ELECTRICAL SWITCHBOARD OPERATION AND MAINTENANCE MANUAL FOR QUEENSLAND URBAN UTILITIES SEWAGE PUMPING STATION

SP143 – LINKS AVE SOUTH

Developed by:

J & P RICHARDSON INDUSTRIES
CAMPBELL AVENUE
WACOL QLD 4076

ABN 23 001 952 325
ACN 001 952 325

Ph. (07) 3271 2911
Fax. (07) 3271 3623

ELECTRICAL SWITCHBOARD OPERATION AND MAINTENANCE MANUAL FOR QUEENSLAND URBAN UTILITIES SEWAGE PUMPING STATION

SP143 – LINKS AVE SOUTH

DOCUMENT CHANGE HISTORY

Version History

Version	Author	Issue Purpose	Signature	Date
1	Roland Barrett	Draft for Comment	Signed	27/03/13

Reviewed by

Version	Author	Position	Signature	Date
1.0	Andrew Hanlon	QUU Project Manager	Original Signed	21/10/13

CONTENTS

1 INTRODUCTION

These operating instructions cover the Sewage Pumping Station electrical equipment supplied by J & P Richardson Industries Pty Ltd in 2013.

1.1 OPERATING INSTRUCTIONS

Normal operation of the pumping station is in the automatic mode with control by means of a Motorola RTU, which receives level signals from the Level Measurement System in the wet well.

Manual controls and Manual Emergency operation of the station is available by means of selector switches on the common control compartment of the switchboard.

2 DESCRIPTION OF OPERATION

2.1 MODE SELECTOR

The station can be operated either in Local-Remote (automatic) or manual emergency mode with selection being made by means of the mode selector switches mounted on common control section escutcheon of the switchboard. The selector switch designated for Manual Emergency Mode is made by means with the following mode selections OFF-ON.

2.2 MANUAL EMERGENCY CONTROL

Each pumping unit can be run in manual emergency control from the common control section by: -

1. Selecting the "ON" setting on the "MODE SELECTOR SWITCH" as described in Clause 2.1.
2. The Duty Pump will start.
3. After a time delay, the Standby Pump will start.
4. Return the selector switch back to “OFF”.

N.B. DO NOT LEAVE THE STATION IN MANUAL EMERGENCY CONTROL WHILE UNATTENDED

2.3 MANUAL CONTROL

For manual control of the station: -

1. Select the "MANUAL" position on the "MODE SELECTOR SWITCH" on the common control section escutcheon.
2. Starting and stopping of each pump is now controlled via the "START" and "STOP" push buttons located on the common control section escutcheon.
3. To return to Automatic Control, return the selector switch back to “REMOTE”.

N.B. DO NOT LEAVE THE STATION IN MANUAL CONTROL WHILE UNATTENDED

2.4 AUTOMATIC CONTROL

For automatic control of the station: -

1. The "MODE SELECTOR SWITCH" on the common control section should be in the "REMOTE" position.
2. The automatic starting and stopping of the pumps is controlled by signals from the Motorola RTU.

For NORMAL OPERATION, each of the pump selector switches should have "EMERGENCY PUMP OFF" mode selected.

In the REMOTE mode the selected Duty Pump unit will start automatically as pre-set by the level in the wet well. In the event of the duty pump not being capable of supplying enough flow to continue draining the wet well and the well level rises to a second pre-set level, then the Standby Pump unit will automatically start to provide additional pumping. The supplementary pump unit also takes over for the respective pump duty on the occurrence of the Duty Pump unit failing. Duty and Standby pump delegation is assigned via the RTU programming.

3 ELECTRICAL EQUIPMENT LIST

This list is to be used in conjunction with Sheet 18 of the electrical switchboard drawings (refer Section 5).

ITEM	DESCRIPTION	SUPPLIER	MANUFACTURER	CATALOGUE NUMBER
	QLD SERVICE LINK	IPD	ALSTOM	QLD SERVICE LINK
2	MANUAL TRANSFER SWITCH	NHP	TERASAKI	S250PE3125
2	CABLE INTERLOCK HEAD PIECE	NHP	TERASAKI	T2MW25CA
2	1m INTERLOCK CABLE	NHP	TERASAKI	T2MW00SA
2	VARIABLE DEPTH HANDLE	NHP	TERASAKI	T2HS25R5GM
2	STANDARD TERMINAL COVER	NHP	TERASAKI	T2CF253LLNG
2	AUX CONTACT	NHP	TERASAKI	T2AX00M3STA
4	Q4 PUMP CIRCUIT BREAKER	NHP	TERASAKI	S125GJ363
4	Q4 PUMP CIRCUIT BREAKER	NHP	TERASAKI	S125GJ350
4	Q4 PUMP CIRCUIT BREAKER	NHP	TERASAKI	S125GJ332
4	Q4 PUMP CIRCUIT BREAKER	NHP	TERASAKI	S125GJ320
4	VARIABLE DEPTH HANDLE	NHP	TERASAKI	T2HS12R5GM
4	STANDARD TERMINAL COVER	NHP	TERASAKI	T2CF123SLNG
5	Q5 PUMP CIRCUIT BREAKER	NHP	TERASAKI	S125GJ363
5	Q5 PUMP CIRCUIT BREAKER	NHP	TERASAKI	S125GJ350
5	Q5 PUMP CIRCUIT BREAKER	NHP	TERASAKI	S125GJ332
5	Q5 PUMP CIRCUIT BREAKER	NHP	TERASAKI	S125GJ320
5	VARIABLE DEPTH HANDLE	NHP	TERASAKI	T2HS12R5GM
5	STANDARD TERMINAL COVER	NHP	TERASAKI	T2CF123SLNG
7	Q7 PHASE FAILURE CIRCUIT BREAKER	NHP	TERASAKI	DTCB15306C
8	Q8 EM. STORAGE DEWATERING PUMP CIRCUIT BREAKER	NHP	TERASAKI	S125GJ320
8	VARIABLE DEPTH HANDLE	NHP	TERASAKI	T2HS12R5GM
8	STANDARD TERMINAL COVER	NHP	TERASAKI	T2CF123SLNG
9	Q9 SUB-DISTRIBUTION CIRCUIT BREAKER	NHP	TERASAKI	S125NJ363
9	VARIABLE DEPTH HANDLE	NHP	TERASAKI	T2HS12R5GM
9	STANDARD TERMINAL COVER	NHP	TERASAKI	T2CF123SLNG
10	Q10 PHASE FAILURE CIRCUIT BREAKER	NHP	TERASAKI	DTCB6306C
11	Q11 15A GPO RCBO	NHP	TERASAKI	DSRCBH-16-30A
12	Q12 RTU LAPTOP GPO RCBO	NHP	TERASAKI	DSRCBH-10-30A
13	Q13 SPARE CIRCUIT BREAKER	NHP	TERASAKI	DSRCBH-06-30A
14	Q14 SPARE CIRCUIT BREAKER	NHP	TERASAKI	DSRCBH-10-30A
15	Q15 GENERATOR AUXILLARY SUPPLY RCBO	NHP	TERASAKI	DSRCBH-10-30A
16	Q16 EXTERNAL AERA LIGHTING RCBO	NHP	TERASAKI	DSRCBH-06-30A
17	Q17 SURGE FILTER CIRCUIT BREAKER	NHP	TERASAKI	DTCB6110C
18	Q18 EM PUMP CONTROL & SURCHARGE IMMINENT CB	NHP	TERASAKI	DTCB6106C
19	Q19 SPARE CIRCUIT BREAKER	NHP	TERASAKI	DTCB6106C

20	Q20 3 PHASE OUTLET CIRCUIT BREAKER	NHP	TERASAKI	DTCB6310C
20	Q20 DIN SAFE M ADD-ON E/L	NHP	TERASAKI	DSRCM-32-30-3PN
21	Q21 CATHODIC PROTECTION POWER SUPPLY CB	NHP	TERASAKI	DTCB6106C
24	Q30 RTU POWER SUPPLY CIRCUIT BREAKER	NHP	TERASAKI	DTCB6104C
25	Q31 SURGE FILTERS ALARM RELAY CIRCUIT BREAKER	NHP	TERASAKI	DTCB6104C
26	Q32 SPARE CIRCUIT BREAKER	NHP	TERASAKI	DTCB6104C
27	Q33 SPARE CIRCUIT BREAKER	NHP	TERASAKI	DTCB6104C
31	Q4-1,Q5-1 PUMP 240VAC CONTROL CIRCUIT BREAKER	NHP	TERASAKI	DTCB6104C
32	QD4,QD6,QD18 PUMP 24VDC CONTROL CIRCUIT BREAKER	NHP	TERASAKI	DTCB6110C
33	QD8 BATTERY SHORT CCT PROTECTION CIRCUIT BREAKER	NHP	TERASAKI	DTCB6210C
34	240VAC-24VDC POWER SUPPLY 120W 5A@24VDC	RAMELEC	WEIDMULLER	8951340000
36	DISTRIBUTION BOARD CHASSIS	NHP	TERASAKI	NC2-24/18-3U
37	F1 FUSE HOLDER	NHP	NHP	NV63FW
37	F1 FUSE CARTRIDGE	NHP	NHP	NES63
38	SURGE DIVERTER	ECO	CRITEC	TDS11002SR277
39	SURGE FILTER ALARM RELAY - SFAR	ECO	CRITEC	DAR-275V
40	SURGE REDUCTION FILTER - SRF	ECO	CRITEC	TDF-10A-240V
41	ENERGEX MAINS PHASE FAILURE RELAY - PFRE	NHP	CARLO GAVAZZI	DPB01CM48W4
43	STATION MAINS PHASE FAILURE RELAY- PFRS	NHP	CARLO GAVAZZI	DPB01CM48W4
45	MAIN NEUTRAL LINK	JPR	JPR	CUSTOM BUS BAR
45	MOUNTING FEET	JPR	JPR	BOBBINS
46	MAIN EARTH LINK	JPR	JPR	CUSTOM BUS BAR
47	DIST. BD NEUTRAL LINK	DORE	DORE	165E24
47	DIST. BD NEUTRAL LINK MOUNTING FEET	DORE	DORE	E/N FEET
48	DIST. BD EARTH LINK	DORE	DORE	165E24
49	SURGE DIVERTER NEUTRAL LINK	CLIPSAL	CLIPSAL	L5A
50	INSTRUMENT EARTH LINK	DORE	DORE	165E12
50	INSTRUMENT EARTH LINK MOUNTING FEET	DORE	DORE	E/N FEET
51	FILTERED SUPPLY NEUTRAL LINK	CLIPSAL	CLIPSAL	L7
52	3 PHASE SWITCHED OUTLET	CLIPSAL	CLIPSAL	56C410
53	1 PHASE OUTLET - 15A	CLIPSAL	CLIPSAL	2015/15
53	1 PHASE OUTLET INSULATING SHROUD	CLIPSAL	CLIPSAL	90B
54	LAPTOP GPO TWIN 10A	CLIPSAL	CLIPSAL	2025
54	LAPTOP GPO MOUNTING BLOCK	CLIPSAL	CLIPSAL	449A
54	LAPTOP GPO INSULATING BACK PLATE	CLIPSAL	CLIPSAL	449AP
55	1 PHASE OUTLET - GENERATOR AUX POWER	CLIPSAL	CLIPSAL	56SO310
56	GENERATOR INLET	DKSH	MENNEKES	MEN 368
56	PROTECTIVE CAP	DKSH	MENNEKES	40788
56	GENERATOR INLET	DKSH	MENNEKES	MEN 361

56	PROTECTIVE CAP	DKSH	MENNEKES	40787
59	22kW PUMP SOFT STARTER	DANFOSS	DANFOSS	MCD500 MCD5-0053B 175G5503
59	18kW PUMP SOFT STARTER	DANFOSS	DANFOSS	MCD500 MCD5-0043B 175G5502
59	15kW PUMP SOFT STARTER	DANFOSS	DANFOSS	MCD500 MCD5-0037B 175G5501
59	7.8kW PUMP SOFT STARTER	DANFOSS	DANFOSS	MCD500 MCD5-0021B 175G 5500
59	PUMP SOFT STARTER MODBUS	DANFOSS	DANFOSS	MCD500 175G 9000
60	PUMP SOFT STARTER KEYPAD KIT	DANFOSS	DANFOSS	MCD500 175G 0096
64	PUMP LINE CONTACTOR - K1 (24VDC COIL)	NHP	SPRECHER & SCHUH	CA7-43C-00-24VDC
64	PUMP LINE CONTACTOR - K1 (24VDC COIL)	NHP	SPRECHER & SCHUH	CA7-30C-00-24VDC
65,66, 68,69	PUMPCONTROL RELAYS K2, K3, K5, K6	IPD	IDEC	RH2B-ULD-24VDC
65,66, 68,69	PUMPCONTROL RELAY BASES K2, K3, K5, K6	IPD	IDEC	SH2B-05C
67	PUMPCONTROL RELAYS K4	IPD	IDEC	RH4B-ULD-24VDC
67	PUMPCONTROL RELAY BASES	IPD	IDEC	SH4B-05C
73,74, 75	PUMPCONTROL RELAYS K20, K21, K22	IPD	IDEC	RH2B-ULD-24VDC
73,74, 75	PUMPCONTROL RELAY BASES K20, K21, K22	IPD	IDEC	SH2B-05C
77	LOCAL START PUSHBUTTON -S1	NHP	SPRECHER & SCHUH	D7P-F3-PX10
78	LOCAL STOP (N/O) PUSHBUTTON-S2	NHP	SPRECHER & SCHUH	D7P-F4-PX10
79	LOCAL ESTOP PUSHBUTTON-S3	NHP	SPRECHER & SCHUH	D7P-MT44 -PX01S
79	LOCAL ESTOP PUSHBUTTON-S3	NHP	SPRECHER & SCHUH	D7-PX01S
79	LOCAL ESTOP PUSHBUTTON-S3	NHP	SPRECHER & SCHUH	D7-15YE112
80	LOCAL RESET PUSHBUTTON-S4	NHP	SPRECHER & SCHUH	D7P-F6-PX10
80	N/O AUX	NHP	SPRECHER & SCHUH	D7-PX10
81	HOURS RUN	NHP	NHP	RQ4801080VDC
82	PUMP POWER SOCKET OUTLET	MARECHAL	MARECHAL	DS3 3134013972
82	PUMP POWER SOCKET OUTLET	MARECHAL	MARECHAL	DS1 3114013972
82	PUMP POWER SOCKET INCLINE SLEEVE	MARECHAL	MARECHAL	51CA058
82	PUMP POWER SOCKET INCLINE SLEEVE	MARECHAL	MARECHAL	51BA058
83	PUMP POWER INLET PLUG	MARECHAL	MARECHAL	DS3 3138013972
83	PUMP POWER INLET PLUG	MARECHAL	MARECHAL	DS1 3118013972
83	PUMP POWER INLET HANDLE	MARECHAL	MARECHAL	313A013
83	PUMP POWER INLET HANDLE	MARECHAL	MARECHAL	311A013
84	PUMP CONTROL SOCKET OUTLET	MARECHAL	MARECHAL	PN7C 01P4060
84	PUMP CONTROL SOCKET INCLINE SLEEVE	MARECHAL	MARECHAL	01NA053
85	PUMP CONTROL INLET PLUG	MARECHAL	MARECHAL	PN7C 01P8060
85	PUMP CONTROL INLET HANDLE	MARECHAL	MARECHAL	01NA313
93	LR3 - WET WELL HIGH LEVEL RELAY	MULTITRODE	MULTITRODE	MTR-5 (24VDC)
95	SIR - SURCHARGE IMMINENT LEVEL RELAY	MULTITRODE	MULTITRODE	MTRA-FS (24VDC)
97	EMERGENCY PUMPING MODE RELAY PUMP1 - EMG1	IPD	IDEC	RH2B-ULD-24VDC

97	EMERGENCY PUMPING MODE RELAY PUMP1 - EMG1	IPD	IDEC	SH2B-05C
98	SURCHARGE IMMINENT DELAY TIMER - SIDT	NHP	SPRECHER & SCHUH	RZ7-FSA 4U U23
99	EMERGENCY PUMPING MODE TIMER - EMGDT	OMRON	OMRON	OMRON H3CA-A
99	EMERGENCY PUMPING MODE TIMER - EMGDT	OMRON	OMRON	OMRON P2CF-11
99	EMERGENCY PUMPING MODE TIMER - EMGDT	OMRON	OMRON	OMRON Y92A-48B
100	EMERGENCY PUMPING MODE PUMP2 - EMG2	NHP	SPRECHER & SCHUH	RZ7-FSA 3E U23
101	EMERGENCY PUMPING MODE SWITCH & LIGHT S5/H5	NHP	SPRECHER & SCHUH	D7P-LSM25 c/w D7-110, D7-17BE165
101	EMERGENCY PUMPING MODE SWITCH & LIGHT S5/H5	NHP	SPRECHER & SCHUH	D7-X10
101	EMERGENCY PUMPING MODE SWITCH & LIGHT S5/H5	NHP	SPRECHER & SCHUH	D7-NU3W
102	EMERGENCY PUMPING MODE AUX RELAY - EMGDTA	IPD	IDEC	RH2B-ULD-24VDC
102	EMERGENCY PUMPING MODE AUX RELAY BASE - EMGDTA	IPD	IDEC	SH2B-05C
115	LIGHTING CONTROL RELAY - SLCR, DZCR	IPD	IDEC	RH2B-ULD-24VDC
115	LIGHTING CONTROL RELAY BASE - SLCR, DZCR	IPD	IDEC	SH2B-05C
116	AREA LIGHTING CONTROL SWITCH - S11	KRAUS&NAIMER	KRAUS&NAIMER	CAD11-A721-600-FT2-F758 *ENGRAVED "OFF ON"
118	STATION LOCAL REMOTE SWITCH - S10	KRAUS&NAIMER	KRAUS&NAIMER	CAD11-A721-600-FT2-F758 *ENGRAVED "LOCAL REMOTE"
119	ELECTRODE TEST RELAY - ETR	IPD	IDEC	RH4B-ULD-24VDC
119	ELECTRODE TEST RELAY BASE - ETR	IPD	IDEC	SH4B-05C
120	WELL WASHER RELAY - WWR	IPD	IDEC	RH2B-ULD-24VDC
120	WELL WASHER RELAY BASE - WWR	IPD	IDEC	SH2B-05C
121	WET WELL LEVEL INDICATOR 0-100% ADJ RED POINTER	CROMPTON	CROMPTON INSTRUMENTS	244-01KG-HG-IP-SR-4-20MA WITH RED POINTER
122	FIELD DISCONNECT BOX DOOR PROXIMITY SWITCH	PEPPERL & FUCHS	PEPPERL & FUCHS	NCB5-18GM40-Z0
123	MICRO SWITCH	OMRON	OMRON	Z-15GW2A55-B5V
124	PROXIMITY SWITCH	CONTROL LOGIC	PEPPERL & FUCHS	NCB5-18GM40-Z0
125	INTERNAL SWITCHBOARD LED LIGHTING	OMEGA	LUMIFA	LF1B-C3S-2THWW4
126	EM. STORAGE DEWATERING PUMP CONTACTOR	NHP	SPRECHER & SCHUH	CA7-16C-10-24VDC
127	EM. STORAGE DEWATERING PUMP OVERLOAD	NHP	SPRECHER & SCHUH	CT7N-23-B48
128	EM. STORAGE DEWATERING PUMP RELAY	IPD	IDEC	RH2B-ULD-24VDC
128	EM. STORAGE DEWATERING PUMP RELAY BASE	IPD	IDEC	SH2B-05C
129	EM. STORAGE DEWATERING PUMP CNTL SWITCH - 7S1	NHP	SPRECHER & SCHUH	D7P-SR32 c/w D7-110, (black with white text) "OFF - AUTO - TEST"
129	EM. STORAGE DEWATERING PUMP CNTL SWITCH - 7S1	NHP	SPRECHER & SCHUH	D7-X10
129	EM. STORAGE DEWATERING PUMP CNTL SWITCH - 7S1	NHP	SPRECHER & SCHUH	D7-X01
130	BD1 - DIODE BRIDGE SINGLE PHASE	RS COMPONENTS	RS COMPONENTS	227-8772
130	F1 - PANEL MOUNT FUSE HOLDER	NHP	NHP	NV20FW + NNS4
130	F1 - 4A FUSE	RS COMPONENTS	RS COMPONENTS	537-1408
130	H1 - RED LED INDICATOR LIGHT	NHP	SPRECHER & SCHUH	D7P-P4-PN7R

130	H2 - WHITE LED INDICATOR LIGHT	NHP	SPRECHER & SCHUH	D7P-P7-PN7W
130	H3 - AMBER LED INDICATOR LIGHT	NHP	SPRECHER & SCHUH	D7P-P0-PN3A
130	K1 - 24VDC 2 POLE RELAY	IDEC	IDEC	RH2B-ULD-DC24V
130	K1 - 24VDC 2 POLE RELAY BASE	IDEC	IDEC	SH2B-05C
130	M1 - VOLTMETER	RS COMPONENTS	RS COMPONENTS	244-862
130	M2 - AMMETER	RS COMPONENTS	RS COMPONENTS	244-907
130	S1 - RED MOMENTERY PUSH PUTTON	NHP	SPRECHER & SCHUH	D7P-F4-PX01
130	S2 - BLUE MOMENTERY PUSH PUTTON	NHP	SPRECHER & SCHUH	D7P-F6-PX10
130	TDR1 - TRANSDUCER	RAMELEC	WEIDMULLER	FTX/DMV/0-150mV/4-20mA/240VAC
130	T1 - 240VAC to 6,8,10,12 VAC TRANSFORMER (60VA)	PETER MARTIN	PETER MARTIN	TX0150 240/12T 240VAC IN (50Hz) 6,8,10,12V TAPPINGS OUTPUT 12.5A MAX
130	VR1 - VARISTOR	RS COMPONENTS	RS COMPONENTS	543-5215
130	THROUGH TERMINAL GREY	PHOENIX	PHOENIX	UT16 (3044199)
130	END COVER	PHOENIX	PHOENIX	D-UT16 (3047206)
130	TERMINAL BRIDGING BAR	PHOENIX	PHOENIX	FBS2-12 (3005950)
133	WET WELL LEVEL PROBE (27m suspension cable PE)	VEGA	VEGA	WL52XXA4AMD1DD1X
133	WET WELL LEVEL PROBE (12m suspension cable PE)	VEGA	VEGA	WL52XXA4ALD1DD1X
134	WET WELL LEVEL ADJUSTMENT UNIT	VEGA	VEGA	DIS62XXKMAXX
135	EM. STORAGE DEWATERING LEVEL PROBE	VEGA	VEGA	WL52XXA4ATD1CD1X
136	EM. STORAGE DEWATERING LEVEL ADJUSTMENT UNIT	VEGA	VEGA	DIS62XXKMAXX
137	DELIVERY PRESSURE TRANSMITTER (0-5.0bar)	VEGA	VEGA	VEGABAR52 BR52.XXCA1FHPMAS
137	DELIVERY PRESSURE TRANSMITTER (0-1.0bar)	VEGA	VEGA	VEGABAR52 BR52.XXCA1DHPMAS
137	DELIVERY PRESSURE TRANSMITTER (0-2.5bar)	VEGA	VEGA	VEGABAR52 BR52.XXCA1EHPMAS
138	TRICLOVE FITTING FOR VEGABAR52	VEGA	VEGA	TRI CLOVE ADAPTER 4
139	CONTROL SYSTEMS POWER SUPPLY 24V DC	POWERBOX	POWERBOX	PB251A-24CM-CC-T-S
140	RADIO 24/13.8VDC CONVERTER 50W	POWERBOX	POWERBOX	PBIH-2412J-CC
141	PSTN MODEM 24V/9VDC CONVERTER	POWERBOX	POWERBOX	PBBA-2409F-CM-CC
142	300mm TELESCOPIC RAILS	UES	UES	DSCH MD 300MM
142	BATTERIES	CENTURY BATTERIES	YAUSA	UXH50-12
143	RADIO	SCHNEIDER	TRIO	DR900-07A02-D0
143	RADIO	SCHNEIDER	TRIO	DR900-06A02-D0
143	RADIO TO RTU PATCH LEAD	BLACKBOX	BLACKBOX	CONNX2298
144	RADIO ANTENNA (15 ELEMENT 13dB ALUM)	SCHNEIDER	TRIO	ANTY13AL
145	RADIO COAX SURGE PROTECTOR	RF INDUSTRIES	POLYPHASER	IS-50-NX-C2
146	ACE 3600 BASIC MODEL (NO RADIO)	MOTOROLA	MOTOROLA	F7509
146	DC POWER SUPPLY	MOTOROLA	MOTOROLA	V251
146	PLUG IN RS-232 PORT	MOTOROLA	MOTOROLA	V184
146	PLUG IN ETHERNET 10/100M PORT	MOTOROLA	MOTOROLA	V212

146	7 SLOT FRAME	MOTOROLA	MOTOROLA	V107
146	SOFTWARE LICENSE - DNP3+ LICENSE	MOTOROLA	MOTOROLA	V283
146	DIGITAL INPUT MODULES - 16 DI FAST 24V DC	MOTOROLA	MOTOROLA	V265
146	RELAY OUTPUT MODULES - 16 DO EE RELAY 2A	MOTOROLA	MOTOROLA	V616
146	MIXED IO CARD - 4AO/ 8AI +/- 20mA	MOTOROLA	MOTOROLA	V562
146	BLANK MODULE	MOTOROLA	MOTOROLA	V20
147	GSM MODEM (BRAYMAC)	BRAYMAC	WAVECOM	FASTRACK Supreme c/w 1.8m CABLE
147	PSTN MODEM	MAESTRO	WOOMERA	56K V.90
148	GSM ANTENNA	RF INDUSTRIES	RF INDUSTRIES	TLA2100
148	PSTN MODEM SURGE PROTECTION UNIT	ECO	CRITEC	SLP1-RJ11-A
150	GRAPHICAL DISPLAY	CONTROL LOGIC	RED LION	G306A000
150	CAT5e PATCH LEAD			RED CAT5e CROSS OVER CABLE
157	INTERNAL COAX CABLE	SCHNEIDER	TRIO	TBURRFTSMAM-NM0.5M 84020878/8530
158	EXTERNAL COAX CABLE	STOCK	RF INDUSTRIES	ANDREW CNT400
159	COAX PLUG	RF INDUSTRIES	PULSE	N-203HS
160	U CLAMP	RF INDUSTRIES	RF INDUSTRIES	UNV
164	10A MINATURE CIRCUIT BREAKER	PHOENIX	PHOENIX	TCP 10 (0712314)
164	TERMINAL MOUNTING BLOCK	PHOENIX	PHOENIX	UK6-FSI/C (3118203)
164	BRIDGING BAR	PHOENIX	PHOENIX	FBI 10-8 (0203263)
164	4A MINATURE CIRCUIT BREAKER	PHOENIX	PHOENIX	TCP 4 (0712259)
164	TERMINAL MOUNTING BLOCK	PHOENIX	PHOENIX	UK6-FSI/C (3118203)
164	2A MINATURE CIRCUIT BREAKER	PHOENIX	PHOENIX	TCP 2 (0712217)
164	TERMINAL MOUNTING BLOCK	PHOENIX	PHOENIX	UK6-FSI/C (3118203)
164	THROUGH TERMINAL GREY	PHOENIX	PHOENIX	PIT2,5 (3209510)
164	THROUGH TERMINAL EARTH	PHOENIX	PHOENIX	PIT2,5 PE (3209536)
164	END COVER	PHOENIX	PHOENIX	D-ST2,5 (3030417)
164	DISCONNECT TERMINAL GREY	PHOENIX	PHOENIX	PIT2,5 MT (3210156)
164	END COVER	PHOENIX	PHOENIX	D-PIT2,5 MT (3211003)
164	GROUP MARKER	PHOENIX	PHOENIX	UBE/D (0800307)
164	END BRACKET	PHOENIX	PHOENIX	E/UK (1201442)
164	PLUG IN BRIDGE 50 WAY	PHOENIX	PHOENIX	FBS 50-5 (3038930)
164	TEST PLUG	PHOENIX	PHOENIX	PS 5 (3030983)
164	TERMINAL MARKER VERTICAL	PHOENIX	PHOENIX	ZB5 QR:FORTL.ZAHLEN 1-10 (1050020:0001)
164	TERMINAL MARKER VERTICAL	PHOENIX	PHOENIX	ZB5 QR:FORTL.ZAHLEN 11-20 (1050020:0011)
164	TERMINAL MARKER VERTICAL	PHOENIX	PHOENIX	ZB5 QR:FORTL.ZAHLEN 21-30 (1050020:0021)
164	TERMINAL MARKER VERTICAL	PHOENIX	PHOENIX	ZB5 QR:FORTL.ZAHLEN 31-40 (1050020:0031)
164	TERMINAL MARKER VERTICAL	PHOENIX	PHOENIX	ZB5 QR:FORTL.ZAHLEN 41-50 (1050020:0041)
164	TERMINAL MARKER VERTICAL	PHOENIX	PHOENIX	ZB5 QR:FORTL.ZAHLEN 51-60 (1050020:0051)

164	TERMINAL MARKER VERTICAL CUSTOM	PHOENIX	PHOENIX	UC-TM 5 CUS L (0824581L) (VERTICAL NUMBERS L1-L40), (VERTICAL NUMBERS 600-611)
170	ENERGEX PADLOCK	H.A.REED LOCKSMITHS	H.A.REED LOCKSMITHS	ENERGEX PADLOCK KEYED 325 WITH S/S SHACKLE AND 2 KEYS PER LOCK
187	LEVEL PROBE (CABLE LENGTH = 30m)	MULTITRODE	MULTITRODE	0.2/01-30 FSP-SHIELD **special shielded cable**
191	EXTERIOR AREA LIGHT	STRATEGIC LIGHTING	STRATEGIC LIGHTING	ECLIPSE T5 2x80W
192	CORROSION INHIBITOR	RS	CORTEC	VPCI-110
189	EM. STORAGE DEWATERING PUMP POWER SOCKET OUTLET	MARECHAL	MARECHAL	DSN1 6114013
189	EM. STORAGE DEWATERING PUMP INCLINE SLEEVE	MARECHAL	MARECHAL	51AA757
190	EM. STORAGE DEWATERING PUMP CONTROL INLET PLUG	MARECHAL	MARECHAL	DSN1 6118013
190	EM. STORAGE DEWATERING PUMP HANDLE	MARECHAL	MARECHAL	611A013

4 TEST RESULTS

J. & P. RICHARDSON INDUSTRIES PTY LTD
114 Campbell Avenue, WACOL QLD 4076
Ph: (07) 3271 2911 - Fax: (07) 3271 3623
E-mail: jpr@jpr.com.au

SWITCHBOARD & SHEETMETAL INSPECTION REPORT

Customer Name: QUU	**Job No: M63000/S63000**
Item: SP143 Links Ave South	**Drawing No: 57-0297set_A**

TASK	PRODUCT DETAIL	INSPECTED BY	DATE	PASS / FAIL	CORRECTIVE ACTION REQUEST OR COMMENTS
Design	Documents	R.B.	4/02/2013	✓	
Drafting	Documents				
Sheetmetal (Refer F1018 for details)	Switchboard	DC	8-3-13	P	
	Doors	DC	12-3-13	P	
	Cell/Panels				
Painting					
Process	Powder / Wet				
Min DFT (40 STD)					
Cure Test					
Colour Exterior			25/03/13	P	HW
Colour Internal					
Colour Panels					
Cubicle Erection		J.Treeye	04/05/13	Pass	~~Lock hooks Not Supplied~~
Electrical Fitout (In accordance with drawings)					
Inspection & Test (Refer to F1019)		EEnstar	8/4/13	Pass	
Packing					

Comments:

BRAD

all Reps are Done 25/03/13

NOTE: - Manufacture is not to proceed to the next process until the item has passed inspection

Affix Status Here: -

Yellow	Awaiting Inspection
Green	Inspection & Test Passed
Red	Inspection & Test Failed, Awaiting Rectification

EAE 8/4/13

J. & P. RICHARDSON INDUSTRIES PTY. LTD.
114 Campbell Avenue, WACOL QLD 4076
Ph: (07) 3271 2911 - Fax: (07) 3271 3623
E-mail: jpr@jpr.com.au

SWITCHBOARD / SHEETMETAL INSPECTION CHECKLIST

CLIENT: Queensland Urban Utilities			**JOB NO:** S63000		
PRODUCT DESCRIPTION: SP143 Links Ave South			**DRAWING & SCHEDULE NUMBERS** 57-0297set A		
CONSTRUCTION	**QUALITY**		**COMPLIANCE WITH DRAWINGS**		**REMARKS OR ACTION**
	GOOD	**POOR**	**YES**	**NO**	
1. **Folds**			✓		
2. **Welds**			✓		
3. **Edges / File**			✓		
4. **Gauge**			✓		
5. **Material**			✓		
6. **Ventilation Openings / Filter Bracket**			✓		
7. **Water Ingress Test**					
8. **Equipment Mounting Arrangement**			✓		
9. **Doors Stiffened**					
10. **Escutcheons and Lexan Covers**			-		
11. **Cable Saddles**					
12. **Grinding**			✓		
13. **Door Stays Fitted**			✓		
14. **Earth Studs**			✓		
15. **Rubber Retainer**			—		
16. **Drawing Holder**					
17. **Hat Sections**					
18. **Locking Bars Fitted**					
19. **External Crevice Welded and Ground**			—		
20. **Legend Cards**					
21. **General Conditions Satisfactory**			✓		
22. **Cabinet Clean**			✓		
23. **Job Name and Number Marked on Board and Panels**					
24. **Lap Top Tray**			-		
25. **Gland Plates Fitted**			✓		
26. **Sunshields Fitted**			✓		

J. & P. RICHARDSON INDUSTRIES PTY LTD
114 Campbell Avenue, WACOL QLD 4076
Ph: (07) 3271 2911 - Fax: (07) 3271 3623
E-mail: jpr@jpr.com.au

SWITCHBOARD ELECTRICAL INSPECTION & TEST REPORT

Customer Name: QUU

Project: Links Ave South Sewage Pumping Station

JPR Job No: M63000 **Item:** SP 143

Constructed by: R Koenenhons **Tested by:** E Edgar **Date:** 6/4/13

Item check list:	*To comply with Drawings, Documents & Specification*						
Main Functional Unit/s	Qty	✓	Size	✓	Settings	✓	
Fuse Fittings	Qty	✓	Size	✓	Fuse Size	✓	
Circuit Breakers	Qty	✓	Size	✓	Settings	✓	
Motor Protection C.B.	Rating		Setting		Function		
Neutral	Reqd	✓	Size	✓	ID	✓	
Equipment Earthing	Checked	✓	Size	✓			
C.T.s	Qty		Rating		Pri Inject.		
Meters	Qty	✓	Rating	✓	Function	✓	
Contactors	Qty	✓	Rating	✓	Voltage	✓	
Overloads	Qty		Rating		Function		
Relays	Qty	✓	Rating	✓	Voltage	✓	
Timers	Qty	✓	Rating	✓	Voltage	✓	
Control Switches	Qty	✓	Rating	✓	Function	✓	
Push Buttons	Qty	✓	Rating	✓	Function	✓	
Pilot Lights	Qty	✓	Rating	✓	Voltage	✓	
Transformers	Qty		Rating		Voltage		
ATT/VFD/Soft Starter	Qty	✓	Rating	✓	Function	✓	
DC Supply	Qty	✓	Rating	✓	Voltage	✓	
Terminals	Qty	✓	Size	✓	ID	✓	
Engraving	Qty	✓	Size	✓	ID	✓	
Cabling	Type	✓	Size	✓	ID	✓	
Busbars	Type		Size		ID		
Escutcheons / Shrouds	Type	✓	Label	✓	IP rating	✓	
S.A. Metering CTs	Qty		Rating				
S.A Metering Links	Type						
S.A. Meters	Type	✓	Size	✓			
JPR Label	Fitted	✓	Stamped	✓	Safety Stkr	✓	
Legend Card	Qty		Correct				
PLC/Telemetry	Qty	✓	Size	✓			
Power Monitor Relay	Qty		Rating		Function		
General Check List:							
IP Sealing	Rating	✓					
Door Latches/Hinges	Qty	✓	Type	✓	Operation	✓	
Ventilation	Required	✓	Type	✓	Operation		
Circuit Schedule	Markup	✓	Checked		Supplied		
Terminal Tightness	Power	✓	Control	✓	Result	✓	
Busbar System	Clearances		Joints		ID		
Earth Continuity	Body to E	✓	Doors to E	✓	Panels to E	✓	
Cubicle Cleaned		✓					
Paint Finish Intact		✓					
Polarity Check	R - R	✓	W - W	✓	B - B	✓	
Function	Power	✓	Control	✓	PLC/Telem	✓	
Continuity Check	R - R	✓	W - W	✓	B - B	✓	N - N ✓
Insulation Test	***R to E***	***W to E***	***B to E***	***R to W***	***R to B***	***W to B***	***N to E***
1000v Test (MΩ) Mains	500	500	500	500	500	500	
Gen	500	500	500	500	500	500	
Earth Leakage							
Earth Leakage Test		Rated Current		Trip Current		Trip Time	
Comments:							

J. & P. RICHARDSON INDUSTRIES PTY LTD
114 Campbell Avenue, WACOL QLD 4076
Ph: (07) 3271 2911 - Fax: (07) 3271 3623
E-mail: jpr@jpr.com.au

SWITCHBOARD ELECTRICAL INSPECTION & TEST REPORT
EARTH LEAKAGE TEST

Customer Name:	QUU				
JPR Job No:	M63000	**Item:**	Links Ave South S.P.S SP143		
Constructed by:	R Kompenhans	**Tested by:**	E Ensor	**Date:**	5/4/13
Test Unit	**Megger RCDT330**	✓	**Other**		

Circuit Breaker	Phase	Rated Current (mA)		Trip Current (mA)		Trip Time (mS)	Comments
Q11		30		23		28.7	
Q12		30		25		28.8	
Q13		30		25		28.7	
Q14		30		25		28.7	
Q15		30		25		28.8	
Q16		30		25		28.7	
	R	30		25		20.4	
Q20	W	30		25		22.0	
	B	30		25		18.6	

Comments:-

J. & P. RICHARDSON INDUSTRIES PTY LTD
114 Campbell Avenue, WACOL QLD 4076
Ph: (07) 3271 2911 - Fax: (07) 3271 3623
E-mail: jpr@jpr.com.au

SWITCHBOARD ELECTRICAL INSPECTION & TEST REPORT
VFD & SOFT STARTER SETUP

Customer Name:	QUU			
Project:	Links Ave. South Sewage Pumping Station			
JPR Job No:	M63000	**Item:**	SP143	**Drive:**
Constructed by:	R Kompenhons	**Tested by:**	E Ensor	**Date:** 2/4/13
Drive Type:	Danfoss MCD5 Soft Starter			
Drive Rating:				
Drive Setup Details:				

Parameter		*Setting*		*Function*
1-1		10A		FLC
1-10		TVR SoftStop		Stop Mode
1-11		5 Sec		Stop Ramp
2-4		20%	Default	0% for Test - Undercurrent
3-1		Remote Control Only		Local/Remote Mode
3-3		Input Trip N/C		Input A Function
3-4		Emergency Stop		Input A Name
4-1		Main Contactor		Relay A Function
4-4		Trip		Relay B Function
4-7		Run		Relay C Function
8-9		415V		Mains Reference Voltage

All other parameters are default settings.

Comments:

JOB SAFETY ANALYSIS

LIVE LOW VOLTAGE WORK

TESTING SWITCHBOARDS AND CONTROL PANELS WITHIN OUR MANUFACTURING PREMISE

APPROVED BY: Eric McCulloch (WHSO)

LOCATION: WACOL WORKSHOP DATE: 5../4../13

AUTHORISATIONS		PERSONAL PROTECTIVE EQUIPMENT	
• Authorisation from person in charge (Signature)	☑ YES	• Long cotton clothing • Insulating work gloves in test • Insulating mats / covers in test • Switchboard rescue kit in test	☑ YES ☑ YES ☑ YES ☑ YES

TASK		
LIVE LOW VOLTAGE WORK	• Isolation points identified and accessible	☑ YES
	• Work area clear of obstructions	☑ YES
	• Unauthorised access prevented to work area	☑ YES
	• P.P.E. is fit for purpose	☑ YES
	• Test equipment is fit for purpose	☑ YES
	• Written authority to proceed has been obtained from a person in charge.	☑ YES
TESTING SWITCHBOARDS AND CONTROL PANELS WITHIN OUR MANUFACTURING PREMISES	• JPR authorisation to conduct live work is current	☑ YES
	• Approved dedicated power supply only used for testing.	☑ YES
	• Approved dedicated power supply in current test	☑ YES
OPTION	(A) RCD protected outputs used at power supply	☑ YES
	> RCD protection checked daily prior to use	☑ YES
	> Safety Observer ~~is~~ / is not required	☑ YES
OPTION	(B) Non RCD protected outputs used at power supply	☐ YES
	> Supervisor consulted prior to use	☐ YES
	> Safety Observer is in attendance	☐ YES

I understand and am fully aware of the requirements of this job safety analysis.

Signatures:	1.	2.	3.	4.	5.

JOB SAFETY ANALYSIS

LIVE LOW VOLTAGE WORK

TESTING SWITCHBOARDS AND CONTROL PANELS WITHIN OUR MANUFACTURING PREMISE

APPROVED BY: Eric McCulloch (WHSO)

LOCATION: WACOL WORKSHOP DATE: 8.1.4.1.13

AUTHORISATIONS		PERSONAL PROTECTIVE EQUIPMENT	
• Authorisation from person in charge (Signature)	☑ YES	• Long cotton clothing • Insulating work gloves in test • Insulating mats / covers in test • Switchboard rescue kit in test	☑ YES ☑ YES ☑ YES ☑ YES

TASK		
LIVE LOW VOLTAGE WORK	• Isolation points identified and accessible	☑ YES
	• Work area clear of obstructions	☑ YES
	• Unauthorised access prevented to work area	☑ YES
	• P.P.E. is fit for purpose	☑ YES
	• Test equipment is fit for purpose	☑ YES
	• Written authority to proceed has been obtained from a person in charge	☑ YES
TESTING SWITCHBOARDS AND CONTROL PANELS WITHIN OUR MANUFACTURING PREMISES	• JPR authorisation to conduct live work is current	☑ YES
	• Approved dedicated power supply only used for testing.	☑ YES
	• Approved dedicated power supply in current test	☑ YES
OPTION	(A) RCD protected outputs used at power supply	☑ YES
	> RCD protection checked daily prior to use	☑ YES
	> Safety Observer is / is not required	☑ YES
OPTION	(B) Non RCD protected outputs used at power supply	☐ YES
	> Supervisor consulted prior to use	☐ YES
	> Safety Observer is in attendance	☐ YES

I understand and am fully aware of the requirements of this job safety analysis.

Signatures:	1.	2.	3.	4.	5.

LIVE LOW VOLTAGE WORK

TESTING SWITCHBOARDS AND CONTROL PANELS WITHIN JPR MANUFACTURING PREMISES AN INDEPENDENT BODY

APPROVED BY: Eric McCulloch (WHSO)

LOCATION: WACOL WORKSHOP **DATE:** 22.4.13

AUTHORISATIONS		MINIMUM PERSONAL PROTECTIVE EQUIPMENT	
• JPR induction completed	☑ YES	• Long cotton clothing	☑ YES
• Authorisation from JPR person in control to perform live work	☐ YES	• Insulating work gloves in test	☑ YES
• Independent body employee Qualifications in accordance with requirements of Electrical Safety Act.	☑ YES	• Insulating mats / covers in test	☐ YES
		• Switchboard rescue kit in test	☐ YES
(Signature) JPR Person in Control		Note:- Items 2,3,4 are to be supplied by the independent body and submitted to JPR for inspection prior to initial use	

HAZARDS	CONTROL MEASURES	
• CONTACT WITH LIVE LOW VOLTAGE • ELECTRIC SHOCK • BURNS	• Isolation points identified and accessible	☐ YES
	• Work area clear of obstructions	☐ YES
	• Unauthorised access prevented to work area Barriers and signage provided by independent body	☐ YES
	• P.P.E. is fit for purpose and in test	☐ YES
	• Test equipment is fit for purpose and in test	☐ YES
	• Authority to proceed has been obtained from JPR person in control	☐ YES
	• Independent body authorisation to conduct live work is current (documentation required to support evidence)	☐ YES
	• Approved dedicated power supply only used for testing. (JPR supplied)	☐ YES
	• Approved dedicated power supply in current test	☐ YES
	OPTION (A) RCD protected outputs used at power supply	☐ YES
	> RCD protection checked daily prior to use	☐ YES
	> Safety Observer is / is not required (Competent safety observer supplied by independent body for duration of live work, documentation required to support evidence)	☐ YES
	OPTION (B) Non RCD protected outputs used at power supply	☐ YES
	> JPR person in control prior to use	☐ YES
	> Safety Observer is in attendance (Competent safety observer supplied by independent body for duration of live work, documentation required to support evidence)	☐ YES

I understand and am fully aware of the requirements of this job safety analysis.

ALL INDEPENDENT BODY EMPLOYEES ON SITE PERFORMING LIVE WORK TO SIGN

Signatures:	JClayton	M. Ravindran			
Name Printed:	John Clayton				
Date:	22/4/13	22/4/13			

SP143 Links Avenue South	Date	

A. Electrical Installation Test Records

AS/NZS 3000:2007 requires that prior to placing an electrical installation or any part thereof in service following its construction, alteration, addition or repair, it shall be inspected and tested to verify that the installation is safe to energize and that it will operate correctly in accordance with the requirements of AS3000:2007.

This section is aimed to ensure that the switchboard manufacturer has carried out and documented all applicable AS3000:2007 tests considered as mandatory, prior to execution of the Factory Acceptance Test.

AS/NZS 3017 Electrical Installations – Verification Guidelines provides inspection, test methods and test acceptance parameters to verify AS3000:2007 safety requirements, however these methods are provided for guidance and other alternative methods are acceptable, AS3017:2007 may be applied through legislative requirements made in each State and Territory of Australia and in New Zealand.

QUEENSLAND Urban Utilities

CA17a - Factory Inspection Tests

Major Projects & Commercial Services
SQUV SP Reliability Improve – Stage2

Item No.	Activity Description	Results			Signed QUU	Results and comments
		Acc	Rej	N/A		
A.1	Records for the verification of the continuity and resistance of the earthing system shall include: a) Main earthing conductor b) Protective earthing conductors c) Earth bonding conductors.	✓ ✓				For acceptance criteria and test methods refer to: AS3000:2007 Section 8.3.5 & AS3017:2007 Section 3.1

Contractor's Signature ..... **Date** .....

Company Name J & P Richardson Industries **Company Electrical Licence No.** 756

Queensland Urban Utilities Electrical Inspector ..... **Date** .....

QUEENSLAND Urban Utilities

CA17a - Factory Inspection Tests

Major Projects & Commercial Services
SQUV SP Reliability Improve – Stage2

Item No.	Activity Description	Results			Signed QUU	Results and comments
		Acc	Rej	N/A		
A.2	Records for the verification of Insulation Resistance shall include: a) Insulation resistance test of complete installation ~~b) Insulation resistance test of consumers mains~~ c) Insulation resistance test of single circuits					For acceptance criteria and test methods refer to AS3000:2007 Section 8.3.6 & AS3017:2007 Section 3.2

Contractor's Signature ..... **Date** .....

Company Name J & P Richardson Industries **Company Electrical Licence No.** 756

Queensland Urban Utilities Electrical Inspector ..... **Date** .....

Item No.	Activity Description	Results			Signed QUU	Results and comments
		Acc	Rej	N/A		
A.3	Records for the verification of Polarity Tests records shall include: ~~a) Consumer mains~~ ~~b) Submains incorporating an earthing conductor~~ ~~c) Submains not incorporating a protective earthing conductor~~ d) Subcircuit polarity connections test (including single pole switches) e) Phase sequence tests					For acceptance criteria and test methods refer to AS3000:2007 Section 8.3.7 & AS3017:2007 Sections 3.3 and 3.5

Contractor's Signature ..... **Date** .....

Company Name J & P Richardson Industries **Company Electrical Licence No.** 756

Queensland Urban Utilities Electrical Inspector ..... **Date** .....

QUEENSLAND UrbanUtilities

CA17a - Factory Inspection Tests

Major Projects & Commercial Services
SQUV SP Reliability Improve – Stage2

Item No.	Activity Description	Results			Signed QUU	Results and comments
		Acc	Rej	N/A		
A.4	Records for the verification of Correct Circuit connection tests records shall include: a) Interconnection between conductors of different circuits b) Socket-Outlet Sub-Circuits c) Ligthing Points d) Equipment Sub-circuits	✓ ✓ ✓				For acceptance criteria and test methods refer to AS3000:2007 Section 8.3.8 & AS3017:2007 Section 3.4

Contractor's Signature ..... **Date** .....

Company Name J & P Richardson Industries **Company Electrical Licence No.** 756

Queensland Urban Utilities Electrical Inspector ..... **Date** .....

Item No.	Activity Description	Results			Signed QUU	Results and comments
		Acc	Rej	N/A		
A.5	Records for the verification of earth fault-loop for impedance shall include: a) Circuits not protected by an RCD					For acceptance criteria and test methods refer to AS3000:2007 Section 8.3.9 & AS3017:2007 Section 3.6 ON SITE TEST
A.6	Records for the verification of operation of RCDs shall include: a) Circuits protected by an RCD	✓				For acceptance criteria and test methods refer to AS3000:2007 Section 8.3.10 & AS3017:2007 Section 3.7

Contractor's Signature ..... **Date** .....

Company Name J & P Richardson Industries **Company Electrical Licence No.** 756

Queensland Urban Utilities Electrical Inspector ..... **Date** .....

B. Testing Area, Documentation and Test Set Up Arrangements

This section is aimed to ensure that all documentation and test set up arrangements have been provided to allow execution and readiness to carry out the FAT.

Item No.	Activity Description	Results			Signed QUU	Results and comments
		Acc	Rej	N/A		
B.1	Verify that a suitable test area has been provided, the test area shall be: • Clearly identified and barricaded • Test bench with enough space for testing equipment and documentation • Well ventilated	✓ ✓ ✓				
B.2	All testing equipment to simulate field inputs and outputs including field instruments and motors shall be pre-connected	✓				
B.3	"As Built" drawings marked up available.	✓				
B.4	"Point to Point" test drawing mark-ups provided	✓				

Contractor's Signature ..... **Date** .....

Company Name J & P Richardson Industries **Company Electrical Licence No.** 756

Queensland Urban Utilities Electrical Inspector ..... **Date** .....

C. Visual Inspections - Sheet Metal / Mechanical Construction Works

The following visual inspections shall take place previous to energising the switchboard circuits. All power supplies shall be disconnected, including the main power supply, generator power supplies and battery power supplies.

Item No.	Activity Description	Results			Signed QUU	Results and comments
		Acc	Rej	N/A		
C.1	Switchboard dimensions correct as per contract drawings	✓				
C.2	Panel layout as per drawings	✓				✓
C.3	All equipment is to be removable from switchboard via front access.	✓				✓
C.4	Power distribution chassis not to be installed too close to the left of the door aperture	✓				✓
C.5	Check operation and orientation of doors and door handles	✓				✓
C.6	Switchboard mounting feet as per drawing	✓				✓
C.7	Material finish as per specification	✓				S.T

Contractor's Signature ..... **Date** .....

Company Name J & P Richardson Industries **Company Electrical Licence No.** 756

Queensland Urban Utilities Electrical Inspector ..... **Date** .....

C.8	IP Rating as per specifications. Fitting of sun shields shall maintain IP56 rating.	✓				J.T
C.9	All bolts fitted / tight	✓				J.T
C.10	All sheet metal edging to be de-burred, special attention given to handle/lock access heat shield cuts.	✓				J.T
C.11	Door, hinges and locks are properly fitted to allow closing without forcing the door or being loose.	✓				J.T
C.12	Lock barrels are mounted neatly. Door penetration and holes shall be suited to the particular lock barrel type.			✓		waiting on barrels
C.13	Lock barrel types are provided as required and operate correctly		✓	✓		WRONG BARREL'S
C.14	Energex Padlock Supplied	✓				✓

Contractor's Signature ..... **Date** .....

Company Name J & P Richardson Industries **Company Electrical Licence No.** 756

Queensland Urban Utilities Electrical Inspector ..... **Date** .....

C.15	All doors sealing shall be properly fitted and firmly secured to the switchboard. Glue shall be provided if necessary.	✓				✓
C.16	Verify that proximity switch metal plates are fixed to doors as indicated in the drawings.	✓				✓
C.17	Ensure to pre-drill holes in plates that are difficult to access after the construction or installation of the switchboard on site. Particular attention shall be given to internal barrier plates and access plate on distribution board.	✓ ✓				✓
C.18	Cut outs from one cubicle to another ~~please~~ shall be large enough to accommodate all cables.	✓		✓		✓
C.19	Sealing between plinth and switchboard.	✓		✓		✓
C.20	Sealing of disconnect zone.	✓				✓

Contractor's Signature ..... **Date** .....

Company Name J & P Richardson Industries **Company Electrical Licence No.** 756

Queensland Urban Utilities Electrical Inspector ..... **Date** .....

C.21	Verify that portable generator cable access plate allows the generator plug pass into the switchboard and reach the generator connection outlet.					
C.22	Inspection plates are properly labelled and not used as gland plates. Inspection plates are only provided to ease access to field wiring.	✓				
C.23	Verify that all gland entries are sealed – No split gland plates	✓				
C.24	All spare holes to be plugged with conduit plugs.	✓				
C.25	Enclosure free of debris	✓				

Contractor's Signature ..... **Date** .....

Company Name J & P Richardson Industries **Company Electrical Licence No.** 756

Queensland Urban Utilities Electrical Inspector ..... **Date** .....

C.26	Lap top support tray provided including 1/4 turn wing knob on laptop support shelf. Knobs types that cannot be operated by hand are not acceptable.					SPR laptop shelfs have been Fitted
C.27	Drawings & log book holder provided	✓				J.T
C.28	Aerial support is adjustable					
C.29	A minimum clearance of 55mm shall be provided around the Redlion HMI to other components mounted in common controls door.	✓				
C.30	Check that selector switches are correctly engraved	✓				
C.31	Check that Indicators are fitted with correct coloured bezels	✓				

Contractor's Signature ..... **Date** .....

Company Name J & P Richardson Industries **Company Electrical Licence No.** 756

Queensland Urban Utilities Electrical Inspector ..... **Date** .....

C.32	Verify that all external labels are fitted to the switchboard.	✓				
C.33	Labelling is correct and complete - wording, size, fixing, material, level.	✓				
C.34	All internal and external labels are to have bevelled edges, sharp edges are not allowed.	✓				
C.35	Verify that 240VAC warning sign is fitted to the switchboard.	✓				

Contractor's Signature ..... **Date** .....

Company Name J & P Richardson Industries **Company Electrical Licence No.** 756

Queensland Urban Utilities Electrical Inspector ..... **Date** .....

D. Visual Inspections- Neutral and Earthing

A visual inspection shall be made when work on an electrical installation has been completed in order to verify that the work complies with the requirements of AS/NZS 3000.

The visual inspection shall be carried out before, or in association with testing, and as far as possible it should be made before the electrical installation is placed in service.

Item No.	Activity Description	Results			Signed QUU	Results and comments
		Acc	Rej	N/A		
D.1	N/L & E/L have adequate bolts for main Neutral & Earth	✓				
D.2	Earth bar / earth connections fitted & OK	✓				
D.3	All neutral connections are accessible	✓				
D.4	MEN connections provided	✓				
D.5	Neutral & earth connections are not in CT section	✓		✓		
D.6	Surge diverter earthed to adjacent stud.			✓		
D.7	Confirm a Direct connection from main earth bar to switchboard chassis	✓				ASA 5.3

Contractor's Signature ..... **Date** .....

Company Name J & P Richardson Industries **Company Electrical Licence No.** 756

Queensland Urban Utilities Electrical Inspector ..... **Date** .....

E. Visual Inspections - Electrical Components Mounting, Wiring and Labelling

As a minimum a visual inspection shall be made when work on an electrical installation has been completed in order to verify that the work complies with the requirements of AS/NZS 3000. This visual inspection section includes AS/NZS 3000 checks as well as several checks to verify that the electrical installation meets the specific design and quality requirements and scope of work.

The visual inspection shall be carried out before, or in association with testing, and as far as possible it should be made before the electrical installation is placed in service.

Item No.	Activity Description	Results			Signed QUU	Results and comments
		Acc	Rej	N/A		
E.1	Busbars appropriately shielded	✓				
E.2	Verify that main switches/circuit breakers and fuses are supplied to the specification (equipment schedule)	✓				
E.3	Main switches lockable/ defeatable as per spec.	✓				

Contractor's Signature ..... **Date** .....

Company Name J & P Richardson Industries **Company Electrical Licence No.** 756

Queensland Urban Utilities Electrical Inspector ..... **Date** .....

E.4	Check operation of Main Supply and Generator supply mechanical and/or key interlocks as applicable.	✓				
E.5	~~Verify that metering fuses & CT's are fed off from main switch line side~~					
E.6	Verify that cable lugs are provided into CRITEC 20 kA surge filter circuit breaker (in most cases Q17)	✓				
E.7	Equipment fed from line side shall be appropriately labelled.	✓				
E.8	Include 2nd label for Surge Diverter and Surge Diverter fuses "FED FROM LINE SIDE OF MAIN SWITCH" as applicable (Items 37/38 on switchboard label schedule).	✓				
E.9	All Circuit Breakers shall be set as indicated in the electrical schematic drawings.	✓				

Contractor's Signature ..... **Date** .....

Company Name J & P Richardson Industries **Company Electrical Licence No.** 756

Queensland Urban Utilities Electrical Inspector ..... **Date** .....

E.10	All circuit breakers shall be wired line side at the top / load side at the bottom	✓				
E.11	Verify that cables current carrying capacity is as indicated in the electrical schematic drawings.	✓				
E.12	Colour coding of wiring as per specification.	✓				
E.13	Wiring in PVC ducting shall be kept tidy.	✓				
E.14	Check cable access dimensions					
E.15	Check cable access & routes for field cabling.					
E.16	Check phasing of circuits are as per drawing.	✓				
E.17	Electrical components fitted are as specified in the equipment schedule	✓				

Contractor's Signature ..... **Date** .....

Company Name J & P Richardson Industries **Company Electrical Licence No.** 756

Queensland Urban Utilities Electrical Inspector ..... **Date** .....

E.18	Verify that quantity and location of GPOs are provided as required in the drawings.	✓				
E.19	Confirm all Idec relays are LED type and wired the correct polarity	✓				
E.20	Verify that ~~digital~~ timer is mounted on its own specific base ~~(IDEC base)~~ as specified in the equipment list (Item 99 -EMGDT)	✓				OMRON timer ✓
E.21	Check that generator plug has protective cover fitted	✓				
E.22	Verify that power disconnection outlets and plugs are supplied with the switchboard as required	✓				
E.23	Verify that terminals & busbar connections are tight	✓				

Contractor's Signature ..... **Date** .....

Company Name J & P Richardson Industries **Company Electrical Licence No.** 756

Queensland Urban Utilities Electrical Inspector ..... **Date** .....

E.24	Verify that terminals are identified as per drawings and spares are provided	✓				
E.25	All terminals shall be correct part number, shrouded to IP20 and labelled.	✓				
E.26	All cable cores ferruled & numbered.	✓				
E.27	24VDC power supply shall be mounted to prevent obstruction to the field instrument terminals.	✓				
E.28	Multicore cables shall be used for RTU harnesses to provide neat wiring installation. Use of individual wires for each I/O is not acceptable.	✓				
E.29	Verify that adequate access to RTU and communication plug is provided	✓				

Contractor's Signature ..... **Date** .....

Company Name J & P Richardson Industries **Company Electrical Licence No.** 756

Queensland Urban Utilities Electrical Inspector ..... **Date** .....

E.30	Modbus communication cables (RS 485) shall be 120ohm impedance twisted pair's.	✓				
E.31	Aerial surge arrestor shall be mounted with a small section of DIN rail the earthed as directly as possible	✓				
E.32	~~When externally installing soft starter CT's for bypass circuit, verify proper size to match the SS and wiring polarity. (if SS is MSF-017 the corresponding CT shall be CTS-017)~~			✓		
E.33	~~When externally installing soft starter CT's for bypass circuit, please ensure proper Bypass operation parameter [340] shall be enabled.~~			✓		
E.34	~~Motor Starter CT ratios are as specified and mounted to correct polarity~~			✓		
E.35	~~Soft starter CT leads to be cut to size / kept short.~~			✓		

Contractor's Signature ..... **Date** .....

Company Name J & P Richardson Industries **Company Electrical Licence No.** 756

Queensland Urban Utilities Electrical Inspector ..... **Date** .....

F. Live Power and Operational Tests

The following tests shall be made with all switchboard electrical circuits energized in order to check that the switchboard meets all operational requirements.

Item No.	Activity Description	Results			Signed QUU	Results and comments
		Acc	Rej	N/A		
F.1	Verify that all circuit breakers isolate their stated circuits	✓				
F.2	Verify that all electrical components energize when power circuits are energized	✓				
F.3	Switchboard lights operate	✓				
F.4	Confirm that E-Stops actually stop its corresponding drive.	✓				
F.5	~~Thermal overloads or~~ soft starter protection appropriately set	✓				
F.6	Set up all of the soft starter parameters	✓				

Contractor's Signature ..... **Date** .....

Company Name J & P Richardson Industries **Company Electrical Licence No.** 756

Queensland Urban Utilities Electrical Inspector ..... **Date** .....

F.7	Verify that all Soft starter operation and all display parameters are displaying correctly. ~~Confirm current CTs are the correct polarity~~					
F.8	A copy of Soft Starter ~~and/or VSD parameter~~ configuration to match site equipment shall be provided to the switchboard manufacturer by the commissioning manager.					
F.9	Record output of 24VDC power supply when connected to 240 VAC main.	✓				27.7 V DC
F.10	Record output of 24VDC power supply when disconnected to 240 VAC main.					
F.11	~~Logica~~ RTU provided with corresponding firmware/ software					**Software Version:** SPR 5103.
F.12	Redlion HMI provided with corresponding software configuration					**Software Version:** SPREF 19 Motiro 19
F.13	I/O tested to RTU terminals	✓				
F.14	Manual functions tested	✓				

Contractor's Signature ..... **Date** .....

Company Name J & P Richardson Industries **Company Electrical Licence No.** 756

Queensland Urban Utilities Electrical Inspector ..... **Date** .....

Queensland UrbanUtilities

CA17a - Factory Inspection Tests

Major Projects & Commercial Services
SQUV SP Reliability Improve – Stage2

G. Non-Conformances and Unauthorised Modifications

G.1	Control cable double insulated or 6mm ✓ ok
G.2	Some labels not level
G.3	Wrong type of lock barrel.
G.4	F.I Laptop [illegible]
G.5	
G.6	
G.7	
G.8	
G.9	
G.10	

Contractor's Signature .... **Date** ....

Company Name J & P Richardson Industries **Company Electrical Licence No.** 756

Queensland Urban Utilities Electrical Inspector John Clayn **Date** 22/9/13

This section is to be completed only at the conclusion of the FAT:

Final FAT Results	YES	NO	Results and comments
Pre-FAT Completed	✓		
Minor NCRs Generated			
Major NCRs Generated		✓	
Pre-FAT Accepted	✓		

Notes:

1. FAT results to be recorded above by Contractor.
2. FAT results to be approved by Queensland Urban Utilities Electrical Inspector.
3. Pre-FAT results to be approved by Queensland Urban Utilities Electrical Inspector at Pre-FAT (if present) or at the start of the FAT.
4. NCRs are to be generated by the Queensland Urban Utilities Electrical Inspector for all NCRs not resolved by the end of the test.

Contractor's Signature ..... **Date** .....

Company Name J & P Richardson Industries **Company Electrical Licence No.** 756

Queensland Urban Utilities Electrical Inspector John Clayton ..... **Date** 22/4/13

QUEENSLAND Urban Utilities

CA17 - Site Inspection Tests

Major Projects & Commercial Services
SQUV SP Reliability Improve – Stage2

SP143 Links Ave South	**Date**	03/07/2013

A. Site Inspection Checks – De-Energised Switchboard Inspection and Tests (CA-17g)

Item No.	Activity Description	Results			Signed QUU	Results and comments
		Acc	Rej	N/A		
A.1	"As Built" marked Up drawings available	✓				
A.2	Switchboard Manufacturer Test Certificate Provided					
A.3	FAT defect/punch list items arranged	✓				
A.4	Switchboard location and orientation correct as per contract drawings	✓				

Contractor's Signature ..... **Date** 3/7/13

Company Name J & P Richardson Industries Pty Ltd ***Company Electrical Licence No:*** 756

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 03/07/2013

QUEENSLAND Urban Utilities

CA17 - Site Inspection Tests

Major Projects & Commercial Services
SQUV SP Reliability Improve – Stage2

Item No.	Activity Description	Results			Signed QUU	Results and comments
		Acc	Rej	N/A		
A.5	Non-hydroscopic sealant material (Bitumastic 300M) to be provided between switchboard plinth & concrete slab	✓				
A.6	Switchboard shall be level and plumb before bolting to concrete plinth (slab)	✓				
A.7	All anchor bolts fitted and tight. Anchors shall be M12 S/Steel chemical anchors.	✓				
A.8	Minimum anchorage shall be 110 mm and filled with non-shrink grout where required.	✓				
A.9	MEN Connection provided	✓				

Contractor's Signature ..... **Date** 3/7/13

Company Name J & P Richardson Industries Pty Ltd ***Company Electrical Licence No:*** 756

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 03/07/13

QUEENSLAND UrbanUtilities

CA17 - Site Inspection Tests

Major Projects & Commercial Services
SQUV SP Reliability Improve – Stage2

Item No.	Activity Description	Results			Signed QUU	Results and comments
		Acc	Rej	N/A		
A.10	Earth Rod/Earth Connections Fitted & OK	✓				
A.11	Internal compartments free of debris	✓				
A.12	Check antenna cable lead between radio and surge arrestor for broken or damaged connector contacts	✓				
A.13	GSM modem connection baud rate to 9600 baud/sec.					

Contractor's Signature ..... **Date** 3/7/13

Company Name J & P Richardson Industries Pty Ltd ***Company Electrical Licence No:*** 756

Queensland Urban Utilities Electrical Inspector JOHN CLAYTON **Date** 03/07/13

QUEENSLAND Urban Utilities

CA17 - Site Inspection Tests

Major Projects & Commercial Services
SQUV SP Reliability Improve – Stage2

Item No.	Activity Description	Results			Signed QUU	Results and comments
		Acc	Rej	N/A		
A.14	Thermistors connections shall be paralleled at the de-contactor.	✓				This is usually applicable to Soft Starter installations and not for VSDs. Please refer to the electrical schematic drawings.
A.15	Verify that all possible gas penetrations have been eliminated	✓				

Contractor's Signature ..... **Date** 3/7/13

Company Name J & P Richardson Industries Pty Ltd ***Company Electrical Licence No:*** 756

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 03/07/13

B. Site Inspection Checks - Cable Ladder/Tray/Duct (CA-17h)

Item No.	Activity Description	Results			Signed QUU	Comments
		Acc	Rej	N/A		
B.1	Ladder/Tray/Duct Correct Size/Type as per Spec.			✓		
B.2	Correct Routing as per Specification/Drawings			✓		
B.3	Clearance from Other Trades Satisfactory			✓		
B.4	Sufficient Brackets/Fixings to Suit Span			✓		
B.5	Brackets/Fixings Secure	✓		✓		
B.6	Verify provision of anaconda to protect mains supply cable under the plinth	✓		✓		

Contractor's Signature ..... **Date** 3/7/13

Company Name J & P Richardson Industries Pty Ltd ***Company Electrical Licence No:*** 756

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 03/07/13

QUEENSLAND UrbanUtilities

CA17 - Site Inspection Tests

Major Projects & Commercial Services
SQUV SP Reliability Improve – Stage2

Item No.	Activity Description	Results			Signed QUU	Results and comments
		Acc	Rej	N/A		
B.7	Ladder/Tray/Duct Earthed/Bonded Correctly			✓		
B.8	Covers Fitted & Secured Correctly			✓		
B.9	Protrusions & Sharp Edges Removed			✓		
B.10	Dissimilar Metals Not in Contact	✓				
B.11	Segregation Barriers Fitted Correctly			✓		
B.12	Adequate Mechanical Protection Provided	✓				
B.13	Integrity of Finish/Coating Maintained	✓				

Contractor's Signature ..... **Date** 3/7/13

Company Name J & P Richardson Industries Pty Ltd ***Company Electrical Licence No:*** 756

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 03/07/13

QUEENSLAND UrbanUtilities

CA17 - Site Inspection Tests

Major Projects & Commercial Services
SQUV SP Reliability Improve – Stage2

Item No.	Activity Description	Results			Signed QUU	Results and comments
		Acc	Rej	N/A		
B.14	Penetrations Sealed Correctly	✓				
B.15	"As Built" Drawings Marked Up	✓				

Contractor's Signature ..... **Date** 3/7/13

Company Name J & P Richardson Industries Pty Ltd ***Company Electrical Licence No:*** 756

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 03/07/2013

C. Site Inspection Checks – Cables (CA-17c)

Item No.	Activity Description	Results			Signed QUU	Results and comments
		Acc	Rej	N/A		
C.1	Cables Sized as per Cable Schedule	✓				
C.2	Correct Cable Types Installed	✓				
C.3	Cables Glanded/Bushed Satisfactorily	✓				
C.4	Cables Terminated Satisfactorily	✓				
C.5	Sheathes/Insulation not Damaged	✓				
C.6	Bending Radius not Exceeded	✓				

Contractor's Signature ..... **Date** 3/7/13

Company Name J & P Richardson Industries Pty Ltd ***Company Electrical Licence No:*** 756

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 03/07/13

QUEENSLAND Urban Utilities

CA17 - Site Inspection Tests

Major Projects & Commercial Services
SQUV SP Reliability Improve – Stage2

Item No.	Activity Description	Results			Signed QUU	Results and comments
		Acc	Rej	N/A		
C.7	Mechanical Protection Provided as Required	✓				
C.8	Cables Adequately Supported	✓				
C.9	Power & Signal Cable Clearances Adequate	✓				
C.10	All Cables Identified as per Cable Schedule	✓				
C.11	Overall Appearance Satisfactory	✓				

Contractor's Signature ..... **Date** 3/7/13

Company Name J & P Richardson Industries Pty Ltd ***Company Electrical Licence No:*** 756

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 03/07/13

D. Site Inspection Checks - Field Equipment and Instrumentation (CA-17e / CA-17f)

Item No.	Activity Description	Results			Signed QUU	Comments
		Acc	Rej	N/A		
D.1	Appropriate Instrument box access cover plate available and properly fitted	✓				
D.2	Appropriate level transmitter stilling pipe available and properly fitted			✓		

Contractor's Signature ..... **Date** 3/7/13

Company Name J & P Richardson Industries Pty Ltd ***Company Electrical Licence No:*** 756

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 03/07/13

Item No.	Activity Description	Results			Signed QUU	Results and comments
		Acc	Rej	N/A		
D.3	Instrument Types/Model and Range as per Specification a) Level Transmitter b) High Level Probe c) Surcharge Imminent Probe d) Delivery Pressure Transmitter e) Flow Level Transmitters	✓ ✓ ✓ ✓		✓		

Contractor's Signature ..... **Date** 3/7/13

Company Name J & P Richardson Industries Pty Ltd ***Company Electrical Licence No:*** 756

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 03/07/13

QUEENSLAND UrbanUtilities

CA17 - Site Inspection Tests

Major Projects & Commercial Services
SQUV SP Reliability Improve – Stage2

Item No.	Activity Description	Results			Signed QUU	Comments
		Acc	Rej	N/A		
D.4	All Instrument calibration certificates supplied a) Level Transmitter b) High Level Probe c) Surcharge Imminent Probe d) Delivery Pressure Transmitter e) Flow Level Transmitters	✓ ✓ ✓		✓		

Contractor's Signature ..... **Date** 3/7/13

Company Name J & P Richardson Industries Pty Ltd ***Company Electrical Licence No:*** 756

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 03/07/13

QUEENSLAND UrbanUtilities

CA17 - Site Inspection Tests

Major Projects & Commercial Services
SQUV SP Reliability Improve – Stage2

Item No.	Activity Description	Results			Signed QUU	Results and comments
		Acc	Rej	N/A		
D.5	Clearances Adequate, suitable mounting and orientation for Correct Operation					
	a) Level Transmitter	✓				
	b) High Level Probe	✓				
	c) Surcharge Imminent Probe	✓				
	d) Delivery Pressure Transmitter	✓				
	e) Flow Level Transmitters			✓		
D.6	Adequate Mechanical Protection Provided					
	a) Level Transmitter	✓				
	b) High Level Probe	✓				
	c) Surcharge Imminent Probe	✓				
	d) Delivery Pressure Transmitter	✓				
	e) Flow Level Transmitters			✓		

Contractor's Signature ..... **Date** 3/7/13

Company Name J & P Richardson Industries Pty Ltd ***Company Electrical Licence No:*** 756

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 03/07/13

Item No.	Activity Description	Results			Signed QUU	Results and comments
		Acc	Rej	N/A		
D.7	Identification tags and data Plate Fitted& Legible					
	a) Level Transmitter	✓				
	b) High Level Probe			/		
	c) Surcharge Imminent Probe			/		
	d) Delivery Pressure Transmitter	✓				
	e) Flow Level Transmitters			/		
D.8	Termination Covers & Seals Securely Fitted					
	a) Level Transmitter	/				
	b) High Level Probe			/		
	c) Surcharge Imminent Probe			/		
	d) Delivery Pressure Transmitter	/				
	e) Flow Level Transmitters			/		

Contractor's Signature ..... **Date** 3/7/13

Company Name J & P Richardson Industries Pty Ltd ***Company Electrical Licence No:*** 756

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 03/07/13

QUEENSLAND UrbanUtilities

CA17 - Site Inspection Tests

Major Projects & Commercial Services
SQUV SP Reliability Improve – Stage2

Item No.	Activity Description	Results			Signed QUU	Results and comments
		Acc	Rej	N/A		
D.9	Level Transmitter and Probes hanging lengths adjusted correctly a) Level Transmitter b) High Level Probe c) Surcharge Imminent Probe d) Delivery Pressure Transmitter e) Flow Level Transmitters					HANGING LENGTH. a) RL: 3.5 b) RL: _____ c) RL: _____
D.10	All redundant equipment shall be removed from the dry well and the wet well.	✓				
D.11	Existing Junction boxes that are not longer to be used shall be removed.	✓				In general, existing J boxes in the dry well shall not be used. Usually the design will indicate direct wiring to equipment in dry wells. The use of J boxes inside dry wells is usually limited to wiring of VSDs to motors and wiring of level transmitters.

