

25 Bunya Street Eagle Farm Q 4009 Ph. (07) 3403 8888 Fx. (07) 3403 1898

16 th April 2004

OPERATING MANUAL FOR:

TARRAGINDI to WYNNUM RD to LYTTON RD TRUNK MAINS S54 and S35 TRUNK MAINS

CATHODIC PROTECTION SYSTEM

CLIENT:

BRISBANE WATER
WATER SYSTEM SERVICES

Cathodic Protection System - \$54 35 - Tarragindi to Wynnum Road to Lytton Road - Trunk Water Main - OM Manual **MANUAL CONTENTS**

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DRAWINGS

486/6/25-AA1C0021E

Standard Rectifier Wiring Diagram

(No Number)

Bimonthly 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.

Cathodic Protection System - \$54 35 - Tarragindi to Wynnum Road to Lytton Road - Trunk Water Main - OM Manual

(3.0)

MAINS DETAILS

Size:

1060, 910 and 600 mm Dia mild steel cement lined.

Coating:

Enamel Coated.

Length:

Appox 11.6 Km.

Location:

From Valve 188 cnr Tarragindi Rd.and Autumn St. Tarragindi

to Valve 214 Lytton Rd. Murarrie.

Construction Drawings:

486/1/22-C0024E

Cathodic Protection Standard Switchboard Cabinet

486/1/22-AAT0001E

Cathodic Protection Test Points

(4.0) <u>CATHODIC PROTECTION DETAILS</u>

- (4.1) Type of Cathodic Protection: Impressed Current.
- (4.2) Rectifier: Standard 30 Volt, 30 amp direct current output enclosed in a stainless steel switchboard. This system has 2 rectifiers installed. One rectifier is in Mott Park, corner Logan Rd. and Abbotsleigh St.Holland Park and has a 240V supply from Mott Park toilet block. The second rectifier is in Majestic Park Camp Hill and has a 240V supply from Energex pole No12681 near 70 Eva St Camp Hill.
- (4.3) Cathode: One cathode point is located on the 1060 mm dia mains, adjacent to scour valve 514 in Mott Park, while the second cathode point is located on the 910 mm dia mains adjacent to valve 200 at Majestic Park. The cathode point is where the cabling from the rectifier is attached to the structure under cathodic protection.
- (4.4) Anodes: Four 1500 x 75mm silicone iron anodes were installed approximately 90 metres from the trunk mains, in a vertical bed 5 metres deep, in the park adjacent to the stormwater drain in Mott Park. Another four anodes were installed approximately 100 metres from the trunk main in a vertical bed 5 metres deep in Majestic Park. The anodes are backfilled with cokebreeze thereby improving anode ground resistance. The anodes are identified by a marker post and label. See layout drawing.
- (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 eighteen test points have been installed on the trunk main which can be identified from the layout drawing.
- (4.6) Associated Drawings:

 Cathodic Protection Test Point Details 486/1/22-AAT0001E

 Standard Rectifier Wiring Diagram 486/6/25-AA1C0021

 Cathodic Protection Test Point & Anode 2 / 10.677-01 to 2 / 10.677-05

 Bed Locations S54 & S35 Trunk Mains. 2 / 10.2315-01
- (4.7) Associated Standards:

 AS/NZS 3000 2000 Electrical Installations

 AS/NZS 2832.1 1998 Cathodic Protection of Metals-Pipes and Cables.
- (4.8) Government Regulations:

 Queensland Electricity Safety Rules and Regulations. 2002

(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) <u>CONCLUSION</u>

Full Cathodic protection has been achieved on this section of trunk mains. The cathodic protection system is registered with the Electrical Safety Office, Department of Industrial Relations, and has approval to operate.

(7.0) **MAINTENANCE**

The cathodic protection system is maintained on a bimonthly basis after commissioning. These checks involve testing rectifier operation and recording of pipe to soil potentials.

Cathodic Protection System - S54 35 - Tarragindi to Wynnum Road to Lytton Road - Trunk Water Main - OM Manual 16 th April, 2004.

Cathodic Protection Unit.

CPS Bimonthly 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.

Cathodic Protection System - S54 35 - Tarragindi to Wynnum Road to Lytton Road - Trunk Water Main - OM Manual 16 th April, 2004.

Cathodic Protection Unit

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.

Cathodic Protection System - \$54 35 - Tarragindi to Wynnum Road to Lytton Road - Trunk Water Main - OM Manual 16 th April, 2004.

Cathodic Protection Unit

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 to reregister system if applicable

CP Form No. 23

Electrical Engineering Unit

Cathodic Protection System Potential Recording Form

Project

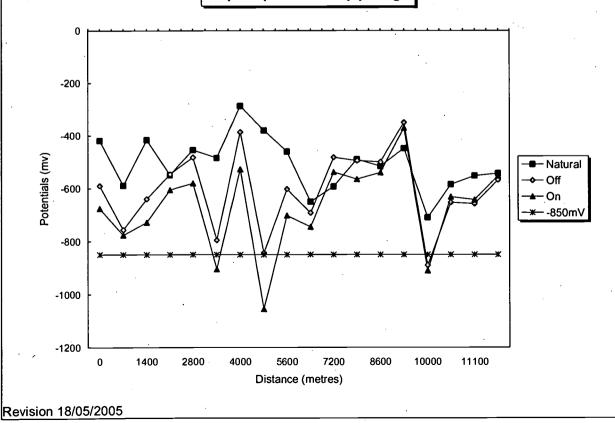
Tarragindi to Wynnum Rd.to Lytton Rd S35&S54

Date 16th June 2004

Test Point Nos 1 to 15 are S54 and Test Points 16 to 18 are S35

Test Point	Distances	Potentials to CuSO4				
number	to T.P.	Natural Off On		Distance		
	(metres)	(mV)	(mV)	(mV)		
1	0	-419	-590	-676	0	
2	700	-589	756	-776	700	
3	1400	-416	-640	-728	1400	
4	1900	-549	-546	-605	1900	Rectifiers at
5	2800	-454	-482	-580	2800	TPs.No6&8
. 6	3400	-484	-795	-905	3400	
_7	4000	-287	- <u>386</u>	-527	4000	
8	4800	-380	-844	-1055	4800	
9	5600	-460	-602	-702	5600	
10	6400	-650	-692	-745	6400	
11	7200	-593	-482	-538	7200	
12	7900	-490	-495	-565	7900	,
13	8600	-516	-500	-540	8600	
14	9200	-448	-350	-371	9200	
15	10000	-710	-890	-910	10000	· ·
16	10400	-585	-653	-632	10400	·
17	11100	-552	-658	-643	11100	i
18	11600	-543	-568	-552	11600	

Graph of potentials vs pipelength



CP Form No. 23

Electrical Engineering Unit

Cathodic Protection System Resistivities Recording Form

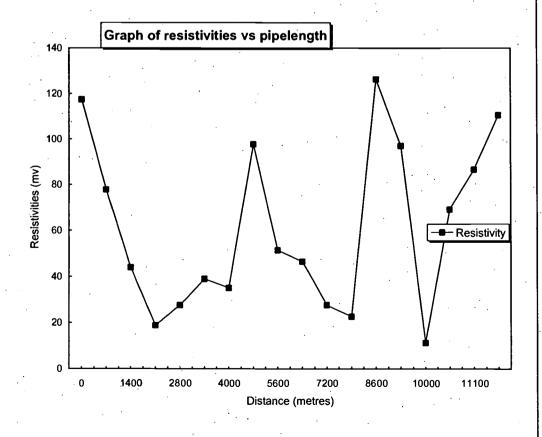
Project Tarragindi to Wynnum Rd. to Lytton Rd. S35 & S54

Date 16th June 2004

Test Point	Distances	Resistivities
number	to T.P.	at 2 metres
	(metres)	ohm metres
1	0	117.4
2	700	77.8
3	1400	43.9
4	1900	18.8
5	2800	27.6
. 6	3400	38.9
7	4000	35.1
8	4800	97.7
9	5600	51.4
10	6400	46.4
11	7200	27.6
12	7900	22.6
13	8600	126.3
14	9200	97
15	10000	11.3
16	10400	69.1
17	11100	86.6
18	11600	110.5

Note. Test Points 1 to 15 are for S54

Test Points 16,17 & 18 are for S35



Revision 21/07/2004

Electrical Engineering Unit

Cathodic Protection System Loop Resistance

Mott Park Rectifier CPS 202

Date: 12th May 2005

Cathodic Protection System:

Tarragindi to Wynnum Rd. S54 Trunk Main

System Operating Volts:

27

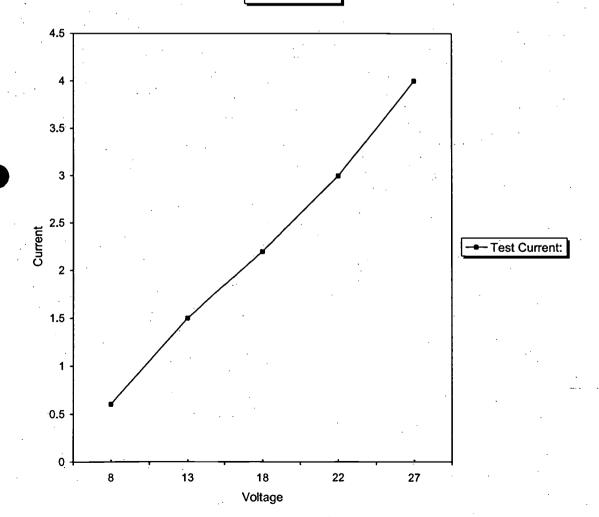
System Operating amps

4

Test Voltage: (volts)		Test Curre	nt:
		(amps)	
8		0.6	
13		1.5	
18		2.2	
, 22		3	
27		4	1

Loop Resistance			
(ohms)			
5			

Loop Resistance



13/05/2005

^

Electrical Engineering Unit

Cathodic Protection System Loop Resistance

Eva St. Rectifier CPS 206

Date: 12th May 2005

Cathodic Protection System:

Tarragindi to Wynnum Rd. S54 Trunk Main

System Operating Volts:

27

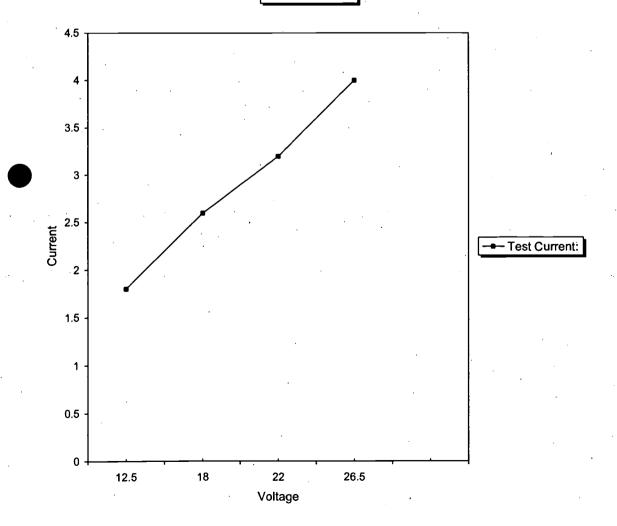
System Operating amps

4.7

Test Voltage:	Test Current:
(volts)	(amps)
12.5	1.8
18	2.6
22	3.2
26.5	4
	. '

Loop Resistance	
(ohms)	
6.875	

Loop Resistance



18/05/2005

FORM 9 V3.01-04



Department of Industrial Relations ABN 52 293 849 579

APPLICATION TO REGISTER A REGISTERABLE CATHODIC PROTECTION SYSTEM PLEASE COMPLETE ALL SECTIONS OF THIS FORM- PLEASE PRINT

Application Deta	ils				٠.			
Name of system owne	r: E	Brisbane City Coun	cil / Bri	sbane Water				
					AB	N 720	02765795	
Postal address:	GPO E	Box 1434 Brisban	e 400	1			•	
Contact name:					TEL			
<u> </u>				<u> </u>		_	_	•
Name of authorised ag	ent of	f system owner:	Brisba	ne Water Network	Serv	ices		
<u> </u>					ABI	N 720	02765795	
Postal Address:	268	Cullen Ave Eagle	Farm 4	1009	_		·	
		·						
	V			<u></u>			•	
Contact Name:	Kerr	y McGovern					<u> </u>	
					TEL	. 07 340	078364	
Type of Application:			_	· · · · · · · · · · · · · · · · · · ·		<u> </u>		. 1
(Tick as appropriate)								
√ N	ew Sys	stem						
	Iteratio	on to an existing sys	tem, Re	gistration No:		_	. :	
<u> </u>	enewa	al of system, Registr	ation No) :				·
Location of system:	From	cnr Tarragindi Rd	& Autun	nn St. Tarragindi to I	Lyttor	Rd near	Metroplex A	ve Murarrie
Carreture to be	Recti	ifier No1(Mott Park)	Abbotsl-	eigh St Holland Pk	POS	ST CODE	4121	
Structure to be protected:	900	mm and 1060 mm	dia Mi	ld Steel Trunk Mair	n			
Maximum operating current:		00 Ampei	res DC	Water or Marine Maximum operat				Volts
		- Allipei		maximum operat	illy v	onage.	<u> </u>	Volts
Declaration			•		; .		; ; ,	
			_	·				·
I/We, being the owner/oregistration of this system					bove,	make ap	plication for	the
(i) I/We have cor (ii) tests pursuant	nplied to sec	with the requiremen	ts of Par	rt 11 of Electrical Sa Regulation 2002, ba	<i>ifety I</i> ased	Regulation	n 2002; aximum ope	rating current
stated this application have been performed; (iii) the maximum operating voltage stated in this application in the case of the system operating with an anode/s								
immersed in water or a marine environment corresponds to the maximum operating current mentioned in paragraph (ii); and								
(iv) any necessary	interfe	erence mitigation me have been tested ar	easures nd are o	for foreign structure perating satisfactoril	s (in 1 ly.	the case	where the sy	stem is
Signature of system ov	vner:	_	_			Day	Month	Year

PRIVACY STATEMENT. The Department of Industrial Relations respects your privacy and is committed to protecting your personal information. The information provided on this form is for the purpose of applying for the registration of a cathodic protections system and monitoring compliance under the Electrical Safety Act 2002, and will be managed within the requirements of Information Standard 42. The Department may be required to disclose your personal information to other government agencies, entities, or persons as may be required by law or that are outsourced functions. This information may also be used for statistical research, information provision and evaluation of our services. We will assume that we have your permission to do this unless you tell us otherwise. You can do this at any time by contacting Equipment Safety on (07) 3237 0281. Further information on our privacy policy is available at www.dir.qld.gov.au

Application of accompany registration fee of \$205.00

Application for systems to be immersed in a marine environment must have technical schedule attached.

Forward to: Electrical Safety Office, LMB 2234 Brisbane Qld 4001

Please note: This is a GST free supply. No tax invoice will be issued.

FORM 9 V3.01-04



Department of Industrial Relations ABN 52 293 849 579

APPLICATION TO REGISTER A REGISTERABLE CATHODIC PROTECTION SYSTEM PLEASE COMPLETE ALL SECTIONS OF THIS FORM- PLEASE PRINT

Application Deta	S						
Name of system owne	r: Brisbane	City Council / Bris	bane Water				
	<u> </u>	•		ABN	7200	2765795	· · · · · · · · · · · · · · · · · · ·
Postal address:	GPO Box 1434	Brisbane 4001					
			·				
Contact name:				TEL			
			<u> </u>				•
Name of authorised ag	gent of system	owner: Brisba	ne Water Network	Service	s	-	
				ABN	7200	2765795	
Postal Address:	268 Cullen A	ve Eagle Farm 4	009				
					_		
Contact Name:	Kerry McGov	/ern					
_		· .		TEL (07 3407	78364	
·							
Type of Application: (Tick as appropriate)	•				-		
	ew System		- · 				_
		existing system, Re	gistration No:	•			
	Renewal of syste	em, Registration No					
From cnr Tarragindi Rd & Autumn St. Tarragindi to Lytton Rd near Metroplex Ave Murarrie							
Location of system:	Rectifier No2 (Majestic Park) Eva St Coorparoo POST CODE 4151						
Structure to be protected: 900 mm and 1060 mm dia Mild Steel Trunk Main							
Maximum operating			Water or Marine				
current:	6.00	Amperes DC	Maximum operati	ng volt	age:	<u> </u>	Volts
Declaration		<u> </u>				· <u>· · · · · · · · · · · · · · · · · · </u>	
Deciaration		*				1 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
I/We, being the owner/oregistration of this system	perators of the o	cathodic protection ith respect to the sy	system described at stem that:	ove, m	ake app	olication for t	he
(ii) tests pursuant	to section 177	of Electrical Safety	t 11 of Electrical Sai Regulation 2002, ba	ety Reg sed on	gulation the ma	2002; ximum opera	ating current
stated this application have been performed:							
(iii) the maximum operating voltage stated in this application in the case of the system operating with an anode/s immersed in water or a marine environment corresponds to the maximum operating current mentioned in							
paragraph (ii); and (iv) any necessary interference mitigation measures for foreign structures (in the case where the system is currently registered) have been tested and are operating satisfactorily.							
Signature of system ov		en lested and are of	eraung saustactorily	′. □ Da'	v	Month	Year
	<u>. L</u>						

PRIVACY STATEMENT. The Department of Industrial Relations respects your privacy and is committed to protecting your personal information. The information provided on this form is for the purpose of applying for the registration of a cathodic protections system and monitoring compliance under the Electrical Safety Act 2002, and will be managed within the requirements of Information Standard 42. The Department may be required to disclose your personal information to other government agencies, entities, or persons as may be required by law or that are outsourced functions. This information may also be used for statistical research, information provision and evaluation of our services. We will assume that we have your permission to do this unless you tell us otherwise. You can do this at any time by contacting Equipment Safety on (07) 3237 0281. Further information on our privacy policy is available at www.dir.qld.gov.au

Application of accompany registration fee of \$205.00

Application for systems to be immersed in a marine environment must have technical schedule attached.

Forward to: Electrical Safety Office, LMB 2234 Brisbane Qld 4001

Please note: This is a GST free supply. No tax invoice will be issued.



Electrical Safety Act 2002

NOTICE OF REGISTRATION OF CATHODIC PROTECTION SYSTEM

Registration No: 3332

Date of Registration:

01 March 2006

Expiry Date:

01 March 2011

The cathodic protection system referred to below has been registered for a term of five years, and the conditions of registration shown hereunder shall apply in addition to the provisions of the Electrical Safety Act and Electrical Safety Regulation 2002.

Name and Postal Address of System Owner	Brisbane City Council Brisbane Water GPO Box 1434 BRISBANE QLD 4001
Location of System	From Cnr Tarragindi Rd and Autum St Tarragindi to Lytton Rd near Metroplex Ave Murarrie Rectifier No1 (Mott Park) Abbotsleigh St Holland Park - Post Code: 4121
Structure to be Protected	Mild Steel Trunk Main

CONDITIONS OF REGISTRATION

Maximum Operating Current:

5.00 Amperes DC

DES EDE

Director – Equipment Safety

21312006



Electrical Safety Act 2002

NOTICE OF REGISTRATION OF CATHODIC PROTECTION SYSTEM

Registration No: 3335

Date of Registration:

01 March 2006

Expiry Date:

01 March 2011

The cathodic protection system referred to below has been registered for a term of five years, and the conditions of registration shown hereunder shall apply in addition to the provisions of the Electrical Safety Act and Electrical Safety Regulation 2002.

Name and Postal Address of System Owner	Brisbane City Council Brisbane Water GPO Box 1434 BRISBANE QLD 4001
Location of System	From Cnr Tarragindi Rd and Autumn St Tarragindi to Lytton Rd near Metroplex Ave Murarrie Recrifier No2 (Majestic Park) Eva St Coorparoo - Post Code: 4151
Structure to be Protected	Mild Steel Tunk Main

CONDITIONS OF REGISTRATION

Maximum Operating Current:

6.00 Amperes DC

DES EDE

Director – Equipment Safety

21312006

Brisbane Water Engineering Services	CP Form No. 27
Electrical Engineering Unit	Eva ST.27V 6 a
Cathodic Protection Interference Survey Results	Form Mott Partzy 5 a.
V	ing Date .5- J- 0 J

	Reading	Test Point	Location	Swing
	1	I. D.	mott Pulk	
On	-1040	 	· ·	-1.1.
Off_	- 394	Lill	Park Loght	-446
On	-830		a	-328
Off	-502	Light	Park Light	77.8
On	-752		0 1 1 . 1 =	200
Off	-570	Light	Park Light	-222
On	-532		Logan Rd	2 / 2
Off	-270	Men	Pole n. 021287	-262
On	-329	·	NAVYE	100
Off	-250	men	Pole no 10836	-19
On	-307		Sexton	
Off	- 303	men	Pole no 32200	O
On	-310		Sexton	.
Off	-310	mon	Pole no 32199	0
On	- 322		Sexton	
Off	-222	Mer	Poleno 39903	0
On	-109		Ferndale	
Off	-109	man	Polens 43890	Ø
On	-687		Fundale	
Off	-683	Men	Poleno 20507	Ø
On	-2.33		Ferndale	
Off -	-233	Men	Poleno 23116	Ø
On	-584		Ferndule	
Off	- 584	men	Pole no 23/17	0
On_	1 '	1	Forndale	
Off	-3-82	men	Pole no 23118 Aberticis	O
On	-424			
Off	-424	non	Poleno 349450 ARIUNStun Poleno 33108	. 0
On	-146		ARIONSTUM	0
Off	-146	Men	Pole no 33108	
		· .		

