:- 400 grams

BLEED O/C POTENTIAL:-

BLEED CURRENT OFF:- 2.4mA ON:- 2.4mA

REFERENCE POTENTIALS AFTER CONNECTION TO FOREIGN STRUCTURE:-

BOND OFF (RECTIFIER OFF)		BLEED ON			RESULTANT SWING
BLEED OFF	BLEED ON	SW	BOND OFF	BOND ON	
-312mV	-883mV	-571 mV	-883mV	-879mV	+4
					-567mV

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

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

INSTALLED/TESTED BY:- L. Greaves

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:- CP B3

DATE INSTALLED:- 16-7-92

BCC CATHODIC PROTECTION SYSTEM IDENTIFICATION:-

FOREIGN STRUCTURE OWNER:- SEQEB

F.S. LOCATION:- SEQEB Post No 33694 DAIRY SWAMP Rd

F.S. IDENTIFICATION:- MEN

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

REFERENCE TYPE:- CuSO₄

POTENTIAL OFF:- -369mV ON:- -340 mV SW:- +29mV

BLEED TYPE:-

BLEED MATERIAL:- ZINC

BLEED WEIGHT:- 400 grams

BLEED O/C POTENTIAL:-

BLEED CURRENT OFF:- 7.2mA ON:- 7.7mA

REFERENCE POTENTIALS AFTER CONNECTION TO FOREIGN STRUCTURE:-

BOND OFF (RECTIFIER OFF)		BLEED ON			RESULTANT SWING
BLEED OFF	BLEED ON	SW	BOND OFF	BOND ON	
-369mV	-470mV	-101 mV	-420mV	-448mV	+22 mV - 79mV

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

IDENTIFICATION TAG INSTALLED? (Y/N) yes
COMMENTS:- ON PIMMS.

INSTALLED/TESTED BY:- 2 yearees.

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:- CP B 4

DATE INSTALLED:- 16-7-92

BCC CATHODIC PROTECTION SYSTEM IDENTIFICATION:

FOREIGN STRUCTURE OWNER:- SEQEB

F.S. LOCATION:- SEQEB POLE NO 23601 NEW CLEVELAND RD

F.S. IDENTIFICATION:- MEN

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

REFERENCE TYPE:- CuSO₄

POTENTIAL OFF:- -539mV ON:- -515mV SW:- +24mV

BLEED TYPE:-

BLEED MATERIAL:- ZINC

BLEED WEIGHT:- 400 grams

BLEED O/C POTENTIAL:-

BLEED CURRENT OFF:- 4.2mA ON:- 4.5mA

REFERENCE POTENTIALS AFTER CONNECTION TO FOREIGN STRUCTURE:-

BOND OFF (RECTIFIER OFF)		BLEED ON			RESULTANT SWING
BLEED OFF	BLEED ON	SW	BOND OFF	BOND ON	
-539mV	-774mV	-135mV	-774mV	-766mV	+12.3mV

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

IDENTIFICATION TAG INSTALLED? (Y/N) yes

COMMENTS:- on PIMMS

INSTALLED/TESTED BY:- L Greaves

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:- CP B5

DATE INSTALLED:- 16-7-92

BCC CATHODIC PROTECTION SYSTEM IDENTIFICATION:-

FOREIGN STRUCTURE OWNER:- SEQEB

F.S. LOCATION:- SEQEB POLE NO 23461 MANLY RD

F.S. IDENTIFICATION:- MEN.

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

REFERENCE TYPE:- CuSO₄

POTENTIAL OFF:- -530 MV ON:- -472 MV SW:- +58 MV

BLEED TYPE:-

BLEED MATERIAL:- ZINC

BLEED WEIGHT:- 400 grams

BLEED O/C POTENTIAL:-

BLEED CURRENT OFF:- 6.5 MA ON:- 7.5 MA

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	
-530 MV	-690 MV	-160 MV	-690 MV	-653 MV	+37 MV	-123 MV

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

IDENTIFICATION TAG INSTALLED? (Y/N) yes

COMMENTS:- on PIMMS

INSTALLED/TESTED BY:- S. Greaves

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

BRISBANE CITY COUNCIL
EAGLE FARM PUMP STATION
CORROSION SECTION

TEST POINT N°1

STANDARD CATHODIC PROTECTION TEST POINT DATA GATHERING

DATE: 1-4-92

TEST POINT TYPE: TYPE B

LOCATION: WYNNUM RD OPP
MAINS SIZE: TINGALPA SQUASH
750MM COURTS.