Contractor's Signature ..... **Date** 3/7/13

Company Name J & P Richardson Industries Pty Ltd ***Company Electrical Licence No:*** 756

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 03/07/13

E. Electrical Installation Safety Tests – Prior to Switchboard Energization

AS/NZS 3000:2007 requires that prior to place an electrical installation or any part thereof in service following its construction, alteration, addition or repair, it shall be inspected and tested to verify that the installation is safe to energize and that it will operate correctly in accordance with the requirements of AS3000:2007.

This section is aimed to ensure that the switchboard manufacturer has carried out and documented all applicable AS3000:2007 tests considered as mandatory, prior to energising and operating the new electrical installation on site.

AS/NZS 3017 Electrical Installations – Verification Guidelines provides inspection, test methods and test acceptance parameters to verify AS3000:2007 safety requirements, however these methods are provided for guidance and other alternative methods are acceptable, AS3017:2007 may be applied through legislative requirements made in each State and Territory of Australia and in New Zealand.

QUEENSLAND UrbanUtilities

CA17 - Site Inspection Tests

Major Projects & Commercial Services
SQUV SP Reliability Improve – Stage2

Item No.	Activity Description	Results			Signed QUU	Results and comments
		Acc	Rej	N/A		
E.1	Records for the verification of the continuity and resistance of the earthing system shall include: a) Main earthing conductor b) Protective earthing conductors c) Earth bonding conductors.	✓		/		For acceptance criteria and test methods refer to AS3000:2007 Section 8.3.5 & AS3017:2007 Section 3.1 As Per Contractors test sheets

Contractor's Signature ..... **Date** 3/7/13

Company Name J & P Richardson Industries Pty Ltd ***Company Electrical Licence No:*** 756

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 03/07/13

QUEENSLAND Urban Utilities

CA17 - Site Inspection Tests

Major Projects & Commercial Services
SQUV SP Reliability Improve – Stage2

Item No.	Activity Description	Results			Signed QUU	Results and comments
		Acc	Rej	N/A		
E.2	Records for the verification of Insulation Resistance shall include: a) Insulation resistance test of complete installation b) Insulation resistance test of consumers mains c) Insulation resistance test of single circuits	✓ ✓		/		For acceptance criteria and test methods refer to AS3000:2007 Section 8.3.6 & AS3017:2007 Section 3.2 As per Contra Ares test sheets

Contractor's Signature ..... **Date** 3/7/13

Company Name J & P Richardson Industries Pty Ltd ***Company Electrical Licence No:*** 756

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 03/07/13

QUEENSLAND Urban Utilities

CA17 - Site Inspection Tests

Major Projects & Commercial Services
SQUV SP Reliability Improve – Stage2

Item No.	Activity Description	Results			Signed QUU	Results and comments
		Acc	Rej	N/A		
E.3	Records for the verification of Polarity Tests records shall include: a) Consumer mains b) Submains incorporating an earthing conductor c) Submains not incorporating a protective earthing conductor d) Submains incorporating a MEN connection at outbuilding e) Subcircuit polarity connections test (including single pole switches) f) Phase sequence tests	✓		✓ ✓ ✓ ✓ ✓		For acceptance criteria and test methods refer to: AS3000:2007 Section 8.3.7 AS3017:2007 Sections 3.3 and 3.5

Contractor's Signature ..... **Date** 3/7/13

Company Name J & P Richardson Industries Pty Ltd ***Company Electrical Licence No:*** 756

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 03/07/13

QUEENSLAND UrbanUtilities

CA17 - Site Inspection Tests

Major Projects & Commercial Services
SQUV SP Reliability Improve – Stage2

Item No.	Activity Description	Results			Signed QUU	Results and comments
		Acc	Rej	N/A		
E.4	Records for the verification of Correct Circuit connection tests records shall include: a) Interconnection between conductors of different circuits b) Socket-Outlet Sub-Circuits c) Ligthing Points d) Equipment Sub-circuits	✓ ✓ ✓ ✓		✓		For acceptance criteria and test methods refer to: AS3000:2007 Section 8.3.8 AS3017:2007 Section 3.4 As Per Contractors test sheets
E.5	Records for the verification of earth fault-loop for impedance shall include: a) Circuits not protected by an RCD					For acceptance criteria and test methods refer to: AS3000:2007 Section 8.3.9 AS3017:2007 Section 3.6

Contractor's Signature ..... **Date** 3/7/13

Company Name J & P Richardson Industries Pty Ltd ***Company Electrical Licence No:*** 756

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 03/07/13

QUEENSLAND UrbanUtilities

CA17 - Site Inspection Tests

Major Projects & Commercial Services
SQUV SP Reliability Improve – Stage2

Item No.	Activity Description	Results			Signed QUU	Results and comments
		Acc	Rej	N/A		
E.6	Records for the verification of operation of RCDs shall include: a) Circuits protected by an RCD	✓				For acceptance criteria and test methods refer to: AS3000:2007 Section 8.3.10 As Per Test Sheets AS3017:2007 Section 3.7

Contractor's Signature ..... **Date** 3/7/13

Company Name J & P Richardson Industries Pty Ltd ***Company Electrical Licence No:*** 756

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 03/07/13

F. Site Inspection Checks - Energised Switchboard Inspection and Tests (CA-17g)

The following tests shall be made with all switchboard electrical circuits energized in order to check that the switchboard meets all operational requirements.

Item No.	Activity Description	Results			Signed QUU	Results and comments
		Acc	Rej	N/A		
F.1	Check Operation of Automatic Transfer Switches & Circuit Breaker Interlocks			✓		
F.2	Switchboard Lights Operate OK	✓				
F.3	Intruder Detection Operate OK	✓				
F.4	Motor phase rotation checked	✓				
F.5	Thermal Overloads appropriately set	✓				Done ots.
F.6	Manual Functions Tested	✓				
F.7	Automatic / Remote Functions Tested					

Contractor's Signature ..... **Date** 3/7/13

Company Name J & P Richardson Industries Pty Ltd ***Company Electrical Licence No:*** 756

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 03/07/13

G. Non-Conformances and Unauthorised Modifications

G.1	
G.2	
G.3	
G.4	
G.5	
G.6	
G.7	
G.8	
G.9	
G.10	

Contractor's Signature ..... **Date** .....

Company Name J & P Richardson Industries Pty Ltd ***Company Electrical Licence No:*** 756

Queensland Urban Utilities Electrical Inspector ..... **Date** .....

This section is to be completed only at the conclusion of the SAT:

Final SAT Results	YES	NO	Comments
Minor NCRs Generated		✓	
Major NCRs Generated		✓	
SAT Accepted	✓		

Notes:

1. SAT results to be recorded above by Contractor.
2. SAT results to be approved by Queensland Urban Utilities Electrical Inspector.
3. NCRs are to be generated by the Queensland Urban Utilities Electrical Inspector for all NCRs not resolved by the end of the test.

Contractor's Signature ..... **Date** 3/7/13

Company Name J & P Richardson Industries Pty Ltd ***Company Electrical Licence No:*** 756

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 02/07/13

Form No. F1124/7

J. & P. RICHARDSON INDUSTRIES PTY. LTD.
114 Campbell Avenue, WACOL QLD 4076
Ph: (07) 3271 2911 - Fax: (07) 3271 3623
E-mail: jpr@jpr.com.au ABN: 23 001 952 325

LV CIRCUIT TEST SHEET

CUSTOMER: QUU

JOB NO: C63000 **DESCRIPTION:** Links Av South

MCC / DISTRIBUTION BOARD NO: SP143

Tested By:	Simon Truloff	Date:	31 / 7 / 13	Certificate No:	109547

CIRCUIT EQUIPMENT	INSULATION RESISTANCE	EARTH CONTINUITY	FAULT LOOP IMPEDANCE	PHASE ROTATION	RCD TRIP TIME	RCD TEST TRIP CURRENT	REMARKS
Mains	200MΩ	0.1Ω	0.25Ω	Clock			Polarity OK
Pump 1	200MΩ						
Pump 2	200MΩ						
Ext. lights	200MΩ	0.2Ω					

J&P RICHARDSON INDUSTRIES PTY LTD
Electrical Contractors and Engineers
Telephone 07 3271 2911 Website www.jpr.com.au
Wacol - Gold Coast - Ipswich
Sunshine Coast - Eagle Farm - Toowoomba - Chinchilla

WORKING IN PARTNERSHIP WITH

QUEENSLAND Urban Utilities

QUUC1011045-QUU068 FOR SPRI 11A MANUFACTURE, SUPPLY & INSTALL 12 SPS S/BOARDS

SEWAGE PUMP STATION

COMMISSIONING PLAN

Site ID and Name	SP143 Links Avenue
Commissioning Date	3/7/13

In Attendance

Name	Role During Commissioning	Company
Simon Trulock	Electrician	JPR
John Clayton	Commissioning Manager	QUU

1 INTRODUCTION

This document is the standard testing procedure for a switchboard change over at a sewage pumping station. The procedure ensures that for a two pump sewage pump station, at least one pump will be operational at all times. The basic cutover procedure is as follows:

- Install temporary pumping system (pump controller and generator).
- Disconnect sewage Pump #2 from existing switchboard and connect to temporary pumping system. **PUMP #1 IS NOW RUNNING THE STATION FROM EXISTING SWITCHBOARD**
- Fully commission Pump #2 on the temporary pumping system. **PUMP #2 IS NOW RUNNING THE STATION FROM TEMPORARY PUMPING SYSTEM**
- Disconnect Pump #1, consumer mains, on site generator and all field instrumentation from the existing switchboard.
- Install new switchboard and connect to consumer mains.
- Connect Pump #1 to the new switchboard and test in "emergency pumping" mode (via the "Emergency Start" switch). **PUMP #2 IS STILL RUNNING THE STATION FROM THE TEMPORARY PUMPING SYSTEM AND PUMP #1 CAN BE RUN UNDER "EMERGENCY PUMPING" MODE FROM NEW SWITCHBOARD.**
- Connect all field instrumentation.
- Test Pump #1 on the new switchboard to operate in "Local" and "Remote" modes. Full commissioning done separately **PUMP #1 IS NOW RUNNING THE STATION FROM NEW SWITCHBOARD**
- Connect Pump #2 to the new switchboard and Test on the new switchboard. Full commissioning done separately.
- Complete the Site Acceptance Test (SAT) including pumps, RTU and SCADA testing.

NOTE: This testing procedure will only be acceptable on sites that do NOT need two pumps to run during the cut over procedure.

(Confirm the current running conditions of the existing switchboard before commencing).

For sites that require two pumps to run simultaneously under dry weather conditions during the proposed cut over period, a site-specific cut over procedure must be developed to incorporate adequate flow control measures (i.e. tankers or temporary pumps).

2 PRE-CHANGE OVER WORKS CHECKLIST

The following checklist is to be completed and signed by the electrical J&P Richardson.

2.1 SWITCHBOARD FACTORY ACCEPTANCE TEST

J&P Richardson Task	Completed
FAT has been completed as per QUU FAT Document and all defects that were identified have been rectified.	✓

2.2 CONCRETE SLAB EXTENSION

J&P Richardson Task	Result
Confirm the concrete slab extension is complete including all necessary conduits.	OK ☑ ✓

2.3 SUPPLY AUTHORITY

J&P Richardson Task	Outcome
The relevant supply authority has been organised to install the metering into the New Switchboard. If direct metering supply authority not required. NA ☐ ✓	Company Energex Booked for 13/7/13 @ 11:00 (time) Ref #

2.4 NEW RADIO ANTENNA MAST LOCATION

J&P Richardson Task	Result
Check the location of the antenna mast and ensure that the new position will not be directly below electrical transmission lines. ASSISTED BY NCS	Location OK ☑ ✓ Antenna dir. ✓ O

2.5 DISCHARGE MAINS PRESSURE TRANSDUCER

J&P Richardson Task	Completed
Install delivery pressure transducer on the discharge rising main. Transducer is calibrated to the specified range (as per spec). 0kPA to 200 kPA	Installed OK ☑ Range 0 (m) to 20 (m)

2.6 TEMPORARY GENERATOR SIZE

65 m'm

J&P Richardson Task	Completed
Note the kW of each pump.	Pump #1 4.6 kW Pump #2 4.6 kW
Determine the type of generator required (J&P Richardson Specific) If the submersible pump's kW less than 25kW, A.W.E.S generator set is suitable. If the submersible pump is greater than 25kW, arrange the generator set through for example Coates Hire. Phone 13 1552 JPR Gen Set	AWES ☐ Coates ☐ Genset Size _____ kVA Date Booked / / Delivery Date / / Delivery Time _____

2.7 PUMP STATION PRELIMARY OPERATIONAL CHECKS

BW Task	Checked
These are checks are helpful to ensure the pump station is fully operational and that no delay will be incurred due to any pump station problem out side of the contract. These task are desirable to have completed before the SAT but are not essential. The job can proceed if they are not done. Commissioning Manager to request networks maintenance to inspect and rectify if necessary	
The reflux valves and associated limit switches are working correctly.	OK ☐ N/A
The discharge pressure connection point is available and that the isolation valve is functioning correctly.	OK ☑

The dry well exhaust fan is working correctly and quietly.	OK ☐ N/A
The wet well does not need pumping out.	OK ☑
The flow meter is functioning correctly.	OK ☐ N/A
The stand bye generator can start and has sufficient fuel.	OK ☑

Electrical Contactor's Supervisor
Name: ..Simon Trolle.....
Date: 3/7/13
Signature: .....

QUU Commissioning Manager
Name: John Clayton.....
Date: 03/07/13
Signature: .....

3 CHANGE OVER WORKS

The following sequence of change over works is the order in which they must be followed. One pump must be operational at all times. After each phase has been completed, the commissioning manager will record the results and instruct the commissioning team to commence work on the next phase.

3.1 INSTALL TEMPORARY PUMPING SYSTEM

3.1.1 Register with Control Room

J&P Richardson Task	Outcome
Call the QUU Control Room Operator (CRO) and inform him that you are on site. Record the CRO's Name and Officer Code and record the time of the call. Advise CRO that you are performing a switchboard changeover and that you will initially be taking one pump off line. Give the operator your contact name and number and advise the operator that communications will be lost to the pump station until the job is finished.	Name: John CRO: Time: 0630

3.1.2 Existing Switchboard Parameters

J&P Richardson Task	Outcome
Ensure that the station is fully functional (pumps can run)	OK ☑
Record the direction of the installed antenna for later reference.	Antenna dir. ✓ O
Record the kWhr meter serial numbers.	#- 4-304080
Record 3 phase motor currents Pump #1 Pump #2	U.7.4 V.7.8 W.7.8 U.6.4 V6.4 W.6.4

3.1.3 Prepare and Install Temporary Pump controller and Generator

J&P Richardson Task	Outcome
Position generator in an appropriate location. Locate away from the work site to reduce noise and fumes.	OK ☑
Position fire extinguisher and oil spill bund as per risk analysis.	OK ☑
Connect the temporary pump controller 3 phases to the generator.	OK ☑
Install Multitrode level sensors and set the Start and Stop levels to be equivalent to the current Start and Stop levels of the existing switchboard parameters.	OK ☑
Install the backup audible and visual alarm system (powered by separate battery). Test electrodes back to temporary pump controller to confirm operation.	OK ☑
Ensure that the generator fuel will be sufficient to enable the generator to run loaded for 12 hours. (This may require extra fuel – arrange if required).	OK ☑
Start the generator and measure the 3 phase volts	OK ☑

Electrical Contactor's Supervisor
Name: ....Simon Tuble.....
Date: 3/7/13
Signature: .....

QUU Commissioning Manager
Name: John Clayton
Date: 03/07/13
Signature:

3.2 CONNECT PUMP #2 TO TEMPORARY PUMPING SYSTEM

J&P Richardson Task	Outcome
On the existing switchboard, Isolate sewage pump (Pump #2) as per BW Isolation Tag and Lock Out procedure. (Unplug from Decontactor).	OK ☑
Disconnect Pump #2 from the existing switchboard and remove the power cables from the switchboard.	OK ☑
Connect Pump #2 power cables to the temporary pump controller.	OK ☑
Electrically test Pump #2 to temporary pump controller connections.	OK ☑
Switch the existing switchboard to "Local" and confirm Pump #1 is stopped.	OK ☑
Manual Test of Temporary Pumping System: (Confirm Pump Direction) Manually start the submersible pump and closely monitor wet well level to confirm that the level is dropping. When confirmed, stop pump.	OK ☑
Auto Test of Temporary Pumping System: (Confirm Pump Cycle) Allow the temporary pumping system to complete one full start and stop cycle automatically to confirm complete system is functioning correctly. This is a HOLD point. Do not proceed until the temporary pump is confirmed to be controlling the wet well level.	OK ☑ TIME: 0730

Electrical Contactor's Supervisor
Name: ..... Simon Truloff .....
Date: ..... 3/7/13 .....
Signature: .....

QUU Commissioning Manager
Name: John Clayton .....
Date: ..... 03/07/13 .....
Signature: .....

3.3 DISCONNECT AND REMOVE EXISTING SWITCHBOARD

3.3.1 Disconnect Pump#1 and Remove Existing Switchboard

J&P Richardson Task	Outcome
On the existing switchboard, Isolate sewage pump (Pump #1) as per BW Isolation Tag and Lock Out procedure. (Unplug from Decontactor).	OK ☑
Disconnect Pump #1 from the existing switchboard and remove the power and control cables from the switchboard consider the possible need for a quick changeover from the temporary system, Pump #2 to Pump #1. if required.	OK ☑
Isolate main incomer at the switchboard. Ensure all secondary sources of power (ie on site Generator) are also isolated from the switchboard. Confirm there is no load.	OK ☑
Remove primary 3-phase fuses from power pole. Lock fuses in lockout box as per QUU Isolation and Lock Out procedure.	OK ☑
Disconnect supply authority mains cable from the switchboard.	OK ☑
Disconnect all other control and communication cables from the switchboard then remove the switchboard away from adjacent job site so not to interfer with the work.	OK ☑

Electrical Contactor's Supervisor
Name: ..... Simon Trulove .....
Date: ..... 3/7/13 .....
Signature: .....

QUU Commissioning Manager
Name: John Graham .....
Date: 03/07/13 .....
Signature: .....

3.4 INSTALL NEW SWITCHBOARD

3.4.1 Install new switchboard (For Sites with Option F Only)

J&P Richardson Task	Outcome
Install and connect the required (new or existing) earth cable	New ☑ Existing ☐
Install and connect the required (new or existing) mains cable	New ☑ Existing ☐
Record the 3 phases mains cable insulation resistance to earth.	A 200 Megohm B 200 Megohm. C 200 Megohm
Record earth resistance	0.1 ohms
Point to point phase continuity	R to L1 OK☑ Wto L2 OK☑ B to L3 OK☑ NtoNuetral OK☑

3.4.2 Install Supply Authority Metering

Task	Outcome
Install the direct connected kWhr Meter	OK ☑

3.4.3 Energise New Switchboard

J&P Richardson Task	Outcome
Retrieve mains 3-phase pole fuses from lock out box as per BW Isolation and Lock Out procedure.	OK ☑
Ensure new switchboard main incomer is turned "Off".	OK ☑
Install the 3-phase pole fuses.	OK ☑
Turn on mains switch	OK ☑
Check 3 phase voltages	AB 414 V BC 415 V CA 415 V
Check phase rotation and ensure it is the same as determined earlier.	OK ☑
Check MEN connection.	OK ☑

Electrical Contactor's Supervisor
Name: ..... Simon Tuloff
Date: 3/7/13
Signature: .....

QUU Commissioning Manager
Name: ..... John Gwynn
Date: 03/07/13
Signature: .....

3.5 CONNECT PUMP #1 TO THE NEW SWITCHBOARD

J&P Richardson Task	Outcome
At the beginning of this procedure, Pump #2 is operating under the control of the temporary switchboard running from the Generator.	OK ☑
Isolate submersible Pump #1 and Pump #2 at the new switchboard, as per QUU Isolation and Lock Out procedure. (Decontactors)	OK ☑
Via the MERACHAL plug in sockets provided on the switchboard reconnect the power and control cables for Pump #1 (this is the pump that is not connected to the generator set)	OK ☑
Install and connect the hydrostatic level probe to the transmitter.	Range 0 to 3 m
Confirm that level is indicating on the display.	OK ☑
Before beginning the next step ensure that the well level is between 'Start' and 'Stop' level and Pump #2 is not running. Isolate Pump #2 to prevent it from running during the next test	OK ☑
De-isolate this now connected Pump #1. Check the rotation by starting the pump via the local "Emergency Start" switch and confirming the wet well level drops by at least 1%.	OK ☑
Start Pump # 1 again and Check the 3 phase motor current and compare with original readings. PUMP #1 Can now be run in emergency and local, under the control of the new switchboard.	A 6.6 Amps B 6.6 Amps C 6.6 Amps
De-isolate Pump #2 so that the station is again under the control of the temporary switchboard.	OK ☑

3.6

3.7 CONNECT FIELD INSTRUMENTATION TO THE NEW SWITCHBOARD

3.7.1 Field Devices

J&P Richardson Task	Outcome
Connect the delivery pressure probe to the transmitter	OK ☑ 0 to 20 Mtrs
Install and connect the Multitrode LR3 wet well high level relay Probe	OK ☑ at 2.25 Mtrs
Install and connect the Multitrode SIR surcharge imminent level relay Probe	OK ☑ at 0.96 Mtrs
Connect the thermistors for each pump (sites with option 1 only)	OK ☑ N/A ☐
Connect the moisture in oil sensor for each pump (sites with option A only)	OK ☐ N/A ☑
Connect the moisture in stator for each pump (sites with option B1 only)	OK ☐ N/A ☑
Connect the motor bearing temperature for each pump (sites with option B2 only)	OK ☐ N/A ☑
Connect the reflux valve micro switch for each pump (sites with option C only)	OK ☐ N/A ☑
Connect the upstream manhole surcharge imminent probe (sites with option D only)	OK ☐ N/A ☑
Connect the Multitrode LR2 sump pump start/ stop probes (sites with option E only)	OK ☐ N/A ☑
Connect the Multitrode LR4 sump pump high/trip probes (sites with option E only)	OK ☐ N/A ☑
Connect the sump pump (sites with option E only)	OK ☐ N/A ☑

Electrical Contactor's Supervisor
Name: ..... Simon Tindall .....
Date: ..... 3/7/13 .....
Signature: .....

QUU Commissioning Manager
Name: John O'Meara .....
Date: 03/07/13 .....
Signature: .....

3.8 CONNECT PUMP #2 TO THE NEW SWITCHBOARD

3.8.1 Connect Pump #2 to New Switchboard

J&P Richardson Task	Outcome
At the beginning of this procedure, Pump #1 is operating under the control of the new switchboard running from the supply authority.	OK ☑
Shut down the generator and disconnect Pump #2 from the temporary switchboard	OK ☑
Ensure Pump #2 circuit breaker at the new switchboard is still isolated and locked out as per BW Isolation and Lock Out procedure.	OK ☑
Via the MERACHAL plug in sockets provided on the switchboard, connect the power and control cables for Pump #2.	OK ☑
De-isolate this now connected submersible pump. Check the rotation by starting the pump via the local "Emergency Start" switch and confirming the wet well level drops by at least 1%.	OK ☑
Start Pump # 2 again and Check the 3 phase motor current and compare with original readings. PUMP #2 Can now be run in emergency and local, under the control of the new switchboard.	A 7.7 Amps B 7.7 Amps C 7.7 Amps

3.9 COMMISSIONING OF THE PUMP STATION COMMUNICATIONS

3.9.1 Radio Antenna Installation

QUU Programmer Task	Outcome
Install new mast with Antenna, orientate antenna to the position determined in section 3.1.2 connect coaxial cable plugs.	OK ☑

3.9.2 Telemetry and SCADA Communications Checks

QUU Programmer Task	Outcome
QUU programmer must complete the following procedures From the SSM086 Standard Fixed Speed Sewage Pumping Station (S.A.T.) Section 1: Setup and Pre-Commissioning Checks 1.1 to 1.8	OK ☑

Electrical Contactor's Supervisor
Name: ....Simon Todoff.....
Date: 31/7/13
Signature: .....

QUU Commissioning Manager
Name: John Tow
Date: 03/07/13
Signature: .....

3.10 COMMISSIONING OF THE PUMP STATION PUMPING SYSTEM

3.10.1 Commissioning of Pump #1 and Pump#2

QUU Programmer & J&P Richardson Task	Outcome
Before beginning the next step ensure that the well level is between "Start and Stop" level (Station under the control of the new board)	OK ☑
QUU Programmer must complete the following procedures From the SSM086 Standard Fixed Speed Sewage Pumping Station (S.A.T.) *Section2: On Site Commissioning Procedure* 2.1 to 2.9	OK ☑

3.10.2 Commissioning of the SCADA Monitor and Control System

QUU Programmer & J&P Richardson Task	Outcome
QUU Programmer must complete the following procedures From the SSM086 Standard Fixed Speed Sewage Pumping Station (S.A.T.) *Section3: On Site Commissioning Procedure*	OK ☑

3.11 INSTALL GENERATOR MAINS (FOR SITES WITH PERMANENT GENERATORS - OPTION F)

J&P Richardson Task	Outcome
Record insulation resistance of the 3-phases	A ___Megohm B___ Megohm. C___ Megohm
Record earth resistance	_____ohms
Connect the generator IO cables	OK ☐
Point to point phase continuity	R to L1 OK☐ Wto L2 OK☐ B to L3 OK☐

Electrical Contactor's Supervisor
Name: ..... Simon Tuckett .....
Date: ..... 3/7/13 .....
Signature: .....

QUU Commissioning Manager
Name: ..... John Clayton .....
Date: ..... 03/07/13 .....
Signature: .....

3.12 SITE ACCEPTANCE TESTING

3.12.1 Site Acceptance Testing (S.A.T) - Remaining Tests

QUU Programmer & J&P Richardson Task	Outcome
Once pump 2 has been commissioned Complete any remaining procedures in Section 2 from the SSM086 Standard Fixed Speed Sewage Pumping Station (S.A.T.)	OK ☑
Check operation of SIR for 20 sec. with probe to prove probe operation and operation of 2 pumps	OK ☑
Check operation LR3 with probe to prove RTU and probe	OK ☑
Seal conduits with denso and grout under switchboard.	OK ☑
Check Energex Phase Fail Input.	OK ☑
Confirm automatic control of pumps.	OK ☑
Check Parameter ~~203 of Soft Starter is a positive value.~~ DANPR	OK ☑
Confirm correct operation of all door locks	OK ☑
Confirm Operation & Maintenance Manual left on site.	OK ☑

3.12.2 SCADA Testing

QUU Programmer & J&P Richardson Task	Outcome
The QUU Programmer must complete the following procedures with the assistance from the Commissioning Engineer and SCADA Commissioning Engineer in the Control Room. From the SSM086 Standard Fixed Speed Sewage Pumping Station (S.A.T.) Section3 : SCADA Commissioning Procedure	OK ☑

3.12.3 Preliminary Work Completion by Electrical J&P Richardsons

J&P Richardson Task	Outcome
Leave the site clean and tidy and hazard free.	OK ☑
Confirm with QUU that the job is complete and their staff can leave.	OK ☑
Confirm with QUU that QUU staff will lock up the site on completion of the switchboard change over work.	OK ☑
Note: If there is a problem with finishing the work due to unforeseen circumstance refer to the Risk Analysis attached.	OK ☑

3.12.4 Register Control Room

QUU Programmer & J&P Richardson Task	Outcome
Commissioning Engineer to call the Control Room Operator (CRO) and inform him that the site works is complete and that the site is now fully in "Remote" control and that all alarms are to be acted on as per the alarm instructions. C.R.O. to confirm that the site is healthy and that there are no alarms active. Record the C.R.O.'s name and Officer Code and record the time of the call.	Name. _____ CRO _____ TIME: _____

Electrical Contactor's Supervisor
Name: ..... Simon Tuke .....
Date: ..... 3/7/13 .....
Signature: .....

QUU Commissioning Manager
Name: ..... John Clayton .....
Date: ..... 03/07/13 .....
Signature: .....

4 POST CHANGE OVER CHECKLIST

4.1 DELIVERABLES FROM RTY PROGRAMMER

QUU Programmer	Date Completed
Within 7 days of the change over the following must be completed and signed off by the QUU Programmer Complete Section 4: Post Commissioning *from the SSM086 Standard Fixed Speed Sewage Pumping Station (S.A.T.)*	/ /
The QUU Programmer will ensure that the Control Room Acceptance (CRA) form is signed by the Manager of the Control Room Officers. The form is to be handed to the Contracts Manager (CM).	/ /

4.2 DELIVERABLES FROM ELECTRICAL J&P RICHARDSON

J&P Richardson Task	Date Completed
All documentation required under the contract is to be provided with the time specified (AS BUILT's, Electrical Certificates etc).	/ /

4.3 DELIVERABLES FROM COMMISSIONING MANAGER

Commissioning Manager	Date Completed
All documentation is handed to the Project Manager to that the new switchboard asset can be capitalised and handed over to the customer.	
Factory Acceptance Test Sheet – Completed & signed off.	OK ☑
Electrical Inspection Sheet – Completed & signed off.	OK ☐
Site Acceptance Test Sheet – Completed & signed off.	OK ☐
Commissioning Plan – Completed & signed off.	OK ☑
Control Room Acceptance Form – Completed & signed off	OK ☐
As built Drawings have been updated, drafted and taken to site along with the Site Specific Functional Specification,	/ /

4.4 SUGGESTIONS FOR IMPROVEMENT

Suggestion	Recommended By

Electrical Contactor's Supervisor
Name: ....Simon [illegible]....
Date: 3/7/13
Signature: ......

QUU Commissioning Manager
Name: John Clayton.........
Date: .03/07/13
Signature:...

Lic No. 756

J. & P. RICHARDSON INDUSTRIES PTY. LTD.

A.B.N. 23 001 952 325

114 CAMPBELL AVENUE, WACOL, BRISBANE, QLD. 4076
POSTAL ADDRESS: P.O. BOX 124, SUMNER PARK, QLD. 4074
Phone: (07) 3271 2911 - All Hours Fax: (07) 3271 3623
Email: jpr@jpr.com.au

ELECTRICAL CONTRACTORS & ENGINEERS
INDUSTRIAL - COMMERCIAL - MINING

Web: www.jpr.com.au

- ELECTRICAL INSTALLATION AND MAINTENANCE
- 24 HOUR BREAKDOWN SERVICE
- SWITCHBOARD DESIGN AND MANUFACTURE
- DATA & COMMUNICATIONS
- HIGH VOLTAGE INSTALLATIONS
- ELECTRICAL ENGINEERING, PLC & PROCESS SOFTWARE DESIGN
- OVERHEAD RETICULATION & UNDERGROUND RETICULATION
- ROADWAY LIGHTING & TRAFFIC SIGNALLING
- MUNICIPAL PUMPING INSTALLATIONS
- SHEETMETAL FABRICATION

BRANCHES

EAGLE FARM
PH: (07) 3868 3535

IPSWICH
PH: (07) 3281 1399

TOOWOOMBA
PH: (07) 4659 9900

GOLD COAST
PH: (07) 5591 6340

SUNSHINE COAST
PH: (07) 5476 5133

CHINCHILLA
PH: (07) 4662 7452

YATALA
PH: (07) 3386 1355

CERTIFIED ENVIRONMENTAL MANAGEMENT SYSTEM ISO 14001

CERTIFIED SAFETY MANAGEMENT SYSTEM AS/NZS 4801

rb0040/lb

Job Ref: C63000

Email To: Andrew.Hanlon@urbanutilities.com.au

3 May 2013

Queensland Urban Utilities

Attention: Mr. Andrew Hanlon

Dear Sir,

Certificate of Compliance
SP143 Links Avenue South

Please be advised the above mentioned switchboard and its containing equipment has been manufactured as per our offer and supplied drawings 57-0297set_A.

All applicable work was carried out to AS3000:2007 and has been tested in accordance with the prescribed procedure and that such work complies in every respect with the requirements of the electrical safety regulation 2002.

Should you require any further information or clarification please do not hesitate to contact the undersigned.

Yours faithfully,
J & P Richardson Industries Pty Ltd

R. Barrett

Roland Barrett
Technical Officer

J. & P. RICHARDSON INDUSTRIES PTY. LTD.

A.B.N. 23 001 952 325

114 CAMPBELL AVENUE, WACOL, BRISBANE, QLD. 4076
POSTAL ADDRESS: P.O. BOX 124, SUMNER PARK, QLD. 4074
Phone: (07) 3271 2911 - All Hours Fax: (07) 3271 3623
Email: jpr@jpr.com.au Web: www.jpr.com.au

ELECTRICAL CONTRACTORS & ENGINEERS
INDUSTRIAL - COMMERCIAL - MINING

Lic No. 756

- ELECTRICAL INSTALLATION AND MAINTENANCE
- 24 HOUR BREAKDOWN SERVICE
- SWITCHBOARD DESIGN AND MANUFACTURE
- DATA & COMMUNICATIONS
- HIGH VOLTAGE INSTALLATIONS
- ELECTRICAL ENGINEERING, PLC & PROCESS SOFTWARE DESIGN
- OVERHEAD RETICULATION & UNDERGROUND RETICULATION
- ROADWAY LIGHTING & TRAFFIC SIGNALLING
- MUNICIPAL PUMPING INSTALLATIONS
- SHEETMETAL FABRICATION

BRANCHES

EAGLE FARM
PH: (07) 3868 3535

IPSWICH
PH: (07) 3281 1399

TOOWOOMBA
PH: (07) 4634 3800

GOLD COAST
PH: (07) 5591 6340

SUNSHINE COAST
PH: (07) 5476 5133

CHINCHILLA
PH: (07) 4662 7452

YATALA
PH: (07) 3386 1355

NCS INTERNATIONAL CERTIFIED ENVIRONMENTAL MANAGEMENT SYSTEM ISO 14001

NCS INTERNATIONAL CERTIFIED SAFETY MANAGEMENT SYSTEM AS/NZS 4801

Letter Ref: ca1216/bn

Job No. C63000

08 July 2013

Queensland Urban Utilities

Attention: Mr. Andrew Hanlon

Dear Sir,

C1011-045 QUU068
Sewage Pump Station – Reliability Improvement Project
SPRI-11a

Please be advised that the switchboard replacement at SP143 Links Ave South has been completed as per the contract requirements.

All applicable work was carried out to AS3000:2007 and has been tested in accordance with the prescribed procedure and that such work complies in every respect with the requirements of the electrical safety regulation 2002.

Thank you for your order, we trust that yourself and your team has been impressed by our commitment to QUU and we look forward to assisting you in the future.

Should you require any further information or clarification please do not hesitate in contacting the undersigned.

Yours Faithfully
J & P Richardson Industries Pty Ltd

Chris Andersen
Electrical Installation Assistant Manager

J & P Richardson Electrical Contractors Licence Number: 756

QUEENSLAND Urban Utilities

SP143 LINKS AVE SOUTH SEWAGE PUMPING STATION

SITE COVER SHEET

FUNCTION TEST
J & P RICHARDSON IND.
NAME: _____ LICENCE: 756
DATE: _____
SIGNATURE: _____

ELECTRICAL DRAWINGS INDEX

DWG N°.	TITLE	SHEET	REVISIONS
486/5/7-0297-000	SITE COVER SHEET	00	P1 O A
486/5/7-0297-001	POWER DISTRIBUTION SCHEMATIC DIAGRAM	01	P1 O A
486/5/7-0297-002	PUMP 01 SCHEMATIC DIAGRAM	02	P1 O A
486/5/7-0297-003	PUMP 02 SCHEMATIC DIAGRAM	03	P1 O A
486/5/7-0297-004	*RESERVED FOR PUMP 03 SCHEMATIC DIAGRAM*	04	
486/5/7-0297-005	*RESERVED (DRY WELL SUMP & EM. STORAGE DEWATEING PUMP)*	05	
486/5/7-0297-006	*RESERVED (GENERATOR CONTROL)*	06	
486/5/7-0297-007	COMMON CONTROLS SCHEMATIC DIAGRAM	07	P1 O A
486/5/7-0297-008	COMMON RTU I/O SCHEMATIC DIAGRAM	08	P1 O A
486/5/7-0297-009	RTU POWER DISTRIBUTION SCHEMATIC DIAGRAM	09	P1 O A
486/5/7-0297-010	RTU DIGITAL INPUTS TERMINATION DIAGRAM - SHEET 1 OF 3	10	P1 O A
486/5/7-0297-011	RTU DIGITAL INPUTS TERMINATION DIAGRAM - SHEET 2 OF 3	11	P1 O A
486/5/7-0297-012	RTU DIGITAL INPUTS TERMINATION DIAGRAM - SHEET 3 OF 3	12	P1 O A
486/5/7-0297-013	RTU DIGITAL OUTPUTS TERMINATION DIAGRAM - SHEET 1 OF 2	13	P1 O A
486/5/7-0297-014	RTU DIGITAL OUTPUTS TERMINATION DIAGRAM - SHEET 2 OF 2	14	P1 O A
486/5/7-0297-015	RTU ANALOG INPUTS TERMINATION DIAGRAM	15	P1 O A
486/5/7-0297-016	RTU ANALOG OUTPUTS TERMINATION DIAGRAM	16	P1 O A
486/5/7-0297-017	COMMON CONTROLS TERMINATION DIAGRAM	17	P1 O A
486/5/7-0297-018	EQUIPMENT LIST	18	P1 O A
486/5/7-0297-019	CABLE SCHEDULE	19	P1 O A
486/5/7-0297-020	SWITCHBOARD LABEL SCHEDULE	20	P1 O A
486/5/7-0297-021	SWITCHBOARD CONSTRUCTION DETAILS - SHEET 1 of 3	21	P1 O A
486/5/7-0297-022	SWITCHBOARD CONSTRUCTION DETAILS - SHEET 2 of 3	22	P1 O A
486/5/7-0297-023	SWITCHBOARD CONSTRUCTION DETAILS - SHEET 3 of 3	23	P1 O A
486/5/7-0297-024	FIELD INSTRUMENTATION - INSTALLATION DETAILS	24	P1 O A
486/5/7-0297-025	*RESERVED (CATHODIC PROTECTION UNIT)*	25	
486/5/7-0297-026	*RESERVED (FIELD DISCONNECTION BOX)*	26	
486/5/7-0297-027	SWBD GENERAL ARRANGEMENT ELEVATIONS	27	P1 O A
486/5/7-0297-028	SWBD GENERAL ARRANGEMENT SECTIONS	28	P1 O A
486/5/7-0297-029	*RESERVED (GENERATOR EXTERNAL CONNECTION BOX)*	29	
486/5/7-0297-030	SWITCHBOARD SLAB - LOCALITY AND SITE PLANS - SHEET 1 of 3	30	P1 O A
486/5/7-0297-031	SWITCHBOARD SLAB AND CONDUIT DETAILS - SHEET 2 of 3	31	P1 O A
486/5/7-0297-032	SWITCHBOARD AND ELECTRICAL CONDUIT LAYOUT - SHEET 3 of 3	32	P1 O A

STANDARD VARIABLES

DESCRIPTION	VALUES
CT METERING ISOLATOR	*NOT APPLICABLE*
NORMAL SUPPLY MAIN SWITCH	125A S250PE/125
GENERATOR SUPPLY MAIN SWITCH	125A S250PE/125
PUMP1 CIRCUIT BREAKER	20A S125GJ/20
PUMP2 CIRCUIT BREAKER	20A S125GJ/20
DRY WELL SUMP PUMP CIRCUIT BREAKER	*NOT APPLICABLE*
EM. STORAGE DEWATERING PUMP CCT BREAKER	*NOT APPLICABLE*
PUMP SOFT STARTER SIZE	MCD5-0021B + 17
PUMP RATING	4.6kW 10A
PUMP LINE CONTACTOR	CA7-30
DRY WELL SUMP PUMP RATING	*NOT APPLICABLE*
DRY WELL SUMP PUMP CONTACTOR & TOL	*NOT APPLICABLE*
PUMP SOCKET OUTLET + INCLINE SLEEVE	DS1 3114013972 + 518A058
PUMP INLET PLUG + HANDLE	DS1 3118013972 + 311A013
WET WELL LEVEL TRANSMITTER	WLS2XXA4ALD1DD1X 3m
EMERGENCY STORAGE WELL LEVEL TRANSMITTER	*NOT APPLICABLE*
EM. STORAGE DEWATERING PUMP RATING	*NOT APPLICABLE*
EM. STORAGE DEWATERING PUMP CONTR & TOL	*NOT APPLICABLE*
FLOWMETER RANGE	*NOT APPLICABLE*
WET WELL ULTRASONIC LEVEL SENSOR	*NOT APPLICABLE*
DELIVERY PRESSURE TRANSMITTER	BR52XXCA1EHPMAS L=12 20m
RADIO	DR900-07A02-D0
EMERGENCY PUMPING TIME	0 7 2sec
No of SINGLE POINT PROBES	2
INCOMING MAINS SUPPLY CABLE	16mm²
MAIN EARTHING CABLE	6mm²
INCOMING GENERATOR SUPPLY CABLE	*NOT APPLICABLE*
SOFT STARTER 3 PHASE SUPPLY	6mm²

STANDARD DESIGN OPTIONS

OPTION	DESCRIPTION	FITTED
A	*INDIVIDUAL PUMP MOISTURE IN OIL (MIO) SENSOR AND FAULT RELAY*	NO
B	*INDIVIDUAL PUMP MOTOR AUX PROTECTION SENSORS AND FAULT RELAYS*	NO
C	*INDIVIDUAL PUMP REFLUX VALVE POSITION SWITCH*	NO
D	*STATION MANHOLE SURCHARGE IMMINENT*	NO
E	*STATION DRY WELL SUMP PUMP AND LEVEL INDICATION SENSORS AND RELAYS*	NO
F	*PERMANENT GENERATOR INSTALLED*	NO
G	*STATION EMERGENCY STORAGE LEVEL SENSOR & DEWATERING PUMP*	NO
H	*STATION DELIVERY FLOWMETER*	NO
I	BACKUP COMMUNICATION - GSM	YES
J	PUMP CONNECTION (Via De-contactors)	YES
K	*CATHODIC PROTECTION*	NO
L	MOTOR THERMISTORS (Via De-contactors)	YES
M	*ODOUR CONTROL*	NO
N	DIRECT CONNECTED METERING	YES
O	*PUMPS ELECTRICAL INTERLOCK*	NO
P	*WET WELL WASHER*	NO
Q	*AUX PIT SUMP PUMP AND LEVEL PROBE*	NO
R	TELEMETRY RADIO	YES
S	*WET WELL SECONDARY LEVEL SENSOR*	NO
T	WET WELL PRIMARY LEVEL SENSOR (Direct Connected)	YES
U	DELIVERY PRESSURE TRANSMITTER (Direct Connected)	YES
V	*CHEMICAL DOSING*	NO
W	PUMP START METHOD - SOFT STARTER	YES
X	*3rd PUMP INSTALLED*	NO
Y	*POWER METER*	NO

TEST
"ISSUED FOR CONSTRUCTION" S97
SIGN R.B. M63000 3/4/13

Sheet 00

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

STD TEMPLATE SP-2P Ver32

DRAFTED	P.HAGUE	Original Signed by P.HAGUE	6-11-12
DRAFTING CHECK	A.WITTHOFT	DESIGN	R.P.E.Q. No. DATE
CAD FILE	57-0297set_A	Original signed by A.WITTHOFT	8895 6-11-12
B.C.C. FILE No.		DESIGN CHECK	R.P.E.Q. No. DATE

PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

QUEENSLAND Urban Utilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

TITLE
SITE COVER SHEET

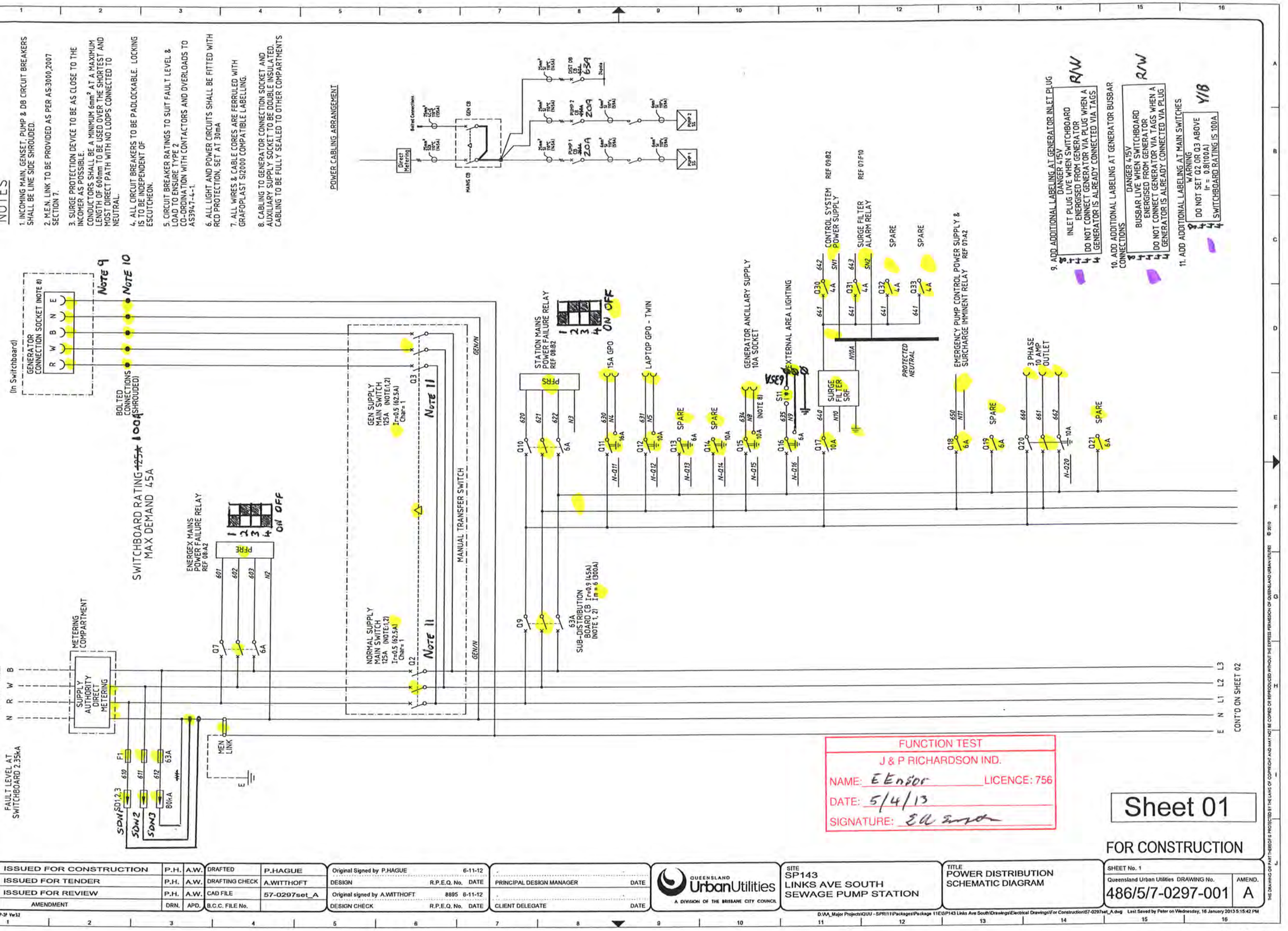
SHEET No. 0
Queensland Urban Utilities DRAWING No. 486/5/7-0297-000
AMEND. A

D:\AA_Major Projects\QUU - SPR111\Packages\Package 11E\SP143 Links Ave South\Drawings\Electical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

NOTES

1. INCOMING MAIN, GENSET, PUMP & DB CIRCUIT BREAKERS SHALL BE LINE SIDE SHROUDED.
2. M.E.N. LINK TO BE PROVIDED AS PER AS:3000,2007 SECTION 7.
3. SURGE PROTECTION DEVICE TO BE AS CLOSE TO THE INCOMER AS POSSIBLE. CONDUCTORS SHALL BE A MINIMUM 6mm² AT A MAXIMUM LENGTH OF 600mm TO BE USED OVER THE SHORTEST AND MOST DIRECT PATH WITH NO LOOPS CONNECTED TO NEUTRAL.
4. ALL CIRCUIT BREAKERS TO BE PADLOCKABLE. LOCKING IS TO BE INDEPENDENT OF ESCUTCHEON.
5. CIRCUIT BREAKER RATINGS TO SUIT FAULT LEVEL & LOAD TO ENSURE TYPE 2 CO-ORDINATION WITH CONTACTORS AND OVERLOADS TO AS3947-4-1.
6. ALL LIGHT AND POWER CIRCUITS SHALL BE FITTED WITH RCD PROTECTION, SET AT 30mA
7. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.
8. CABLING TO GENERATOR CONNECTION SOCKET AND AUXILIARY SUPPLY SOCKET TO BE DOUBLE INSULATED. CABLING TO BE FULLY SEALED TO OTHER COMPARTMENTS

POWER CABLING ARRANGEMENT



FUNCTION TEST
J & P RICHARDSON IND.
NAME: E Enson LICENCE: 756
DATE: 5/4/13
SIGNATURE: E Enson

Sheet 01

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

STD TEMPLATE SP-2P Ver3.2

DRAFTED	P.HAGUE	Original Signed by P.HAGUE	6-11-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0297set_A	Original signed by A.WITTHOFT	8895 6-11-12
B.C.C. FILE No.		DESIGN CHECK R.P.E.Q. No.	DATE
		PRINCIPAL DESIGN MANAGER	DATE
		CLIENT DELEGATE	DATE

QUEENSLAND UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

TITLE
POWER DISTRIBUTION
SCHEMATIC DIAGRAM

SHEET No. 1
Queensland Urban Utilities DRAWING No. 486/5/7-0297-001
AMEND. A

D:\AA_Major Projects\QUU - SPR111\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\07-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

03-04-13

CONT'D FROM SHEET 01

E N R W B

Q4 20A
Ir=0.63 (12.5A)
Im= 6 (120A)
Note 1

1K1

Q4-1 4A

10N 10

PS-P1 5A 24VDC
PUMP 1 POWER SUPPLY

100- 100

QD4 10A

101

DANFOSS MCD5-0021B + MODBUS
Rated I Medium Duty
17A
SOFT STARTER 2U1

L1 L2 L3 T1 T2 T3 PE 5 6

130 131

DE-CONTACTORS

M 3~ SUBMERSIBLE PUMP No1 4.6kW 10AMPS

MOTOR THERMISTORS

1 2 AUX PLUG

KEYPAD

1K6 113 17 RUN
112 18 +24V
1K21 114 25 RESET
1K4 115 11 E.STOP
116 15
116 16 +24V

A

101 A5 A6 100-

101 21 FAULT 24 109 1K3 STARTER FAULT RELAY REF 02:C12
104 13 OPERATE 14 110 1K1 LINE CONTACTOR REF 02:A3
104 33 RUN 34 111 1K2 STARTER RUNNING RELAY REF 02:C13

HRM1 100- HOURS RUN METER

MODBUS MODULE
B6 B8 B7

Set terminating switch to 'OFF'

RS485+ RS485- Cable 16 FROM RTU REF 09:F12

RS485A+ RS485A- Cable 17 TO SOFT STARTER 2 REF 03:E7

A

101 1S3 E/STOP 104 104 1K4 E.STOP RELAY REF 02:C5, F3, B13

1S5 EM.START OFF ON

101 1K4 105 1K20 EMG1 REF 07:B5 107 1K6 RUN RELAY REF 02:B5

101 101 1K5 CONTROL CCT 'POWER ON' RELAY REF 02:B12

101 OFF ON 1S5 EM.START 108 1H5 Y EMERGENCY PUMP MODE SELECTED

100-

CONT'D ON SHEET 03

RTU DIGITAL INPUTS

+ 24VDC POWER SUPPLY - REFER SHEET 09:C7

R0S2+ R0S2 J6+ 2A J6- R0S2 R0S2- R0S2- COM

DI01	1K5	DI01	CONTROL POWER
DI02	1S1	DI02	START PUSHBUTTON
DI03	1S2	DI03	STOP PUSHBUTTON
DI04	1K4	DI04	E.STOP RELAY HEALTHY
DI05	1S4	DI05	RESET PUSHBUTTON
DI06	1K2	DI06	RUNNING
DI07	1K3	DI07	STARTER FAULT
		DI08	SPARE
		DI09	SPARE
		DI10	SPARE

R0S2-

RTU DIGITAL OUTPUTS

+ 24VDC POWER SUPPLY - REFER SHEET 09:C7

R0S6+ R0S6 2A J6+ J6- R0S6- R0S6

DO01+	DO01	DO01	1K20	DO01- RUN COMMAND REF 02:F4
DO02+	DO02	DO02	1K21	DO02- FAULT RESET REF 02:C3
DO03+	DO03	DO03	1K22	DO03- EMERGENCY MODE INTERRUPT REF 07: B3
DO04+	DO04	DO04		SPARE

2 C 1 NO 4 C 3 NO 6 C 5 NO 8 C 7 NO

NOTES

1. INCOMING GENSET, MAIN, PUMP & DIST. BOARD CIRCUIT BREAKERS SHALL BE LINE SIDE SHROUDED.
2. CIRCUIT BREAKER RATINGS TO SUIT FAULT LEVEL & LOAD ENSURE MIN TYPE 1 CO-ORDINATION WITH CONTACTORS & OVERLOADS TO IEC 947-4-1.
3. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.
4. FAULT LEVEL OF 20kA AT 415V FOR 0.2sec.

LEGEND:
- ⊗ RTU MARSH. CCT BREAKER TERM
- ○ RTU MARSH. LINK TERMINAL
- ⊘ SWITCHBOARD CONTROL TERM.
- □ SWITCHBOARD GENERATOR TERM.
- ⊠ FIELD TERMINAL
- ◪ RTU TERMINAL
- ■ SS TERMINAL
- DI01 DIGITAL INPUT
- DO01 DIGITAL OUTPUT
- AI01 ANALOG INPUT
- AO01 ANALOG OUTPUT

FUNCTION TEST
J & P RICHARDSON IND.
NAME: E Enger LICENCE: 756
DATE: 5/4/13
SIGNATURE: E Enger

Sheet 02
FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED	P.HAGUE
DRAFTING CHECK	A.WITTHOFT
CAD FILE	57-0297set_A
B.C.C. FILE No.	

Original Signed by P.HAGUE 6-11-12 DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 6-11-12 DESIGN CHECK R.P.E.Q. No. DATE
PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities A DIVISION OF THE BRISBANE CITY COUNCIL

SITE: SP143 LINKS AVE SOUTH SEWAGE PUMP STATION

TITLE: PUMP No1 SCHEMATIC DIAGRAM

SHEET No. 2
Queensland Urban Utilities DRAWING No. 486/5/7-0297-002
AMEND. A

STD TEMPLATE SP-29 Ver32

D:\AA_Major Projects\QUU - SPR111\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

03 24-6-13

CONT'D FROM SHEET 02

E N R W B

Q5 20A
Ir=0.63 (12.5A)
Im= 6 (120A)
Note 1

2K1

Q5-1 4A

20N 20

PS-P2 5A 24VDC
PUMP 2 POWER SUPPLY

200- 200

QD5 10A

201

DANFOSS MCD5-0021B + MODBUS
Rated Medium Duty 17A
SOFT STARTER 2U1

L1 L2 L3 T1 T2 T3 PE

5 230
6 231

2K6 213 17 RUN
212 18 +24V
2K21 214 25 RESET
2K4 215 11 E.STOP
216 15
216 16 +24V
201 A5

A6 200-

201 21 FAULT 24 209 2K3 STARTER FAULT RELAY REF 03:C12
204 13 OPERATE 14 210 2K1 LINE CONTACTOR REF 03:A3
204 33 RUN 34 211 2K2 STARTER RUNNING RELAY REF 03:C13

HRM2 200- HOURS RUN METER

MODBUS MODULE
B6 B8 B7

Set terminating switch to 'ON'

RS485A+ RS485A- Cable 17
FROM SOFT STARTER 1 REF 02:E7

DE-CONTACTORS

M ~3 SUBMERSIBLE PUMP No2 4.6kW 10AMPS

MOTOR THERMISTORS

1 2 AUX PLUG

KEYPAD

A

201 2S3 E/STOP 204 204 2K4 E.STOP RELAY REF 03:C5, F3, B13

201 2K4 205 2S5 EM.START OFF ON I * O
2K20
EMG2 REF 07:B5
207 2K6 RUN RELAY REF 03:B5

201 201 2K5 CONTROL CCT 'POWER ON' RELAY REF 03:B12

201 OFF ON I * O 2S5 EM.START 208 2H5 EMERGENCY PUMP MODE SELECTED

200-

CONT'D ON SHEET 04

RTU DIGITAL INPUTS

+ 24VDC POWER SUPPLY - REFER SHEET 09:C7

ROS3+ ROS3 2A J6+ J6- ROS3- COM

DI17+	2K5	DI17	CONTROL POWER
DI18+	2S1	DI18	START PUSHBUTTON
DI19+	2S2	DI19	STOP PUSHBUTTON
DI20+	2K4	DI20	E.STOP RELAY HEALTHY
DI21+	2S4	DI21	RESET PUSHBUTTON
DI22+	2K2	DI22	RUNNING
DI23+	2K3	DI23	STARTER FAULT
		DI24	SPARE
		DI25	SPARE
		DI26	SPARE

RTU DIGITAL OUTPUTS

+ 24VDC POWER SUPPLY - REFER SHEET 09:C7

ROS7+ ROS7 2A J6+ J6- ROS7-

DO17+	DO17	2K20	DO17-	RUN COMMAND REF 03:F4
DO18+	DO18	2K21	DO18-	FAULT RESET REF 03:C3
DO19+	DO19	2K22	DO19-	EMERGENCY MODE INTERRUPT REF 07: C3
DO20+	DO20			SPARE

LEGEND:

- RTU MARSH. CCT BREAKER TERM
- RTU MARSH. LINK TERMINAL
- SWITCHBOARD CONTROL TERM.
- SWITCHBOARD GENERATOR TERM.
- FIELD TERMINAL
- RTU TERMINAL
- SS TERMINAL
- DI01 DIGITAL INPUT
- DO01 DIGITAL OUTPUT
- AI01 ANALOG INPUT
- AO01 ANALOG OUTPUT

NOTES

1. INCOMING GENSET, MAIN, PUMP & DIST. BOARD CIRCUIT BREAKERS SHALL BE LINE SIDE SHROUDED.
2. CIRCUIT BREAKER RATINGS TO SUIT FAULT LEVEL & LOAD ENSURE MIN TYPE 1 CO-ORDINATION WITH CONTACTORS & OVERLOADS TO IEC 947-4-1.
3. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.
4. FAULT LEVEL OF 20kA AT 415V FOR 0.2sec.

FUNCTION TEST
J & P RICHARDSON IND.
NAME: E Enson LICENCE: 756
DATE: 8/4/13
SIGNATURE: E Enson

Sheet 03
FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED	P.HAGUE	Original Signed by P.HAGUE	6-11-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0297set_A	Original signed by A.WITTHOFT 8895	6-11-12
B.C.C. FILE No.		DESIGN CHECK R.P.E.Q. No.	DATE
		PRINCIPAL DESIGN MANAGER	DATE
		CLIENT DELEGATE	DATE

Queensland Urban Utilities — A DIVISION OF THE BRISBANE CITY COUNCIL

SITE: SP143 LINKS AVE SOUTH SEWAGE PUMP STATION

TITLE: PUMP No2 SCHEMATIC DIAGRAM

SHEET No. 3

Queensland Urban Utilities DRAWING No. 486/5/7-0297-003 AMEND. A

S10 TEMPLATE SP-2P Ver32

D:\MA_Major Projects\QUU - SPR111\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

03-pg 13

COMMON CONTROL SECTION

EMERGENCY PUMPING MODE (24VDC)

240VAC FILTERED SUPPLY Q18 REF 01:E13

5A 24VDC PS3

QD18 5A

SIR-1

SIDT 20SEC — SURCHARGE IMMINENT ON DELAY TIMER REF 07:B4, 08:B2

SIDT (Set @ 80% of RTU pumping time) — EMGDT 0 7 2sec — EMERGENCY PUMPING MODE OFF DELAY TIMER REF 07:C2

EMGDT — EMGDTA — EMERGENCY PUMPING MODE AUX RELAY REF 07:C2, 08:D2

EMGDTA — 1K22 REF 02:E14 — EMG1 — EMERGENCY PUMPING MODE PUMP 1 REF 02:F4

2K22 REF 03:E14 — EMG2 12SEC — EMERGENCY PUMPING MODE PUMP 2 ON DELAY TIMER REF 03:F4

EMGDT - SETTINGS

MODE | TIME SET D 0 7 2 S | RANGE

TIMING DIAGRAM

SIDT	SURCHARGE IMMINENT ACTIVE
SIDT CONTACT 1	ON DELAY (t1), ACTIVATE EM. PUMPING MODE
SIDT CONTACT 2	INSTANTANEOUS, ACTIVATE PLC INPUT
EMGDT TRIGGER (6)	EMERGENCY PUMPING MODE ACTIVE
EMGDT CONTACT	EM. PUMP MODE STARTED, DELAY OFF (t2) IS PUMP RUN ON TIME. T2= 80% OF SURCHARGE PUMPUNG TIME DEFINED IN THE RTU CODE
EMG1/EMG2	INITIATE, PUMP 1 START & PUMP 2 DELAYED START
EMG2 CONTACTS	ON DELAY (t3), START PUMP 2

COMMON CONTROL SECTION

SWITCHBOARD INTERNAL LIGHTING AND SECURITY

DI32A — DOOR SECURITY STATUS

+ 24VDC POWER SUPPLY - REF 09:E7

ALL DOOR SWITCHES SHOWN WITH DOORS OPEN

J9C

SLCR — L2 SWITCHBOARD LIGHTING CONTROL RELAY REF 07:C10, 07:A10

DOOR 1 … DOOR 8 — INTERNAL L.E.D. LIGHT FITTINGS

DS12 — Prox. Switch Fitted To 'Disconnect Zone' Door

DZCR — DISCONNECT ZONE CONTROL RELAY REF 07: A10

COMMON CONTROL SECTION

LEVEL MONITORING

SIR — SURCHARGE IMMINENT LEVEL RELAY

Multitrode Model SAFE-FS 24VDC

DC+ FAILSAFE 1 — SIR-E1

GND ALARM 2 — SIR-E2

SIR-E3 ETR REF 08:G4

SIR-1 REF 07:B2 — SIR-1

SIR-2 REF 08:C2 — SIR-2

DIP SWITCHES S1 … S8 OFF ON

602 601 600 — Cable C02 — INST. EARTH

LEVEL PROBE

LR3 — WET WELL HIGH LEVEL RELAY

24VDC SUPPLY REF 08:C7 — J7+ / J7-

Multitrode Model MTR-5 24VDC

+VE HI — LR3-E1

-VE LO — LR3-E2

LR3-E3 ETR REF 08:G4

LR3 REF 08:D2 — DI31+ / DI31

25 28 C

604 603 — Cable C02 — INST. EARTH

LEVEL PROBE

ATS SECTION

SURGE PROTECTION

SURGE REDUCTION FILTER SRF

SURGE FILTER ALARM RELAY SFAR

CLOSE = HEALTHY

SURGE DIVERTERS REF 01:I2 — SD1 SD2 SD3

240VAC FILTERED SUPPLY Q31 REF 01:C12

SURGE DIVERTERS & FILTER OK REF 08:B2 — DI14+ / DI14

NOTES

1. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.
2. RUN SEPARATE DEDICATED EARTH CONDUCTOR TO EARTH BAR.

LEGEND:

- ⊗ RTU MARSH. CCT BREAKER TERM
- ○ RTU MARSH. LINK TERMINAL
- ⌀ SWITCHBOARD CONTROL TERM.
- □ SWITCHBOARD GENERATOR TERM.
- ✖ FIELD TERMINAL
- ◪ RTU TERMINAL
- ■ SS TERMINAL
- DI01 DIGITAL INPUT
- DO01 DIGITAL OUTPUT
- AI01 ANALOG INPUT
- AO01 ANALOG OUTPUT

FUNCTION TEST

J & P RICHARDSON IND.

NAME: E Ensor LICENCE: 756

DATE: 8/4/13

SIGNATURE: E Ensor

Sheet 07

FOR CONSTRUCTION

A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.	DRAFTED	P.HAGUE	Original Signed by P.HAGUE 6-11-12
O	11.12	ISSUED FOR TENDER	P.H.	A.W.	DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No. DATE
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.	CAD FILE	57-0297set_A	Original signed by A.WITTHOFT 8895 6-11-12
No	DATE	AMENDMENT	DRN.	APD.	B.C.C. FILE No.		DESIGN CHECK R.P.E.Q. No. DATE

PRINCIPAL DESIGN MANAGER DATE

CLIENT DELEGATE DATE

Queensland Urban Utilities — A DIVISION OF THE BRISBANE CITY COUNCIL

SITE: SP143 LINKS AVE SOUTH SEWAGE PUMP STATION

TITLE: COMMON CONTROLS SCHEMATIC DIAGRAM

SHEET No. 7

Queensland Urban Utilities DRAWING No. 486/5/7-0297-007 AMEND. A

D:\AA_Major Projects\QUU - SPR111\Packages\Package 11\EISP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

STD TEMPLATE SP-2F Ver3.2

03-04-13

RTU DIGITAL INPUTS

R0S2+ / R0S2-

DI11		DI11	RESERVED FOR MANHOLE SURCHARGE IMMINENT
DI12	PFRE	DI12	ENERGEX MAINS POWER REF 01:F4
DI13	PFRS	DI13	STATION MAINS POWER REF 01:E8
DI14	SFAR, SD1, SD1,2&3	DI14	SURGE DIVERTERS OK REF 07:G10
DI15	LOC REM I * S10	DI15	STATION LOCAL/REMOTE SWITCH
DI16	SIDT 25 28	DI16	SURCHARGE IMMINENT REF 07:B5

R0S3+ / R0S3-

DI27	SIR-2	DI27	SURCHARGE IMMINENT PROBE FAIL REF 07:G2
DI28	BOK	DI28	RTU BATTERY OK REF 09:C4
DI29	RTU	DI29	RTU CONTROL POWER REF 09:C4
DI30	EMGDTA	DI30	EMERGENCY PUMPING MODE REF 07:B5
DI31	LR3	DI31	WET WELL HIGH LEVEL REF 07:F6

DI2+24V

+ 24VDC POWER SUPPLY - REFER SHEET 09:C7

R0S4+ / R0S4-

DI33	Q2 REF 01:H5	DI33	NORMAL SUPPLY CB CLOSED
DI34		DI142	DI34 TO DI42 SPARES RESERVED FOR GENERATOR CONTROL
DI143		DI143	SPARE - RESERVED FOR VALVE PIT HIGH LEVEL
DI144		DI144	SPARE RESERVED FOR CP
DI145		DI148	DI45 TO DI48 SPARES RESERVED FOR DRY WELL SUMP PUMP AND LEVEL RELAYS

RTU DIGITAL OUTPUTS

R0S6+ / R0S6-

DO05	ETR	DO05-	ELECTRODE TEST RELAY REF 07:F3, 07:F7
DO06		DO06NO	SPARE RESERVED FOR WELL WASHER
DO07		DO07NO	SPARE - RESERVED FOR DRY WELL ALARM STROBE
DO08		DO08NO	SPARE - RESERVED FOR ODOUR CONTROL UNIT

R0S7+ / R0S7-

DO21		DO21	SPARE - RESERVED FOR GENERATOR EXERCISE
DO22		DO22NO	SPARE RESERVED FOR CP
DO23		DO23NO	SPARE RESERVED FOR CP
DO24		DO24NO	SPARE - RESERVED FOR EM. STORAGE TANK SUMP PUMP CONTROL

RTU ANALOG INPUTS

24VDC SUPPLY REF 09:C7

ANALOG LEVEL METER — TERMINAL HOUSING — TRANSMITTER

AI01	AI01+24V, 611; AI01A, 609; 610	AI01	PRIMARY WET WELL LEVEL
AI02	ADJ. UNIT; TRANSMITTER; AI02+24V	AI02	DELIVERY PRESSURE
AI03		AI03	RESERVED FOR EMERGENCY STORAGE LEVEL
AI04		AI04	SPARE
AI05		AI05	RESERVED FOR GENERATOR FUEL LEVEL
AI06		AI06	RESERVED FOR SECONARY WET WELL LEVEL
AI07		AI07	RESERVED FOR RECTIFIER CURRENT
AI08		AI08	RESERVED FOR DELIVERY FLOWMETER

RTU ANALOG OUTPUTS

RESERVED FOR CHEMICAL DOSING PUMP SPEED REFERENCE — AO-04 — AO04-I, AO04-R

FUNCTION TEST
J & P RICHARDSON IND.
NAME: E Ensor LICENCE: 756
DATE: 8/4/13
SIGNATURE: E a Ensor

NOTES

1. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.

LEGEND:
- ⊗ RTU MARSH. CCT BREAKER TERM
- ○ RTU MARSH. LINK TERMINAL
- ⌀ SWITCHBOARD CONTROL TERM.
- □ SWITCHBOARD GENERATOR TERM.
- ▣ FIELD TERMINAL
- ◪ RTU TERMINAL
- ■ SS TERMINAL
- DI01 DIGITAL INPUT
- DO01 DIGITAL OUTPUT
- AI01 ANALOG INPUT
- AO01 ANALOG OUTPUT

Sheet 08

FOR CONSTRUCTION

A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.	DRAFTED	P.HAGUE	Original Signed by P.HAGUE 6-11-12	
O	11.12	ISSUED FOR TENDER	P.H.	A.W.	DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No. DATE	PRINCIPAL DESIGN MANAGER DATE
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.	CAD FILE	57-0297set_A	Original signed by A.WITTHOFT 8895 6-11-12	
No	DATE	AMENDMENT	DRN.	APD.	B.C.C. FILE No.		DESIGN CHECK R.P.E.Q. No. DATE	CLIENT DELEGATE DATE

STD TEMPLATE SP-2F Ver3.2

QUEENSLAND UrbanUtilities — A DIVISION OF THE BRISBANE CITY COUNCIL

SITE: SP143 LINKS AVE SOUTH SEWAGE PUMP STATION

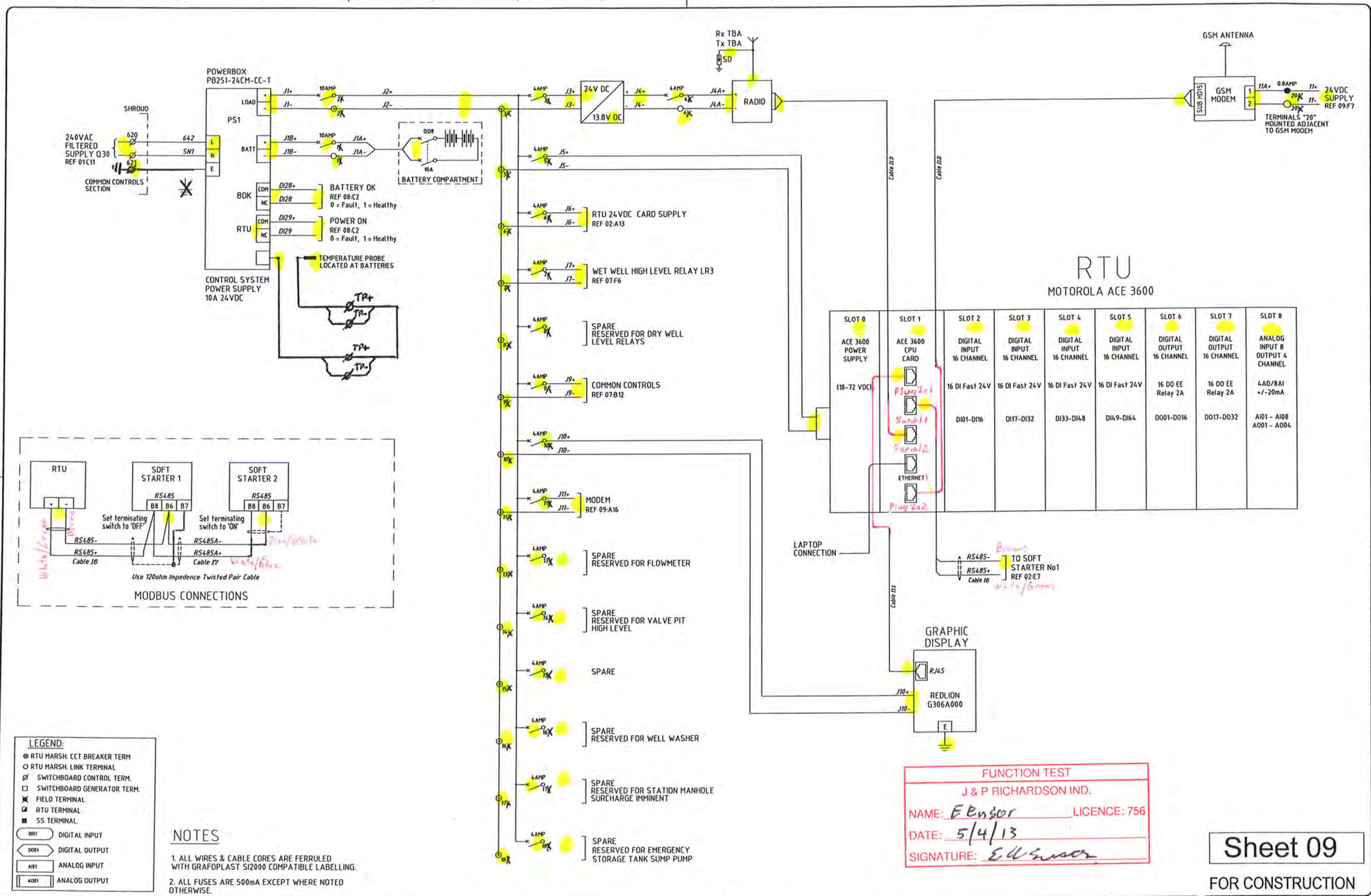
TITLE: COMMON RTU I/O SCHEMATIC DIAGRAM

SHEET No. 8

Queensland Urban Utilities DRAWING No. 486/5/7-0297-008 AMEND. A

D:\MA_Major Projects\QUU - SPR111\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

03-04-13


POWERBOX
PB251-24CM-CC-T
PS1
LOAD
BATT
BOK
RTU
COM
NC
SHROUD
240VAC
FILTERED
SUPPLY Q30
REF 01:C11
620
621
642
SN1
COMMON CONTROLS
SECTION
J1+
J1-
J2+
J2-
10AMP
J1B+
J1B-
J1A+
J1A-
QD8
10A
BATTERY COMPARTMENT
DI28+
DI28
BATTERY OK
REF 08:C2
0 = Fault, 1 = Healthy
DI29+
DI29
POWER ON
REF 08:C2
0 = Fault, 1 = Healthy
TEMPERATURE PROBE
LOCATED AT BATTERIES
TP+
TP-
CONTROL SYSTEM
POWER SUPPLY
10A 24VDC
4AMP
J3+
J3-
24V DC
13.8V DC
J4+
J4-
J4A+
J4A-
Rx TBA
Tx TBA
SD
RADIO
J5+
J5-
J6+
J6-
RTU 24VDC CARD SUPPLY
REF 02:A13
J7+
J7-
WET WELL HIGH LEVEL RELAY LR3
REF 07:F6
SPARE
RESERVED FOR DRY WELL
LEVEL RELAYS
J9+
J9-
COMMON CONTROLS
REF 07:B12
J10+
J10-
J11+
J11-
MODEM
REF 09:A16
SPARE
RESERVED FOR FLOWMETER
SPARE
RESERVED FOR VALVE PIT
HIGH LEVEL
SPARE
SPARE
RESERVED FOR WELL WASHER
SPARE
RESERVED FOR STATION MANHOLE
SURCHARGE IMMINENT
SPARE
RESERVED FOR EMERGENCY
STORAGE TANK SUMP PUMP
Cable I13
Cable I12
Cable I11
GSM ANTENNA
SUB HD15
GSM
MODEM
11A+
0.8AMP
11+
11-
24VDC
SUPPLY
REF 09:F7
TERMINALS "20"
MOUNTED ADJACENT
TO GSM MODEM
RTU
MOTOROLA ACE 3600
SLOT 0
ACE 3600
POWER
SUPPLY
(18-72 VDC)
SLOT 1
ACE 3600
CPU
CARD
Plug in 1
Serial 1
Serial 2
ETHERNET
Plug in 2
SLOT 2
DIGITAL
INPUT
16 CHANNEL
16 DI Fast 24V
DI01-DI16
SLOT 3
DIGITAL
INPUT
16 CHANNEL
16 DI Fast 24V
DI17-DI32
SLOT 4
DIGITAL
INPUT
16 CHANNEL
16 DI Fast 24V
DI33-DI48
SLOT 5
DIGITAL
INPUT
16 CHANNEL
16 DI Fast 24V
DI49-DI64
SLOT 6
DIGITAL
OUTPUT
16 CHANNEL
16 DO EE
Relay 2A
DO01-DO16
SLOT 7
DIGITAL
OUTPUT
16 CHANNEL
16 DO EE
Relay 2A
DO17-DO32
SLOT 8
ANALOG
INPUT 8
OUTPUT 4
CHANNEL
4AO/8AI
+/-20mA
AI01 - AI08
AO01 - AO04
LAPTOP
CONNECTION
RS485-
RS485+
Cable I6
TO SOFT
STARTER No1
REF 02:E7
GRAPHIC
DISPLAY
RJ45
REDLION
G306A000
E
RTU
SOFT
STARTER 1
SOFT
STARTER 2
RS485
B8
B6
B7
Set terminating
switch to 'OFF'
Set terminating
switch to 'ON'
RS485A-
RS485A+
Cable I7
Use 120ohm Impedence Twisted Pair Cable
MODBUS CONNECTIONS
LEGEND:
RTU MARSH. CCT BREAKER TERM
RTU MARSH. LINK TERMINAL
SWITCHBOARD CONTROL TERM.
SWITCHBOARD GENERATOR TERM.
FIELD TERMINAL
RTU TERMINAL
SS TERMINAL
DI01 DIGITAL INPUT
DO01 DIGITAL OUTPUT
AI01 ANALOG INPUT
AO01 ANALOG OUTPUT
NOTES
1. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.
2. ALL FUSES ARE 500mA EXCEPT WHERE NOTED OTHERWISE.
FUNCTION TEST
J & P RICHARDSON IND.
NAME: E Ensor
LICENCE: 756
DATE: 5/4/13
SIGNATURE:
Sheet 09
FOR CONSTRUCTION

A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.	DRAFTED	P.HAGUE
O	11.12	ISSUED FOR TENDER	P.H.	A.W.	DRAFTING CHECK	A.WITTHOFT
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.	CAD FILE	57-0297set_A
No	DATE	AMENDMENT	DRN.	APD.	B.C.C. FILE No.	