Brisbane Water Engineering Services	. CP Form No. 27
Electrical Engineering Unit	Eva St 21 V 6 a
Cathodic Protection Interference Survey Results For Larrasin R	orm J Mott Park27V 5 a
$C \rightarrow C$	Date 3-5-05

	Reading	Test Point I. D.	Location	Swing
On	-226		EVUST	·
Off	-175	Men	Pole no 185	-51
On	-414		CHatsworth	
Off	-414	Min	Pole no 26522 Cityview	0
On	-283		CityView	
Off	-289	men	Poleno 9590	46
On	-007		Fergision	
Off	-003	Men	Preno 17735	U
On	-488		Fergision.	
OFF	-382	Men_	Pole no 17734	-106
On	-084		Fergiston	
Off	-084	Mon	Pole no , 29009	-0
On	-240		Fergision	
Off	-240	Men	Pole no 27011	6
On	-011		The Promand	
Off	-011	Men	Polemo 1454	O.
On	-172		The Promand	
Off	-112	men	Pole no ×19640	Ö
On	-12		muin	
Off	-12	Men	Poleno 40265.	6
On			·	
Off				
On				
Off			·	
On		·	· ·	
Off			·	
On				
Off.				
On			•	·
Off	<u> </u>			

TESTED BY P SMY NA

Brisbane Water Engineering Services	CP Form No.18
Electrical Engineering Unit	
	•
Standard Cathodic Protection Test Point Data Gathering Form	· · ·
Project 554 TARRAGINDI TO WYNNUM RD Date 3-11-	- <i>03</i> .
P Location AUTUMN 4 TARRAGINDI RD TP No1.	•••••
Mains Size 1060 mm/ TP Type	S
POTENTIAL TESTING	
CATHODE TO CATHODE RETURN (RESISTANCE)).2 N
ZINC REFERENCE TO PIPE CuSo4 REFERENCE TO PIPE	+ 774 - 419
ZINC TO CuSo4	- 1194
ARTH TESTING	
TEST NO. 1 PIN SPACING 2 RESISTIVITY	117.4 18
MEGGER READING 9.35	
TEST NO 2	•
PIN SPACING RESISTIVITY MEGGER READING	· · · · · · · · · · · · · · · · · · ·
TEST NO 3	
PIN SPACING RESISTIVITY MEGGER READING	
COMMENTS / LOCATION DRAWING	4
1 1 1	
	٠.
PRO ZN E	
V188 PRO ZN RATION	<u>-</u>
UNPRO ZN 3.0 - FENC	E.
60	
TP GARDEN	· · · · · · · · · · · · · · · · · · ·
TARRACINDI RD	
INSTALLED BY L. GREA	·

Revision 09/28/95

Brisbane Water Engineering Services CP Form No.18 Electrical Engineering Unit Standard Cathodic Protection Test Point Data Gathering Form Project Weller's Hill - Mt Gravatt Date 19-4-03 TP Location Weller's Rd Fernvale TP No.2 TP Type ... B X 2. Mains Size POTENTIAL TESTING CATHODE TO CATHODE RETURN (RESISTANCE) ZINC REFERENCE TO PIPE **CuSo4 REFERENCE TO PIPE** ZINC TO CuSo4 EARTH TESTING TEST NO. 1 PIN SPACING RESISTIVITY 77-8 Jpm MEGGER READING Meiler Ry **COMMENTS / LOCATION DRAWING** Trafic Island EFFINGHAM Detail Weller Rd.

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Brisbane Water Engineering Services	CP Form No.18
Electrical Engineering Unit	
Standard Cathodic Protection Test Point Data Gathering Form	
Project S 54 Tarragind) - Wynnum 2 -	7-03
TP Location	•••••
Mains Size 424 to 364 TP Type	••••••
POTENTIAL TESTING	
CATHODE TO CATHODE RETURN (RESISTANCE) ZINC REFERENCE TO PIPE CuSo4 REFERENCE TO PIPE ZINC TO CuSo4	12 JL + 585 -416 - 1111
EARTH TESTING TEST NO. 1 PIN SPACING MEGGER READING 3.5	43.9 SLPM
COMMENTS / LOCATION DRAWING	
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	Brisbane Water Engineering Services CP Form No. 18
	Electrical Engineering Unit
	Standard Cathodic Protection Test Point Data Gathering Form
	Project SJ4 Tavragindi-LynnanDate 10-4-03
	TP Location Sexton. TP No. 4
	Mains Size 42 -3 6 TP Type 13 Pit.
	POTENTIAL TESTING
	CATHODE TO CATHODE RETURN (RESISTANCE)
	ZINC REFERENCE TO PIPE + G 8-9 CuSo4 REFERENCE TO PIPE - 549
	ZINC TO CuSo4
	EARTH TESTING TEST NO. 1 PIN SPACING MEGGER READING Lift /-5 COMMENTS / LOCATION DRAWING
	- Sexton Kenb
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-	Bowling club.
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Brisbane Water Engineering Services	CP Form No.18
Electrical Engineering Unit	
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Standard Cathodic Protection Test Point Data Gathering Forn	
Project Tarragindi Wynnum Date 28	
TP Location Cnt Birdwood + Navy TP No. 5	
Mains Size 42 to 36 TP Type	B Post
POTENTIAL TESTING	
CATHODE TO CATHODE RETURN (RESISTANCE)	0]][
ZINC REFERENCE TO PIPE CuSo4 REFERENCE TO PIPE	+ 590 - 454
ZINC TO CuSo4	-1095
EARTH TESTING	
TEST NO. 1 PIN SPACING 2 RESISTIVITY	n en
PIN SPACING 2 RESISTIVITY MEGGER READING 2-2	21.6 SPn
COMMENTS / LOCATION DRAWING	
	Fence Lina
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	rdwood Rd
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Brisbane Water Engineering	ng Services	CP Form No.18
Electrical Engineering Unit		
Standard Cathodic Protection Tes	st Point Data Gathering Fo	orm
Project S 54 Tarrasindi:	- Wynnum Date 10	-4-03
TP Location Mott Park	TP No	6
Mains Size	TP Type	Reut 15-1-en
POTENTIAL TESTING		
CATHODE TO CATHODE RE		·/S
ZINC REFERENCE TO PIPE CuSo4 REFERENCE TO PIP		+ 585
ZINC TO CuSo4	L	- 1060 - 484
EARTH TESTING		
TEST NO. 1		
PIN SPACING MEGGER READING	Z RESISTIVITY	_ 16-3
TEST NO 2		
PIN SPACING MEGGER READING	RESISTIVITY	
<u>TEST NO 3</u> PIN SPACING	RESISTIVITY	
MEGGER READING	Logan 1	
COMMENTS / LOCATION DRAWING	7	<u>tu</u>
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Brisbane Water Engineering Services	CP Form No.18
Electrical Engineering Unit	
Standard Cathodic Protection Test Point Data Gathering Form	
Project S54 Tarry Indi-Wynnum Date 10-4	0}
TP Location 40 Geelongau TP No. 7	••••••
Mains Size 43'-36 TP Type	
POTENTIAL TESTING	· · · · · · · · · · · · · · · · · · ·
CATHODE TO CATHODE RETURN (RESISTANCE) ZINC REFERENCE TO PIPE CuSo4 REFERENCE TO PIPE ZINC TO CuSo4	•15 +720 -287 -1006
EARTH TESTING TEST NO. 1 PIN SPACING MEGGER READING 2 M RESISTIVITY 3	5.16 APM
COMMENTS / LOCATION DRAWING	
COMMENTS / LOCATION DRAWING Percival	tce
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Brisbane Water Engineering Services	CP Form No.18
Electrical Engineering Unit	. :
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Standard Cathodic Protection Test Point Data Gathering Form	· ·
Project Tarragind - Uynnum Date 28-	10-07
TP Location EVA St in Magestic TP No	8
Mains Size TP Type	В
POTENTIAL TESTING	·
CATHODE TO CATHODE RETURN (RESISTANCE)	*/SL
ZINC REFERENCE TO PIPE CuSo4 REFERENCE TO PIPE	+726 -380
ZINC TO CuSo4	-//00
EARTH TESTING	
TEST NO. 1 PIN SPACING 2 m RESISTIVITY	97.710
MEGGER READING 7.78	· / / / / / / / / / / / / / / / / / / /
COMMENTS / LOCATION DRAWING	
	,
Mag estic Park	•
Park.	
Fence Line	
Kerb X5 TP	
A	
House 72	
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Brisbane Water Engineering Services	CP Form No.18
Electrical Engineering Unit	
Standard Cathodic Protection Test Point Data Gathering Form	
Project Set 54 Tarragindi-Wynnum Date 18-2-	- 04
TP Location Chats worth at ILLIdge TP No.	9
Mains Size 42 - 36 TP Type 3	Post
POTENTIAL TESTING	
ZINC REFERENCE TO PIPE CuSo4 REFERENCE TO PIPE ZINC TO 0.001	15 578 460 1095
EARTH TESTING TEST NO. 1 PIN SPACING MEGGER READING 2 RESISTIVITY 5	1.4 RPM
COMMENTS / LOCATION DRAWING	
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Thidse Ish Main.	
chatsworth INSTALLED BY P SM97	-1-1

Brisbane Water Engineering Services	CP Form No.18
Electrical Engineering Unit	
Standard Cathodic Protection Test Point Data Gathering Form	<u> </u>
Project Tarrag muli To Wynnum Date 10-1	10-03
TP Location Thomas and Prout TP No. 10	•••••••••
Mains Size	Post
POTENTIAL TESTING	
CATHODE TO CATHODE RETURN (RESISTANCE) ZINC REFERENCE TO PIPE CuSo4 REFERENCE TO PIPE ZINC TO CuSo4	115 +443 -650 -1090
EARTH TESTING TEST NO. 1 PIN SPACING MEGGER READING 3-7 RESISTIVITY C	46·4 SCP1
COMMENTS / LOCATION DRAWING	
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Prout	
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Air Valve W Jun OTest Point O Energen	· .
no	46791
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Brisbane Water Engineering Services	CP Form No.18
Electrical Engineering Unit	
Standard Cathodic Protection Test Point Data Gar	thering Form
	Date 28-4-0)
·	TP No. 112
Mains Size 42 - 36	TP Type B Post
POTENTIAL TESTING	
CATHODE TO CATHODE RETURN (RESISTAND ZINC REFERENCE TO PIPE CuSo4 REFERENCE TO PIPE ZINC TO CuSo4	CE)
EARTH TESTING TEST NO. 1 PIN SPACING MEGGER READING 2 • 2	SISTIVITY 27-6 SCPM
COMMENTS / LOCATION DRAWING	
	Old Clearland Rd
	main A Insulated Tool
	F. Insulated
	e Fencel
	Post
Ferguson Rd	
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Brisbane Water Engineering Service	CES CP Form No.18
Electrical Engineering Unit	
Standard Cathodic Protection Test Point Dat	a Gathering Form
Project Tarragindi Wynnan RJ	Date 19 - 4-03
TP Location The Promenade	TP No. 12
Mains Size 42" - 36"	TP Type B. P.+.
POTENTIAL TESTING	
CATHODE TO CATHODE RETURN (RESIS	STANCE) b/J
ZINC REFERENCE TO PIPE CuSo4 REFERENCE TO PIPE	+ 446 -490
ZINC TO CuSo4	- 952
EARTH TESTING	
TEST NO. 1 PIN SPACING MEGGER READING 1.8	RESISTIVITY 22.6 STPF
COMMENTS / LOCATION DRAWING	
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Electrical Engineering Unit	
Standard Cathodic Protection Test Point Data G	Sathering Form
Project	Date
TP Location 511 Davey Rd	TP No
Mains Size	TP Type B Post.
POTENTIAL TESTING	
CATHODE TO CATHODE RETURN (RESISTA ZINC REFERENCE TO PIPE CuSo4 REFERENCE TO PIPE ZINC TO CuSo4	- 1225
EARTH TESTING TEST NO. 1 PIN SPACING MEGGER READING COMMENTS / LOCATION DRAWING	RESISTIVITY 126.35 JU
COMMENTS / LOCATION DRAWING	·
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7	P. Post
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Brisbane Water Engineering Services	CP Form No.18
Electrical Engineering Unit	
Standard Cathodic Protection Test Point Data Gathering Form	UBD 161613
Project S54 Tarragindi - Wynnym Rd. Date	
TP Location Bagette st Sevenhills TP No. 14	*********
Mains Size	.Cost.
POTENTIAL TESTING	
0.0-4 DEFERENCE TO DUDE	· 02.
ZINC TO CuSo4	-448
EARTH TESTING	
TEST NO. 1 PIN SPACING 2 M/s RESISTIVITY 9 MEGGER READING 7.7	97 2mtrs
TEST NO 2 PIN SPACING RESISTIVITY MEGGER READING	
TEST NO 3 PIN SPACING RESISTIVITY MEGGER READING	
COMMENTS / LOCATION DRAWING	
J g	•
BISC	
Baguette St.	
Sc TP	
Wain Deep Diablo	
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Brisbane Water Engineering Services	CP Form No;18
Electrical Engineering Unit	J
	, r
Standard Cathodic Protection Test Point Data Gathering Form	·
Project 534 Tarrasındi - Wynnum Date 3 -	2-04
P Location CAR Wy nnum + Barrack TP No. 15	•••••
Mains Size 42 70 30 TP Type 3	Pit.
	·
POTENTIAL TESTING	,
CATHODE TO CATHODE RETURN (RESISTANCE)	1
	+680
	- 111/
ARTH TESTING	
TEST NO. 1 PIN SPACING 2 RESISTIVITY /	1.3 S. Pm
MEGGER READING - 9 To City	
COMMENTS / LOCATION DRAWING	
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Muin INLINE TO Barr	ack
Pit.	
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Brisbane Water Engineering Services CP Form No.1		
Electrical Engineering Unit		
Standard Cathodic Protection Test Point Data Gathering Form		
Project Set 35 Lynnum RJ.	Date 20-1-04	
TP Location 88 Barrack Rd	TP No/	
Mains Size	TP Type B Cost	
POTENTIAL TESTING	•	
CATHODE TO CATHODE RETURN (RESIST ZINC REFERENCE TO PIPE CuSo4 REFERENCE TO PIPE ZINC TO CuSo4	ANCE) -2 SC + 559 - 585 - 1143	
EARTH TESTING TEST NO. 1 PIN SPACING MEGGER READING	RESISTIVITY 69.08 RPM	
TEST NO 2 PIN SPACING MEGGER READING	RESISTIVITY	
TEST NO 3 PIN SPACING MEGGER READING	RESISTIVITY	
COMMENTS / LOCATION DRAWING		
House 88		
INSTALLED	P. Sm J 1 11.	

Brisbane Water Engineering Servi	CP Form No.18	
Electrical Engineering Unit		
Standard Cathodic Protection Test Point Data Gathering Form		
Project Set 35 Wynnun Rd		
TP Location Car Barracko Ly	Hon TP No. 2	
Mains Size	TP Type B. Post	
POTENTIAL TESTING		
CATHODE TO CATHODE RETURN (REZINC REFERENCE TO PIPE CuSo4 REFERENCE TO PIPE ZINC TO CuSo4	SISTANCE)	
EARTH TESTING TEST NO. 1 PIN SPACING MEGGER READING G-9	RESISTIVITY 66-6 11 CM	
TEST NO 2 PIN SPACING MEGGER READING	RESISTIVITY	
TEST NO 3 PIN SPACING MEGGER READING	RESISTIVITY	
COMMENTS / LOCATION DRAWING		
Barrack		
TP HIS		
	wattle St.	
main.		
INSTALL	ED BY P. SMYTH	

Brisbane Water Engineering Servic	es CP Form No.18
Electrical Engineering Unit	
Standard Cathodic Protection Test Point Dat	a Gathering Form
Project Sct 35 Wynnum RX	Date 22-1-04
TP Location Lytton Rd by Metrop	NEXTP No. 3
Mains Size	TP Type B. Post
POTENTIAL TESTING	
CATHODE TO CATHODE RETURN (RESI	
ZINC REFERENCE TO PIPE CuSo4 REFERENCE TO PIPE	<u>+461</u> -547
ZINC TO CuSo4	-1002
EARTH TESTING	
TEST NO. 1 PIN SPACING	RESISTIVITY 110-5 AP
MEGGER READING 8.8	110 0 511
TEST NO 2	
PIN SPACING MEGGER READING	RESISTIVITY
TEST NO 3 PIN SPACING	RESISTIVITY
MEGGER READING	
COMMENTS / LOCATION DRAWING Metropiex	
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Street Pit.	
Pit.	• • • • • • • • • • • • • • • • • • •
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CP Form No. 21

Electrical Engineering Unit

Insulated Joint Testing Details Form

Isolation 1

Project S54 TARRAGINAL TO WINNUM RD.

Date 3-11-03

DESCRIPTION

MAINS DETAILS: LOCATIONS: SIZE: MATERIAL:

SIZE: MATERIAL: COATING: VALVE No.

TARRAGINDI	TO	WYNA	/UM	RD
TARRAGINDI				
1060 MM				
MILD S				
TAR E	POXY			
V_188				

IN GROUND TESTING

BOLT TO FLANGE RESISTANCE: NUMBER OF BOLT:

FLANGE TO FLANGE RESISTANCE: 35・0 ル INSULATION CHECKER MODEL 702:

POTENTIAL DIFFERENCE TO REFERENCE CELL:

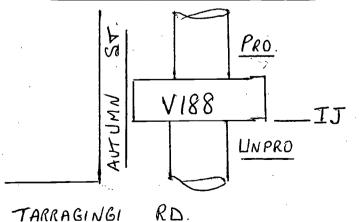
PROTECTED SIDE: UNPROTECTED SIDE:

- 313 MV - 303 MV

ABOVE TESTING

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

COMMENTS / LOCATION DRAWING



TESTED BY L. GREAVES

CP Form No. 21

Electrical Engineering Unit

Insulated Joint Testing Details Form

Isolation 2

Project 554 TARRAGINDI TO WYNNUM RD

Date 4-11-03

DESCRIPTION

MAINS DETAILS:

LOCATIONS:

SIZE:

MATERIAL:

COATING: VALVE No. TARRAGINDI TO WYNNUM RD

AUTUMN ST

1060 MM

MILD STEEL

150 MM RETIC

IN GROUND TESTING

BOLT TO FLANGE RESISTANCE:

ALL > 1.5 MSV

NUMBER OF BOLT:

FLANGE TO FLANGE RESISTANCE:

INSULATION CHECKER MODEL 702:

POTENTIAL DIFFERENCE TO REFERENCE CELL.