POTENTIAL TESTING

CATHODE TO CATHODE RETURN (RESISTANCE): 0.1Ω

ZINC REFERENCE TO PIPE: +446 mV

CuSO₄ REFERENCE TO PIPE: -438 mV

ZINC TO CuSO₄: -885 mV

EARTH TESTING

PIN SPACING: 2M

MEGGER READING: 22x-1 RESISTIVITY: 27.63 Ω/metre

PIN SPACING: 3M

MEGGER READING: 15x-1 RESISTIVITY: 28.26 Ω/metre

4M

5x-1 RESISTIVITY: 12.56 Ω/metre

SACRIFICIAL ANODE
(IF INSTALLED)

ANODE TYPE:

ANODE SIZE:

ANODE TO PIPE POTENTIAL:

ZINC REF TO PIPE:

(ANODE CONNECTED)

CuSO₄ REF TO PIPE:

(ANODE CONNECTED)

SACRIFICIAL ANODE CURRENT:

BLEED RESISTOR SIZE:

(IF INSTALLED)

INSTALLED BY:

L Greaves

COMMENTS:

1 COPY TO FILE

1 COPY TO T.O.

TEST POINT N°2

BRISBANE CITY COUNCIL
EAGLE FARM PUMP STATION
CORROSION SECTION

STANDARD CATHODIC PROTECTION TEST POINT DATA GATHERING

DATE: 2-4-92

TEST POINT TYPE: CouponLOCATION: MANLY Rd between
MAINS SIZE: Belmont & New Clevea
750M Rds.POTENTIAL TESTING

CATHODE TO CATHODE RETURN (RESISTANCE): 0.15V

ZINC REFERENCE TO PIPE: +338mV

CuSO₄ REFERENCE TO PIPE: -441mVZINC TO CuSO₄: -765mVCuSO₄ to White - 655mV
CuSO₄ to Red/Blue - 443mV
Zinc to White + 114mV
Zinc to Red/Blue + 337mVEARTH TESTING

PIN SPACING: 2M

MEGGER READING: 30x·1 RESISTIVITY: 37.68Ω/metre

PIN SPACING: 3M

MEGGER READING: 16x·1 RESISTIVITY: 30.14Ω/metre

PIN SPACING: 4M

MEGGER READING: 8x·1 RESISTIVITY: 20.09Ω/metre

SACRIFICIAL ANODE
(IF INSTALLED)

ANODE TYPE:

ANODE SIZE:

ANODE TO PIPE POTENTIAL:

ZINC REF TO PIPE:

(ANODE CONNECTED)

CuSO₄ REF TO PIPE:
(ANODE CONNECTED)

SACRIFICIAL ANODE CURRENT:

BLEED RESISTOR SIZE:
(IF INSTALLED)INSTALLED BY: L. Greaves

COMMENTS:

1 COPY TO FILE
1 COPY TO T.O.

BRISBANE CITY COUNCIL
EAGLE FARM PUMP STATION
CORROSION SECTION

TEST POINT N° 3

STANDARD CATHODIC PROTECTION TEST POINT DATA GATHERING

DATE:

TEST POINT TYPE: TYPE B.

LOCATION: MANLY RD & NEW
MAINS SIZE: CLEVELAND RD
750 mm

POTENTIAL TESTING

CATHODE TO CATHODE RETURN (RESISTANCE): 0.15V

ZINC REFERENCE TO PIPE: +157 mV

CuSO₄ REFERENCE TO PIPE: -545 mV

ZINC TO CuSO₄: -702 mV

EARTH TESTING

PIN SPACING: 2M

MEGGER READING: 6x 0.1 RESISTIVITY: 7.53 ohm/metre

PIN SPACING: 3M

MEGGER READING: 4x 0.1 RESISTIVITY: 7.53 ohm/metre

PIN SPACING: 4M

MEGGER READING: 4x 0.1 RESISTIVITY: 10.04 ohm/metre

SACRIFICIAL ANODE
(IF INSTALLED)