STD TEMPLATE SP-2P Ver3.2

Original Signed by P.HAGUE 6-11-12
DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 6-11-12
DESIGN CHECK R.P.E.Q. No. DATE

PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities — A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

TITLE
RTU POWER DISTRIBUTION
SCHEMATIC DIAGRAM

SHEET No. 9
Queensland Urban Utilities DRAWING No. 486/5/7-0297-009
AMEND. A

D:\AA_Major Projects\QUU - SPRI11\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

03-04-13

RTU COMPARTMENT

24VDC POWER DISTRIBUTION

SWITCHBOARD

FIELD

24VDC DIST

SHEET 09 REFER

REFER SHEET 09

RACK 0 SLOT 2
MOTOROLA 16 CHANNEL
DIGITAL INPUT MODULE
16 DI Fast 24V

DI1

MOTOROLA WIRED CABLE BRAID & 20 WAY TB HOLDER

LINK BARS

TO INSULATED INSTRUMENT EARTH

CONT ON SHEET 11

PUMP 1
STARTER COMPARTMENT
REFER SHEET 02

DI01 1K5 CONTROL POWER
DI02 1S1 START PUSHBUTTON
DI03 1S2 STOP PUSHBUTTON
DI04 1K4 E.STOP RELAY HEALTHY
DI05 1S4 RESET PUSHBUTTON
DI06 1K2 PUMP RUNNING
DI07 1K3 STARTER FAULT

COMMON COMPARTMENT
DI13 PFRS STATION MAINS POWER
REF 01:E8

ATS COMPARTMENT
DI12 PFRE ENERGEX MAINS POWER
REF 01:F4
DI14 SFAR SURGE DIVERTERS OK
REF 07:G10

STARTER COMPARTMENT
DI15 LOC REM S10 STATION LOCAL/REMOTE SWITCH

COMMON COMPARTMENT
DI16 SIDT SURCHARGE IMMINENT
REF 07:B5

FUNCTION TEST
J & P RICHARDSON IND.
NAME: E Endsor LICENCE: 756
DATE: 8/4/13
SIGNATURE: E Endsor

LEGEND:
C?? CABLE IDENTIFIER
2A RTU MINITURE CCT BREAKER
DISCONNECT LINK TERMINAL
THROUGH TERMINAL

NOTES
1. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.
2. ALL FUSES ARE 500mA EXCEPT WHERE NOTED OTHERWISE.

Sheet 10

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED P.HAGUE
DRAFTING CHECK A.WITTHOFT
CAD FILE 57-0297set_A
B.C.C. FILE No.

Original Signed by P.HAGUE 6-11-12
DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 6-11-12
DESIGN CHECK R.P.E.Q. No. DATE

PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

Queensland Urban Utilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

TITLE
RTU DIGITAL INPUTS
TERMINATION DIAGRAM
SHEET 1 OF 3

SHEET No. 10
Queensland Urban Utilities DRAWING No. 486/5/7-0297-010
AMEND. A

STD TEMPLATE SP-3F Ver33

D:\AA_Major Projects\QUU - SPR1111\Packages\Package 11\EsP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

03-04-13

RTU COMPARTMENT

RACK 0 SLOT 3
MOTOROLA 16 CHANNEL
DIGITAL INPUT MODULE
16 DI Fast 24V

DI17 1 (1)
DI18 2 (2)
DI19 3 (3)
DI20 4 (4)
DI21 5 (5)
DI22 6 (6)
DI23 7 (7)
DI24 8 (8)
DI25 9 (9)
DI26 10 (10)
DI27 11 (11)
DI28 12 (12)
DI29 13 (13)
DI30 14 (14)
DI31 15 (15)
DI32 16 (16)
+24V 17 (17)
COM1 18 (18)
PGND1 19 (19)
PGND1 20 (20)

MOTOROLA WIRED CABLE BRAID & 20 WAY TB HOLDER

R0S3 DI2
2A 1
R0S3+ (17)
R0S3- (18)
DI17 (1)
DI18 (2)
DI19 (3)
DI20 (4)
DI21 (5)
DI22 (6)
DI23 (7)
DI24 (8)
DI25 (9)
DI26 (10)
DI27 (11)
DI28 (12)
DI29 (13)
DI30 (14)
DI31 (15)
DI32 (16)
R0S3-E (19)
R0S3-E (20)
40

LINK BARS

TO INSULATED INSTRUMENT EARTH

CONT ON SHEET 10

K+ 0
K- V

DI17+ DI17 Gy
DI18+ DI18 Gy
DI19+ DI19 Gy
DI20+ DI20 Gy
DI21+ DI21 Gy
DI22+ DI22 Gy
DI23+ DI23 Gy
DI27+ DI27 Gy
DI28+ DI28 Gy
DI29+ DI29 Gy
DI30+ DI30 Gy
DI31+ DI31 Gy
DI32+ DI32 Gy

SWITCHBOARD

PUMP 2
STARTER COMPARTMENT
REFER SHEET 03

DI17+ DI17 2K5 CONTROL POWER
DI18+ DI18 2S1 START PUSHBUTTON
DI19+ DI19 2S2 STOP PUSHBUTTON
DI20+ DI20 2K4 E.STOP RELAY HEALTHY
DI21+ DI21 2S4 RESET PUSHBUTTON
DI22+ DI22 2K2 PUMP RUNNING
DI23+ DI23 2K3 STARTER FAULT

COMMON COMPARTMENT
DI27+ DI27 SIR-2 SURCHARGE IMMINENT PROBE FAIL
REF 07:G2

RTU COMPARTMENT
DI28+ DI28 BOK RTU BATTERY OK
REF 09:C4
DI29+ DI29 RTU RTU CONTROL POWER
REF 09:C4

COMMON COMPARTMENT
DI30+ DI30 EMGDTA EMERGENCY PUMPING MODE
REF 07:B5
DI31+ DI31 LR3 WET WELL HIGH LEVEL
REFER 07:F6
DI32+ DI32 SLCR DZCR DOOR SECURITY STATUS
REF 07:A15
DS 3 off

FIELD

RACK 0 SLOT 4
MOTOROLA 16 CHANNEL
DIGITAL INPUT MODULE
16 DI Fast 24V

DI33 1 (1)
DI34 2 (2)
DI35 3 (3)
DI36 4 (4)
DI37 5 (5)
DI38 6 (6)
DI39 7 (7)
DI40 8 (8)
DI41 9 (9)
DI42 10 (10)
DI43 11 (11)
DI44 12 (12)
DI45 13 (13)
DI46 14 (14)
DI47 15 (15)
DI48 16 (16)
+24V 17 (17)
COM1 18 (18)
PGND1 19 (19)
PGND1 20 (20)

MOTOROLA WIRED CABLE BRAID & 20 WAY TB HOLDER

R0S4 DI3
2A 1
R0S4+ (17)
R0S4- (18)
DI33 (1)
DI34 (2)
DI35 (3)
DI36 (4)
DI37 (5)
DI38 (6)
DI39 (7)
DI40 (8)
DI41 (9)
DI42 (10)
DI43 (11)
DI44 (12)
DI45 (13)
DI46 (14)
DI47 (15)
DI48 (16)
R0S4-E (19)
R0S4-E (20)
40

LINK BARS

TO INSULATED INSTRUMENT EARTH

CONT ON SHEET 12

K+ 0
K- V

DI33+ DI33 Q2 NORMAL SUPPLY CB CLOSED
REF 01:H5

FUNCTION TEST
J & P RICHARDSON IND.
NAME: E Ensor LICENCE: 756
DATE: 8/4/13
SIGNATURE: E Ensor

LEGEND:
C?? CABLE IDENTIFIER
2A 1 RTU MINITURE CCT BREAKER
1 DISCONNECT LINK TERMINAL
1 THROUGH TERMINAL

NOTES
1. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.
2. ALL FUSES ARE 500mA EXCEPT WHERE NOTED OTHERWISE.

Sheet 11
FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED	P.HAGUE	Original Signed by P.HAGUE	6-11-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0297set_A	Original signed by A.WITTHOFT 8895	6-11-12
B.C.C. FILE No.		DESIGN CHECK R.P.E.Q. No.	DATE

PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

TITLE
RTU DIGITAL INPUTS
TERMINATION DIAGRAM
SHEET 2 OF 3

SHEET No. 11
Queensland Urban Utilities DRAWING No.
486/5/7-0297-011
AMEND. A

STB TEMPLATE SP-2P Ver3.2

D:\AA_Major Projects\QUU - SPR111\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

RTU COMPARTMENT

SWITCHBOARD

FIELD

RACK 0 SLOT 5
MOTOROLA 16 CHANNEL
DIGITAL INPUT MODULE
16 DI Fast 24V

DI49	1	(1)
DI50	2	(2)
DI51	3	(3)
DI52	4	(4)
DI53	5	(5)
DI54	6	(6)
DI55	7	(7)
DI56	8	(8)
DI57	9	(9)
DI58	10	(10)
DI59	11	(11)
DI60	12	(12)
DI61	13	(13)
DI62	14	(14)
DI63	15	(15)
DI64	16	(16)
+24V	17	(17)
COM1	18	(18)
PGND1	19	(19)
PGND1	20	(20)

MOTOROLA WIRED
CABLE BRAID &
20 WAY TB HOLDER

DI4

ROSS+	(17)	2
ROSS-	(18)	4
DI49	(1)	6
DI50	(2)	8
DI51	(3)	10
DI52	(4)	12
DI53	(5)	14
DI54	(6)	16
DI55	(7)	18
DI56	(8)	20
DI57	(9)	22
DI58	(10)	24
DI59	(11)	27
DI60	(12)	29
DI61	(13)	31
DI62	(14)	33
DI63	(15)	35
DI64	(16)	37
ROSS-E	(19)	38
ROSS-E	(20)	39

2A 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

LINK BARS

TO INSULATED
INSTRUMENT
EARTH

CONT ON
SHEET 11

0 V

CONT ON
SHEET 13

FUNCTION TEST
J & P RICHARDSON IND.
NAME: E Ensor LICENCE: 756
DATE: 8/4/13
SIGNATURE: E Ensor.

LEGEND:
- C?? CABLE IDENTIFIER
- 2A ○ × 1 RTU MINITURE CCT BREAKER
- 1 DISCONNECT LINK TERMINAL
- 1 THROUGH TERMINAL

NOTES
1. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.
2. ALL FUSES ARE 500mA EXCEPT WHERE NOTED OTHERWISE.

Sheet 12

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED	P.HAGUE
DRAFTING CHECK	A.WITTHOFT
CAD FILE	57-0297set_A
B.C.C. FILE No.	

Original Signed by P.HAGUE	6-11-12	.
DESIGN	R.P.E.Q. No. DATE	PRINCIPAL DESIGN MANAGER DATE
Original signed by A.WITTHOFT	8895 6-11-12	.
DESIGN CHECK	R.P.E.Q. No. DATE	CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

TITLE
RTU DIGITAL INPUTS
TERMINATION DIAGRAM
SHEET 3 OF 3

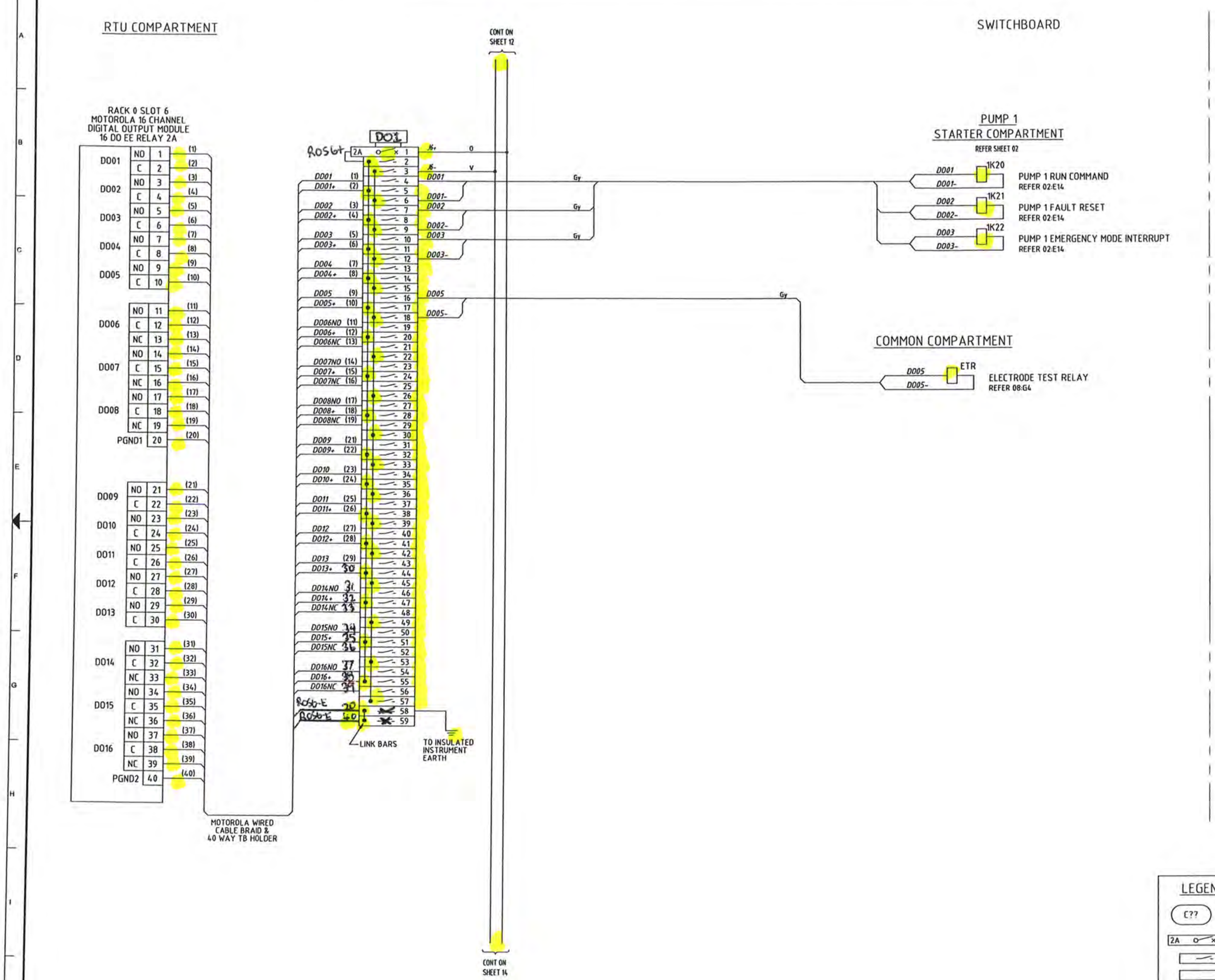
SHEET No. 12

Queensland Urban Utilities DRAWING No. 486/5/7-0297-012

AMEND. A

STD TEMPLATE SP-3P Ver3.2

D:\AA_Major Projects\QUU - ISPR11\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM


RTU COMPARTMENT
SWITCHBOARD
FIELD
RACK 0 SLOT 6
MOTOROLA 16 CHANNEL
DIGITAL OUTPUT MODULE
16 DO EE RELAY 2A
DO01 NO 1 C 2
DO02 NO 3 C 4
DO03 NO 5 C 6
DO04 NO 7 C 8
DO05 NO 9 C 10
DO06 NO 11 C 12 NC 13
DO07 NO 14 C 15 NC 16
DO08 NO 17 C 18 NC 19
PGND1 20
DO09 NO 21 C 22
DO10 NO 23 C 24
DO11 NO 25 C 26
DO12 NO 27 C 28
DO13 NO 29 C 30
DO14 NO 31 C 32 NC 33
DO15 NO 34 C 35 NC 36
DO16 NO 37 C 38 NC 39
PGND2 40
MOTOROLA WIRED
CABLE BRAID &
40 WAY TB HOLDER
CONT ON
SHEET 12
DO1
RoS6t
2A
DO01 (1)
DO01+ (2)
DO02 (3)
DO02+ (4)
DO03 (5)
DO03+ (6)
DO04 (7)
DO04+ (8)
DO05 (9)
DO05+ (10)
DO06NO (11)
DO06+ (12)
DO06NC (13)
DO07NO (14)
DO07+ (15)
DO07NC (16)
DO08NO (17)
DO08+ (18)
DO08NC (19)
DO09 (21)
DO09+ (22)
DO10 (23)
DO10+ (24)
DO11 (25)
DO11+ (26)
DO12 (27)
DO12+ (28)
DO13 (29)
DO13+ 30
DO14NO 31
DO14+ 32
DO14NC 33
DO15NO 34
DO15+ 35
DO15NC 36
DO16NO 37
DO16+ 38
DO16NC 39
RoS6-E 20
RoS6-E 40
LINK BARS
TO INSULATED
INSTRUMENT
EARTH
CONT ON
SHEET 14
J6+ 0
J6- V
DO01
DO01-
DO02
DO02-
DO03
DO03-
DO05
DO05-
Gy
PUMP 1
STARTER COMPARTMENT
REFER SHEET 02
1K20 PUMP 1 RUN COMMAND
REFER 02:E14
1K21 PUMP 1 FAULT RESET
REFER 02:E14
1K22 PUMP 1 EMERGENCY MODE INTERRUPT
REFER 02:E14
COMMON COMPARTMENT
ETR ELECTRODE TEST RELAY
REFER 08:G4

FUNCTION TEST
J & P RICHARDSON IND.
NAME: E Ensof LICENCE: 756
DATE: 8/4/13
SIGNATURE: E A Ensor.

NOTES

1. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.
2. ALL FUSES ARE 500mA EXCEPT WHERE NOTED OTHERWISE.

LEGEND:
- C?? CABLE IDENTIFIER
- 2A o× 1 RTU MINITURE CCT BREAKER
- 1 DISCONNECT LINK TERMINAL
- 1 THROUGH TERMINAL

Sheet 13

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

STD TEMPLATE SP-2P Ver3.2

DRAFTED	P.HAGUE
DRAFTING CHECK	A.WITTHOFT
CAD FILE	57-0297set_A
B.C.C. FILE No.	

Original Signed by P.HAGUE 6-11-12
DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 6-11-12
DESIGN CHECK R.P.E.Q. No. DATE

PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

TITLE
RTU DIGITAL OUTPUTS
TERMINATION DIAGRAM
SHEET 1 OF 2

SHEET No. 13
Queensland Urban Utilities DRAWING No. 486/5/7-0297-013
AMEND. A

D:\AA_Major Projects\QUU - SPRI11\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

RTU COMPARTMENT

SWITCHBOARD

FIELD

CONT ON SHEET 13

RACK 0 SLOT 7
MOTOROLA 16 CHANNEL
DIGITAL OUTPUT MODULE
16 DO EE RELAY 2A

DO17	NO	1	(1)
	C	2	(2)
DO18	NO	3	(3)
	C	4	(4)
DO19	NO	5	(5)
	C	6	(6)
DO20	NO	7	(7)
	C	8	(8)
DO21	NO	9	(9)
	C	10	(10)
DO22	NO	11	(11)
	C	12	(12)
	NC	13	(13)
	NO	14	(14)
DO23	C	15	(15)
	NC	16	(16)
	NO	17	(17)
DO24	C	18	(18)
	NC	19	(19)
	PGND1	20	(20)
DO25	NO	21	(21)
	C	22	(22)
DO26	NO	23	(23)
	C	24	(24)
DO27	NO	25	(25)
	C	26	(26)
DO28	NO	27	(27)
	C	28	(28)
DO29	NO	29	(29)
	C	30	(30)
DO30	NO	31	(31)
	C	32	(32)
	NC	33	(33)
	NO	34	(34)
DO31	C	35	(35)
	NC	36	(36)
	NO	37	(37)
DO32	C	38	(38)
	NC	39	(39)
	PGND2	40	(40)

MOTOROLA WIRED CABLE BRAID & 40 WAY TB HOLDER

R057+ DO2

	2A		1	K+ 0
			2	
DO17 (1)			3	K- V
DO17+ (2)			4	DO17
			5	DO17-
DO18 (3)			6	DO18
DO18+ (4)			7	
			8	DO18-
DO19 (5)			9	DO19
DO19+ (6)			10	
			11	DO19-
DO20 (7)			12	
DO20+ (8)			13	
			14	
DO21 (9)			15	
DO21+ (10)			16	
			17	
DO22NO (11)			18	
DO22+ (12)			19	
DO22NC (13)			20	
			21	
DO23NO (14)			22	
DO23+ (15)			23	
DO23NC (16)			24	
			25	
DO24NO (17)			26	
DO24+ (18)			27	
DO24NC (19)			28	
			29	
DO25 (21)			30	
DO25+ (22)			31	
			32	
DO26 (23)			33	
DO26+ (24)			34	
			35	
DO27 (25)			36	
DO27+ (26)			37	
			38	
DO28 (27)			39	
DO28+ (28)			40	
			41	
DO29 (29)			42	
DO29+ 30			43	
			44	
DO30NO 31			45	
DO30+ 32			46	
DO30NC 33			47	
			48	
DO31NO 34			49	
DO31+ 35			50	
DO31NC 36			51	
			52	
DO32NO 37			53	
DO32+ 38			54	
DO32NC 39			55	
			56	
R057-E 20			57	
R057-E 40			58	
			59	

LINK BARS

TO INSULATED INSTRUMENT EARTH

CONT ON SHEET 15

PUMP 2
STARTER COMPARTMENT
REFER SHEET 03

DO17	2K20	PUMP 2 RUN COMMAND REFER 03:E14
DO17-		
DO18	2K21	PUMP 2 FAULT RESET REFER 03:E14
DO18-		
DO19	2K22	PUMP 2 EMERGENCY MODE INTERRUPT REFER 03:E14
DO19-		

FUNCTION TEST
J & P RICHARDSON IND.
NAME: E Ensor LICENCE: 756
DATE: 8/4/13
SIGNATURE: E Ensor

NOTES

1. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.
2. ALL FUSES ARE 500mA EXCEPT WHERE NOTED OTHERWISE.

LEGEND:

- (C??) CABLE IDENTIFIER
- 2A o x 1 RTU MINITURE CCT BREAKER
- 1 DISCONNECT LINK TERMINAL
- 1 THROUGH TERMINAL

Sheet 14

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED	P.HAGUE	Original Signed by P.HAGUE	6-11-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0297set_A	Original signed by A.WITTHOFT	8885 6-11-12
B.C.C. FILE No.		DESIGN CHECK R.P.E.Q. No.	DATE

PRINCIPAL DESIGN MANAGER DATE

CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

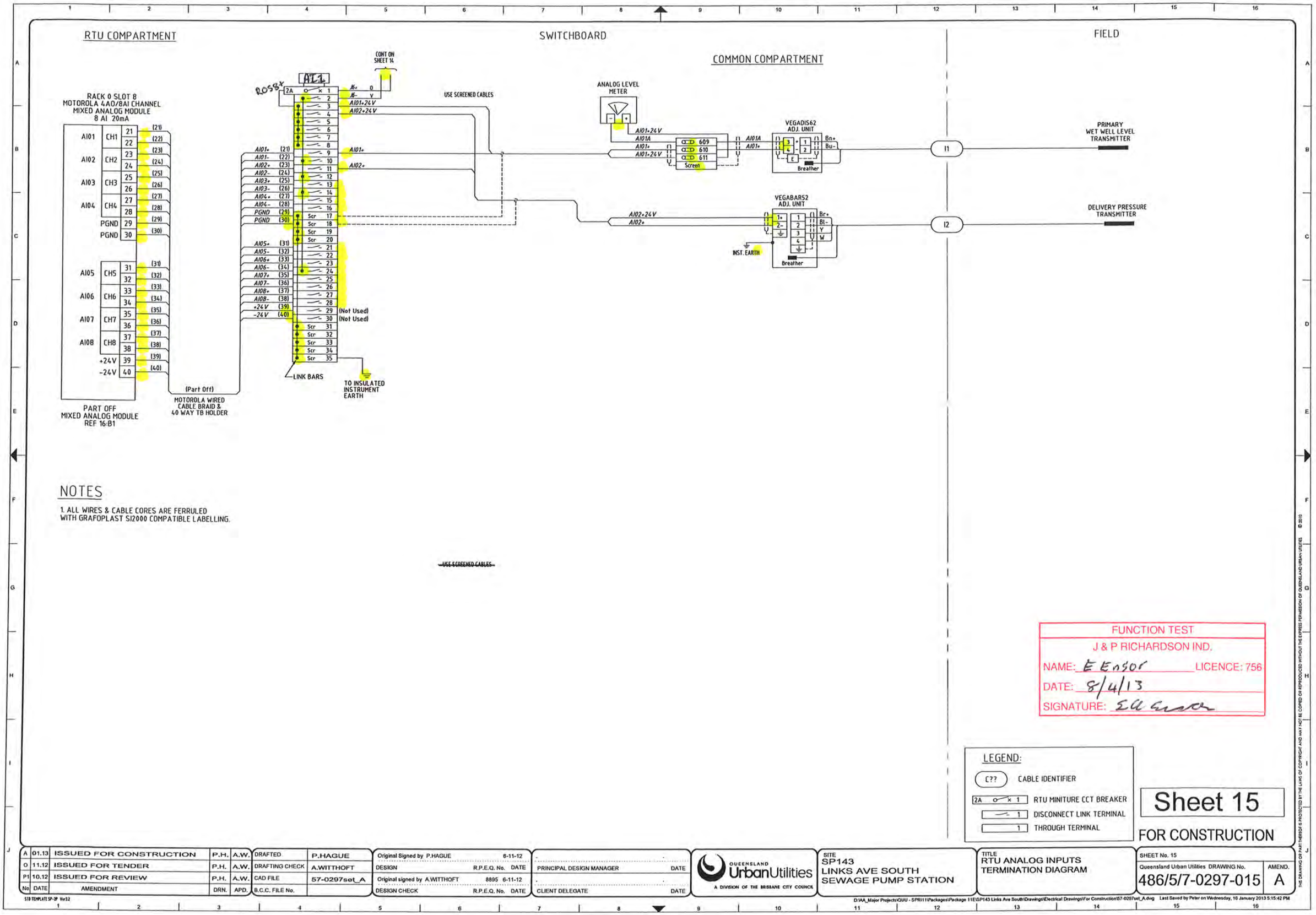
TITLE
RTU DIGITAL OUTPUTS
TERMINATION DIAGRAM
SHEET 2 OF 2

SHEET No. 14
Queensland Urban Utilities DRAWING No. 486/5/7-0297-014
AMEND. A

STD TEMPLATE SP-JP Ver32

D:\AA_Major Projects\QUU - SPR111\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

23/01/13



NOTES

1. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.

~~USE SCREENED CABLES~~

FUNCTION TEST
J & P RICHARDSON IND.
NAME: E Ensor LICENCE: 756
DATE: 8/4/13
SIGNATURE: E Ensor

LEGEND:
- C?? CABLE IDENTIFIER
- 2A o x 1 RTU MINITURE CCT BREAKER
- 1 DISCONNECT LINK TERMINAL
- 1 THROUGH TERMINAL

Sheet 15

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED P.HAGUE
DRAFTING CHECK A.WITTHOFT
CAD FILE 57-0297set_A
B.C.C. FILE No.

Original Signed by P.HAGUE 6-11-12
DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 6-11-12
DESIGN CHECK R.P.E.Q. No. DATE

PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

TITLE
RTU ANALOG INPUTS
TERMINATION DIAGRAM

SHEET No. 15
Queensland Urban Utilities DRAWING No. 486/5/7-0297-015
AMEND. A

STD TEMPLATE SP-3P Ver3.2

D:\AA_Major Projects\QUU - SPRI11\Packages\Package 11\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

03-04-13

RTU COMPARTMENT

SWITCHBOARD

FIELD

STARTER COMPARTMENT

RACK 0 SLOT 8
MOTOROLA 4AO/8AI CHANNEL
MIXED ANALOG MODULE
4 AO 0-20mA

AO01	Vout1	1	(1)
	CH1 Ref1	2	(2)
	Iout1	3	(3)
	PGND1	4	(4)
	PGND1	5	(5)
AO02	Vout2	6	(6)
	CH2 Ref2	7	(7)
	Iout2	8	(8)
	PGND1	9	(9)
	PGND1	10	(10)
AO03	Vout3	11	(11)
	CH3 Ref3	12	(12)
	Iout3	13	(13)
	PGND1	14	(14)
	PGND1	15	(15)
AO04	Vout4	16	(16)
	CH4 Ref4	17	(17)
	Iout4	18	(18)
	PGND1	19	(19)
	PGND1	20	(20)

PART OFF
MIXED ANALOG MODULE
REF 15:B1

(Part Off)
MOTOROLA WIRED
CABLE BRAID &
40 WAY TB HOLDER

AO1

AO01-V	(1)	1
AO01-R	(2)	2
AO01-I	(3)	3
PGND1	(4)	E 4
PGND1	(5)	E 5
AO02-V	(6)	6
AO02-R	(7)	7
AO02-I	(8)	8
PGND1	(9)	E 9
PGND1	(10)	E 10
AO03-V	(11)	11
AO03-R	(12)	12
AO03-I	(13)	13
PGND1	(14)	E 14
PGND1	(15)	E 15
AO04-V	(16)	16
AO04-R	(17)	17
AO04-I	(18)	18
PGND1	(19)	E 19
PGND1	(20)	E 20
		E 21
		Scr 22
		Scr 23
		Scr 24
		Scr 25

TO PROTECTIVE EARTH

TO INSULATED INSTRUMENT EARTH

LINK BARS

FUNCTION TEST
J & P RICHARDSON IND.
NAME: E Ensor LICENCE: 756
DATE: 8/4/13
SIGNATURE: E Ensor

LEGEND:
- C?? CABLE IDENTIFIER
- 2A o × 1 RTU MINITURE CCT BREAKER
- 1 DISCONNECT LINK TERMINAL
- 1 THROUGH TERMINAL

NOTES

1. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.

Sheet 16

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED P.HAGUE
DRAFTING CHECK A.WITTHOFT
CAD FILE 57-0297set_A
B.C.C. FILE No.

Original Signed by P.HAGUE 6-11-12 DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 6-11-12 DESIGN CHECK R.P.E.Q. No. DATE

PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

QUEENSLAND Urban Utilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

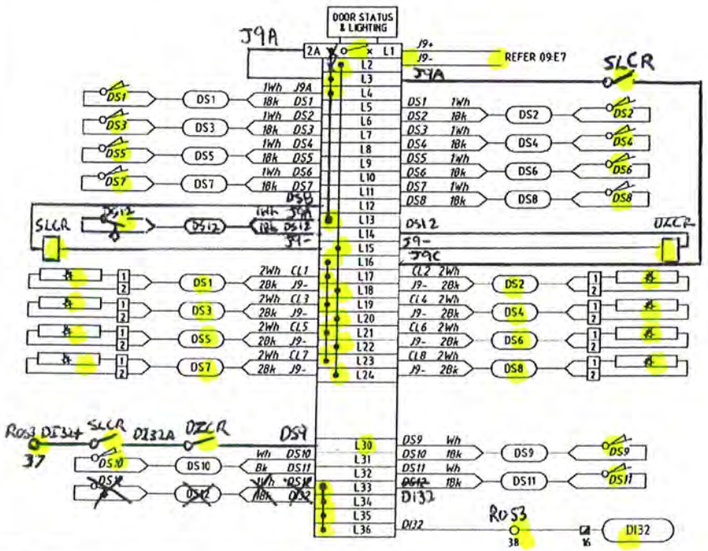
TITLE
RTU ANALOG OUTPUTS
TERMINATION DIAGRAM

SHEET No. 16
Queensland Urban Utilities DRAWING No. 486/5/7-0297-016
AMEND. A

STD TDWPLATE SP-2P Ver3.3

D:\AA_Major Projects\QUU - SPR111\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

SWITCHBOARD INTERNAL LIGHTING AND SECURITY



FUNCTION TEST

J & P RICHARDSON IND.

NAME: E Enson LICENCE: 756

DATE: 8/4/13

SIGNATURE: E Enson

LEGEND:

- C?? CABLE IDENTIFIER
- 2A ○ × 1 RTU MINITURE CCT BREAKER
- 1 DISCONNECT LINK TERMINAL
- 1 THROUGH TERMINAL

NOTES

1. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.
2. ALL FUSES ARE 500mA EXCEPT WHERE NOTED OTHERWISE.

Sheet 17

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED	P.HAGUE	Original Signed by P.HAGUE	6-11-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0297set_A	Original signed by A.WITTHOFT 8895	6-11-12
B.C.C. FILE No.		DESIGN CHECK R.P.E.Q. No.	DATE

PRINCIPAL DESIGN MANAGER DATE

CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities — A DIVISION OF THE BRISBANE CITY COUNCIL

SITE: SP143 LINKS AVE SOUTH SEWAGE PUMP STATION

TITLE: COMMON CONTROLS TERMINATION DIAGRAM

SHEET No. 17

Queensland Urban Utilities DRAWING No. 486/5/7-0297-017 AMEND. A

STD TEMPLATE SP-29 Ver32

D:\AA_Major Projects\QUU - SPR111\Packages\Package 11E\SP143 Links Ave South\Dcawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

03-04-13

ITEM	QTY	DESCRIPTION	MANUFACTURER	CATALOGUE No	OPT	REMARKS
1					N	
2	1	MANUAL TRANSFER SWITCH	TERASAKI	MTSS2PE12533	F	Set Ir=0.5 (62.5A) Char=1
3		- TO SUIT MAIN SWITCHES Q2 & Q3 S250PE/125	TERASAKI	Q2 - c/w 3 N/O AUX CONTACTS	F	
4	1	Q4 PUMP1 CIRCUIT BREAKER + T2HS Handle	TERASAKI	S125GJ/20	-	Set Ir=0.63 (12.5A) Im=6 (120A)
5	1	Q5 PUMP2 CIRCUIT BREAKER + T2HS Handle	TERASAKI	S125GJ/20	-	Set Ir=0.63 (12.5A) Im=6 (120A)
6					E	
7	1	Q7 ENERGEX PHASE FAILURE CIRCUIT BREAKER	TERASAKI	DTCB15306C	-	
8					G	
9	1	Q9 SUB-DISTRIBUTION BOARD CIRCUIT BREAKER	TERASAKI	S125NJ/63	-	Set Ir=0.9 (45A) Im=6 (300A)
10	1	Q10 STATION MAINS PHASE FAILURE CIRCUIT BREAKER	TERASAKI	DTCB6306C	-	
11	1	Q11 15A GPO CIRCUIT BREAKER	TERASAKI	DSRCBH-16-30A	*	
12	1	Q12 RTU LAPTOP GPO CIRCUIT BREAKER	TERASAKI	DSRCBH-10-30A	-	
13	1	Q13 SPARE	TERASAKI	DSRCBH-6-30A	E	
14	1	Q14 SPARE	TERASAKI	DSRCBH-10-30A	E	
15	1	Q15 GENERATOR AUXILLARY SUPPLY CIRCUIT BREAKER	TERASAKI	DSRCBH-10-30A	-	
16	1	Q16 EXTERNAL AREA LIGHTING CIRCUIT BREAKER	TERASAKI	DSRCBH-6-30A	Y	
17	1	Q17 SURGE FILTER CIRCUIT BREAKER	TERASAKI	DTCB6110C	-	
18	1	Q18 EM PUMP CNTRL & SURCHARGE IMMINENT CB	TERASAKI	DTCB6106C	-	
19	1	Q19 SPARE CIRCUIT BREAKER	TERASAKI	DTCB6106C	K	
20	1	Q20 3 PHASE OUTLET CIRCUIT BREAKER	TERASAKI	DTCB6310C	-	PLUS DSRCM-32-30-3PN
21	1	Q21 SPARE	TERASAKI	DTCB6106C	Q	
22						
23					V	
24	1	Q30 RTU POWER SUPPLY CIRCUIT BREAKER	TERASAKI	DTCB6104C	-	
25	1	Q31 SURGE FILTER ALARM RELAY CIRCUIT BREAKER	TERASAKI	DTCB6104C	-	
26	1	Q32 SPARE	TERASAKI	DTCB6104C	H	
27	1	Q33 SPARE	TERASAKI	DTCB6104C	-	
28						
29						
30						
31	2	PUMP 240VAC CONTROL CIRCUIT BREAKER	TERASAKI	DTCB6104C	-	Q4-1, Q5-1
32	3	24VDC CONTROL CIRCUIT BREAKER	TERASAKI	DTCB6110C	-	QD4, QD5, QD18
33	1	BATTERY SHORT CCT PROTECTION CIRCUIT BREAKER	TERASAKI	DTCB6210C	-	QD8
34	3	240VAC-24VDC POWER SUPPLY	WEIDMULLER	8951340000	-	120W 5A/24VDC
35						
36	1	DISTRIBUTION BOARD CHASSIS	TERASAKI	NC 2-24/18-3U	-	
37	3	F1 - SURGE DIVERTER CIRCUIT FUSES	NHP	63AMP 63MS	-	FUSES & HOLDERS
38	3	SURGE DIVERTER	CRITEC	TDS1100-2SR-277	-	
39	1	SURGE FILTER ALARM RELAY - SFAR	CRITEC	DAR-275V	-	
40	1	SURGE REDUCTION FILTER - SRF	CRITEC	TDF-10A-240V	-	
41	1	ENERGEX MAINS PHASE FAILURE RELAY - PFRE	CARLO GAVAZZI	DPB01CM48W4	-	
42						
43	1	STATION MAINS PHASE FAILURE RELAY - PFRS	CARLO GAVAZZI	DPB01CM48W4	-	
44						
45	1	MAIN NEUTRAL LINK	DORE ELEC.	~~BLAN6~~ 165E12	-	INSULATED c/w EFEET
46	1	MAIN EARTH LINK	DORE ELEC.	~~BLANE6~~ 165E12	-	
47	1	DIST. BD NEUTRAL LINK	DORE ELEC.	~~20LA10~~ 165E24	-	INSULATED c/w EFEET
48	1	DIST. BD EARTH LINK	DORE ELEC.	~~20LAE10~~ 165E24	-	
49	~~1~~	~~SURGE DIVERTER NEUTRAL LINK~~	~~CLIPSAL~~	~~L5A~~	-	~~INSULATED~~
50	1	INSTRUMENT EARTH LINK	CLIPSAL	~~DLBE12~~ L12	-	INSULATED
51	1	FILTERED SUPPLY NEUTRAL LINK	CLIPSAL	L7	-	INSULATED
52	1	3 PHASE SWITCHED OUTLET	CLIPSAL	56C410	-	USE ENCLOSURE AS SHROUD
53	1	1 PHASE OUTLET 15A	CLIPSAL	15/15+90B (SHROUD)	-	
54	1	LAPTOP GPO - TWIN 10A	CLIPSAL	25+449A+449AP	-	
55	1	1 PHASE OUTLET - GENERATOR ANCILLARY POWER	CLIPSAL	56SO310	F	IP56
56	1	3 PHASE N&E APPLIANCE INLET - GENERATOR POWER	MENNEKES	MEN361	F	c/w PROTECTIVE CAP 40787
57						
58						
59	2	PUMP SOFT STARTER	DANFOSS MCD5	MCD5-0021B + MODBUS COMMS		175G5500 + 175G9000
60	2	EXTERNAL KEYPAD KIT	DANFOSS	175G3061	-	
61						
62		(revision cloud) A				
63						
64	2	PUMP LINE CONTACTOR - K1 (24VDC COIL)	SPRECHER & SCHUH	CA7-30		24VDC COIL

ITEM	QTY	DESCRIPTION	MANUFACTURER	CATALOGUE No	OPT	REMARKS
65	2	SOFT STARTER RUNNING RELAY - K2	IDEC	RH2B-ULD-DC24V	-	+ SH2B-05
66	2	STARTER FAULT RELAY - K3	IDEC	RH2B-ULD-DC24V	-	+ SH2B-05
67	2	PUMP EM. STOP RELAY - K4	IDEC	RH4B-ULD-DC24V	-	+ SH4B-05
68	2	PUMP CONTROL CCT POWER ON RELAY - K5	IDEC	RH2B-ULD-DC24V	-	+ SH2B-05
69	2	PUMP RUN RELAY - K6	IDEC	RH2B-ULD-DC24V	-	+ SH2B-05
70					A	
71					B	
72					B	
73	2	PUMP RUN COMMAND RELAY - K20	IDEC	RH2B-ULD-DC24V	-	+ SH2B-05
74	2	PUMP FAULT RESET RELAY - K21	IDEC	RH2B-ULD-DC24V	-	+ SH2B-05
75	2	PUMP EMERGENCY MODE INTERRUPT RELAY - K22	IDEC	RH2B-ULD-DC24V	-	+ SH2B-05
76					-	
77	2	PUMP START PUSHBUTTON - S1	SPRECHER & SCHUH	D7P-F3-PX10	-	
78	2	PUMP STOP PUSHBUTTON - S2	SPRECHER & SCHUH	D7P-F4-PX10	-	
79	2	PUMP EM/STOP PUSHBUTTON - S3	SPRECHER & SCHUH	D7P-MT34-PX01S	-	c/w D7-15YE112 + PX01S
80	2	PUMP RESET PUSHBUTTON - S4	SPRECHER & SCHUH	D7P-F6-PX10	-	
81	2	PUMP HOUR RUN METER - HRM	NHP	RQ4801080VDC	-	24VDC
82	2	PUMP POWER SOCKET OUTLET + INCLINE SLEEVE	MARECHAL	DS1 3114013972 + 51BA058	J	
83	2	PUMP POWER INLET PLUG + HANDLE	MARECHAL	DS1 3118013972 + 311A013	J	
84	2	PUMP CONTROL SOCKET OUTLET + INCLINE SLEEVE	MARECHAL	PN7C 01P4060 + 01NA053	J	
85	2	PUMP CONTROL INLET PLUG + HANDLE	MARECHAL	PN7C 01P8060 + 01NA313	J	
86					E	
87					E	
88					E	
89					E	
90					E	
91					E	
92					E	
93	1	LR3- WET WELL HIGH LEVEL RELAY	MULTITRODE	MTR-5	-	24VDC
94					Q	
95					D	
96	1	SIR - SURCHARGE IMMINENT LEVEL RELAY	MULTITRODE	MTRA-FS	-	24VDC
97	1	EMERGENCY PUMPING MODE RELAY PUMP1 - EMG1	IDEC	RH2B-ULD-DC24V	-	+ SH2B-05
98	1	SURCHARGE IMMINENT DELAY TIMER - SIDT	SPRECHER & SCHUH	RZ7-FSA 4U U23	-	ON DELAY / INSTANTANEOUS
99	1	EMERGENCY PUMPING MODE TIMER - EMGDT	OMRON	H3CA-A (+ P2CF-11)	-	(+ Y92A-48B) OFF DELAY
100	1	EMERGENCY PUMPING MODE TIMER PUMP2- EMG2	SPRECHER & SCHUH	RZ7-FSA 3E U23	-	ON DELAY
101	2	EMERGENCY PUMPING MODE SWITCH & LIGHT - S5/H5	SPRECHER & SCHUH	D7P-LSM25 + D7-~~M24~~ MLW		+ D7-X10 (2), ENGRAVE 'OFF ON'
102	1	EMERGENCY PUMPING MODE AUX RELAY - EMGDTA	IDEC	RH2B-ULD-DC24V	-	+ SH2B-05
103					F	
104					F	
105					F	
106					F	
107					F	
108					F	
109					F	
110					F	
111					F	
112					F	
113					F	
114						
115	2	SW/BD LIGHTING CONTROL RELAY - SLCR, DZLR	IDEC	RH2B-ULD-DC24V	-	+ SH2B-05
116	1	AREA LIGHTING CONTROL SWITCH - S11	KRAUS & NAIMER	CAD11-~~A720~~-600-FT2-F758 (A721)	-	ENGRAVE 'OFF ON'
117						
118	1	STATION LOCAL/REMOTE SWITCH - S10	KRAUS & NAIMER	CAD11-~~A720~~-600-FT2-F758 (A721)	-	ENGRAVE 'LOCAL REMOTE'
119	1	ELECTRODES TEST RELAY - ETR	IDEC	RH4B-ULD-DC24V	-	+ SH4B-05
120					P	
121	1	WET WELL LEVEL INDICATOR	CROMPTON INSTRUMENTS	244-01VG-HG-IP-SR 4-20mA (AR)	-	0-100% ADJ RED POINTER
122					J	
123	11	SW/BD DOOR MICRO SWITCHES - SINGLE POLE	OMRON	Z-15GW2 55 B	-	11 OFF N/O
124	1	SW/BD DISCONNECT COMPART DOOR PROXIMITY SWITCH	PEPPERL & FUCHS	NCB5-18GM40-Z0	-	
125	8	SW/BD INTERNAL LED LIGHTS	LUMIFA	LF1B-C3S-2THWW4	-	
126					G	
127					G	
128					G	

ITEM	QTY	DESCRIPTION	MANUFACTURER	CATALOGUE No	OPT	REMARKS
129					G	
130					K	
131					S	
132					H	
133	1	PRIMARY WET WELL LEVEL PROBE	VEGA - VEGAWELL52	WL52XXA4ALD1DD1X	-	SET RANGE TO = 3m (24295901)
134	1	PRIMARY WET WELL LEVEL ADJUSTMENT UNIT	VEGA - VEGADIS62	DIS62XXKMAXX	-	(24295907)
135					G	
136					-	
137	1	DELIVERY PRESSURE TRANSMITTER	VEGA VEGABAR52	BR52XXCA1EHPMAS L=12	U	RANGE = 20m (24295919)
138	1	TRICLOVE FITTING FOR VEGABAR52	VEGA	ADAPTOR &	U	A
139	1	CONTROL SYSTEM POWER SUPPLY 24VDC	POWERBOX	PB251A-24CM-CC-T-S	-	
140	1	RADIO 24V/13.8VDC CONVERTER	POWERBOX	PBIH-2412J-CC	R	
141					I	
142	2	BATTERIES - INCLUDING SPILL TRAYS	YUASA	UXH50-12	-	
143	1	RADIO	TRIO	DR900-07A02-D0	R	
144	1	RADIO ANTENNA	TRIO	YAGI ANT13AL	R	15 ELEMENT 13dB ALUM
145	1	RADIO COAX SURGE PROTECTION UNIT	POLYPHASER CORPORATION	IS-50NX-C2	R	Mounted on Din Rail
146	1	TELEMETRY UNIT	MOTOROLA	ACE - 3600	-	
147	1	GSM MODEM	WAVECOM	FASTRACK Supreme	I	c/w 5 M Cable
148	1	GSM CELLULAR TRANSIT ANTENNA	RF INDUSTRIES	TLA2000	I	
150	1	GRAPHIC DISPLAY	REDLION	G306A000		
153						
156	1	ANTENNA MAST c/w 20mm NYLON CABLE GLAND	SWBD BUILDER	SHEET 23	R	LENGTH = 4 MTRS
157	1	INTERNAL COAX CABLE (Radio to Lightning Arrester)	TRIO	TRIO - SMAM/NM/TL23	R	Cable No X01
158	1	EXTERNAL COAX CABLE (Lightning Arrester to Aerial)	R.F. INDUSTRIES	ANDREW - CNT400	R	Cable No X02
159	2	COAX PLUG (For CNT400 cable)	PULSE	N-203HS	R	Straight cable plug crimp
160	1	U CLAMPS	R.F. INDUSTRIES	UNV	R	
164.0	Lot	MINIATURE THERMAL CIRCUIT BREAKER	PHOENIX CONTACT	TCP 'x'A + UK6FSI/C	-	'x' = AMP Rating
164.1	70	THROUGH TERMINALS (Grey & Blue as Required)	PHOENIX CONTACT	PIT 2.5		PIT 2.5-BU (for -ve)
164.2	325	DISCONNECT TERMINALS (Grey & Blue as Required)	PHOENIX CONTACT	PIT 2.5-MT	-	PIT 2.5-MT-BU (for -ve)
164.3	11	GROUP MARKER CARRIER	PHOENIX CONTACT	UBE	-	
164.4	10	PLUG-IN BRIDGE	PHOENIX CONTACT	FBS-50	-	AS REQUIRED
164.5	2	TEST PLUG	PHOENIX CONTACT	PS-5		
164.6	1	COVER PROFILE (SHROUDING) + CARRIER PLATE	PHOENIX CONTACT	AP-2 + AP2-TU	-	AS REQUIRED
165	9	Earth Terminals	Phoenix Contact		-	
166					-	
169						
170	1	ENERGEX PADLOCK - 45mm brass pin tumbler	H.A. REED LOCKSMITHS	KEY No 325 & S/S Shackle	-	c/w 2 KEYS
171						
172	Lot	WET WELL CONDUIT END CAPS c/w NYLON CABLE GLANDS	HD PVC	TO SUIT CONDUITS		Detail 'W'
173	Lot	S/STEEL FITTINGS AS DETAILED FOR PRESSURE TX	FITTINGS	STAINLESS STEEL	U	Sheet 24
174	1	EARTH ROD CONNECTION BOX	NESCO	ERB1	-	
175	1	LINE TAP - BONDING TO EARTHING ROD	CLIPSAL	BP26	-	
176	1	EARTHING ROD	COPPER ROD	13mm Diameter	-	
177					E	
178					Q	
179					E	
180					E	
181					E	
182					E	
183					E	
184					E	
185					E	
186					E	
187	2	SINGLE POINT PROBES	MULTITRODE	2 off - 020130FSP-Shield	-	
188					C	
189					G	
190					G	
191	1	EXTERIOR AREA LIGHT	STRATEGIC LIGHTING	ECLIPSE - T5 2x80W	J	High Impact Resistant
192	4	CORROSION INHIBITOR	CORTEC	VPCI-110 OR 111	-	FROM AP CONTROLS

Sheet 18

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED: P.HAGUE
DRAFTING CHECK: A.WITTHOFT
CAD FILE: 57-0297set_A
B.C.C. FILE No.

Original Signed by P.HAGUE 6-11-12
DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 6-11-12
DESIGN CHECK R.P.E.Q. No. DATE

PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

Queensland UrbanUtilities — A DIVISION OF THE BRISBANE CITY COUNCIL

SITE: SP143 LINKS AVE SOUTH SEWAGE PUMP STATION

TITLE: EQUIPMENT LIST

SHEET No. 18
Queensland Urban Utilities DRAWING No. 486/5/7-0297-018
AMEND. A

STD TEMPLATE SP-2P Ver3.2

D:\AA_Major Projects\QUU - SPRI11\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

03-04-13

CABLE No.	STATUS	SIZE	CORES	TYPE	LENGTH (m) Note 1	FROM	TO	CABLE FUNCTION	NOTES
P01	NEW	16mm²	4C	PVC/CU/PVC Note2		ENERGEX Supply Pillar/Pole	Switchboard	Incoming Mains Supply	Refer Note2 for Cable Protection
E01	NEW	6mm²	1C	Building Wire		Switchboard	Earth stake	Main Earth	
P05	EXISTING	2.5mm²	3C+E+2pilots	Flexible (Submersible)		Switchboard - Pump De-Contactor	Pump No1	Pump 1 Motor Feed +Thermistors	
P08	EXISTING	6mm²	3C+E	Flexible (Submersible)		Switchboard - Pump De-Contactor	Pump No2	Pump 2 Motor Feed	
P23	NEW	2.5mm²	2C+E	PVC/CU/PVC		Switchboard	External Area Lights	Area Lighting	
C200	EXISTING	1.5mm²	7C	Flexible (Submersible)		Switchboard - Pump Aux Plug	Pump No2	Pump 2 Motor Thermisters	
C01	NEW	1.5mm²	2C	Vendor-420136FSP-Shield		Switchboard	Surcharge Imminent Probe	Surcharge Imminent Signal (SIR)	
C02	NEW	1.5mm²	2C	Vendor-420136FSP-Shield		Switchboard	Wet Well High Level Probe	Wet Well High Level Signal (LR3)	
I01	NEW		7C	Vendor		Switchboard	Wet Well Hydroscopic Level Sensor	Primary Wet Well Level	Incl Excess Length - See Note 3
I02	NEW			Vendor		Switchboard	Delivery Pressure Transmitter	Delivery Pressure	Located in Valve Pit
I06	NEW	24 AWG	1Pr	120 ohm Twisted Pair		Switchboard - RTU	Switchboard - Soft Starter No1	RS485 Comms	Overall Screened Twisted Pair
I07	NEW	24 AWG	1Pr	120 ohm Twisted Pair		Switchboard - Soft Starter No1	Switchboard - Soft Starter No2	RS485 Comms	Overall Screened Twisted Pair
I11-I13	NEW			Ethernet		Switchboard RTU	Graphic Display/Modem/Radio	Communications	
X01	NEW			Vendor		Switchboard - Radio	Aerial Coax Surge Protector	Radio Communications	
X02	NEW			CNT400		Aerial Coax Surge Protector	Aerial	Radio Communications	

NOTE:

1. THE CONTRACTOR IS RESPONSIBLE IN DETERMINING THE ACTUAL CABLE LENGTHS REQUIRED ON SITE.
2. PROTECT THE MAINS CABLE USING PVC SHEATHED FLEXIBLE METAL CONDUIT SUCH AS 'ADAPTAFLEX' FROM 150mm Min WITHIN THE PVC MAINS CONDUIT CAST IN THE SLAB UP TO THE GLAND PLATE. TERMINATE USING PROPRIETARY GLAND. SEAL AROUND CABLE AT EXIT POINT OF CONDUIT TO PREVENT INGRESS OF VERMIN. PROVIDE ADEQUATE EXCESS FOR RE-TERMINATION.
3. ALLOW SUFFICIENT LENGTH ON CABLE TO ALLOW FOR REMOVAL OF PROBE AND CONDUIT. EXCESS LENGTH TO BE STORED IN ELECTRODE BOX

Sheet 19

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED	P.HAGUE	Original Signed by P.HAGUE	6-11-12
DRAFTING CHECK	A.WITTHOFT	DESIGN	R.P.E.Q. No. DATE
CAD FILE	57-0297set_A	Original signed by A.WITTHOFT	8895 6-11-12
B.C.C. FILE No.		DESIGN CHECK	R.P.E.Q. No. DATE

PRINCIPAL DESIGN MANAGER DATE

CLIENT DELEGATE DATE

QUEENSLAND Urban Utilities — A DIVISION OF THE BRISBANE CITY COUNCIL

SITE: SP143 LINKS AVE SOUTH SEWAGE PUMP STATION

TITLE: CABLE SCHEDULE

SHEET No. 19

Queensland Urban Utilities DRAWING No. 486/5/7-0297-019

AMEND. A

STD TEMPLATE SP-JP Ver3.2

D:\AA_Major Projects\QUU - SPRI11\Packages\Package 11\EGP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

ITEM #	OPT.	DESCRIPTION - INTERNAL LABEL	LABEL 1	LABEL 2 (IF NECESSARY)	TEXT HEIGHT	MATERIAL / COLOUR
02		ENERGEX SUPPLY	NORMAL SUPPLY MAIN SWITCH 125A	REFER SHEET 01	10mm 4mm	ABS PLASTIC B/W
03		GENERATOR SUPPLY	GENERATOR SUPPLY MAIN SWITCH 125A	NOTE 11	10mm 4mm	ABS PLASTIC B/W
04/05		PUMP CIRCUIT BREAKER	PUMP No1 20A	PUMP No2 20A	6mm 4mm	ABS PLASTIC W/B
07		PHASE FAILURE CIRCUIT BREAKER	ENERGEX PHASE FAILURE RELAY Q7	FED FROM LINE SIDE OF MAIN SWITCH	4mm 4mm	ABS PLASTIC W/B
09		SUB-DISTRIBUTION BOARD CB	SUB-DISTRIBUTION BOARD 63A	Mounted On Escutcheon	6mm 4mm	ABS PLASTIC W/B
10		PHASE FAILURE CIRCUIT BREAKER	STATION PHASE FAILURE RELAY - Q10		4mm 4mm	ABS PLASTIC W/B
11		1 PHASE OUTLET CIRCUIT BREAKER	1Φ GPO Q11		4mm 4mm	ABS PLASTIC W/B
12		RTU LAPTOP CIRCUIT BREAKER	RTU LAPTOP GPO Q12		4mm 4mm	ABS PLASTIC W/B
13		SPARE CIRCUIT BREAKER	SPARE Q13		"	"
14		SPARE CIRCUIT BREAKER	SPARE Q14		"	"
15		GENERATOR ANCILLARY SUPPLY CB	GENERATOR ANCILLARY SUPPLY Q15		4mm 4mm	ABS PLASTIC W/B
16		EXT. AREA LIGHTING CIRCUIT BREAKER	AREA LIGHTING Q16		4mm 4mm	ABS PLASTIC W/B
17		SURGE FILTER CIRCUIT BREAKER	SURGE FILTER Q17		4mm 4mm	ABS PLASTIC W/B
18		EM PUMP CONTROL & SIR CIRCUIT BREAKER	EM PUMPING CCT & SIR Q18		4mm 4mm	ABS PLASTIC W/B
19		SPARE CIRCUIT BREAKER	SPARE Q19		4mm 4mm	ABS PLASTIC W/B
20		3 PHASE OUTLET CIRCUIT BREAKER	3Φ OUTLET Q20		4mm 4mm	ABS PLASTIC W/B
21		SPARE CIRCUIT BREAKER	SPARE Q21		"	"
24		RTU POWER SUPPLY CIRCUIT BREAKER	RTU POWER SUPPLY Q30		4mm 4mm	ABS PLASTIC W/B
25		SURGE FILTER ALARM RELAY CIRCUIT BREAKER	SURGE FILTER ALARM RELAY Q31		4mm 4mm	ABS PLASTIC W/B
26		SPARE CIRCUIT BREAKER	SPARE Q32		"	"
27		SPARE CIRCUIT BREAKER	SPARE Q33		4mm 4mm	ABS PLASTIC W/B
31		PUMP 240VAC CONTROL CIRCUIT BREAKER	PUMP No1 Q4-1	PUMP No2 Q5-1	4mm 4mm	ABS PLASTIC W/B
32		24VDC CONTROL CIRCUIT BREAKER	PUMP No1 QD4	PUMP No2 QD5 EM PUMPING QD18	4mm 4mm	ABS PLASTIC W/B
33		BATTERY CIRCUIT BREAKER	BATTERY QD8		4mm 4mm	ABS PLASTIC W/B
34		240VAC-24VDC POWER SUPPLY	PS-P1	PS-P2 PS3	4mm 4mm	ABS PLASTIC W/B
35						
37		SURGE DIVERTER FUSES	SURGE DIVERTER FUSES 63A / 63A	FED FROM LINE SIDE OF MAIN SWITCH	4mm 4mm	ABS PLASTIC W/B - R/W
38		SURGE DIVERTERS	SURGE DIVERTERS	FED FROM LINE SIDE OF MAIN SWITCH	4mm 4mm	ABS PLASTIC W/B - R/W
39		SURGE FILTER ALARM RELAY	SFAR		4mm 4mm	ABS PLASTIC W/B
40		SURGE REDUCTION FILTER	SURGE REDUCTION FILTER		4mm 4mm	ABS PLASTIC W/B
41		PHASE FAILURE RELAY	ENERGEX MAINS POWER FAIL - PFRE	FED FROM LINE SIDE OF MAIN SWITCH	4mm 4mm	ABS PLASTIC W/B - R/W
43		PHASE FAILURE RELAY	STATION MAINS POWER FAIL - PFRS		4mm 4mm	ABS PLASTIC W/B
45		MAIN NEUTRAL LINK	MAIN NEUTRAL		4mm	ABS PLASTIC W/B
46		MAIN EARTH LINK	MAIN EARTH		4mm	ABS PLASTIC W/B
47		SUB-BOARD NEUTRAL LINK	NEUTRAL		4mm	ABS PLASTIC W/B
48		SUB-BOARD EARTH LINK	EARTH		4mm	ABS PLASTIC W/B
49		~~SURGE DIVERTER NEUTRAL LINK~~	~~SURGE DIVERTER NEUTRAL~~		~~4mm~~	~~ABS PLASTIC W/B~~
50		INSTRUMENT EARTH LINK	INSTRUMENT EARTH		4mm	ABS PLASTIC W/B
51		FILTERED SUPPLY NEUTRAL LINK	FILTERED SUPPLY NEUTRAL		4mm 4mm	ABS PLASTIC W/B
54		LAPTOP GPO	LAPTOP SPO ONLY		4mm	ABS PLASTIC W/B
55	M	GENERATOR 240VAC CONNECTION SOCKET	GENERATOR ANCILLARY SUPPLY		4mm 4mm	ABS PLASTIC W/B
56	M	GENERATOR POWER CONNECTION SOCKET	GENERATOR CONNECTION	REFER SHEET 01 NOTE 4	6mm 6mm	ABS PLASTIC W/B
59		PUMP SOFT STARTER	PUMP No1 1U1	PUMP No2 2U1	6mm 4mm	ABS PLASTIC W/B
60		PUMP SOFT STARTER KEYPAD	PUMP No1	PUMP No2	8mm	ABS PLASTIC W/B
61						
63						
64		LINE CONTACTOR	PUMP 1 1K1	PUMP 2 2K1	4mm 4mm	ABS PLASTIC W/B
65		SOFT STARTER RUNNING RELAY	1K2	2K2	4mm	ABS PLASTIC W/B
66		SOFT STARTER FAULT RELAY	1K3	2K3	4mm	ABS PLASTIC W/B
67		EM. STOP RELAY	1K4	2K4	4mm	ABS PLASTIC W/B
68		PUMP POWER ON RELAY	1K5	2K5	4mm	ABS PLASTIC W/B
69		PUMP RUN RELAY	1K6	2K6	4mm	ABS PLASTIC W/B

ITEM #	OPT.	DESCRIPTION - INTERNAL LABEL	LABEL 1	LABEL 2 (IF NECESSARY)	TEXT HEIGHT	MATERIAL / COLOUR
73		PUMP RUN COMMAND RELAY	1K20	2K20	4mm	ABS PLASTIC W/B
74		PUMP FAULT RESET RELAY	1K21	2K21	4mm	ABS PLASTIC W/B
75		PUMP EMERGENCY MODE INTERRUPT RELAY	1K22	2K22	4mm	ABS PLASTIC W/B
77		PUMP START PUSHBUTTON	START	START	4mm	ABS PLASTIC W/B
78		PUMP STOP PUSHBUTTON	STOP	STOP	4mm	ABS PLASTIC W/B
79		PUMP EM.STOP PUSHBUTTON	(use label supplied with P/Button)	(use label supplied with P/Button)		Y/B
80		PUMP RESET PUSHBUTTON	FAULT RESET	FAULT RESET	4mm	ABS PLASTIC W/B
81		~~PUMP HOURS RUN METER~~	~~HOURS RUN~~	~~HOURS RUN~~	~~4mm~~	~~ABS PLASTIC W/B~~
82/83	J	PUMP DE-CONTACTOR	PUMP No1	PUMP No2	6mm	ABS PLASTIC W/B
84/85	J	PUMP AUX CONTROL PLUG & SOCKET	PUMP No1	PUMP No2	6mm	ABS PLASTIC W/B
93		WET WELL HIGH LEVEL RELAY	WET WELL HIGH LEVEL - LR3		4mm 4mm	ABS PLASTIC W/B
96		SIRCHARGE IMMINENT LEVEL RELAY	WET WELL SURCHARGE IMMINENT - SIR		4mm 4mm	ABS PLASTIC W/B
97		EMERGENCY PUMPING MODE PUMP 1 RELAY	EMG1		4mm	ABS PLASTIC W/B
98		SURCHARGE IMMINENT ON DELAY TIMER	SIDT		4mm	ABS PLASTIC W/B
99		EMERGENCY PUMPING MODE OFF DELAY TIMER	EMGDT		4mm	ABS PLASTIC W/B
100		EMERGENCY PUMPING MODE PUMP 2 TIMER	EMG2		4mm	ABS PLASTIC W/B
101		EMERGENCY PUMPING MODE START SWITCH	EMERGENCY PUMPING MODE	EMERGENCY PUMPING MODE	4mm 4mm	ABS PLASTIC W/B
102		EMERG. PUMPING MODE OFF DELAY AUX RELAY	EMGDTA		4mm	ABS PLASTIC W/B
				EMERGENCY PUMPING MODE OFF ON	4mm 4mm 4mm	
115		SWITCHBOARD LIGHTING CONTROL RELAY	SLCR	DZCR	4mm	ABS PLASTIC W/B
116		AREA LIGHTING CONTROL SWITCH	AREA LIGHTING		4mm	ABS PLASTIC W/B
118		STATION LOCAL/REMOTE SELECTOR SWITCH	STATION CONTROL MODE		4mm	ABS PLASTIC W/B
119		ELECTRODES TEST RELAY	ETR		4mm	ABS PLASTIC W/B
121		WET WELL LEVEL INDICATOR	WET WELL LEVEL		4mm	ABS PLASTIC W/B
134		WET WELL PRIMARY LEVEL ADJ. UNIT	PRIMARY WET WELL LEVEL (Located in Sw/Bd)		4mm 4mm	ABS PLASTIC W/B
137	U	DELIVERY PRESSURE ADJ. UNIT	DELIVERY PRESSURE (Located in Sw/Bd)		4mm 4mm	ABS PLASTIC W/B
139		CONTROL SYS 240VAC/24VDC POWER SUPPLY	CONTROL SYSTEM 24VDC POWER SUPPLY		4mm 4mm	ABS PLASTIC W/B
140	R	RADIO 24V/13.8VDC CONVERTER	24/12 VDC CONVERTER - RADIO		4mm 4mm	ABS PLASTIC W/B
143	R	RADIO	RADIO		4mm	ABS PLASTIC W/B
145	R	RADIO COAX SURGE PROTECTION	RADIO SURGE PROTECTION		4mm	ABS PLASTIC W/B
146		TELEMETRY UNIT	RTU		4mm	ABS PLASTIC W/B
147	I	MODEM	MODEM		4mm	ABS PLASTIC W/B

ITEM #	OPT.	DESCRIPTION - INTERNAL LABEL	LABEL 1	LABEL 2 (IF NECESSARY)	TEXT HEIGHT	MATERIAL / COLOUR
4 OFF		Access Plate - Do Not Drill	Inspection Plate Do Not Install Glands		[illegible]	W/B
		TERMINAL HEADER	SWITCHBOARD LIGHTING			
		TERMINAL HEADER	24VDC POWER DISTRIBUTION	DIGITAL INPUTS DI4	4mm 4mm	ABS PLASTIC W/B
		TERMINAL HEADER	DIGITAL INPUTS DI1	DIGITAL INPUTS DI2 DIGITAL INPUTS DI3	4mm 4mm	ABS PLASTIC W/B
		TERMINAL HEADER	DIGITAL OUTPUTS DO1	DIGITAL OUTPUTS DO2	4mm 4mm	ABS PLASTIC W/B
		TERMINAL HEADER	ANALOG INPUTS AI1	ANALOG OUTPUTS AO1	4mm 4mm	ABS PLASTIC W/B
		HEADER LABELS (Above DB Circuit Breakers)	NON FILTERED SUPPLY	FILTERED SUPPLY	6mm 6mm	ABS PLASTIC W/B
		HEADER LABEL (Incomer Section)	MEN BEHIND		6mm	ABS PLASTIC W/B
		HEADER LABEL (Over Terminals 600-613)	LEVEL TX AND LEVEL PROBES		4mm 4mm	ABS PLASTIC W/B
		HEADER LABEL (Over Shrouded Terminals)	WARNING 240VAC		4mm 4mm	ABS PLASTIC R/W
200						
201						
203	F2	GENERATOR BOLTED CONNECTIONS	~~BUSBAR LIVE WHEN SWITCHBOARD ENERGISED FROM GENERATOR~~	REFER SHEET 01 NOTE 10	4mm 4mm	ABS PLASTIC R/W
204						
205						
206		METER PANEL WARNING SIGN	(DUPLICATE LABELS 'X' & 'Y' FROM EXTERNAL LABEL LIST)	(MOUNT INSIDE METER BOX ADJACENT METERS)	6mm 6mm	ABS PLASTIC W/B
208						
209		PUMP INFORMATION LABEL Label size to be approximately 150 x 50	SP143 LINKS AVE SOUTH PUMPS ZONE 6.1 kW 4.6 IMPELLER 220		6mm	ABS PLASTIC W/B

EXTERNAL DOOR LABEL LIST

LABEL	TEXT	TEXT HEIGHT	PAINT FILL LETTERING	QTY
A	SP143	25mm	Black	1
B	RTU	10mm	Black	1
C	PUMP ? CONTROL	10mm	Black	2
D	WARNING THIS SITE IS MONITORED BY THE CONTROL ROOM. PLEASE INFORM THE OPERATOR BEFORE ISOLATING PUMPS OR STATION	8mm	Black	2
E	PLEASE CHECK THAT THE STATION IS IN REMOTE MODE BEFORE LEAVING SITE	8mm	Black	1
F	COMMON CONTROL	10mm	Black	1
I	MAIN SWITCHES	10mm	Black	1
J	DISTRIBUTION BOARD	10mm	Black	1
L	GENERATOR BUSBAR CONNECTIONS	10mm	Black	1
M	PUMP DE-CONTACTORS	10mm	Black	1
N	GENERATOR PLUG CONNECTIONS	10mm	Black	1
O	BATTERIES	10mm	Black	1
P	SUPPLY AUTHORITY METERING	10mm	Black	1
Q	DANGER 415V	10mm	Black	1
R	DANGER - 2 SOURSES OF SUPPLY	10mm	Red	1
T	SURGE DIVERTERS	10mm	Black	1
Y	Phone: 340 78414 (Butt up directly under Label 'X')	8mm	Black	1
Z	DANGER - ELECTRICAL EQUIPMENT Queensland Urban Utilities Phone 34078414 — NOTE: LABEL DESIGN IS ISSUED FROM QUU			1

EXTERNAL LABELS 1mm THICK. 316 GRADE STAINLESS STEEL. FIXED WITH M3 316 STAINLESS STEEL METAL THREADS.

DETAIL Q

FIELD LABEL LIST

LABEL	TEXT	TEXT HEIGHT	PAINT FILL LETTERING	QTY
AA	MAIN EARTH CONDUCTOR - DO NOT DISCONNECT (On Main Earth Electrode)	5mm		1

LABEL 'X'

WARNING
THIS SITE IS CONTINUOUSLY MONITORED
CONTACT CONTROL ROOM
BEFORE OPENING METER DOOR
AND PRIOR TO LEAVING SITE.