PROTECTED SIDE:

- 394 MV - 371 MV

UNPROTECTED SIDE:

ABOVE TESTING

BOLT TO FLANGE RESISTANCE:

NUMBER OF BOLTS:

FLANGE TO FLANGE RESISTANCE:

COMMENTS / LOCATION DRAWING

150 MM. V188 TI AUTUMN ST.

TESTED BY L. GREAVES

Ji ISDAI	ne Water Engineering Services CP Form No.
lectrical l	Engineering Unit
nsulated	d Joint Testing Details Form
Project .1.	arragindi - Wynnum Date 17-2-04 Isolation 3
ESCRIPT	<u>rion</u>
	MAINS DETAILS: LOCATIONS: SIZE: MATERIAL: COATING: VALVE No. Tarragindi Kd J Autum Rd Tarragind Kd J Autum Rd Tarragind Kd J Autum Rd Tarragind Kd J Autum Rd Tarragi
N GROUN	ID TESTING
	BOLT TO FLANGE RESISTANCE: NUMBER OF BOLT: FLANGE TO FLANGE RESISTANCE: INSULATION CHECKER MODEL 702: POTENTIAL DIFFERENCE TO REFERENCE CELL:
	PROTECTED SIDE: -375 UNPROTECTED SIDE: -250
BOVE TE	<u>ESTING</u>
	BOLT TO FLANGE RESISTANCE: all Bolt 7200 1. NUMBER OF BOLTS: FLANGE TO FLANGE RESISTANCE: 70KJ
OMMENT	TS / LOCATION DRAWING
	Valve 254 autum Rd

Brisbane Water Engineering Services	CP Form No. 21
Electrical Engineering Unit	
Insulated Joint Testing Details Form	tin. no 3a
	-10-03
DESCRIPTION	
- MAINS DETAILS: LOCATIONS: SIZE: MATERIAL: COATING: VALVE No. MAINS DETAILS: andrew + Ferndale 42 to 36 4 Mild Steel 9" Branch	
N GROUND TESTING	,
BOLT TO FLANGE RESISTANCE: NUMBER OF BOLT: FLANGE TO FLANGE RESISTANCE: INSULATION CHECKER MODEL 702: POTENTIAL DIFFERENCE TO REFERENCE CELL.	
PROTECTED SIDE: -250 mv UNPROTECTED SIDE: -150 mv	
ABOVE TESTING	
BOLT TO FLANGE RESISTANCE: NUMBER OF BOLTS: FLANGE TO FLANGE RESISTANCE:	
OMMENTS / LOCATION DRAWING	•
andrew	
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Branch TESTED BY P. SM	lule.

	gineering Services CP Fo	m No. 2
Electrical Engineering Unit		
Insulated Joint Testing [Details Form	
Project Wellers hill -	MT Gravatt Date 19-4-0	
DESCRIPTION	13016TV	3h 7
MAINS DETAILS: LOCATIONS: SIZE:	Intercetions as below	:
MATERIAL: COATING: VALVE No.	Tar asbestos	
N GROUND TESTING	-	
DOTENTIAL DIESE	T: 26 of 42" x1" IGE RESISTANCE: 0.7 m.Q. CKER MODEL 702: 1 N 11	
(8)	RENCE TO REFERENCE CELL:	
6	3.8. Pit Trafic Island Dit EFFINGHA	- INI
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Buspa	ne Water Engineering Services	CP Form No
Electrical	Engineering Unit	
Insulate	d Joint Testing Details Form	
Project		-7-03
DESCRIP	NOF	
	MAINS DETAILS: LOCATIONS: SIZE: MATERIAL: COATING: VALVE No. MO 46 Effingham 42"-3C" MILD Steel 16"BR. 796	,
IN GROUN	<u>D TESTING</u>	
	BOLT TO FLANGE RESISTANCE: NUMBER OF BOLT: FLANGE TO FLANGE RESISTANCE: INSULATION CHECKER MODEL 702: A / A	720al
	PROTECTED SIDE:	
ABOVE TE	UNPROTECTED SIDE:	
ABOVE IE		
	BOLT TO FLANGE RESISTANCE: NUMBER OF BOLTS: FLANGE TO FLANGE RESISTANCE:	<u> </u>
COMMENT	S/LOCATION DRAWING Yalve 196	
	S/LOCATION DRAWING Yalve 74.5 Torsulated	
ngham :	Marn	5
J	House 46 6	
	 	104
	TESTED BY P. SI	Fence

Brisbane Water Engineering Services	CP Form No. 2
Electrical Engineering Unit	
nsulated Joint Testing Details Form	
Project S54 Date 28-	4-07 Solation 7
DESCRIPTION	
- MAINS DETAILS: LOCATIONS: SIZE: MATERIAL: COATING: VALVE No.	nam 15.
N GROUND TESTING	
BOLT TO FLANGE RESISTANCE: all Bolts - 200 NUMBER OF BOLT: FLANGE TO FLANGE RESISTANCE: 66 m JL INSULATION CHECKER MODEL 702: N/A	
POTENTIAL DIFFERENCE TO REFERENCE CELL.	
PROTECTED SIDE: —549 UNPROTECTED SIDE: —447	
ABOVE TESTING	
BOLT TO FLANGE RESISTANCE: NUMBER OF BOLTS: FLANGE TO FLANGE RESISTANCE:	· · · · · · · · · · · · · · · · · · · ·
COMMENTS / LOCATION DRAWING Sexton. Kerb	
Insulated Johns	
J.P. Snaw	
TESTED BY PONT	

Brisbane Water Engineering Services	CP Form No. 21
Electrical Engineering Unit	
Insulated Joint Testing Details Form	
	-4-03 lating 8
DESCRIPTION	•
MAINS DETAILS: LOCATIONS: SIZE: MATERIAL: COATING: VALVE No. MAINS DETAILS: Tarragindi to by 42-36" Merrell St Mild Steel G" Br	nnum
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	7200S
BOLT TO FLANGE RESISTANCE: NUMBER OF BOLTS: FLANGE TO FLANGE RESISTANCE:	
COMMENTS/LOCATION DRAWING Insulated Joseph Mass	<u>~</u> 5 7 2 m
House 8 Drive way	<u> </u>
FenceLine TESTED BY P. Sm	9111

Brisbane Water Engineering Services	CP Form No. 21
Electrical Engineering Unit	
Insulated Joint Testing Details Form	Isoktion 9
Project Tarragindi - Wynnum Date	28-10-03
DESCRIPTION	
MAINS DETAILS: LOCATIONS: SIZE: MATERIAL: COATING: VALVE No. MAINS DETAILS: L2 S Wain St 42" - 36" M7 (d Steel 6" Branch,	
IN GROUND TESTING	
NUMBER OF BOLT: 12	 _
ABOVE TESTING	
BOLT TO FLANGE RESISTANCE: NUMBER OF BOLTS: FLANGE TO FLANGE RESISTANCE:	
COMMENTS / LOCATION DRAWING	
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Howe 42.	P. Snyth.

Brisbane Water Engineering S	Services CP Form No. 21
Electrical Engineering Unit	
Insulated Joint Testing Details Form	
Project 5 54	Date 14 - 4 -07 ISOLATIA 10
DESCRIPTION	
- MAINS DETAILS: Jarra of LOCATIONS: 11601: 42- MATERIAL: COATING: VALVE No.	sleigh + cavendish Rd
IN GROUND TESTING	
BOLT TO FLANGE RESISTANCE: NUMBER OF BOLT: FLANGE TO FLANGE RESISTANCE INSULATION CHECKER MODEL 70 POTENTIAL DIFFERENCE TO REF	02: N/A
PROTECTED SIDE: UNPROTECTED SIDE:	<u>-414</u> <u>-356</u>
ABOVE TESTING	
BOLT TO FLANGE RESISTANCE: NUMBER OF BOLTS: FLANGE TO FLANGE RESISTANCE	<u> </u>
COMMENTS / LOCATION DRAWING	cavendish Rd
•	abbotsleigh
5 made	
	TESTED BY P. SMYTH
evision 01/29/96	प्र

Brisba	ane Water Engineering Services	CP Form No. 21
Electrical	l Engineering Unit	
Insulate	ed Joint Testing Details Form	ation 10a
Project <u>.1</u>	Cavragindi - Lynnum Date 28	-10-03
<u>DESCRIP</u>	TION	
•	MAINS DETAILS: LOCATIONS: SIZE: MATERIAL: COATING: VALVE No. MAINS DETAILS: Arlington St. Arlington St.	
<u>IN GROUN</u>	ND TESTING	
	BOLT TO FLANGE RESISTANCE: NUMBER OF BOLT: FLANGE TO FLANGE RESISTANCE: STANCE: TO FLANGE RESISTANCE: STANCE: TO FLANGE RESISTANCE: FLANGE TO FLANGE RESISTANCE: FLANGE TO FLANGE RESISTANCE: TO FLANGE TO FLANGE RESISTANCE: POTENTIAL DIFFERENCE TO REFERENCE CELL.	<u> </u>
	PROTECTED SIDE: -465 MV UNPROTECTED SIDE: -415 MV	
ABOVE TE	<u>ESTING</u>	
	BOLT TO FLANGE RESISTANCE: NUMBER OF BOLTS: FLANGE TO FLANGE RESISTANCE:	
COMMENT ———	TS/LOCATION DRAWING House 29	
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	TESTED BY	msTH.

Brisbane Water Engineering Services	CP Form No. 21
Electrical Engineering Unit	
Insulated Joint Testing Details Form	
	Isolation nos 11
Project Turragindi to wynnum Date . 2.	8-10-03
DESCRIPTION	
- MAINS DETAILS:	· · · · · · · · · · · · · · · · · · ·
LOCATIONS: Eva St SIZE: 42" to 30"	
SIZE: 42" to 36" MATERIAL: MITA Steel	
COATING:	
VALVE No. 9" Branch	
N GROUND TESTING	
FLANGE TO FLANGE RESISTANCE: 200 J INSULATION CHECKER MODEL 702: N / A POTENTIAL DIFFERENCE TO REFERENCE CELL. PROTECTED SIDE:	mv mv
BOLT TO FLANGE RESISTANCE: NUMBER OF BOLTS: FLANGE TO FLANGE RESISTANCE:	
OMMENTS / LOCATION DRAWING	
main	Fence line
For Kerb Est.	
House 72	

Brisbane Water Engineering Services	CD Form No. 04
Electrical Engineering Unit	CP Form No. 21
Insulated Joint Testing Details Form Solar	TION 121.
Project 5 54 Tavra Gindi wynnum Date 16-	3-04
DESCRIPTION	
- MAINS DETAILS: LOCATIONS: SIZE: MATERIAL: COATING: VALVE No. Cnr ILLIDGE + Cho 42"-36" 42"-36" 7/A.	45 worth.
IN GROUND TESTING	
BOLT TO FLANGE RESISTANCE: NUMBER OF BOLT: FLANGE TO FLANGE RESISTANCE: INSULATION CHECKER MODEL 702: DOTENTIAL DISSERBINGS TO DESCRIPTION OF THE PROPERTY	2005
POTENTIAL DIFFERENCE TO REFERENCE CELL.	
PROTECTED SIDE: — 430 mV UNPROTECTED SIDE: — 430 mV	
ABOVE TESTING	
BOLT TO FLANGE RESISTANCE: NUMBER OF BOLTS: FLANGE TO FLANGE RESISTANCE:	
COMMENTS / LOCATION DRAWING	
Value Mair. CHats worth Mair. TESTED BY P. SI	4474
LLIDGE STED BY	
House 55	•

Brisbane Water Engineering Services	CP Form No. 21
Electrical Engineering Unit	
Insulated Joint Testing Details Form	
	Isolative 13
Project Sch 54 Tarragindi - wynnum Date!	
DESCRIPTION	,
MAINS DETAILS: LOCATIONS: SIZE: Chadsworth & B	oundary
MATERIAL: COATING: VALVE No. 12" Br	
IN GROUND TESTING	
NUMBER OF BOLT: FLANGE TO FLANGE RESISTANCE: NUMBER OF BOLT: 12 NUMBER OF BOLT: 12 NUMBER OF BOLT: 12 NUMBER OF BOLT: NUMBER OF BOLT:	
PROTECTED SIDE: -50 UNPROTECTED SIDE: -40	
ABOVE TESTING	
BOLT TO FLANGE RESISTANCE: NUMBER OF BOLTS: FLANGE TO FLANGE RESISTANCE:	
COMMENTS / LOCATION DRAWING	
Chartsworth	
Main)	
Boundary TESTED BY P.	SMYTH

Brisbane Water Engineer	ring Services	CP Form No. 21
Electrical Engineering Unit		
Insulated Joint Testing Details F	orm	9
Project Tavyragindi To h	Jynnum Date 14- 180LATI	-10-03 ON Nº14
DESCRIPTION		
	S54 Prout + THomas. 42° to 36" Mild Steel.	
IN GROUND TESTING		·
BOLT TO FLANGE RESISTA NUMBER OF BOLT: FLANGE TO FLANGE RESIS INSULATION CHECKER MO	STANCE: 2-5 m SC DDEL 702: N/A	<u>200</u> Sl
PROTECTED SIDE: UNPROTECTED SIDE:	<u> </u>	
ABOVE TESTING		
BOLT TO FLANGE RESISTAN NUMBER OF BOLTS: FLANGE TO FLANGE RESIST COMMENTS / LOCATION DRAWING		
Alve	Prout.	
	TESTED BY P. S	my-11

THOMAS.

Brisbane Water Engineering Services	CP Form No. 21
Electrical Engineering Unit	· ·
Insulated Joint Testing Details Form	
Project <u>S 54</u> Date <u>28-1</u> ISola +	U-03
DESCRIPTION	
- MAINS DETAILS: LOCATIONS: SIZE: MATERIAL: COATING: VALVE No.	
IN GROUND TESTING	•
BOLT TO FLANGE RESISTANCE: NUMBER OF BOLT: FLANGE TO FLANGE RESISTANCE: INSULATION CHECKER MODEL 702: POTENTIAL DIFFERENCE TO REFERENCE CELL.	<u>2005</u>
PROTECTED SIDE: -550 mv UNPROTECTED SIDE: -386 mv	
ABOVE TESTING	
BOLT TO FLANGE RESISTANCE: NUMBER OF BOLTS: FLANGE TO FLANGE RESISTANCE:	
COMMENTS / LOCATION DRAWING	
maring grand. Old Clevela-	
City View RA TESTED BY P SMY	1+14

Brisbane Water Engineering Services	CP Form No. 21
Electrical Engineering Unit	
Insulated Joint Testing Details Form	
Project S54 Tarragindi-Lynnam. Date 29-	4-03
DESCRIPTION	
MAINS DETAILS: LOCATIONS: SIZE: MATERIAL: COATING: VALVE No.	
IN GROUND TESTING	-
BOLT TO FLANGE RESISTANCE: NUMBER OF BOLT: FLANGE TO FLANGE RESISTANCE: INSULATION CHECKER MODEL 702: POTENTIAL DIFFERENCE TO REFERENCE CELL.	<u>vo J</u> L
PROTECTED SIDE: -593 MV UNPROTECTED SIDE: -573. MV	·:
ABOVE TESTING	
BOLT TO FLANGE RESISTANCE. NUMBER OF BOLTS: FLANGE TO FLANGE RESISTANCE.	
COMMENTS / LOCATION DRAWING	
Old Clearly Mair e FINSHotel ton Post. Test Pent School.	Fence Like
TESTED BY P SM	7th.

Brisbane Water Engineering Services	CP Form No. 21
Electrical Engineering Unit	
Insulated Joint Testing Details Form	
Project <u>S 5 4</u> Date	29-4-03 Isolation 17
DESCRIPTION	•
MAINS DETAILS: Tarragindi Wynr LOCATIONS: Chr The Promenade SIZE: 42° - 36° MATERIAL: MIId Steel COATING: VALVE No. 9° Branch	
IN GROUND TESTING	
NUMBER OF BOLT: FLANGE TO FLANGE RESISTANCE: 2 K SC INSULATION CHECKER MODEL 702: N/A POTENTIAL DIFFERENCE TO REFERENCE CELL. PROTECTED SIDE: -413 UNPROTECTED SIDE: -34	7200SL
ABOVE TESTING	
BOLT TO FLANGE RESISTANCE: NUMBER OF BOLTS: FLANGE TO FLANGE RESISTANCE:	· · · · · · · · · · · · · · · · · · ·
COMMENTS / LOCATION DRAWING	
The Pronenade	
Insulated Test	
TESTED BY	Stanly

Brisbane Water Engineering	Services CP Form No. 21
Electrical Engineering Unit	5 , 7, 5, 11, 11, 12, 12, 12, 12, 12, 12, 12, 12
Liounda Lingineering Offic	
Insulated Joint Testing Details Form	Isolution no 18
Project S.54	Date /5 - 4 - 63
DESCRIPTION	
LOCATIONS: 511 SIZE: 42" MATERIAL: Milo COATING:	36
IN GROUND TESTING	
BOLT TO FLANGE RESISTANCE: NUMBER OF BOLT: FLANGE TO FLANGE RESISTANCE INSULATION CHECKER MODEL 7 POTENTIAL DIFFERENCE TO REI PROTECTED SIDE: UNPROTECTED SIDE:	CE: •25 m SC 702: N/A
ABOVE TESTING	
BOLT TO FLANGE RESISTANCE: NUMBER OF BOLTS: FLANGE TO FLANGE RESISTANC	E:
COMMENTS / LOCATION DRAWING	10
	Insulated Joint Darcy Rd
·	TESTED BY P. SMYTH

Brisbane Water Engineering Services	CP Form No. 21
Electrical Engineering Unit	
Insulated Joint Testing Details Form	lation 19
Project S54 Tarragind - Lynnum Date 28-	10-03
DESCRIPTION	
MAINS DETAILS: LOCATIONS: 534 Darcy Rd SIZE: 42"-36" MATERIAL: 70" Cd Steet COATING: VALVE No. 9" Branch	
IN GROUND TESTING	
BOLT TO FLANGE RESISTANCE: 7 All BOLH NUMBER OF BOLT: 12 FLANGE TO FLANGE RESISTANCE: 875 m JL INSULATION CHECKER MODEL 702: 4/5 POTENTIAL DIFFERENCE TO REFERENCE CELL. PROTECTED SIDE: -410 m V	
ABOVE TESTING	
BOLT TO FLANGE RESISTANCE: NUMBER OF BOLTS: FLANGE TO FLANGE RESISTANCE:	<u>. </u>
COMMENTS / LOCATION DRAWING	
Ease Ment.	
Davcy RJ. TESTED BY	

Brisbane Water En	gineering Services	CP Form No. 21
Electrical Engineering Unit		
Insulated Joint Testing I	Details Form	
Project Tarragindi - M	Viennom kd. Date !!!-	-11-03
DESCRIPTION	(5	solation 20
MAINS DETAILS: LOCATIONS:	S54 Richmand + Muir Rd.	<u> </u>
SIZE: MATERIAL: COATING: VALVE No.	M BCL Tar Asbestos	
IN GROUND TESTING		
INSULATION CHE	T: 8 IGE RESISTANCE: 17 -2- CKER MODEL 702: 1 N 1/ ERENCE TO REFERENCE CELL.	
ABOVE TESTING		
BOLT TO FLANGE NUMBER OF BOLT FLANGE TO FLANG	TS:	· · · · · · · · · · · · · · · · · · ·
COMMENTS / LOCATION DRA		•
12" Take off 5	S LAND	
	TESTED BY Jag	Richmond ST
	TESTED BY Jag	Hor

Brisbane Water Engineering Services	CP Form No. 21
Electrical Engineering Unit	
Insulated Joint Testing Details Form	olation 21
Project Tarragindi - Wynnum. Date 30-	
DESCRIPTION	
MAINS DETAILS: LOCATIONS: SIZE: MATERIAL: COATING: VALVE No. MAINS DETAILS: Cnr Muir & wynnu 42"-36" Mild Steel T/E VALVE No.	<u>~</u>
IN GROUND TESTING	
BOLT TO FLANGE RESISTANCE: UN BOLK 72 NUMBER OF BOLT: FLANGE TO FLANGE RESISTANCE: 69 KJ INSULATION CHECKER MODEL 702: N/A POTENTIAL DIFFERENCE TO REFERENCE CELL. PROTECTED SIDE: - 460 mV UNPROTECTED SIDE: - 380 mV	<u>00 J</u>
ABOVE TESTING	
BOLT TO FLANGE RESISTANCE: NUMBER OF BOLTS: FLANGE TO FLANGE RESISTANCE:	
COMMENTS / LOCATION DRAWING	
	 -
Mulk 3mit 12" Brown	
Wynnun	
TESTED BY	MYTH

	ne Water Engineering Services	CP Form No. 21
Electrical	Engineering Unit	
Insulated	d Joint Testing Details Form	plation no 22
Project S.	54 Tarray Indi To Lynnum Date 11	11-03.
DESCRIP	TION	
•	MAINS DETAILS: LOCATIONS: SIZE: MATERIAL: COATING: MAINS DETAILS: Chr Muir + Wynnui 42° to 36° Mild Steel	n Ru
	VALVE No. 12" Branch ID TESTING	
	NUMBER OF BOLT: FLANGE TO FLANGE RESISTANCE: INSULATION CHECKER MODEL 702: POTENTIAL DIFFERENCE TO REFERENCE CELL: PROTECTED SIDE: UNPROTECTED SIDE: - 485 mv UNPROTECTED SIDE: - 310 mv	THE COMMERCE CONTRACT OF THE CONTRACT OF THE COMMERCE CONTRACT OF THE CONTRACT OF THE COMMERCE CONTRACT OF THE COMMERCE CONTRACT OF THE CONTRACT OF T
ABOVE TE	The state of the s	The second secon
	BOLT TO FLANGE RESISTANCE: NUMBER OF BOLTS: FLANGE TO FLANGE RESISTANCE:	
COMMEN	S / LOCATION DRAWING	
	12" Plans	Barrack

.