ANODE TYPE:

ANODE SIZE:

ANODE TO PIPE POTENTIAL:

ZINC REF. TO PIPE:

(ANODE CONNECTED)

CuSO₄ REF TO PIPE:
(ANODE CONNECTED)

SACRIFICIAL ANODE CURRENT:

BLEED RESISTOR SIZE:
(IF INSTALLED)

INSTALLED BY: L. Greaves

COMMENTS:

1 COPY TO FILE

1 COPY TO T.O.

BRISBANE CITY COUNCIL
EAGLE FARM PUMP STATION
CORROSION SECTION

TEST POINT N°4

STANDARD CATHODIC PROTECTION TEST POINT DATA GATHERING

DATE:

TEST POINT TYPE: Coupon Type

LOCATION: NEW CLEVELAND RD
 MAINS SIZE: IN RECT. UNIT.
750MM

POTENTIAL TESTING

CATHODE TO CATHODE RETURN (RESISTANCE): 0.35Ω

ZINC REFERENCE TO PIPE: +716 mV

CuSO₄ REFERENCE TO PIPE: -532 mV

ZINC TO CuSO₄: -1248 mV

CuSO₄ to white - 632 mV
 CuSO₄ to Red/Blue - 532 mV
 Zn to white + 613 mV
 Zn to Red/Blue + 716 mV

EARTH TESTING

PIN SPACING: 2M

MEGGER READING: 188x-1

RESISTIVITY: 236.125V/metre

PIN SPACING: 3M

MEGGER READING: 114x-1

RESISTIVITY: 214.775V/metre

PIN SPACING: 4M

MEGGER READING: 51x-1

RESISTIVITY: 138.165V/metre

~~SILICONE~~ ANODE
 (IF INSTALLED)

ANODE TYPE: SILICONE IRON

ANODE SIZE: 1500 x 75

ANODE TO PIPE POTENTIAL:

ZINC REF TO PIPE:

(ANODE CONNECTED)

CuSO₄ REF TO PIPE:
 (ANODE CONNECTED)

SACRIFICIAL ANODE CURRENT:

BLEED RESISTOR SIZE:
 (IF INSTALLED)

INSTALLED BY: 1 greaves

COMMENTS:

1 COPY TO FILE
 1 COPY TO T.O.

BRISBANE CITY COUNCIL
EAGLE FARM PUMP STATION
CORROSION SECTION

TEST POINT N°5

STANDARD CATHODIC PROTECTION TEST POINT DATA GATHERING

DATE: 24-3-92

TEST POINT TYPE: TYPE B.

LOCATION:

MAINS SIZE: DAIRY SWAMP RD &
720MM ERMERO RD.

POTENTIAL TESTING

CATHODE TO CATHODE RETURN (RESISTANCE): 0.1Ω

ZINC REFERENCE TO PIPE: - 750 mV

CuSO₄ REFERENCE TO PIPE: - 462 mV

ZINC TO CuSO₄: - 1214 mV

EARTH TESTING

PIN SPACING: 2M MEGGER READING: 213 X .01 RESISTIVITY: 26.75 Ω/metre

PIN SPACING: 3M MEGGER READING: 411 X .01 RESISTIVITY: 77.43 Ω/metre

SACRIFICIAL ANODE
(IF INSTALLED)

ANODE TYPE:

ANODE SIZE:

ANODE TO PIPE POTENTIAL:

ZINC REF TO PIPE:

(ANODE CONNECTED)

CuSO₄ REF TO PIPE:

(ANODE CONNECTED)

SACRIFICIAL ANODE CURRENT:

BLEED RESISTOR SIZE:

(IF INSTALLED)

INSTALLED BY: L. Greaves

COMMENTS:

1 COPY TO FILE

1 COPY TO T.O.

BRISBANE CITY COUNCIL
EAGLE FARM PUMP STATION
CORROSION SECTION

TEST POINT N^o 6

STANDARD CATHODIC PROTECTION TEST POINT DATA GATHERING

DATE: 8-4-92

TEST POINT TYPE: COUPON

LOCATION: WRIGHT ST opp.
MAINS SIZE: CARAVAN PARK.
750MM.