8mm Black 1

Sheet 20

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

STD TEMPLATE SP-2P Ver3.2

DRAFTED: P.HAGUE
DRAFTING CHECK: A.WITTHOFT
CAD FILE: 57-0297set_A
B.C.C. FILE No.

Original Signed by P.HAGUE 6-11-12
DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 6-11-12
DESIGN CHECK R.P.E.Q. No. DATE

PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

TITLE
SWITCHBOARD
LABEL SCHEDULE

SHEET No. 20
Queensland Urban Utilities DRAWING No. 486/5/7-0297-020
AMEND. A

D:\AA_Major Projects\QUU - SPRI11\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

CONSTRUCTION - EXTERNAL SWITCHBOARD

Cubicle construction 3mm Marine grade Aluminium (5251).
Plinth construction ~~75x60~~ 80x40mm channel 6061 T6 Grade Aluminium.
Folded, "Pulse MIG" & "TIG welded with all visible seams and joints fully welded, free from splatter and ground smooth where needed.
External doors and covers fitted with Emka 1011-207 self grip seal.
Stainless Steel "D" Handles fitted where indicated on the drawings.
M6 Earth studs fixed to the interior of all doors and hinged escutcheons and on adjacent cubicle interior surfaces. Fit dedicated earth stud adjacent main earth bar for switchboard earth.
Door stiffeners, door stays, cable straps, and document holders etc fitted where shown on the drawings.
Door stay arms to be S/Steel and of sufficent strength to prevent being deformed when subjected to reasonable loads. Minimum 3mm S/Steel.
Lift-off covers and mounting panels fixed with M8 studs & stainless steel dome nuts.
Gland plates manufactured from 3mm aluminium, unless otherwise shown.
Inspection/Access plates manufactured from 3mm aluminium.
Gland/Inspect/Access plate openings fitted with M6x1.0 flat head closed end rivet nuts. (Detail F)
Cable glands to be fitted with compression side installed within cubicle. (Detail G)
Gland/Inspection/Access plates to be fitted with seals attached to cubicle.
Gland/Inspection/Access plate fixings at 100mm.
Gland/Inspection/Access plates to maintain a 50mm clearance from section dividers.
Gland/Inspection/Access plates are NOT to be split.
Inspection/Access plates are NOT to be earthed.
Provide Shrouding to all live parts to IP20 where required.
Hinges (external) Selectrix HIB650ss-316. Stainless steel.
Star washers fitted under all hinge screws.
Hinged escutcheons fixed with Emka 1/4 turn 1000-U142
All equipment to be removable via front access.
Install switchboard with non-hydroscopic material between plinth and concrete slab. (Detail E1)
All escutcheons to open a minimum of 90°
All sheet metal edging to be de-burred.

Locks Doors 1 - 9 & 11
DORE ELECTRICS - Swing Handle SHKSS Universal Locking - 92268
DORE ELECTRICS - 3 point lock rod set - TLR24
Half Profile Cylinder
Key Codes RC496A, RC496AB, RC496ABC refer to each door for clarification.

Locks Door 12
DORE ELECTRICS - Swing Handle SHKSS Universal Locking - 92268
DORE ELECTRICS - 3 point lock rod set - TLR22SS (all S/Steel)
Lockwood Barrel Lock, Key Code RC496AB

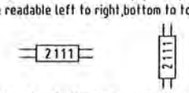
Locks Door 10
DORE ELECTRICS - Swing Handle SHPSS Padlockable - 316
DORE ELECTRICS - 3 point lock rod set - TLR24
ENERGEX padlock, S/Steel Shackle, 45mm brass pin tumbler.
Energex Key No325. c/w 2 keys.

OPERATING PARAMETERS

Standard	AS 3439.1
Current & Frequency	AC 50Hz
Rated Operational Voltage Ue	415 VAC
Rated Insulation Voltage Ui	660 V
Rated Auxiliary Voltage	240 VAC / 24 VDC
Rated Current (Main Bus)	100 ~~300~~ AMPS
Short Circuit Current Isc	20 kA
Duration of Isc	.2 sec
Degree of Protection	IP 56 to AS 1939
Measure of Protection by barriers and enclosures.	
Service Conditions	Outdoors
Mass	Not exceeding 2000kg
Forms of Segregation	Form 3 (DB SECTION Form 2)

WIRING

All Control wiring to be PVC V90 HT 0.6/1Kv Grade with tinned conductor.
Control and instrumentation wiring has flexible copper conductors, and is colour coded as detailed below, each individual wire shall be numbered each end, and terminated by the use of appropriate pre-insulated crimp lugs or pins.
Separate lugs or pins shall be used for each conductor. A proprietary double pin lug may be used to terminate two conductors.
Use proprietary bridging links when required to common up terminals.
Not more than two wires shall be connected to any terminal.
Not more than one wire shall be connected on one side of any tunnel type terminal.
Where multiple connections are required on tunnel terminals, proprietary terminal link bars shall be used.
Power wiring to be minimum 2.5sqmm stranded copper conductors, phase colour coded as detailed below. V90 0.6/1kV
Control wiring to be minimum 1.0sqmm flexible copper conductors, colour coded as detailed below.
Low level control signals to be minimum 0.5sqmm flexible copper conductors, colour coded as detailed below.
Wiring between RTU terminals & RTU disconnect plugs to be multicore cable with 0.5sqmm flexible copper conductors.
4-20mA analog signals (internal & external) wired in shielded pair minimum size 0.5sqmm, and earthed at one end only. (Switchboard end for external signals)
All 240VAC wiring in the RTU or PLC sections shall be double insulated and all terminals shall be shrouded and labelled- ' Danger 240VAC'
Earth cables minimum 2.5sqmm flexible.
Doors and hinged escutcheons bonded with flexible ~~tinned~~ copper ~~braiding~~ G/Wire
Disconnection zone door to be bonded with flexible copper G/Wire. Heat shrink at lugs.
Switchboard to have dedicated earthing cable bonding directly to main earth bar.
Ensure minimum clearance of 100mm is maintained between cable ducting & gland plates.
Wire numbering will be equal to Grafoplast SI2000 system.
Terminal strips to be mounted 30mm off equipment panel to aid termination.
Wire numbers are readable left to right,bottom to top as shown.



~~Supply spare RTU fuse terminal fuses seperately. 2x10A, 2x5A 4x2A, 6x5A~~
All cable glands to be Stainless Steel type.

COLOUR CODE

Phase wiring (A,B &C)	Red, White, Blue	2.5sqmm (min)
Potential Metering (240/415 VAC)	Red, White, Blue, Black	1.5sqmm
Current Metering (Secondary)	Red, White, Blue, Grey	2.5sqmm
240 VAC Control Active	Red	1.0sqmm
240 VAC Neutral	Black	1.0sqmm
Extra Low VDC Positive supplies	Orange	1.0sqmm
Extra Low VDC Negative supplies	Violet	1.0sqmm
General Extra Low VDC Wiring	Grey	1.0sqmm
RTU & PLC Wiring	Grey	0.5sqmm
Electrode Wiring	Salmon	1.0sqmm
Intrinsically safe wiring	Light Blue	1.5sqmm
Earth	Green/Yellow	2.5sqmm (min)
Door & Escutcheon Earth Bonds	Green/Yellow	4 sqmm
Instrument Shield Earth	Green/Yellow	1.5sqmm (min)

PAINTING

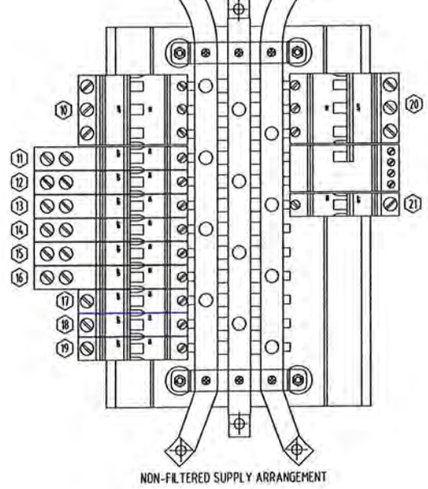
Aluminium Surface Preparation.
Finish smooth all exposed welds, clean, descale, and degrease all surfaces.
Surfaces pretreatment in accordance with AS 1580 & AS 3715 using Novox LF acid etch cleaner, Novacoat 12 conversion coating, & clean water rinses.
Apply DULUX ALPHATECH 3000 powder coat to manufacturer's recommendations.
CUBICLE & EXTERNAL COMPONENTS :- DULUX Mist Green (36648) matt finish.
INTERIOR ITEMS (mounting panels, escutcheons, etc.) :- DULUX Bright White (32166)
Minimum Dry Film Thickness all surfaces 50 microns.

LABELS

Internal labels W/B engraved ABS PLASTIC to label schedule.
Warning labels R/W engraved ABS PLASTIC to label schedule.
E/Stop labels Y/B engraved ABS PLASTIC to label schedule.
First letter = Background colour, Second letter = Lettering colour.

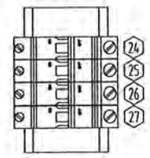
Main switch label	MAIN SWITCH 400A	10mm / 4mm	Material ABS PLASTIC Colour B/W
Pump CB labels	PUMP No1 250A	6mm / 4mm	Material ABS PLASTIC Colour W/B
Compartment labels	RTU	10mm	Material Stainless Steel
E/Stop labels	EMERGENCY STOP	4mm	Material ABS PLASTIC Colour Y/B
Warning labels	DANGER 415V ISOLATE ELSE WHERE	7mm / 5mm	Material ABS PLASTIC Colour R/W

Internal labels secured by M3 chrome plated metal threads.
CB's to be identified with individual labels as per label schedule.
Labels obstructed by switchboard wiring are relocated to adjacent duct lid and secured by M3 nylon threads. Lid to be secured by a single cable tie at one corner.
External switchboard labels to be 1mm thick 316 grade stainless steel secured by M3 316 stainless steel metal threads.
All internal and external labels are to have bevelled edges.



NON-FILTERED SUPPLY ARRANGEMENT

FILTERED SUPPLY ARRANGEMENT



DETAIL M
SUB-DISTRIBUTION BOARD ARRANGEMENT

Sheet 21

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED	P.HAGUE
DRAFTING CHECK	A.WITTHOFT
CAD FILE	57-0297set_A
B.C.C. FILE No.	

Original Signed by P.HAGUE 6-11-12
DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 6-11-12
DESIGN CHECK R.P.E.Q. No. DATE

PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

QUEENSLAND Urban Utilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

TITLE
SWITCHBOARD
CONSTRUCTION DETAILS
SHEET 1 OF 3

SHEET No. 21
Queensland Urban Utilities DRAWING No. 486/5/7-0297-021
AMEND. A

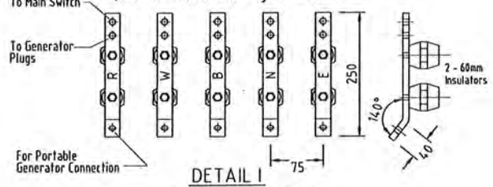
STD TEMPLATE SP-2F Ver32
D:\AA_Major Projects\QUU - SPR111\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

27-2-13

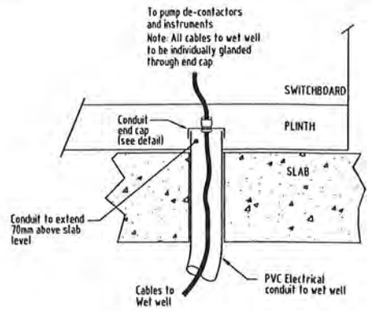
ESCUTCHEON LAYOUT DETAIL V

ESCUTCHEON LAYOUT DETAIL X

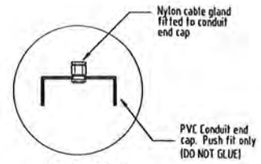
1 - 30mm x 6.3mm Cu Busbar per Phase, N & E
3 - 12mm Dia holes per Phase, N & E for cable connections
(lower 12mm hole for external generator connection)



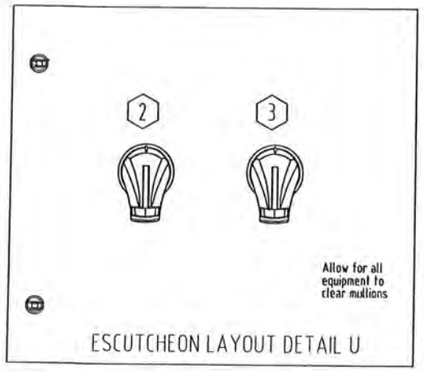
DETAIL I
(GENERATOR BOLTED CONNECTION)
(FIT SHROUD AND LABEL)



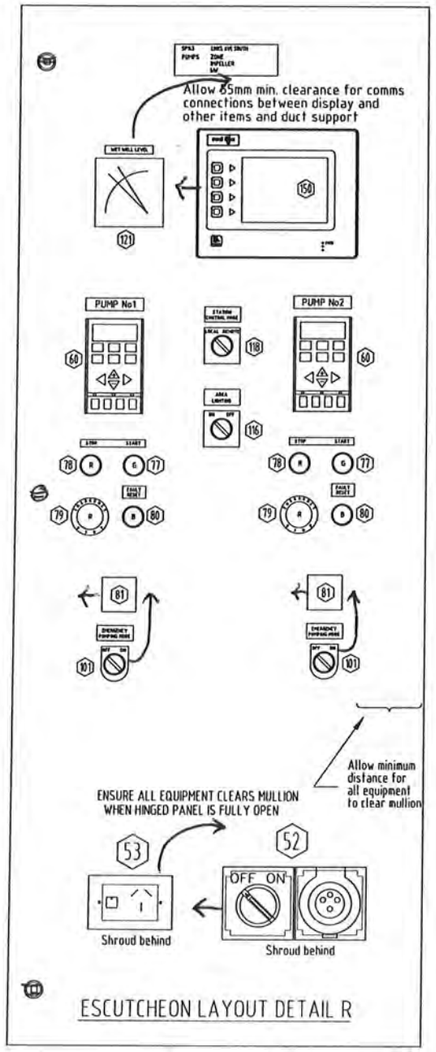
DETAIL W
(WET WELL CONDUIT SEALING DETAIL)



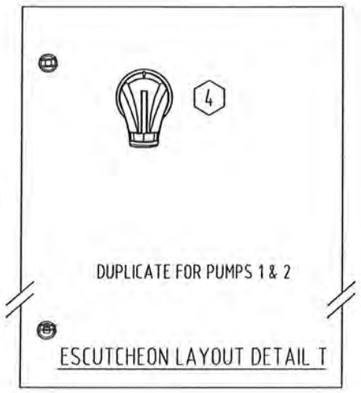
(END CAP DETAIL)



ESCUTCHEON LAYOUT DETAIL U

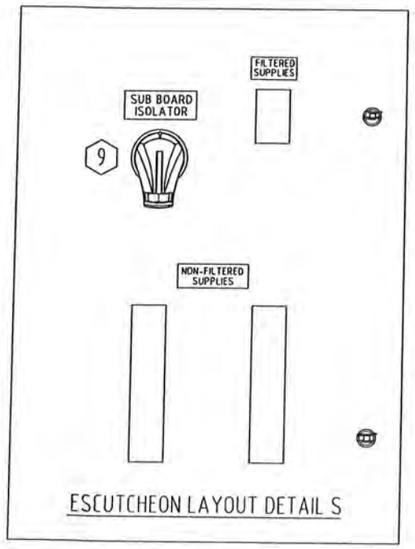


ESCUTCHEON LAYOUT DETAIL R



ESCUTCHEON LAYOUT DETAIL T

NOTE:
ALL ESCUTCHEONS
TO OPEN 90° min.



ESCUTCHEON LAYOUT DETAIL S

Sheet 22

FOR CONSTRUCTION

A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.	DRAFTED	P.HAGUE	Original Signed by P.HAGUE	6-11-12	PRINCIPAL DESIGN MANAGER	DATE
O	11.12	ISSUED FOR TENDER	P.H.	A.W.	DRAFTING CHECK	A.WITTHOFT	DESIGN	R.P.E.Q. No. DATE		
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.	CAD FILE	57-0297set_A	Original signed by A.WITTHOFT	8895 6-11-12	CLIENT DELEGATE	DATE
No	DATE	AMENDMENT	DRN.	APD.	B.C.C. FILE No.		DESIGN CHECK	R.P.E.Q. No. DATE		

QUEENSLAND Urban Utilities
A DIVISION OF THE BRISBANE CITY COUNCIL

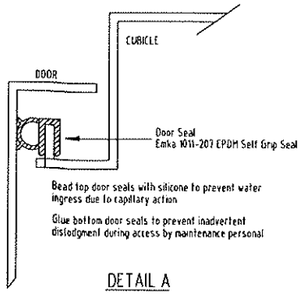
SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

TITLE
SWITCHBOARD
CONSTRUCTION DETAILS
SHEET 2 OF 3

SHEET No. 22
Queensland Urban Utilities DRAWING No. 486/5/7-0297-022
AMEND. A

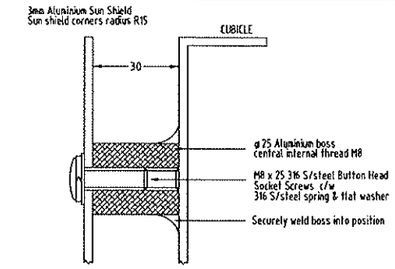
D:\AA_Major Projects\QUU - SPR111\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

27-2-13



DETAIL A

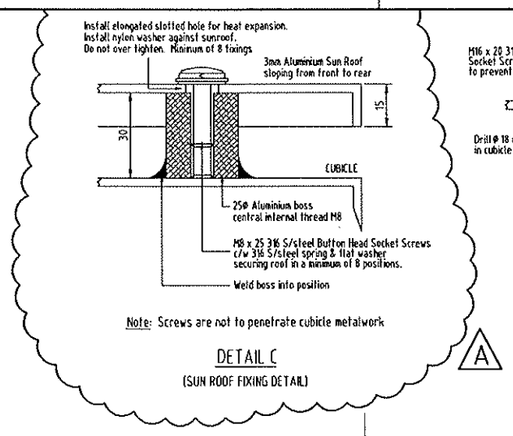
DOOR SEAL
EXTERNAL SWITCHBOARD



Notes: Screws are not to penetrate cubicle metalwork.
Boss for sunshields to be 30mm.

DETAIL B

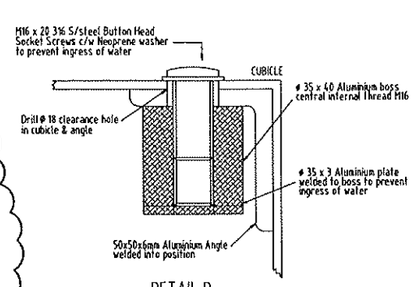
(SUN SHIELD MOUNTING TO ENDS, REAR AND DOORS)



Note: Screws are not to penetrate cubicle metalwork

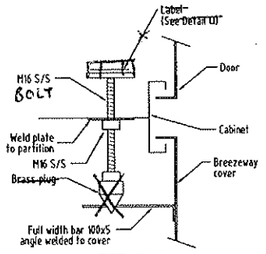
DETAIL C

(SUN ROOF FIXING DETAIL)



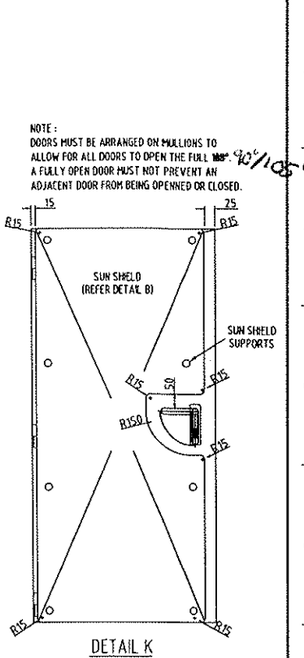
DETAIL D

(EYE BOLT FIXING DETAIL)



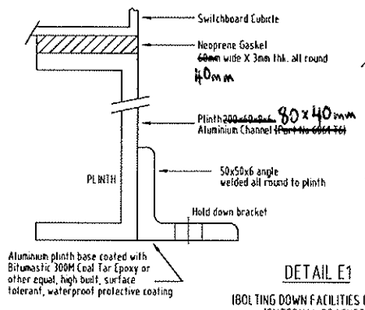
DETAIL V

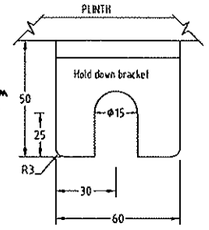
(BREEZEWAY LATCH INSTALLATION DETAIL)



DETAIL K

(DOOR SUN SHIELD DETAIL)

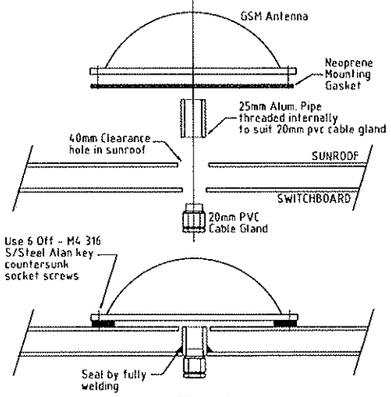




DETAIL E1

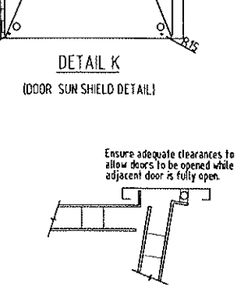
(BOLTING DOWN FACILITIES DETAIL)
(EXTERNAL BRACKET)

SET UP CUBICLE TO BE LEVEL & PLUMB BEFORE BOLTING TO CONCRETE PLINTH USING M12 S/STEEL CHEMICAL ANCHORS. MINIMUM ANCHORAGE 110mm. USE 40x40x3mm WASHERS FILL WITH NON-SHRINK GROUT WHERE REQUIRED.

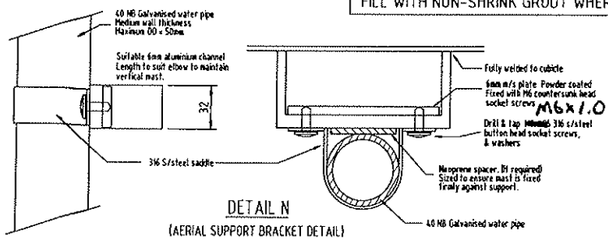


DETAIL X

(GSM ANTENNA MOUNTING DETAIL)

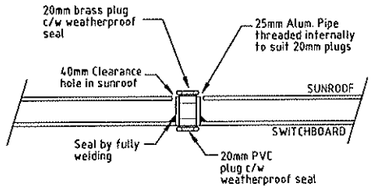


DOOR CLEARANCES



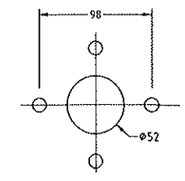
DETAIL N

(AERIAL SUPPORT BRACKET DETAIL)



DETAIL X

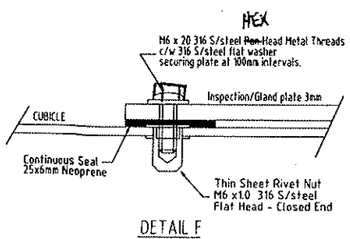
(SMART METERING ANTENNA PLUG DETAIL)



(Fit 3mm neoprene gasket between plinth & flange)
(Fixings 316 s/steel bolts, nuts, flat & spring washers)

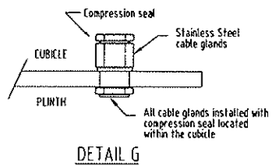
DETAIL P

AERIAL & AREA LIGHTING FLANGE MOUNTING DETAIL
(COMPLETE WITH BLANKING FLANGE IF NO AERIAL FITTED)



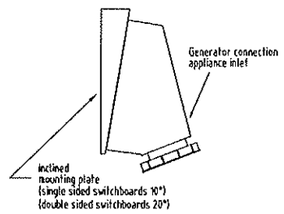
DETAIL F

(GLAND/INSPECTION PLATE FIXING DETAIL)



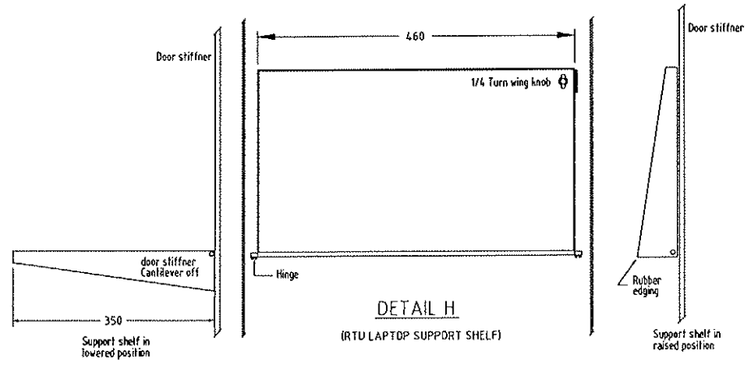
DETAIL G

(CABLE GLAND INSTALLATION DETAIL)



DETAIL D

(INCLINED MOUNTING PLATE DETAIL)



DETAIL H

(RTU LAPTOP SUPPORT SHELF)

Sheet 23

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
0	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED	P.HAGUE	Original Signed by P.HAGUE	6-11-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0297set_A	Original signed by A.WITTHOFT	8895 6-11-12
B.C.C. FILE No.		DESIGN CHECK R.P.E.Q. No.	DATE

PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

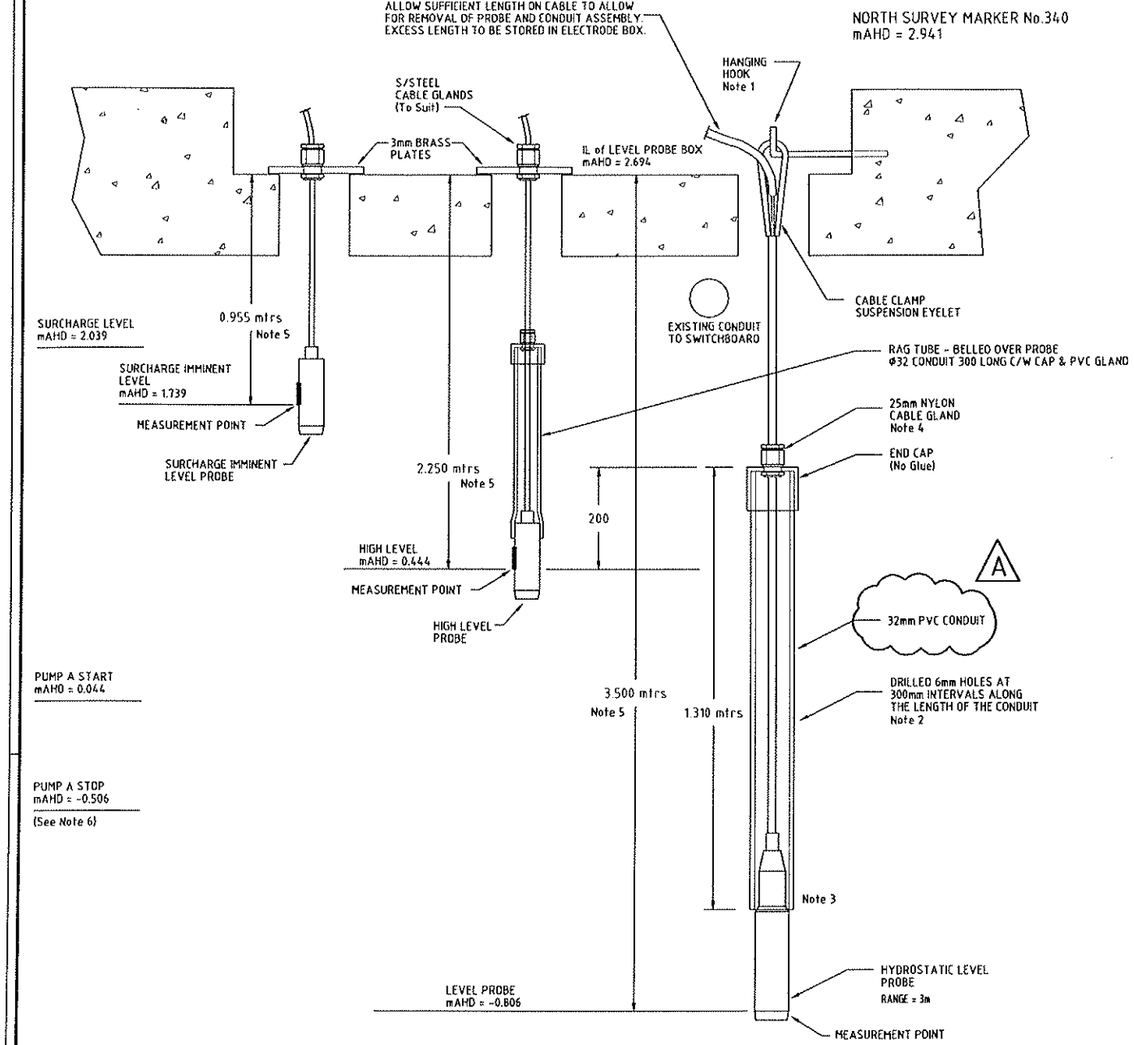
TITLE
SWITCHBOARD
CONSTRUCTION DETAILS
SHEET 3 OF 3

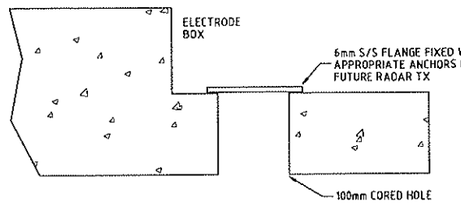
SHEET No. 23
Queensland Urban Utilities DRAWING No. 486/5/7-0297-023
AMEND. A

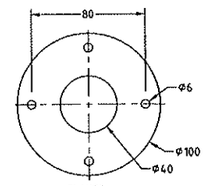
S10 TEMPLATE SP-2F Ver3.2

D:\AA_Major Projects\QUU - SPR111\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

03/04/13



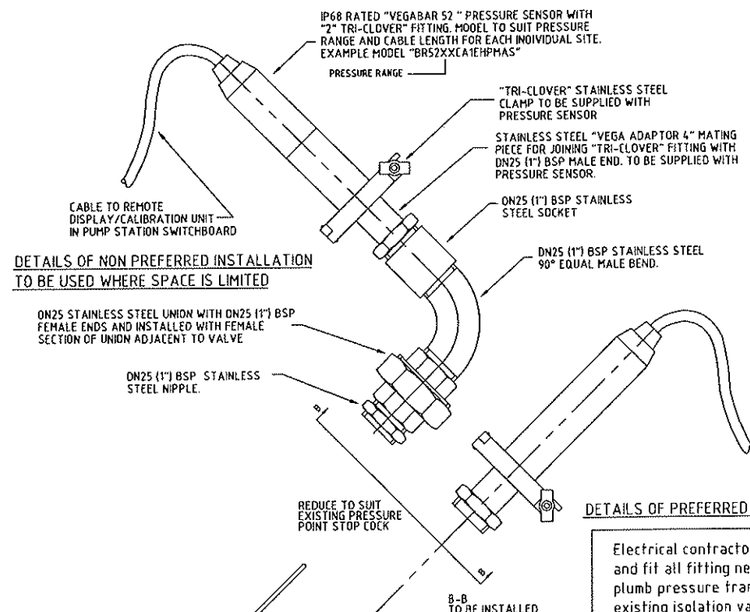




(RADAR TX FLANGE MOUNTING DETAIL)

FLANGE TO FIT IN EXISTING ELECTRODE BOX. TYPICAL WIDTH OF ELECTRODE BOX IS 120mm.

SECONDARY LEVEL TRANSMITTER MOUNTING BRACKET INSTALLATION DETAILS



DETAILS OF NON PREFERRED INSTALLATION TO BE USED WHERE SPACE IS LIMITED

DETAILS OF PREFERRED INSTALLATION

Electrical contractor to supply and fit all fitting necessary to plumb pressure transducer into existing isolation valve.

NOTE, ADDITIONAL FITTINGS MAY BE REQUIRED.

	QTY	MATERIALS LIST
1	1	LENGTH OF HEAVY DUTY ORANGE PVC CONDUIT 40mm
2	1	CONDUIT END CAP
3	2	25mm NYLON CABLE GLAND
4	3	CABLE CLAMP SUSPENSION EYELET

PRIMARY LEVEL PROBE INSTALLATION NOTES

1. Install stainless steel hanging hook for the suspension of the hydrostatic probe.
2. Drill 4 x 6mm holes, 150mm from each end and every 300mm of the cut length, prior to installation.
3. Install so that the conduit rests on the shoulder of the probe. Do not glue the conduit to the end cap.
4. Install a 25mm nylon cable gland. Apply no compression to cable.
5. Measurements are to be taken from bottom of the Level Probe box to 'measurement points' on probes
6. Pump stop level shown on this drawing is 100mm above actual IDTS value. This allows for ramp down of soft starter/VSD

PRESSURE TRANSMITTER INSTALLATION NOTES

1. Material: All stainless steel fittings to be grade 316.
2. Galling: All stainless steel threads to be lubricated with approved anti galling grease and thread tape where applicable.
3. Install as per 'prefered' detail unless space limitations prevents this method.

Sheet 24

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED P.HAGUE
DRAFTING CHECK A.WITTHOFT
CAD FILE 67-0297set_A
B.C.C. FILE No.

Original Signed by P.HAGUE 6-11-12 DESIGN
R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 6-11-12 DESIGN CHECK
R.P.E.Q. No. DATE

PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities — A DIVISION OF THE BRISBANE CITY COUNCIL

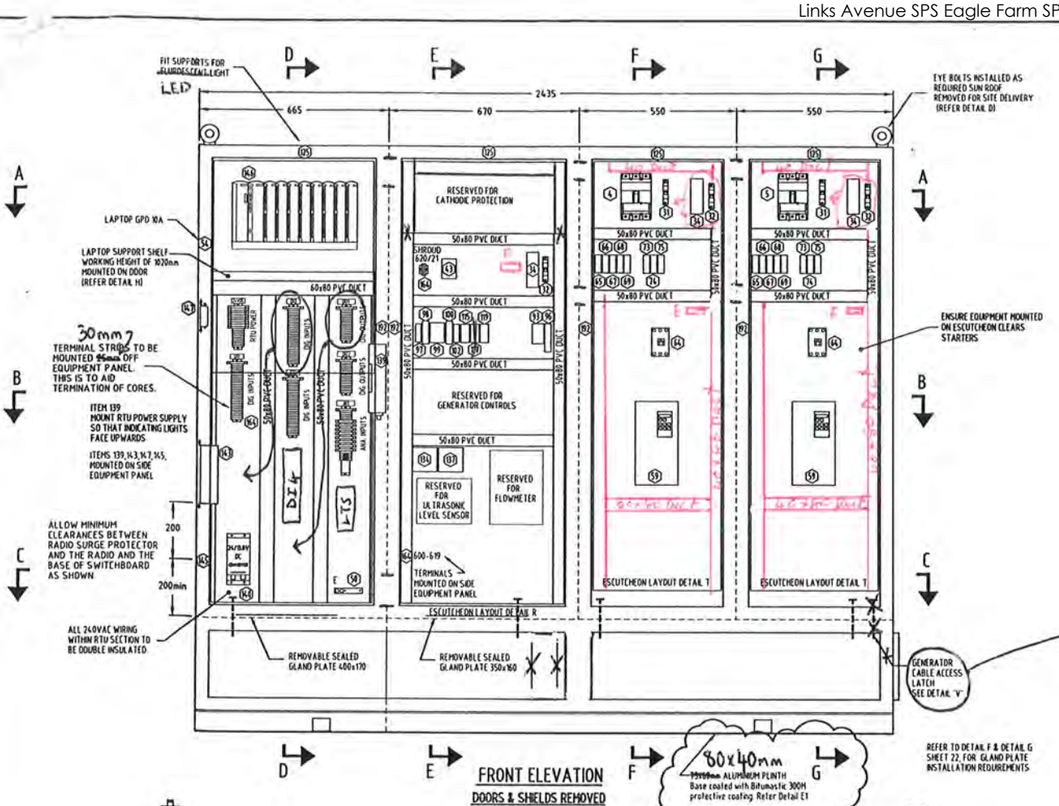
SITE SP143 LINKS AVE SOUTH SEWAGE PUMP STATION

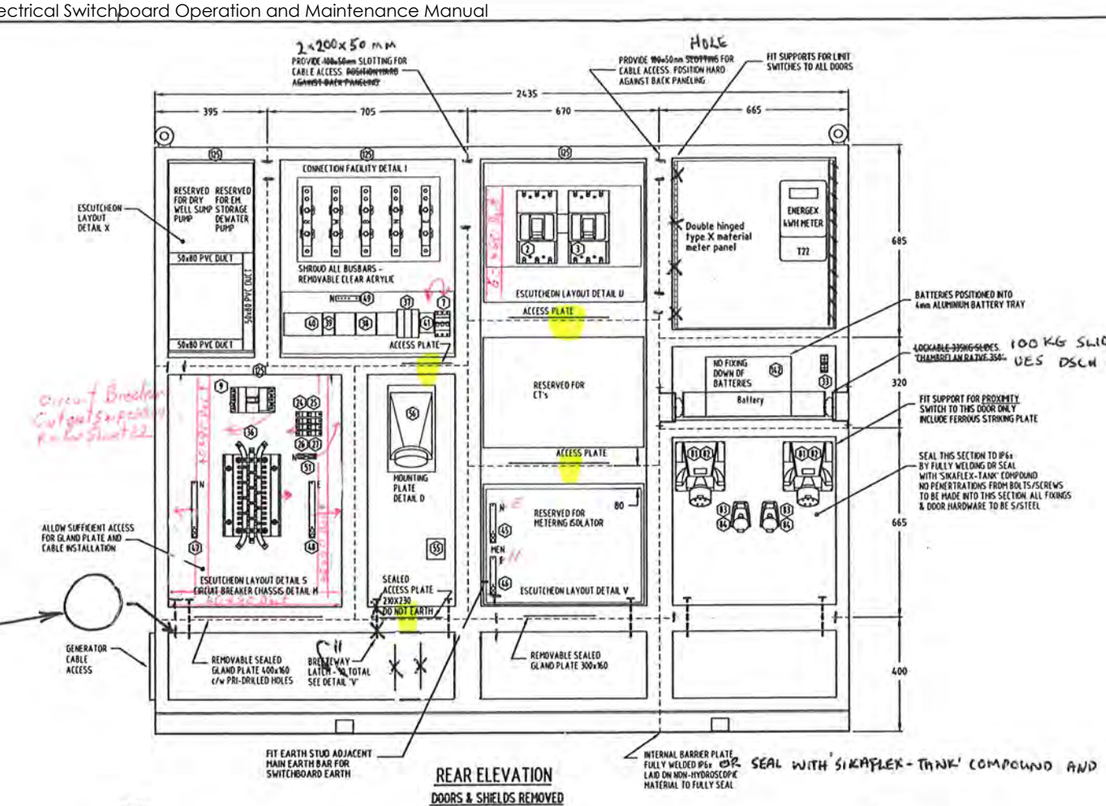
TITLE FIELD INSTRUMENTATION INSTALLATION DETAILS

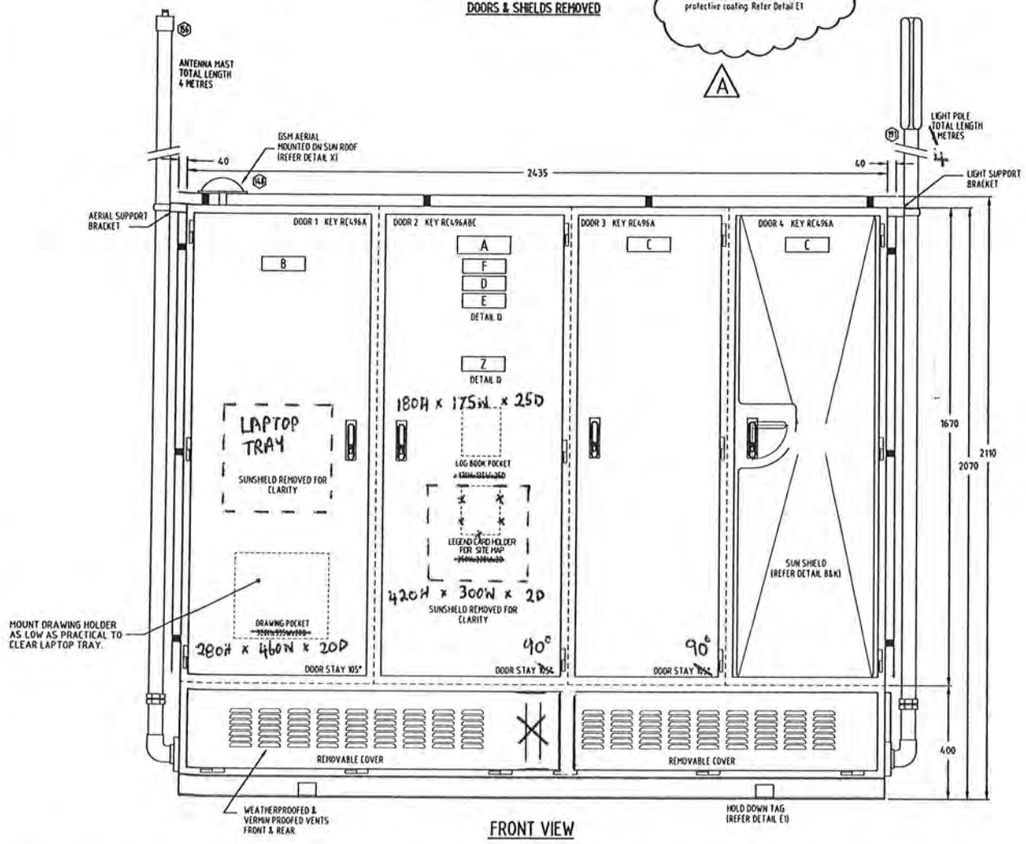
SHEET No. 24
Queensland Urban Utilities DRAWING No. 486/5/7-0297-024
AMEND. A

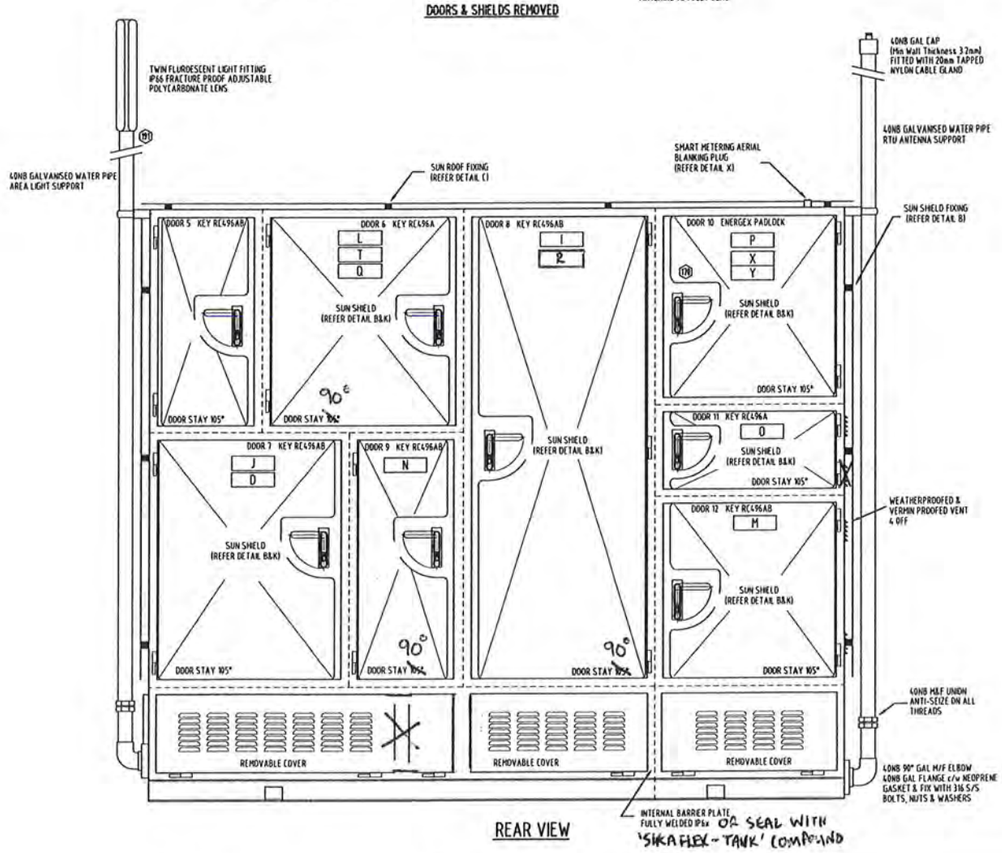
STD TEMPLATE SP-39 Ver32

D:\AA_Major Projects\QUU - SPR111\Packages\Package 11\EISP143 Links Ave South\Drawings\Electrical Drawings\For Construction\67-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM









Sheet 27

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED	P.HAGUE	Original Signed by P.HAGUE	6-11-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0297set_A	Original signed by A.WITTHOFT 8895	6-11-12
B.C.C. FILE No.		DESIGN CHECK R.P.E.Q. No.	DATE

PRINCIPAL DESIGN MANAGER — DATE

CLIENT DELEGATE — DATE

QUEENSLAND UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL

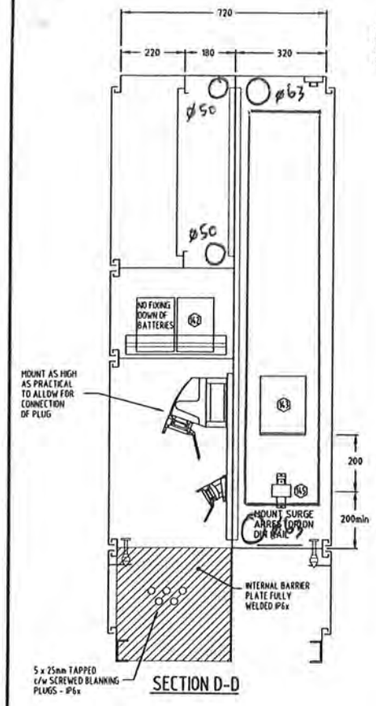
SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

TITLE
SWITCHBOARD
GENERAL ARRANGEMENT
ELEVATIONS

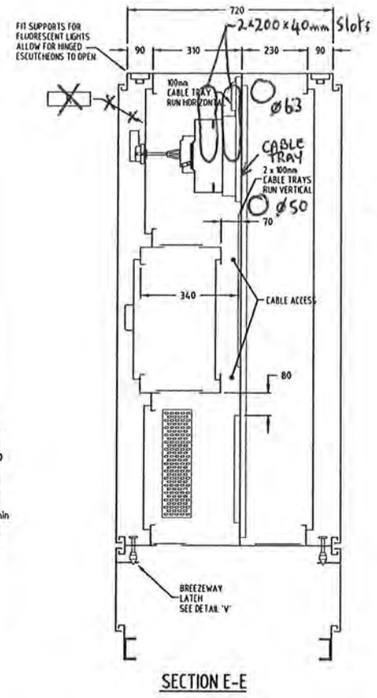
SHEET No. 27

Queensland Urban Utilities DRAWING No. 486/5/7-0297-027

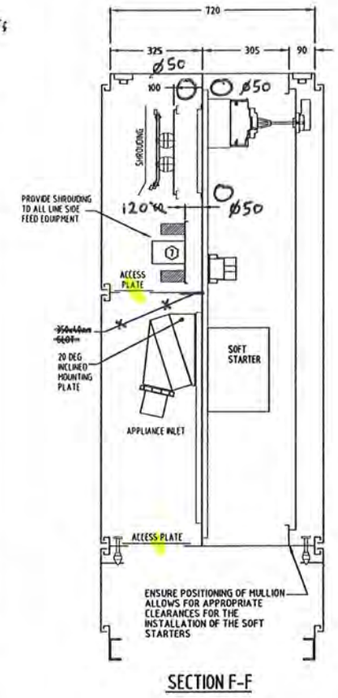
AMEND. A



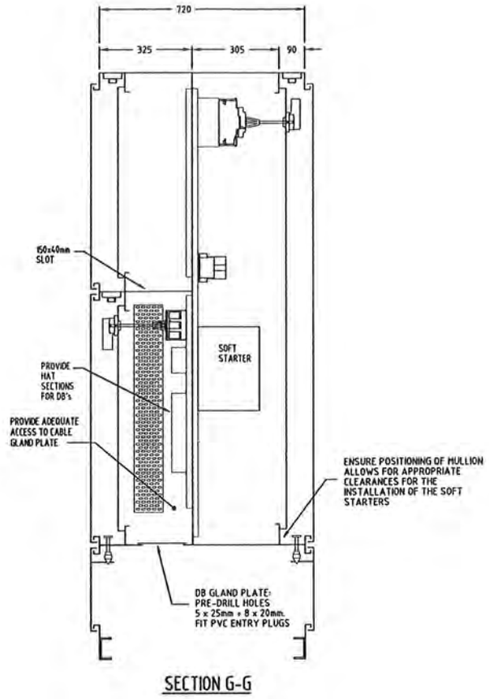
SECTION D-D



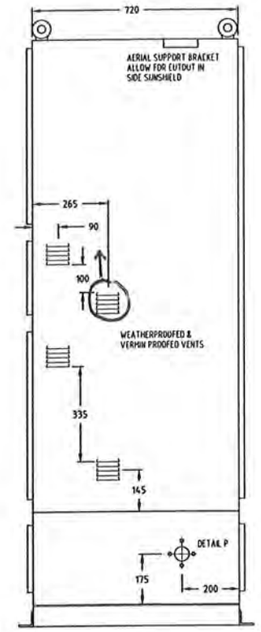
SECTION E-E



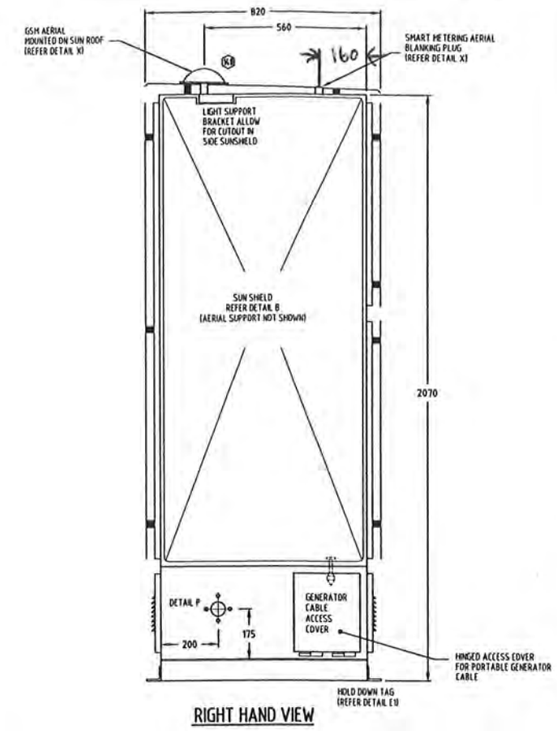
SECTION F-F



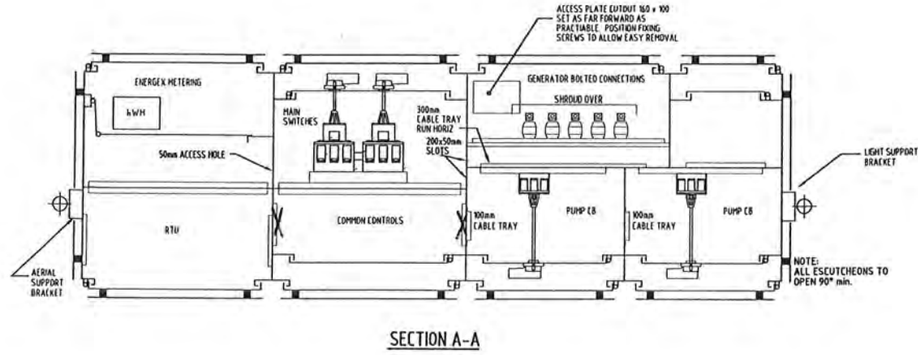
SECTION G-G



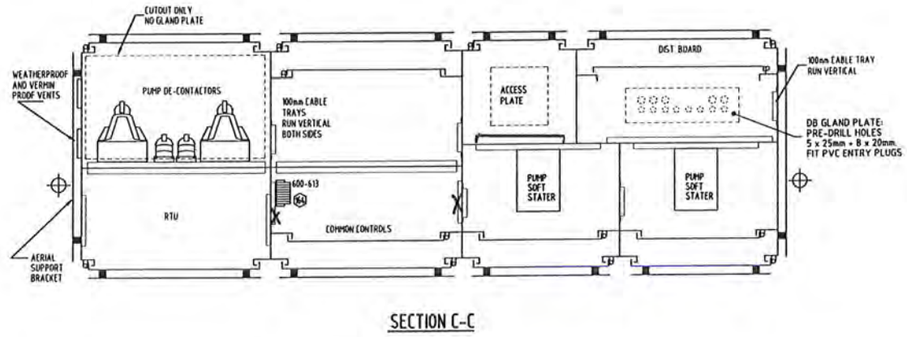
LEFT HAND ELEVATION
SHIELDS REMOVED



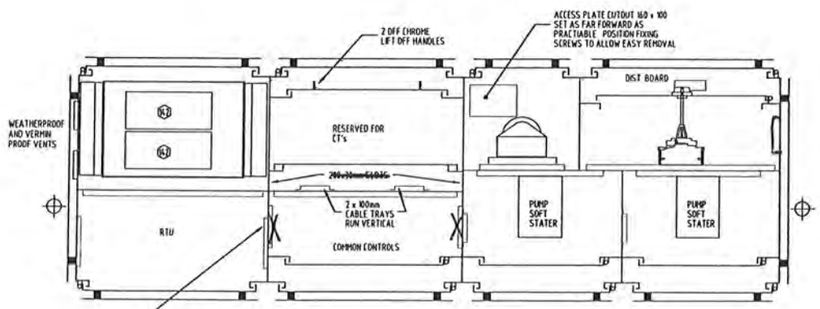
RIGHT HAND VIEW



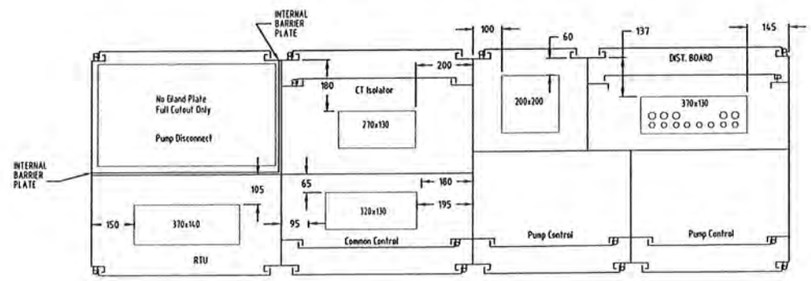
SECTION A-A



SECTION C-C



SECTION B-B



GLAND/INSPECTION PLATE CUTOUTS

Sheet 28

FOR CONSTRUCTION

A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.	DRAFTED	P.HAGUE	Original Signed by P.HAGUE		6-11-12	.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.	DRAFTING CHECK	A.WITTHOFT	DESIGN	R.P.E.Q. No.	DATE	PRINCIPAL DESIGN MANAGER DATE
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.	CAD FILE	57-0297set_A	Original signed by A.WITTHOFT	8895	6-11-12	.
No	DATE	AMENDMENT	DRN.	APD.	B.C.C. FILE No.		DESIGN CHECK	R.P.E.Q. No.	DATE	CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

TITLE
SWITCHBOARD
GENERAL ARRANGEMENT
SECTIONS

SHEET No. 28

Queensland Urban Utilities DRAWING No. 486/5/7-0297-028

AMEND. A

QUEENSLAND Urban Utilities

SP143 LINKS AVE SOUTH SEWAGE PUMPING STATION

SITE COVER SHEET

POINT TO POINT TEST
J & P RICHARDSON IND.
NAME:_____LICENCE: 756
DATE:_____
SIGNATURE:_____

ELECTRICAL DRAWINGS INDEX

DWG N°.	TITLE	SHEET	REVISIONS
486/5/7-0297-000	SITE COVER SHEET	00	P1 O A
486/5/7-0297-001	POWER DISTRIBUTION SCHEMATIC DIAGRAM	01	P1 O A
486/5/7-0297-002	PUMP 01 SCHEMATIC DIAGRAM	02	P1 O A
486/5/7-0297-003	PUMP 02 SCHEMATIC DIAGRAM	03	P1 O A
486/5/7-0297-004	*RESERVED FOR PUMP 03 SCHEMATIC DIAGRAM*	04	
486/5/7-0297-005	*RESERVED (DRY WELL SUMP & EM STORAGE DEWATEING PUMP)*	05	
486/5/7-0297-006	*RESERVED (GENERATOR CONTROL)*	06	
486/5/7-0297-007	COMMON CONTROLS SCHEMATIC DIAGRAM	07	P1 O A
486/5/7-0297-008	COMMON RTU I/O SCHEMATIC DIAGRAM	08	P1 O A
486/5/7-0297-009	RTU POWER DISTRIBUTION SCHEMATIC DIAGRAM	09	P1 O A
486/5/7-0297-010	RTU DIGITAL INPUTS TERMINATION DIAGRAM - SHEET 1 OF 3	10	P1 O A
486/5/7-0297-011	RTU DIGITAL INPUTS TERMINATION DIAGRAM - SHEET 2 OF 3	11	P1 O A
486/5/7-0297-012	RTU DIGITAL INPUTS TERMINATION DIAGRAM - SHEET 3 OF 3	12	P1 O A
486/5/7-0297-013	RTU DIGITAL OUTPUTS TERMINATION DIAGRAM - SHEET 1 OF 2	13	P1 O A
486/5/7-0297-014	RTU DIGITAL OUTPUTS TERMINATION DIAGRAM - SHEET 2 OF 2	14	P1 O A
486/5/7-0297-015	RTU ANALOG INPUTS TERMINATION DIAGRAM	15	P1 O A
486/5/7-0297-016	RTU ANALOG OUTPUTS TERMINATION DIAGRAM	16	P1 O A
486/5/7-0297-017	COMMON CONTROLS TERMINATION DIAGRAM	17	P1 O A
486/5/7-0297-018	EQUIPMENT LIST	18	P1 O A
486/5/7-0297-019	CABLE SCHEDULE	19	P1 O A
486/5/7-0297-020	SWITCHBOARD LABEL SCHEDULE	20	P1 O A
486/5/7-0297-021	SWITCHBOARD CONSTRUCTION DETAILS - SHEET 1 of 3	21	P1 O A
486/5/7-0297-022	SWITCHBOARD CONSTRUCTION DETAILS - SHEET 2 of 3	22	P1 O A
486/5/7-0297-023	SWITCHBOARD CONSTRUCTION DETAILS - SHEET 3 of 3	23	P1 O A
486/5/7-0297-024	FIELD INSTRUMENTATION - INSTALLATION DETAILS	24	P1 O A
486/5/7-0297-025	*RESERVED (CATHODIC PROTECTION UNIT)*	25	
486/5/7-0297-026	*RESERVED (FIELD DISCONNECTION BOX)*	26	
486/5/7-0297-027	SWBD GENERAL ARRANGEMENT ELEVATIONS	27	P1 O A
486/5/7-0297-028	SWBD GENERAL ARRANGEMENT SECTIONS	28	P1 O A
486/5/7-0297-029	*RESERVED (GENERATOR EXTERNAL CONNECTION BOX)*	29	
486/5/7-0297-030	SWITCHBOARD SLAB - LOCALITY AND SITE PLANS - SHEET 1 of 3	30	P1 O A
486/5/7-0297-031	SWITCHBOARD SLAB AND CONDUIT DETAILS - SHEET 2 of 3	31	P1 O A
486/5/7-0297-032	SWITCHBOARD AND ELECTRICAL CONDUIT LAYOUT - SHEET 3 of 3	32	P1 O A

STANDARD VARIABLES

DESCRIPTION	VALUES
CT METERING ISOLATOR	*NOT APPLICABLE*
NORMAL SUPPLY MAIN SWITCH	125A S250PE/125
GENERATOR SUPPLY MAIN SWITCH	125A S250PE/125
PUMP1 CIRCUIT BREAKER	20A S125GJ/20
PUMP2 CIRCUIT BREAKER	20A S125GJ/20
DRY WELL SUMP PUMP CIRCUIT BREAKER	*NOT APPLICABLE*
EM STORAGE DEWATERING PUMP CCT BREAKER	*NOT APPLICABLE*
PUMP SOFT STARTER SIZE	MCD5-0021B + 17
PUMP RATING	4.6kW 10A
PUMP LINE CONTACTOR	CA7-30
DRY WELL SUMP PUMP RATING	*NOT APPLICABLE*
DRY WELL SUMP PUMP CONTACTOR & TOL	*NOT APPLICABLE*
PUMP SOCKET OUTLET + INCLINE SLEEVE	DS1 3114013972 + 51BA058
PUMP INLET PLUG + HANDLE	DS1 3118013972 + 311A013
WET WELL LEVEL TRANSMITTER	WLS2XXA4ALD1DD1X 3m
EMERGENCY STORAGE WELL LEVEL TRANSMITTER	*NOT APPLICABLE*
EM STORAGE DEWATERING PUMP RATING	*NOT APPLICABLE*
EM STORAGE DEWATERING PUMP CONTR & TOL	*NOT APPLICABLE*
FLOWMETER RANGE	*NOT APPLICABLE*
WET WELL ULTRASONIC LEVEL SENSOR	*NOT APPLICABLE*
DELIVERY PRESSURE TRANSMITTER	BRS2XXCA1EHPMAS L=12 20m
RADIO	DR900-07A02-D0
EMERGENCY PUMPING TIME	0 7 2sec
No of SINGLE POINT PROBES	2
INCOMING MAINS SUPPLY CABLE	16mm^2
MAIN EARTHING CABLE	6mm^2
INCOMING GENERATOR SUPPLY CABLE	*NOT APPLICABLE*
SOFT STARTER 3 PHASE SUPPLY	6mm^2

STANDARD DESIGN OPTIONS

OPTION	DESCRIPTION	FITTED
A	*INDIVIDUAL PUMP MOISTURE IN OIL (MIO) SENSOR AND FAULT RELAY*	NO
B	*INDIVIDUAL PUMP MOTOR AUX PROTECTION SENSORS AND FAULT RELAYS*	NO
C	*INDIVIDUAL PUMP REFLUX VALVE POSITION SWITCH*	NO
D	*STATION MANHOLE SURCHARGE IMMINENT*	NO
E	*STATION DRY WELL SUMP PUMP AND LEVEL INDICATION SENSORS AND RELAYS*	NO
F	*PERMANENT GENERATOR INSTALLED*	NO
G	*STATION EMERGENCY STORAGE LEVEL SENSOR & DEWATERING PUMP*	NO
H	*STATION DELIVERY FLOWMETER*	NO
I	BACKUP COMMUNICATION - GSM	YES
J	PUMP CONNECTION (Via De-contactors)	YES
K	*CATHODIC PROTECTION*	NO
L	MOTOR THERMISTORS (Via De-contactors)	YES
M	*ODOUR CONTROL*	NO
N	DIRECT CONNECTED METERING	YES
O	*PUMPS ELECTRICAL INTERLOCK*	NO
P	*WET WELL WASHER*	NO
Q	*AUX PIT SUMP PUMP AND LEVEL PROBE*	NO
R	TELEMETRY RADIO	YES
S	*WET WELL SECONDARY LEVEL SENSOR*	NO
T	WET WELL PRIMARY LEVEL SENSOR (Direct Connected)	YES
U	DELIVERY PRESSURE TRANSMITTER (Direct Connected)	YES
V	*CHEMICAL DOSING*	NO
W	PUMP START METHOD - SOFT STARTER	YES
X	*3rd PUMP INSTALLED*	NO
Y	*POWER METER*	NO

TEST
"ISSUED FOR CONSTRUCTION" S97
SIGN R.B M63000 4/4/13

Sheet 00

FOR CONSTRUCTION

A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.	DRAFTED	P.HAGUE	
O	11.12	ISSUED FOR TENDER	P.H.	A.W.	DRAFTING CHECK	A.WITTHOFT	
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.	CAD FILE	57-0297set_A	
No	DATE	AMENDMENT	DRN.	APD.	B.C.C. FILE No.		

Original Signed by P.HAGUE 6-11-12
DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 6-11-12
DESIGN CHECK R.P.E.Q. No. DATE

PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

QUEENSLAND Urban Utilities
A DIVISION OF THE BRISBANE CITY COUNCIL

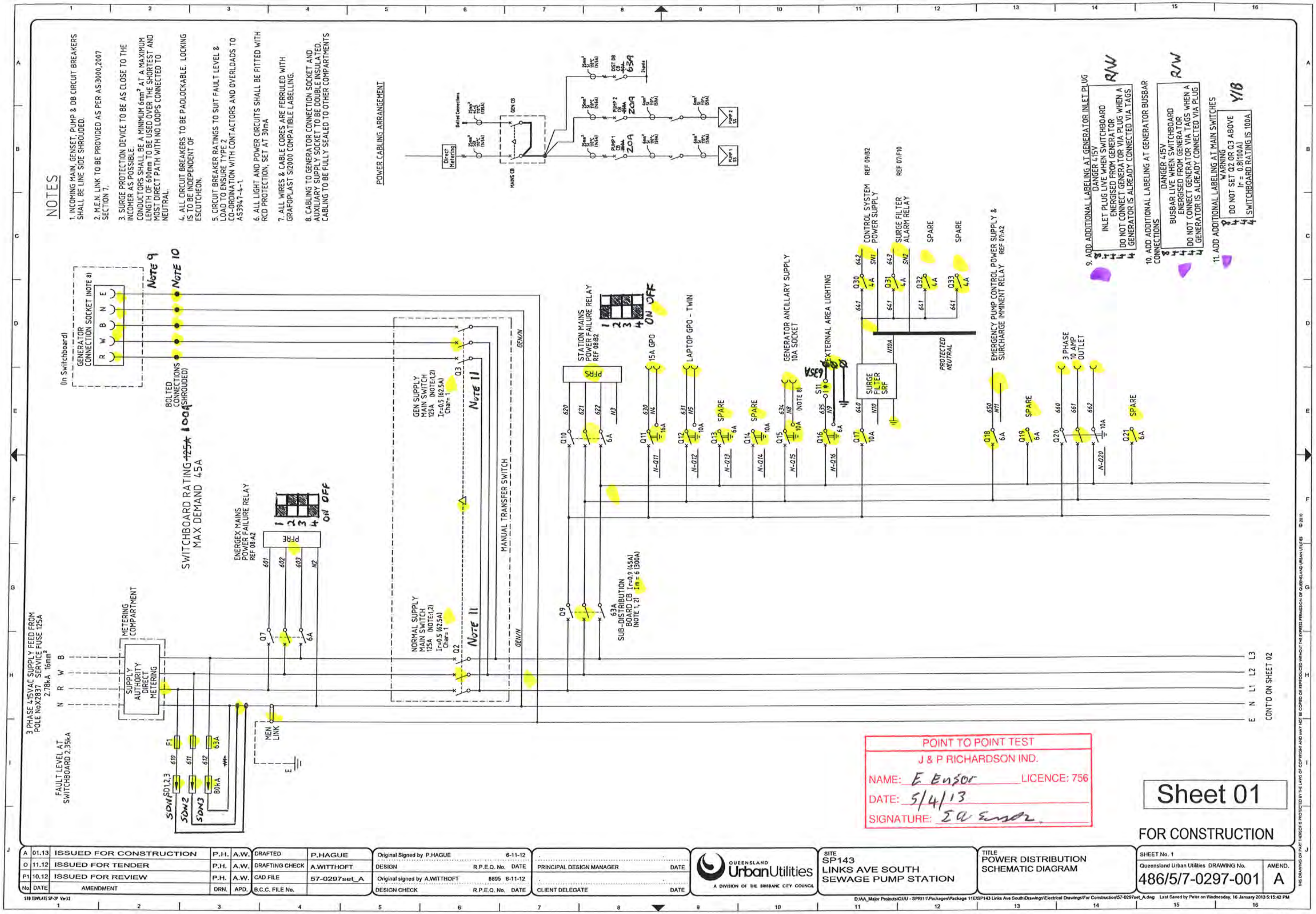
SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

TITLE
SITE COVER SHEET

SHEET No. 0
Queensland Urban Utilities DRAWING No. 486/5/7-0297-000
AMEND. A

STD TEMPLATE SP-JP Ver32

D:\AA_Major Projects\QUU - SPR111\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM


NOTES
1. INCOMING MAIN, GENSET, PUMP & DB CIRCUIT BREAKERS SHALL BE LINE SIDE SHROUDED.
2. M.E.N. LINK TO BE PROVIDED AS PER AS:3000,2007 SECTION 7.
3. SURGE PROTECTION DEVICE TO BE AS CLOSE TO THE INCOMER AS POSSIBLE. CONDUCTORS SHALL BE A MINIMUM 6mm² AT A MAXIMUM LENGTH OF 600mm TO BE USED OVER THE SHORTEST AND MOST DIRECT PATH WITH NO LOOPS CONNECTED TO NEUTRAL.
4. ALL CIRCUIT BREAKERS TO BE PADLOCKABLE. LOCKING IS TO BE INDEPENDENT OF ESCUTCHEON.
5. CIRCUIT BREAKER RATINGS TO SUIT FAULT LEVEL & LOAD TO ENSURE TYPE 2 CO-ORDINATION WITH CONTACTORS AND OVERLOADS TO AS3947-4-1.
6. ALL LIGHT AND POWER CIRCUITS SHALL BE FITTED WITH RCD PROTECTION, SET AT 30mA
7. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.
8. CABLING TO GENERATOR CONNECTION SOCKET AND AUXILIARY SUPPLY SOCKET TO BE DOUBLE INSULATED. CABLING TO BE FULLY SEALED TO OTHER COMPARTMENTS
POWER CABLING ARRANGEMENT
9. ADD ADDITIONAL LABELING AT GENERATOR INLET PLUG
DANGER 415V
INLET PLUG LIVE WHEN SWITCHBOARD ENERGISED FROM GENERATOR
DO NOT CONNECT GENERATOR VIA PLUG WHEN A GENERATOR IS ALREADY CONNECTED VIA TAGS
R/W
10. ADD ADDITIONAL LABELING AT GENERATOR BUSBAR CONNECTIONS
DANGER 415V
BUSBAR LIVE WHEN SWITCHBOARD ENERGISED FROM GENERATOR
DO NOT CONNECT GENERATOR VIA TAGS WHEN A GENERATOR IS ALREADY CONNECTED VIA PLUG
R/W
11. ADD ADDITIONAL LABELING AT MAIN SWITCHES
WARNING
DO NOT SET Q2 OR Q3 ABOVE
Ir = 0.8(100A)
SWITCHBOARD RATING IS 100A
Y/B
(In Switchboard)
GENERATOR CONNECTION SOCKET (NOTE 8)
NOTE 9
NOTE 10
BOLTED CONNECTIONS (SHROUDED)
SWITCHBOARD RATING 125A 100A
MAX DEMAND 45A
ENERGEX MAINS POWER FAILURE RELAY REF 08:A2
PFRE
ON OFF
GEN SUPPLY MAIN SWITCH 125A (NOTE:1,2) Ir=0.5 (62.5A) Char=1
NORMAL SUPPLY MAIN SWITCH 125A (NOTE:1,2) Ir=0.5 (62.5A) Char=1
NOTE 11
MANUAL TRANSFER SWITCH
GEN/N
STATION MAINS POWER FAILURE RELAY REF 08:B2
PFRS
63A SUB-DISTRIBUTION BOARD CB Ir=0.9 (45A) Im = 6 (300A) (NOTE 1, 2)
15A GPO
LAPTOP GPO - TWIN
SPARE
GENERATOR ANCILLARY SUPPLY 10A SOCKET
EXTERNAL AREA LIGHTING
SURGE FILTER SRF
CONTROL SYSTEM POWER SUPPLY REF 09:B2
SURGE FILTER ALARM RELAY REF 07:F10
PROTECTED NEUTRAL
EMERGENCY PUMP CONTROL POWER SUPPLY & SURCHARGE IMMINENT RELAY REF 07:A2
3 PHASE 10 AMP OUTLET
3 PHASE 415VAC SUPPLY FEED FROM POLE NoX2837 SERVICE FUSE 125A 2.78kA 16mm²
METERING COMPARTMENT
SUPPLY AUTHORITY DIRECT METERING
FAULT LEVEL AT SWITCHBOARD 2.35kA
MEN LINK
CONT'D ON SHEET 02
Direct Metering
MAINS CB
GEN CB
PUMP 1 CB 20A
PUMP 2 CB 20A
DIST DB CB 63A
POINT TO POINT TEST
J & P RICHARDSON IND.
NAME: E Ensor LICENCE: 756
DATE: 5/4/13
SIGNATURE: E a Ensor
Sheet 01
FOR CONSTRUCTION
A 01.13 ISSUED FOR CONSTRUCTION P.H. A.W.
O 11.12 ISSUED FOR TENDER P.H. A.W.
P1 10.12 ISSUED FOR REVIEW P.H. A.W.
No DATE AMENDMENT DRN. APD.
DRAFTED P.HAGUE
DRAFTING CHECK A.WITTHOFT
CAD FILE 57-0297set_A
B.C.C. FILE No.
Original Signed by P.HAGUE 6-11-12
DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 6-11-12
DESIGN CHECK R.P.E.Q. No. DATE
PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE
QUEENSLAND UrbanUtilities A DIVISION OF THE BRISBANE CITY COUNCIL
SITE SP143 LINKS AVE SOUTH SEWAGE PUMP STATION
TITLE POWER DISTRIBUTION SCHEMATIC DIAGRAM
SHEET No. 1
Queensland Urban Utilities DRAWING No. 486/5/7-0297-001
AMEND. A
03-04-13

CONT'D FROM SHEET 01

E N R W B

Q4 20A
Ir=0.63 (12.5A)
Im= 6 (120A)
Note 1

1K1

Q4-1 4A

10N 10

PS-P1 5A 24VDC
PUMP 1 POWER SUPPLY

100- 100

QD4 10A

101

DANFOSS MCD5-0021B + MODBUS
Rated I Medium Duty 17A
SOFT STARTER 2U1

L1 L2 L3 T1 T2 T3 PE 5 6

130 131

DE-CONTACTORS

M ~3 SUBMERSIBLE PUMP No1 4.6kW 10AMPS

MOTOR THERMISTORS

AUX PLUG

KEYPAD

1K6 113 17 RUN
112 18 +24V
1K21 114 25 RESET
1K4 115 11 E.STOP
116 15
116 16 +24V

A

101 A5 A6 100-

FAULT 101 21 24 109 1K3 STARTER FAULT RELAY REF 02:C12
OPERATE 104 13 14 110 1K1 LINE CONTACTOR REF 02:A3
RUN 104 33 34 111 1K2 STARTER RUNNING RELAY REF 02:C13

HRM1 100- HOURS RUN METER

MODBUS MODULE
B6 B8 B7

Set terminating switch to 'OFF'

RS485+ RS485- Cable 16 FROM RTU REF 09:F12

RS485A+ RS485A- Cable 17 TO SOFT STARTER 2 REF 03:E7

A

101 1S3 E/STOP 104 104 1K4 E.STOP RELAY REF 02:C5, F3, B13

1S5 EM.START OFF ON

101 1K4 105 1K20 EMG1 REF 07:B5 107 1K6 RUN RELAY REF 02:B5

101 101 1K5 CONTROL CCT 'POWER ON' RELAY REF 02:B12

101 OFF ON 1S5 EM.START 108 1H5 EMERGENCY PUMP MODE SELECTED

100-

CONT'D ON SHEET 03

RTU DIGITAL INPUTS

+ 24VDC POWER SUPPLY - REFER SHEET 09:C7

R0S2+ R0S2 2A J6+ J6- R0S2- R0S2- COM

DI01+	1K5	DI01	DI01	CONTROL POWER
DI02+	1S1	DI02	DI02	START PUSHBUTTON
DI03+	1S2	DI03	DI03	STOP PUSHBUTTON
DI04+	1K4	DI04	DI04	E.STOP RELAY HEALTHY
DI05+	1S4	DI05	DI05	RESET PUSHBUTTON
DI06+	1K2	DI06	DI06	RUNNING
DI07+	1K3	DI07	DI07	STARTER FAULT
		DI08	DI08	SPARE
		DI09	DI09	SPARE
		DI10	DI10	SPARE

R0S2-

RTU DIGITAL OUTPUTS

+ 24VDC POWER SUPPLY - REFER SHEET 09:C7

R0S6+ R0S6 2A J6+ J6- R0S6-

DO01+	DO01	DO01	1K20	DO01-	RUN COMMAND REF 02:F4
DO02+	DO02	DO02	1K21	DO02-	FAULT RESET REF 02:C3
DO03+	DO03	DO03	1K22	DO03-	EMERGENCY MODE INTERRUPT REF 07: B3
DO04+	DO04	DO04			SPARE

2 C 1 NO; 4 C 3 NO; 6 C 5 NO; 8 C 7 NO

POINT TO POINT TEST
J & P RICHARDSON IND.
NAME: E Enfor LICENCE: 756
DATE: 5/4/13
SIGNATURE: E A Enfor.