Wynnum Rd

· ·	
Brisbane Water Engineering S	ervices CP Form No. 21
Electrical Engineering Unit	
Insulated Joint Testing Details Form	ISOLATION Nº 24
Project S.c.I. 53 Murv To North of	Mc Date 13-3-04
DESCRIPTION	
MATERIAL: MITA	d Steel
IN GROUND TESTING	
BOLT TO FLANGE RESISTANCE: NUMBER OF BOLT: FLANGE TO FLANGE RESISTANCE INSULATION CHECKER MODEL 702 POTENTIAL DIFFERENCE TO REFE PROTECTED SIDE: UNPROTECTED SIDE: UNPROTECTED SIDE: BOLT TO FLANGE RESISTANCE: NUMBER OF BOLTS:	200 N 2: N/A
FLANGE TO FLANGE RESISTANCE	
COMMENTS / LOCATION DRAWING	wynnum Rd
	203
	Value 203 Barrack
·	TESTED BY P. SMYTH

CP Form No. 23

Electrical Engineering Unit

Cathodic Protection System Potential Recording Form

Project

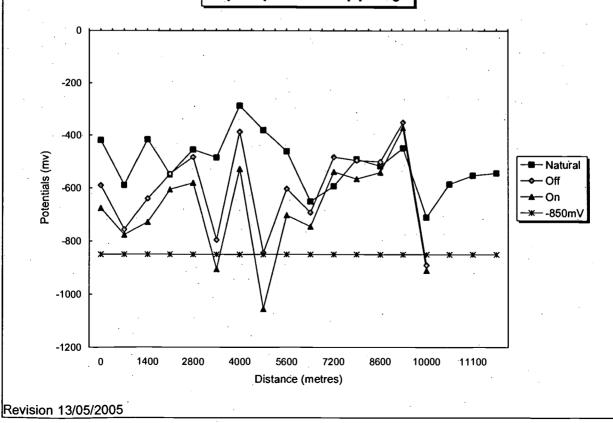
Tarragindi to Wynnum Rd.to Lytton Rd S35&S54

Date 16th June 2004

Test Point Nos 1 to 15 are S54 and Test Points 16 to 18 are S35

Test Point	Distances	Pote	ntials to CuS	604		
number	to T.P.	Natural	Off	On	Distance	
	(metres)	(mV)	(mV)	(mV) .		
1	0	-419	-590	-676	0	
2	700	-589	-756	-776	700	
3	1400	416	-640	-728	1400	
4	1900	549	-546	-605	1900	Rectifiers at
5	2800	-454	-482	-580	2800	TPs.No6&8
6	3400	-484	-795	-905	3400	
. 7	4000	-287	-386	-527	4000	
8	4800	-380	-844	-1055	4800	
9	5600	-460	-602	-702	5600	
10	6400	-650	-692	-745	6400	:
11	7200	-593	-482	-538	7200	
12	7900	-490	-495	-565	7900	
13	8600	-516	-500	-540	8600	
14	9200	-448	-350	-371	9200	
15	10000	-710	-890	-910	10000	·
16	10400	-585			10400	
17	11100	-552			11100	
18	11600	-543			11600	,

Graph of potentials vs pipelength



CP Form No. 23

Electrical Engineering Unit

Cathodic Protection System Resistivities Recording Form

Project

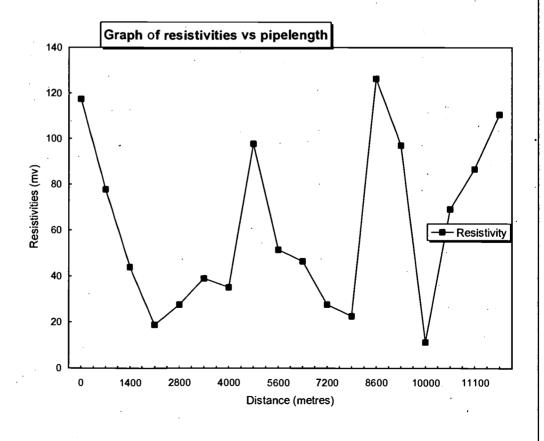
Tarragindi to Wynnum Rd. to Lytton Rd. S35 & S54

Date 16th June 2004

Test Point	Distances	Resistivities	
number	to T.P.	at 2 metres	
	(metres)	ohm metres	
1	0	117.4	
2	700	77.8	
3	1400	43.9	
4	1900	18.8	
5	2800	27.6	
6	3400	38.9	
7	4000	35.1	
8	4800	97.7	
9	5600	51.4	
10	6400	46.4	
11	7200	27.6	
12	7900	22.6	
13	8600	126.3	
14	9200	97	
15	10000	11.3	
16	10400	69.1	
17	11100	86.6	
18	11600	110.5	

Note. Test Points 1 to 15 are for S54

Test Points 16,17 & 18 are for S35



Revision 21/07/2004

Electrical Engineering Unit

Cathodic Protection System Loop Resistance

Mott Park Rectifier CPS 202

Date: 12th May 2005

Cathodic Protection System:

Tarragindi to Wynnum Rd. S54 Trunk Main

System Operating Volts:

27

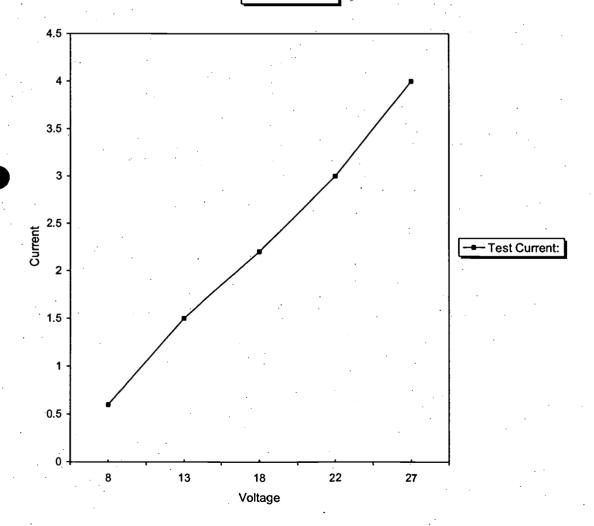
System Operating amps

4

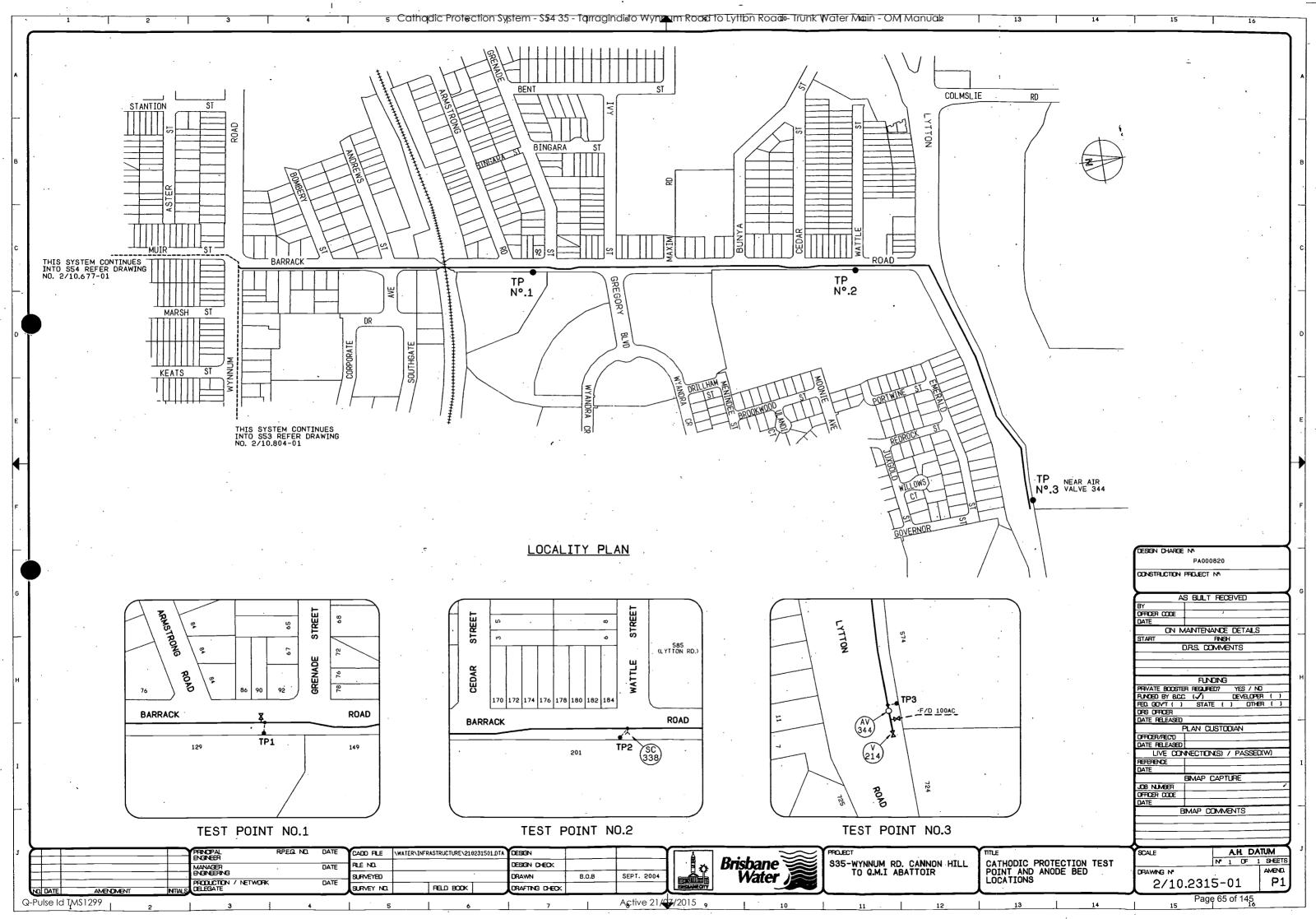
Test Voltag	e:	Test Current:	
(volts)		(amps)	
8		0.6	
13.		¹ 1.5	
18		2.2	
22		3	
27		4	