POTENTIAL TESTING

CATHODE TO CATHODE RETURN (RESISTANCE): 0.1Ω

ZINC REFERENCE TO PIPE: + 483 mV

CuSO₄ REFERENCE TO PIPE: - 523 mV

ZINC TO CuSO₄:

+ 1002 mV

CuSO₄ to White - 607 mV
CuSO₄ to Red/Blue - 521 mV
Zinc to White + 396 mV
Zinc to Red/Blue + 483 mV

EARTH TESTING

PIN SPACING: 2M

MEGGER READING: 130 x 1

RESISTIVITY: 163.28 Ω/metre

3M

60 x 1

113.04 Ω/metre

PIN SPACING: 4M

MEGGER READING: 35 x 1

RESISTIVITY: 87.92 Ω/metre

SACRIFICIAL ANODE
(IF INSTALLED)

ANODE TYPE:

ANODE SIZE:

ANODE TO PIPE POTENTIAL:

ZINC REF TO PIPE:

(ANODE CONNECTED)

CuSO₄ REF TO PIPE:

(ANODE CONNECTED)

SACRIFICIAL ANODE CURRENT:

BLEED RESISTOR SIZE:

(IF INSTALLED)

INSTALLED BY: L. Greaves

COMMENTS:

1 COPY TO FILE

1 COPY TO T.O.

BRISBANE CITY COUNCIL
EAGLE FARM PUMP STATION
CORROSION SECTION

TEST POINT N° 7

STANDARD CATHODIC PROTECTION TEST POINT DATA GATHERING

DATE: 26-3-92

TEST POINT TYPE: VALVE PIT.

LOCATION: SCRUB RD BELMONT
MAINS SIZE: BEHIND SEQEB SUB.
750MM

POTENTIAL TESTING

CATHODE TO CATHODE RETURN (RESISTANCE):

ZINC REFERENCE TO PIPE: + 617 mV

CuSO₄ REFERENCE TO PIPE: - 515 mV

ZINC TO CuSO₄: - 1135 mV

EARTH TESTING

PIN SPACING: 2 M

MEGGER READING: 210 X 01 RESISTIVITY: 26.37 ohm/metre

PIN SPACING: 3 M

MEGGER READING: 750 X 01 RESISTIVITY: 141.3 ohm/metre
631 X 01 158.5 ohm/metre

SACRIFICIAL ANODE
(IF INSTALLED)

ANODE TYPE:

ANODE SIZE:

ANODE TO PIPE POTENTIAL:

ZINC REF TO PIPE:

(ANODE CONNECTED)

CuSO₄ REF TO PIPE:

(ANODE CONNECTED)

SACRIFICIAL ANODE CURRENT:

BLEED RESISTOR SIZE:

(IF INSTALLED)

INSTALLED BY:

L. Greaves.

COMMENTS:

1 COPY TO FILE

1 COPY TO T.O.

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

ELECTRICAL WORKSHOP

INSULATED JOINT TESTING DETAILS: DRY SWAMP RD TRUNK mains.

DATE 10-4-91

DESCRIPTION

MAINS DETAILS:- 750 - 600 ft.
LOCATIONS:- WYNNUM RD. @ 15 SQUASH COURTS.
SIZE:- VALVE 919
MATERIAL:-
COATING:- LOCATION # 1.
NUMBER:-

IN GROUND TESTING

BOLT TO FLANGE RESISTANCE:- ALL BOLTS 7200 ohms TO FLANGE
NUMBER OF BOLT:-
FLANGE TO FLANGE RESISTANCE:- 50 ohms ACROSS JOINT.
INSULATION CHECKER MODEL 702:- 40 ON SCALE & STEADY.
POTENTIAL DIFFERENCE TO REFERENCE CELL UNABLE TO CHECK.
PROTECTED SIDE:-
UNPROTECTED SIDE:-

ABOVE TESTING

BOLT TO FLANGE RESISTANCE:-
NUMBER OF BOLTS:- } N/A
FLANGE TO FLANGE RESISTANCE:- }

COMMENTS

PASSED OIC
EXISTING OLD TYPE TEST POINT
INSTALLED.