LEGEND:
- RTU MARSH. CCT BREAKER TERM
- RTU MARSH. LINK TERMINAL
- SWITCHBOARD CONTROL TERM.
- SWITCHBOARD GENERATOR TERM.
- FIELD TERMINAL
- RTU TERMINAL
- SS TERMINAL
- DI01 DIGITAL INPUT
- DO01 DIGITAL OUTPUT
- AI01 ANALOG INPUT
- AO01 ANALOG OUTPUT

NOTES

1. INCOMING GENSET, MAIN, PUMP & DIST. BOARD CIRCUIT BREAKERS SHALL BE LINE SIDE SHROUDED.
2. CIRCUIT BREAKER RATINGS TO SUIT FAULT LEVEL & LOAD ENSURE MIN TYPE 1 CO-ORDINATION WITH CONTACTORS & OVERLOADS TO IEC 947-4-1.
3. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.
4. FAULT LEVEL OF 20kA AT 415V FOR 0.2sec.

Sheet 02

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED	P.HAGUE	Original Signed by P.HAGUE	6-11-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0297set_A	Original signed by A.WITTHOFT 8895	6-11-12
B.C.C. FILE No.		DESIGN CHECK R.P.E.Q. No.	DATE
		PRINCIPAL DESIGN MANAGER	DATE
		CLIENT DELEGATE	DATE

QUEENSLAND UrbanUtilities — A DIVISION OF THE BRISBANE CITY COUNCIL

SITE: SP143 LINKS AVE SOUTH SEWAGE PUMP STATION

TITLE: PUMP No1 SCHEMATIC DIAGRAM

SHEET No. 2

Queensland Urban Utilities DRAWING No. 486/5/7-0297-002 AMEND. A

D:\WA_Major Projects\QUU - SPRII1\Packages\Package 11\E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

03-04-13

CONT'D FROM SHEET 02

E N R W B

Q5 20A
Ir=0.63 (12.5A)
Im= 6 (120A)
Note 1

2K1

Q5-1 4A

20N

PS-P2 5A 24VDC
PUMP 2 POWER SUPPLY

200- 200

QD5 10A

201

DANFOSS MCD5-0021B + MODBUS
Rated I Medium Duty 17A
SOFT STARTER 2U1

L1 L2 L3 PE T1 T2 T3

5 6 230 231

2K6 213 17 RUN
212 18 +24V
2K21 214 25 RESET
2K4 215 11 E.STOP
216 15
216 16 +24V

KEYPAD

201 A5 A6 200-

201 21 FAULT 24 209 2K3 STARTER FAULT RELAY REF 03:C12
204 13 OPERATE 14 210 2K1 LINE CONTACTOR REF 03:A3
204 33 RUN 34 211 2K2 STARTER RUNNING RELAY REF 03:C13

HRM2 200- HOURS RUN METER

MODBUS MODULE B6 B8 B7

Set terminating switch to 'ON'

RS485A+ (White/Blue)
RS485A- (Blue/white)
Cable 17
FROM SOFT STARTER 1 REF 02:E7

DE-CONTACTORS

M 3~ SUBMERSIBLE PUMP No2 4.6kW 10AMPS

MOTOR THERMISTORS

AUX PLUG 1 2

A

201 2S3 E/STOP 204 204 2K4 E.STOP RELAY REF 03:C5, F3, B13

201 2K4 205 2S5 EM.START OFF ON 2K20 EMG2 REF 07:B5 207 2K6 RUN RELAY REF 03:B5

201 201 2K5 CONTROL CCT 'POWER ON' RELAY REF 03:B12

201 OFF ON 2S5 EM.START 208 2H5 EMERGENCY PUMP MODE SELECTED

200-

CONT'D ON SHEET 04

RTU DIGITAL INPUTS

+ 24VDC POWER SUPPLY - REFER SHEET 09:C7

R0S3 J6+ 2A J6- R0S3 R0S3+ R0S3- COM

DI17+	2K5	DI17	CONTROL POWER
DI18+	2S1	DI18	START PUSHBUTTON
DI19+	2S2	DI19	STOP PUSHBUTTON
DI20+	2K4	DI20	E.STOP RELAY HEALTHY
DI21+	2S4	DI21	RESET PUSHBUTTON
DI22+	2K2	DI22	RUNNING
DI23+	2K3	DI23	STARTER FAULT
		DI24	SPARE
		DI25	SPARE
		DI26	SPARE

R0S3- 26

RTU DIGITAL OUTPUTS

+ 24VDC POWER SUPPLY - REFER SHEET 09:C7

R0S7+ R0S7 2A J6+ J6- R0S7- R0S7

DO17+	DO17	2K20	DO17-	RUN COMMAND REF 03:F4
DO18+	DO18	2K21	DO18-	FAULT RESET REF 03:C3
DO19+	DO19	2K22	DO19-	EMERGENCY MODE INTERRUPT REF 07: C3
DO20+	DO20			SPARE

NOTES

1. INCOMING GENSET, MAIN, PUMP & DIST. BOARD CIRCUIT BREAKERS SHALL BE LINE SIDE SHROUDED.
2. CIRCUIT BREAKER RATINGS TO SUIT FAULT LEVEL & LOAD ENSURE MIN TYPE 1 CO-ORDINATION WITH CONTACTORS & OVERLOADS TO IEC 947-4-1.
3. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.
4. FAULT LEVEL OF 20kA AT 415V FOR 0.2sec.

LEGEND:
- ⊗ RTU MARSH. CCT BREAKER TERM
- ○ RTU MARSH. LINK TERMINAL
- ⌀ SWITCHBOARD CONTROL TERM.
- □ SWITCHBOARD GENERATOR TERM.
- ✖ FIELD TERMINAL
- ◪ RTU TERMINAL
- ■ SS TERMINAL
- DI01 DIGITAL INPUT
- DO01 DIGITAL OUTPUT
- AI01 ANALOG INPUT
- AO01 ANALOG OUTPUT

POINT TO POINT TEST
J & P RICHARDSON IND.
NAME: E Enslor LICENCE: 756
DATE: 8/4/13
SIGNATURE: E Enslor

Sheet 03
FOR CONSTRUCTION

A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.	DRAFTED	P.HAGUE	Original Signed by P.HAGUE	6-11-12	
O	11.12	ISSUED FOR TENDER	P.H.	A.W.	DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE	PRINCIPAL DESIGN MANAGER DATE
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.	CAD FILE	57-0297set_A	Original signed by A.WITTHOFT	8895 6-11-12	
No	DATE	AMENDMENT	DRN.	APD.	B.C.C. FILE No.		DESIGN CHECK	R.P.E.Q. No. DATE	CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities A DIVISION OF THE BRISBANE CITY COUNCIL

SITE: SP143 LINKS AVE SOUTH SEWAGE PUMP STATION

TITLE: PUMP No2 SCHEMATIC DIAGRAM

SHEET No. 3

Queensland Urban Utilities DRAWING No. 486/5/7-0297-003 AMEND. A

D:\AA_Major Projects\QUU - SPR111\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

STD TEMPLATE SP-3P Ver3.2

03-04-13

COMMON CONTROL SECTION

EMERGENCY PUMPING MODE (24VDC)

240VAC FILTERED SUPPLY Q18 REF 01:E13

5A 24VDC PS3

QD18 5A

SIR-1

SIDT 20SEC — SURCHARGE IMMINENT ON DELAY TIMER REF 07:B4, 08:B2

SIDT (Set @ 80% of RTU pumping time) — EMGDT — EMERGENCY PUMPING MODE OFF DELAY TIMER REF 07:C2

EMGDT — EMGDTA — EMERGENCY PUMPING MODE AUX RELAY REF 07:C2, 08:D2

EMGDTA — 1K22 REF 02:E14 — EMG1 — EMERGENCY PUMPING MODE PUMP 1 REF 02:F4

2K22 REF 03:E14 — EMG2 12SEC — EMERGENCY PUMPING MODE PUMP 2 ON DELAY TIMER REF 03:F4

EMGDT - SETTINGS

MODE	RANGE
TIME SET	
D	0 7 2 S

TIMING DIAGRAM

SIDT	SURCHARGE IMMINENT ACTIVE
SIDT CONTACT 1	ON DELAY (t1), ACTIVATE EM. PUMPING MODE
SIDT CONTACT 2	INSTANTANEOUS, ACTIVATE PLC INPUT
EMGDT TRIGGER (6)	EMERGENCY PUMPING MODE ACTIVE
EMGDT CONTACT	EM. PUMP MODE STARTED, DELAY OFF (t2) IS PUMP RUN ON TIME. T2= 80% OF SURCHARGE PUMPUNG TIME DEFINED IN THE RTU CODE
EMG1/EMG2	INITIATE, PUMP 1 START & PUMP 2 DELAYED START
EMG2 CONTACTS	ON DELAY (t3), START PUMP 2

COMMON CONTROL SECTION

SWITCHBOARD INTERNAL LIGHTING AND SECURITY

DOOR SECURITY STATUS

Prox. Switch Fitted To 'Disconnect Zone' Door

+ 24VDC POWER SUPPLY - REF 09:E7

ALL DOOR SWITCHES SHOWN WITH DOORS OPEN

J9C

L2 SWITCHBOARD LIGHTING CONTROL RELAY REF 07:C10, 07:A10

INTERNAL L.E.D. LIGHT FITTINGS

DOOR 1 … DOOR 8

DISCONNECT ZONE CONTROL RELAY REF 07:A10

Prox. Switch Fitted To 'Disconnect Zone' Door

ATS SECTION

SURGE PROTECTION

SURGE REDUCTION FILTER SRF

SURGE FILTER ALARM RELAY SFAR

CLOSE = HEALTHY

SURGE DIVERTERS REF 01:I2 — SD1, SD2, SD3

240VAC FILTERED SUPPLY Q31 REF 01:C12

SURGE DIVERTERS & FILTER OK REF 08:B2

COMMON CONTROL SECTION

LEVEL MONITORING

SIR — SURCHARGE IMMINENT LEVEL RELAY

Multitrode Model SAFE-FS 24VDC

SIR-1 REF 07:B2 — SIR-1

SIR-2 REF 08:C2 — SIR-2

SIR-E1, SIR-E2, SIR-E3 ETR REF 08:G4

DIP SWITCHES S1–S8 OFF ON

CABLE C102 — INST. EARTH — LEVEL PROBE

LR3 — WET WELL HIGH LEVEL RELAY

24VDC SUPPLY REF 08:C7

Multitrode Model MTR-5 24VDC

LR3 REF 08:D2

LR3-E1, LR3-E2, LR3-E3 ETR REF 08:G4

DIP SWITCHES S1–S6 OFF ON

CABLE C102 — INST. EARTH — LEVEL PROBE

NOTES

1. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.
2. RUN SEPARATE DEDICATED EARTH CONDUCTOR TO EARTH BAR.

LEGEND:

- RTU MARSH. CCT BREAKER TERM
- RTU MARSH. LINK TERMINAL
- SWITCHBOARD CONTROL TERM.
- SWITCHBOARD GENERATOR TERM.
- FIELD TERMINAL
- RTU TERMINAL
- SS TERMINAL
- DI01 DIGITAL INPUT
- DO01 DIGITAL OUTPUT
- AI01 ANALOG INPUT
- AO01 ANALOG OUTPUT

POINT TO POINT TEST
J & P RICHARDSON IND.
NAME: E Ensor LICENCE: 756
DATE: 8/4/13
SIGNATURE: E Ensor

Sheet 07

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED	P.HAGUE	Original Signed by P.HAGUE	6-11-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0297set_A	Original signed by A.WITTHOFT 8895	6-11-12
B.C.C. FILE No.		DESIGN CHECK R.P.E.Q. No.	DATE

PRINCIPAL DESIGN MANAGER DATE

CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities — A DIVISION OF THE BRISBANE CITY COUNCIL

SITE: SP143 LINKS AVE SOUTH SEWAGE PUMP STATION

TITLE: COMMON CONTROLS SCHEMATIC DIAGRAM

SHEET No. 7

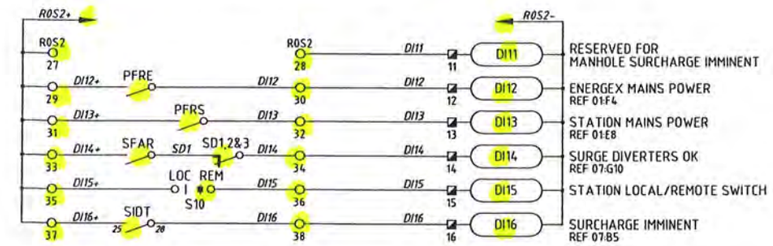
Queensland Urban Utilities DRAWING No. 486/5/7-0297-007 AMEND. A

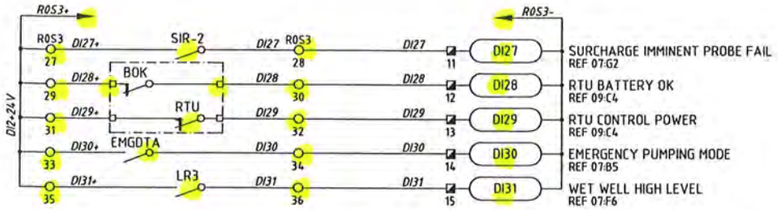
STD TEMPLATE SP-3F Ver3.2

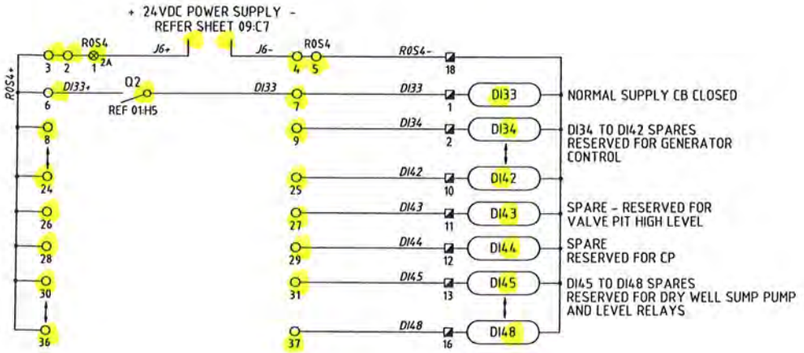
D:\AA_Major Projects\QUU - SPR111\Packages\Package 11\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

03/04/13

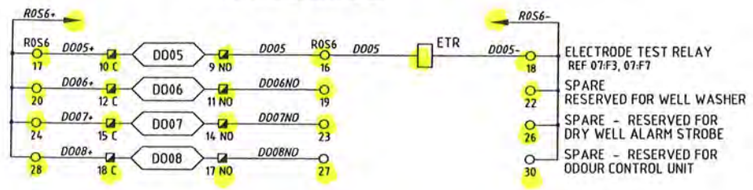
RTU DIGITAL INPUTS

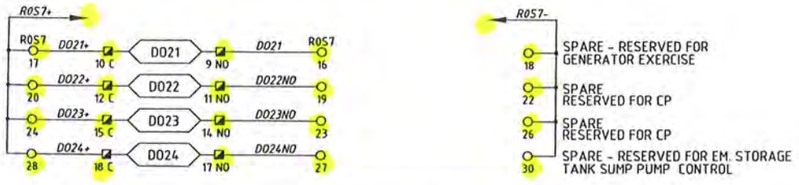




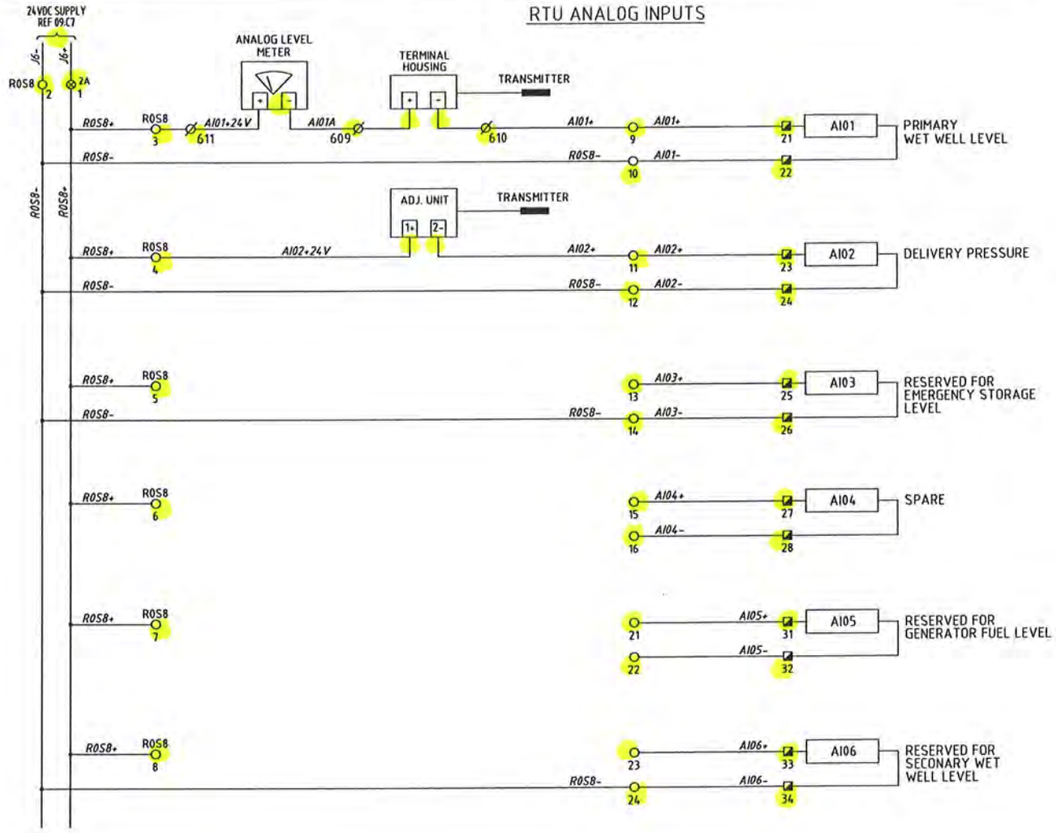


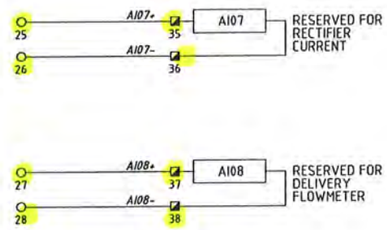
RTU DIGITAL OUTPUTS



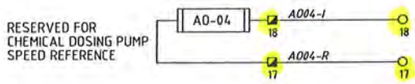


RTU ANALOG INPUTS





RTU ANALOG OUTPUTS



NOTES

1. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.

LEGEND:

- ⊗ RTU MARSH. CCT BREAKER TERM
- ○ RTU MARSH. LINK TERMINAL
- ⌀ SWITCHBOARD CONTROL TERM.
- □ SWITCHBOARD GENERATOR TERM.
- ✖ FIELD TERMINAL
- ◪ RTU TERMINAL
- ■ SS TERMINAL
- DI01 DIGITAL INPUT
- DO01 DIGITAL OUTPUT
- AI01 ANALOG INPUT
- AO01 ANALOG OUTPUT

POINT TO POINT TEST
J & P RICHARDSON IND.
NAME: E Enfor LICENCE: 756
DATE: 8/4/13
SIGNATURE: E A Enfor

Sheet 08

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED	P.HAGUE	B.C.C. FILE No.	
DRAFTING CHECK	A.WITTHOFT		
CAD FILE	57-0297set_A		

Original Signed by P.HAGUE 6-11-12 DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 6-11-12 DESIGN CHECK R.P.E.Q. No. DATE
PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities — A DIVISION OF THE BRISBANE CITY COUNCIL

SITE: SP143 LINKS AVE SOUTH SEWAGE PUMP STATION

TITLE: COMMON RTU I/O SCHEMATIC DIAGRAM

SHEET No. 8
Queensland Urban Utilities DRAWING No. 486/5/7-0297-008
AMEND. A

D:\AA_Major Projects\QUU - SPR111\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

03/04/13

POWERBOX
PB251-24CM-CC-T

PS1

240VAC FILTERED SUPPLY Q30
REF 01:C11

SHROUD

COMMON CONTROLS SECTION

CONTROL SYSTEM POWER SUPPLY 10A 24VDC

BATTERY COMPARTMENT

BATTERY OK
REF 08:C2
0 = Fault, 1 = Healthy

POWER ON
REF 08:C2
0 = Fault, 1 = Healthy

TEMPERATURE PROBE LOCATED AT BATTERIES

24V DC / 13.8V DC

Rx TBA
Tx TBA

RADIO

GSM ANTENNA

GSM MODEM

TERMINALS "20" MOUNTED ADJACENT TO GSM MODEM

24VDC SUPPLY
REF 09:F7

RTU
MOTOROLA ACE 3600

SLOT 0	SLOT 1	SLOT 2	SLOT 3	SLOT 4	SLOT 5	SLOT 6	SLOT 7	SLOT 8
ACE 3600 POWER SUPPLY	ACE 3600 CPU CARD	DIGITAL INPUT 16 CHANNEL	DIGITAL INPUT 16 CHANNEL	DIGITAL INPUT 16 CHANNEL	DIGITAL INPUT 16 CHANNEL	DIGITAL OUTPUT 16 CHANNEL	DIGITAL OUTPUT 16 CHANNEL	ANALOG INPUT 8 OUTPUT 4 CHANNEL
(18-72 VDC)	Plug 1 in 1 Serial1 Serial2 ETH 1 Plug 1 in 2	16 DI Fast 24V	16 DI Fast 24V	16 DI Fast 24V	16 DI Fast 24V	16 DO EE Relay 2A	16 DO EE Relay 2A	4 AO/8 AI +/-20mA
		DI01-DI16	DI17-DI32	DI33-DI48	DI49-DI64	DO01-DO16	DO17-DO32	AI01 - AI08 AO01 - AO04

LAPTOP CONNECTION

RS485-
RS485+
Cable 16
TO SOFT STARTER No1
REF 02:E7
Brown
White/Brown

Cable 111

GRAPHIC DISPLAY
RJ45
REDLION G306A000
J10+
J10-

Cable 112

1	4AMP	SPARE RESERVED FOR DRY WELL LEVEL RELAYS
2	4AMP	COMMON CONTROLS REF 07:B12
3	4AMP	MODEM REF 09:A16
4	4AMP	SPARE RESERVED FOR FLOWMETER
5	4AMP	SPARE RESERVED FOR VALVE PIT HIGH LEVEL
6	4AMP	SPARE
7	4AMP	SPARE RESERVED FOR WELL WASHER
8	4AMP	SPARE RESERVED FOR STATION MANHOLE SURCHARGE IMMINENT
9	4AMP	SPARE RESERVED FOR EMERGENCY STORAGE TANK SUMP PUMP

RTU
SOFT STARTER 1
SOFT STARTER 2
RS485
B8 B6 B7
Set terminating switch to 'OFF'
Set terminating switch to 'ON'
RS485-
RS485+
RS485A-
RS485A+
Cable 16
Cable 17
Use 120ohm Impedence Twisted Pair Cable

MODBUS CONNECTIONS

LEGEND:
- ⊗ RTU MARSH. CCT BREAKER TERM
- O RTU MARSH. LINK TERMINAL
- ⌀ SWITCHBOARD CONTROL TERM.
- □ SWITCHBOARD GENERATOR TERM.
- FIELD TERMINAL
- RTU TERMINAL
- SS TERMINAL
- DI01 DIGITAL INPUT
- DO01 DIGITAL OUTPUT
- AI01 ANALOG INPUT
- AO01 ANALOG OUTPUT

NOTES

1. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.
2. ALL FUSES ARE 500mA EXCEPT WHERE NOTED OTHERWISE.

POINT TO POINT TEST
J & P RICHARDSON IND.
NAME: E Ensor LICENCE: 756
DATE: 5/4/13
SIGNATURE: E Ensor

Sheet 09

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED	P.HAGUE
DRAFTING CHECK	A.WITTHOFT
CAD FILE	57-0297set_A
B.C.C. FILE No.	

Original Signed by P.HAGUE 6-11-12 DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 6-11-12 DESIGN CHECK R.P.E.Q. No. DATE
PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

QUEENSLAND Urban Utilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

TITLE
RTU POWER DISTRIBUTION
SCHEMATIC DIAGRAM

SHEET No. 9
Queensland Urban Utilities DRAWING No.
486/5/7-0297-009
AMEND. A

STD TEMPLATE SP-3P Ver32

D:\AA_Major Projects\QUU - SPR111\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

03-04-13

RTU COMPARTMENT

24VDC POWER DISTRIBUTION

SWITCHBOARD

FIELD

24VDC DIST

SHEET 09 REFER

REFER SHEET 09

PUMP 1
STARTER COMPARTMENT
REFER SHEET 02

DI01+ / DI01 — 1K5 — CONTROL POWER
DI02+ / DI02 — 1S1 — START PUSHBUTTON
DI03+ / DI03 — 1S2 — STOP PUSHBUTTON
DI04+ / DI04 — 1K4 — E.STOP RELAY HEALTHY
DI05+ / DI05 — 1S4 — RESET PUSHBUTTON
DI06+ / DI06 — 1K2 — PUMP RUNNING
DI07+ / DI07 — 1K3 — STARTER FAULT

RACK 0 SLOT 2
MOTOROLA 16 CHANNEL
DIGITAL INPUT MODULE
16 DI Fast 24V

DI01 … DI16, +24V, COM1, PGND1, PGND1

MOTOROLA WIRED CABLE BRAID & 20 WAY TB HOLDER

DI1

LINK BARS

TO INSULATED INSTRUMENT EARTH

CONT ON SHEET 11

COMMON COMPARTMENT

DI13+ / DI13 — PFRS — STATION MAINS POWER — REF 01:E8

ATS COMPARTMENT

DI12+ / DI12 — PFRE — ENERGEX MAINS POWER — REF 01:F4

DI14+ / DI14 — SFAR — SURGE DIVERTERS OK — REF 07:G10

STARTER COMPARTMENT

DI15+ / DI15 — LOC REM S10 — STATION LOCAL/REMOTE SWITCH

COMMON COMPARTMENT

DI16+ / DI16 — SIDT — SURCHARGE IMMINENT — REF 07:B5

POINT TO POINT TEST
J & P RICHARDSON IND.
NAME: E Ensor LICENCE: 756
DATE: 8/4/13
SIGNATURE: E a Ensor

LEGEND:
- C?? — CABLE IDENTIFIER
- 2A — RTU MINITURE CCT BREAKER
- DISCONNECT LINK TERMINAL
- THROUGH TERMINAL

NOTES
1. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.
2. ALL FUSES ARE 500mA EXCEPT WHERE NOTED OTHERWISE.

Sheet 10

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED P.HAGUE
DRAFTING CHECK A.WITTHOFT
CAD FILE 57-0297set_A
B.C.C. FILE No.

Original Signed by P.HAGUE 6-11-12
DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 6-11-12
DESIGN CHECK R.P.E.Q. No. DATE

PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

Queensland Urban Utilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

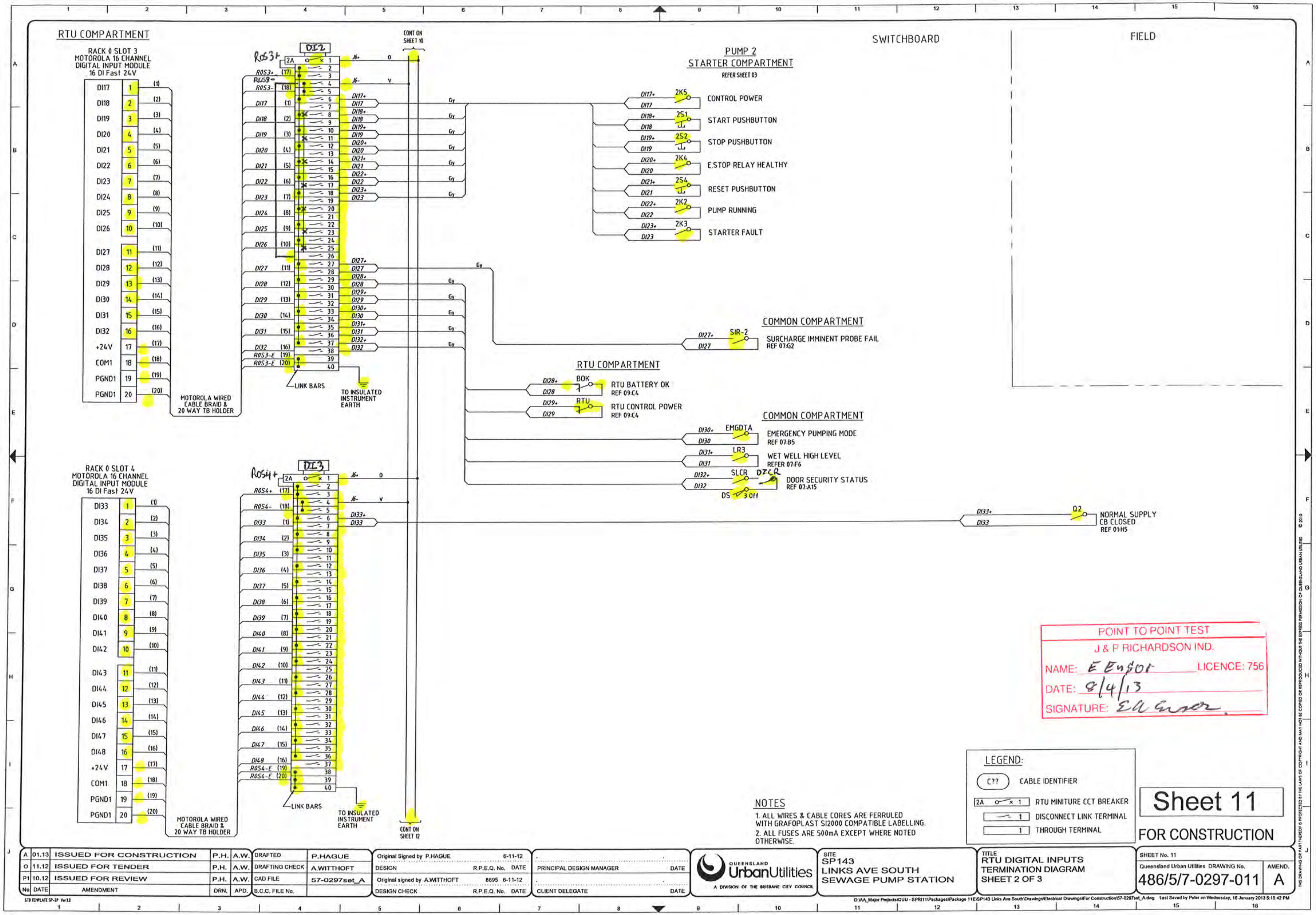
TITLE
RTU DIGITAL INPUTS
TERMINATION DIAGRAM
SHEET 1 OF 3

SHEET No. 10
Queensland Urban Utilities DRAWING No.
486/5/7-0297-010
AMEND. A

STD TEMPLATE SP-39 Ver3.2

D:\AA_Major Projects\QUU - SPR111\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

03-04-13


RTU COMPARTMENT
RACK 0 SLOT 3
MOTOROLA 16 CHANNEL
DIGITAL INPUT MODULE
16 DI Fast 24V
DI17 DI18 DI19 DI20 DI21 DI22 DI23 DI24 DI25 DI26 DI27 DI28 DI29 DI30 DI31 DI32 +24V COM1 PGND1 PGND1
MOTOROLA WIRED CABLE BRAID & 20 WAY TB HOLDER
DI2
RO53+
2A
LINK BARS
TO INSULATED INSTRUMENT EARTH
CONT ON SHEET 10
SWITCHBOARD
FIELD
PUMP 2
STARTER COMPARTMENT
REFER SHEET 03
2K5 CONTROL POWER
2S1 START PUSHBUTTON
2S2 STOP PUSHBUTTON
2K4 E.STOP RELAY HEALTHY
2S4 RESET PUSHBUTTON
2K2 PUMP RUNNING
2K3 STARTER FAULT
COMMON COMPARTMENT
SIR-2 SURCHARGE IMMINENT PROBE FAIL REF 07:G2
RTU COMPARTMENT
BOK RTU BATTERY OK REF 09:C4
RTU RTU CONTROL POWER REF 09:C4
COMMON COMPARTMENT
EMGDTA EMERGENCY PUMPING MODE REF 07:B5
LR3 WET WELL HIGH LEVEL REFER 07:F6
SLCR DZCR DOOR SECURITY STATUS REF 07:A15
DS 3 Off
RACK 0 SLOT 4
MOTOROLA 16 CHANNEL
DIGITAL INPUT MODULE
16 DI Fast 24V
DI33 DI34 DI35 DI36 DI37 DI38 DI39 DI40 DI41 DI42 DI43 DI44 DI45 DI46 DI47 DI48 +24V COM1 PGND1 PGND1
DI3
RO54+
Q2 NORMAL SUPPLY CB CLOSED REF 01:H5
CONT ON SHEET 12
POINT TO POINT TEST
J & P RICHARDSON IND.
NAME: E Ensor LICENCE: 756
DATE: 8/4/13
SIGNATURE: EA Ensor
NOTES
1. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.
2. ALL FUSES ARE 500mA EXCEPT WHERE NOTED OTHERWISE.
LEGEND:
C?? CABLE IDENTIFIER
RTU MINITURE CCT BREAKER
DISCONNECT LINK TERMINAL
THROUGH TERMINAL
Sheet 11
FOR CONSTRUCTION
A 01.13 ISSUED FOR CONSTRUCTION P.H. A.W.
O 11.12 ISSUED FOR TENDER P.H. A.W.
P1 10.12 ISSUED FOR REVIEW P.H. A.W.
DRAFTED P.HAGUE
DRAFTING CHECK A.WITTHOFT
CAD FILE 57-0297set_A
Original Signed by P.HAGUE 6-11-12
Original signed by A.WITTHOFT 8895 6-11-12
PRINCIPAL DESIGN MANAGER
CLIENT DELEGATE
QUEENSLAND UrbanUtilities A DIVISION OF THE BRISBANE CITY COUNCIL
SITE SP143 LINKS AVE SOUTH SEWAGE PUMP STATION
TITLE RTU DIGITAL INPUTS TERMINATION DIAGRAM SHEET 2 OF 3
SHEET No. 11
Queensland Urban Utilities DRAWING No. 486/5/7-0297-011
AMEND. A

RTU COMPARTMENT

SWITCHBOARD

FIELD

RACK 0 SLOT 5
MOTOROLA 16 CHANNEL
DIGITAL INPUT MODULE
16 DI Fast 24V

DI49	1	(1)
DI50	2	(2)
DI51	3	(3)
DI52	4	(4)
DI53	5	(5)
DI54	6	(6)
DI55	7	(7)
DI56	8	(8)
DI57	9	(9)
DI58	10	(10)
DI59	11	(11)
DI60	12	(12)
DI61	13	(13)
DI62	14	(14)
DI63	15	(15)
DI64	16	(16)
+24V	17	(17)
COM1	18	(18)
PGND1	19	(19)
PGND1	20	(20)

MOTOROLA WIRED CABLE BRAID & 20 WAY TB HOLDER

DI4

ROSS+ (17)
ROSS- (18)
DI49 (1)
DI50 (2)
DI51 (3)
DI52 (4)
DI53 (5)
DI54 (6)
DI55 (7)
DI56 (8)
DI57 (9)
DI58 (10)
DI59 (11)
DI60 (12)
DI61 (13)
DI62 (14)
DI63 (15)
DI64 (16)
ROSS-E (19)
ROSS-E (20)

2A

LINK BARS

TO INSULATED INSTRUMENT EARTH

CONT ON SHEET 11

CONT ON SHEET 13

POINT TO POINT TEST
J & P RICHARDSON IND.
NAME: EEllsor LICENCE: 756
DATE: 8/4/13
SIGNATURE: EEllsor

NOTES
1. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.
2. ALL FUSES ARE 500mA EXCEPT WHERE NOTED OTHERWISE.

LEGEND:
- C?? CABLE IDENTIFIER
- 2A ○ × 1 RTU MINITURE CCT BREAKER
- — 1 DISCONNECT LINK TERMINAL
- 1 THROUGH TERMINAL

Sheet 12

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED	P.HAGUE	Original Signed by P.HAGUE	6-11-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0297set_A	Original signed by A.WITTHOFT 8895	6-11-12
B.C.C. FILE No.		DESIGN CHECK R.P.E.Q. No.	DATE
		PRINCIPAL DESIGN MANAGER	DATE
		CLIENT DELEGATE	DATE

QUEENSLAND UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL

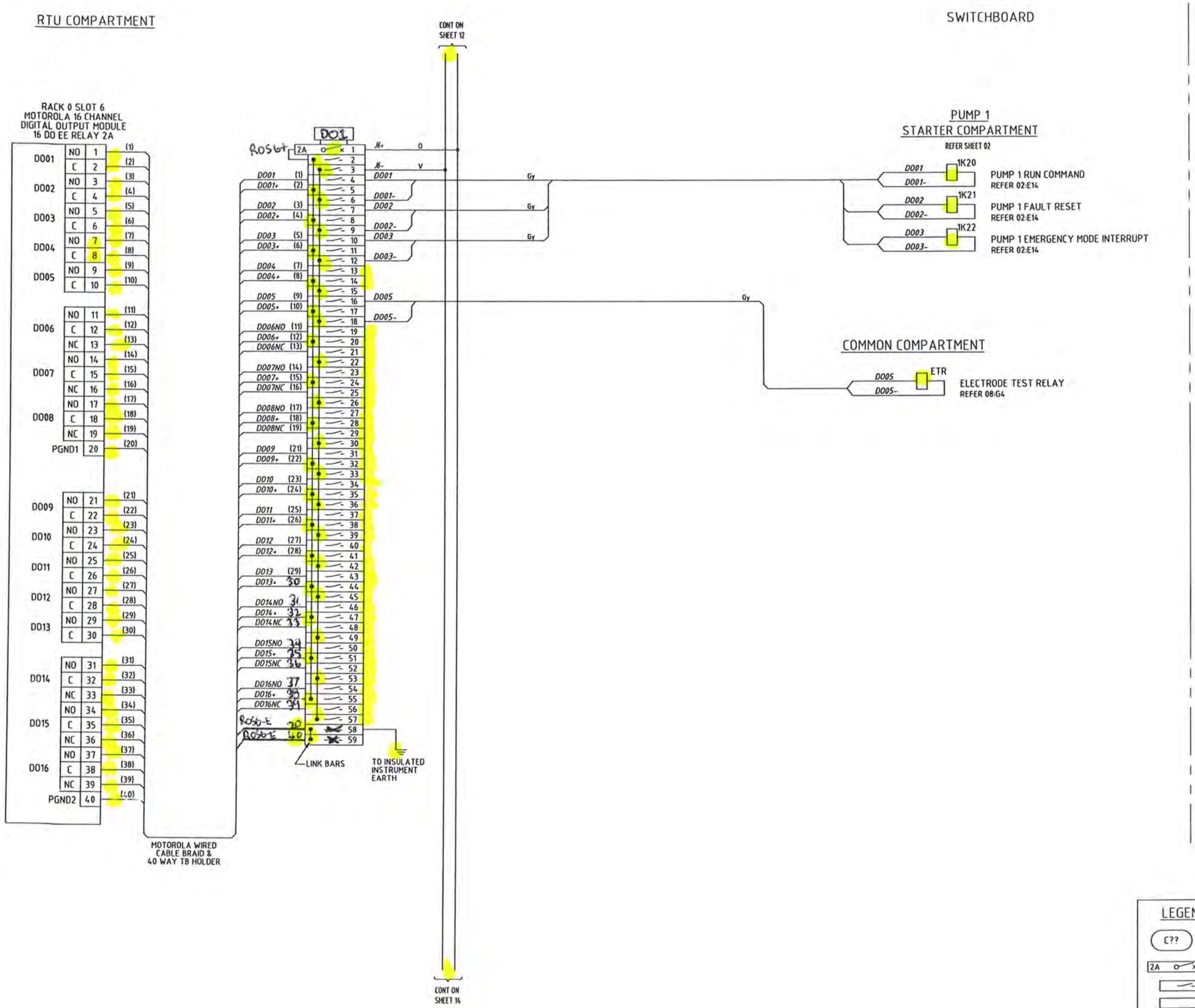
SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

TITLE
RTU DIGITAL INPUTS
TERMINATION DIAGRAM
SHEET 3 OF 3

SHEET No. 12
Queensland Urban Utilities DRAWING No. 486/5/7-0297-012
AMEND. A

STD TEMPLATE SP-3P Ver12

D:\AA_Major Projects\QUU - SPR111\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM



POINT TO POINT TEST
J & P RICHARDSON IND.
NAME: E Ensor LICENCE: 756
DATE: 8/4/13
SIGNATURE: E A Ensor

LEGEND:

C??	CABLE IDENTIFIER
2A o× 1	RTU MINITURE CCT BREAKER
1	DISCONNECT LINK TERMINAL
1	THROUGH TERMINAL

NOTES

1. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.
2. ALL FUSES ARE 500mA EXCEPT WHERE NOTED OTHERWISE.

Sheet 13

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED	P.HAGUE
DRAFTING CHECK	A.WITTHOFT
CAD FILE	57-0297set_A
B.C.C. FILE No.	

Original Signed by P.HAGUE 6-11-12
DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 6-11-12
DESIGN CHECK R.P.E.Q. No. DATE

PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

TITLE
RTU DIGITAL OUTPUTS
TERMINATION DIAGRAM
SHEET 1 OF 2

SHEET No. 13
Queensland Urban Utilities DRAWING No. 486/5/7-0297-013 AMEND. A

STD TEMPLATE SP-2P Ver3.2

D:\AA_Major Projects\QUU - SPRI11\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

RTU COMPARTMENT

SWITCHBOARD

FIELD

RACK 0 SLOT 7
MOTOROLA 16 CHANNEL
DIGITAL OUTPUT MODULE
16 DO EE RELAY 2A

DO17	NO	1	(1)
	C	2	(2)
DO18	NO	3	(3)
	C	4	(4)
DO19	NO	5	(5)
	C	6	(6)
DO20	NO	7	(7)
	C	8	(8)
DO21	NO	9	(9)
	C	10	(10)
DO22	NO	11	(11)
	C	12	(12)
	NC	13	(13)
DO23	NO	14	(14)
	C	15	(15)
	NC	16	(16)
DO24	NO	17	(17)
	C	18	(18)
	NC	19	(19)
	PGND1	20	(20)
DO25	NO	21	(21)
	C	22	(22)
DO26	NO	23	(23)
	C	24	(24)
DO27	NO	25	(25)
	C	26	(26)
DO28	NO	27	(27)
	C	28	(28)
DO29	NO	29	(29)
	C	30	(30)
DO30	NO	31	(31)
	C	32	(32)
	NC	33	(33)
DO31	NO	34	(34)
	C	35	(35)
	NC	36	(36)
DO32	NO	37	(37)
	C	38	(38)
	NC	39	(39)
	PGND2	40	(40)

MOTOROLA WIRED CABLE BRAID & 40 WAY TB HOLDER

CONT ON SHEET 13

R057+ DO2

2A		1	
		2	
DO17	(1)	3	
DO17+	(2)	4	
		5	
DO18	(3)	6	
DO18+	(4)	7	
		8	
DO19	(5)	9	
DO19+	(6)	10	
		11	
DO20	(7)	12	
DO20+	(8)	13	
		14	
DO21	(9)	15	
DO21+	(10)	16	
		17	
DO22NO	(11)	18	
DO22+	(12)	19	
DO22NC	(13)	20	
		21	
DO23NO	(14)	22	
DO23+	(15)	23	
DO23NC	(16)	24	
		25	
DO24NO	(17)	26	
DO24+	(18)	27	
DO24NC	(19)	28	
		29	
DO25	(21)	30	
DO25+	(22)	31	
		32	
DO26	(23)	33	
DO26+	(24)	34	
		35	
DO27	(25)	36	
DO27+	(26)	37	
		38	
DO28	(27)	39	
DO28+	(28)	40	
		41	
DO29	(29)	42	
DO29+	30	43	
		44	
DO30NO	31	45	
DO30+	32	46	
DO30NC	33	47	
		48	
DO31NO	34	49	
DO31+	35	50	
DO31NC	36	51	
		52	
DO32NO	37	53	
DO32+	38	54	
DO32NC	39	55	
		56	
R057-E	20	57	
R057-E	40	58	
		59	

LINK BARS

TO INSULATED INSTRUMENT EARTH

CONT ON SHEET 15

DO17	Gy	
DO17-		
DO18	Gy	
DO18-		
DO19	Gy	
DO19-		

PUMP 2
STARTER COMPARTMENT
REFER SHEET 03

DO17	2K20	PUMP 2 RUN COMMAND REFER 03:E14
DO17-		
DO18	2K21	PUMP 2 FAULT RESET REFER 03:E14
DO18-		
DO19	2K22	PUMP 2 EMERGENCY MODE INTERRUPT REFER 03:E14
DO19-		

POINT TO POINT TEST
J & P RICHARDSON IND.
NAME: EEnsor LICENCE: 756
DATE: 8/4/13
SIGNATURE: EEnsor

NOTES

1. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.
2. ALL FUSES ARE 500mA EXCEPT WHERE NOTED OTHERWISE.

LEGEND:

- (??) CABLE IDENTIFIER
- 2A ○ × 1 RTU MINITURE CCT BREAKER
- 1 DISCONNECT LINK TERMINAL
- 1 THROUGH TERMINAL

Sheet 14

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED	P.HAGUE	Original Signed by P.HAGUE	6-11-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0297set_A	Original signed by A.WITTHOFT	8895 6-11-12
B.C.C. FILE No.		DESIGN CHECK R.P.E.Q. No.	DATE

PRINCIPAL DESIGN MANAGER DATE

CLIENT DELEGATE DATE

QUEENSLAND Urban Utilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

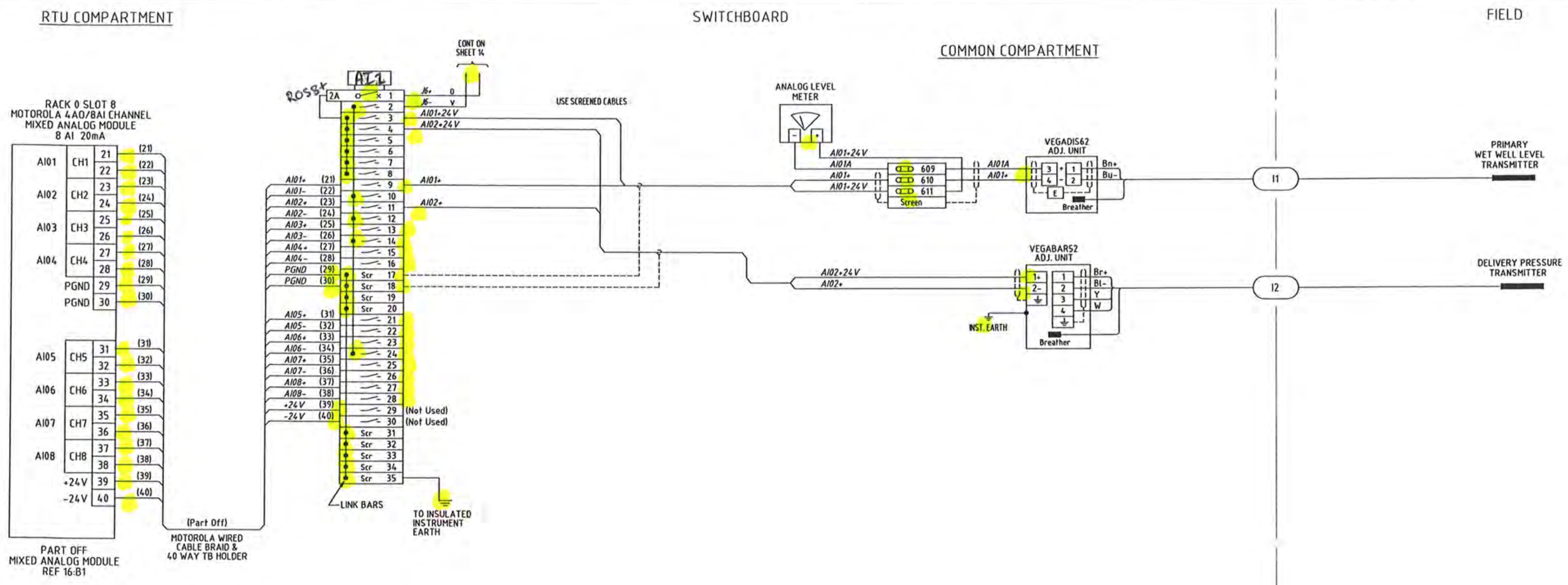
TITLE
RTU DIGITAL OUTPUTS
TERMINATION DIAGRAM
SHEET 2 OF 2

SHEET No. 14

Queensland Urban Utilities DRAWING No. 486/5/7-0297-014 AMEND. A

STD TEMPLATE SP-JP Ver32

D:\AA_Major Projects\QUU - SPRI11\Packages\Package 11\E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM



NOTES

1. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.

~~USE SCREENED CABLES~~

POINT TO POINT TEST
J & P RICHARDSON IND.
NAME: E Ensor LICENCE: 756
DATE: 8/4/13
SIGNATURE: E a Ensor

LEGEND:

(C??)	CABLE IDENTIFIER
2A o—x 1	RTU MINITURE CCT BREAKER
—— 1	DISCONNECT LINK TERMINAL
1	THROUGH TERMINAL

Sheet 15

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED	P.HAGUE
DRAFTING CHECK	A.WITTHOFT
CAD FILE	57-0297set_A
B.C.C. FILE No.	

Original Signed by P.HAGUE 6-11-12
DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 6-11-12
DESIGN CHECK R.P.E.Q. No. DATE

PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

TITLE
RTU ANALOG INPUTS
TERMINATION DIAGRAM

SHEET No. 15
Queensland Urban Utilities DRAWING No. 486/5/7-0297-015 AMEND. A

STD TEMPLATE SP-2P Ver3.2

D:\AA_Major Projects\QUU - SPRI11\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

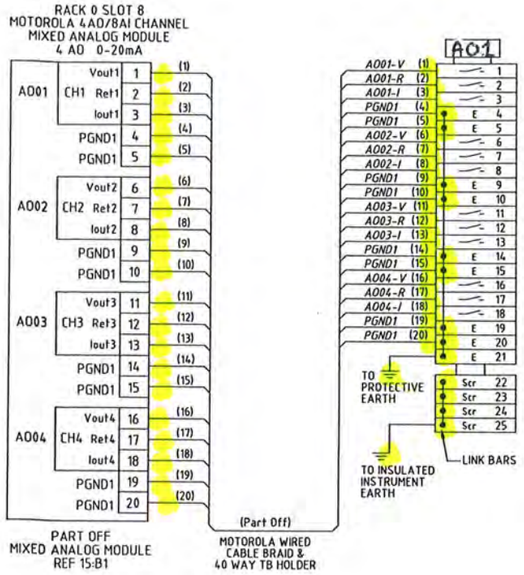
03-04-13

RTU COMPARTMENT

SWITCHBOARD

FIELD

STARTER COMPARTMENT



POINT TO POINT TEST
J & P RICHARDSON IND.
NAME: E Ensor LICENCE: 756
DATE: 8/4/13
SIGNATURE: E Ensor

LEGEND:
- C?? CABLE IDENTIFIER
- 2A ○ × 1 RTU MINITURE CCT BREAKER
- 1 DISCONNECT LINK TERMINAL
- 1 THROUGH TERMINAL

NOTES

1. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.

Sheet 16

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED	P.HAGUE
DRAFTING CHECK	A.WITTHOFT
CAD FILE	57-0297set_A
B.C.C. FILE No.	

Original Signed by P.HAGUE 6-11-12
DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 6-11-12
DESIGN CHECK R.P.E.Q. No. DATE
PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

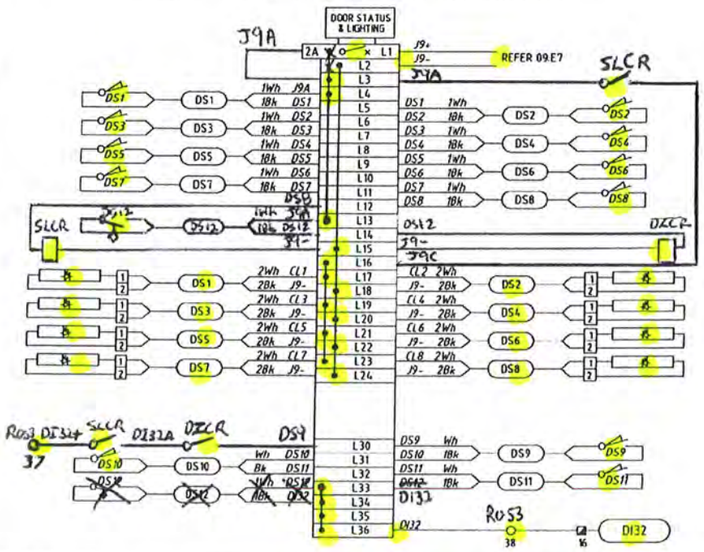
TITLE
RTU ANALOG OUTPUTS
TERMINATION DIAGRAM

SHEET No. 16
Queensland Urban Utilities DRAWING No. 486/5/7-0297-016
AMEND. A

STD TEMPLATE SP-2P Ver32

D:\AA_Major Projects\QUU - SPR11\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

SWITCHBOARD INTERNAL LIGHTING AND SECURITY



POINT TO POINT TEST
J & P RICHARDSON IND.
NAME: E Ensor LICENCE: 756
DATE: 8/4/13
SIGNATURE: E Ensor.

LEGEND:

- C?? CABLE IDENTIFIER
- 2A ○ × 1 RTU MINITURE CCT BREAKER
- 1 DISCONNECT LINK TERMINAL
- 1 THROUGH TERMINAL

NOTES

1. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.
2. ALL FUSES ARE 500mA EXCEPT WHERE NOTED OTHERWISE.

Sheet 17

FOR CONSTRUCTION

No.	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED	P.HAGUE	Original Signed by P.HAGUE	6-11-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0297set_A	Original signed by A.WITTHOFT 8895	6-11-12
B.C.C. FILE No.		DESIGN CHECK R.P.E.Q. No.	DATE

PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

TITLE
COMMON CONTROLS
TERMINATION DIAGRAM

SHEET No. 17
Queensland Urban Utilities DRAWING No. 486/5/7-0297-017
AMEND. A

STD TEMPLATE SP-2P Ver12

D:\AA_Major Projects\QUU - GPR111\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

03-04-13

ITEM	QTY	DESCRIPTION	MANUFACTURER	CATALOGUE No	OPT	REMARKS
1					N	
2	1	MANUAL TRANSFER SWITCH	TERASAKI	MTSS2PE12533	F	Set Ir=0.5 (62.5A) Char=1
3		- TO SUIT MAIN SWITCHES Q2 & Q3 S250PE/125	TERASAKI	Q2 - c/w 3 N/O AUX CONTACTS	F	
4	1	Q4 PUMP1 CIRCUIT BREAKER + T2HS Handle	TERASAKI	S125GJ/20	-	Set Ir=0.63 (12.5A) Im=6 (120A)
5	1	Q5 PUMP2 CIRCUIT BREAKER + T2HS Handle	TERASAKI	S125GJ/20	-	Set Ir=0.63 (12.5A) Im=6 (120A)
6					E	
7	1	Q7 ENERGEX PHASE FAILURE CIRCUIT BREAKER	TERASAKI	DTCB15306C	-	
8					G	
9	1	Q9 SUB-DISTRIBUTION BOARD CIRCUIT BREAKER	TERASAKI	S125NJ/63	-	Set Ir=0.9 (45A) Im=6 (300A)
10	1	Q10 STATION MAINS PHASE FAILURE CIRCUIT BREAKER	TERASAKI	DTCB6306C	-	
11	1	Q11 15A GPO CIRCUIT BREAKER	TERASAKI	DSRCBH-16-30A	=	
12	1	Q12 RTU LAPTOP GPO CIRCUIT BREAKER	TERASAKI	DSRCBH-10-30A	-	
13	1	Q13 SPARE	TERASAKI	DSRCBH-6-30A	E	
14	1	Q14 SPARE	TERASAKI	DSRCBH-10-30A	E	
15	1	Q15 GENERATOR AUXILLARY SUPPLY CIRCUIT BREAKER	TERASAKI	DSRCBH-10-30A	-	
16	1	Q16 EXTERNAL AREA LIGHTING CIRCUIT BREAKER	TERASAKI	DSRCBH-6-30A	Y	
17	1	Q17 SURGE FILTER CIRCUIT BREAKER	TERASAKI	DTCB6110C	-	
18	1	Q18 EM PUMP CNTRL & SURCHARGE IMMINENT CB	TERASAKI	DTCB6106C	-	
19	1	Q19 SPARE CIRCUIT BREAKER	TERASAKI	DTCB6106C	K	
20	1	Q20 3 PHASE OUTLET CIRCUIT BREAKER	TERASAKI	DTCB6310C	-	PLUS DSRCM-32-30-3PN
21	1	Q21 SPARE	TERASAKI	DTCB6106C	Q	
22						
23					V	
24	1	Q30 RTU POWER SUPPLY CIRCUIT BREAKER	TERASAKI	DTCB6104C	-	
25	1	Q31 SURGE FILTER ALARM RELAY CIRCUIT BREAKER	TERASAKI	DTCB6104C	-	
26	1	Q32 SPARE	TERASAKI	DTCB6104C	H	
27	1	Q33 SPARE	TERASAKI	DTCB6104C	-	
28						
29						
30						
31	2	PUMP 240VAC CONTROL CIRCUIT BREAKER	TERASAKI	DTCB6104C	-	Q4-1, Q5-1
32	3	24VDC CONTROL CIRCUIT BREAKER	TERASAKI	DTCB6110C	-	QD4, QD5, QD18
33	1	BATTERY SHORT CCT PROTECTION CIRCUIT BREAKER	TERASAKI	DTCB6210C	-	QD8
34	3	240VAC-24VDC POWER SUPPLY	WEIDMULLER	8951340000	-	120W 5A/24VDC
35						
36	1	DISTRIBUTION BOARD CHASSIS	TERASAKI	NC -2-24/18-3U	-	
37	3	F1 - SURGE DIVERTER CIRCUIT FUSES	NHP	63AMP 63MS	-	FUSES & HOLDERS
38	3	SURGE DIVERTER	CRITEC	TDS1100-2SR-277	-	
39	1	SURGE FILTER ALARM RELAY - SFAR	CRITEC	DAR-275V	-	
40	1	SURGE REDUCTION FILTER - SRF	CRITEC	TDF-10A-240V	-	
41	1	ENERGEX MAINS PHASE FAILURE RELAY - PFRE	CARLO GAVAZZI	DPB01CM48W4	-	
42						
43	1	STATION MAINS PHASE FAILURE RELAY - PFRS	CARLO GAVAZZI	DPB01CM48W4	-	
44						
45	1	MAIN NEUTRAL LINK	DORE ELEC.	~~DLAH6~~ 165E12	-	INSULATED c/w EFeet
46	1	MAIN EARTH LINK	DORE ELEC.	~~BLAHE6~~ 165E12	-	
47	1	DIST. BD NEUTRAL LINK	DORE ELEC.	~~20LA10~~ 165E24	-	INSULATED c/w EFeet
48	1	DIST. BD EARTH LINK	DORE ELEC.	~~20LAE10~~ 165E24	-	
49	~~1~~	~~SURGE DIVERTER NEUTRAL LINK~~	~~CLIPSAL~~	~~L5A~~	-	~~INSULATED~~
50	1	INSTRUMENT EARTH LINK	CLIPSAL	~~OLDE12~~ L12	-	INSULATED
51	1	FILTERED SUPPLY NEUTRAL LINK	CLIPSAL	L7	-	INSULATED
52	1	3 PHASE SWITCHED OUTLET	CLIPSAL	56C410	-	USE ENCLOSURE AS SHROUD
53	1	1 PHASE OUTLET 15A	CLIPSAL	15/15+90B (SHROUD)	-	
54	1	LAPTOP GPO - TWIN 10A	CLIPSAL	25+449A+449AP	-	
55	1	1 PHASE OUTLET - GENERATOR ANCILLARY POWER	CLIPSAL	56SO310	F	IP56
56	1	3 PHASE N&E APPLIANCE INLET - GENERATOR POWER	MENNEKES	MEN361	F	c/w PROTECTIVE CAP 40787
57						
58						
59	2	PUMP SOFT STARTER	DANFOSS MCD5	MCD5-0021B + MODBUS COMMS		175G5500 + 175G9000
60	2	EXTERNAL KEYPAD KIT	DANFOSS	175G3061	-	
61						
62						
63		A				
64	2	PUMP LINE CONTACTOR - K1 (24VDC COIL)	SPRECHER & SCHUH	CA7-30		24VDC COIL

ITEM	QTY	DESCRIPTION	MANUFACTURER	CATALOGUE No	OPT	REMARKS
65	2	SOFT STARTER RUNNING RELAY - K2	IDEC	RH2B-ULD-DC24V	-	+ SH2B-05
66	2	STARTER FAULT RELAY - K3	IDEC	RH2B-ULD-DC24V	-	+ SH2B-05
67	2	PUMP EM. STOP RELAY - K4	IDEC	RH4B-ULD-DC24V	-	+ SH4B-05
68	2	PUMP CONTROL CCT POWER ON RELAY - K5	IDEC	RH2B-ULD-DC24V	-	+ SH2B-05
69	2	PUMP RUN RELAY - K6	IDEC	RH2B-ULD-DC24V	-	+ SH2B-05
70					A	
71					B	
72					B	
73	2	PUMP RUN COMMAND RELAY - K20	IDEC	RH2B-ULD-DC24V	-	+ SH2B-05
74	2	PUMP FAULT RESET RELAY - K21	IDEC	RH2B-ULD-DC24V	-	+ SH2B-05
75	2	PUMP EMERGENCY MODE INTERRUPT RELAY - K22	IDEC	RH2B-ULD-DC24V	-	+ SH2B-05
76					-	
77	2	PUMP START PUSHBUTTON - S1	SPRECHER & SCHUH	D7P-F3-PX10	-	
78	2	PUMP STOP PUSHBUTTON - S2	SPRECHER & SCHUH	D7P-F4-PX10	-	
79	2	PUMP EM/STOP PUSHBUTTON - S3	SPRECHER & SCHUH	D7P-MT34-PX01S	-	c/w D7-15YE112 + PX01S
80	2	PUMP RESET PUSHBUTTON - S4	SPRECHER & SCHUH	D7P-F6-PX10	-	
81	2	PUMP HOUR RUN METER - HRM	NHP	RQ4801080VDC	-	24VDC
82	2	PUMP POWER SOCKET OUTLET + INCLINE SLEEVE	MARECHAL	DS1 3114013972 + 51BA058	J	
83	2	PUMP POWER INLET PLUG + HANDLE	MARECHAL	DS1 3118013972 + 311A013	J	
84	2	PUMP CONTROL SOCKET OUTLET + INCLINE SLEEVE	MARECHAL	PN7C 01P4060 + 01NA053	J	
85	2	PUMP CONTROL INLET PLUG + HANDLE	MARECHAL	PN7C 01P8060 + 01NA313	J	
86					E	
87					E	
88					E	
89					E	
90					E	
91					E	
92					E	
93	1	LR3- WET WELL HIGH LEVEL RELAY	MULTITRODE	MTR-5	-	24VDC
94					Q	
95					D	
96	1	SIR - SURCHARGE IMMINENT LEVEL RELAY	MULTITRODE	MTRA-FS	-	24VDC
97	1	EMERGENCY PUMPING MODE RELAY PUMP1 - EMG1	IDEC	RH2B-ULD-DC24V	-	+ SH2B-05
98	1	SURCHARGE IMMINENT DELAY TIMER - SIDT	SPRECHER & SCHUH	RZ7-FSA 4U U23	-	ON DELAY / INSTANTANEOUS
99	1	EMERGENCY PUMPING MODE TIMER - EMGDT	OMRON	H3CA-A (+ P2CF-11)	-	(+ Y92A-48B) OFF DELAY
100	1	EMERGENCY PUMPING MODE TIMER PUMP2- EMG2	SPRECHER & SCHUH	RZ7-FSA 3E U23	-	ON DELAY
101	2	EMERGENCY PUMPING MODE SWITCH & LIGHT - S5/H5	SPRECHER & SCHUH	D7P-LSM25 + D7-~~M~~ MLW		+ D7-X10 (2), ENGRAVE 'OFF ON'
102	1	EMERGENCY PUMPING MODE AUX RELAY - EMGDTA	IDEC	RH2B-ULD-DC24V	-	+ SH2B-05
103					F	
104					F	
105					F	
106					F	
107					F	
108					F	
109					F	
110					F	
111					F	
112					F	
113					F	
114						
115	2	SW/BD LIGHTING CONTROL RELAY - SLCR, DZLR	IDEC	RH2B-ULD-DC24V	-	+ SH2B-05
116	1	AREA LIGHTING CONTROL SWITCH - S11	KRAUS & NAIMER	CAD11-~~A720~~-600-FT2-F758	-	ENGRAVE 'OFF ON'
117				A721		
118	1	STATION LOCAL/REMOTE SWITCH - S10	KRAUS & NAIMER	CAD11-~~A720~~-600-FT2-F758	-	ENGRAVE 'LOCAL REMOTE'
119	1	ELECTRODES TEST RELAY - ETR	IDEC	RH4B-ULD-DC24V	-	+ SH4B-05
120					P	
121	1	WET WELL LEVEL INDICATOR	CROMPTON INSTRUMENTS	244-01~~X~~G-HG-IP-SR 4-20mA (AR)	-	0-100% ADJ RED POINTER
122					J	
123	11	SW/BD DOOR MICRO SWITCHES - SINGLE POLE	OMRON	Z-15GW2 55 B	-	11 OFF N/O
124	1	SW/BD DISCONNECT COMPART DOOR PROXIMITY SWITCH	PEPPERL & FUCHS	NCB5-18GM40-Z0	-	
125	8	SW/BD INTERNAL LED LIGHTS	LUMIFA	LF18-C3S-2THWW4	-	
126					G	
127					G	
128					G	

ITEM	QTY	DESCRIPTION	MANUFACTURER	CATALOGUE No	OPT	REMARKS
129					G	
130					K	
131					S	
132					H	
133	1	PRIMARY WET WELL LEVEL PROBE	VEGA - VEGAWELL52	WL52XXA4ALD1DD1X	-	SET RANGE TO = 3m
134	1	PRIMARY WET WELL LEVEL ADJUSTMENT UNIT	VEGA - VEGADIS62	DIS62XXKMAXX	-	
135					G	
136					-	
137	1	DELIVERY PRESSURE TRANSMITTER	VEGA VEGABAR52	BR52XXCA1EHPMAS L=12	U	RANGE = 20m
138	1	TRICLOVE FITTING FOR VEGABAR52	VEGA	ADAPTOR 4	U	A
139	1	CONTROL SYSTEM POWER SUPPLY 24VDC	POWERBOX	PB251A-24CM-CC-T-S	-	
140	1	RADIO 24V/13.8VDC CONVERTER	POWERBOX	PBIH-2412J-CC	R	
141					I	
142	2	BATTERIES - INCLUDING SPILL TRAYS	YUASA	UXH50-12	-	
143	1	RADIO	TRIO	DR900-07A02-D0	R	
144	1	RADIO ANTENNA	TRIO	YAGI ANT13AL	R	15 ELEMENT 13dB ALUM
145	1	RADIO COAX SURGE PROTECTION UNIT	POLYPHASER CORPORATION	IS-50NX-C2	R	Mounted on Din Rail
146	1	TELEMETRY UNIT	MOTOROLA	ACE - 3600	-	
147	1	GSM MODEM	WAVECOM	FASTRACK Supreme	I	c/w 5 M Cable
148	1	GSM CELLULAR TRANSIT ANTENNA	RF INDUSTRIES	TLA2000	I	
150	1	GRAPHIC DISPLAY	REDLION	G306A000		
153						
156	1	ANTENNA MAST c/w 20mm NYLON CABLE GLAND	SWBD BUILDER	SHEET 23	R	LENGTH = 4 MTRS
157	1	INTERNAL COAX CABLE (Radio to Lightning Arrester)	TRIO	TRIO - SMAM/NM/TL23	R	Cable No X01
158	1	EXTERNAL COAX CABLE (Lightning Arrester to Aerial)	R.F. INDUSTRIES	ANDREW - CNT400	R	Cable No X02
159	2	COAX PLUG (For CNT400 cable)	PULSE	N-203HS	R	Straight cable plug crimp
160	1	U CLAMPS	R.F. INDUSTRIES	UNV	R	
164.0	Lot	MINIATURE THERMAL CIRCUIT BREAKER	PHOENIX CONTACT	TCP 'x'A + UK6FSI/C	-	'x' = AMP Rating
164.1		THROUGH TERMINALS (Grey & Blue as Required)	PHOENIX CONTACT	PIT 2.5		PIT 2.5-BU (for -ve)
164.2		DISCONNECT TERMINALS (Grey & Blue as Required)	PHOENIX CONTACT	PIT 2.5-MT	-	PIT 2.5-MT-BU (for -ve)
164.3		GROUP MARKER CARRIER	PHOENIX CONTACT	UBE	-	
164.4		PLUG-IN BRIDGE	PHOENIX CONTACT	FBS-50	-	AS REQUIRED
164.5	2	TEST PLUG	PHOENIX CONTACT	PS-5		
164.6		COVER PROFILE (SHROUDING) + CARRIER PLATE	PHOENIX CONTACT	AP-2 + AP2-TU	-	AS REQUIRED
165					-	
166					-	
169						
170	1	ENERGEX PADLOCK - 45mm brass pin tumbler	H.A. REED LOCKSMITHS	KEY No 325 & S/S Shackle	-	c/w 2 KEYS
171						
172	Lot	WET WELL CONDUIT END CAPS c/w NYLON CABLE GLANDS	HD PVC	TO SUIT CONDUITS		Detail 'W'
173	Lot	S/STEEL FITTINGS AS DETAILED FOR PRESSURE TX	FITTINGS	STAINLESS STEEL	U	Sheet 24
174	1	EARTH ROD CONNECTION BOX	NESCO	ERB1	-	
175	1	LINE TAP - BONDING TO EARTHING ROD	CLIPSAL	BP26	-	
176	1	EARTHING ROD	COPPER ROD	13mm Diameter	-	
177					E	
178					Q	
179					E	
180					E	
181					E	
182					E	
183					E	
184					E	
185					E	
186					E	
187	2	SINGLE POINT PROBES	MULTITRODE	2 off - 020130FSP-Shield	-	
188					C	
189					G	
190					G	
191	1	EXTERIOR AREA LIGHT	STRATEGIC LIGHTING	ECLIPSE - T5 2x80W	J	High Impact Resistant
192	4	CORROSION INHIBITOR	CORTEC	VPCI-110 OR 111	-	FROM AP CONTROLS

Sheet 18

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED: P.HAGUE
DRAFTING CHECK: A.WITTHOFT
CAD FILE: 57-0297set_A
B.C.C. FILE No.