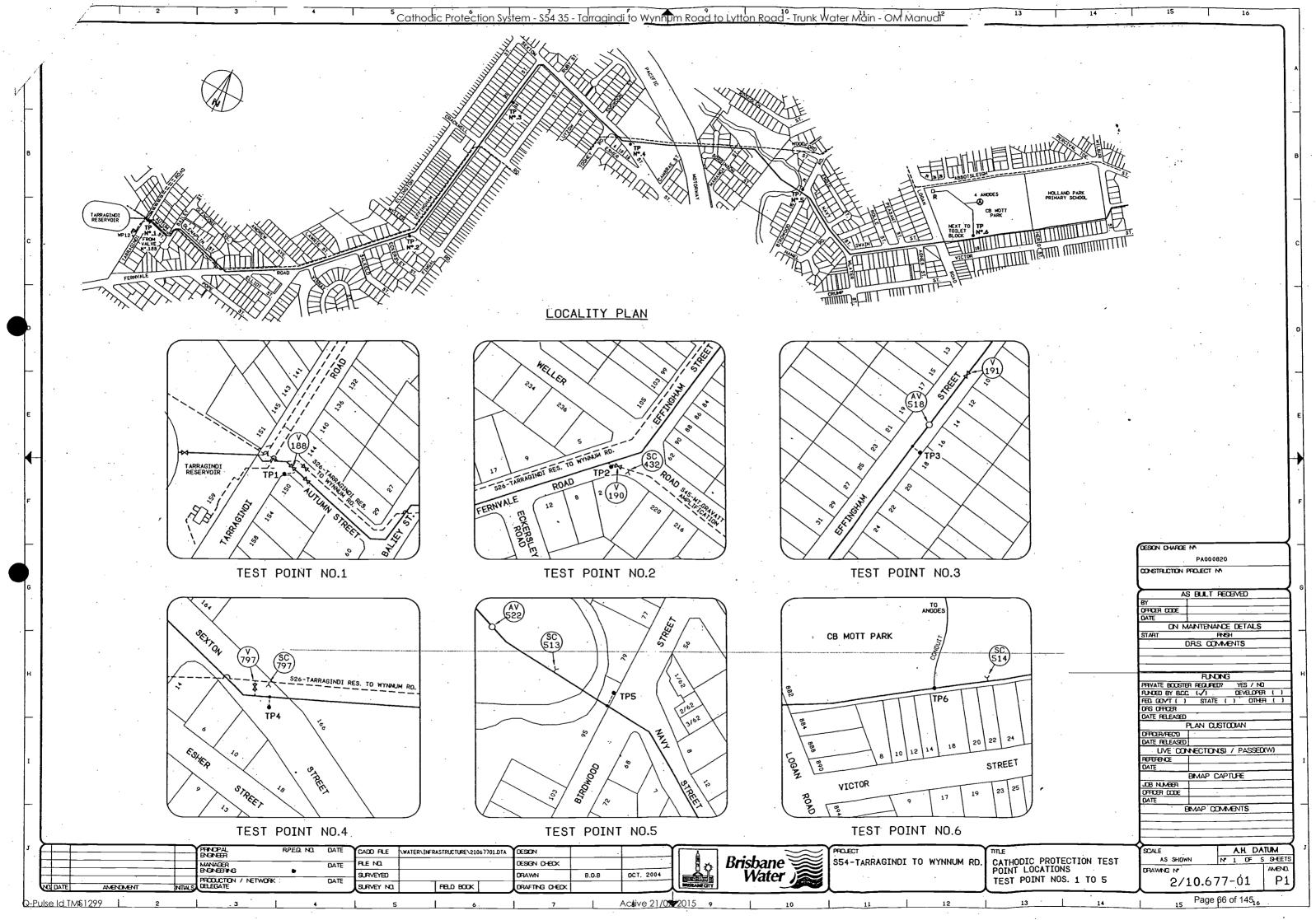
Γ	Loop Resistance		
L	(ohms)		
Γ			
1	5		

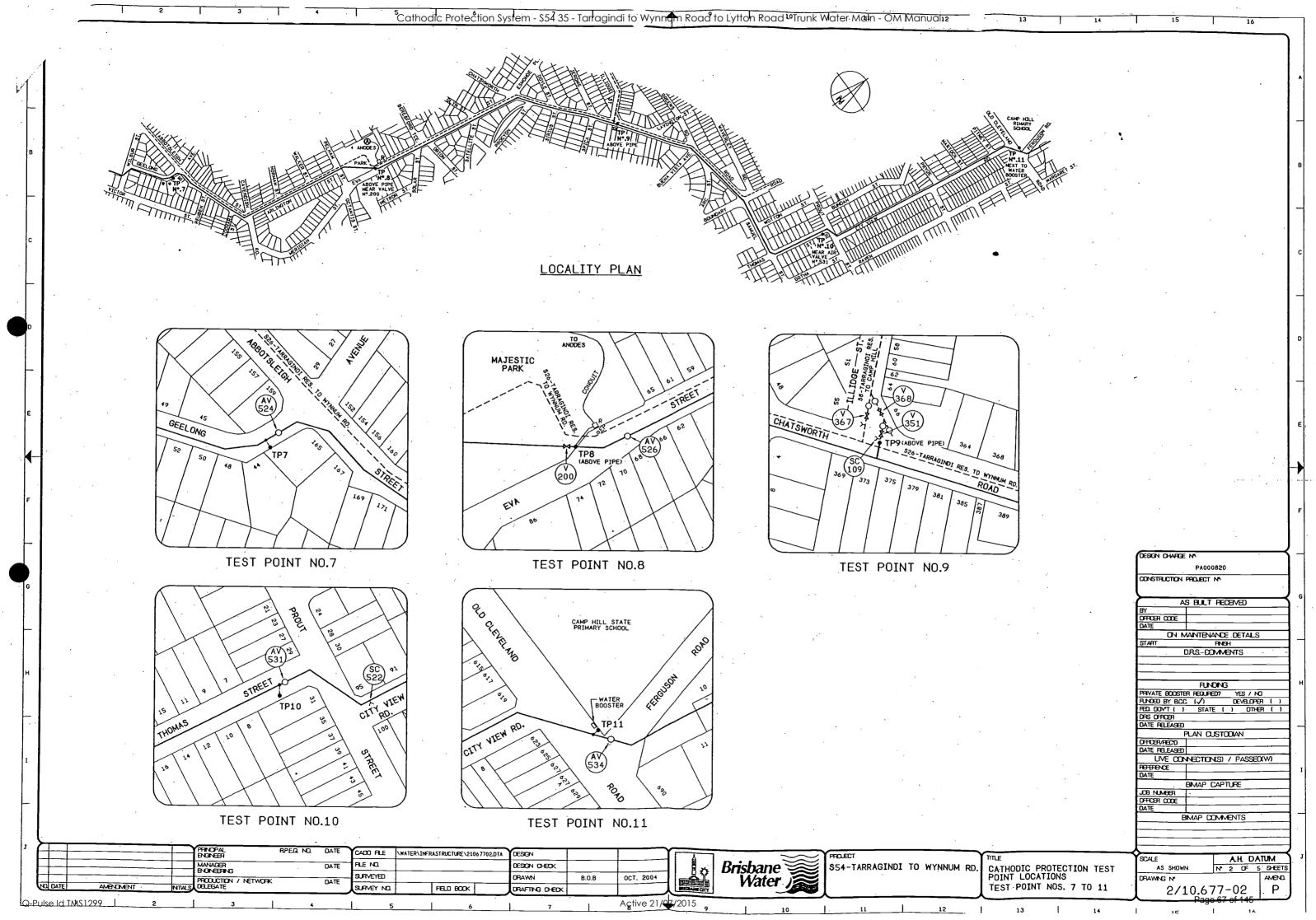
Loop Resistance

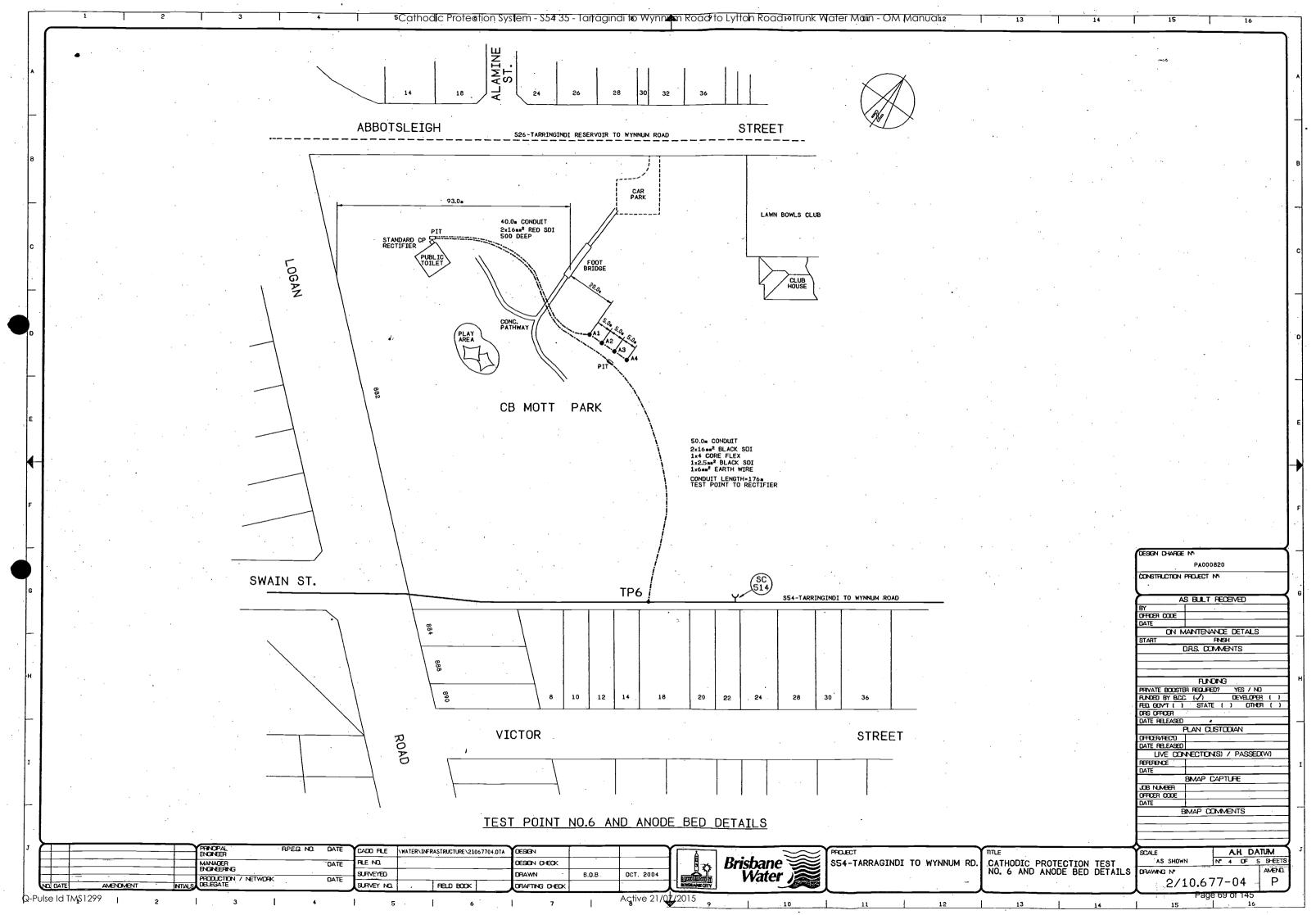


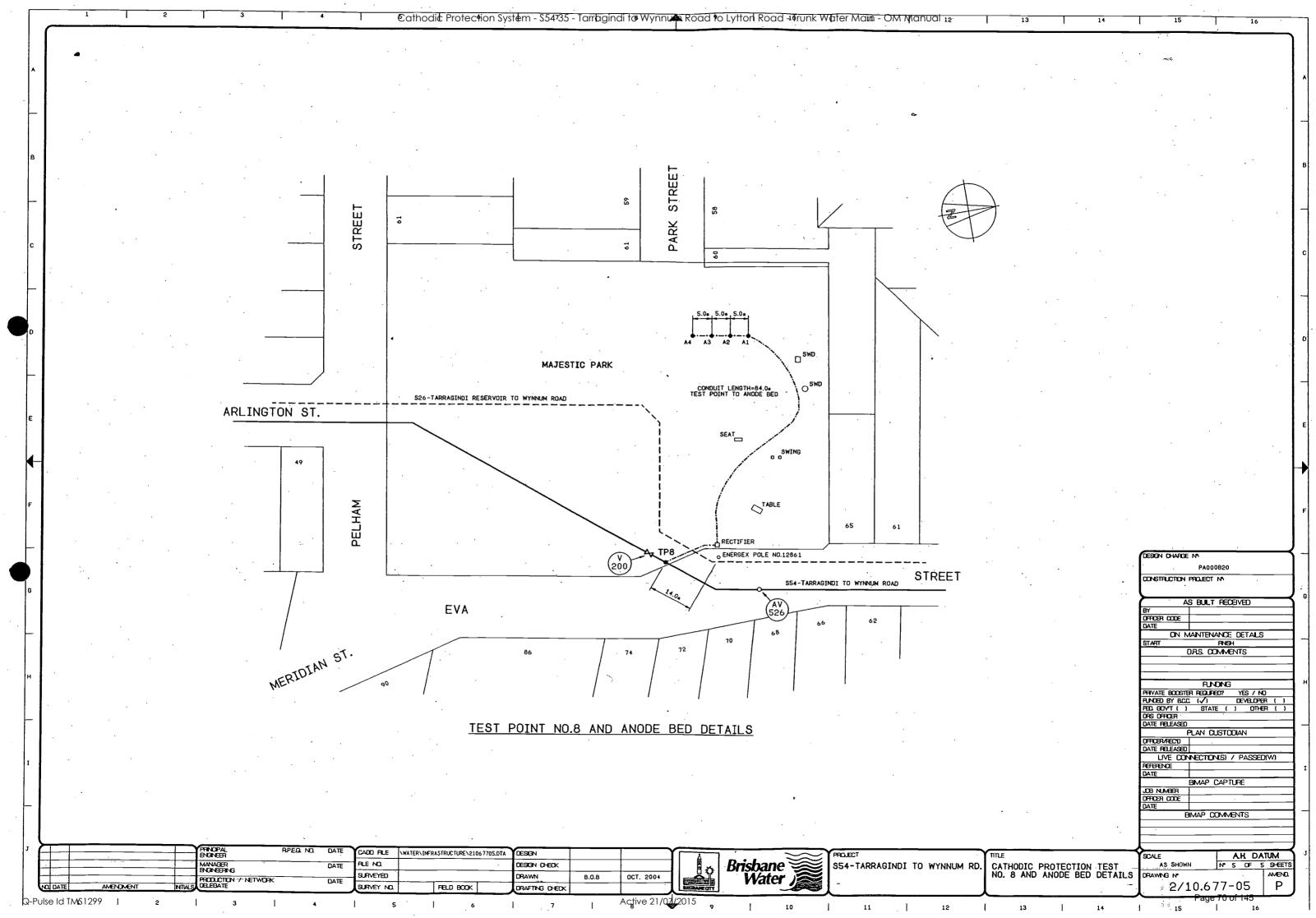
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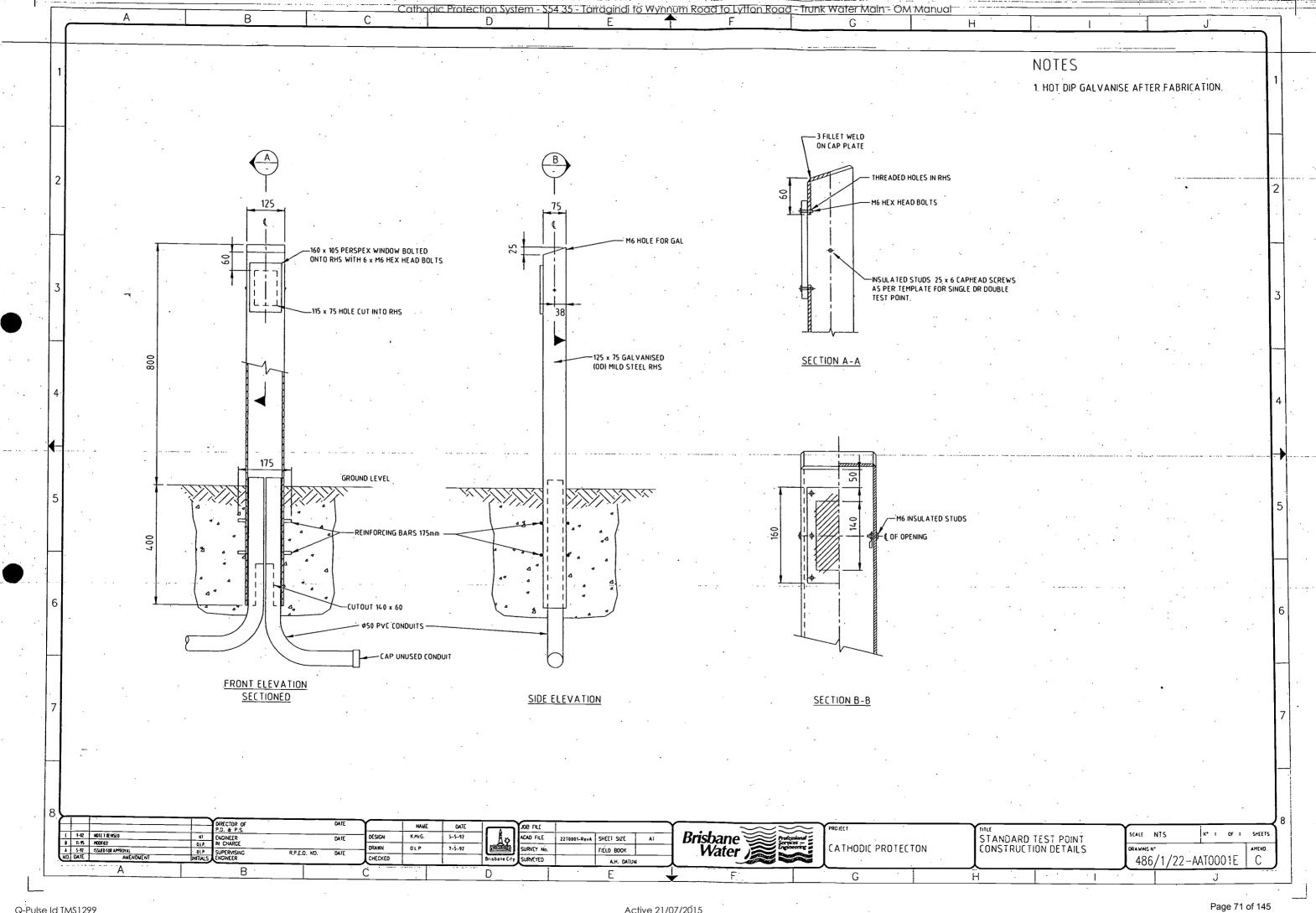


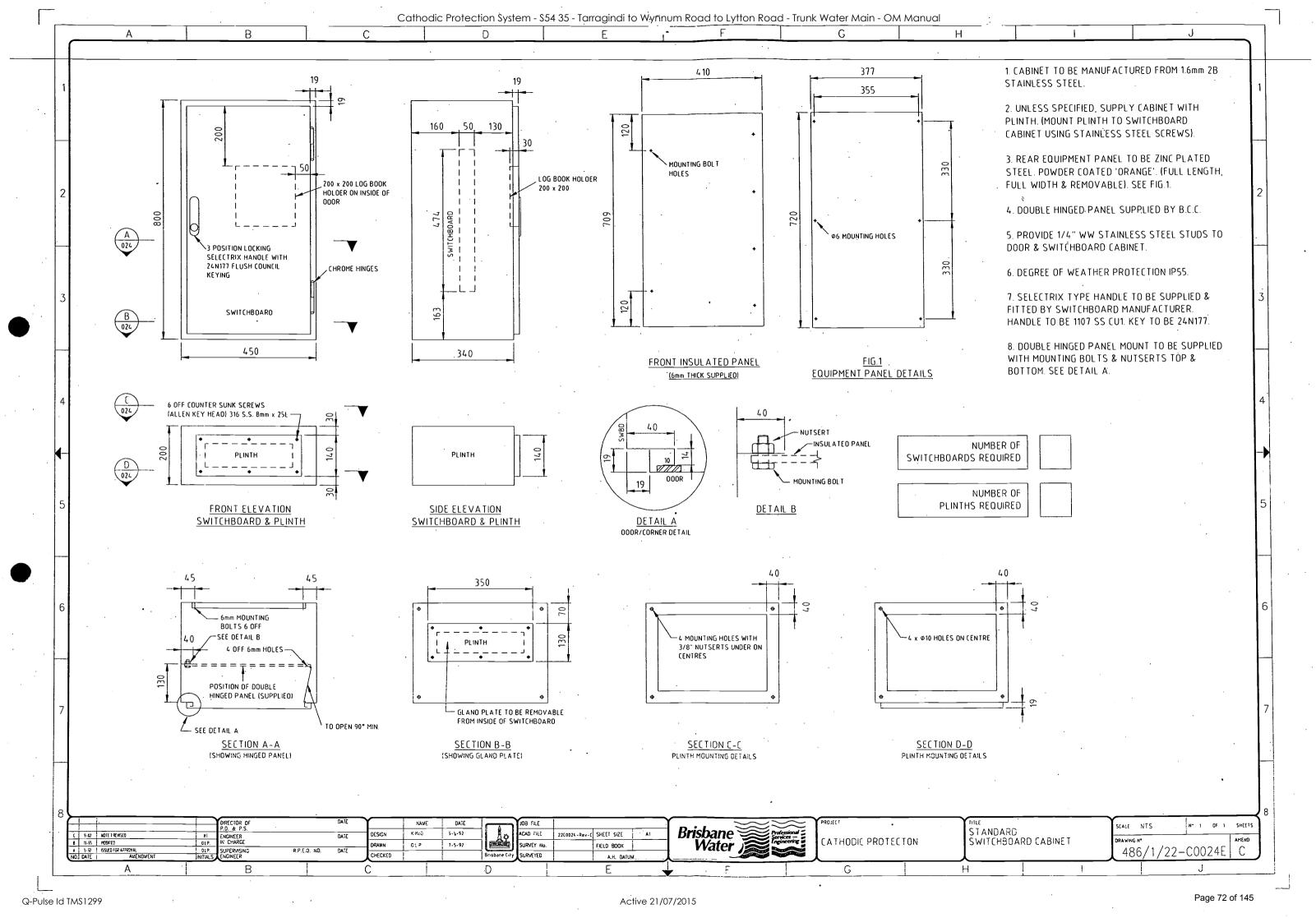


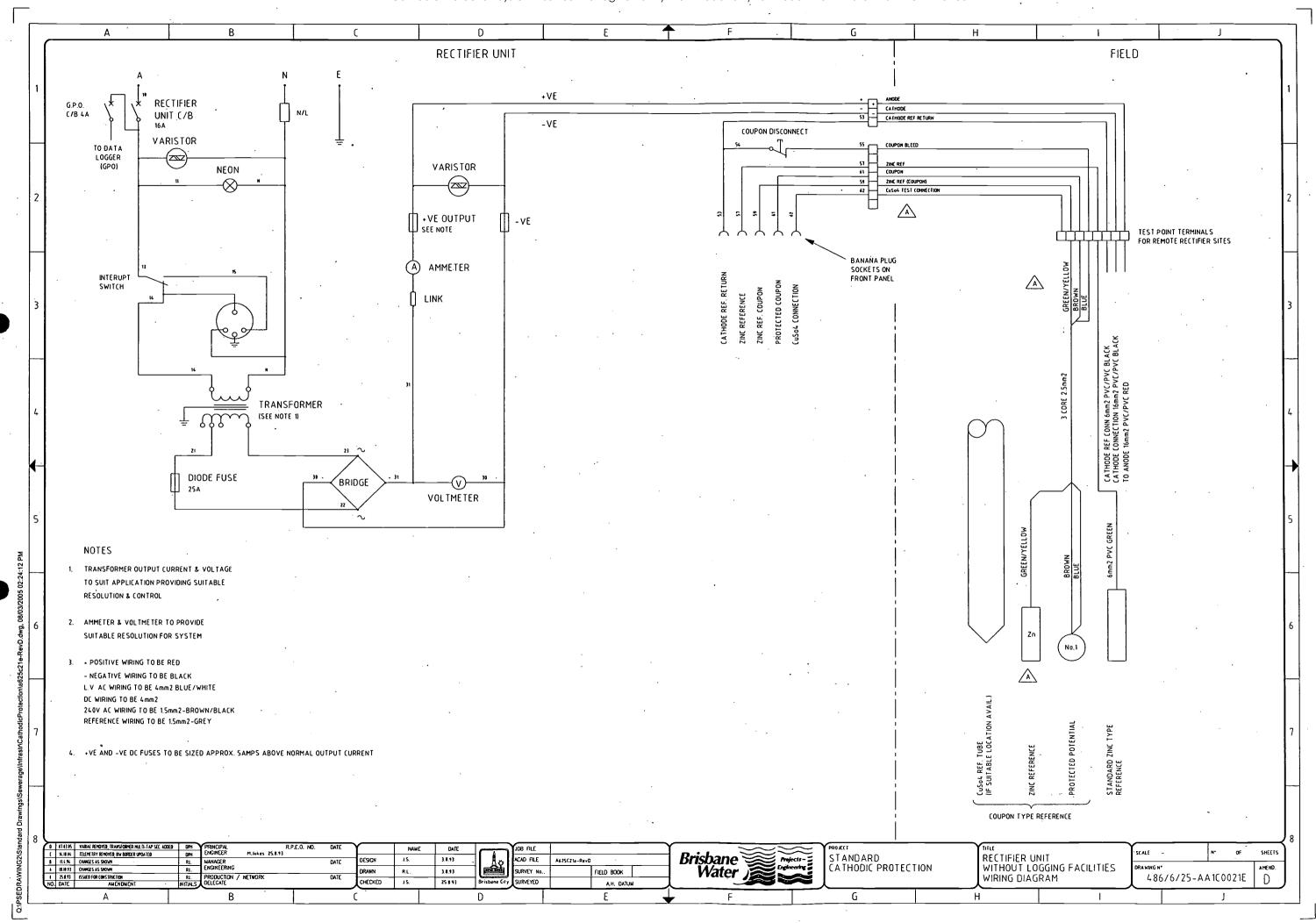














25 Bunya Street Eagle Farm Q 4009 Ph. (07) 3403 8888 Fx. (07) 3403 1898

16 th April 2004

OPERATING MANUAL FOR:

TARRAGINDI to WYNNUM RD to LYTTON RD TRUNK MAINS S54 and S35 TRUNK MAINS

CATHODIC PROTECTION SYSTEM

CLIENT:

BRISBANE WATER
WATER SYSTEM SERVICES

(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)

Bimonthly 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.

Cathodic Protection System - S54 35 - Tarragindi to Wynnum Road to Lytton Road - Trunk Water Main - OM Manual

(3.0)

MAINS DETAILS

Size:

1060, 910 and 600 mm Dia mild steel cement lined.

Coating:

Enamel Coated.

Length:

Appox 11.6 Km.

Location:

From Valve 188 cnr Tarragindi Rd.and Autumn St. Tarragindi

to Valve 214 Lytton Rd. Murarrie.

Construction Drawings:

486/1/22-C0024E

Cathodic Protection Standard Switchboard Cabinet

486/1/22-AAT0001E

Cathodic Protection Test Points

(4.0) <u>CATHODIC PROTECTION DETAILS</u>

- (4.1) Type of Cathodic Protection: Impressed Current.
- (4.2) Rectifier: Standard 30 Volt, 30 amp direct current output enclosed in a stainless steel switchboard. This system has 2 rectifiers installed. One rectifier is in Mott Park, corner Logan Rd. and Abbotsleigh St.Holland Park and has a 240V supply from Mott Park toilet block. The second rectifier is in Majestic Park Camp Hill and has a 240V supply from Energex pole No12681 near 70 Eva St Camp Hill.
- (4.3) Cathode: One cathode point is located on the 1060 mm dia mains, adjacent to scour valve 514 in Mott Park, while the second cathode point is located on the 910 mm dia mains adjacent to valve 200 at Majestic Park.. The cathode point is where the cabling from the rectifier is attached to the structure under cathodic protection.
- (4.4) Anodes: Four 1500 x 75mm silicone iron anodes were installed approximately 90 metres from the trunk mains, in a vertical bed 5 metres deep, in the park adjacent to the stormwater drain in Mott Park. Another four anodes were installed approximately 100 metres from the trunk main in a vertical bed 5 metres deep in Majestic Park. The anodes are backfilled with cokebreeze thereby improving anode ground resistance. The anodes are identified by a marker post and label. See layout drawing.
- (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 eighteen test points have been installed on the trunk main which can be identified from the layout drawing.
- (4.6) Associated Drawings:

 Cathodic Protection Test Point Details 486/1/22-AAT0001E

 Standard Rectifier Wiring Diagram 486/6/25-AA1C0021

 Cathodic Protection Test Point & Anode 2 / 10.677-01 to 2 / 10.677-05

 Bed Locations S54 & S35 Trunk Mains. 2 / 10.2315-01
- (4.7) Associated Standards:

 AS/NZS 3000 2000 Electrical Installations

 AS/NZS 2832.1 1998 Cathodic Protection of Metals-Pipes and Cables.
- (4.8) Government Regulations:
 Oueensland Electricity Safety Rules and Regulations. 2002

(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) <u>CONCLUSION</u>

Full Cathodic protection has been achieved on this section of trunk mains. The cathodic protection system is registered with the Electrical Safety Office, Department of Industrial Relations, and has approval to operate.

(7.0) <u>MAINTENANCE</u>

The cathodic protection system is maintained on a bimonthly basis after commissioning. These checks involve testing rectifier operation and recording of pipe to soil potentials.

Cathodic Protection System - S54 35 - Tarragindi to Wynnum Road to Lytton Road - Trunk Water Main - OM Manual $16^{\,th}$ April, 2004.

Cathodic Protection Unit.

CPS Bimonthly 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.

Cathodic Protection System - \$5435 - Tarragindi to Wynnum Road to Lytton Road - Trunk Water Main - OM Manual 16^{th} April, 2004.

Cathodic Protection Unit

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.

Cathodic Protection System - S54 35 - Tarragindi to Wynnum Road to Lytton Road - Trunk Water Main - OM Manual 16 th April, 2004.