TESTED BY



INSULATED JOINT DETAILS

DATE: 22-11-90

NUMBER - Takeoff from trunk mains and
mainly Rd. and new Cleveland
MAINS DETAILS - LOCATION:- Rd.
SIZE:- 300 & takeoff from 12004
MATERIAL:-
COATING:-

INSULATED SIDE

UNINSULATED SIDE

PIPE SIZE :-

COATING :-

FLANGE SIZE :-

BOLT NO. :-

BOLT SIZE :-

TEST POINT:- SIZE

TYPE

INSTALLED TESTING:-

INSTALLED DATE :-

CURRENT

VOLTAGE

PROTECTED SIDE	CuS04	REF	ON
			OFF

UNPROTECTED SIDE	CuS04	REF	ON
			OFF

below

ABOVEGROUND TESTING:- READING (OHMS) - see above
 COMMENTS - from specification 77A.10 joint is
 TESTED BY - *CP*
WPF

INSULATED JOINT DETAILS

DATE: 27-11-90

NUMBER -

MAINS DETAILS -

LOCATION:-

SIZE:-

MATERIAL:-

COATING:-

INSULATED SIDE

UNINSULATED SIDE

PIPE SIZE -

all bolts > 200 n to
flange.

COATING -

2 or across joint one direction
0 or across joint opp. direction

FLANGE SIZE -

54m across joint

BOLT NO. -

+ to protected pipe
- 5.29 m from prot side of
pipe to CuSO₄

BOLT SIZE -

- 5.72 m from unprot pipe to
CuSO₄.

TEST POINT:- SIZE -

TYPE -

INSTALLED TESTING:-

INSTALLED DATE -

CURRENT

VOLTAGE -

PROTECTED SIDE CuSO₄ REFON
OFFnote: not full gasket installed
existing flange
sandblasted to clean
joint.UNPROTECTED SIDE CuSO₄ REFON
OFF

Below

ABOVEGROUND TESTING:- READING (OHMS) - see above

COMMENTS - from specification 77-A-101 joint is

TESTED BY -

OK
unforced

INSULATED JOINT DETAILS

DATE: 25-9-90

NUMBER - 10

MAINS DETAILS - LOCATION: DAIRY SWAMP RD NEAR FERNELD RD.

SIZE: 1200 mm

MATERIAL: MS

COATING: FUSION BONDED POLY

INSULATED SIDE

UNINSULATED SIDE

PIPE SIZE - 300 mm

COATING -

FLANGE SIZE -

BOLT NO. - 12 OFF

BOLT SIZE - 20 mm

BOLT TEST - 71 MΩ

TEST POINT: - SIZE -

TYPE -

INSTALLED TESTING: - > 20 MΩ

INSTALLED DATE -

CURRENT

VOLTAGE -

PROTECTED SIDE CuSO₄ REF ON
OFFUNPROTECTED SIDE CuSO₄ REF ON
OFF

ABOVEGROUND TESTING: - READING (OHMS)

COMMENTS - Flange not removed; half gasket fitted originally
TESTED BY - corrosion between gaskets removed w/ - Bachman blade;
gap sealed w/ - silicon sealant

INSULATED JOINT DETAILS

DATE: 15-11-90

NUMBER - 11

MAINS DETAILS -

LOCATION:- DAIRY SWAMP RD NEAR GRASSDALE RD
SIZE:- 1200 mm
MATERIAL:- M S
COATING:- FUSION BONDED PVC

INSULATED SIDE

UNINSULATED SIDE

PIPE SIZE -

300 mm

COATING -

FLANGE SIZE -

BOLT NO. -

12 OF 1

BOLT SIZE -

BOLT TEST

> 1 m -

TEST POINT:- SIZE -

TYPE -

INSTALLED TESTING:-

25 Ω

INSTALLED DATE -

CURRENT

VOLTAGE -

PROTECTED SIDE CuSO₄ REF ON
OFFUNPROTECTED SIDE CuSO₄ REF ON
OFF

ABOVEGROUND TESTING:- READING (OHMS)