Original Signed by P.HAGUE 6-11-12
DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 6-11-12
DESIGN CHECK R.P.E.Q. No. DATE

PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

TITLE
EQUIPMENT LIST

SHEET No. 18
Queensland Urban Utilities DRAWING No. 486/5/7-0297-018 AMEND. A

STD TEMPLATE SP-2P Ver32

D:\AA_Major Projects\QUU - SPRI11\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

03-04-13

CABLE No.	STATUS	SIZE	CORES	TYPE	LENGTH (m) Note 1	FROM	TO	CABLE FUNCTION	NOTES
P01	NEW	$16mm^2$	4C	PVC/CU/PVC Note2		ENERGEX Supply Pillar/Pole	Switchboard	Incoming Mains Supply	Refer Note2 for Cable Protection
E01	NEW	$6mm^2$	1C	Building Wire		Switchboard	Earth stake	Main Earth	
P05	EXISTING	$2.5mm^2$	3C+E+2pilots	Flexible (Submersible)		Switchboard - Pump De-Contactor	Pump No1	Pump 1 Motor Feed +Thermistors	
P08	EXISTING	$6mm^2$	3C+E	Flexible (Submersible)		Switchboard - Pump De-Contactor	Pump No2	Pump 2 Motor Feed	
P23	NEW	$2.5mm^2$	2C+E	PVC/CU/PVC		Switchboard	External Area Lights	Area Lighting	
C200	EXISTING	$1.5mm^2$	7C	Flexible (Submersible)		Switchboard - Pump Aux Plug	Pump No2	Pump 2 Motor Thermistors	
C01	NEW	$1.5mm^2$	2C	Vendor-020130FSP-Shield		Switchboard	Surcharge Imminent Probe	Surcharge Imminent Signal (SIR)	
C02	NEW	$1.5mm^2$	2C	Vendor-020130FSP-Shield		Switchboard	Wet Well High Level Probe	Wet Well High Level Signal (LR3)	
I01	NEW			Vendor		Switchboard	Wet Well Hydroscopic Level Sensor	Primary Wet Well Level	Incl Excess Length - See Note 3
I02	NEW			Vendor		Switchboard	Delivery Pressure transmitter	Delivery Pressure	Located in Valve Pit
I06	NEW	24 AWG	1 Pr	120 ohm Twisted Pair		Switchboard - RTU	Switchboard - Soft Starter No1	RS485 Comms	Overall Screened Twisted Pair
I07	NEW	24 AWG	1 Pr	120 ohm Twisted Pair		Switchboard - Soft Starter No1	Switchboard - Soft Starter No2	RS485 Comms	Overall Screened Twisted Pair
I11-I13	NEW			Ethernet		Switchboard RTU	Graphic Display/Modem/Radio	Communications	
X01	NEW			Vendor		Switchboard - Radio	Aerial Coax Surge Protector	Radio Communications	
X02	NEW			CNT400		Aerial Coax Surge Protector	Aerial	Radio Communications	

NOTE:

1. THE CONTRACTOR IS RESPONSIBLE IN DETERMINING THE ACTUAL CABLE LENGTHS REQUIRED ON SITE.

2. PROTECT THE MAINS CABLE USING PVC SHEATHED FLEXIBLE METAL CONDUIT SUCH AS 'ADAPTAFLEX' FROM 150mm Min WITHIN THE PVC MAINS CONDUIT CAST IN THE SLAB UP TO THE GLAND PLATE. TERMINATE USING PROPRIETARY GLAND. SEAL AROUND CABLE AT EXIT POINT OF CONDUIT TO PREVENT INGRESS OF VERMIN. PROVIDE ADEQUATE EXCESS FOR RE-TERMINATION.

3. ALLOW SUFFICIENT LENGTH ON CABLE TO ALLOW FOR REMOVAL OF PROBE AND CONDUIT. EXCESS LENGTH TO BE STORED IN ELECTRODE BOX

Sheet 19

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

STD TEMPLATE SP-3P Ver3.2

DRAFTED: P.HAGUE
DRAFTING CHECK: A.WITTHOFT
CAD FILE: 57-0297set_A
B.C.C. FILE No.:

Original Signed by P.HAGUE 6-11-12
DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 6-11-12
DESIGN CHECK R.P.E.Q. No. DATE

PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

TITLE
CABLE SCHEDULE

SHEET No. 19
Queensland Urban Utilities DRAWING No. 486/5/7-0297-019
AMEND. A

D:\AA_Major Projects\QUU - SPRI11\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

ITEM #	OPT.	DESCRIPTION - INTERNAL LABEL	LABEL 1	LABEL 2 (IF NECESSARY)	TEXT HEIGHT	MATERIAL / COLOUR
02		ENERGEX SUPPLY	NORMAL SUPPLY MAIN SWITCH 125A	REFER SHEET 01 NOTE 11	10mm 4mm	ABS PLASTIC B/W
03		GENERATOR SUPPLY	GENERATOR SUPPLY MAIN SWITCH 125A		10mm 4mm	ABS PLASTIC B/W
04/05		PUMP CIRCUIT BREAKER	PUMP No1 20A	PUMP No2 20A	6mm 4mm	ABS PLASTIC W/B
07		PHASE FAILURE CIRCUIT BREAKER	ENERGEX PHASE FAILURE RELAY Q7	FED FROM LINE SIDE OF MAIN SWITCH	4mm 4mm	ABS PLASTIC W/B
09		SUB-DISTRIBUTION BOARD CB	SUB-DISTRIBUTION BOARD 63A	Mounted On Escutcheon	6mm 4mm	ABS PLASTIC W/B
10		PHASE FAILURE CIRCUIT BREAKER	STATION PHASE FAILURE RELAY Q10		4mm 4mm	ABS PLASTIC W/B
11		1 PHASE OUTLET CIRCUIT BREAKER	1Φ GPO Q11		4mm 4mm	ABS PLASTIC W/B
12		RTU LAPTOP CIRCUIT BREAKER	RTU LAPTOP GPO Q12		4mm 4mm	ABS PLASTIC W/B
13		SPARE CIRCUIT BREAKER	SPARE Q13		"	"
14		SPARE CIRCUIT BREAKER	SPARE Q14		"	"
15		GENERATOR ANCILLARY SUPPLY CB	GENERATOR ANCILLARY SUPPLY Q15		4mm 4mm	ABS PLASTIC W/B
16		EXT. AREA LIGHTING CIRCUIT BREAKER	AREA LIGHTING Q16		4mm 4mm	ABS PLASTIC W/B
17		SURGE FILTER CIRCUIT BREAKER	SURGE FILTER Q17		4mm 4mm	ABS PLASTIC W/B
18		EM PUMP CONTROL & SIR CIRCUIT BREAKER	EM PUMPING CCT & SIR Q18		4mm 4mm	ABS PLASTIC W/B
19		SPARE CIRCUIT BREAKER	SPARE Q19		4mm 4mm	ABS PLASTIC W/B
20		3 PHASE OUTLET CIRCUIT BREAKER	3Φ OUTLET Q20		4mm 4mm	ABS PLASTIC W/B
21		SPARE CIRCUIT BREAKER	SPARE Q21		"	"
24		RTU POWER SUPPLY CIRCUIT BREAKER	RTU POWER SUPPLY Q30		4mm 4mm	ABS PLASTIC W/B
25		SURGE FILTER ALARM RELAY CIRCUIT BREAKER	SURGE FILTER ALARM RELAY Q31		4mm 4mm	ABS PLASTIC W/B
26		SPARE CIRCUIT BREAKER	SPARE Q32		"	"
27		SPARE CIRCUIT BREAKER	SPARE Q33		4mm 4mm	ABS PLASTIC W/B
31		PUMP 240VAC CONTROL CIRCUIT BREAKER	PUMP No1 Q4-1	PUMP No2 Q5-1	4mm 4mm	ABS PLASTIC W/B
32		24VDC CONTROL CIRCUIT BREAKER	PUMP No1 QD4	PUMP No2 QD5 EM PUMPING QD18	4mm 4mm	ABS PLASTIC W/B
33		BATTERY CIRCUIT BREAKER	BATTERY QD8		4mm 4mm	ABS PLASTIC W/B
34		240VAC-24VDC POWER SUPPLY	PS-P1	PS-P2 PS3	4mm 4mm	ABS PLASTIC W/B
35						
37		SURGE DIVERTER FUSES	SURGE DIVERTER FUSES 63A/63A	FED FROM LINE SIDE OF MAIN SWITCH	4mm 4mm	ABS PLASTIC W/B - R/W
38		SURGE DIVERTERS	SURGE DIVERTERS	FED FROM LINE SIDE OF MAIN SWITCH	4mm 4mm	ABS PLASTIC W/B - R/W
39		SURGE FILTER ALARM RELAY	SFAR		4mm 4mm	ABS PLASTIC W/B
40		SURGE REDUCTION FILTER	SURGE REDUCTION FILTER		4mm 4mm	ABS PLASTIC W/B
41		PHASE FAILURE RELAY	ENERGEX MAINS POWER FAIL - PFRE	FED FROM LINE SIDE OF MAIN SWITCH	4mm 4mm	ABS PLASTIC W/B - R/W
43		PHASE FAILURE RELAY	STATION MAINS POWER FAIL - PFRS		4mm 4mm	ABS PLASTIC W/B
45		MAIN NEUTRAL LINK	MAIN NEUTRAL		4mm	ABS PLASTIC W/B
46		MAIN EARTH LINK	MAIN EARTH		4mm	ABS PLASTIC W/B
47		SUB-BOARD NEUTRAL LINK	NEUTRAL		4mm	ABS PLASTIC W/B
48		SUB-BOARD EARTH LINK	EARTH		4mm	ABS PLASTIC W/B
49		~~SURGE DIVERTER NEUTRAL LINK~~	~~SURGE DIVERTER NEUTRAL~~		4mm	~~ABS PLASTIC W/B~~
50		INSTRUMENT EARTH LINK	INSTRUMENT EARTH		4mm	ABS PLASTIC W/B
51		FILTERED SUPPLY NEUTRAL LINK	FILTERED SUPPLY NEUTRAL		4mm 4mm	ABS PLASTIC W/B
54		LAPTOP GPO	LAPTOP SPO ONLY		4mm	ABS PLASTIC W/B
55	M	GENERATOR 240VAC CONNECTION SOCKET	GENERATOR ANCILLARY SUPPLY		4mm 4mm	ABS PLASTIC W/B
56	M	GENERATOR POWER CONNECTION SOCKET	GENERATOR CONNECTION	REFER SHEET 01 NOTE 4	6mm 6mm	ABS PLASTIC W/B
59		PUMP SOFT STARTER	PUMP No1 1U1	PUMP No2 2U1	6mm 4mm	ABS PLASTIC W/B
60		PUMP SOFT STARTER KEYPAD	PUMP No1	PUMP No2	8mm	ABS PLASTIC W/B
61						
63						
64		LINE CONTACTOR	PUMP 1 1K1	PUMP 2 2K1	4mm 4mm	ABS PLASTIC W/B
65		SOFT STARTER RUNNING RELAY	1K2	2K2	4mm	ABS PLASTIC W/B
66		SOFT STARTER FAULT RELAY	1K3	2K3	4mm	ABS PLASTIC W/B
67		EM. STOP RELAY	1K4	2K4	4mm	ABS PLASTIC W/B
68		PUMP POWER ON RELAY	1K5	2K5	4mm	ABS PLASTIC W/B
69		PUMP RUN RELAY	1K6	2K6	4mm	ABS PLASTIC W/B

ITEM #	OPT.	DESCRIPTION - INTERNAL LABEL	LABEL 1	LABEL 2 (IF NECESSARY)	TEXT HEIGHT	MATERIAL / COLOUR
73		PUMP RUN COMMAND RELAY	1K20	2K20	4mm	ABS PLASTIC W/B
74		PUMP FAULT RESET RELAY	1K21	2K21	4mm	ABS PLASTIC W/B
75		PUMP EMERGENCY MODE INTERRUPT RELAY	1K22	2K22	4mm	ABS PLASTIC W/B
77		PUMP START PUSHBUTTON	START	START	4mm	ABS PLASTIC W/B
78		PUMP STOP PUSHBUTTON	STOP	STOP	4mm	ABS PLASTIC W/B
79		PUMP EM.STOP PUSHBUTTON	(use label supplied with P/Button)	(use label supplied with P/Button)		Y/B
80		PUMP RESET PUSHBUTTON	FAULT RESET	FAULT RESET	4mm	ABS PLASTIC W/B
81		~~PUMP HOURS RUN METER~~	~~HOURS RUN~~	~~HOURS RUN~~	~~4mm~~	~~ABS PLASTIC W/B~~
82/83	J	PUMP DE-CONTACTOR	PUMP No1	PUMP No2	6mm	ABS PLASTIC W/B
84/85	J	PUMP AUX CONTROL PLUG & SOCKET	PUMP No1	PUMP No2	6mm	ABS PLASTIC W/B
93		WET WELL HIGH LEVEL RELAY	WET WELL HIGH LEVEL - LR3		4mm 4mm	ABS PLASTIC W/B
96		SIRCHARGE IMMINENT LEVEL RELAY	WET WELL SURCHARGE IMMINENT - SIR		4mm 4mm	ABS PLASTIC W/B
97		EMERGENCY PUMPING MODE PUMP 1 RELAY	EMG1		4mm	ABS PLASTIC W/B
98		SURCHARGE IMMINENT ON DELAY TIMER	SIDT		4mm	ABS PLASTIC W/B
99		EMERGENCY PUMPING MODE OFF DELAY TIMER	EMGDT		4mm	ABS PLASTIC W/B
100		EMERGENCY PUMPING MODE PUMP 2 TIMER	EMG2		4mm	ABS PLASTIC W/B
101		EMERGENCY PUMPING MODE START SWITCH	EMERGENCY PUMPING MODE	EMERGENCY PUMPING MODE	4mm 4mm	ABS PLASTIC W/B
102		EMERG. PUMPING MODE OFF DELAY AUX RELAY	EMGOTA		4mm	ABS PLASTIC W/B
				EMERGENCY PUMPING MODE OFF ON	4mm 4mm 4mm	
115		SWITCHBOARD LIGHTING CONTROL RELAY	SLCR	DZCR	4mm	ABS PLASTIC W/B
116		AREA LIGHTING CONTROL SWITCH	AREA LIGHTING		4mm	ABS PLASTIC W/B
118		STATION LOCAL/REMOTE SELECTOR SWITCH	STATION CONTROL MODE		4mm	ABS PLASTIC W/B
119		ELECTRODES TEST RELAY	ETR		4mm	ABS PLASTIC W/B
121		WET WELL LEVEL INDICATOR	WET WELL LEVEL		4mm	ABS PLASTIC W/B
134		WET WELL PRIMARY LEVEL ADJ. UNIT	PRIMARY WET WELL LEVEL (Located in Sw/Bd)		4mm 4mm	ABS PLASTIC W/B
137	U	DELIVERY PRESSURE ADJ. UNIT	DELIVERY PRESSURE (Located in Sw/Bd)		4mm 4mm	ABS PLASTIC W/B
139		CONTROL SYS 240VAC/24VDC POWER SUPPLY	CONTROL SYSTEM 24VDC POWER SUPPLY		4mm 4mm	ABS PLASTIC W/B
140	R	RADIO 24V/13.8VDC CONVERTER	24/12 VDC CONVERTER - RADIO		4mm 4mm	ABS PLASTIC W/B
143	R	RADIO	RADIO		4mm	ABS PLASTIC W/B
145	R	RADIO COAX SURGE PROTECTION	RADIO SURGE PROTECTION		4mm	ABS PLASTIC W/B
146		TELEMETRY UNIT	RTU		4mm	ABS PLASTIC W/B
147	I	MODEM	MODEM		4mm	ABS PLASTIC W/B

ITEM #	OPT.	DESCRIPTION - INTERNAL LABEL	LABEL 1	LABEL 2 (IF NECESSARY)	TEXT HEIGHT	MATERIAL / COLOUR
4 off		Access Plate Label	Inspection Plate [illegible]		6mm [illegible]	W/B
		Terminal Header	SWITCHBOARD LIGHTING			
		TERMINAL HEADER	24VDC POWER DISTRIBUTION	DIGITAL INPUTS DI4	4mm 4mm	ABS PLASTIC W/B
		TERMINAL HEADER	DIGITAL INPUTS DI1	DIGITAL INPUTS DI2 DIGITAL INPUTS DI3	4mm 4mm	ABS PLASTIC W/B
		TERMINAL HEADER	DIGITAL OUTPUTS DO1	DIGITAL OUTPUTS DO2	4mm 4mm	ABS PLASTIC W/B
		TERMINAL HEADER	ANALOG INPUTS AI1	ANALOG OUTPUTS AO1	4mm 4mm	ABS PLASTIC W/B
		HEADER LABELS (Above DB Circuit Breakers)	NON FILTERED SUPPLY	FILTERED SUPPLY	6mm 6mm	ABS PLASTIC W/B
		HEADER LABEL (Incomer Section)	MEN BEHIND		6mm	ABS PLASTIC W/B
		HEADER LABEL (Over Terminals 600-613)	LEVEL TX AND LEVEL PROBES		4mm 4mm	ABS PLASTIC W/B
		HEADER LABEL (Over Shrouded Terminals)	WARNING 240VAC		4mm 4mm	ABS PLASTIC R/W
200						
201						
203	F2	GENERATOR BOLTED CONNECTIONS	~~BUSBAR LIVE WHEN SWITCHBOARD ENERGISED FROM GENERATOR~~	REFER SHEET 01 NOTE 10	4mm 4mm	ABS PLASTIC R/W
204						
205						
206		METER PANEL WARNING SIGN	(DUPLICATE LABELS 'X' & 'Y' FROM EXTERNAL LABEL LIST)	(MOUNT INSIDE METER BOX ADJACENT METERS)	6mm 6mm	ABS PLASTIC W/B
208						
209		PUMP INFORMATION LABEL Label size to be approximately 150 x 50	SP143 LINKS AVE SOUTH PUMPS ZONE 6.1 kW 4.6 IMPELLER 220		6mm	ABS PLASTIC W/B

EXTERNAL DOOR LABEL LIST

LABEL	TEXT	TEXT HEIGHT	PAINT FILL LETTERING	QTY
A	SP143	25mm	Black	1
B	RTU	10mm	Black	1
C	PUMP ? CONTROL	10mm	Black	2
D	WARNING THIS SITE IS MONITORED BY THE CONTROL ROOM. PLEASE INFORM THE OPERATOR BEFORE ISOLATING PUMPS OR STATION	8mm	Black	2
E	PLEASE CHECK THAT THE STATION IS IN REMOTE MODE BEFORE LEAVING SITE	8mm	Black	1
F	COMMON CONTROL	10mm	Black	1
I	MAIN SWITCHES	10mm	Black	1
J	DISTRIBUTION BOARD	10mm	Black	1
L	GENERATOR BUSBAR CONNECTIONS	10mm	Black	1
M	PUMP DE-CONTACTORS	10mm	Black	1
N	GENERATOR PLUG CONNECTIONS	10mm	Black	1
O	BATTERIES	10mm	Black	1
P	SUPPLY AUTHORITY METERING	10mm	Black	1
Q	DANGER 415V	10mm	Black	1
R	DANGER - 2 SOURSES OF SUPPLY	10mm	Red	1
T	SURGE DIVERTERS	10mm	Black	1
Y	Phone: 340 78414 (Butt up directly under Label 'X')	8mm	Black	1
Z	DANGER - ELECTRICAL EQUIPMENT Queensland Urban Utilities Phone 34078414 NOTE: LABEL DESIGN IS ISSUED FROM QUU			1

EXTERNAL LABELS 1mm THICK. 316 GRADE STAINLESS STEEL. FIXED WITH M3 316 STAINLESS STEEL METAL THREADS.

DETAIL Q

FIELD LABEL LIST

LABEL	TEXT	TEXT HEIGHT	PAINT FILL LETTERING	QTY
AA	MAIN EARTH CONDUCTOR - DO NOT DISCONNECT (On Main Earth Electrode)	5mm		1

LABEL 'X'

WARNING
THIS SITE IS CONTINUOUSLY MONITORED
CONTACT CONTROL ROOM
BEFORE OPENING METER DOOR
AND PRIOR TO LEAVING SITE.

8mm	Black	1

Sheet 20

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED: P.HAGUE
DRAFTING CHECK: A.WITTHOFT
CAD FILE: 57-0297set_A
B.C.C. FILE No.

Original Signed by P.HAGUE 6-11-12
DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 6-11-12
DESIGN CHECK R.P.E.Q. No. DATE

PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

QUEENSLAND Urban Utilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE: SP143 LINKS AVE SOUTH SEWAGE PUMP STATION

TITLE: SWITCHBOARD LABEL SCHEDULE

SHEET No. 20
Queensland Urban Utilities DRAWING No. 486/5/7-0297-020
AMEND. A

STD TEMPLATE SP-2P Ver3.2

D:\AA_Major Projects\QUU - SPRI11\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

03-04-12

CONSTRUCTION - EXTERNAL SWITCHBOARD

Cubicle construction 3mm Marine grade Aluminium (5251).
Plinth construction ~~75x60~~ 80x40mm channel 6061 T6 Grade Aluminium.
Folded, "Pulse MIG" & "TIG welded with all visible seams and joints fully welded, free from splatter and ground smooth where needed.
External doors and covers fitted with Emka 1011-207 self grip seal.
Stainless Steel "D" Handles fitted where indicated on the drawings.
M6 Earth studs fixed to the interior of all doors and hinged escutcheons and on adjacent cubicle interior surfaces. Fit dedicated earth stud adjacent main earth bar for switchboard earth.
Door stiffeners, door stays, cable straps, and document holders etc fitted where shown on the drawings.
Door stay arms to be S/Steel and of sufficent strength to prevent being deformed when subjected to reasonable loads. Minimum 3mm S/Steel.
Lift-off covers and mounting panels fixed with M8 studs & stainless steel dome nuts.
Gland plates manufactured from 3mm aluminium, unless otherwise shown.
Inspection/Access plates manufactured from 3mm aluminium.
Gland/Inspect/Access plate openings fitted with M6x1.0 flat head closed end rivet nuts. (Detail F)
Cable glands to be fitted with compression side installed within cubicle. (Detail G)
Gland/Inspection/Access plates to be fitted with seals attached to cubicle.
Gland/Inspection/Access plate fixings at 100mm.
Gland/Inspection/Access plates to maintain a 50mm clearance from section dividers.
Gland/Inspection/Access plates are NOT to be split.
Inspection/Access plates are NOT to be earthed.
Provide Shrouding to all live parts to IP20 where required.
Hinges (external) Selectrix HIB650ss-316. Stainless steel.
Star washers fitted under all hinge screws.
Hinged escutcheons fixed with Emka 1/4 turn 1000-U142
All equipment to be removable via front access.
Install switchboard with non-hydroscopic material between plinth and concrete slab. (Detail E1)
All escutcheons to open a minimum of 90°
All sheet metal edging to be de-burred.

Locks Doors 1 - 9 & 11
DORE ELECTRICS - Swing Handle SHKSS Universal Locking - 92268
DORE ELECTRICS - 3 point lock rod set - TLR24
Half Profile Cylinder
Key Codes RC496A, RC496AB, RC496ABC refer to each door for clarification.

Locks Door 12
DORE ELECTRICS - Swing Handle SHKSS Universal Locking - 92268
DORE ELECTRICS - 3 point lock rod set - TLR22SS (all S/Steel)
Lockwood Barrel Lock, Key Code RC496AB

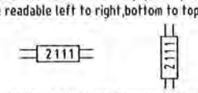
Locks Door 10
DORE ELECTRICS - Swing Handle SHPSS Padlockable - 316
DORE ELECTRICS - 3 point lock rod set - TLR24
ENERGEX padlock, S/Steel Shackle, 45mm brass pin tumbler.
Energex Key No325. c/w 2 keys.

OPERATING PARAMETERS

Standard	AS 3439.1
Current & Frequency	AC 50Hz
Rated Operational Voltage Ue	415 VAC
Rated Insulation Voltage Ui	660 V
Rated Auxiliary Voltage	240 VAC / 24 VDC
Rated Current (Main Bus)	100 ~~300~~ AMPS
Short Circuit Current Isc	20 kA
Duration of Isc	.2 sec
Degree of Protection	IP 56 to AS 1939
Measure of Protection by barriers and enclosures.	
Service Conditions	Outdoors
Mass	Not exceeding 2000kg
Forms of Segregation	Form 3 (DB SECTION FORM 2)

WIRING

All wiring to be PVC V90 HT 0.6/1Kv Grade with tinned conductor.
Control and instrumentation wiring has flexible copper conductors, and is colour coded as detailed below, each individual wire shall be numbered each end, and terminated by the use of appropriate pre-insulated crimp lugs or pins.
Separate lugs or pins shall be used for each conductor. A proprietary double pin lug may be used to terminate two conductors.
Use proprietary bridging links when required to common up terminals.
Not more than two wires shall be connected to any terminal.
Not more than one wire shall be connected on one side of any tunnel type terminal.
Where multiple connections are required on tunnel terminals, proprietary terminal link bars shall be used.
Power wiring to be minimum 2.5sqmm stranded copper conductors, phase colour coded as detailed below.
Control wiring to be minimum 1.0sqmm flexible copper conductors, colour coded as detailed below.
Low level control signals to be minimum 0.5sqmm flexible copper conductors. colour coded as detailed below.
Wiring between RTU terminals & RTU disconnect plugs to be multicore cable with 0.5sqmm flexible copper conductors.
4-20mA analog signals (internal & external) wired in shielded pair minimum size 0.5sqmm, and earthed at one end only. (Switchboard end for external signals)
All 240VAC wiring in the RTU or PLC sections shall be double insulated and all terminals shall be shouded and labelled- ' Danger 240VAC'
Earth cables minimum 2.5sqmm flexible.
Doors and hinged escutcheons bonded with flexible ~~tinned~~ copper ~~braiding~~ B/Wire
Disconnection zone door to be bonded with flexible copper B/Wire. Heat shrink at lugs.
Switchboard to have dedicated earthing cable bonding directly to main earth bar.
Ensure minimum clearance of 100mm is maintained between cable ducting & gland plates.
Wire numbering will be equal to Grafoplast SI2000 system.
Terminal strips to be mounted 30mm off equipment panel to aid termination.
Wire numbers are readable left to right,bottom to top as shown.



~~Supply spare 'RTU fuse-terminal' fuses seperately, 2x10A, 2x5A 4x2A, 6x5A~~
All cable glands to be Stainless Steel type.

COLOUR CODE

Phase wiring (A,B &C)	Red, White, Blue	2.5sqmm (min)
Potential Metering (240/415 VAC)	Red, White, Blue, Black	1.5sqmm
Current Metering (Secondary)	Red, White, Blue, Grey	2.5sqmm
240 VAC Control Active	Red	1.0sqmm
240 VAC Neutral	Black	1.0sqmm
Extra Low VDC Positive supplies	Orange	1.0sqmm
Extra Low VDC Negative supplies	Violet	1.0sqmm
General Extra Low VDC Wiring	Grey	1.0sqmm
RTU & PLC Wiring	Grey	0.5sqmm
Electrode Wiring	Salmon	1.0sqmm
Intrinsically safe wiring	Light Blue	1.5sqmm
Earth	Green/Yellow	2.5sqmm (min)
Door & Escutcheon Earth Bonds	Green/Yellow	4 sqmm
Instrument Shield Earth	Green/Yellow	1.5sqmm (min)

PAINTING

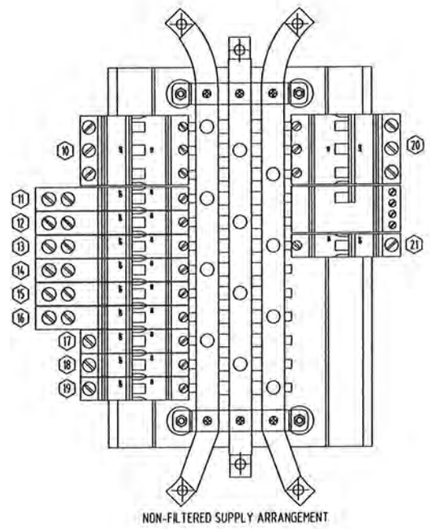
Aluminium Surface Preparation
Finish smooth all exposed welds, clean, descale, and degrease all surfaces.
Surfaces pretreatment in accordance with AS 1580 & AS 3715 using Novox LF acid etch cleaner, Novacoat 12 conversion coating, & clean water rinses.
Apply DULUX ALPHATECH 3000 powder coat to manufacturer's recommendations.
CUBICLE & EXTERNAL COMPONENTS :- DULUX Mist Green (36648) matt finish.
INTERIOR ITEMS (mounting panels, escutcheons, etc.) :- DULUX Bright White (32166)
Minimum Dry Film Thickness all surfaces 50 microns.

LABELS

Internal labels W/B engraved ABS PLASTIC to label schedule.
Warning labels R/W engraved ABS PLASTIC to label schedule.
E/Stop labels Y/B engraved ABS PLASTIC to label schedule.
First letter = Background colour, Second letter = Lettering colour.

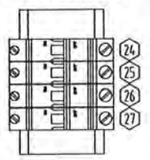
Main switch label	MAIN SWITCH 400A	10mm / 4mm	Material ABS PLASTIC Colour B/W
Pump CB labels	PUMP No1 250A	6mm / 4mm	Material ABS PLASTIC Colour W/B
Compartment labels	RTU	10mm	Material Stainless Steel
E/Stop labels	EMERGENCY STOP	4mm	Material ABS PLASTIC Colour Y/B
Warning labels	DANGER 415V ISOLATE ELSE WHERE	7mm / 5mm	Material ABS PLASTIC Colour R/W

Internal labels secured by M3 chrome plated metal threads.
CB's to be identified with individual labels as per label schedule.
Labels obstructed by switchboard wiring are relocated to adjacent duct lid and secured by M3 nylon threads. Lid to be secured by a single cable tie at one corner.
External switchboard labels to be 1mm thick 316 grade stainless steel secured by M3 316 stainless steel metal threads.
All internal and external labels are to have bevelled edges.



NON-FILTERED SUPPLY ARRANGEMENT

FILTERED SUPPLY ARRANGEMENT



DETAIL M
SUB-DISTRIBUTION BOARD ARRANGEMENT

Sheet 21

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED P.HAGUE
DRAFTING CHECK A.WITTHOFT
CAD FILE 57-0297set_A
B.C.C. FILE No.

Original Signed by P.HAGUE 6-11-12
DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 6-11-12
DESIGN CHECK R.P.E.Q. No. DATE

PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

TITLE
SWITCHBOARD
CONSTRUCTION DETAILS
SHEET 1 OF 3

SHEET No. 21
Queensland Urban Utilities DRAWING No. 486/5/7-0297-021
AMEND. A

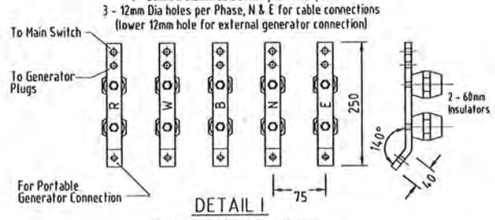
D:\AA_Major Projects\QUU - SP#111\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

27-2-13

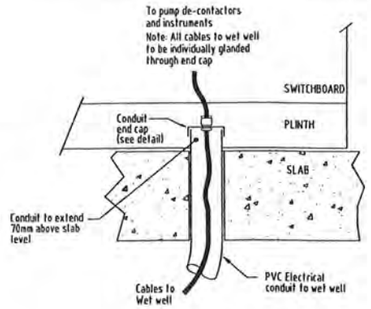
ESCUTCHEON LAYOUT DETAIL V

ESCUTCHEON LAYOUT DETAIL X

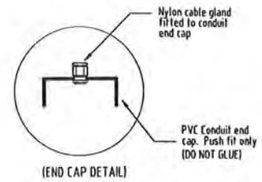
1 - 30mm x 6.3mm Cu Busbar per Phase, N & E
3 - 12mm Dia holes per Phase, N & E for cable connections
(lower 12mm hole for external generator connection)



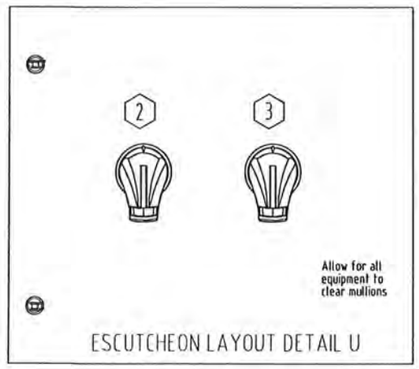
DETAIL I
(GENERATOR BOLTED CONNECTION)
(FIT SHROUD AND LABEL)



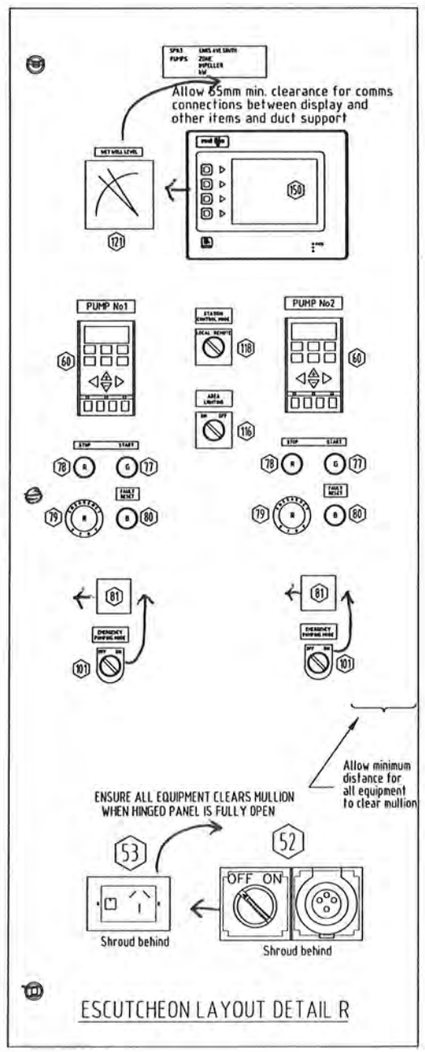
DETAIL W
(WET WELL CONDUIT SEALING DETAIL)



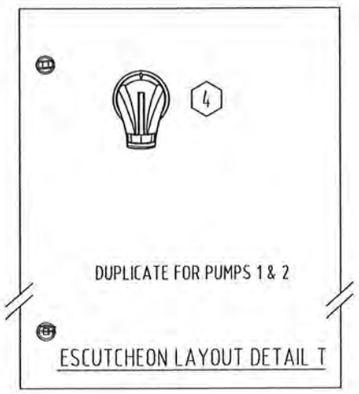
(END CAP DETAIL)



ESCUTCHEON LAYOUT DETAIL U

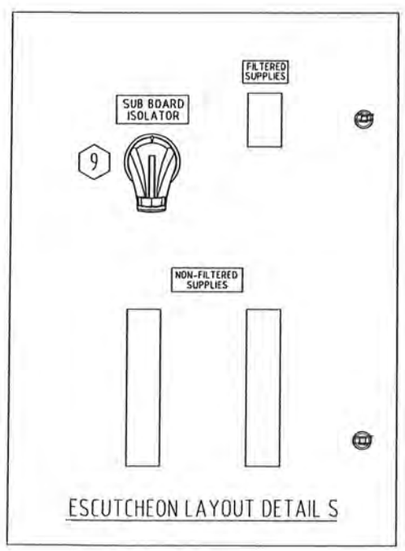


ESCUTCHEON LAYOUT DETAIL R



ESCUTCHEON LAYOUT DETAIL T

NOTE:
ALL ESCUTCHEONS
TO OPEN 90° min.



ESCUTCHEON LAYOUT DETAIL S

Sheet 22

FOR CONSTRUCTION

A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.	DRAFTED	P.HAGUE	Original Signed by P.HAGUE	6-11-12			
0	11.12	ISSUED FOR TENDER	P.H.	A.W.	DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE	PRINCIPAL DESIGN MANAGER	DATE	
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.	CAD FILE	57-0297set_A	Original signed by A.WITTHOFT	8895 6-11-12			
No	DATE	AMENDMENT	DRN.	APD.	B.C.C. FILE No.		DESIGN CHECK	R.P.E.Q. No. DATE	CLIENT DELEGATE	DATE	

QUEENSLAND UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

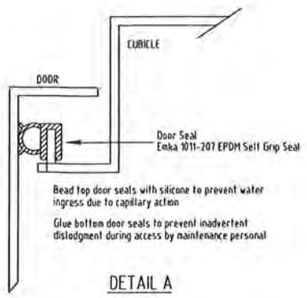
TITLE
SWITCHBOARD
CONSTRUCTION DETAILS
SHEET 2 OF 3

SHEET No. 22
Queensland Urban Utilities DRAWING No. 486/5/7-0297-022
AMEND. A

S10 TEMPLATE SF-3P Ver32

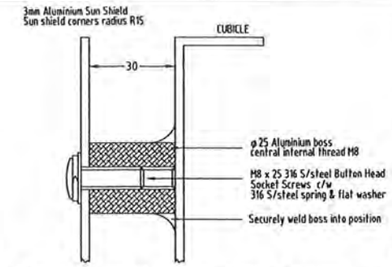
D:\AA_Major Projects\QUU - SPR111\Packages\Package 11\EISP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

27-2-13



DETAIL A

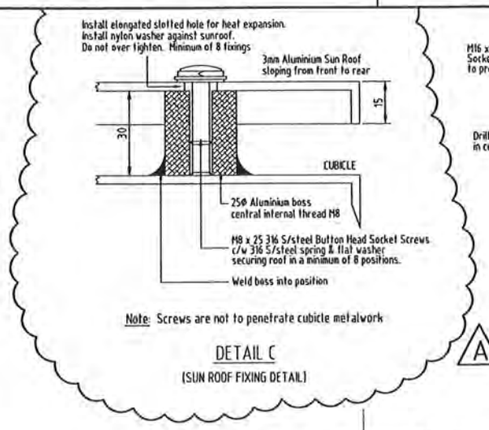
DOOR SEAL
EXTERNAL SWITCHBOARD



Notes: Screws are not to penetrate cubicle metalwork.
Boss for sunshields to be 30mm,

DETAIL B

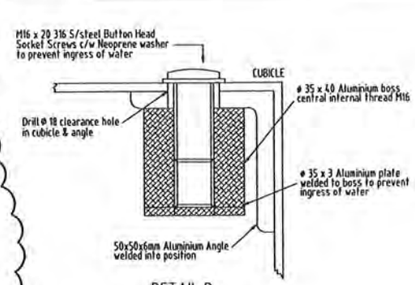
(SUN SHIELD MOUNTING TO ENDS, REAR AND DOORS)



Note: Screws are not to penetrate cubicle metalwork

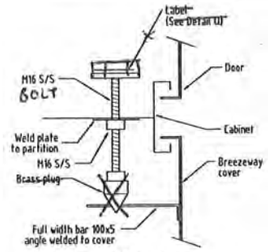
DETAIL C

(SUN ROOF FIXING DETAIL)



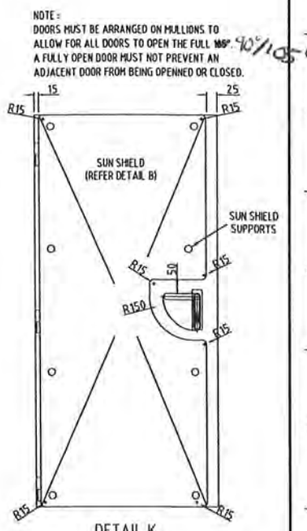
DETAIL D

(EYE BOLT FIXING DETAIL)



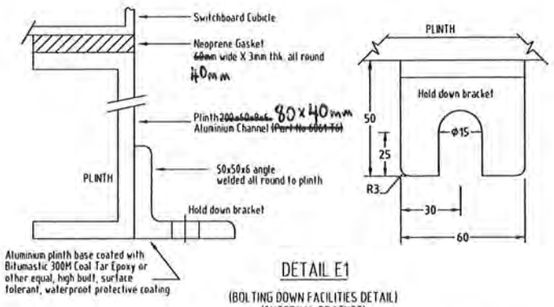
DETAIL V

(BREEZEWAY LATCH INSTALLATION DETAIL)



DETAIL K

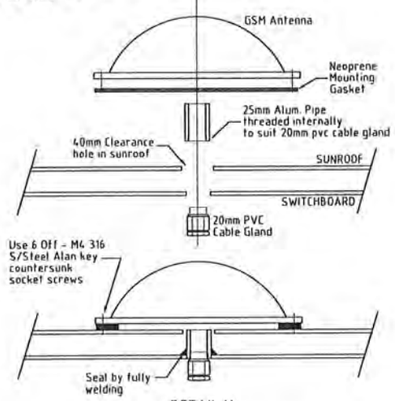
(DOOR SUN SHIELD DETAIL)



DETAIL E1

(BOLTING DOWN FACILITIES DETAIL)
(EXTERNAL BRACKET)

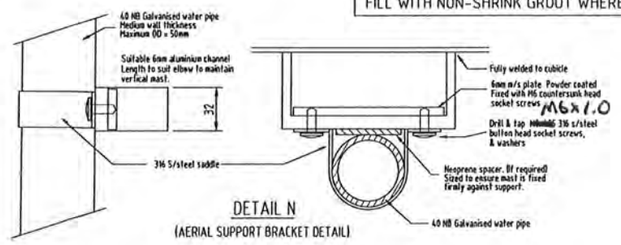
SET UP CUBICLE TO BE LEVEL & PLUMB BEFORE BOLTING TO CONCRETE PLINTH USING M12 S/STEEL CHEMICAL ANCHORS. MINIMUM ANCHORAGE 110mm. USE 40x40x3mm WASHERS FILL WITH NON-SHRINK GROUT WHERE REQUIRED.



DETAIL X

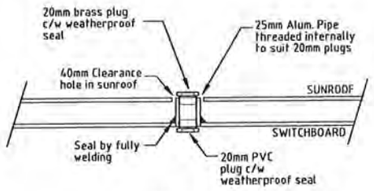
(GSM ANTENNA MOUNTING DETAIL)

DOOR CLEARANCES



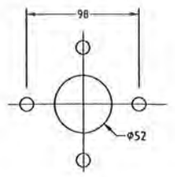
DETAIL N

(AERIAL SUPPORT BRACKET DETAIL)



DETAIL X

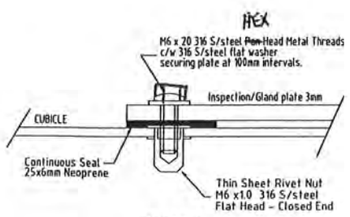
(SMART METERING ANTENNA PLUG DETAIL)



(Fit 3mm neoprene gasket between plinth & flange)
(Fixings 316 s/steel bolts, nuts, flat & spring washers)

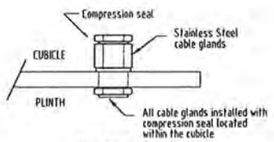
DETAIL P

AERIAL & AREA LIGHTING FLANGE MOUNTING DETAIL
(COMPLETE WITH BLANKING FLANGE IF NO AERIAL FITTED)



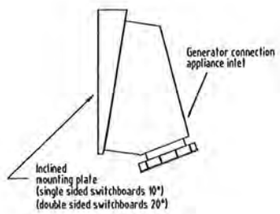
DETAIL F

(GLAND/INSPECTION PLATE FIXING DETAIL)



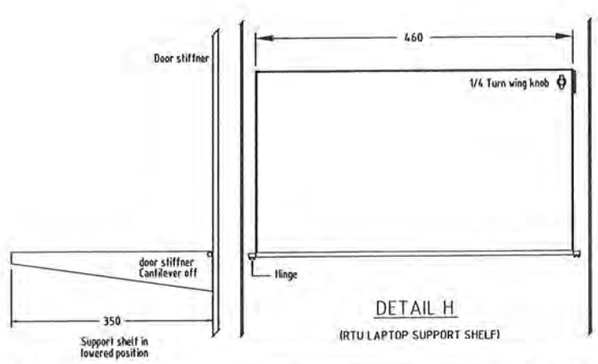
DETAIL G

(CABLE GLAND INSTALLATION DETAIL)



DETAIL O

(INCLINED MOUNTING PLATE DETAIL)



DETAIL H

(RTU LAPTOP SUPPORT SHELF)

Sheet 23

FOR CONSTRUCTION

A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.	DRAFTED	P.HAGUE	Original Signed by P.HAGUE	6-11-12	PRINCIPAL DESIGN MANAGER	DATE
O	11.12	ISSUED FOR TENDER	P.H.	A.W.	DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE		
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.	CAD FILE	57-0297sel_A	Original signed by A.WITTHOFT	8895 6-11-12	CLIENT DELEGATE	DATE
No	DATE	AMENDMENT	DRN.	APD.	B.C.G. FILE No.		DESIGN CHECK	R.P.E.Q. No. DATE		

QUEENSLAND UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

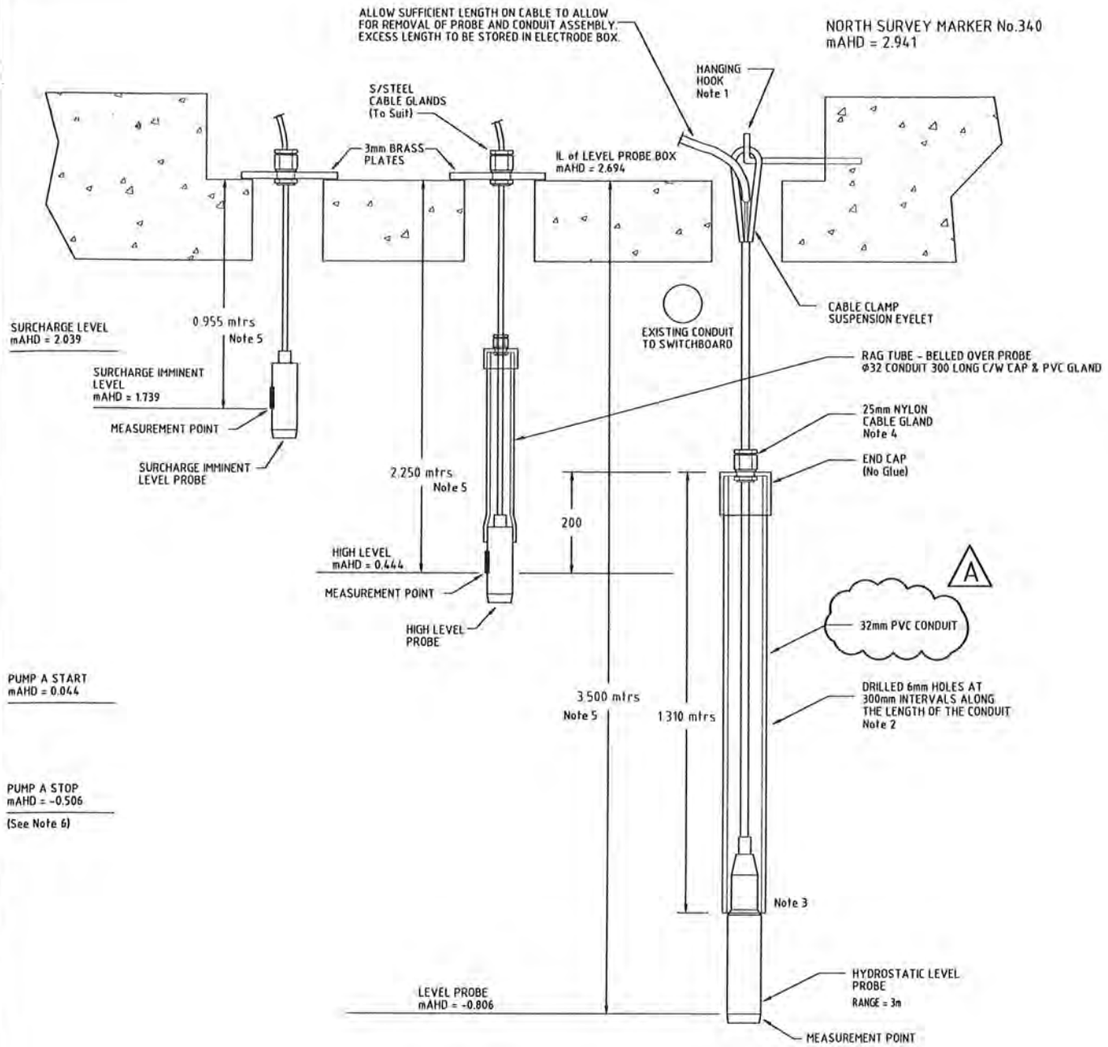
TITLE
SWITCHBOARD
CONSTRUCTION DETAILS
SHEET 3 OF 3

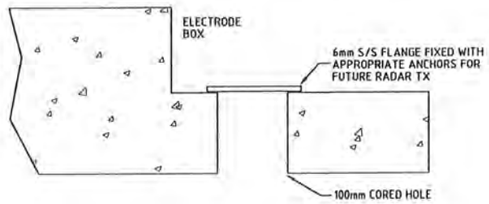
SHEET No. 23
Queensland Urban Utilities DRAWING No. 486/5/7-0297-023
AMEND. A

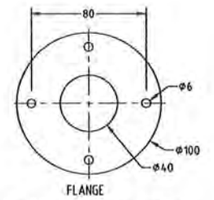
D:\AA_Major Projects\QUU - SPR111\Packages\Package 11\EISP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297sel_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

STD TEMPLATE SP-2F Ver32

03-04-13



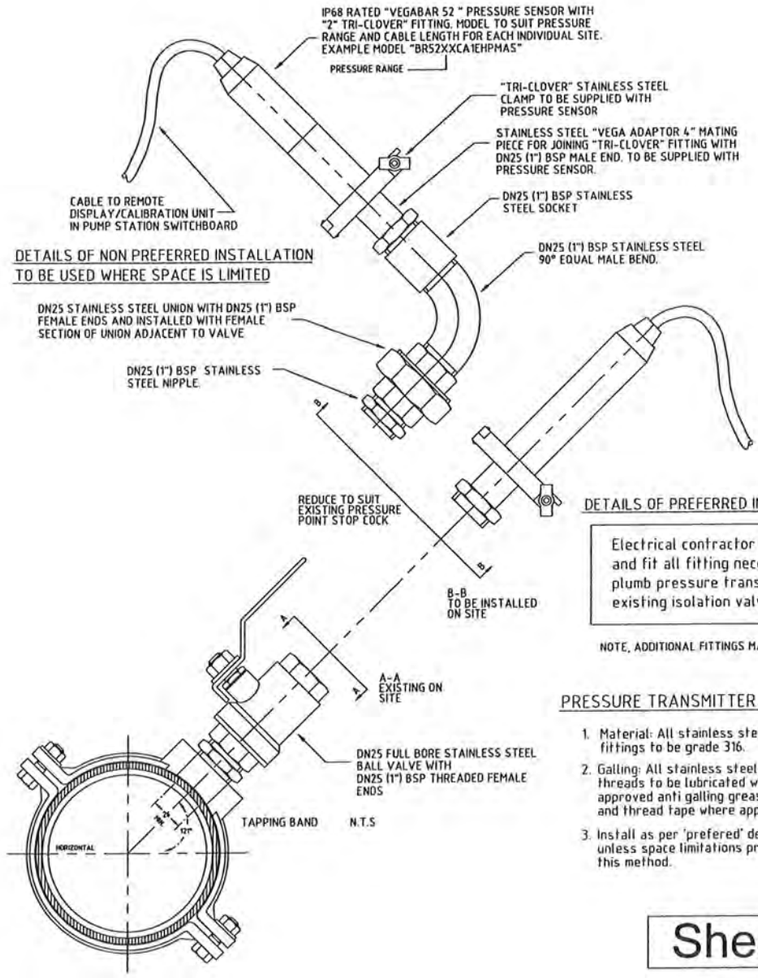




(RADAR TX FLANGE MOUNTING DETAIL)

FLANGE TO FIT IN EXISTING ELECTRODE BOX. TYPICAL WIDTH OF ELECTRODE BOX IS 120mm.

SECONDARY LEVEL TRANSMITTER MOUNTING BRACKET INSTALLATION DETAILS



DETAILS OF PREFERRED INSTALLATION

Electrical contractor to supply and fit all fitting necessary to plumb pressure transducer into existing isolation valve.

NOTE, ADDITIONAL FITTINGS MAY BE REQUIRED.

	QTY	MATERIALS LIST
1	1	LENGTH OF HEAVY DUTY ORANGE PVC CONDUIT 40mm
2	1	CONDUIT END CAP
3	2	25mm NYLON CABLE GLAND
4	3	CABLE CLAMP SUSPENSION EYELET

PRIMARY LEVEL PROBE INSTALLATION NOTES

1. Install stainless steel hanging hook for the suspension of the hydrostatic probe.
2. Drill 4 x 6mm holes, 150mm from each end and every 300mm of the cut length, prior to installation.
3. Install so that the conduit rests on the shoulder of the probe. Do not glue the conduit to the end cap.
4. Install a 25mm nylon cable gland. Apply no compression to cable.
5. Measurements are to be taken from bottom of the Level Probe box to 'measurement points' on probes
6. Pump stop level shown on this drawing is 100mm above actual IDTS value. This allows for ramp down of soft starter/VSD

PRESSURE TRANSMITTER INSTALLATION NOTES

1. Material: All stainless steel fittings to be grade 316.
2. Galling: All stainless steel threads to be lubricated with approved anti galling grease and thread tape where applicable.
3. Install as per 'prefered' detail unless space limitations prevents this method.

Sheet 24

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED P.HAGUE
DRAFTING CHECK A.WITTHOFT
CAD FILE 57-0297set_A
B.C.C. FILE No.

Original Signed by P.HAGUE 6-11-12
DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 6-11-12
DESIGN CHECK R.P.E.Q. No. DATE

PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL

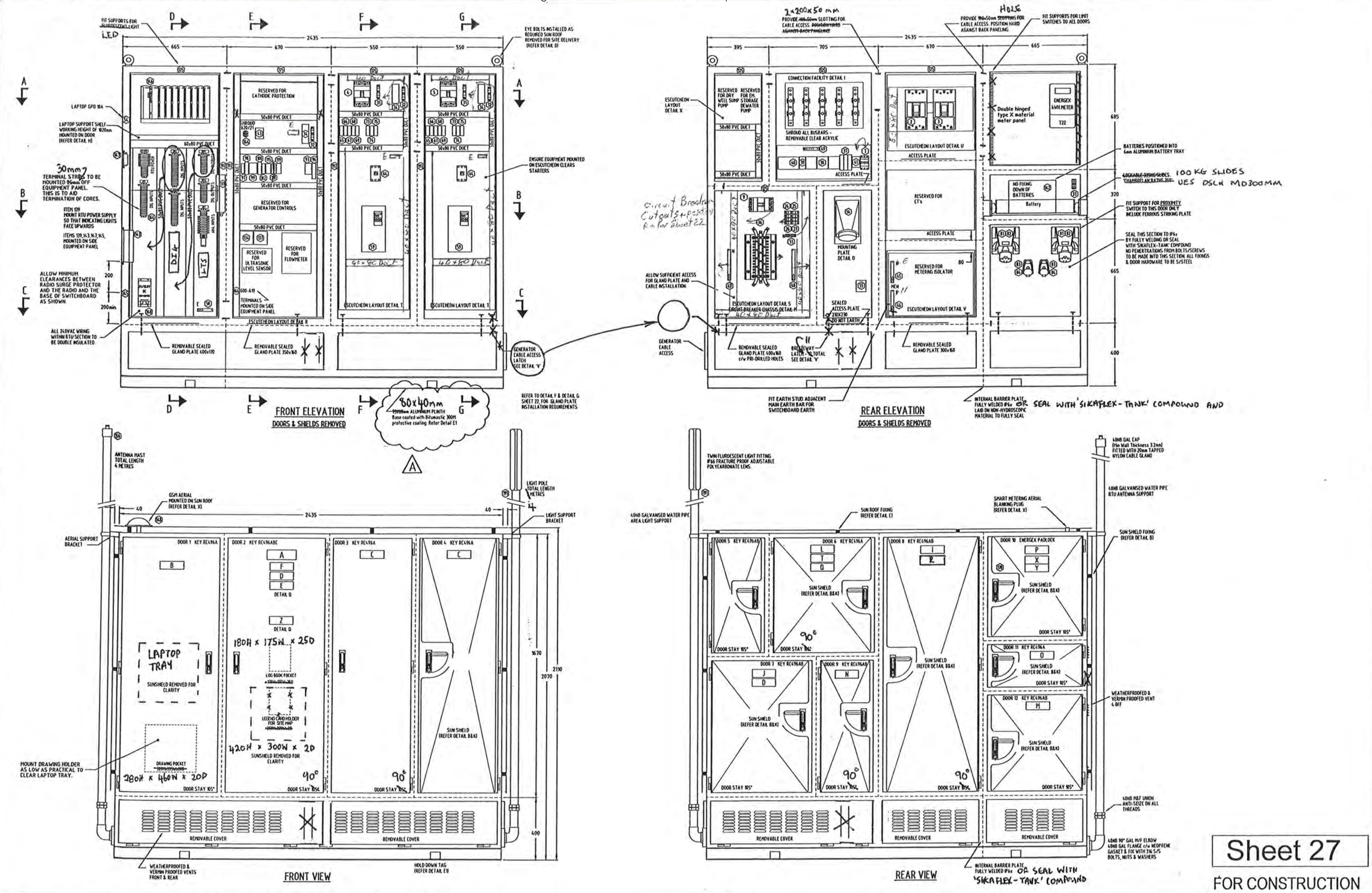
SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

TITLE
FIELD INSTRUMENTATION INSTALLATION DETAILS

SHEET No. 24
Queensland Urban Utilities DRAWING No. 486/5/7-0297-024
AMEND. A

STD TEMPLATE SP-3P Ver3.2

D:\AA_Major Projects\QUU - SPR1111\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM



Sheet 27

FOR CONSTRUCTION

No.	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED	P.HAGUE
DRAFTING CHECK	A.WITTHOFT
CAD FILE	57-0297set_A
B.C.C. FILE No.	

Original Signed by P.HAGUE		6-11-12
DESIGN	R.P.E.Q. No.	DATE
Original signed by A.WITTHOFT	8895	6-11-12
DESIGN CHECK	R.P.E.Q. No.	DATE

PRINCIPAL DESIGN MANAGER	DATE
CLIENT DELEGATE	DATE

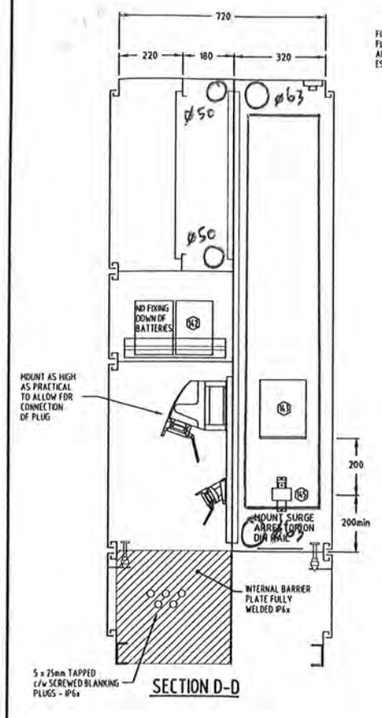
QUEENSLAND UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

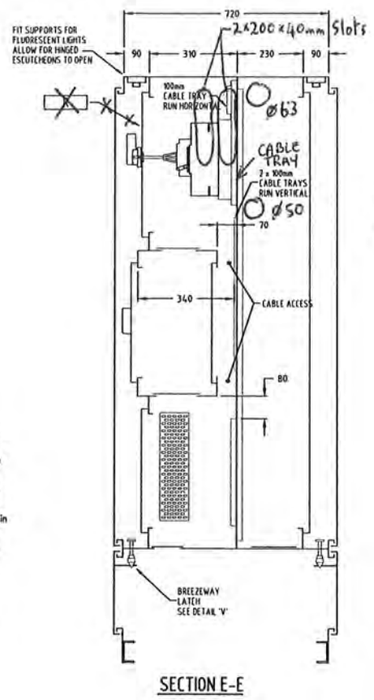
TITLE
SWITCHBOARD
GENERAL ARRANGEMENT
ELEVATIONS

SHEET No. 27
Queensland Urban Utilities DRAWING No. 486/5/7-0297-027
AMEND. A

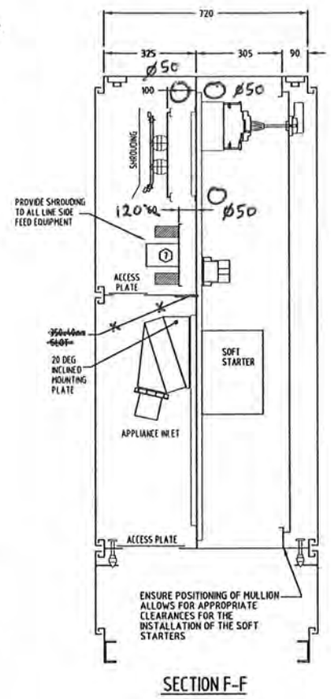
27-2-13



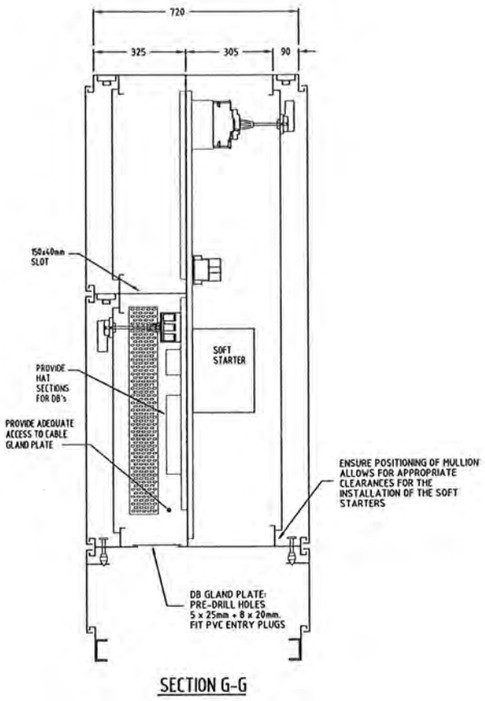
SECTION D-D



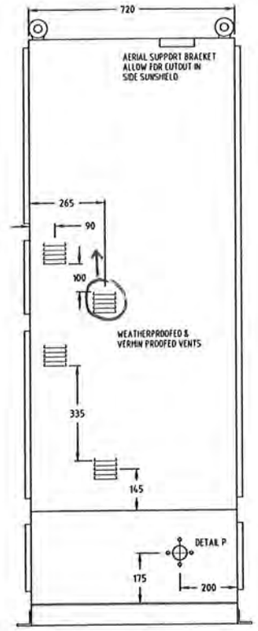
SECTION E-E



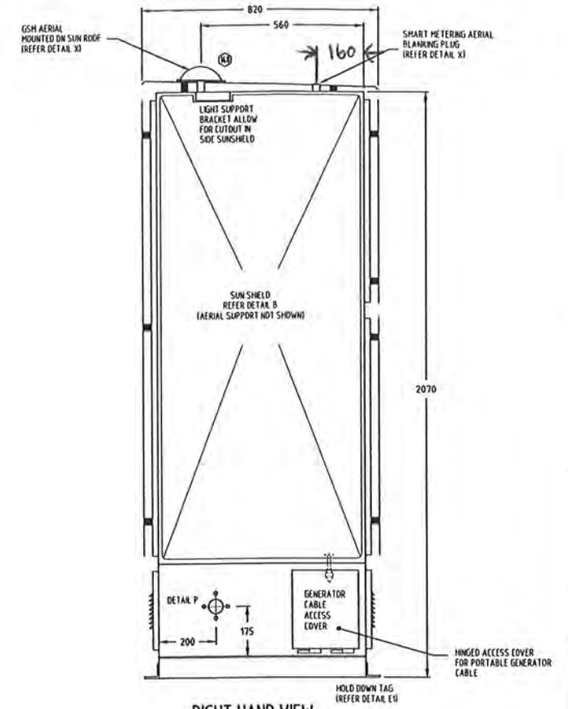
SECTION F-F



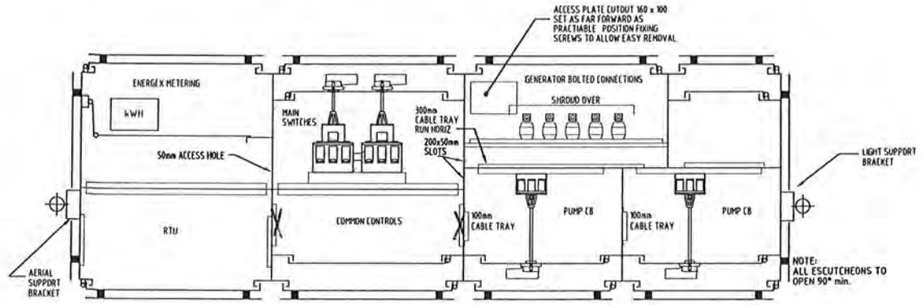
SECTION G-G



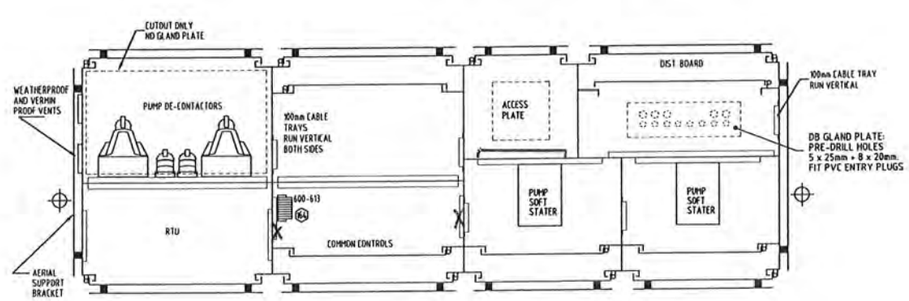
LEFT HAND ELEVATION
SHIELDS REMOVED



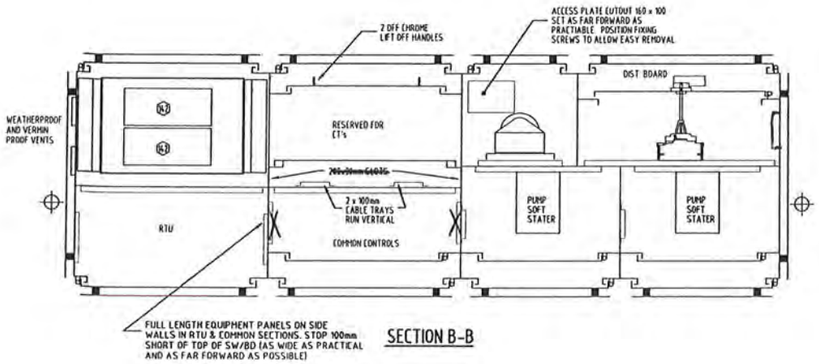
RIGHT HAND VIEW



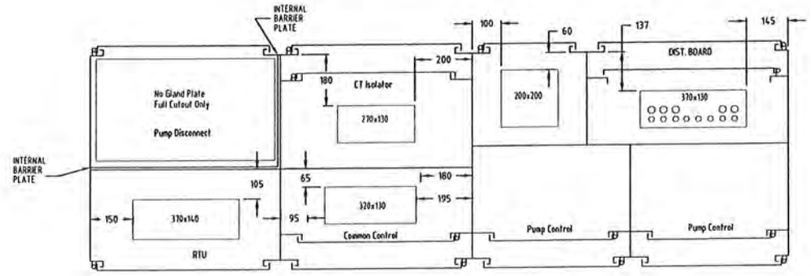
SECTION A-A



SECTION C-C



SECTION B-B



GLAND/INSPECTION PLATE CUTOUTS

Sheet 28

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED	P.HAGUE	Original Signed by P.HAGUE	6-11-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0297set_A	Original signed by A.WITTHOFT 8895	6-11-12
B.C.C. FILE No.		DESIGN CHECK R.P.E.Q. No.	DATE

.	.
PRINCIPAL DESIGN MANAGER	DATE
.	.
CLIENT DELEGATE	DATE

QUEENSLAND Urban Utilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

TITLE
SWITCHBOARD
GENERAL ARRANGEMENT
SECTIONS

SHEET No. 28
Queensland Urban Utilities DRAWING No. 486/5/7-0297-028
AMEND. A

D:\AA Major Projects\0111 - SPR111\Packages\Package 11\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter Hague at 6-11-12 5:42 PM

5 "AS INSTALLED" RED PENNED DRAWINGS

QUEENSLAND UrbanUtilities

ELECTRICAL AS BUILT DETAILS		
I CERTIFY THAT THE "AS CONSTRUCTED" DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS		
REV	COMPANY: J & P Richardson Industries Pty Ltd	
	NAME: Justin Read	
	SIGNATURE: Justin Read	
	RPEQ No: 7727	DATE: 12/7/13

SP143 LINKS AVE SOUTH SEWAGE PUMPING STATION

SITE COVER SHEET

ELECTRICAL DRAWINGS INDEX

DWG N°.	TITLE	SHEET	REVISIONS
486/5/7-0297-000	SITE COVER SHEET	00	P1 0 A
486/5/7-0297-001	POWER DISTRIBUTION SCHEMATIC DIAGRAM	01	P1 0 A
486/5/7-0297-002	PUMP 01 SCHEMATIC DIAGRAM	02	P1 0 A
486/5/7-0297-003	PUMP 02 SCHEMATIC DIAGRAM	03	P1 0 A
486/5/7-0297-004	*RESERVED FOR PUMP 03 SCHEMATIC DIAGRAM*	04	
486/5/7-0297-005	*RESERVED (DRY WELL SUMP & EM STORAGE DEWATEING PUMP)*	05	
486/5/7-0297-006	*RESERVED (GENERATOR CONTROL)*	06	
486/5/7-0297-007	COMMON CONTROLS SCHEMATIC DIAGRAM	07	P1 0 A
486/5/7-0297-008	COMMON RTU I/O SCHEMATIC DIAGRAM	08	P1 0 A
486/5/7-0297-009	RTU POWER DISTRIBUTION SCHEMATIC DIAGRAM	09	P1 0 A
486/5/7-0297-010	RTU DIGITAL INPUTS TERMINATION DIAGRAM - SHEET 1 OF 3	10	P1 0 A
486/5/7-0297-011	RTU DIGITAL INPUTS TERMINATION DIAGRAM - SHEET 2 OF 3	11	P1 0 A
486/5/7-0297-012	RTU DIGITAL INPUTS TERMINATION DIAGRAM - SHEET 3 OF 3	12	P1 0 A
486/5/7-0297-013	RTU DIGITAL OUTPUTS TERMINATION DIAGRAM - SHEET 1 OF 2	13	P1 0 A
486/5/7-0297-014	RTU DIGITAL OUTPUTS TERMINATION DIAGRAM - SHEET 2 OF 2	14	P1 0 A
486/5/7-0297-015	RTU ANALOG INPUTS TERMINATION DIAGRAM	15	P1 0 A
486/5/7-0297-016	RTU ANALOG OUTPUTS TERMINATION DIAGRAM	16	P1 0 A
486/5/7-0297-017	COMMON CONTROLS TERMINATION DIAGRAM	17	P1 0 A
486/5/7-0297-018	EQUIPMENT LIST	18	P1 0 A
486/5/7-0297-019	CABLE SCHEDULE	19	P1 0 A
486/5/7-0297-020	SWITCHBOARD LABEL SCHEDULE	20	P1 0 A
486/5/7-0297-021	SWITCHBOARD CONSTRUCTION DETAILS - SHEET 1 of 3	21	P1 0 A
486/5/7-0297-022	SWITCHBOARD CONSTRUCTION DETAILS - SHEET 2 of 3	22	P1 0 A
486/5/7-0297-023	SWITCHBOARD CONSTRUCTION DETAILS - SHEET 3 of 3	23	P1 0 A
486/5/7-0297-024	FIELD INSTRUMENTATION - INSTALLATION DETAILS	24	P1 0 A
486/5/7-0297-025	*RESERVED (CATHODIC PROTECTION UNIT)*	25	
486/5/7-0297-026	*RESERVED (FIELD DISCONNECTION BOX)*	26	
486/5/7-0297-027	SWBD GENERAL ARRANGEMENT ELEVATIONS	27	P1 0 A
486/5/7-0297-028	SWBD GENERAL ARRANGEMENT SECTIONS	28	P1 0 A
486/5/7-0297-029	*RESERVED (GENERATOR EXTERNAL CONNECTION BOX)*	29	
486/5/7-0297-030	SWITCHBOARD SLAB - LOCALITY AND SITE PLANS - SHEET 1 of 3	30	P1 0 A
486/5/7-0297-031	SWITCHBOARD SLAB AND CONDUIT DETAILS - SHEET 2 of 3	31	P1 0 A
486/5/7-0297-032	SWITCHBOARD AND ELECTRICAL CONDUIT LAYOUT - SHEET 3 of 3	32	P1 0 A

STANDARD VARIABLES

DESCRIPTION	VALUES
CT METERING ISOLATOR	*NOT APPLICABLE*
NORMAL SUPPLY MAIN SWITCH	125A S250PE/125
GENERATOR SUPPLY MAIN SWITCH	125A S250PE/125
PUMP1 CIRCUIT BREAKER	20A S125GJ/20
PUMP2 CIRCUIT BREAKER	20A S125GJ/20
DRY WELL SUMP PUMP CIRCUIT BREAKER	*NOT APPLICABLE*
EM STORAGE DEWATERING PUMP CCT BREAKER	*NOT APPLICABLE*
PUMP SOFT STARTER SIZE	MCD5-0021B + 17
PUMP RATING	4.6kW 10A
PUMP LINE CONTACTOR	CA7-30
DRY WELL SUMP PUMP RATING	*NOT APPLICABLE*
DRY WELL SUMP PUMP CONTACTOR & TOL	*NOT APPLICABLE*
PUMP SOCKET OUTLET + INCLINE SLEEVE	DS1 3114013972 + 51BA058
PUMP INLET PLUG + HANDLE	DS1 3118013972 + 311A013
WET WELL LEVEL TRANSMITTER	WL52XXA4ALD1DD1X 3m
EMERGENCY STORAGE WELL LEVEL TRANSMITTER	*NOT APPLICABLE*
EM STORAGE DEWATERING PUMP RATING	*NOT APPLICABLE*
EM STORAGE DEWATERING PUMP CONTR & TOL	*NOT APPLICABLE*
FLOWMETER RANGE	*NOT APPLICABLE*
WET WELL ULTRASONIC LEVEL SENSOR	*NOT APPLICABLE*
DELIVERY PRESSURE TRANSMITTER	BR52XXCA1EHPMAS L=12 20m
RADIO	DR900-07A02-D0
EMERGENCY PUMPING TIME	0 7 2sec
No of SINGLE POINT PROBES	2
INCOMING MAINS SUPPLY CABLE	16mm²
MAIN EARTHING CABLE	6mm²
INCOMING GENERATOR SUPPLY CABLE	*NOT APPLICABLE*
SOFT STARTER 3 PHASE SUPPLY	6mm²

STANDARD DESIGN OPTIONS

OPTION	DESCRIPTION	FITTED
A	*INDIVIDUAL PUMP MOISTURE IN OIL (MIO) SENSOR AND FAULT RELAY*	YES NO
B	*INDIVIDUAL PUMP MOTOR AUX PROTECTION SENSORS AND FAULT RELAYS*	YES NO
C	*INDIVIDUAL PUMP REFLUX VALVE POSITION SWITCH*	YES NO
D	*STATION MANHOLE SURCHARGE IMMINENT*	YES NO
E	*STATION DRY WELL SUMP PUMP AND LEVEL INDICATION SENSORS AND RELAYS*	YES NO
F	*PERMANENT GENERATOR INSTALLED*	YES NO
G	*STATION EMERGENCY STORAGE LEVEL SENSOR & DEWATERING PUMP*	YES NO
H	*STATION DELIVERY FLOWMETER*	YES NO
I	BACKUP COMMUNICATION - GSM	YES NO
J	PUMP CONNECTION (Via De-contactors)	YES NO
K	*CATHODIC PROTECTION*	YES NO
L	MOTOR THERMISTORS (Via De-contactors)	YES NO
M	*ODOUR CONTROL*	YES NO
N	DIRECT CONNECTED METERING	YES NO
O	*PUMPS ELECTRICAL INTERLOCK*	YES NO
P	*WET WELL WASHER*	YES NO
Q	*AUX PIT SUMP PUMP AND LEVEL PROBE*	YES NO
R	TELEMETRY RADIO	YES NO
S	*WET WELL SECONDARY LEVEL SENSOR*	YES NO
T	WET WELL PRIMARY LEVEL SENSOR (Direct Connected)	YES NO
U	DELIVERY PRESSURE TRANSMITTER (Direct Connected)	YES NO
V	*CHEMICAL DOSING*	YES NO
W	PUMP START METHOD - SOFT STARTER	YES NO
X	*3rd PUMP INSTALLED*	YES NO
Y	*POWER METER*	YES NO

Sheet 00

FOR CONSTRUCTION

No.	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

B.C.C. FILE No.