Cathodic Protection Unit

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 to reregister system if applicable

CP Form No. 23

Electrical Engineering Unit

Cathodic Protection System Potential Recording Form

Project

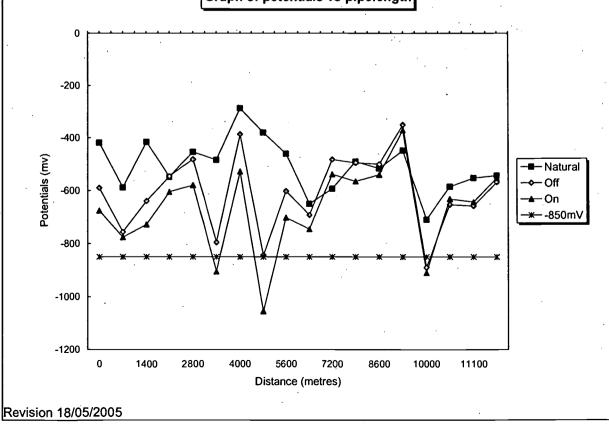
Tarragindi to Wynnum Rd.to Lytton Rd S35&S54

Date 16th June 2004

Test Point Nos 1 to 15 are S54 and Test Points 16 to 18 are S35

Test Point	Distances	Potentials to CuSO4				
number	to T.P.	Natural	Off	On	Distance	,
	(metres)	(mV)	(mV)	(mV)	•	
1	0	<u>-419</u>	-590	-676	0	
2	700	-589	-756	-776	700	
3	1400	-416	-640	-728	1400	
4	1900	-549	-546	-605	1900	Rectifiers at
5	2800	-454	-482	-580	2800	TPs.No6&8
. 6	3400	-484	-795	-905	3400	
7	4000	-287	-386	-527	4000	
8	4800	-380	-844	-1055	4800	
9	5600	-460	-602	-702	5600	
10	6400	-650	-692	-745	6400	
11	7200	-593	-482	-538	7200	
12	7900	-490	-495	-565	7900	
13	8600	-516	-500	-540	8600	
14	9200	-448	-350	-371	9200	
15	10000	-710	-890	-910	10000	
16	10400	-585	-653	-632	10400	
17	11100	-552	-658	-643	11100	
18	11600	-543	-568	-552	11600]

Graph of potentials vs pipelength



CP Form No. 23

Electrical Engineering Unit

Cathodic Protection System Resistivities Recording Form

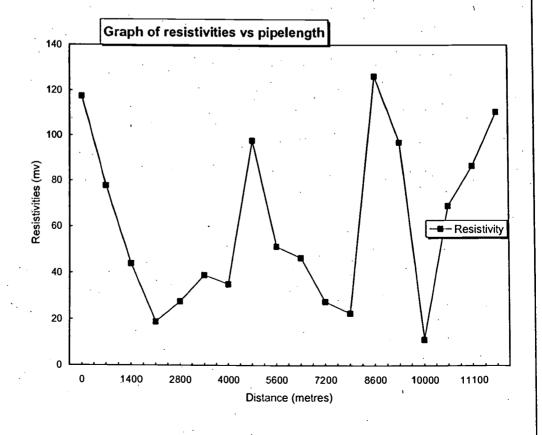
Project

Tarragindi to Wynnum Rd. to Lytton Rd. S35 & S54

Date 16th June 2004

Test Point	Distances	Resistivities
number	to T.P.	at 2 metres
	(metres)	ohm metres
1	0	117.4
2	700	77.8
3	1400	43.9
4	1900	18.8
5	2800	27.6
· 6	3400	38.9
7	4000	35.1
8	4800	97.7
9	5600	51.4
10	6400	46.4
11	7200	27.6
12	7900	22.6
13	8600	126.3
14	9200	97
15	10000	. 11.3
16	10400	69.1
17	11100	86.6
18	11600	110.5

Note.
Test Points 1 to 15 are for S54
Test Points 16,17 & 18 are for S35



Revision 21/07/2004

Electrical Engineering Unit

Cathodic Protection System Loop Resistance

Mott Park Rectifier CPS 202

Date: 12th May 2005

Cathodic Protection System:

Tarragindi to Wynnum Rd. S54 Trunk Main

System Operating Volts:

27

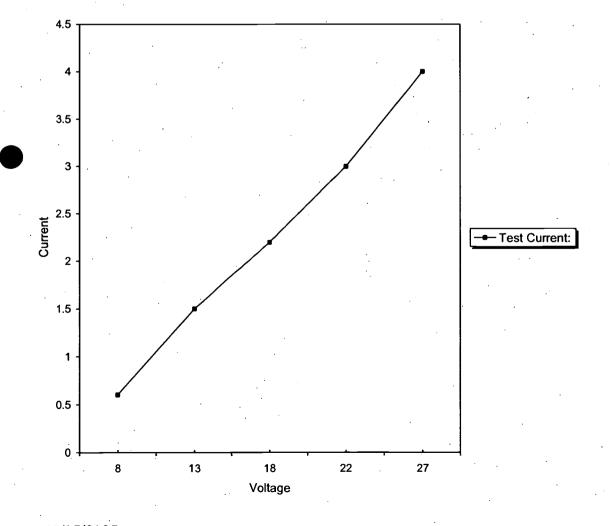
System Operating amps

4

Test Voltage	e:	Test Curren	it:
(volts)		(amps)	
8		0.6	
13		1.5	
18		2.2	
22		3	
27		4	

Loop Resistance	
(ohms)	
5	

Loop Resistance



13/05/2005

Electrical Engineering Unit

Cathodic Protection System Loop Resistance

Eva St. Rectifier CPS 206

Date: 12th May 2005

Cathodic Protection System:

Tarragindi to Wynnum Rd. S54 Trunk Main

System Operating Volts:

27

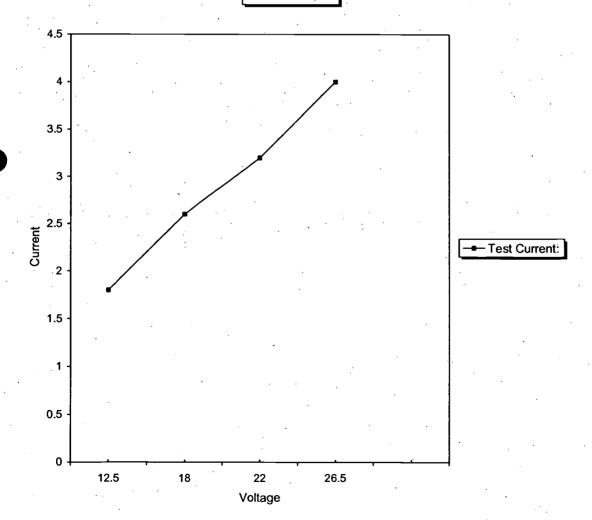
System Operating amps

4.7

Test Voltage:		Test Curre	nt:
(volts)		(amps)	
12.5		1.8	
18		2.6	
22		3.2	
26.5		4	
			人,在

į	Loop Resistance	
	(ohms)	
	6.875	

Loop Resistance



18/05/2005

FORM 9 V3.01-04



Department of Industrial Relations ABN 52 293 849 579

APPLICATION TO REGISTER A REGISTERABLE CATHODIC PROTECTION SYSTEM PLEASE COMPLETE ALL SECTIONS OF THIS FORM- PLEASE PRINT

Application Deta	alis 🖟 🔒					100000000000000000000000000000000000000
Name of system owne	r: Brisbane	City Council / Bris	bane Water	<u> </u>		
				ABN 720	002765795	
Postal address:	GPO Box 1434	Brisbane 4001				
Contact name:			1	TEL		
		_		· .		
Name of authorised ag	ent of system	owner: Brisba	ne Water Network Se	ervices	_	
			-	ABN 720	02765795	
Postal Address:	268 Cullen A	ve Eagle Farm 4	009		·	
				:		
·					•	
Contact Name:	Kerry McGov	vern	· · · · · · · · · · · · · · · · · · ·	·	:	
				TEL 07 34	078364	
		· .		-		
Type of Application: (Tick as appropriate)						
√ N	ew System					
	Uteration to an	existing system, Re	gistration No:	•		
O F	Renewal of system	em, Registration No				
Location of system:	From cnr Tarragindi Rd & Autumn St. Tarragindi to Lytton Rd near Metroplex Ave Murarrie					
<u> </u>	Rectifier No1(Mott Park) Abbotsleigh St Holland Pk POST CODE 4121					
Structure to be protected:	900 mm and 1060 mm dia Mild Steel Trunk Main					
Maximum operating current:	5.00	Amperes DC	Water or Marine en Maximum operation			Volts
				N. 4651.		
Declaration						
I/We, being the owner/o registration of this syste	perators of the mand certify wi	cathodic protection th respect to the sy	system described abo stem that:	ove, make ar	oplication for t	he
(ii) tests pursuant stated this app	t to section 177 plication have b	of Electrical Safety een performed:	t 11 of Electrical Safe Regulation 2002, bas lication in the case of	ed on the m	aximum oper	•
immersed in v paragraph (ii); (iv) any necessary	vater or a marin and interference m	e environment come nitigation measures	esponds to the maximitor foreign structures (perating satisfactorily.	um operatin	g current mer	ntioned in
Signature of system or				Day	Month	Year
			<u> </u>			

PRIVACY STATEMENT. The Department of Industrial Relations respects your privacy and is committed to protecting your personal information. The information provided on this form is for the purpose of applying for the registration of a cathodic protections system and monitoring compliance under the Electrical Safety Act 2002, and will be managed within the requirements of Information Standard 42. The Department may be required to disclose your personal information to other government agencies, entities, or persons as may be required by law or that are outsourced functions. This information may also be used for statistical research, information provision and evaluation of our services. We will assume that we have your permission to do this unless you tell us otherwise. You can do this at any time by contacting Equipment Safety on (07) 3237 0281. Further information on our privacy policy is available at www.dir.qld.gov.au

Application of accompany registration fee of \$205.00

Application for systems to be immersed in a marine environment must have technical schedule attached.

Forward to: Electrical Safety Office, LMB 2234 Brisbane Qld 4001

Please note: This is a GST free supply. No tax invoice will be issued.

FORM 9 V3.01-04



Department of Industrial Relations ABN 52 293 849 579

APPLICATION TO REGISTER A REGISTERABLE CATHODIC PROTECTION SYSTEM PLEASE COMPLETE ALL SECTIONS OF THIS FORM- PLEASE PRINT

Application Deta	ails 💉 🐪					70.00	
Name of system owner	er: Brisbane	City Council / Bri	sbane Water	_			
				ABN	720	02765795	
Postal address:	GPO Box 1434	Brisbane 400	<u> </u>	_			
				•		<u> </u>	
Contact name:				TEL		-	
	t		-				
Name of authorised a	gent of system	owner: Brisba	ne Water Network	Service	s		
				ABN	7200	2765795	
Postal Address:	268 Cullen Av	e Eagle Farm	1009 .				
	•					-	
_	_						
Contact Name:	Kerry McGov	ern		, -			
	• .	•		TEL (07 340	78364	
· · · · · · · · · · · · · · · · · · ·				-			
Type of Application: (Tick as appropriate)				•			
√ N	lew System				_		-
	Alteration to an e	xisting system, Re	gistration No:				
	Renewal of syste	m, Registration No	:				
Location of system: From cnr Tarragindi Rd & Autumn St. Tarragindi to Lytton Rd near Metroplex Ave Murarrie							
Location of system.	Rectifier No2 (Majestic Park) Eva	St Coorparoo	POST	CODE	4151	
Structure to be protected: 900 mm and 1060 mm dia Mild Steel Trunk Main							
Maximum operating current: G.00 Amperes DC Water or Marine environment Water or Maximum operating voltage: Volts			Volts				
Declaration		, Akida					
IAN's boing the surrents		ath a dia a sata ation		•		10.00	
I/We, being the owner/o registration of this system	m and certify wit	h respect to the sy	system described a stem that:	iboye, m	аке ар	plication for	tne
(i) I/We have cor (ii) tests pursuant	nplied with the re	equirements of Par	t 11 of Electrical Sa	afety Reg	gulation	2002;	rating aumont
stated this application have been performed:							
(iii) the maximum operating voltage stated in this application in the case of the system operating with an anode/s immersed in water or a marine environment corresponds to the maximum operating current mentioned in paragraph (ii): and							
(iv) any necessary interference mitigation measures for foreign structures (in the case where the system is currently registered) have been tested and are operating satisfactorily.							
Signature of system ov				Day	у	Month	Year
							-

PRIVACY STATEMENT. The Department of Industrial Relations respects your privacy and is committed to protecting your personal information. The information provided on this form is for the purpose of applying for the registration of a cathodic protections system and monitoring compliance under the Electrical Safety Act 2002, and will be managed within the requirements of Information Standard 42. The Department may be required to disclose your personal information to other government agencies, entities, or persons as may be required by law or that are outsourced functions. This information may also be used for statistical research, information provision and evaluation of our services. We will assume that we have your permission to do this unless you tell us otherwise. You can do this at any time by contacting Equipment Safety on (07) 3237 0281. Further information on our privacy policy is available at www.dir.qld.gov.au

Application of accompany registration fee of \$205.00

Application for systems to be immersed in a marine environment must have technical schedule attached.

Forward to: Electrical Safety Office, LMB 2234 Brisbane Qld 4001

Please note: This is a GST free supply. No tax invoice will be issued.



Electrical Safety Act 2002

NOTICE OF REGISTRATION OF CATHODIC PROTECTION SYSTEM

Registration No: 3335

Date of Registration:

01 March 2006

Expiry Date:

01 March 2011

The cathodic protection system referred to below has been registered for a term of five years, and the conditions of registration shown hereunder shall apply in addition to the provisions of the Electrical Safety Act and Electrical Safety Regulation 2002.

Name and Postal Address of System Owner	Brisbane City Council Brisbane Water GPO Box 1434 BRISBANE QLD 4001
Location of System	From Cnr Tarragindi Rd and Autumn St Tarragindi to Lytton Rd near Metroplex Ave Murarrie Recrifier No2 (Majestic Park) Eva St Coorparoo - Post Code: 4151
Structure to be Protected	Mild Steel Tunk Main

CONDITIONS OF REGISTRATION

Maximum Operating Current:

6.00 Amperes DC

DES EDE

Director – Equipment Safety

21312006

Page 89 of 145



Electrical Safety Act 2002

NOTICE OF REGISTRATION OF CATHODIC PROTECTION SYSTEM

Registration No: 3332

Date of Registration:

01 March 2006

Expiry Date:

01 March 2011

The cathodic protection system referred to below has been registered for a term of five years, and the conditions of registration shown hereunder shall apply in addition to the provisions of the Electrical Safety Act and Electrical Safety Regulation 2002.

Name and Postal Address of System Owner	Brisbane City Council Brisbane Water GPO Box 1434 BRISBANE QLD 4001
Location of System	From Cnr Tarragindi Rd and Autum St Tarragindi to Lytton Rd near Metroplex Ave Murarrie Rectifier No1 (Mott Park) Abbotsleigh St Holland Park - Post Code: 4121
Structure to be Protected	Mild Steel Trunk Main

CONDITIONS OF REGISTRATION

Maximum Operating Current:

5.00 Amperes DC

DES EDE

Director – Equipment Safety

21312006

Brisbane Water Engineering Services	CP Form No. 27
Electrical Engineering Unit	Eva ST. 27V 6 a
Cathodic Protection Interference Survey Results	Mott Partzy 5 a.
Project \$54 Unit Readin	g Date <u></u> <u> </u>

	Reading	Test Point	Location	Swing
		I.D.	Mott Pulk	
On	-1040	-		
Off	- 394	LillA	Park Loght	-446
On	-830			70 %
Off	-502	Light	Park Light	-328
- On	-752		0.1.1	
Off	-530	Lost	Park Light	-222
On	-532		Logan Rd	
Off	-270	Men	Pole n. 221287	-262
On	-329		NAVYE	
Off	-250	men	Pole no 10836	-19
On	-303		Sexton	
Off	- 303	man	Pole no 32260	O
On	-310		Sexton	.
Off	-310	mon	Pole no 32199	O
On	- 322		Sexton	
Off	-322	Men	Poleno 39903	0
On	-109		Ferndale	
Off	-109	mon	Polens 43890	0
On	-687		Fundate	-
Off	-683	Men	Poleno 20507	0
On	-233		Ferndahe	
Off	-233	Men	Poleno 23116	Ø
On	-584		Ferndule	
Off	- 584	men	Pole no 23/17	0
On	-382		Forndale	- -
Off	- 3-82	men	Pole no 23118 Abertstell	0
On	-424	,	ADertslenk	
Off	-424	non	Poleno 349450 ARIUNStun	0
On	-146		ARIONStun	0
Off	-146	Men	Pole no 33108	
				· .

TESTED BY P. SMYTH

Brisbane Water Engineering Services	CP Form No. 27
Electrical Engineering Unit	Eva St 27 V 6 a
Cathodic Protection Interference Survey Results Fo	m Mott Park27V 5 a
CT	Date 5-5-05

On -226 Off -175 Min Pole No 185 On -414 Off -414 Min Pole no 26522 On -283 Off -289 Men Pole no 9590 On -003 Off -003 Men Pole no 17735 On -488 Off -003 Men Pole no 17735 On -488 Off -084 Men Pole no 17734 Off -011 Men Pole no 27011 Off -172 Men Pole no 1454 On -172 Off -172 Men Pole no 1454 On -172 Off -172 Men Pole no 1465 On Off On Off On Off On Off On Off On Off On	•	Reading	Test Point I. D.	Location	Swing
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On -283 Off -289 men Poleno 9590 On -007 Off -003 Men Poleno 17735 On -488 OFF -382 Men Poleno 17734 -106 On -084 Off -084 Men Poleno 12909 Off -260 Men Poleno 12909 Off -2160 Men Poleno 27011 Off -011 Men Poleno 1454 Off -172 Men Poleno 419640 On -172 Off -12 Men Poleno 40265. On Off On Off On Off On Off On Off On Off On		1	74	_ · · · · ·	6
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On -084 Men Pole no 129009 On -240 Fergision Off -240 Men Pole no 27011 Off -211 Men Pole no 1454 On -172 Men Pole no 1454 On -172 Men Pole no 1460 On -12 Men Pole no 419640 On -17 Men Pole no 4065. On Off On Off On	On	-488		Fergision.	ind
Off -084 Man Pole no . 29009 On -2400 Off -2400 Men Pole no 27011 On -011 Off -011 Men Pole no 1454 On -172 Men Pole no 14640 On -172 Men Pole no x19640 On -12 Men Pole no 40265. On Off On Off On Off On Off On Off On Off On Off On Off On Off On Off On	OFF	-382	Men_		-106
Off -084 Men Pole no 129099 On -2400 Men Pole no 27011 Off -011 Men Pole no 1454 On -172 Men Pole no 1454 On -172 Men Pole no 19640 On -172 Men Pole no 19640 On -172 Men Pole no 1965. Off -12 Men Pole no 1965. On Off On Off On Off On Off On Off On Off	On	-084		Fergiston	
Off -240 Men Poleno 27011 On -011 Off -011 Men Poleno 1454 On -172 Off -172 Men Poleno 1466 On -12 Off -12 Men Poleno 40265. On Off On	Off	-084	Mon	Pole no , 29009	-0
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TESTED BY P. SMYNA

Brisbane Water Engineering Service	CP Form No.18
lectrical Engineering Unit	
tandard Cathodic Protection Test Point Data	Gathering Form
roject \$54 TARRAGINDI TO WYNNUM RD	Date 3-//-03.
P Location AUTUMN 9 TARRAGINDI RD	TP No1
lains Size 1060 mm	·
OTENTIAL TESTING	e me e e e
CATHODE TO CATHODE RETURN (RESIST	TANCE) 0.250
ZINC REFERENCE TO PIPE	+ 774
CuSo4 REFERENCE TO PIPE ZINC TO CuSo4	<u>- 419</u> - 1194
- CARTH TESTING	
TEST NO. 1	
PIN SPACING MEGGER READING 9.35	RESISTIVITY 1/7.4 1P
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<u>TEST NO 2</u> PIN SPACING	RESISTIVITY
MEGGER READING	
TEST NO 3	·
PIN SPACING MEGGER READING	RESISTIVITY
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COMMENTS / LOCATION DRAWING	
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TP GARDEN	~
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Revision 09/28/95