COMMENTS - NEW FULL GASKET FITTED TO FLANGE

TESTED BY -

INSULATED JOINT DETAILS

DATE: 13-11-90

NUMBER - 12

MAINS DETAILS - LOCATION:- WRIGHT ST - OUTSIDE CARAVAN PARK

SIZE:- 1200 mm

MATERIAL:- MS

COATING:- FUSION BONDED POLY

INSULATED SIDE

UNINSULATED SIDE

PIPE SIZE -

300 mm

COATING -

FLANGE SIZE -

BOLT NO. -

12 OFF

BOLT SIZE -

20 mm

BOLT TEST

>1MΩ

TEST POINT:- SIZE -

TYPE -

INSTALLED TESTING:-

20 m

INSTALLED DATE -

CURRENT

VOLTAGE -

PROTECTED SIDE CuS04 REF ON
OFFUNPROTECTED SIDE CuS04 REF ON
OFF

ABOVEGROUND TESTING:- READING (OHMS)

COMMENTS - Tee off pipe cut & new full gasket fitted
between flanges

TESTED BY -

INSULATED JOINT DETAILS

DATE: 1-11-90

NUMBER: 13

MAINS DETAILS

LOCATION: WRIGHT ST CNR OLD CLEVELAND RD &
REYNOLDS ST.

SIZE: 1200 mm

MATERIAL: MS

COATING: FUSION BONDED POLY

INSULATED SIDE

UNINSULATED SIDE

PIPE SIZE: 300 mm

COATING:

FLANGE SIZE:

BOLT NO.: 120FF

BOLT SIZE: 20 mm

BOLT TIGHT: > 1 m m

TEST POINT: SIZE:

TYPE:

INSTALLED TESTING: 35 m

INSTALLED DATE:

CURRENT

VOLTAGE

PROTECTED SIDE CuS04 REF ON
OFFUNPROTECTED SIDE CuS04 REF ON
OFF

ABOVEGROUND TESTING: READING (OHMS)

COMMENTS:

Jee off pipe cut & new full gasket fitted
between flanges

TESTED BY:

INSULATED JOINT DETAILS

DATE: 5-11-90

NUMBER: 13 A

MAINS DETAILS - LOCATION: WRIGHT ST NEAR OLD CLEVELAND RD

SIZE: 1200 mm

MATERIAL: MS

COATING: FUSION BONDED POLY

INSULATED SIDE

UNINSULATED SIDE

PIPE SIZE: 150 mm

COATING:

FLANGE SIZE:

BOLT NO.: 8 OF 1

BOLT SIZE: 16 mm

BOLT TEST: > 1 mΩ.

TEST POINT: SIZE:

TYPE:

INSTALLED TESTING: 6 m (AFTER RAIN)

INSTALLED DATE:

CURRENT

VOLTAGE

PROTECTED SIDE CuS04 REF ON
OFFUNPROTECTED SIDE CuS04 REF ON
OFF

ABOVEGROUND TESTING: READING (OHMS)

COMMENTS: Tee off pipe cut & new full gasket fitted
between flanges

TESTED BY:

INSULATED JOINT DETAILS

DATE: 24-10-90

NUMBER - 14

MAINS DETAILS - LOCATION: PAST WRIGHT ST ON EMBANKMENT

SIZE: 1200 mm

MATERIAL: MS

COATING: FUSION BONDED POLY

INSULATED SIDE

UNINSULATED SIDE

PIPE SIZE - 300 mm

COATING -

FLANGE SIZE -

BOLT NO. - 12 OFF

BOLT SIZE - 20 mm

BOLT TEST

TEST POINT:- SIZE -

TYPE -

INSTALLED TESTING: - > 200 m

INSTALLED DATE -

CURRENT

VOLTAGE -

PROTECTED SIDE CuS04 REF ON
OFFUNPROTECTED SIDE CuS04 REF ON
OFF

ABOVEGROUND TESTING: - READING (OHMS)

COMMENTS - Tee off pipe cut & new full gasket fitted between flanges.

TESTED BY -

1 2 3 4 5 6 7 8 9 10 11 12 13 14 NOTES