DRAFTED	P.HAGUE	Original Signed by P.HAGUE	6-11-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0297set_A	Original signed by A.WITTHOFT 8895	6-11-12
		DESIGN CHECK R.P.E.Q. No.	DATE

PRINCIPAL DESIGN MANAGER DATE

CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities — A DIVISION OF THE BRISBANE CITY COUNCIL

SITE: SP143 LINKS AVE SOUTH SEWAGE PUMP STATION

TITLE: SITE COVER SHEET

SHEET No. 0

Queensland Urban Utilities DRAWING No. 486/5/7-0297-000

AMEND. A

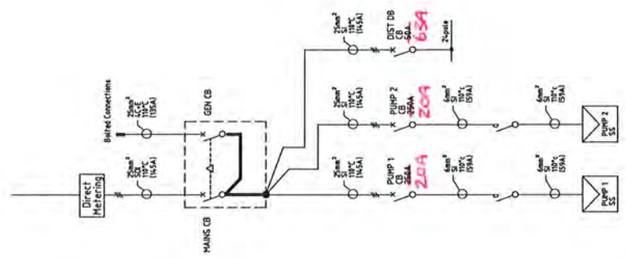
STD TEMPLATE SP-JP Ver32

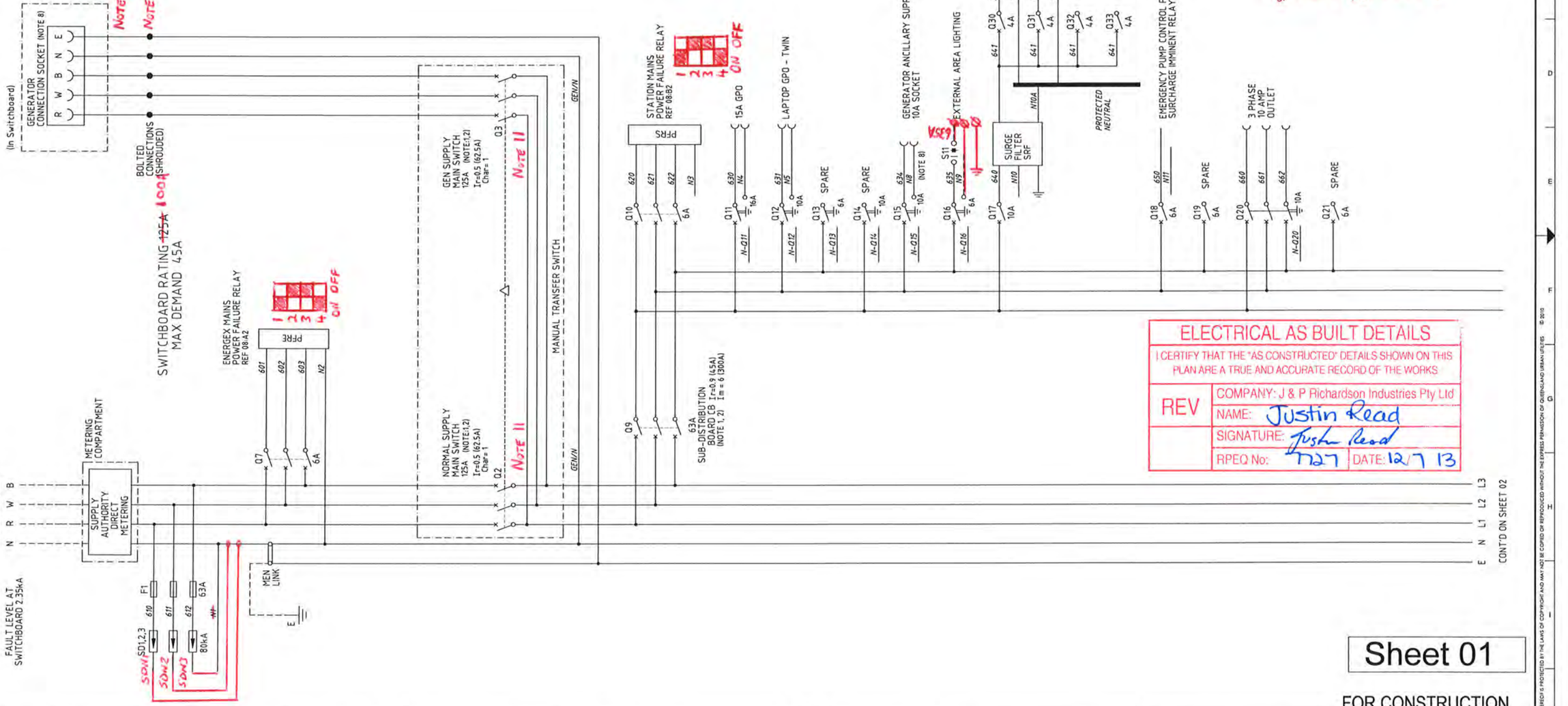
D:\AA_Major Projects\QUU - SPR111\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

NOTES

1. INCOMING MAIN, GENSET, PUMP & DB CIRCUIT BREAKERS SHALL BE LINE SIDE SHROUDED.
2. M.E.N. LINK TO BE PROVIDED AS PER AS:3000.2007 SECTION 7.
3. SURGE PROTECTION DEVICE TO BE AS CLOSE TO THE INCOMER AS POSSIBLE. CONDUCTORS SHALL BE A MINIMUM 6mm² AT A MAXIMUM LENGTH OF 600mm TO BE USED OVER THE SHORTEST AND MOST DIRECT PATH WITH NO LOOPS CONNECTED TO NEUTRAL.
4. ALL CIRCUIT BREAKERS TO BE PADLOCKABLE. LOCKING IS TO BE INDEPENDENT OF ESCUTCHEON.
5. CIRCUIT BREAKER RATINGS TO SUIT FAULT LEVEL & LOAD TO ENSURE TYPE 2 CO-ORDINATION WITH CONTACTORS AND OVERLOADS TO AS3947-4-1.
6. ALL LIGHT AND POWER CIRCUITS SHALL BE FITTED WITH RCD PROTECTION, SET AT 30mA
7. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.
8. CABLING TO GENERATOR CONNECTION SOCKET AND AUXILIARY SUPPLY SOCKET TO BE DOUBLE INSULATED. CABLING TO BE FULLY SEALED TO OTHER COMPARTMENTS

POWER CABLING ARRANGEMENT





9. ADD ADDITIONAL LABELING AT GENERATOR INLET PLUG
DANGER 415V
INLET PLUG LIVE WHEN SWITCHBOARD ENERGISED FROM GENERATOR
DO NOT CONNECT GENERATOR VIA PLUG WHEN A GENERATOR IS ALREADY CONNECTED VIA TAGS
R/W

10. ADD ADDITIONAL LABELING AT GENERATOR BUSBAR CONNECTIONS
DANGER 415V
BUSBAR LIVE WHEN SWITCHBOARD ENERGISED FROM GENERATOR
DO NOT CONNECT GENERATOR VIA TAGS WHEN A GENERATOR IS ALREADY CONNECTED VIA PLUG
R/W

11. ADD ADDITIONAL LABELING AT MAIN SWITCHES
WARNING
DO NOT SET Q2 OR Q3 ABOVE Ir = 0.8(100A)
SWITCHBOARD RATING IS 100A
Y/B

ELECTRICAL AS BUILT DETAILS

I CERTIFY THAT THE "AS CONSTRUCTED" DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS

REV	COMPANY: J & P Richardson Industries Pty Ltd	
	NAME: Justin Read	
	SIGNATURE: Justin Read	
	RPEQ No: 7727	DATE: 12/7/13

Sheet 01

FOR CONSTRUCTION

No.	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED	P.HAGUE
DRAFTING CHECK	A.WITTHOFT
CAD FILE	57-0297set_A
B.C.C. FILE No.	

Original Signed by P.HAGUE 6-11-12 DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 6-11-12 DESIGN CHECK R.P.E.Q. No. DATE
PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities — A DIVISION OF THE BRISBANE CITY COUNCIL

SITE: SP143 LINKS AVE SOUTH SEWAGE PUMP STATION

TITLE: POWER DISTRIBUTION SCHEMATIC DIAGRAM

SHEET No. 1
Queensland Urban Utilities DRAWING No. 486/5/7-0297-001
AMEND. A

S10 TEMPLATE SP-2P Ver3.2

D:\AA_Major Projects\QUU - SPR111\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

03-04-13

CONT'D FROM SHEET 01

E N R W B

Q4 20A
Ir=0.63 (12.5A)
Im= 6 (120A)
Note 1

1K1

Q4-1 4A

10N 10

PS-P1 5A 24VDC
PUMP 1 POWER SUPPLY

100- 100

QD4 10A

101

DANFOSS MCD5-0021B + MODBUS
Rated I Medium Duty 17A
SOFT STARTER 2U1

L1 L2 L3 T1 T2 T3 PE 5 6

130 131

DE-CONTACTORS

M 3
SUBMERSIBLE PUMP No1
4.6kW 10AMPS

MOTOR THERMISTORS

AUX PLUG

KEYPAD

1K6 113 17 RUN
112 18 +24V
1K21 114 25 RESET
1K4 115 11 E.STOP
116 15
116 16 +24V

A

101 A5 A6 100-

101 21 FAULT 24 109 1K3 STARTER FAULT RELAY REF 02:C12
104 13 OPERATE 14 110 1K1 LINE CONTACTOR REF 02:A3
104 33 RUN 34 111 1K2 STARTER RUNNING RELAY REF 02:C13

HRM1 h 100- HOURS RUN METER

MODBUS MODULE
B6 B8 B7

Set terminating switch to 'OFF'

RS485+ Vt/Gn
RS485- Cable 16 Bn/Vt/Bu
FROM RTU REF 09:F12

RS485A+
RS485A- Cable 17 Bu/Wt
TO SOFT STARTER 2 REF 03:E7

A

101 1S3 E/STOP 104 104 1K4 E.STOP RELAY REF 02:C5, F3, B13

1S5 EM.START OFF ON I ✱ O

101 1K4 105 1K20 EMG1 REF 07:B5 107 1K6 RUN RELAY REF 02:B5

101 101 1K5 CONTROL CCT 'POWER ON' RELAY REF 02:B12

101 OFF ON I ✱ O 1S5 EM.START 108 1H5 Y EMERGENCY PUMP MODE SELECTED

100-

CONT'D ON SHEET 03

RTU DIGITAL INPUTS

+ 24VDC POWER SUPPLY - REFER SHEET 09:C7

R0S2 J6+ 2A J6- R0S2 R0S2+ R0S2- COM

DI01+	1K5	DI01	DI01	CONTROL POWER
DI02+	1S1	DI02	DI02	START PUSHBUTTON
DI03+	1S2	DI03	DI03	STOP PUSHBUTTON
DI04+	1K4	DI04	DI04	E.STOP RELAY HEALTHY
DI05+	1S4	DI05	DI05	RESET PUSHBUTTON
DI06+	1K2	DI06	DI06	RUNNING
DI07+	1K3	DI07	DI07	STARTER FAULT
		DI08	DI08	SPARE
		DI09	DI09	SPARE
		DI10	DI10	SPARE

RTU DIGITAL OUTPUTS

+ 24VDC POWER SUPPLY - REFER SHEET 09:C7

R0S6+ R0S6 J6+ 2A J6- R0S6- R0S6

DO01+	DO01	DO01	1K20 DO01-	RUN COMMAND REF 02:F4
DO02+	DO02	DO02	1K21 DO02-	FAULT RESET REF 02:C3
DO03+	DO03	DO03	1K22 DO03-	EMERGENCY MODE INTERRUPT REF 07: B3
DO04+	DO04	DO04		SPARE

ELECTRICAL AS BUILT DETAILS

I CERTIFY THAT THE "AS CONSTRUCTED" DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS

REV

COMPANY: J & P Richardson Industries Pty Ltd
NAME: Justin Read
SIGNATURE: Justin Read
RPEQ No: T127 DATE: 12/7/13

LEGEND:
- RTU MARSH. CCT BREAKER TERM
- RTU MARSH. LINK TERMINAL
- SWITCHBOARD CONTROL TERM.
- SWITCHBOARD GENERATOR TERM.
- FIELD TERMINAL
- RTU TERMINAL
- SS TERMINAL
- DI01 DIGITAL INPUT
- DO01 DIGITAL OUTPUT
- AI01 ANALOG INPUT
- AO01 ANALOG OUTPUT

NOTES

1. INCOMING GENSET, MAIN, PUMP & DIST. BOARD CIRCUIT BREAKERS SHALL BE LINE SIDE SHROUDED.
2. CIRCUIT BREAKER RATINGS TO SUIT FAULT LEVEL & LOAD ENSURE MIN TYPE 1 CO-ORDINATION WITH CONTACTORS & OVERLOADS TO IEC 947-4-1.
3. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.
4. FAULT LEVEL OF 20kA AT 415V FOR 0.2sec.

Sheet 02

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED	P.HAGUE
DRAFTING CHECK	A.WITTHOFT
CAD FILE	57-0297set_A
B.C.C. FILE No.	

Original Signed by P.HAGUE 6-11-12
DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 6-11-12
DESIGN CHECK R.P.E.Q. No. DATE
PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE: SP143 LINKS AVE SOUTH SEWAGE PUMP STATION

TITLE: PUMP No1 SCHEMATIC DIAGRAM

SHEET No. 2
Queensland Urban Utilities DRAWING No. 486/5/7-0297-002
AMEND. A

D:\AA_Major Projects\QUU - SPRI11\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

CONT'D FROM SHEET 02

E N R W B

Q5 — 20A — Ir=0.63 (12.5A) Im= 6 (120A) Note 1

2K1

Q5-1 4A

20N — 20

PS-P2 5A 24VDC — PUMP 2 POWER SUPPLY

200- — 200

Q05 10A

201

DANFOSS MCD5-0021B + MODBUS — Rated I Medium Duty 17A — SOFT STARTER 2U1

L1 L2 L3 T1 T2 T3 PE 5 6

230 231

DE-CONTACTORS

M 3~ — SUBMERSIBLE PUMP No2 4.6kW 10AMPS

MOTOR THERMISTORS

AUX PLUG 1 2

KEYPAD

2K6 213 17 RUN
212 18 +24V
2K21 214 25 RESET
2K4 215 11 E.STOP
216 15
216 16 +24V

A

201 A5 — A6 200-

201 21 FAULT 24 209 — 2K3 — STARTER FAULT RELAY REF 03:C12

204 13 OPERATE 14 210 — 2K1 — LINE CONTACTOR REF 03:A3

204 33 RUN 34 211 — 2K2 — STARTER RUNNING RELAY REF 03:C13

HRM2 — 200- — HOURS RUN METER

MODBUS MODULE B6 B8 B7

Set terminating switch to 'ON'

RS485A+ Wt/Bn
RS485A- Cable 17 Bn/Wt
FROM SOFT STARTER 1 REF 02:E7

A

201 2S3 E/STOP 204 — 2K4 — E.STOP RELAY REF 03:C5, F3, B13

2S5 EM.START OFF ON

201 2K4 205 2K20 EMG2 REF 07:B5 — 207 — 2K6 — RUN RELAY REF 03:B5

201 — 201 — 2K5 — CONTROL CCT 'POWER ON' RELAY REF 03:B12

201 OFF ON 2S5 EM.START — 208 — 2H5 — EMERGENCY PUMP MODE SELECTED

200-

CONT'D ON SHEET 04

RTU DIGITAL INPUTS

+ 24VDC POWER SUPPLY - REFER SHEET 09:C7

R0S3+ — R0S3 J6+ 2A — J6- — R0S3 — R0S3- — COM

DI17+	2K5	DI17	CONTROL POWER
DI18+	2S1	DI18	START PUSHBUTTON
DI19+	2S2	DI19	STOP PUSHBUTTON
DI20+	2K4	DI20	E.STOP RELAY HEALTHY
DI21+	2S4	DI21	RESET PUSHBUTTON
DI22+	2K2	DI22	RUNNING
DI23+	2K3	DI23	STARTER FAULT
		DI24	SPARE
		DI25	SPARE
		DI26	SPARE

R0S3-

RTU DIGITAL OUTPUTS

+ 24VDC POWER SUPPLY - REFER SHEET 09:C7

R0S7+ — R0S7 J6+ 2A — J6- R0S7- — R0S7

DO17+	DO17	2K20	DO17-	RUN COMMAND REF 03:F4
DO18+	DO18	2K21	DO18-	FAULT RESET REF 03:C3
DO19+	DO19	2K22	DO19-	EMERGENCY MODE INTERRUPT REF 07: C3
DO20+	DO20			SPARE

ELECTRICAL AS BUILT DETAILS

I CERTIFY THAT THE 'AS CONSTRUCTED' DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS

REV	COMPANY: J & P Richardson Industries Pty Ltd	
	NAME: Justin Read	
	SIGNATURE: Justin Read	
	RPEQ No: 4727	DATE: 12/7/13

LEGEND:

- ⊗ RTU MARSH. CCT BREAKER TERM.
- ○ RTU MARSH. LINK TERMINAL
- Ø SWITCHBOARD CONTROL TERM.
- □ SWITCHBOARD GENERATOR TERM.
- ▣ FIELD TERMINAL
- ◪ RTU TERMINAL
- ■ SS TERMINAL
- DI01 DIGITAL INPUT
- DO01 DIGITAL OUTPUT
- AI01 ANALOG INPUT
- AO01 ANALOG OUTPUT

NOTES

1. INCOMING GENSET, MAIN, PUMP & DIST. BOARD CIRCUIT BREAKERS SHALL BE LINE SIDE SHROUDED.
2. CIRCUIT BREAKER RATINGS TO SUIT FAULT LEVEL & LOAD ENSURE MIN TYPE 1 CO-ORDINATION WITH CONTACTORS & OVERLOADS TO IEC 947-4-1.
3. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.
4. FAULT LEVEL OF 20kA AT 415V FOR 0.2sec.

Sheet 03

FOR CONSTRUCTION

No.	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED	P.HAGUE	Original Signed by P.HAGUE	6-11-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0297set_A	Original signed by A.WITTHOFT 8895	6-11-12
B.C.C. FILE No.		DESIGN CHECK R.P.E.Q. No.	DATE
		PRINCIPAL DESIGN MANAGER	DATE
		CLIENT DELEGATE	DATE

Queensland Urban Utilities — A DIVISION OF THE BRISBANE CITY COUNCIL

SITE: SP143 LINKS AVE SOUTH SEWAGE PUMP STATION

TITLE: PUMP No2 SCHEMATIC DIAGRAM

SHEET No. 3

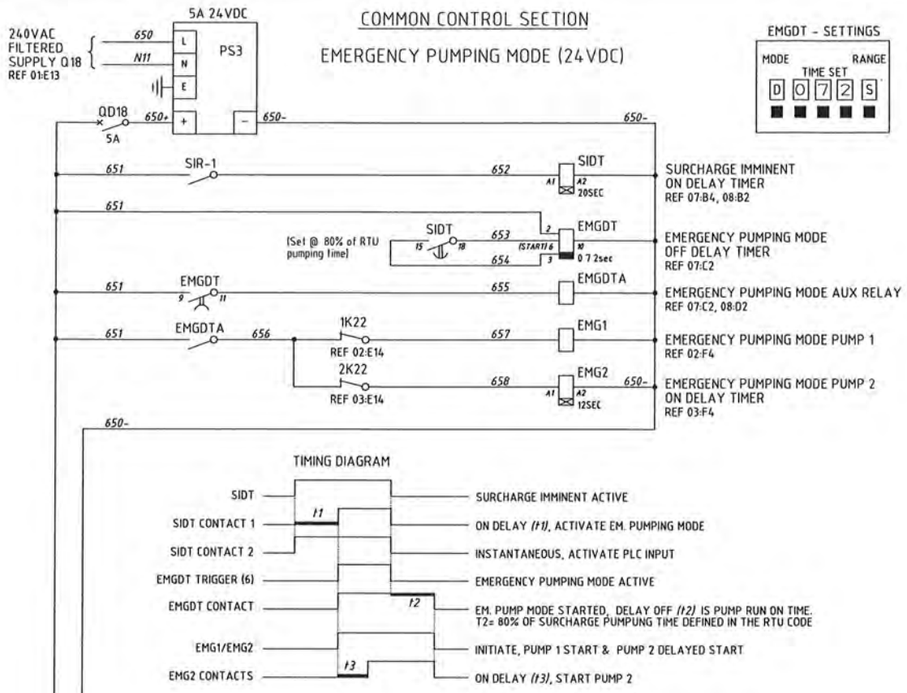
Queensland Urban Utilities DRAWING No. 486/5/7-0297-003 AMEND. A

STD TEMPLATE SP-3P Ver3.2

D:\AA_Major Projects\QUU - SPR111\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

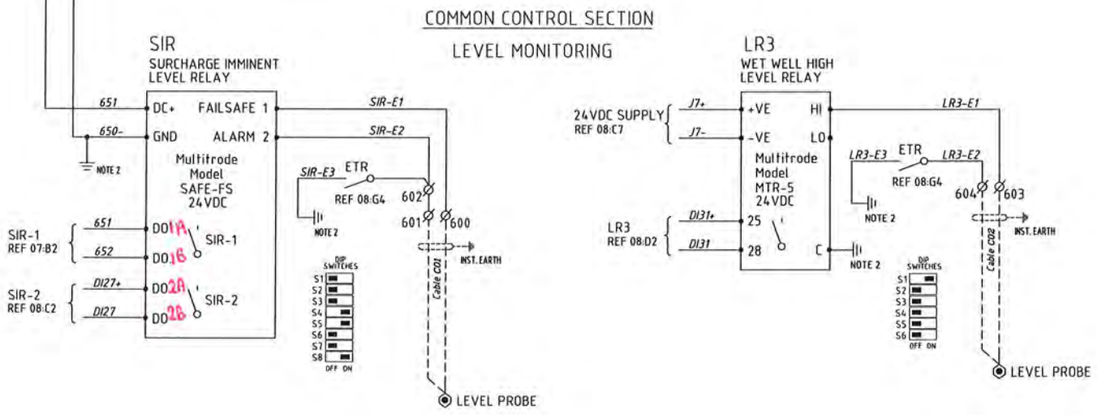
COMMON CONTROL SECTION

EMERGENCY PUMPING MODE (24VDC)



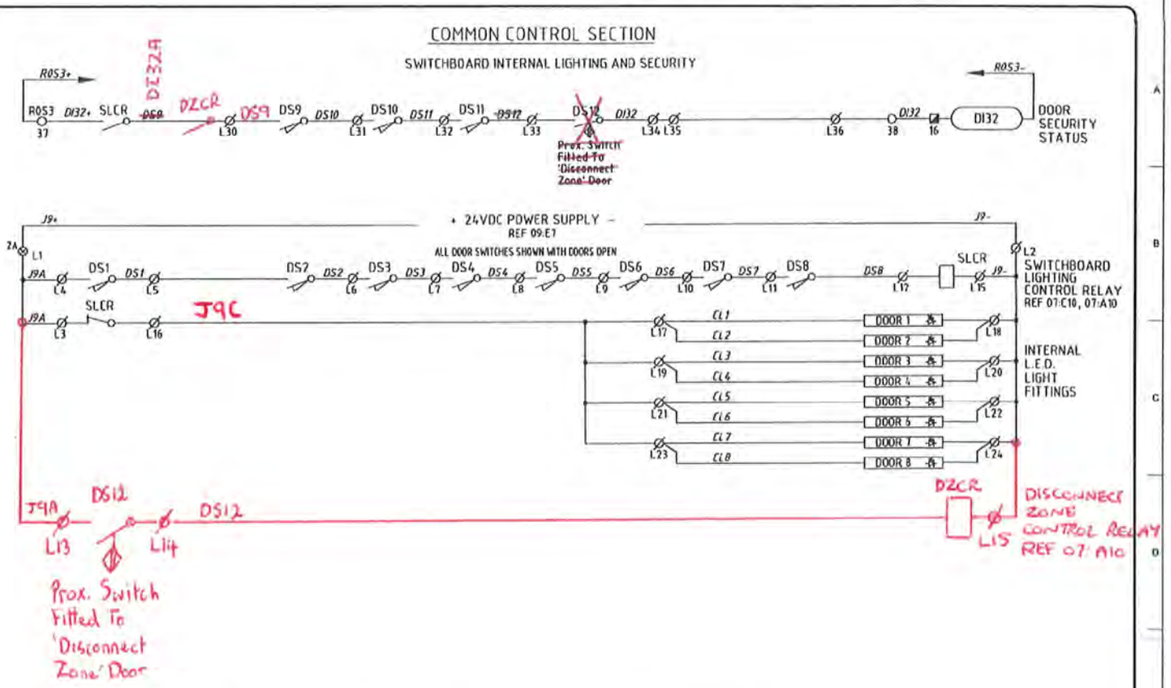
COMMON CONTROL SECTION

LEVEL MONITORING



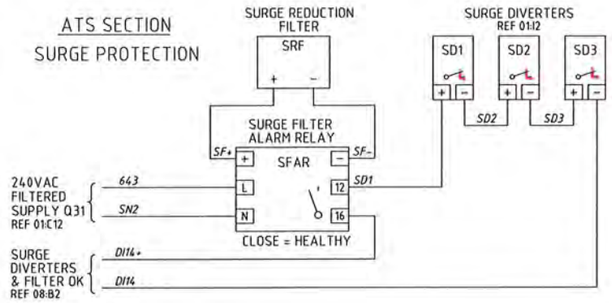
COMMON CONTROL SECTION

SWITCHBOARD INTERNAL LIGHTING AND SECURITY



ATS SECTION

SURGE PROTECTION



NOTES

1. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SIZ000 COMPATIBLE LABELLING.
2. RUN SEPARATE DEDICATED EARTH CONDUCTOR TO EARTH BAR.

LEGEND:

- ⊗ RTU MARSH. CCT BREAKER TERM
- ○ RTU MARSH. LINK TERMINAL
- ⌀ SWITCHBOARD CONTROL TERM.
- □ SWITCHBOARD GENERATOR TERM.
- ⊠ FIELD TERMINAL
- ◪ RTU TERMINAL
- ■ SS TERMINAL
- DI01 DIGITAL INPUT
- DO01 DIGITAL OUTPUT
- AI01 ANALOG INPUT
- AO01 ANALOG OUTPUT

ELECTRICAL AS BUILT DETAILS

I CERTIFY THAT THE 'AS CONSTRUCTED' DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS

REV | COMPANY: J & P Richardson Industries Pty Ltd
NAME: Justin Read
SIGNATURE: Justin Read
RPEQ No: 7727 DATE: 12/7/13

Sheet 07

FOR CONSTRUCTION

No.	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED	P.HAGUE	Original Signed by P.HAGUE	6-11-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0297set_A	Original signed by A.WITTHOFT 8895	6-11-12
B.C.C. FILE No.		DESIGN CHECK R.P.E.Q. No.	DATE

PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

Queensland Urban Utilities — A DIVISION OF THE BRISBANE CITY COUNCIL

SITE: SP143 LINKS AVE SOUTH SEWAGE PUMP STATION

TITLE: COMMON CONTROLS SCHEMATIC DIAGRAM

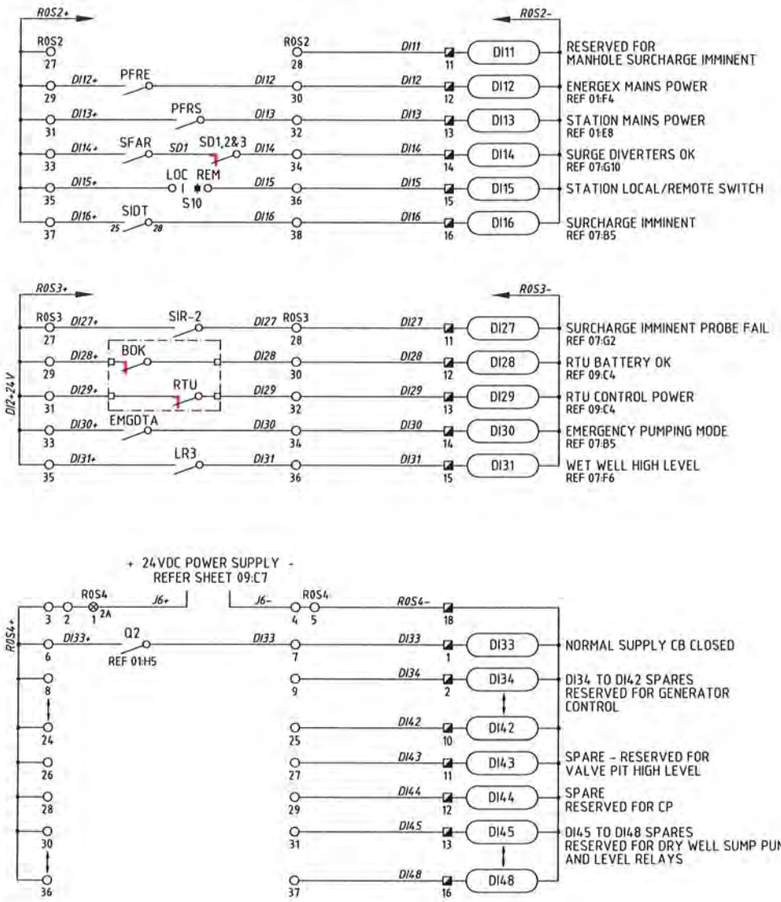
SHEET No. 7

Queensland Urban Utilities DRAWING No. 486/5/7-0297-007 AMEND. A

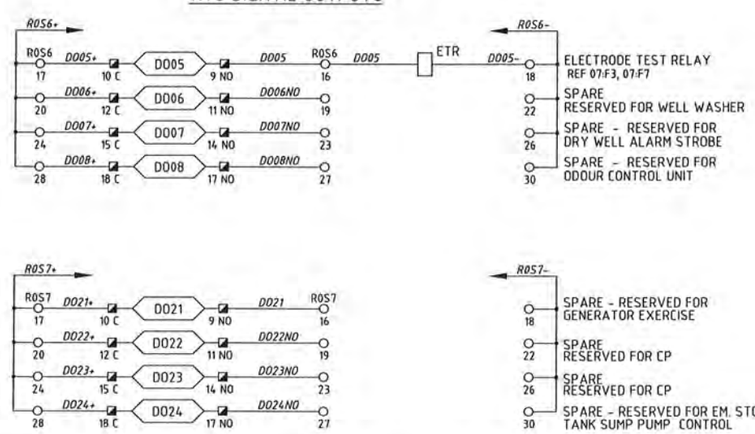
STD TEMPLATE SP-2P Ver12

D:\AA_Major Projects\QUU - SPR111\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

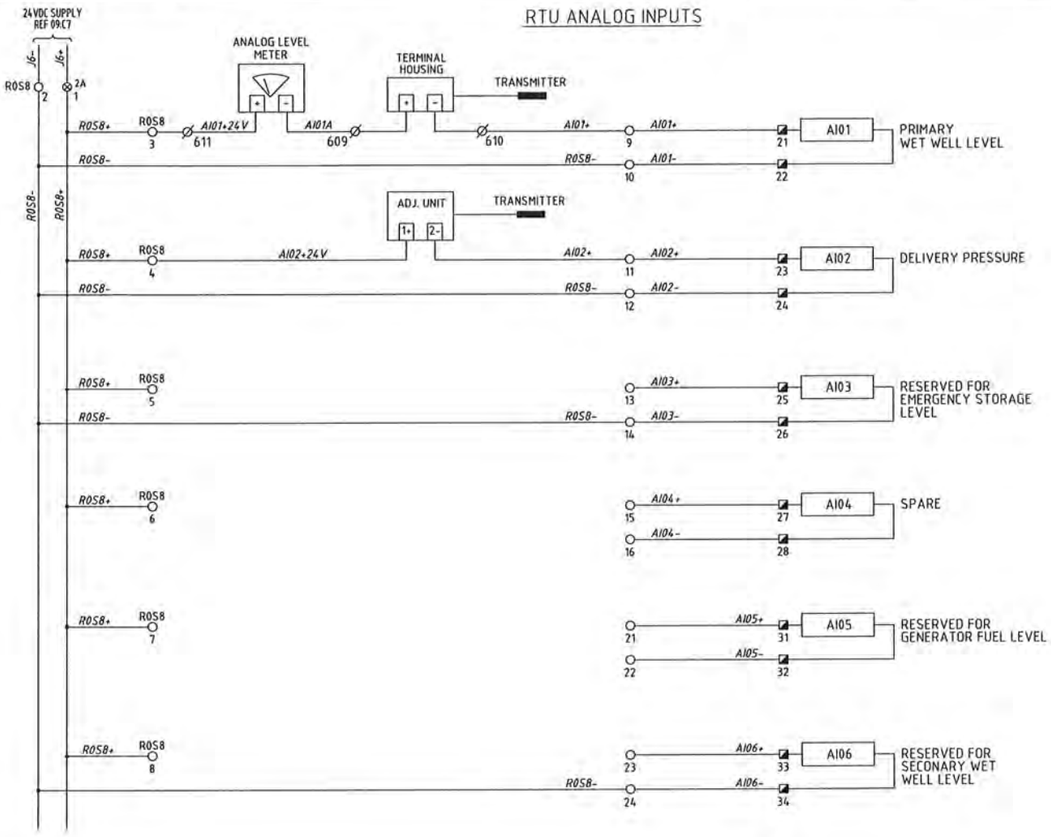
RTU DIGITAL INPUTS

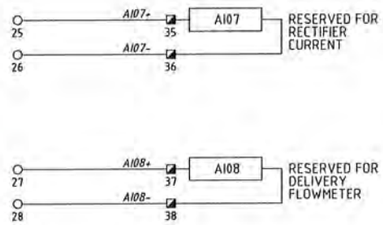


RTU DIGITAL OUTPUTS

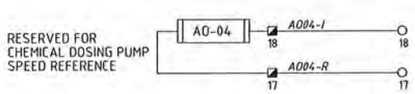


RTU ANALOG INPUTS





RTU ANALOG OUTPUTS



ELECTRICAL AS BUILT DETAILS

I CERTIFY THAT THE "AS CONSTRUCTED" DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS

REV	COMPANY: J & P Richardson Industries Pty Ltd	
	NAME: Justin Read	
	SIGNATURE: Justin Read	
	RPEQ No: 9727	DATE: 12/7/13

NOTES

1. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.

LEGEND:
- ⊗ RTU MARSH. CCT BREAKER TERM
- ○ RTU MARSH. LINK TERMINAL
- ⌀ SWITCHBOARD CONTROL TERM.
- □ SWITCHBOARD GENERATOR TERM.
- ▣ FIELD TERMINAL
- ◪ RTU TERMINAL
- ■ SS TERMINAL
- DI01 DIGITAL INPUT
- DO01 DIGITAL OUTPUT
- AI01 ANALOG INPUT
- AO01 ANALOG OUTPUT

Sheet 08

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED	P.HAGUE	Original Signed by P.HAGUE	6-11-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0297set_A	Original signed by A.WITTHOFT 8895	6-11-12
B.C.C. FILE No.		DESIGN CHECK R.P.E.Q. No.	DATE
		PRINCIPAL DESIGN MANAGER	DATE
		CLIENT DELEGATE	DATE

QUEENSLAND UrbanUtilities — A DIVISION OF THE BRISBANE CITY COUNCIL

SITE: SP143 LINKS AVE SOUTH SEWAGE PUMP STATION

TITLE: COMMON RTU I/O SCHEMATIC DIAGRAM

SHEET No. 8

Queensland Urban Utilities DRAWING No.: 486/5/7-0297-008

AMEND.: A

D:\AA_Major Projects\QUU - SPR111\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

POWERBOX
PB251-24CM-CC-T

PS1

240VAC FILTERED SUPPLY Q30
REF 01:C11

SHROUD

COMMON CONTROLS SECTION

CONTROL SYSTEM POWER SUPPLY 10A 24VDC

BATTERY COMPARTMENT

BATTERY OK
REF 08:C2
0 = Fault, 1 = Healthy

POWER ON
REF 08:C2
0 = Fault, 1 = Healthy

TEMPERATURE PROBE LOCATED AT BATTERIES

24V DC / 13.8V DC

Rx TBA
Tx TBA
SD

RADIO

GSM ANTENNA

GSM MODEM

24VDC SUPPLY
REF 09:F7

TERMINALS "20" MOUNTED ADJACENT TO GSM MODEM

RTU
MOTOROLA ACE 3600

SLOT 0	SLOT 1	SLOT 2	SLOT 3	SLOT 4	SLOT 5	SLOT 6	SLOT 7	SLOT 8
ACE 3600 POWER SUPPLY	ACE 3600 CPU CARD	DIGITAL INPUT 16 CHANNEL	DIGITAL INPUT 16 CHANNEL	DIGITAL INPUT 16 CHANNEL	DIGITAL INPUT 16 CHANNEL	DIGITAL OUTPUT 16 CHANNEL	DIGITAL OUTPUT 16 CHANNEL	ANALOG INPUT 8 OUTPUT 4 CHANNEL
		16 DI Fast 24V	16 DI Fast 24V	16 DI Fast 24V	16 DI Fast 24V	16 DO EE Relay 2A	16 DO EE Relay 2A	4AO/8AI +/-20mA
	PLUG IN 2	DI01-DI16	DI17-DI32	DI33-DI48	DI49-DI64	DO01-DO16	DO17-DO32	AI01 - AI08 AO01 - AO04

SERIAL 2
SERIAL 1
ETHERNET 1
PLUG IN 1

LAPTOP CONNECTION

TO SOFT STARTER No1
REF 02:E7

GRAPHIC DISPLAY
REDLION G306A000

MODBUS CONNECTIONS

RTU
SOFT STARTER 1
SOFT STARTER 2
RS485
B8 B6 B7
Set terminating switch to 'OFF'
Set terminating switch to 'ON'
RS485-
RS485+
RS485A-
RS485A+
Cable 16
Cable 17
Use 120ohm Impedence Twisted Pair Cable

LEGEND:
- RTU MARSH. CCT BREAKER TERM
- RTU MARSH. LINK TERMINAL
- SWITCHBOARD CONTROL TERM.
- SWITCHBOARD GENERATOR TERM.
- FIELD TERMINAL
- RTU TERMINAL
- SS TERMINAL
- DI01 DIGITAL INPUT
- DO01 DIGITAL OUTPUT
- AI01 ANALOG INPUT
- AO01 ANALOG OUTPUT

NOTES

1. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.
2. ALL FUSES ARE 500mA EXCEPT WHERE NOTED OTHERWISE.

- SPARE RESERVED FOR DRY WELL LEVEL RELAYS
- COMMON CONTROLS REF 07:B12
- MODEM REF 09:A16
- SPARE RESERVED FOR FLOWMETER
- SPARE RESERVED FOR VALVE PIT HIGH LEVEL
- SPARE
- SPARE RESERVED FOR WELL WASHER
- SPARE RESERVED FOR STATION MANHOLE SURCHARGE IMMINENT
- SPARE RESERVED FOR EMERGENCY STORAGE TANK SUMP PUMP
- RTU 24VDC CARD SUPPLY REF 02:A13
- WET WELL HIGH LEVEL RELAY LR3 REF 07:F6

ELECTRICAL AS BUILT DETAILS

I CERTIFY THAT THE "AS CONSTRUCTED" DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS

REV
COMPANY: J & P Richardson Industries Pty Ltd
NAME: Justin Read
SIGNATURE: Justin Read
RPEQ No: 4727 DATE: 12/7/13

Sheet 09

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED P.HAGUE
DRAFTING CHECK A.WITTHOFT
CAD FILE 57-0297set_A
B.C.C. FILE No.

Original Signed by P.HAGUE 6-11-12
DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 6-11-12
DESIGN CHECK R.P.E.Q. No. DATE
PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

QUEENSLAND Urban Utilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

TITLE
RTU POWER DISTRIBUTION
SCHEMATIC DIAGRAM

SHEET No. 9
Queensland Urban Utilities DRAWING No. 486/5/7-0297-009
AMEND. A

S10 TEMPLATE SP-JP Ver32

D:\AA_Major Projects\QUU - SPRI11\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

09-04-13

RTU COMPARTMENT

24VDC POWER DISTRIBUTION

SWITCHBOARD

FIELD

24VDC DIST

SHEET 09 REFER

REFER SHEET 09

PUMP 1
STARTER COMPARTMENT
REFER SHEET 02

DI01+ DI01 1K5 CONTROL POWER
DI02+ DI02 1S1 START PUSHBUTTON
DI03+ DI03 1S2 STOP PUSHBUTTON
DI04+ DI04 1K4 E.STOP RELAY HEALTHY
DI05+ DI05 1S4 RESET PUSHBUTTON
DI06+ DI06 1K2 PUMP RUNNING
DI07+ DI07 1K3 STARTER FAULT

RACK 0 SLOT 2
MOTOROLA 16 CHANNEL
DIGITAL INPUT MODULE
16 DI Fast 24V

DI01 (1) DI02 (2) DI03 (3) DI04 (4) DI05 (5) DI06 (6) DI07 (7) DI08 (8) DI09 (9) DI10 (10) DI11 (11) DI12 (12) DI13 (13) DI14 (14) DI15 (15) DI16 (16) +24V (17) COM1 (18) PGND1 (19) PGND1 (20)

MOTOROLA WIRED CABLE BRAID & 20 WAY TB HOLDER

ROS2+ (17) ROS2- (18) ROS2-E (19) ROS2-E (20)

LINK BARS

TO INSULATED INSTRUMENT EARTH

CONT ON SHEET 11

COMMON COMPARTMENT
DI13+ DI13 PFRS STATION MAINS POWER REF 01:E8

ATS COMPARTMENT
DI12+ DI12 PFRE ENERGEX MAINS POWER REF 01:F4
DI14+ DI14 SFAR SURGE DIVERTERS OK REF 07:G10

STARTER COMPARTMENT
DI15+ DI15 LOC REM S10 STATION LOCAL/REMOTE SWITCH

COMMON COMPARTMENT
DI16+ DI16 SIDT 25 28 SURCHARGE IMMINENT REF 07:B5

ELECTRICAL AS BUILT DETAILS

I CERTIFY THAT THE "AS CONSTRUCTED" DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS

REV | COMPANY: J & P Richardson Industries Pty Ltd
NAME: Justin Read
SIGNATURE: Justin Read
RPEQ No: 4727 DATE: 12/7/13

LEGEND:
C?? CABLE IDENTIFIER
2A 1 RTU MINITURE CCT BREAKER
1 DISCONNECT LINK TERMINAL
1 THROUGH TERMINAL

NOTES

1. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.
2. ALL FUSES ARE 500mA EXCEPT WHERE NOTED OTHERWISE.

Sheet 10

FOR CONSTRUCTION

No.	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED P.HAGUE
DRAFTING CHECK A.WITTHOFT
CAD FILE 57-0297set_A
B.C.C. FILE No.

Original Signed by P.HAGUE 6-11-12
DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 6-11-12
DESIGN CHECK R.P.E.Q. No. DATE

PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL

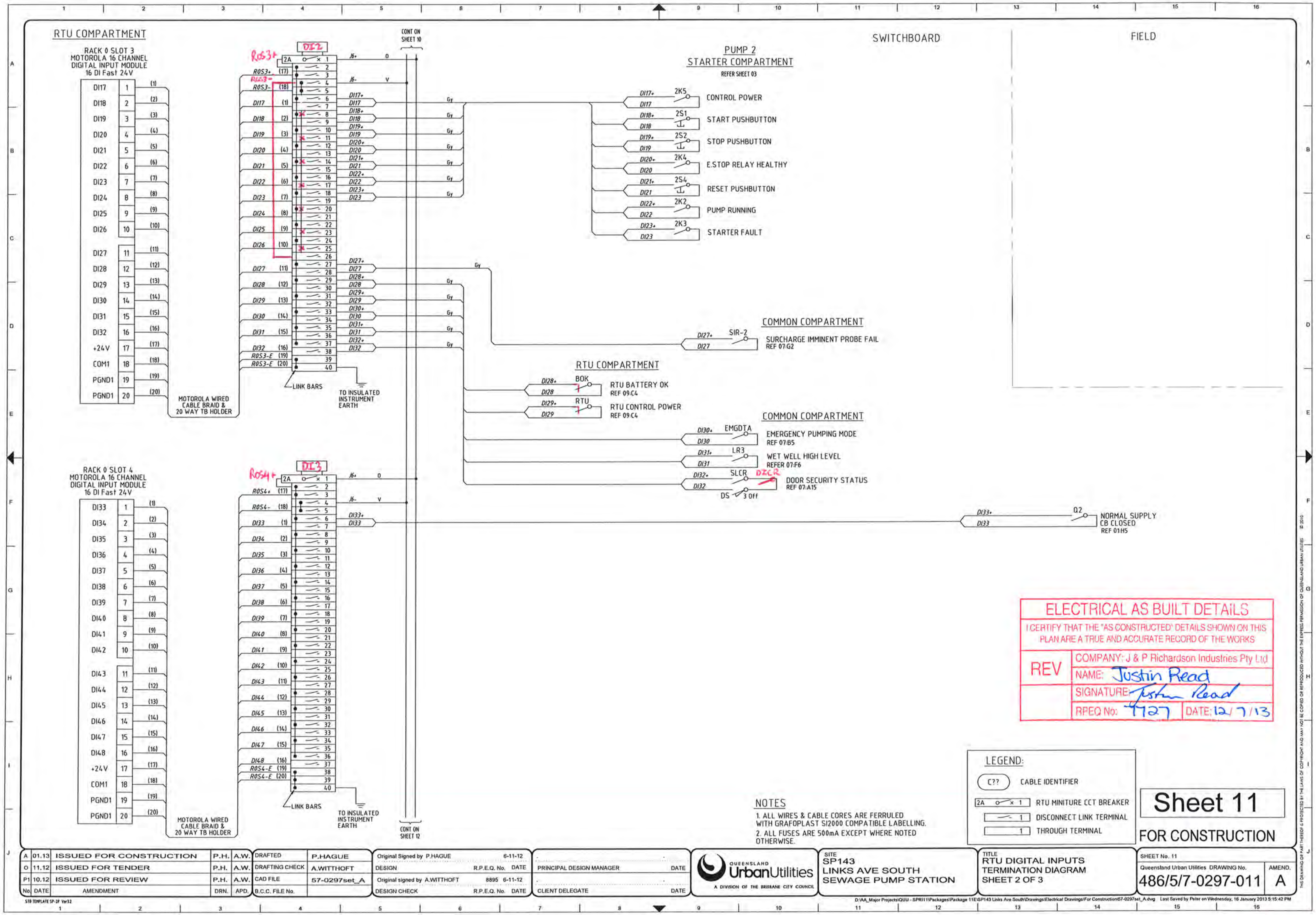
SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

TITLE
RTU DIGITAL INPUTS
TERMINATION DIAGRAM
SHEET 1 OF 3

SHEET No. 10
Queensland Urban Utilities DRAWING No. 486/5/7-0297-010
AMEND. A

STD TEMPLATE SP-2P Ver32

D:\AA_Major Projects\QUU - SPR11\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM



RTU COMPARTMENT
RACK 0 SLOT 3
MOTOROLA 16 CHANNEL
DIGITAL INPUT MODULE
16 DI Fast 24V
DI17 DI18 DI19 DI20 DI21 DI22 DI23 DI24 DI25 DI26 DI27 DI28 DI29 DI30 DI31 DI32 +24V COM1 PGND1 PGND1
MOTOROLA WIRED CABLE BRAID & 20 WAY TB HOLDER
DI2
ROS3+
LINK BARS
TO INSULATED INSTRUMENT EARTH
CONT ON SHEET 10
SWITCHBOARD
FIELD
PUMP 2
STARTER COMPARTMENT
REFER SHEET 03
2K5 CONTROL POWER
2S1 START PUSHBUTTON
2S2 STOP PUSHBUTTON
2K4 E.STOP RELAY HEALTHY
2S4 RESET PUSHBUTTON
2K2 PUMP RUNNING
2K3 STARTER FAULT
COMMON COMPARTMENT
SIR-2 SURCHARGE IMMINENT PROBE FAIL REF 07:G2
RTU COMPARTMENT
BOK RTU BATTERY OK REF 09:C4
RTU RTU CONTROL POWER REF 09:C4
COMMON COMPARTMENT
EMGDTA EMERGENCY PUMPING MODE REF 07:B5
LR3 WET WELL HIGH LEVEL REFER 07:F6
SLCR DZCR DOOR SECURITY STATUS REF 07:A15
DS 3 Off
RACK 0 SLOT 4
MOTOROLA 16 CHANNEL
DIGITAL INPUT MODULE
16 DI Fast 24V
DI33 DI34 DI35 DI36 DI37 DI38 DI39 DI40 DI41 DI42 DI43 DI44 DI45 DI46 DI47 DI48 +24V COM1 PGND1 PGND1
DI3
ROS4+
Q2 NORMAL SUPPLY CB CLOSED REF 01:H5
CONT ON SHEET 12
NOTES
1. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.
2. ALL FUSES ARE 500mA EXCEPT WHERE NOTED OTHERWISE.
LEGEND:
C?? CABLE IDENTIFIER
RTU MINITURE CCT BREAKER
DISCONNECT LINK TERMINAL
THROUGH TERMINAL
ELECTRICAL AS BUILT DETAILS
I CERTIFY THAT THE "AS CONSTRUCTED" DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS
REV
COMPANY: J & P Richardson Industries Pty Ltd
NAME: Justin Read
SIGNATURE: Justin Read
RPEQ No: 1727
DATE: 12/7/13
Sheet 11
FOR CONSTRUCTION
A 01.13 ISSUED FOR CONSTRUCTION P.H. A.W.
0 11.12 ISSUED FOR TENDER P.H. A.W.
P1 10.12 ISSUED FOR REVIEW P.H. A.W.
DRAFTED P.HAGUE
DRAFTING CHECK A.WITTHOFT
CAD FILE 57-0297set_A
Original Signed by P.HAGUE 6-11-12
Original signed by A.WITTHOFT 8895 6-11-12
PRINCIPAL DESIGN MANAGER
CLIENT DELEGATE
QUEENSLAND UrbanUtilities A DIVISION OF THE BRISBANE CITY COUNCIL
SITE SP143 LINKS AVE SOUTH SEWAGE PUMP STATION
TITLE RTU DIGITAL INPUTS TERMINATION DIAGRAM SHEET 2 OF 3
SHEET No. 11
Queensland Urban Utilities DRAWING No. 486/5/7-0297-011
AMEND. A

RTU COMPARTMENT

SWITCHBOARD

FIELD

RACK 0 SLOT 5
MOTOROLA 16 CHANNEL
DIGITAL INPUT MODULE
16 DI Fast 24V

DI49	1	(1)
DI50	2	(2)
DI51	3	(3)
DI52	4	(4)
DI53	5	(5)
DI54	6	(6)
DI55	7	(7)
DI56	8	(8)
DI57	9	(9)
DI58	10	(10)
DI59	11	(11)
DI60	12	(12)
DI61	13	(13)
DI62	14	(14)
DI63	15	(15)
DI64	16	(16)
+24V	17	(17)
COM1	18	(18)
PGND1	19	(19)
PGND1	20	(20)

MOTOROLA WIRED CABLE BRAID & 20 WAY TB HOLDER

DI4

ROSS+		2A
ROSS+	(17)	2
ROSS-		3
ROSS-	(18)	4
DI49	(1)	5
DI50	(2)	6
DI51	(3)	7
DI52	(4)	8
DI53	(5)	9
DI54	(6)	10
DI55	(7)	11
DI56	(8)	12
DI57	(9)	13
DI58	(10)	14
DI59	(11)	15
DI60	(12)	16
DI61	(13)	17
DI62	(14)	18
DI63	(15)	19
DI64	(16)	20
ROSS-E	(19)	21
ROSS-E	(20)	22
		23
		24
		25
		26
		27
		28
		29
		30
		31
		32
		33
		34
		35
		36
		37
		38
		39
		40

16+ 0

16- V

LINK BARS

TO INSULATED INSTRUMENT EARTH

CONT ON SHEET 11

CONT ON SHEET 13

ELECTRICAL AS BUILT DETAILS

I CERTIFY THAT THE 'AS CONSTRUCTED' DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS

REV	
	COMPANY: J & P Richardson Industries Pty Ltd
	NAME: Justin Read
	SIGNATURE: Justin Read
	RPEQ No: 7127 DATE: 12/7/13

NOTES

1. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.
2. ALL FUSES ARE 500mA EXCEPT WHERE NOTED OTHERWISE.

LEGEND:

- C?? CABLE IDENTIFIER
- 2A o-x 1 RTU MINITURE CCT BREAKER
- 1 DISCONNECT LINK TERMINAL
- 1 THROUGH TERMINAL

Sheet 12

FOR CONSTRUCTION

No.	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED	P.HAGUE	Original Signed by P.HAGUE	6-11-12	. .
DRAFTING CHECK	A.WITTHOFT	DESIGN	R.P.E.Q. No. DATE	PRINCIPAL DESIGN MANAGER DATE
CAD FILE	57-0297set_A	Original signed by A.WITTHOFT	8895 6-11-12	. .
B.C.C. FILE No.		DESIGN CHECK	R.P.E.Q. No. DATE	CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

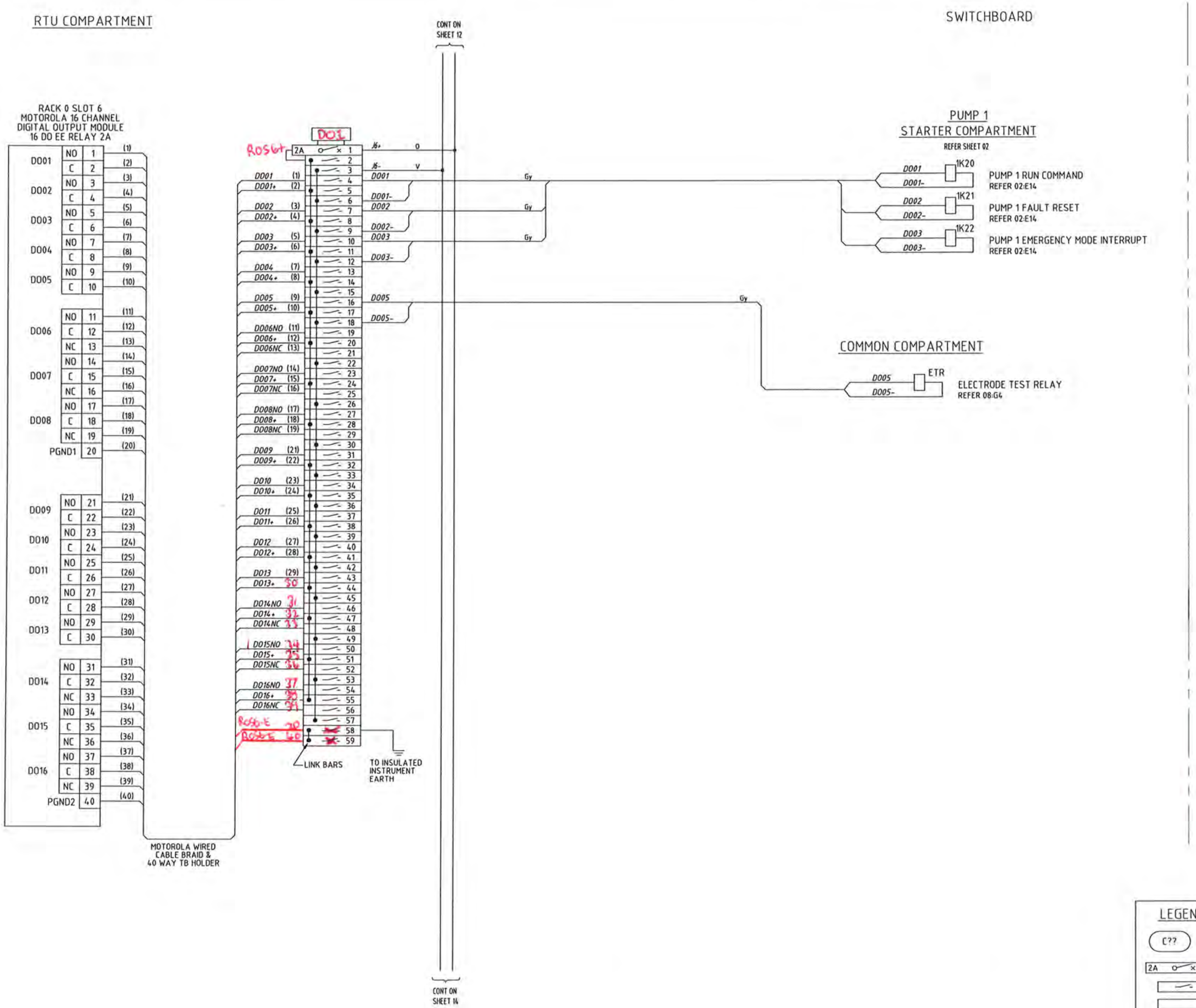
TITLE
RTU DIGITAL INPUTS
TERMINATION DIAGRAM
SHEET 3 OF 3

SHEET No. 12

Queensland Urban Utilities DRAWING No. 486/5/7-0297-012 AMEND. A

STD TEMPLATE SP-3P Ver3.2

D:\AA_Major Projects\QUU - SPRI11\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM



ELECTRICAL AS BUILT DETAILS

I CERTIFY THAT THE "AS CONSTRUCTED" DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS

REV	COMPANY: J & P Richardson Industries Pty Ltd
	NAME: Justin Read
	SIGNATURE: Justin Read
	RPEQ No: 4727 DATE: 12/7/13

NOTES

1. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.
2. ALL FUSES ARE 500mA EXCEPT WHERE NOTED OTHERWISE.

LEGEND:

- (C??) CABLE IDENTIFIER
- 2A o—× 1 RTU MINITURE CCT BREAKER
- —· 1 DISCONNECT LINK TERMINAL
- 1 THROUGH TERMINAL

Sheet 13

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED	P.HAGUE
DRAFTING CHECK	A.WITTHOFT
CAD FILE	57-0297set_A
B.C.C. FILE No.	

Original Signed by P.HAGUE 6-11-12
DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 6-11-12
DESIGN CHECK R.P.E.Q. No. DATE

PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities A DIVISION OF THE BRISBANE CITY COUNCIL

SITE SP143 LINKS AVE SOUTH SEWAGE PUMP STATION

TITLE RTU DIGITAL OUTPUTS TERMINATION DIAGRAM SHEET 1 OF 2

SHEET No. 13
Queensland Urban Utilities DRAWING No. 486/5/7-0297-013 AMEND. A

STD TEMPLATE SF-2P Ver3.2

D:\AA_Major Projects\QUU - SPRI11\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

RTU COMPARTMENT

SWITCHBOARD

FIELD

RACK 0 SLOT 7
MOTOROLA 16 CHANNEL
DIGITAL OUTPUT MODULE
16 DO EE RELAY 2A

DO17	NO	1	(1)
	C	2	(2)
DO18	NO	3	(3)
	C	4	(4)
DO19	NO	5	(5)
	C	6	(6)
DO20	NO	7	(7)
	C	8	(8)
DO21	NO	9	(9)
	C	10	(10)
DO22	NO	11	(11)
	C	12	(12)
	NC	13	(13)
DO23	NO	14	(14)
	C	15	(15)
	NC	16	(16)
DO24	NO	17	(17)
	C	18	(18)
	NC	19	(19)
PGND1		20	(20)
DO25	NO	21	(21)
	C	22	(22)
DO26	NO	23	(23)
	C	24	(24)
DO27	NO	25	(25)
	C	26	(26)
DO28	NO	27	(27)
	C	28	(28)
DO29	NO	29	(29)
	C	30	(30)
DO30	NO	31	(31)
	C	32	(32)
	NC	33	(33)
DO31	NO	34	(34)
	C	35	(35)
	NC	36	(36)
DO32	NO	37	(37)
	C	38	(38)
	NC	39	(39)
PGND2		40	(40)

MOTOROLA WIRED CABLE BRAID & 40 WAY TB HOLDER

CONT ON SHEET 13

RO57+ DO2

2A		1	N+ 0
		2	
DO17	(1)	3	N- V
DO17+	(2)	4	DO17
		5	DO17-
DO18	(3)	6	DO18
DO18+	(4)	7	
		8	DO18-
DO19	(5)	9	DO19
DO19+	(6)	10	
		11	DO19-
DO20	(7)	12	
DO20+	(8)	13	
		14	
DO21	(9)	15	
DO21+	(10)	16	
		17	
DO22NO	(11)	18	
DO22+	(12)	19	
DO22NC	(13)	20	
		21	
DO23NO	(14)	22	
DO23+	(15)	23	
DO23NC	(16)	24	
		25	
DO24NO	(17)	26	
DO24+	(18)	27	
DO24NC	(19)	28	
		29	
DO25	(21)	30	
DO25+	(22)	31	
		32	
DO26	(23)	33	
DO26+	(24)	34	
		35	
DO27	(25)	36	
DO27+	(26)	37	
		38	
DO28	(27)	39	
DO28+	(28)	40	
		41	
DO29	(29)	42	
DO29+	35	43	
		44	
DO30NO	31	45	
DO30+	32	46	
DO30NC	33	47	
		48	
DO31NO	34	49	
DO31+	35	50	
DO31NC	36	51	
		52	
DO32NO	37	53	
DO32+	38	54	
DO32NC	39	55	
		56	
RO57-E	20	57	
RO57-E	40	58	
		59	

LINK BARS

TO INSULATED INSTRUMENT EARTH

CONT ON SHEET 15

PUMP 2
STARTER COMPARTMENT
REFER SHEET 03

DO17	2K20	PUMP 2 RUN COMMAND REFER 03:E14
DO17-		
DO18	2K21	PUMP 2 FAULT RESET REFER 03:E14
DO18-		
DO19	2K22	PUMP 2 EMERGENCY MODE INTERRUPT REFER 03:E14
DO19-		

ELECTRICAL AS BUILT DETAILS

I CERTIFY THAT THE "AS CONSTRUCTED" DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS

REV

COMPANY: J & P Richardson Industries Pty Ltd
NAME: Justin Read
SIGNATURE: Justin Read
RPEQ No: 4727 DATE: 12/7/13

NOTES

1. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.
2. ALL FUSES ARE 500mA EXCEPT WHERE NOTED OTHERWISE.

LEGEND:

- C?? CABLE IDENTIFIER
- 2A o× 1 RTU MINITURE CCT BREAKER
- 1 DISCONNECT LINK TERMINAL
- 1 THROUGH TERMINAL

Sheet 14

FOR CONSTRUCTION

A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.	DRAFTED	P.HAGUE	Original Signed by P.HAGUE	6-11-12	.	.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.	DRAFTING CHECK	A.WITTHOFT	DESIGN	R.P.E.Q. No. DATE	PRINCIPAL DESIGN MANAGER	DATE
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.	CAD FILE	57-0297set_A	Original signed by A.WITTHOFT	8895 6-11-12	.	.
No	DATE	AMENDMENT	DRN.	APD.	B.C.C. FILE No.		DESIGN CHECK	R.P.E.Q. No. DATE	CLIENT DELEGATE	DATE

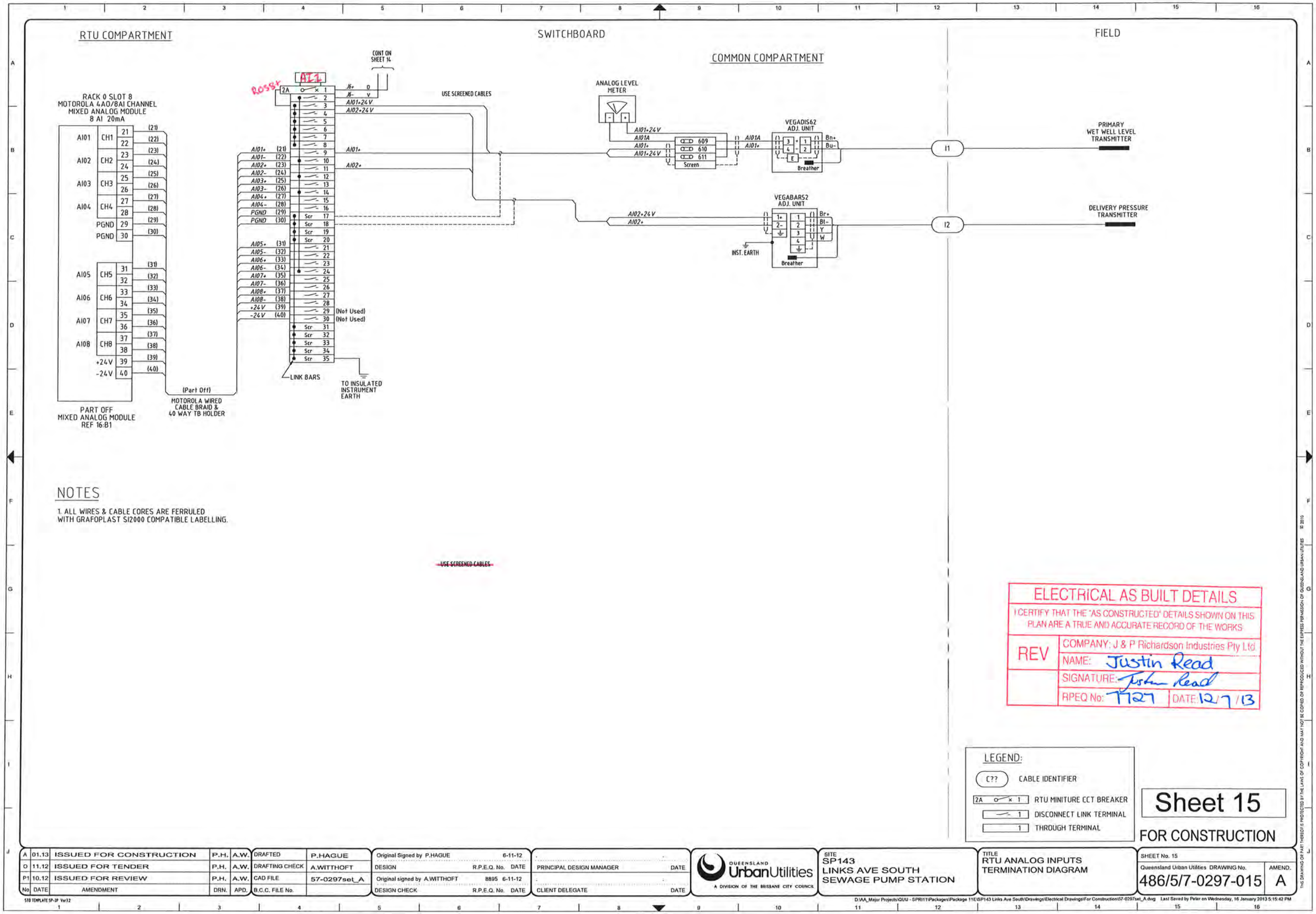
QUEENSLAND UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

TITLE
RTU DIGITAL OUTPUTS
TERMINATION DIAGRAM
SHEET 2 OF 2

SHEET No. 14
Queensland Urban Utilities DRAWING No. 486/5/7-0297-014
AMEND. A

D:\AA_Major Projects\QUU - SPR111\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM



NOTES

1. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.

~~USE SCREENED CABLES~~

ELECTRICAL AS BUILT DETAILS

I CERTIFY THAT THE "AS CONSTRUCTED" DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS

REV	COMPANY: J & P Richardson Industries Pty Ltd	
	NAME: Justin Read	
	SIGNATURE: Justin Read	
	RPEQ No: 7127	DATE: 12/7/13

LEGEND:

- C?? CABLE IDENTIFIER
- 2A ○ × 1 RTU MINITURE CCT BREAKER
- 1 DISCONNECT LINK TERMINAL
- 1 THROUGH TERMINAL

Sheet 15

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED	P.HAGUE	Original Signed by P.HAGUE	6-11-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0297set_A	Original signed by A.WITTHOFT 8895	6-11-12
B.C.C. FILE No.		DESIGN CHECK R.P.E.Q. No.	DATE

PRINCIPAL DESIGN MANAGER DATE

CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

TITLE
RTU ANALOG INPUTS
TERMINATION DIAGRAM

SHEET No. 15

Queensland Urban Utilities DRAWING No. 486/5/7-0297-015 AMEND. A

S10 TEMPLATE SP-JP Ver32

D:\AA_Major Projects\QUU - SPRI111\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

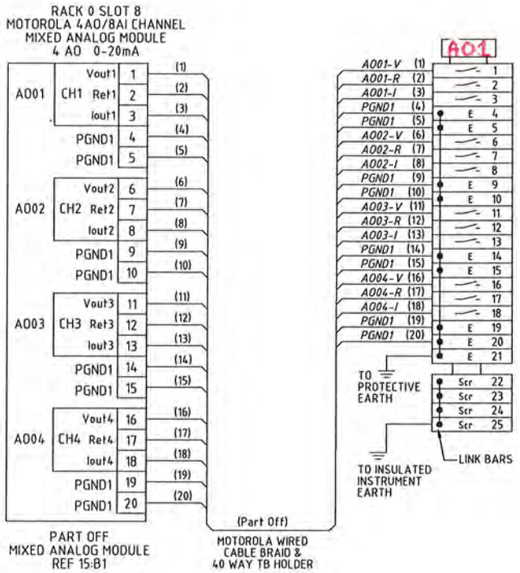
03/06/13

RTU COMPARTMENT

SWITCHBOARD

FIELD

STARTER COMPARTMENT



ELECTRICAL AS BUILT DETAILS

I CERTIFY THAT THE "AS CONSTRUCTED" DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS

REV

COMPANY: J & P Richardson Industries Pty Ltd

NAME: Justin Read

SIGNATURE: Justin Read

RPEQ No: 7727 DATE: 12/7/13

LEGEND:

- C?? CABLE IDENTIFIER
- 2A × 1 RTU MINITURE CCT BREAKER
- 1 DISCONNECT LINK TERMINAL
- 1 THROUGH TERMINAL

NOTES

1. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.

Sheet 16

FOR CONSTRUCTION

No.	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED	P.HAGUE	Original Signed by P.HAGUE	6-11-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0297set_A	Original signed by A.WITTHOFT 8895	6-11-12
B.C.C. FILE No.		DESIGN CHECK R.P.E.Q. No.	DATE

PRINCIPAL DESIGN MANAGER DATE

CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

TITLE
RTU ANALOG OUTPUTS
TERMINATION DIAGRAM

SHEET No. 16

Queensland Urban Utilities DRAWING No. 486/5/7-0297-016

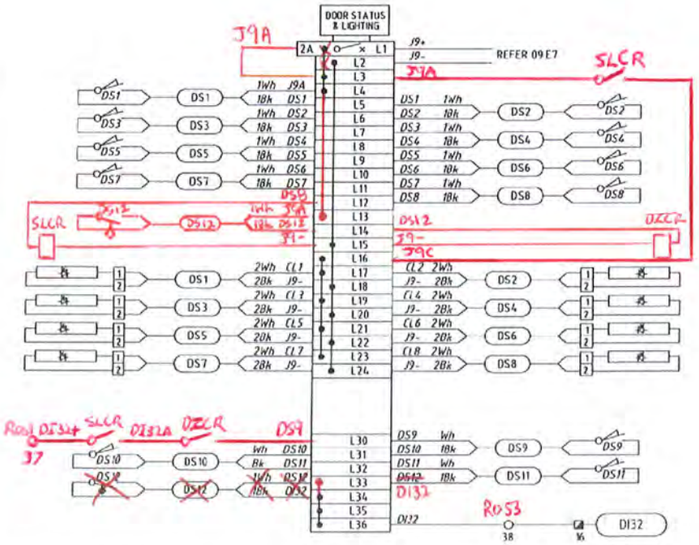
AMEND. A

STD TEMPLATE SP-2F Ver12

D:\AA_Major Projects\QUU - SPR111\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

14-2-13

SWITCHBOARD INTERNAL LIGHTING AND SECURITY



ELECTRICAL AS BUILT DETAILS

I CERTIFY THAT THE "AS CONSTRUCTED" DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS

REV	COMPANY: J & P Richardson Industries Pty Ltd	
	NAME: Justin Read	
	SIGNATURE: Justin Read	
	RPEQ No: 7727	DATE: 12/7/13

LEGEND:

- C?? — CABLE IDENTIFIER
- 2A ○ × 1 — RTU MINITURE CCT BREAKER
- 1 — DISCONNECT LINK TERMINAL
- 1 — THROUGH TERMINAL

NOTES

1. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.
2. ALL FUSES ARE 500mA EXCEPT WHERE NOTED OTHERWISE.