Brisbane Water Engineering Services	CP Form No.18
Electrical Engineering Unit	
Standard Cathodic Protection Test Point Data G	athering Form
Project Weller's Hill -MT Gravatt	Date 19-4-03
TP Location Weller's Rd Fernvale	TP No2
Mains Size	ТР Туре
POTENTIAL TESTING	PUP
CATHODE TO CATHODE RETURN (RESISTA ZINC REFERENCE TO PIPE CuSo4 REFERENCE TO PIPE ZINC TO CuSo4	NCE) $ \begin{array}{r} 0.15 & 0.15 \\ +6.14 & +601 \\ -589 & -614 \\ -1203 & -1216 \end{array} $
MEGGER READING6-2_	RESISTIVITY 77-8 Jpm
COMMENTS / LOCATION DRAWING	Rd
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3.8. Trafic Island	
3.8 Ker b Pit Pit	EFFINGHAM
Detail.	
Weller Rd	
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Brisbane Water Engineering Services	CP Form No.18
Electrical Engineering Unit	. •
Standard Cathodic Protection Test Point Data Gathering Form	
Project S 54 Tarragind - Wynnume 2 - 7	7-03
TP Location	•••••
Mains Size	*******
POTENTIAL TESTING	
CATHODE TO CATHODE RETURN (RESISTANCE)	2 N
ZINC REFERENCE TO PIPE CuSo4 REFERENCE TO PIPE	585 416
ZINC TO CuSo4	HIL
EARTH TESTING	
TEST NO. 1 PIN SPACING 2 RESISTIVITY 4.	3.9 S.Pm
PIN SPACING 2 RESISTIVITY 4. MEGGER READING 3.5	
COMMENTS / LOCATION DRAWING	
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Brisbane Water Engineering Services	CP Form No.18
Electrical Engineering Unit	
Standard Cathodic Protection Test Point Data Gathering Fo	
Project S 54 Tavragnali - Lynnan Date 10	0-4-03
TP Location Sexton. TP No. 1	' +
Mains Size 42 - 3 6 TP Type	B Pit.
POTENTIAL TESTING	
CATHODE TO CATHODE RETURN (RESISTANCE)	·25L
ZINC REFERENCE TO PIPE CuSo4 REFERENCE TO PIPE	+689
ZINC TO CuSo4	-1124
EARTH TESTING	
TEST NO. 1	
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COMMENTS / LOCATION DRAWING	
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Brisbane Water Engineering Services	CP Form No.18
Electrical Engineering Unit	·
Standard Cathodic Protection Test Point Data Gathering Fon	m
Project Tarragindi Wynnum Date 28	
TP Location Cnt Birdwood + Navy TP No. 5	
Mains Size 40 36 TP Type	
POTENTIAL TESTING	_
CATHODE TO CATHODE RETURN (RESISTANCE) ZINC REFERENCE TO PIPE CuSo4 REFERENCE TO PIPE ZINC TO CuSo4	6 JL +590 -454 -1095
EARTH TESTING TEST NO. 1 PIN SPACING 2 RESISTIVITY MEGGER READING 2-1	2-1.6 SPn
COMMENTS / LOCATION DRAWING	Fence Line
main.	irdwood Rd
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Brisbane Water Engineering Service	S CP Form No.18
Electrical Engineering Unit	
Standard Cathodic Protection Test Point Data	
Project S. 54 Tarrasindi - Wynnui	Date
	TP No6
Mains Size	TP Type Reut 15-1-en
POTENTIAL TESTING	
CATHODE TO CATHODE RETURN (RESIST ZINC REFERENCE TO PIPE CuSo4 REFERENCE TO PIPE ZINC TO CuSo4	FANCE) -/SC
EARTH TESTING TEST NO. 1 PIN SPACING MEGGER READING 7.3	RESISTIVITY 16-3
TEST NO 2 PIN SPACING MEGGER READING	RESISTIVITY
TEST NO 3 PIN SPACING MEGGER READING	RESISTIVITY
COMMENTS / LOCATION DRAWING	Logan Rd
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	ABBOTSLeis st sot Bridge CM 4-44
1P. 176M To Main INSTALLED	P SMYTH

Brisbane Water Engineering Services cr	P Form No.18
Electrical Engineering Unit	
Standard Cathodic Protection Test Point Data Gathering Form	
Project S54 Tarry Indl - Wyhnum Date 10-4-0	5)
TP Location 40 Geelongau TP No. 7	•
Mains Size 43 - 36 TP Type 13 P.	48 /
POTENTIAL TESTING	. •
ZINC REFERENCE TO PIPE CuSo4 REFERENCE TO PIPE	1 <u>1</u> 720 287 006
EARTH TESTING TEST NO. 1 PIN SPACING MEGGER READING 2.8 RESISTIVITY 35.1	6 RPM
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Brisbane Water Engineering Services	CP Form No.18
Electrical Engineering Unit	
Standard Cathodic Protection Test Point Data Gathering Form	
Project Tarragindi - Uynnum Date 28-	10-07
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TP Location EVA St 1n Magestic TP No	<u>13</u>
POTENTIAL TESTING	· · · · · · · · · · · · · · · · · · ·
CATHODE TO CATHODE RETURN (RESISTANCE)	=15
ZINC REFERENCE TO PIPE CuSo4 REFERENCE TO PIPE ZINC TO CuSo4	7726 -380 -1100
EARTH TESTING	
TEST NO. 1 PIN SPACING 2 m RESISTIVITY MEGGER READING 7.78	97.750
COMMENTS / LOCATION DRAWING	S
In a estic	
Mag estic Park	
Fence Line	
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C. C.	
House 72	
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Brisbane Water Engineering Sei	rvices	CP Form No.18
Electrical Engineering Unit		· · · . j
Standard Cathodic Protection Test Point		· · · · · · · · · · · · · · · · · · ·
Project Set 54 Tarragindi-W	•	
P Location Chats worth at ILL	•	
Mains Size 42 - 36	ТР Туре	Post
POTENTIAL TESTING		
CATHODE TO CATHODE RETURN (R	ESISTANCE) .	15
ZINC REFERENCE TO PIPE		
CuSo4 REFERENCE TO PIPE ZINC TO CuSo4		1095
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TEST NO. 1 PIN SPACING MEGGER READING 4.1	RESISTIVITY	1.4 1 Pm
OMMENTS / LOCATION DRAWING		·
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Brisbane Water Engineering Services CP Form No.18 Electrical Engineering Unit Standard Cathodic Protection Test Point Data Gathering Form Project Tarrag mili To Wynnum Date 10-10-03 TP Location Thomas and Prout TP No. 10 Mains Size ... 42 10 36" TP Type ... B ... Post POTENTIAL TESTING CATHODE TO CATHODE RETURN (RESISTANCE) ZINC REFERENCE TO PIPE **CuSo4 REFERENCE TO PIPE** ZINC TO CuSo4 EARTH TESTING TEST NO. 1 3-72m RESISTIVITY 46.4 SCPM PIN SPACING MEGGER READING COMMENTS / LOCATION DRAWING Prout nr THOMAS. P. SMUTH. INSTALLED BY

Brisbane Water Engineering Service	CP Form No.18
Electrical Engineering Unit	
Standard Cathodic Protection Test Point Data	Gathering Form
Project S 34 Tarragind - Wynnam	Date 28-4-0)
TP Location Old Cleavand Rd	TP No. 112
Mains Size	ТР Туре <u>В Ро</u> 54
POTENTIAL TESTING	
CATHODE TO CATHODE RETURN (RESISTA ZINC REFERENCE TO PIPE CUSO4 REFERENCE TO PIPE ZINC TO CUSO4	ANCE) " S\
EARTH TESTING TEST NO. 1 PIN SPACING MEGGER READING 2 • 2	RESISTIVITY 27-6 SCPM
COMMENTS / LOCATION DRAWING	
	Old Clearland Rd
	main F. Insulated Town
Ferguson Ri	TP Post
INSTALLED BY	

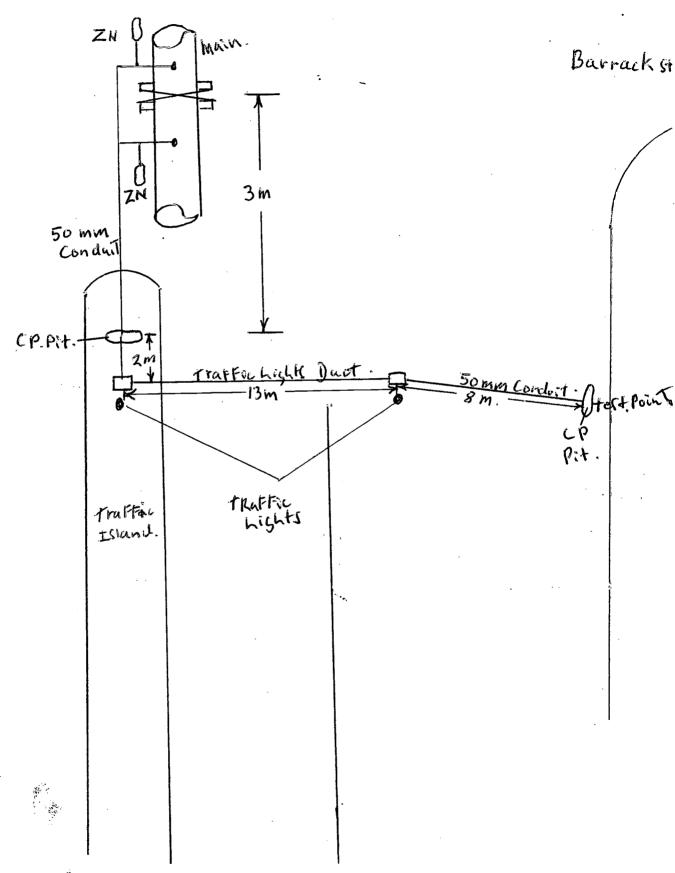
Brisbane Water Engineering Services CP Form No.18				
Electrical Engineering Unit				
Standard Cathodic Protection Test Point Data Gathering F	orm			
Project Tarregindi Wynnan RJ Date 19-4-03				
	12			
Mains Size	B Pit.			
POTENTIAL TESTING	-			
CATHODE TO CATHODE RETURN (RESISTANCE) ZINC REFERENCE TO PIPE CuSo4 REFERENCE TO PIPE ZINC TO CuSo4	→ 446 -490 -952			
EARTH TESTING TEST NO. 1 PIN SPACING MEGGER READING 1.8 RESISTIVITY	22.6 JPA			
COMMENTS / LOCATION DRAWING				
The Promenade				
5 mas 5				
Kelb. TP				
6 30 m→				
	Stanly			

Brisbane Water Engineering Services CP Form No.18				
Electrical Engineering Unit				
Standard Cathodic Protection Test Point Data Gathering Form				
Project <u>554</u> Date <u>15-4-0</u> 3				
TP Location 511 Davey Rd TP No. 13	*****			
Mains Size	205 F.			
POTENTIAL TESTING				
	251 +709 -516 1225			
EARTH TESTING				
TEST NO. 1 PIN SPACING MEGGER READING 10.06 RESISTIVITY 12	6.35 Jp			
COMMENTS / LOCATION DRAWING				
$\leftarrow 8m \rightarrow$	1			
n				
7 P. P. S. 1111	House			
Dates fer				
man Parc	y R.J.			

	Brisbane Water Engineering Services	CP Form No.18
	Electrical Engineering Unit	
	Standard Cathodic Protection Test Point Data Gathering Form	UBD 161613
	Project 554 Tarragindi - Wynnym Rd. Date	
	TP Location Bagette st Sevenhills TP No. 14	
_	Mains Size 9.00 mm TP Type B	lost.
	CuSo4 REFERENCE TO PIPE	·02. +559 -448 -1002
	EARTH TESTING TEST NO. 1 PIN SPACING MEGGER READING 7.7 RESISTIVITY 9	77 2mtrs
	TEST NO 2 PIN SPACING RESISTIVITY MEGGER READING	
	TEST NO 3 PIN SPACING RESISTIVITY MEGGER READING	
	COMMENTS / LOCATION DRAWING	
	BIscay	Leilani
	Baguette St.	
	Sam nain seep 12.	
	INSTALLED BY & Saffer	

muan st

2,6mm² Earth wore 2,6mm² SDI Black 2,6mm² SDI Black



Wynnum Rd

Brisbane Water Engineering Services CP Form No.		
Electrical Engineering Unit		
Standard Cathodic Protection Test Point Data Gathering	Form	
Project 534 Tarrasındi - Wynnam Date		
TP Location CAL Wy nnum + Barrack TP No.	•	
Mains Size 42 70 3C TP Type		
POTENTIAL TESTING		
CATHODE TO CATHODE RETURN (RESISTANCE) ZINC REFERENCE TO PIPE CuSo4 REFERENCE TO PIPE ZINC TO CuSo4	1/1 +680 -710 -1111	
EARTH TESTING TEST NO. 1		
MEGGER READING 9 COMMENTS / LOCATION DRAWING	Y _ //·3 Sl Pm	
	· · · · · · · · · · · · · · · · · · ·	
Muil Muin Hour	Barrack_	
Pit.		
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INSTALLED BY	SMYTTA	

Brisbane Water Engineering Service	CP Form No.18
Electrical Engineering Unit	
Standard Cathodic Protection Test Point Data	Gathering Form
Project Set 35 Lynnum RJ.	Date 20-1-04
TP Location 88 Barrack RJ	TP No/
Mains Size	TP Type B Post
POTENTIAL TESTING	
CATHODE TO CATHODE RETURN (RESIST ZINC REFERENCE TO PIPE CuSo4 REFERENCE TO PIPE ZINC TO CuSo4	TANCE) -25 -559 -585 -1143
EARTH TESTING TEST NO. 1 PIN SPACING MEGGER READING 5.5	RESISTIVITY 69.08 1 Pm
TEST NO 2 PIN SPACING MEGGER READING	RESISTIVITY
TEST NO 3 PIN SPACING MEGGER READING	RESISTIVITY
COMMENTS / LOCATION DRAWING	
House 88	

Brisbane Water Engineering Servic	CP Form No.1
Electrical Engineering Unit	
Standard Cathodic Protection Test Point Dat	
Project Set 35 Wynnun Rd	
TP Location Cnr Barracko Lyto	ton TP No. 2
Mains Size	TP TypeBPos €
POTENTIAL TESTING	
CATHODE TO CATHODE RETURN (RESIZINC REFERENCE TO PIPE CuSo4 REFERENCE TO PIPE ZINC TO CuSo4	STANCE)
EARTH TESTING TEST NO. 1 PIN SPACING MEGGER READING G-9	RESISTIVITY 86-6 11 C
TEST NO 2 PIN SPACING MEGGER READING	RESISTIVITY
TEST NO 3 PIN SPACING MEGGER READING	RESISTIVITY
COMMENTS / LOCATION DRAWING	
Barrack	
1P-H10	wattle St
Main.	
INSTALLE	DBY P. SMYTH

Brisbane Water Engineering Services	CP Form No.18
Electrical Engineering Unit	
Standard Cathodic Protection Test Point Data G	athering Form
Project Sct 35 Wynnum RX	Date 22-1-04
TP Location Lytton Rd by Metroples	KTP No3
Mains Size	TP Type B Post
POTENTIAL TESTING	
CATHODE TO CATHODE RETURN (RESISTAL ZINC REFERENCE TO PIPE	·
CuSo4 REFERENCE TO PIPE	<u>+461</u> -547
ZINC TO CuSo4	- 1002
EARTH TESTING	
TEST NO. 1 PIN SPACING	RESISTIVITY 110-5 API
PIN SPACING 82 M R MEGGER READING 88	(LOIOTIVITI
TEST NO 2	
PIN SPACING R	RESISTIVITY
MEGGER READING	
TEST NO 3	
PIN SPACING R MEGGER READING	RESISTIVITY
E- 50 m metroplex	
1	
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Str.	
Pit. Pit.	
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main	
INSTALLED BY	P. Smynt.

Brisbane Water Engineering Services

CP Form No. 21

Electrical Engineering Unit

Insulated Joint Testing Details Form

Isolation 1

Project S54 TARRAGINDI TO WYNNUM RD.

Date 3-11-03

DESCRIPTION

MAINS DETAILS: LOCATIONS:

SIZE:

MATERIAL: COATING:

VALVE No.

TARRAGINDI TO WYNNUM RD TARRAGINDI AND AUTUMN RD. 1060 MM MILD STEEL

TAR EPOXY V188

IN GROUND TESTING

BOLT TO FLANGE RESISTANCE:

NUMBER OF BOLT:

FLANGE TO FLANGE RESISTANCE:

35.0 N

INSULATION CHECKER MODEL 702:

POTENTIAL DIFFERENCE TO REFERENCE CELL:

PROTECTED SIDE:

- 313 MV

UNPROTECTED SIDE:

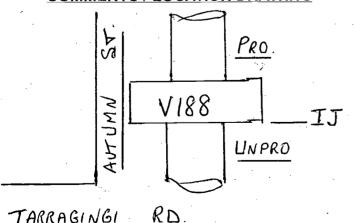
ABOVE TESTING

BOLT TO FLANGE RESISTANCE:

NUMBER OF BOLTS:

FLANGE TO FLANGE RESISTANCE:

COMMENTS / LOCATION DRAWING



TESTED BY L. GREAVES

TARRAGINGI

Brisbane Water Engineering Services

CP Form No. 21

Electrical Engineering Unit

Insulated Joint Testing Details Form

Isolation 2

Project 554 TARRAGINDI TO WYNNUM RD

Date 4-//-03

DESCRIPTION

MAINS DETAILS:

TARRAGINDI TO WYNNUM RD

LOCATIONS:

AUTUMN ST

SIZE:

1000 MM MATERIAL:

MILD STEEL

COATING: VALVE No.

TAR EPOXY RETIC 150 MM

IN GROUND TESTING

BOLT TO FLANGE RESISTANCE:

ALL > 1.5 MSV

NUMBER OF BOLT:

FLANGE TO FLANGE RESISTANCE:

INSULATION CHECKER MODEL 702:

POTENTIAL DIFFERENCE TO REFERENCE CELL:

PROTECTED SIDE:

- 394 MV

UNPROTECTED SIDE:

- 371 MV

ABOVE TESTING

BOLT TO FLANGE RESISTANCE:

NUMBER OF BOLTS:

FLANGE TO FLANGE RESISTANCE:

COMMENTS / LOCATION DRAWING

150 MM. V188 II AUTUMN ST. TESTED BY L. GREAVES

Revision 14/02/2000

Brisbane Water Engine	eering Service	S CP!	Form No. 21
Electrical Engineering Unit			· . · · · · · · · · · · · · · · · · · ·
nsulated Joint Testing Detai	ils Form		
Project Karragindi — L	lynnaw	Date	
DESCRIPTION			
MAINS DETAILS: LOCATIONS: SIZE: MATERIAL: COATING:	Tarragindi 42° +036° Mild Stee P.C	Rd & Autum	ī RJ
VALVE No. N GROUND TESTING	2.54		
BOLT TO FLANGE RES NUMBER OF BOLT: FLANGE TO FLANGE F INSULATION CHECKED POTENTIAL DIFFEREN	RESISTANCE: R MODEL 702:	CELL:	
PROTECTED SIDE: UNPROTECTED SIDE:		-375 -250	_ · - · .
ABOVE TESTING		-	
BOLT TO FLANGE RES NUMBER OF BOLTS: FLANGE TO FLANGE F		1 Bolts 7200	<u>o</u>
COMMENTS / LOCATION DRAWIN	<u>1G</u>		•
	Value 254 autu	- - ~ ~	
Tarras indi RJ	TESTED	BY P. SMYTH	•••••

Brisbane Water Engineering Services	CP Form No. 21
Electrical Engineering Unit	
Insulated Joint Testing Details Form	lin no 3a
Project Tarragindi - Wynnun Date 28-	
DESCRIPTION	
- MAINS DETAILS: LOCATIONS: SIZE: MATERIAL: COATING: VALVE No. MAINS DETAILS: andrew + Ferndale 42 to 36 Mild Sted 9" Branch	
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: -2 50 in x	
UNPROTECTED SIDE: -250 mv -150 mv	
ABOVE TESTING	
BOLT TO FLANGE RESISTANCE: NUMBER OF BOLTS: FLANGE TO FLANGE RESISTANCE:	<u>. </u>
COMMENTS / LOCATION DRAWING	
andrew	
Branch TESTED BY P. SM:	ule.
← 32 m→	· · · · · · · · · · · · · · · · · · ·

Brisbane Water Engine	ering Servic	es	CP Form No. 2
Electrical Engineering Unit			
Insulated Joint Testing Details	Form		
Project Wellers hill - MT (irava ++	Date 1 9	4-0) lation 4
DESCRIPTION	• • •		
MAINS DETAILS: LOCATIONS: SIZE: MATERIAL: COATING:	ntercetions mscL		
VALVE No.	Tar asbe	570.S	<u>. </u>
N GROUND TESTING	_		
POTENTIAL DIFFERENCE	TO REFERENCE	CELL:	
3.8 ker b 1 O o Bass 2 20 P.	Treific	EFF1.	NGHANI
Detail.			
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INSTALLED BY

Brisba	ine Water Engi	neering Service	s c	P Form N
Electrical	Engineering Unit			· :
Insulate	d Joint Testing De	tails Form		
				· <u> </u>
Project	}5.44 	······································	Date 2-7- Isola	
DESCRIP	<u>TION</u>			
	MAINS DETAILS:	·		•
	LOCATIONS: SIZE:	no 46 EFF 11 42"-36"	ngham St	<u> </u>
	MATERIAL: COATING:	Mold Stee	<u></u>	
	VALVE No.	16"BR	796	<u> </u>
IN GROUN	ND TESTING			
	POTENTIAL DIFFERIOR PROTECTED SIDE: UNPROTECTED SIDE	ENCE TO REFERENCE (· .
ABOVE TE	<u>STING</u>			
	BOLT TO FLANGE R NUMBER OF BOLTS FLANGE TO FLANGE	: ERESISTANCE:		<u>.</u>
COMMEN.	TS / LOCATION DRAW	ring value	196	-
			Insulted	
igham (<u>)</u>		Main S	
.,		House 46		
		1100CFC PF G		ı
		Trouse 27 C	BY P. SMY474	

Brisbane Water Engineering	j Services	CP Form No.
lectrical Engineering Unit		
nsulated Joint Testing Details For	n	•
Project S54		5-4-07 Isolation 7
ESCRIPTION		
SIZE: Se	raginali To (ston Bowling id Steel	Jynnam Club
I GROUND TESTING		
BOLT TO FLANGE RESISTAND NUMBER OF BOLT: FLANGE TO FLANGE RESISTATE INSULATION CHECKER MODE POTENTIAL DIFFERENCE TO PROTECTED SIDE: UNPROTECTED SIDE:	NCE: "6 m JZ L 702: N/A	7200S
BOVE TESTING		
BOLT TO FLANGE RESISTAND NUMBER OF BOLTS: FLANGE TO FLANGE RESISTA OMMENTS / LOCATION DRAWING Sex	NCE:	
Insulated John	•	•
	•	

Brisbane Water Engineering Services	CP Form No. 2
Electrical Engineering Unit	
Insulated Joint Testing Details Form	
Project 554 Date	29-4-03 ISOLATION 8
DESCRIPTION	•
MAINS DETAILS: LOCATIONS: SIZE: MATERIAL: COATING: VALVE No. MAINS DETAILS: Tarragin 10 to Merrell s 42-36" MILL Steel	Wynnum
N GROUND TESTING	•
NUMBER OF BOLT: FLANGE TO FLANGE RESISTANCE: •68 m INSULATION CHECKER MODEL 702: M/A POTENTIAL DIFFERENCE TO REFERENCE CELL: PROTECTED SIDE: -455 UNPROTECTED SIDE: -359	1.9
ABOVE TESTING	
BOLT TO FLANGE RESISTANCE: NUMBER OF BOLTS: FLANGE TO FLANGE RESISTANCE:	
COMMENTS / LOCATION DRAWING Insulated John January 1000000000000000000000000000000000000	maon S 2m
Home 8 Drive vo	<u> </u>
Fence Line TESTED BY	
•	

Brisbane Water Engineering Services	CP Form No. 21
Electrical Engineering Unit	
Insulated Joint Testing Details Form	Isolation 9
·	-10-63
DESCRIPTION	
- MAINS DETAILS: LOCATIONS: SIZE: MATERIAL: COATING: VALVE No. MAINS DETAILS: 42 S Wain St. 42 - 36 " 42 - 36 " 6" Branch.	
IN GROUND TESTING	
BOLT TO FLANGE RESISTANCE: all BOLTS NUMBER OF BOLT: 12 FLANGE TO FLANGE RESISTANCE: *8 27 50 INSULATION CHECKER MODEL 702: N/K.	7200SL
POTENTIAL DIFFERENCE TO REFERENCE CELL.	
PROTECTED SIDE: -440 m UNPROTECTED SIDE: -390 m	<u>v</u>
ABOVE TESTING	
BOLT TO FLANGE RESISTANCE: NUMBER OF BOLTS: FLANGE TO FLANGE RESISTANCE:	
COMMENTS / LOCATION DRAWING	
5 = 6"asivelve	<u></u>
House 42. TESTED BY P.SM	1474

Brisbane Water Engineering S	Services CP Form No. 21
Electrical Engineering Unit	
Insulated Joint Testing Details Form	
Project <u>S 54</u>	Date 14-4-03 ISOLatia 10
DESCRIPTION	
SIZE: 42 -	Sleigh & cavendish Rd
IN GROUND TESTING	
BOLT TO FLANGE RESISTANCE: NUMBER OF BOLT: FLANGE TO FLANGE RESISTANC INSULATION CHECKER MODEL 7 POTENTIAL DIFFERENCE TO REF	0 <u>2:</u> N/A
PROTECTED SIDE: UNPROTECTED SIDE:	<u>-414</u> <u>-356</u>
ABOVE TESTING	
BOLT TO FLANGE RESISTANCE: NUMBER OF BOLTS: FLANGE TO FLANGE RESISTANC	E:
COMMENTS / LOCATION DRAWING	cavendish Rd
	abbotsleigh
	T34
5 mil	
	TESTED BY P SMYTH
Revision 01/29/96	3

Brisbane Water Engineering Services	CP Form No. 21
Electrical Engineering Unit	
Insulated Joint Testing Details Form	plation 10a
	8-10-03
DESCRIPTION	
MAINS DETAILS: LOCATIONS: SIZE: MATERIAL: COATING: VALVE No. MAINS DETAILS: Arlington St. 42" - 36" 42	
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: - 10 (5 m)	
PROTECTED SIDE: — 465 mv UNPROTECTED SIDE: — 415 mv	
ABOVE TESTING	
BOLT TO FLANGE RESISTANCE: NUMBER OF BOLTS: FLANGE TO FLANGE RESISTANCE:	· · · · · · · · · · · · · · · · · · ·
COMMENTS / LOCATION DRAWING House 29	
)
	•
TESTED BY	Sm5TV.

Brisb	pane Water Engineering Services	CP Form No. 21
Electrica	al Engineering Unit	
Insulat	ted Joint Testing Details Form	olation nox1
Project .	Tarragindi to wynnum Date 28-	
DESCRI	PTION	
•	MAINS DETAILS: LOCATIONS: SIZE: MATERIAL: COATING: VALVE No. MAINS DETAILS: E va St H 2" to 36" WITH Steel Granch	· · · · · · · · · · · · · · · · · · ·
IN GROU	JND 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: -310 m	V
ABOVE T	<u>resting</u>	
4	BOLT TO FLANGE RESISTANCE: NUMBER OF BOLTS: FLANGE TO FLANGE RESISTANCE:	
OMMEN	ITS / LOCATION DRAWING	
*5^	Kerb Main F	fence line
¢-	House 72	
	TESTED BY	

Brisbane Water Engineering Services	CP Form No. 21
Electrical Engineering Unit	
Insulated Joint Testing Details Form	TON 121.
Project 5 54 Tavra Gindi wyhnum Date 16-	
DESCRIPTION	
- MAINS DETAILS: LOCATIONS: SIZE: MATERIAL: COATING: VALVE No. Cnr ILLIDGE + Cha 42"-36" 42"-36" 7/A, 7/A,	.+5 worth.
IN GROUND TESTING	1
BOLT TO FLANGE RESISTANCE: NUMBER OF BOLT: FLANGE TO FLANGE RESISTANCE: INSULATION CHECKER MODEL 702: POTENTIAL DIFFERENCE TO REFERENCE CELL. PROTECTED SIDE: UNPROTECTED SIDE: - 430 mV	<u>200</u> 5
ABOVE TESTING	 .
BOLT TO FLANGE RESISTANCE. NUMBER OF BOLTS: FLANGE TO FLANGE RESISTANCE:	
COMMENTS / LOCATION DRAWING	
LLIDGE St Value Main. CHats worth TESTED BY P. Sh	4 <i>47</i> H
	· 1

Brisbane Water Engineering Services	CP Form No. 21
Electrical Engineering Unit	
Insulated Joint Testing Details Form	15-2-17
Project Set 54 Tarraginal - wynnum Date 14-3-	ativi 13
DESCRIPTION	
- MAINS DETAILS: LOCATIONS: SIZE: MATERIAL: COATING: VALVE No. MAINS DETAILS: Chats worth & Bound L2"-36" MILD Steel T/E VALVE No.	<u>.arg</u>
IN GROUND TESTING	
BOLT TO FLANGE RESISTANCE: all Bolts 72 NUMBER OF BOLT: 12 FLANGE TO FLANGE RESISTANCE: 8 K SC INSULATION CHECKER MODEL 702: N/A POTENTIAL DIFFERENCE TO REFERENCE CELL.	<u>00</u> 1
PROTECTED SIDE: -560 UNPROTECTED SIDE: -480	
ABOVE TESTING	
BOLT TO FLANGE RESISTANCE: NUMBER OF BOLTS: FLANGE TO FLANGE RESISTANCE:	
COMMENTS / LOCATION DRAWING	<u> </u>
Chatsworth	
S ISL Main	
	. 1
Boundary TESTED BY P. SMy	414

Brisbane Water Engineering Services	CP Form No. 2
Electrical Engineering Unit	
Insulated Joint Testing Details Form	
	10-03 TION Nº 14
DESCRIPTION	
MAINS DETAILS: LOCATIONS: SIZE: MATERIAL: COATING: VALVE No.	
IN GROUND TESTING	
BOLT TO FLANGE RESISTANCE: 011 Bolts NUMBER OF BOLT: 12 FLANGE TO FLANGE RESISTANCE: 2-5 msc INSULATION CHECKER MODEL 702: N/A.	<u> </u>
POTENTIAL DIFFERENCE TO REFERENCE CELL.	
PROTECTED SIDE: — 500 UNPROTECTED SIDE: — 318	
ABOVE TESTING	
BOLT TO FLANGE RESISTANCE: NUMBER OF BOLTS: FLANGE TO FLANGE RESISTANCE:	
COMMENTS / LOCATION DRAWING	
Alv Prout. Joo Branch. TP. TESTED BY	Smy-14

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Brisbane Water Engineering Services	CP Form No. 21
Electrical Engineering Unit	
Insulated Joint Testing Details Form	9
	-10-03 -10-03
DESCRIPTION	
- MAINS DETAILS: LOCATIONS: SIZE: MATERIAL: COATING: VALVE No.	<u>\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ </u>
IN GROUND TESTING	
BOLT TO FLANGE RESISTANCE: NUMBER OF BOLT: FLANGE TO FLANGE RESISTANCE: INSULATION CHECKER MODEL 702: POTENTIAL DIFFERENCE TO REFERENCE CELL.	72005
PROTECTED SIDE: -350 mV UNPROTECTED SIDE: -386 mV	<u> </u>
ABOVE TESTING	
BOLT TO FLANGE RESISTANCE: NUMBER OF BOLTS: FLANGE TO FLANGE RESISTANCE:	<u> </u>
COMMENTS / LOCATION DRAWING	
mary 9"Branch. Old Clevel	
City View Rd TESTED BY SI	7474

Brisbane Water Engineering Services	CP Form No. 21
Electrical Engineering Unit	
Insulated Joint Testing Details Form	
Project S54 Tarragindi-Lynnam Date 29-	4-03
DESCRIPTION	
MAINS DETAILS: LOCATIONS: SIZE: MATERIAL: COATING: VALVE No.	
IN GROUND TESTING	 .
BOLT TO FLANGE RESISTANCE: NUMBER OF BOLT: FLANGE TO FLANGE RESISTANCE: INSULATION CHECKER MODEL 702: POTENTIAL DIFFERENCE TO REFERENCE CELL.	<u>wo J</u> L
PROTECTED SIDE: -593 mv UNPROTECTED SIDE: -573 mv	
ABOVE TESTING	 : : :
BOLT TO FLANGE RESISTANCE. NUMBER OF BOLTS: FLANGE TO FLANGE RESISTANCE:	
COMMENTS / LOCATION DRAWING	
Main e Post.	•
o Post. Test Peril School.	, once kine
TESTED BY P SM	1th.

Brisbane Water Engineering Service	CP Form No. 2
Electrical Engineering Unit	
Insulated Joint Testing Details Form	
Project <u>S 5 i</u> p	Date 29-4-03 ISOLation 17
DESCRIPTION	
MAINS DETAILS: LOCATIONS: SIZE: MATERIAL: COATING: VALVE No. Tarragind CnR The Pr 42' - 36 MIId	Steel Branch
IN GROUND TESTING	
FLANGE TO FLANGE RESISTANCE: INSULATION CHECKER MODEL 702: POTENTIAL DIFFERENCE TO REFERENC PROTECTED SIDE: UNPROTECTED SIDE:	2 K SC N / A DE CELL. - 413 - 345
ABOVE TESTING	
BOLT TO FLANGE RESISTANCE: NUMBER OF BOLTS: FLANGE TO FLANGE RESISTANCE:	
COMMENTS / LOCATION DRAWING	K ->
The Pronen	rade
5 majn	
Insula Job	tell of Polist
	Stanle
TESTE	ED BY

Brisbane Water Engineering Services	
	CP Form No. 21
Electrical Engineering Unit	
Insulated Joint Testing Details Form	tion 70:18
Project <u>S.54</u> . Date Date	<u> </u>
DESCRIPTION	· · · · · · · · · · · · · · · · · · ·
- MAINS DETAILS: LOCATIONS: SIZE: MATERIAL: COATING: VALVE No. Tavragind: - Wynnu 511 Darcy Rd 42" - 36" Mynu Fild Steel G" Branch	<u>n R</u> J
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:	7200J
UNPROTECTED SIDE: — 465	<u> </u>
ABOVE TESTING	
BOLT TO FLANGE RESISTANCE: NUMBER OF BOLTS: FLANGE TO FLANGE RESISTANCE: COMMENTS / LOCATION DRAWING COMMENTS / LOCATION DRAWING Insulcided Touch	Howe 511
taran da arang	rcy lad
TESTED BY	

Brisbane Water Engineering Services	CP Form No. 21
Electrical Engineering Unit	
Insulated Joint Testing Details Form	
<u> </u>	ation 19
Project 554 Tarraginds - Lynnum Date 28-1	0-03
DESCRIPTION	
- MAINS DETAILS:	
LOCATIONS: 534 Darcy Rd SIZE: 42"-36"	<u> </u>
	·
MATERIAL: <u>mild steet</u> COATING:	
VALVE No. 9" Branch	
IN GROUND TESTING	
PROTECTED SIDE: UNPROTECTED SIDE: FLANGE RESISTANCE:	
	<u>.</u>
ABOVE TESTING	
BOLT TO FLANGE RESISTANCE: NUMBER OF BOLTS: FLANGE TO FLANGE RESISTANCE:	
COMMENTS / LOCATION DRAWING	
Ease Ment.	
Davcy a. A. TESTED BY	

Brisbane Water Engin	eering Services	CP Form No. 21
Electrical Engineering Unit	1. 7	
Insulated Joint Testing Deta	ails Form	•
Project Tarragindi - Wyn	nom hd. Dat	e //-//-03
DESCRIPTION		isolation 20
MAINS DETAILS: LOCATIONS: SIZE: MATERIAL: COATING: VALVE No.	S54 Richmand + Muir M SC L Tar Asbestos	
IN GROUND TESTING		
BOLT TO FLANGE RES NUMBER OF BOLT: FLANGE TO FLANGE F INSULATION CHECKE POTENTIAL DIFFEREN PROTECTED SIDE: UNPROTECTED SIDE:	RESISTANCE: 17 - 12 R MODEL 702: 1 N//	
ABOVE TESTING		•
BOLT TO FLANGE RES NUMBER OF BOLTS: FLANGE TO FLANGE R		
COMMENTS / LOCATION DRAWIN	<u>ıg</u>	*
12" Take off 8	1SLANL Pedest	Work &
,		Roichmond ST

Brisbane Water Engineering Services	CP Form No. 21
Electrical Engineering Unit	
Insulated Joint Testing Details Form	olation 21
Project Tarragindi - Wynnum Date 30-	10-03
DESCRIPTION	
- MAINS DETAILS: LOCATIONS: SIZE: MATERIAL: COATING: VALVE No. Cnr Muir + wynnu 42"-36" Mrid Steel T/E VALVE No.	<u>m</u>
IN GROUND TESTING	
BOLT TO FLANGE RESISTANCE: ULL BOLK 72 NUMBER OF BOLT: 12 FLANGE TO FLANGE RESISTANCE: 69 KJ INSULATION CHECKER MODEL 702: N/A POTENTIAL DIFFERENCE TO REFERENCE CELL.	200 J
PROTECTED SIDE: — 460 mV UNPROTECTED SIDE: — 380 mV	
ABOVE TESTING	
BOLT TO FLANGE RESISTANCE: NUMBER OF BOLTS: FLANGE TO FLANGE RESISTANCE:	· · · · · · · · · · · · · · · · · · ·
COMMENTS / LOCATION DRAWING	
Mulk 3m. masn	
Wynnun	
TESTED BY	SMYTH

Brisbane Water Engineering Services

CP Form No. 21

Electrical Engineering Unit

Insulated Joint Testing Details Form

Isolation no 22

Project SJ4 Tarray Indi To Lynnum

Date 11-11-03.

DESCRIPTION

MAINS DETAILS:

LOCATIONS:

SIZE:

MATERIAL:

COATING:

VALVE No.

Chr Muir + Lynnum Ru
42° to 36°
Mild Steel
T/E
12" Branch

IN GROUND TESTING

BOLT TO FLANGE RESISTANCE:

all Bolt 72001

NUMBER OF BOLT:

FLANGE TO FLANGE RESISTANCE:

INSULATION CHECKER MODEL 702:

POTENTIAL DIFFERENCE TO REFERENCE CELL:

PROTECTED SIDE:

UNPROTECTED SIDE:

-485 mv -310 nv

ABOVE TESTING

BOLT TO FLANGE RESISTANCE:

NUMBER OF BOLTS:

FLANGE TO FLANGE RESISTANCE:

COMMENTS / LOCATION DRAWING

Mur

12" Plans

Barrack

SMYTH

Wynnum Rd

Brisbane Water Engineering Services	00 5 N 04
	CP Form No. 21
Electrical Engineering Unit	
Insulated Joint Testing Details Form	10N Nº 24
Project Set 53 Musu To Man dotte Date 13-	J-014
DESCRIPTION	
- MAINS DETAILS: LOCATIONS: SIZE: MATERIAL: COATING: VALVE No. MAINS DETAILS: Cor Barrack & Wynn Mild Steel TA: 203	um RU
IN GROUND TESTING	
BOLT TO FLANGE RESISTANCE: All Bolt 720 NUMBER OF BOLT: FLANGE TO FLANGE RESISTANCE: 200 N INSULATION CHECKER MODEL 702: N/A POTENTIAL DIFFERENCE TO REFERENCE CELL. PROTECTED SIDE: -526 UNPROTECTED SIDE: -680	
ABOVE TESTING	
BOLT TO FLANGE RESISTANCE: NUMBER OF BOLTS: FLANGE TO FLANGE RESISTANCE:	
COMMENTS / LOCATION DRAWING WYNNUM	RJ
TESTED BY P. SM	

.	Brisbane Water Engineering Services CP Form No.		
Electrical Engineering Unit			
Insulated Joint Testing Details Form Isolation 76 8 Project Set 35 Wynnum - Date 20-2-04 Valve 816			
		DESCRIPTION	
		MAINS DETAILS:	
LOCATIONS: SIZE:	Lytton Rd Metroplex		
MATERIAL:	mild steel		
COATING: VALVE No.			
W ODOUND TESTING			
N GROUND TESTING			
PROTECTED SIDE: UNPROTECTED SIDE	NCE TO REFERENCE CELL: - 540		
ABOVE TESTING			
· ·	CICTANCE		
BOLT TO FLANGE RE NUMBER OF BOLTS: FLANGE TO FLANGE			
BOLT TO FLANGE RE NUMBER OF BOLTS: FLANGE TO FLANGE	RESISTANCE:		
BOLT TO FLANGE RE NUMBER OF BOLTS:	RESISTANCE:		