Sheet 17

FOR CONSTRUCTION

No.	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED	P.HAGUE	Original Signed by P.HAGUE	6-11-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0297set_A	Original signed by A.WITTHOFT 8895	6-11-12
B.C.C. FILE No.		DESIGN CHECK R.P.E.Q. No.	DATE

PRINCIPAL DESIGN MANAGER DATE

CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities — A DIVISION OF THE BRISBANE CITY COUNCIL

SITE: SP143 LINKS AVE SOUTH SEWAGE PUMP STATION

TITLE: COMMON CONTROLS TERMINATION DIAGRAM

SHEET No. 17

Queensland Urban Utilities DRAWING No. 486/5/7-0297-017 AMEND. A

D:\AA_Major Projects\QUU - SPR111\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

STD TEMPLATE (SP-2P Ver)2

03-04-13

ITEM	QTY	DESCRIPTION	MANUFACTURER	CATALOGUE No	OPT	REMARKS
1					N	
2	1	MANUAL TRANSFER SWITCH	TERASAKI	MTSS2PE12533	F	Set Ir=0.5 (62.5A) Char=1
3		- TO SUIT MAIN SWITCHES Q2 & Q3 S250PE/125	TERASAKI	Q2 - c/w 3 N/O AUX CONTACTS	F	
4	1	Q4 PUMP1 CIRCUIT BREAKER + T2HS Handle	TERASAKI	S125GJ/20	-	Set Ir=0.63 (12.5A) Im=6 (120A)
5	1	Q5 PUMP2 CIRCUIT BREAKER + T2HS Handle	TERASAKI	S125GJ/20	-	Set Ir=0.63 (12.5A) Im=6 (120A)
6					E	
7	1	Q7 ENERGEX PHASE FAILURE CIRCUIT BREAKER	TERASAKI	DTCB15306C	-	
8					G	
9	1	Q9 SUB-DISTRIBUTION BOARD CIRCUIT BREAKER	TERASAKI	S125NJ/63	-	Set Ir=0.9 (45A) Im=6 (300A)
10	1	Q10 STATION MAINS PHASE FAILURE CIRCUIT BREAKER	TERASAKI	DTCB6306C	-	
11	1	Q11 15A GPO CIRCUIT BREAKER	TERASAKI	DSRCBH-16-30A	*	
12	1	Q12 RTU LAPTOP GPO CIRCUIT BREAKER	TERASAKI	DSRCBH-10-30A	-	
13	1	Q13 SPARE	TERASAKI	DSRCBH-6-30A	E	
14	1	Q14 SPARE	TERASAKI	DSRCBH-10-30A	E	
15	1	Q15 GENERATOR AUXILLARY SUPPLY CIRCUIT BREAKER	TERASAKI	DSRCBH-10-30A	-	
16	1	Q16 EXTERNAL AREA LIGHTING CIRCUIT BREAKER	TERASAKI	DSRCBH-6-30A	Y	
17	1	Q17 SURGE FILTER CIRCUIT BREAKER	TERASAKI	DTCB6110C	-	
18	1	Q18 EM PUMP CNTRL & SURCHARGE IMMINENT CB	TERASAKI	DTCB6106C	-	
19	1	Q19 SPARE CIRCUIT BREAKER	TERASAKI	DTCB6106C	K	
20	1	Q20 3 PHASE OUTLET CIRCUIT BREAKER	TERASAKI	DTCB6310C	-	PLUS DSRCM-32-30-3PN
21	1	Q21 SPARE	TERASAKI	DTCB6106C	Q	
22						
23					V	
24	1	Q30 RTU POWER SUPPLY CIRCUIT BREAKER	TERASAKI	DTCB6104C	-	
25	1	Q31 SURGE FILTER ALARM RELAY CIRCUIT BREAKER	TERASAKI	DTCB6104C	-	
26	1	Q32 SPARE	TERASAKI	DTCB6104C	H	
27	1	Q33 SPARE	TERASAKI	DTCB6104C	-	
28						
29						
30						
31	2	PUMP 240VAC CONTROL CIRCUIT BREAKER	TERASAKI	DTCB6104C	-	Q4-1, Q5-1
32	3	24VDC CONTROL CIRCUIT BREAKER	TERASAKI	DTCB6110C	-	QD4, QD5, QD18
33	1	BATTERY SHORT CCT PROTECTION CIRCUIT BREAKER	TERASAKI	DTCB6210C	-	QD8
34	3	240VAC-24VDC POWER SUPPLY	WEIDMULLER	8951340000	-	120W 5A/24VDC
35						
36	1	DISTRIBUTION BOARD CHASSIS	TERASAKI	NCK-2-24/18-3U	-	
37	3	F1 - SURGE DIVERTER CIRCUIT FUSES	NHP	63AMP 63MS	-	FUSES & HOLDERS
38	3	SURGE DIVERTER	CRITEC	TDS1100-2SR-277	-	
39	1	SURGE FILTER ALARM RELAY - SFAR	CRITEC	DAR-275V	-	
40	1	SURGE REDUCTION FILTER - SRF	CRITEC	TDF-10A-240V	-	
41	1	ENERGEX MAINS PHASE FAILURE RELAY - PFRE	CARLO GAVAZZI	DPB01CM48W4	-	
42						
43	1	STATION MAINS PHASE FAILURE RELAY - PFRS	CARLO GAVAZZI	DPB01CM48W4	-	
44						
45	1	MAIN NEUTRAL LINK	DORE ELEC.	~~DLAN6~~ 165E12	-	INSULATED c/w EFGET
46	1	MAIN EARTH LINK	DORE ELEC.	~~DLANE6~~ 165E12	-	
47	1	DIST. BD NEUTRAL LINK	DORE ELEC.	~~2DLA18~~ 165E24	-	INSULATED c/w EFGET
48	1	DIST. BD EARTH LINK	DORE ELEC.	~~2DLAE18~~ 165E24	-	
49	~~1~~	~~SURGE DIVERTER NEUTRAL LINK~~	~~CLIPSAL~~	~~L5A~~	-	~~INSULATED~~
50	1	INSTRUMENT EARTH LINK	CLIPSAL	~~DLBE12~~ L12	-	INSULATED
51	1	FILTERED SUPPLY NEUTRAL LINK	CLIPSAL	L7	-	INSULATED
52	1	3 PHASE SWITCHED OUTLET	CLIPSAL	56C410	-	USE ENCLOSURE AS SHROUD
53	1	1 PHASE OUTLET 15A	CLIPSAL	15/15+90B (SHROUD)	-	
54	1	LAPTOP GPO - TWIN 10A	CLIPSAL	25+449A+449AP	-	
55	1	1 PHASE OUTLET - GENERATOR ANCILLARY POWER	CLIPSAL	56SO310	F	IP56
56	1	3 PHASE N&E APPLIANCE INLET - GENERATOR POWER	MENNEKES	MEN361	F	c/w PROTECTIVE CAP 40787
57						
58						
59	2	PUMP SOFT STARTER	DANFOSS MCD5	MCD5-0021B + MODBUS COMMS		175G5500 + 175G9000
60	2	EXTERNAL KEYPAD KIT	DANFOSS	175G3061	-	
61						
62						
63						
64	2	PUMP LINE CONTACTOR - K1 (24VDC COIL)	SPRECHER & SCHUH	CA7-30		24VDC COIL

ITEM	QTY	DESCRIPTION	MANUFACTURER	CATALOGUE No	OPT	REMARKS
65	2	SOFT STARTER RUNNING RELAY - K2	IDEC	RH2B-ULD-DC24V	-	+ SH2B-05
66	2	STARTER FAULT RELAY - K3	IDEC	RH2B-ULD-DC24V	-	+ SH2B-05
67	2	PUMP EM. STOP RELAY - K4	IDEC	RH4B-ULD-DC24V	-	+ SH4B-05
68	2	PUMP CONTROL CCT POWER ON RELAY - K5	IDEC	RH2B-ULD-DC24V	-	+ SH2B-05
69	2	PUMP RUN RELAY - K6	IDEC	RH2B-ULD-DC24V	-	+ SH2B-05
70					A	
71					B	
72					B	
73	2	PUMP RUN COMMAND RELAY - K20	IDEC	RH2B-ULD-DC24V	-	+ SH2B-05
74	2	PUMP FAULT RESET RELAY - K21	IDEC	RH2B-ULD-DC24V	-	+ SH2B-05
75	2	PUMP EMERGENCY MODE INTERRUPT RELAY - K22	IDEC	RH2B-ULD-DC24V	-	+ SH2B-05
76					-	
77	2	PUMP START PUSHBUTTON - S1	SPRECHER & SCHUH	D7P-F3-PX10	-	
78	2	PUMP STOP PUSHBUTTON - S2	SPRECHER & SCHUH	D7P-F4-PX10	-	
79	2	PUMP EM/STOP PUSHBUTTON - S3	SPRECHER & SCHUH	D7P-MT34-PX01S	-	c/w D7-15YE112 + PX01S
80	2	PUMP RESET PUSHBUTTON - S4	SPRECHER & SCHUH	D7P-F6-PX10	-	
81	2	PUMP HOUR RUN METER - HRM	NHP	RQ4801080VDC	-	24VDC
82	2	PUMP POWER SOCKET OUTLET + INCLINE SLEEVE	MARECHAL	DS1 3114013972 + 51BA058	J	
83	2	PUMP POWER INLET PLUG + HANDLE	MARECHAL	DS1 3118013972 + 311A013	J	
84	2	PUMP CONTROL SOCKET OUTLET + INCLINE SLEEVE	MARECHAL	PN7C 01P4060 + 01NA053	J	
85	2	PUMP CONTROL INLET PLUG + HANDLE	MARECHAL	PN7C 01P8060 + 01NA313	J	
86					E	
87					E	
88					E	
89					E	
90					E	
91					E	
92					E	
93	1	LR3- WET WELL HIGH LEVEL RELAY	MULTITRODE	MTR-5	-	24VDC
94					Q	
95					D	
96	1	SIR - SURCHARGE IMMINENT LEVEL RELAY	MULTITRODE	MTRA-FS	-	24VDC
97	1	EMERGENCY PUMPING MODE RELAY PUMP1 - EMG1	IDEC	RH2B-ULD-DC24V	-	+ SH2B-05
98	1	SURCHARGE IMMINENT DELAY TIMER - SIDT	SPRECHER & SCHUH	RZ7-FSA 4U U23	-	ON DELAY / INSTANTANEOUS
99	1	EMERGENCY PUMPING MODE TIMER - EMGDT	OMRON	H3CA-A (+ P2CF-11)	-	(+ Y92A-48B) OFF DELAY
100	1	EMERGENCY PUMPING MODE TIMER PUMP2- EMG2	SPRECHER & SCHUH	RZ7-FSA 3E U23	-	ON DELAY
101	2	EMERGENCY PUMPING MODE SWITCH & LIGHT - S5/H5	SPRECHER & SCHUH	D7P-LSM25 + D7-~~N3Y~~ MUW		+ D7-X10 (2), ENGRAVE 'OFF ON'
102	1	EMERGENCY PUMPING MODE AUX RELAY - EMGDTA	IDEC	RH2B-ULD-DC24V	-	+ SH2B-05
103					F	
104					F	
105					F	
106					F	
107					F	
108					F	
109					F	
110					F	
111					F	
112					F	
113					F	
114						
115	2	SW/BD LIGHTING CONTROL RELAY - SLCR, DZCR	IDEC	RH2B-ULD-DC24V	-	+ SH2B-05
116	1	AREA LIGHTING CONTROL SWITCH - S11	KRAUS & NAIMER	CAD11-~~A720~~-600-FT2-F758	-	ENGRAVE 'OFF ON'
117				A721		
118	1	STATION LOCAL/REMOTE SWITCH - S10	KRAUS & NAIMER	CAD11-~~A720~~-600-FT2-F758	-	ENGRAVE 'LOCAL REMOTE'
119	1	ELECTRODES TEST RELAY - ETR	IDEC	RH4B-ULD-DC24V	-	+ SH4B-05
120					P	
121	1	WET WELL LEVEL INDICATOR	CROMPTON INSTRUMENTS	244-01KG-HG-IP-SR 4-20mA	-	0-100% ADJ RED POINTER
122				01RG	J	
123	11	SW/BD DOOR MICRO SWITCHES - SINGLE POLE	OMRON	Z-15GW2 55 B	-	11 OFF N/O
124	1	SW/BD DISCONNECT COMPART DOOR PROXIMITY SWITCH	PEPPERL & FUCHS	NCB5-18GM40-Z0	-	
125	8	SW/BD INTERNAL LED LIGHTS	LUMIFA	LF1B-C3S-2THWW4	-	
126					G	
127					G	
128					G	

ITEM	QTY	DESCRIPTION	MANUFACTURER	CATALOGUE No	OPT	REMARKS
129					G	
130					K	
131					S	
132					H	
133	1	PRIMARY WET WELL LEVEL PROBE	VEGA - VEGAWELL52	WL52XXA4ALD1DD1X	-	SET RANGE TO = 3m
134	1	PRIMARY WET WELL LEVEL ADJUSTMENT UNIT	VEGA - VEGADIS62	DIS62XXKMAXX	-	
135					G	
136					-	
137	1	DELIVERY PRESSURE TRANSMITTER	VEGA VEGABAR52	BR52XXCA1EHPMAS L=12	U	RANGE = 20m
138	1	TRICLOVE FITTING FOR VEGABAR52	VEGA	ADAPTOR	U	A
139	1	CONTROL SYSTEM POWER SUPPLY 24VDC	POWERBOX	PB251A-24CM-CC-T-S	-	
140	1	RADIO 24V/13.8VDC CONVERTER	POWERBOX	PBIH-2412J-CC	R	
141					I	
142	2	BATTERIES - INCLUDING SPILL TRAYS	YUASA	UXH50-12	-	
143	1	RADIO	TRIO	DR900-07A02-D0	R	
144	1	RADIO ANTENNA	TRIO	YAGI ANT13AL	R	15 ELEMENT 13dB ALUM
145	1	RADIO COAX SURGE PROTECTION UNIT	POLYPHASER CORPORATION	IS-50NX-C2	R	Mounted on Din Rail
146	1	TELEMETRY UNIT	MOTOROLA	ACE - 3600	-	
147	1	GSM MODEM	WAVECOM	FASTRACK Supreme	I	c/w 5 M Cable
148	1	GSM CELLULAR TRANSIT ANTENNA	RF INDUSTRIES	TLA2000	I	
150	1	GRAPHIC DISPLAY	REDLION	G306A000		
153						
156	1	ANTENNA MAST c/w 20mm NYLON CABLE GLAND	SWBD BUILDER	SHEET 23	R	LENGTH = 4 MTRS
157	1	INTERNAL COAX CABLE (Radio to Lightning Arrester)	TRIO	TRIO - SMAM/NM/TL23	R	Cable No X01
158	1	EXTERNAL COAX CABLE (Lightning Arrester to Aerial)	R.F. INDUSTRIES	ANDREW - CNT400	R	Cable No X02
159	2	COAX PLUG (For CNT400 cable)	PULSE	N-203HS	R	Straight cable plug crimp
160	1	U CLAMPS	R.F. INDUSTRIES	UNV	R	
164.0	Lot	MINIATURE THERMAL CIRCUIT BREAKER	PHOENIX CONTACT	TCP 'x'A + UK6FSI/C	-	'x' = AMP Rating
164.1	70	THROUGH TERMINALS (Grey & Blue as Required)	PHOENIX CONTACT	PIT 2.5		PIT 2.5-BU (for -ve)
164.2	325	DISCONNECT TERMINALS (Grey & Blue as Required)	PHOENIX CONTACT	PIT 2.5-MT	-	PIT 2.5-MT-BU (for -ve)
164.3	11	GROUP MARKER CARRIER	PHOENIX CONTACT	UBE	-	
164.4	10	PLUG-IN BRIDGE	PHOENIX CONTACT	FBS-50	-	AS REQUIRED
164.5	2	TEST PLUG	PHOENIX CONTACT	PS-5		
164.6	1	COVER PROFILE (SHROUDING) + CARRIER PLATE	PHOENIX CONTACT	AP-2 + AP2-TU	-	AS REQUIRED
165	9	EARTH TERMINALS	PHOENIX CONTACT		-	
166					-	
169						
170	1	ENERGEX PADLOCK - 45mm brass pin tumbler	H.A. REED LOCKSMITHS	KEY No 325 & S/S Shackle	-	c/w 2 KEYS
171						
172	Lot	WET WELL CONDUIT END CAPS c/w NYLON CABLE GLANDS	HD PVC	TO SUIT CONDUITS		Detail 'W'
173	Lot	S/STEEL FITTINGS AS DETAILED FOR PRESSURE TX	FITTINGS	STAINLESS STEEL	U	Sheet 24
174	1	EARTH ROD CONNECTION BOX	NESCO	ERB1	-	
175	1	LINE TAP - BONDING TO EARTHING ROD	CLIPSAL	BP26	-	
176	1	EARTHING ROD	COPPER ROD	13mm Diameter	-	
177					E	
178					Q	
179					E	
180					E	
181					E	
182					E	
183					E	
184					E	
185					E	
186					E	
187	2	SINGLE POINT PROBES	MULTITRODE	2 off - 020130FSP-Shield	-	
188					C	
189					G	
190					G	
191	1	EXTERIOR AREA LIGHT	STRATEGIC LIGHTING	ECLIPSE - T5 2x80W	J	High Impact Resistant
192	4	CORROSION INHIBITOR	CORTEC	VPCI-110 OR 111	-	FROM AP CONTROLS

ELECTRICAL AS BUILT DETAILS
I CERTIFY THAT THE "AS CONSTRUCTED" DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS
REV
COMPANY: J & P Richardson Industries Pty Ltd
NAME: Justin Read
SIGNATURE: Justin Read
RPEQ No: 7727
DATE: 12/7/13

Sheet 18
FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
0	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED: P.HAGUE
DRAFTING CHECK: A.WITTHOFT
CAD FILE: 57-0297set_A
B.C.C. FILE No.

Original Signed by P.HAGUE 6-11-12
DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 6-11-12
DESIGN CHECK R.P.E.Q. No. DATE

PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

TITLE
EQUIPMENT LIST

SHEET No. 18
Queensland Urban Utilities DRAWING No. 486/5/7-0297-018
AMEND. A

STD TEMPLATE SP-2P Ver32

D:\AA_Major Projects\QUU - SPRI11\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

CABLE No.	STATUS	SIZE	CORES	TYPE	LENGTH (m) Note 1	FROM	TO	CABLE FUNCTION	NOTES
P01	NEW	16mm²	4C	PVC/CU/PVC Note2		ENERGEX Supply Pillar/Pole	Switchboard	Incoming Mains Supply	Refer Note2 for Cable Protection
E01	NEW	6mm²	1C	Building Wire		Switchboard	Earth stake	Main Earth	
P05	EXISTING	2.5mm²	3C+E+2pilots	Flexible (Submersible)		Switchboard - Pump De-Contactor	Pump No1	Pump 1 Motor Feed +Thermistors	
		-							
P08	EXISTING	6mm²	3C+E	Flexible (Submersible)		Switchboard - Pump De-Contactor	Pump No2	Pump 2 Motor Feed	
		-							
P23	NEW	2.5mm²	2C+E	PVC/CU/PVC		Switchboard	External Area Lights	Area Lighting	
C01	NEW	1.5mm²	2C	Vendor-020139FSP-Shield		Switchboard	Surcharge Imminent Probe	Surcharge Imminent Signal (SIR)	
C02	NEW	1.5mm²	2C	Vendor-020136FSP-Shield		Switchboard	Wet Well High Level Probe	Wet Well High Level Signal (LR3)	
C200	EXISTING	1.5mm²	7C	Flexible (Submersible)		Switchboard - Pump Aux Plug	Pump No2	Pump 2 Motor Thermistors	
		-							
I01	NEW			Vendor		Switchboard	Wet Well Hydroscopic Level Sensor	Primary Wet Well Level	Incl Excess Length - See Note 3
I02	NEW			Vendor		Switchboard	Delivery Pressure Transmitter	Delivery Pressure	Located in Valve Pit
I06	NEW	24 AWG	1 Pr	120 ohm Twisted Pair		Switchboard - RTU	Switchboard - Soft Starter No1	RS485 Comms	Overall Screened Twisted Pair
I07	NEW	24 AWG	1 Pr	120 ohm Twisted Pair		Switchboard - Soft Starter No1	Switchboard - Soft Starter No2	RS485 Comms	Overall Screened Twisted Pair
I11-I13	NEW			Ethernet		Switchboard RTU	Graphic Display/Modem/Radio	Communications	
X01	NEW			Vendor		Switchboard - Radio	Aerial Coax Surge Protector	Radio Communications	
X02	NEW			CAT6a00		Aerial Coax Surge Protector	Aerial	Radio Communications	

NOTE:

1. THE CONTRACTOR IS RESPONSIBLE IN DETERMINING THE ACTUAL CABLE LENGTHS REQUIRED ON SITE.
2. PROTECT THE MAINS CABLE USING PVC SHEATHED FLEXIBLE METAL CONDUIT SUCH AS 'ADAPTAFLEX' FROM 150mm Min WITHIN THE PVC MAINS CONDUIT CAST IN THE SLAB UP TO THE GLAND PLATE. TERMINATE USING PROPRIETARY GLAND. SEAL AROUND CABLE AT EXIT POINT OF CONDUIT TO PREVENT INGRESS OF VERMIN. PROVIDE ADEQUATE EXCESS FOR RE-TERMINATION.
3. ALLOW SUFFICIENT LENGTH ON CABLE TO ALLOW FOR REMOVAL OF PROBE AND CONDUIT. EXCESS LENGTH TO BE STORED IN ELECTRODE BOX

ELECTRICAL AS BUILT DETAILS

I CERTIFY THAT THE "AS CONSTRUCTED" DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS

REV

COMPANY: J & P Richardson Industries Pty Ltd

NAME: Justin Read

SIGNATURE: Justin Read

RPEQ No: 7727 DATE: 12/7/13

Sheet 19

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED P.HAGUE
DRAFTING CHECK A.WITTHOFT
CAD FILE 57-0297set_A
B.C.C. FILE No.

Original Signed by P.HAGUE 6-11-12
DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 6-11-12
DESIGN CHECK R.P.E.Q. No. DATE

PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

QUEENSLAND Urban Utilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

TITLE
CABLE SCHEDULE

SHEET No. 19
Queensland Urban Utilities DRAWING No. 486/5/7-0297-019
AMEND. A

STD TEMPLATE SP-2F Ver32

D:\AA_Major Projects\QUU - SPR111\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

ITEM #	OPT.	DESCRIPTION - INTERNAL LABEL	LABEL 1	LABEL 2 (IF NECESSARY)	TEXT HEIGHT	MATERIAL / COLOUR
02		ENERGEX SUPPLY	NORMAL SUPPLY MAIN SWITCH 125A	REFER SHEET 01	10mm 4mm	ABS PLASTIC B/W
03		GENERATOR SUPPLY	GENERATOR SUPPLY MAIN SWITCH 125A	NOTE 11	10mm 4mm	ABS PLASTIC B/W
04/05		PUMP CIRCUIT BREAKER	PUMP No1 20A	PUMP No2 20A	6mm 4mm	ABS PLASTIC W/B
07		PHASE FAILURE CIRCUIT BREAKER	ENERGEX PHASE FAILURE RELAY Q7	FED FROM LINE SIDE OF MAIN SWITCH	4mm 4mm	ABS PLASTIC W/B
09		SUB-DISTRIBUTION BOARD CB	SUB-DISTRIBUTION BOARD 63A	Mounted On Escutcheon	6mm 4mm	ABS PLASTIC W/B
10		PHASE FAILURE CIRCUIT BREAKER	STATION PHASE FAILURE RELAY Q10		4mm 4mm	ABS PLASTIC W/B
11		1 PHASE OUTLET CIRCUIT BREAKER	1ϕ GPO Q11		4mm 4mm	ABS PLASTIC W/B
12		RTU LAPTOP CIRCUIT BREAKER	RTU LAPTOP GPO Q12		4mm 4mm	ABS PLASTIC W/B
13		SPARE CIRCUIT BREAKER	SPARE Q13		"	"
14		SPARE CIRCUIT BREAKER	SPARE Q14		"	"
15		GENERATOR ANCILLARY SUPPLY CB	GENERATOR ANCILLARY SUPPLY Q15		4mm 4mm	ABS PLASTIC W/B
16		EXT. AREA LIGHTING CIRCUIT BREAKER	AREA LIGHTING Q16		4mm 4mm	ABS PLASTIC W/B
17		SURGE FILTER CIRCUIT BREAKER	SURGE FILTER Q17		4mm 4mm	ABS PLASTIC W/B
18		EM PUMP CONTROL & SIR CIRCUIT BREAKER	EM PUMPING CCT & SIR Q18		4mm 4mm	ABS PLASTIC W/B
19		SPARE CIRCUIT BREAKER	SPARE Q19		4mm 4mm	ABS PLASTIC W/B
20		3 PHASE OUTLET CIRCUIT BREAKER	3ϕ OUTLET Q20		4mm 4mm	ABS PLASTIC W/B
21		SPARE CIRCUIT BREAKER	SPARE Q21		"	"
24		RTU POWER SUPPLY CIRCUIT BREAKER	RTU POWER SUPPLY Q30		4mm 4mm	ABS PLASTIC W/B
25		SURGE FILTER ALARM RELAY CIRCUIT BREAKER	SURGE FILTER ALARM RELAY Q31		4mm 4mm	ABS PLASTIC W/B
26		SPARE CIRCUIT BREAKER	SPARE Q32		"	"
27		SPARE CIRCUIT BREAKER	SPARE Q33		4mm 4mm	ABS PLASTIC W/B
31		PUMP 240VAC CONTROL CIRCUIT BREAKER	PUMP No1 Q4-1	PUMP No2 Q5-1	4mm 4mm	ABS PLASTIC W/B
32		24VDC CONTROL CIRCUIT BREAKER	PUMP No1 QD4	PUMP No2 QD5 EM PUMPING QD18	4mm 4mm	ABS PLASTIC W/B
33		BATTERY CIRCUIT BREAKER	BATTERY QD8		4mm 4mm	ABS PLASTIC W/B
34		240VAC-24VDC POWER SUPPLY	PS-P1	PS-P2 PS3	4mm 4mm	ABS PLASTIC W/B
35						
37		SURGE DIVERTER FUSES	SURGE DIVERTER FUSES 63A/ 63A	FED FROM LINE SIDE OF MAIN SWITCH	4mm 4mm	ABS PLASTIC W/B - R/W
38		SURGE DIVERTERS	SURGE DIVERTERS	FED FROM LINE SIDE OF MAIN SWITCH	4mm 4mm	ABS PLASTIC W/B - R/W
39		SURGE FILTER ALARM RELAY	SFAR		4mm 4mm	ABS PLASTIC W/B
40		SURGE REDUCTION FILTER	SURGE REDUCTION FILTER		4mm 4mm	ABS PLASTIC W/B
41		PHASE FAILURE RELAY	ENERGEX MAINS POWER FAIL - PFRE	FED FROM LINE SIDE OF MAIN SWITCH	4mm 4mm	ABS PLASTIC W/B - R/W
43		PHASE FAILURE RELAY	STATION MAINS POWER FAIL - PFRS		4mm 4mm	ABS PLASTIC W/B
45		MAIN NEUTRAL LINK	MAIN NEUTRAL		4mm	ABS PLASTIC W/B
46		MAIN EARTH LINK	MAIN EARTH		4mm	ABS PLASTIC W/B
47		SUB-BOARD NEUTRAL LINK	NEUTRAL		4mm	ABS PLASTIC W/B
48		SUB-BOARD EARTH LINK	EARTH		4mm	ABS PLASTIC W/B
49		~~SURGE DIVERTER NEUTRAL LINK~~	~~SURGE DIVERTER NEUTRAL~~		4mm	~~ABS PLASTIC W/B~~
50		INSTRUMENT EARTH LINK	INSTRUMENT EARTH		4mm	ABS PLASTIC W/B
51		FILTERED SUPPLY NEUTRAL LINK	FILTERED SUPPLY NEUTRAL		4mm 4mm	ABS PLASTIC W/B
54		LAPTOP GPO	LAPTOP SPO ONLY		4mm	ABS PLASTIC W/B
55	M	GENERATOR 240VAC CONNECTION SOCKET	GENERATOR ANCILLARY SUPPLY		4mm 4mm	ABS PLASTIC W/B
56	M	GENERATOR POWER CONNECTION SOCKET	GENERATOR CONNECTION	REFER SHEET 01 NOTE 9	6mm 6mm	ABS PLASTIC W/B
59		PUMP SOFT STARTER	PUMP No1 1U1	PUMP No2 2U1	6mm 4mm	ABS PLASTIC W/B
60		PUMP SOFT STARTER KEYPAD	PUMP No1	PUMP No2	8mm	ABS PLASTIC W/B
61						
63						
64		LINE CONTACTOR	PUMP 1 1K1	PUMP 2 2K1	4mm 4mm	ABS PLASTIC W/B
65		SOFT STARTER RUNNING RELAY	1K2	2K2	4mm	ABS PLASTIC W/B
66		SOFT STARTER FAULT RELAY	1K3	2K3	4mm	ABS PLASTIC W/B
67		EM. STOP RELAY	1K4	2K4	4mm	ABS PLASTIC W/B
68		PUMP POWER ON RELAY	1K5	2K5	4mm	ABS PLASTIC W/B
69		PUMP RUN RELAY	1K6	2K6	4mm	ABS PLASTIC W/B

ITEM #	OPT.	DESCRIPTION - INTERNAL LABEL	LABEL 1	LABEL 2 (IF NECESSARY)	TEXT HEIGHT	MATERIAL / COLOUR
73		PUMP RUN COMMAND RELAY	1K20	2K20	4mm	ABS PLASTIC W/B
74		PUMP FAULT RESET RELAY	1K21	2K21	4mm	ABS PLASTIC W/B
75		PUMP EMERGENCY MODE INTERRUPT RELAY	1K22	2K22	4mm	ABS PLASTIC W/B
77		PUMP START PUSHBUTTON	START	START	4mm	ABS PLASTIC W/B
78		PUMP STOP PUSHBUTTON	STOP	STOP	4mm	ABS PLASTIC W/B
79		PUMP EMSTOP PUSHBUTTON	(use label supplied with P/Button)	(use label supplied with P/Button)		Y/B
80		PUMP RESET PUSHBUTTON	FAULT RESET	FAULT RESET	4mm	ABS PLASTIC W/B
81		~~PUMP HOURS RUN METER~~	~~HOURS RUN~~	~~HOURS RUN~~	~~4mm~~	~~ABS PLASTIC W/B~~
82/83	J	PUMP DE-CONTACTOR	PUMP No1	PUMP No2	6mm	ABS PLASTIC W/B
84/85	J	PUMP AUX CONTROL PLUG & SOCKET	PUMP No1	PUMP No2	6mm	ABS PLASTIC W/B
93		WET WELL HIGH LEVEL RELAY	WET WELL HIGH LEVEL - LR3		4mm 4mm	ABS PLASTIC W/B
96		SURCHARGE IMMINENT LEVEL RELAY	WET WELL SURCHARGE IMMINENT - SIR		4mm 4mm	ABS PLASTIC W/B
97		EMERGENCY PUMPING MODE PUMP 1 RELAY	EMG1		4mm	ABS PLASTIC W/B
98		SURCHARGE IMMINENT ON DELAY TIMER	SIDT		4mm	ABS PLASTIC W/B
99		EMERGENCY PUMPING MODE OFF DELAY TIMER	EMGDT		4mm	ABS PLASTIC W/B
100		EMERGENCY PUMPING MODE PUMP 2 TIMER	EMG2		4mm	ABS PLASTIC W/B
101		EMERGENCY PUMPING MODE START SWITCH	EMERGENCY PUMPING MODE	EMERGENCY PUMPING MODE	4mm 4mm	ABS PLASTIC W/B
102		EMERG. PUMPING MODE OFF DELAY AUX RELAY	EMGDTA		4mm	ABS PLASTIC W/B
				EMERGENCY PUMPING MODE OFF ON	4mm 4mm 4mm	
115		SWITCHBOARD LIGHTING CONTROL RELAY	SLCR	DZCR	4mm	ABS PLASTIC W/B
116		AREA LIGHTING CONTROL SWITCH	AREA LIGHTING		4mm	ABS PLASTIC W/B
118		STATION LOCAL/REMOTE SELECTOR SWITCH	STATION CONTROL MODE		4mm	ABS PLASTIC W/B
119		ELECTRODES TEST RELAY	ETR		4mm	ABS PLASTIC W/B
121		WET WELL LEVEL INDICATOR	WET WELL LEVEL		4mm	ABS PLASTIC W/B
134		WET WELL PRIMARY LEVEL ADJ. UNIT	PRIMARY WET WELL LEVEL (Located in Sw/Bd)		4mm 4mm	ABS PLASTIC W/B
137	U	DELIVERY PRESSURE ADJ. UNIT	DELIVERY PRESSURE (Located in Sw/Bd)		4mm 4mm	ABS PLASTIC W/B
139		CONTROL SYS 240VAC/24VDC POWER SUPPLY	CONTROL SYSTEM 24VDC POWER SUPPLY		4mm 4mm	ABS PLASTIC W/B
140	R	RADIO 24V/13.8VDC CONVERTER	24/12 VDC CONVERTER - RADIO		4mm 4mm	ABS PLASTIC W/B
143	R	RADIO	RADIO		4mm	ABS PLASTIC W/B
145	R	RADIO COAX SURGE PROTECTION	RADIO SURGE PROTECTION		4mm	ABS PLASTIC W/B
146		TELEMETRY UNIT	RTU		4mm	ABS PLASTIC W/B
147	I	MODEM	MODEM		4mm	ABS PLASTIC W/B

ITEM #	OPT.	DESCRIPTION - INTERNAL LABEL	LABEL 1	LABEL 2 (IF NECESSARY)	TEXT HEIGHT	MATERIAL / COLOUR
4 WAY		ACCESS PLATE - DO NOT DRILL	INSPECTION PLATE DO NOT INSTALL CABLES		6mm 4mm	W/B
		TERMINAL HEADER	SWITCHBOARD LIGHTING			
		TERMINAL HEADER	24VDC POWER DISTRIBUTION	DIGITAL INPUTS DI4	4mm 4mm	ABS PLASTIC W/B
		TERMINAL HEADER	DIGITAL INPUTS DI1	DIGITAL INPUTS DI2 DIGITAL INPUTS DI3	4mm 4mm	ABS PLASTIC W/B
		TERMINAL HEADER	DIGITAL OUTPUTS DO1	DIGITAL OUTPUTS DO2	4mm 4mm	ABS PLASTIC W/B
		TERMINAL HEADER	ANALOG INPUTS AI1	ANALOG OUTPUTS AO1	4mm 4mm	ABS PLASTIC W/B
		HEADER LABELS (Above DB Circuit Breakers)	NON FILTERED SUPPLY	FILTERED SUPPLY	6mm 6mm	ABS PLASTIC W/B
		HEADER LABEL (Incomer Section)	MEN BEHIND		6mm	ABS PLASTIC W/B
		HEADER LABEL (Over Terminals 600-613)	LEVEL TX AND LEVEL PROBES		4mm 4mm	ABS PLASTIC W/B
		HEADER LABEL (Over Shrouded Terminals)	WARNING 240VAC		4mm 4mm	ABS PLASTIC R/W
200						
201						
203	F2	GENERATOR BOLTED CONNECTIONS	~~BUSBAR LIVE WHEN SWITCHBOARD ENERGISED FROM GENERATOR~~	REFER SHEET 01 NOTE 10	4mm 4mm	ABS PLASTIC R/W
204						
205						
206		METER PANEL WARNING SIGN	(DUPLICATE LABELS 'X' & 'Y' FROM EXTERNAL LABEL LIST)	(MOUNT INSIDE METER BOX ADJACENT METERS)	6mm 6mm	ABS PLASTIC W/B
208						
209		PUMP INFORMATION LABEL Label size to be approximately 150 x 50	SP143 LINKS AVE SOUTH PUMPS ZONE 6.1 kW 4.6 IMPELLER 220		6mm	ABS PLASTIC W/B

EXTERNAL DOOR LABEL LIST

LABEL	TEXT	TEXT HEIGHT	PAINT FILL LETTERING	QTY
A	SP143	25mm	Black	1
B	RTU	10mm	Black	1
C	PUMP ? CONTROL	10mm	Black	2
D	WARNING THIS SITE IS MONITORED BY THE CONTROL ROOM. PLEASE INFORM THE OPERATOR BEFORE ISOLATING PUMPS OR STATION	8mm	Black	2
E	PLEASE CHECK THAT THE STATION IS IN REMOTE MODE BEFORE LEAVING SITE	8mm	Black	1
F	COMMON CONTROL	10mm	Black	1
I	MAIN SWITCHES	10mm	Black	1
J	DISTRIBUTION BOARD	10mm	Black	1
L	GENERATOR BUSBAR CONNECTIONS	10mm	Black	1
M	PUMP DE-CONTACTORS	10mm	Black	1
N	GENERATOR PLUG CONNECTIONS	10mm	Black	1
O	BATTERIES	10mm	Black	1
P	SUPPLY AUTHORITY METERING	10mm	Black	1
Q	DANGER 415V	10mm	Black	1
R	DANGER - 2 SOURSES OF SUPPLY	10mm	Red	1
T	SURGE DIVERTERS	10mm	Black	1
Y	Phone: 340 78414 (Butt up directly under Label 'X')	8mm	Black	1
Z	DANGER - ELECTRICAL EQUIPMENT Queensland Urban Utilities Phone 34078414 NOTE: LABEL DESIGN IS ISSUED FROM QUU			1

EXTERNAL LABELS 1mm THICK. 316 GRADE STAINLESS STEEL. FIXED WITH M3 316 STAINLESS STEEL METAL THREADS.

DETAIL Q

FIELD LABEL LIST

LABEL	TEXT	TEXT HEIGHT	PAINT FILL LETTERING	QTY
AA	MAIN EARTH CONDUCTOR - DO NOT DISCONNECT (On Main Earth Electrode)	5mm		1

LABEL 'X'

WARNING
THIS SITE IS CONTINUOUSLY MONITORED
CONTACT CONTROL ROOM
BEFORE OPENING METER DOOR
AND PRIOR TO LEAVING SITE.

8mm Black 1

ELECTRICAL AS BUILT DETAILS
I CERTIFY THAT THE "AS CONSTRUCTED" DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS
REV
COMPANY: J & P Richardson Industries Pty Ltd
NAME: Justin Read
SIGNATURE: Justin Read
RPEQ No: 7727
DATE: 12/7/13

Sheet 20

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED: P.HAGUE
DRAFTING CHECK: A.WITTHOFT
CAD FILE: 57-0297set_A
B.C.C. FILE No.

Original Signed by P.HAGUE 6-11-12
DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 6-11-12
DESIGN CHECK R.P.E.Q. No. DATE

PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

TITLE
SWITCHBOARD
LABEL SCHEDULE

SHEET No. 20
Queensland Urban Utilities DRAWING No. 486/5/7-0297-020
AMEND. A

STD TEMPLATE SP-2P Ver3.2

D:\AA_Major Projects\QUU - SPRI11\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

CONSTRUCTION - EXTERNAL SWITCHBOARD

Cubicle construction 3mm Marine grade Aluminium (5251).
Plinth construction ~~75x60~~ 80x40mm channel 6061 T6 Grade Aluminium.
Folded, "Pulse MIG" & "TIG welded with all visible seams and joints fully welded, free from splatter and ground smooth where needed.
External doors and covers fitted with Emka 1011-207 self grip seal.
Stainless Steel "D" Handles fitted where indicated on the drawings.
M6 Earth studs fixed to the interior of all doors and hinged escutcheons and on adjacent cubicle interior surfaces. Fit dedicated earth stud adjacent main earth bar for switchboard earth.
Door stiffeners, door stays, cable straps, and document holders etc fitted where shown on the drawings.
Door stay arms to be S/Steel and of sufficent strength to prevent being deformed when subjected to reasonable loads. Minimum 3mm S/Steel.
Lift-off covers and mounting panels fixed with M8 studs & stainless steel dome nuts.
Gland plates manufactured from 3mm aluminium, unless otherwise shown.
Inspection/Access plates manufactured from 3mm aluminium.
Gland/Inspect/Access plate openings fitted with M6x1.0 flat head closed end rivet nuts. (Detail F)
Cable glands to be fitted with compression side installed within cubicle. (Detail G)
Gland/Inspection/Access plates to be fitted with seals attached to cubicle.
Gland/Inspection/Access plate fixings at 100mm.
Gland/Inspection/Access plates to maintain a 50mm clearance from section dividers.
Gland/Inspection/Access plates are NOT to be split.
Inspection/Access plates are NOT to be earthed.
Provide Shrouding to all live parts to IP20 where required.
Hinges (external) Selectrix HIB650ss-316. Stainless steel.
Star washers fitted under all hinge screws.
Hinged escutcheons fixed with Emka 1/4 turn 1000-U142
All equipment to be removable via front access.
Install switchboard with non-hydroscopic material between plinth and concrete slab. (Detail E1)
All escutcheons to open a minimum of 90°
All sheet metal edging to be de-burred.

Locks Doors 1 - 9 & 11

DORE ELECTRICS - Swing Handle SHKSS Universal Locking - 92268
DORE ELECTRICS - 3 point lock rod set - TLR24
Half Profile Cylinder
Key Codes RC496A, RC496AB, RC496ABC refer to each door for clarification.

Locks Door 12

DORE ELECTRICS - Swing Handle SHKSS Universal Locking - 92268
DORE ELECTRICS - 3 point lock rod set - TLR22SS (all S/Steel)
Lockwood Barrel Lock, Key Code RC496AB

Locks Door 10

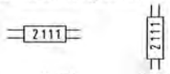
DORE ELECTRICS - Swing Handle SHPSS Padlockable - 316
DORE ELECTRICS - 3 point lock rod set - TLR24
ENERGEX padlock, S/Steel Shackle, 45mm brass pin tumbler
Energex Key No325. c/w 2 keys.

OPERATING PARAMETERS

Standard	AS 3439.1
Current & Frequency	AC 50Hz
Rated Operational Voltage Ue	415 VAC
Rated Insulation Voltage Ui	660 V
Rated Auxiliary Voltage	240 VAC / 24 VDC
Rated Current (Main Bus)	100 ~~300~~ AMPS
Short Circuit Current Isc	20 kA
Duration of Isc	.2 sec
Degree of Protection	IP 56 to AS 1939
Measure of Protection by barriers and enclosures.	
Service Conditions	Outdoors
Mass	Not exceeding 2000kg
Forms of Segregation	Form 3 (DB SECTION FORM 2)

WIRING

All wiring to be PVC V90 HT 0.6/1Kv Grade with tinned conductor.
Control and instrumentation wiring has flexible copper conductors, and is colour coded as detailed below, each individual wire shall be numbered each end, and terminated by the use of appropriate pre-insulated crimp lugs or pins.
Separate lugs or pins shall be used for each conductor. A proprietary double pin lug may be used to terminate two conductors.
Use proprietary bridging links when required to common up terminals.
Not more than two wires shall be connected to any terminal.
Not more than one wire shall be connected on one side of any tunnel type terminal.
Where multiple connections are required on tunnel terminals, proprietary terminal link bars shall be used.
Power wiring to be minimum 2.5sqmm stranded copper conductors, phase colour coded as detailed below.
Control wiring to be minimum 1.0sqmm flexible copper conductors, colour coded as detailed below.
Low level control signals to be minimum 0.5sqmm flexible copper conductors, colour coded as detailed below.
Wiring between RTU terminals & RTU disconnect plugs to be multicore cable with 0.5sqmm flexible copper conductors.
4-20mA analog signals (internal & external) wired in shielded pair minimum size 0.5sqmm, and earthed at one end only. (Switchboard end for external signals)
All 240VAC wiring in the RTU or PLC sections shall be double insulated and all terminals shall be shrouded and labelled- 'Danger 240VAC'
Earth cables minimum 2.5sqmm flexible.
Doors and hinged escutcheons bonded with flexible ~~tinned~~ copper ~~braiding~~ B/Wire
Disconnection zone door to be bonded with flexible copper B/Wire. Heat shrink at lugs.
Switchboard to have dedicated earthing cable bonding directly to main earth bar.
Ensure minimum clearance of 100mm is maintained between cable ducting & gland plates.
Wire numbering will be equal to Grafoplast SI2000 system.
Terminal strips to be mounted 30mm off equipment panel to aid termination.
Wire numbers are readable left to right,bottom to top as shown.



~~Supply spare 'RTU fuse terminal' fuses seperately: 2x10A, 2x5A 4x2A, 6x5A~~
All cable glands to be Stainless Steel type.

COLOUR CODE

Phase wiring (A,B &C)	Red, White, Blue	2.5sqmm (min)
Potential Metering (240/415 VAC)	Red, White, Blue, Black	1.5sqmm
Current Metering (Secondary)	Red, White, Blue, Grey	2.5sqmm
240 VAC Control Active	Red	1.0sqmm
240 VAC Neutral	Black	1.0sqmm
Extra Low VDC Positive supplies	Orange	1.0sqmm
Extra Low VDC Negative supplies	Violet	1.0sqmm
General Extra Low VDC Wiring	Grey	1.0sqmm
RTU & PLC Wiring	Grey	0.5sqmm
Electrode Wiring	Salmon	1.0sqmm
Intrinsically safe wiring	Light Blue	1.5sqmm
Earth	Green/Yellow	2.5sqmm (min)
Door & Escutcheon Earth Bonds	Green/Yellow	4 sqmm
Instrument Shield Earth	Green/Yellow	1.5sqmm (min)

PAINTING

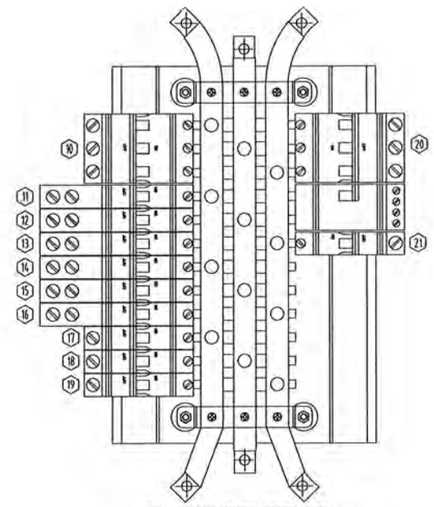
Aluminium Surface Preparation.
Finish smooth all exposed welds, clean, descale, and degrease all surfaces.
Surfaces pretreatment in accordance with AS 1580 & AS 3715 using Novox LF acid etch cleaner, Novacoat 12 conversion coating, & clean water rinses.
Apply DULUX ALPHATECH 3000 powder coat to manufacturer's recommendations.
CUBICLE & EXTERNAL COMPONENTS :- DULUX Mist Green (36648) matt finish.
INTERIOR ITEMS (mounting panels, escutcheons, etc.) :- DULUX Bright White (32166)
Minimum Dry Film Thickness all surfaces 50 microns.

LABELS

Internal labels W/B engraved ABS PLASTIC to label schedule.
Warning labels R/W engraved ABS PLASTIC to label schedule.
E/Stop labels Y/B engraved ABS PLASTIC to label schedule.
First letter = Background colour, Second letter = Lettering colour.

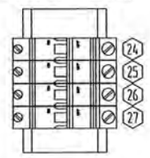
Main switch label	MAIN SWITCH 400A	10mm / 4mm	Material ABS PLASTIC Colour B/W
Pump CB labels	PUMP No1 250A	6mm / 4mm	Material ABS PLASTIC Colour W/B
Compartment labels	RTU	10mm	Material Stainless Steel
E/Stop labels	EMERGENCY STOP	4mm	Material ABS PLASTIC Colour Y/B
Warning labels	DANGER 415V ISOLATE ELSE WHERE	7mm / 5mm	Material ABS PLASTIC Colour R/W

Internal labels secured by M3 chrome plated metal threads.
CB's to be identified with individual labels as per label schedule.
Labels obstructed by switchboard wiring are relocated to adjacent duct lid and secured by M3 nylon threads. Lid to be secured by a single cable tie at one corner.
External switchboard labels to be 1mm thick 316 grade stainless steel secured by M3 316 stainless steel metal threads.
All internal and external labels are to have bevelled edges.



NON-FILTERED SUPPLY ARRANGEMENT

FILTERED SUPPLY ARRANGEMENT



DETAIL M
SUB-DISTRIBUTION BOARD ARRANGEMENT

ELECTRICAL AS BUILT DETAILS		
I CERTIFY THAT THE "AS CONSTRUCTED" DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS		
REV	COMPANY: J & P Richardson Industries Pty Ltd	
	NAME: Justin Read	
	SIGNATURE: Justin Read	
	RPEQ No: 4727	DATE: 12/7/13

Sheet 21

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
0	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED P.HAGUE
DRAFTING CHECK A.WITTHOFT
CAD FILE 57-0297set_A
B.C.C. FILE No.

Original Signed by P.HAGUE 6-11-12
DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 6-11-12
DESIGN CHECK R.P.E.Q. No. DATE

PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

TITLE
SWITCHBOARD
CONSTRUCTION DETAILS
SHEET 1 OF 3

SHEET No. 21
Queensland Urban Utilities DRAWING No. 486/5/7-0297-021
AMEND. A

S10 TEMPLATE SP-JP Ver3.3

D:\AA_Major Projects\QUU - SPR111\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

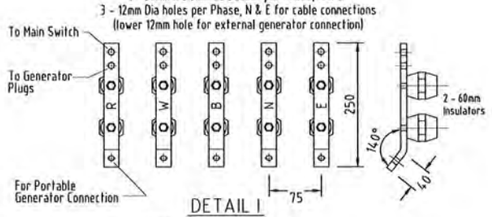
27-2-13

MEN BEHIND

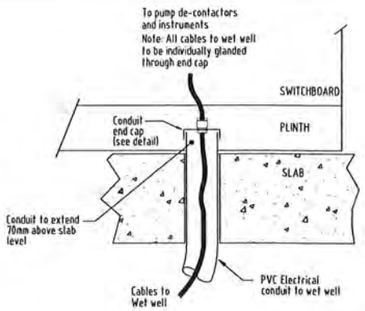
ESCUTCHEON LAYOUT DETAIL V

ESCUTCHEON LAYOUT DETAIL X

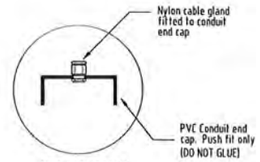
1 - 30mm x 6.3mm Cu Busbar per Phase, N & E
3 - 12mm Dia holes per Phase, N & E for cable connections
(lower 12mm hole for external generator connection)



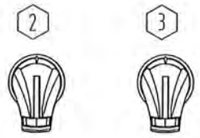
DETAIL I
(GENERATOR BOLTED CONNECTION)
(FIT SHROUD AND LABEL)



DETAIL W
(WET WELL CONDUIT SEALING DETAIL)

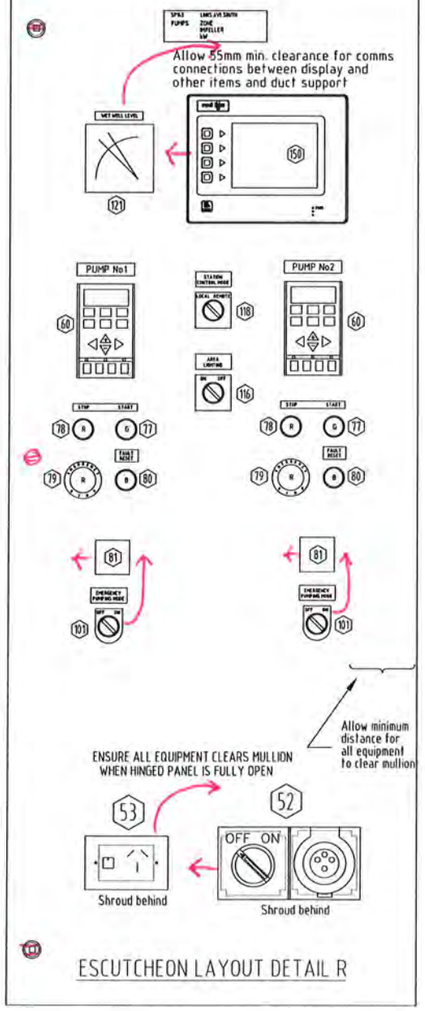


(END CAP DETAIL)

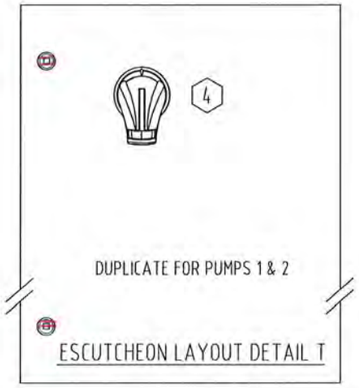


Allow for all equipment to clear mullions

ESCUTCHEON LAYOUT DETAIL U



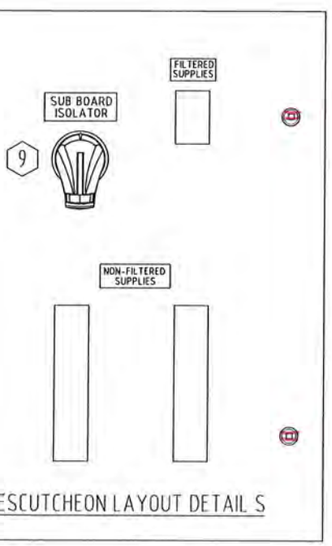
ESCUTCHEON LAYOUT DETAIL R



DUPLICATE FOR PUMPS 1 & 2

ESCUTCHEON LAYOUT DETAIL T

NOTE:
ALL ESCUTCHEONS
TO OPEN 90° min.



ESCUTCHEON LAYOUT DETAIL S

ELECTRICAL AS BUILT DETAILS

I CERTIFY THAT THE "AS CONSTRUCTED" DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS

REV		
	COMPANY: J & P Richardson Industries Pty Ltd	
	NAME: Justin Read	
	SIGNATURE: Justin Read	
	RPEQ No: 9727	DATE: 12/7/13

Sheet 22

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED	P.HAGUE
DRAFTING CHECK	A.WITTHOFT
CAD FILE	57-0297set_A
B.C.C. FILE No.	

Original Signed by P.HAGUE 6-11-12
DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 6-11-12
DESIGN CHECK R.P.E.Q. No. DATE

PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL

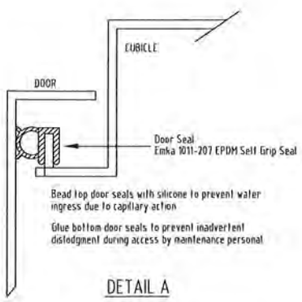
SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

TITLE
SWITCHBOARD
CONSTRUCTION DETAILS
SHEET 2 OF 3

SHEET No. 22
Queensland Urban Utilities DRAWING No.
486/5/7-0297-022
AMEND. A

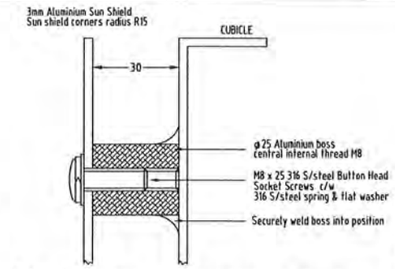
D:\AA_Major Projects\QUU - SPRI111\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

27-2-13



DETAIL A

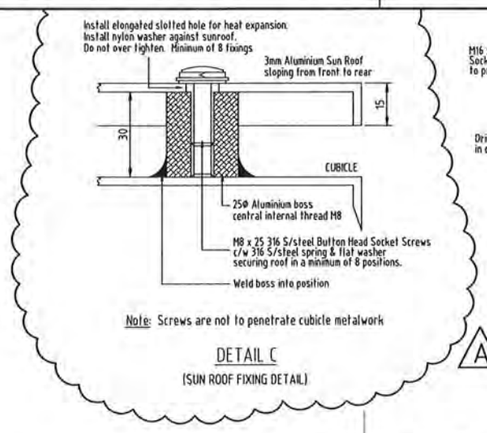
DOOR SEAL
EXTERNAL SWITCHBOARD



Notes: Screws are not to penetrate cubicle metalwork.
Boss for sunshields to be 30mm.

DETAIL B

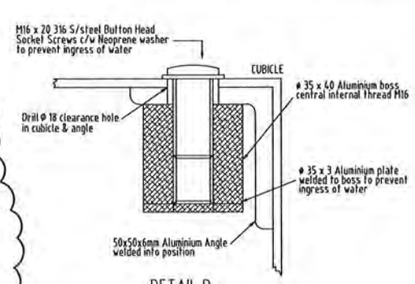
(SUN SHIELD MOUNTING TO ENDS, REAR AND DOORS)



Note: Screws are not to penetrate cubicle metalwork

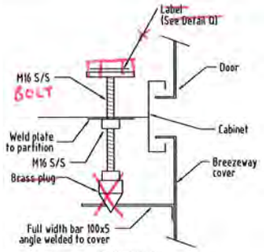
DETAIL C

(SUN ROOF FIXING DETAIL)



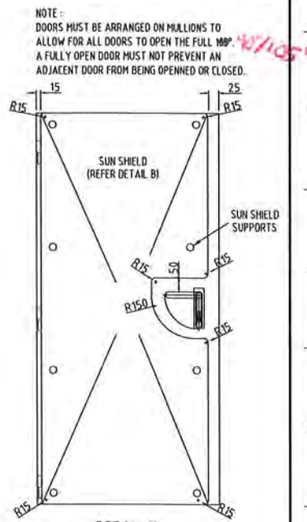
DETAIL D

(EYE BOLT FIXING DETAIL)



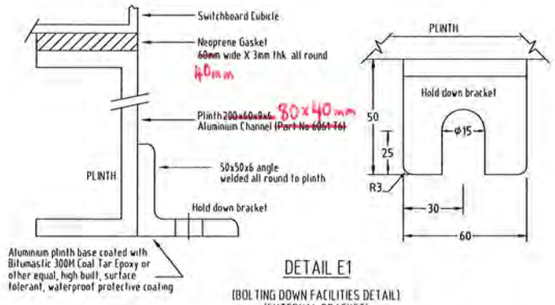
DETAIL V

(BREEZEWAY LATCH INSTALLATION DETAIL)



DETAIL K

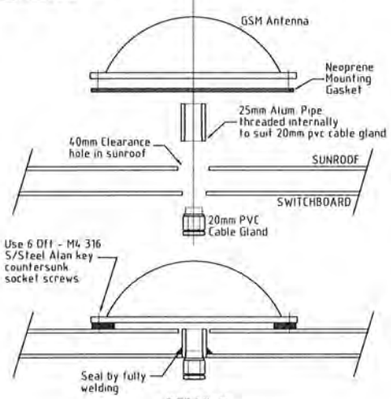
(DOOR SUN SHIELD DETAIL)



DETAIL E1

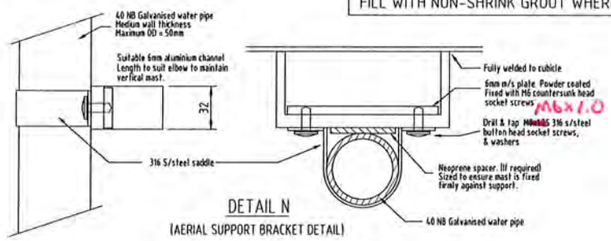
(BOLTING DOWN FACILITIES DETAIL)
(EXTERNAL BRACKET)

SET UP CUBICLE TO BE LEVEL & PLUMB BEFORE BOLTING TO CONCRETE PLINTH USING M12 S/STEEL CHEMICAL ANCHORS. MINIMUM ANCHORAGE 110mm. USE 40x40x3mm WASHERS FILL WITH NON-SHRINK GROUT WHERE REQUIRED.



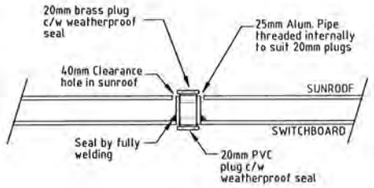
DETAIL X

(GSM ANTENNA MOUNTING DETAIL)



DETAIL N

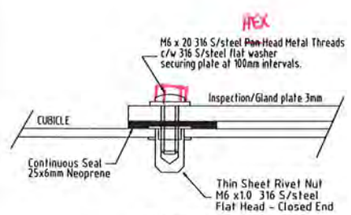
(AERIAL SUPPORT BRACKET DETAIL)



DETAIL X

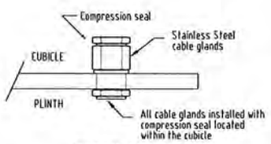
(SMART METERING ANTENNA PLUG DETAIL)

DOOR CLEARANCES



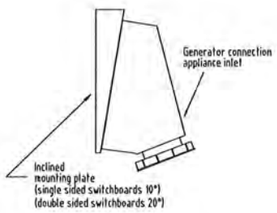
DETAIL F

(GLAND/INSPECTION PLATE FIXING DETAIL)



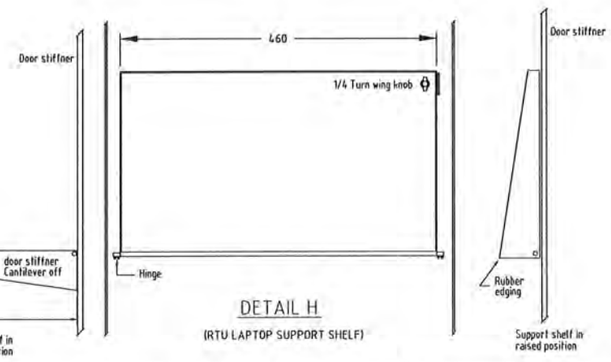
DETAIL G

(CABLE GLAND INSTALLATION DETAIL)



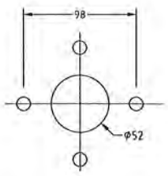
DETAIL O

(INCLINED MOUNTING PLATE DETAIL)



DETAIL H

(RTU LAPTOP SUPPORT SHELF)



(Fit 3mm neoprene gasket between plinth & flange)
(Fixings 316 s/steel bolts, nuts, flat & spring washers)

DETAIL P

AERIAL & AREA LIGHTING FLANGE MOUNTING DETAIL
(COMPLETE WITH BLANKING FLANGE IF NO AERIAL FITTED)

ELECTRICAL AS BUILT DETAILS

I CERTIFY THAT THE "AS CONSTRUCTED" DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS

REV
COMPANY: J & P Richardson Industries Pty Ltd
NAME: Justin Read
SIGNATURE: Justin Read
RPEQ No: 7727 DATE: 12/7/13

Sheet 23

FOR CONSTRUCTION

REV	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED P.HAGUE
DRAFTING CHECK A.WITTHOFT
CAD FILE 57-0297set_A
B.C.C. FILE No.

Original Signed by P.HAGUE 6-11-12
DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 6-11-12
DESIGN CHECK R.P.E.Q. No. DATE

PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL

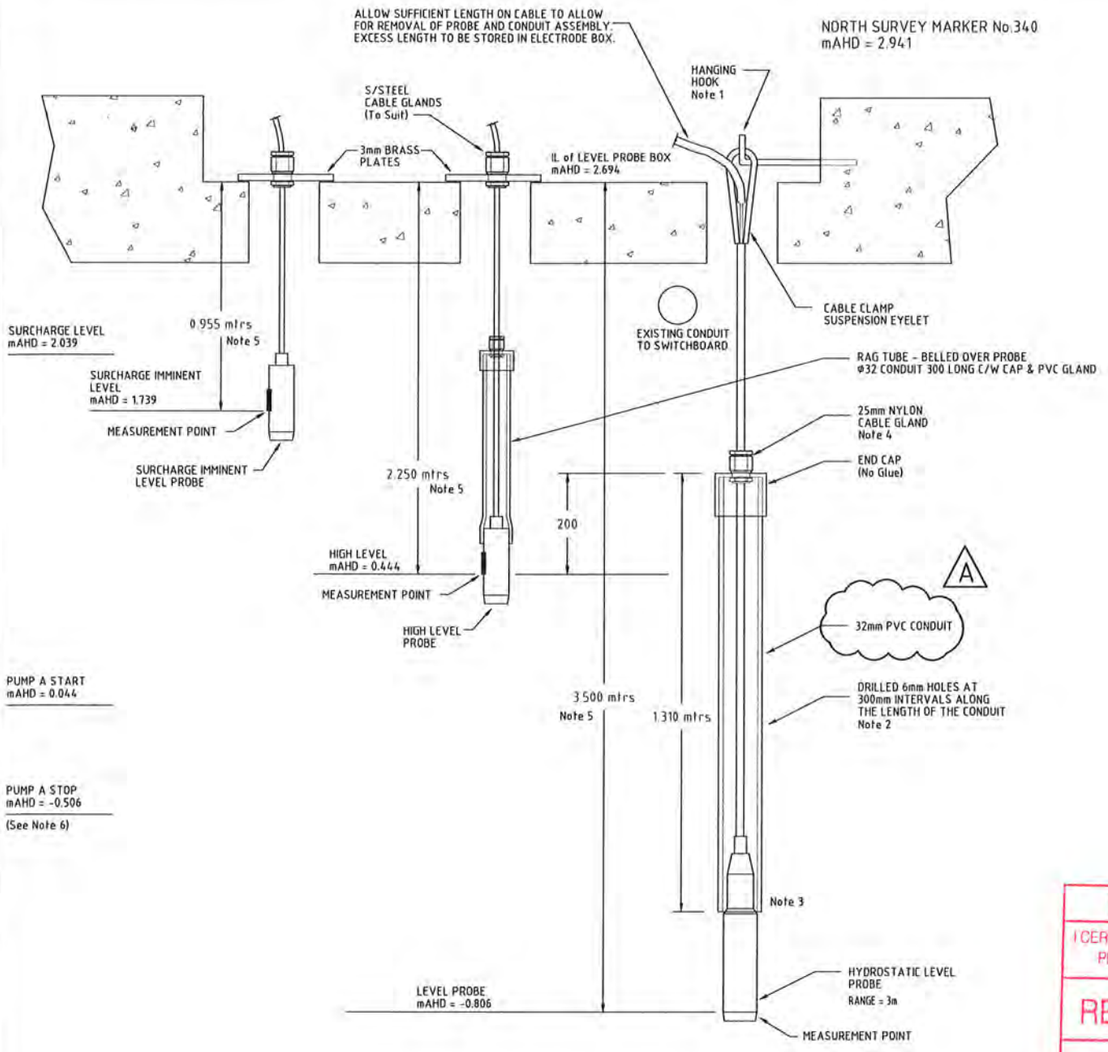
SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

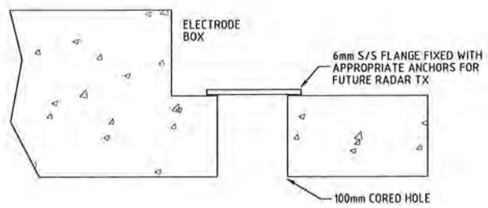
TITLE
SWITCHBOARD
CONSTRUCTION DETAILS
SHEET 3 OF 3

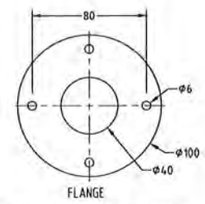
SHEET No. 23
Queensland Urban Utilities DRAWING No. 486/5/7-0297-023
AMEND. A

STD TEMPLATE SP-2F Ver32

D:\AA_Major Projects\QUU - SPR11\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM



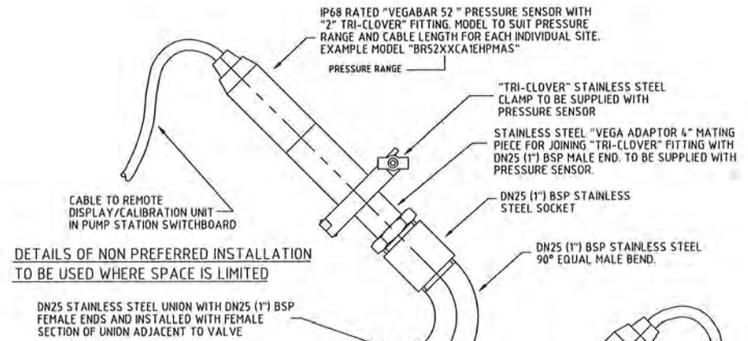




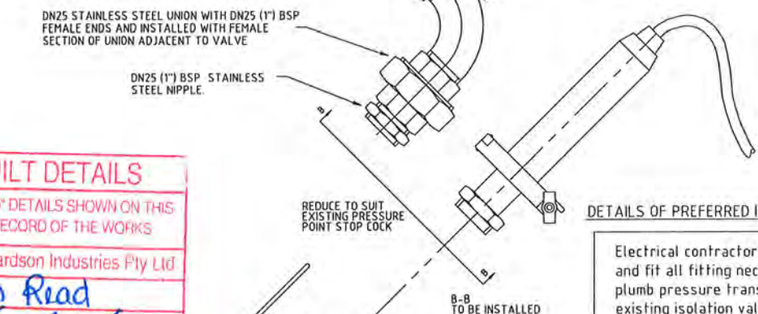
(RADAR TX FLANGE MOUNTING DETAIL)

FLANGE TO FIT IN EXISTING ELECTRODE BOX. TYPICAL WIDTH OF ELECTRODE BOX IS 120mm.

SECONDARY LEVEL TRANSMITTER MOUNTING BRACKET INSTALLATION DETAILS



DETAILS OF NON PREFERRED INSTALLATION TO BE USED WHERE SPACE IS LIMITED



DETAILS OF PREFERRED INSTALLATION

Electrical contractor to supply and fit all fitting necessary to plumb pressure transducer into existing isolation valve.

NOTE, ADDITIONAL FITTINGS MAY BE REQUIRED.

	QTY	MATERIALS LIST
1	1	LENGTH OF HEAVY DUTY ORANGE PVC CONDUIT 40mm
2	1	CONDUIT END CAP
3	2	25mm NYLON CABLE GLAND
4	3	CABLE CLAMP SUSPENSION EYELET

PRIMARY LEVEL PROBE INSTALLATION NOTES

1. Install stainless steel hanging hook for the suspension of the hydrostatic probe.
2. Drill 4 x 6mm holes, 150mm from each end and every 300mm of the cut length, prior to installation.
3. Install so that the conduit rests on the shoulder of the probe. Do not glue the conduit to the end cap.
4. Install a 25mm nylon cable gland. Apply no compression to cable.
5. Measurements are to be taken from bottom of the Level Probe box to 'measurement points' on probes
6. Pump stop level shown on this drawing is 100mm above actual IDTS value. This allows for ramp down of soft starter/VSD

PRESSURE TRANSMITTER INSTALLATION NOTES

1. Material: All stainless steel fittings to be grade 316.
2. Galling: All stainless steel threads to be lubricated with approved anti galling grease and thread tape where applicable.
3. Install as per 'prefered' detail unless space limitations prevents this method.

ELECTRICAL AS BUILT DETAILS

I CERTIFY THAT THE "AS CONSTRUCTED" DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS

REV | COMPANY: J & P Richardson Industries Pty Ltd | NAME: Justin Read | SIGNATURE: Justin Read | RPEQ No: 7127 | DATE: 12/7/13

Sheet 24

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED P.HAGUE
DRAFTING CHECK A.WITTHOFT
CAD FILE 57-0297set_A
B.C.C. FILE No.

Original Signed by P.HAGUE 6-11-12 DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 6-11-12 DESIGN CHECK R.P.E.Q. No. DATE
PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities A DIVISION OF THE BRISBANE CITY COUNCIL

SITE SP143 LINKS AVE SOUTH SEWAGE PUMP STATION

TITLE FIELD INSTRUMENTATION INSTALLATION DETAILS

SHEET No. 24
Queensland Urban Utilities DRAWING No. 486/5/7-0297-024
AMEND. A

STD TEMPLATE SP-J9 Ver3.2

D:\AA_Major Projects\QUU - SPR111\Packages\Package 11E\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:15:42 PM

FRONT ELEVATION
DOORS & SHIELDS REMOVED

REAR ELEVATION
DOORS & SHIELDS REMOVED

FRONT VIEW

REAR VIEW

ELECTRICAL AS BUILT DETAILS

I CERTIFY THAT THE "AS CONSTRUCTED" DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS

REV | COMPANY: J & P Richardson Industries Pty Ltd
NAME: Justin Read
SIGNATURE: Justin Read
RPEQ No: 9727 | DATE: 12/7/13

Sheet 27

FOR CONSTRUCTION

A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.	DRAFTED	P.HAGUE	Original Signed by P.HAGUE	6-11-12	.	
O	11.12	ISSUED FOR TENDER	P.H.	A.W.	DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE	PRINCIPAL DESIGN MANAGER	DATE
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.	CAD FILE	57-0297set_A	Original signed by A.WITTHOFT	8895 6-11-12	.	
No	DATE	AMENDMENT	DRN.	APD.	B.C.C. FILE No.		DESIGN CHECK	R.P.E.Q. No. DATE	CLIENT DELEGATE	DATE

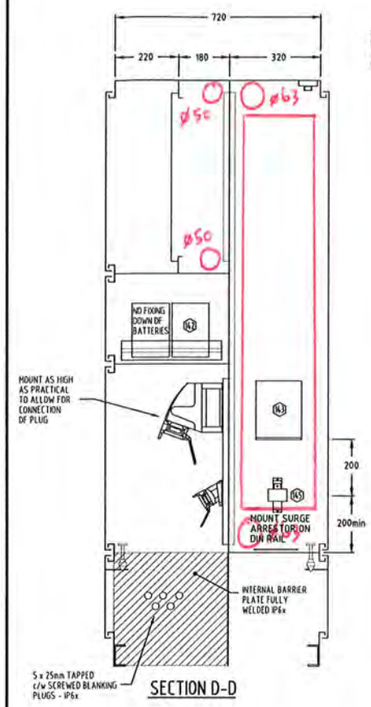
QUEENSLAND UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

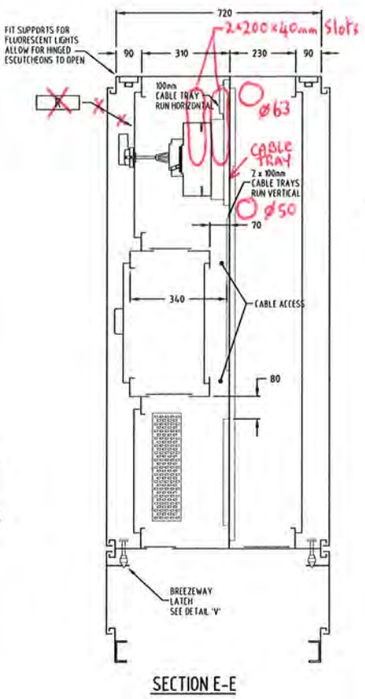
TITLE
SWITCHBOARD
GENERAL ARRANGEMENT
ELEVATIONS

SHEET No. 27
Queensland Urban Utilities DRAWING No. 486/5/7-0297-027
AMEND. A

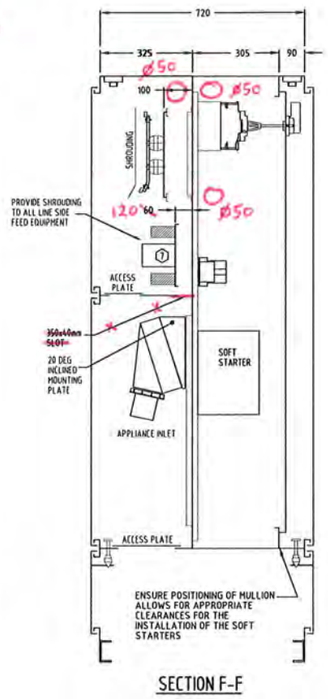
D:\AA_Major Projects\QUU - SP0111\Packages\Package 11\SP143 Links Ave South\Drawings\Electrical Drawings\For Construction\57-0297set_A.dgn Last Saved by Peter on Wednesday, 11 December 2013 12:43:43 PM



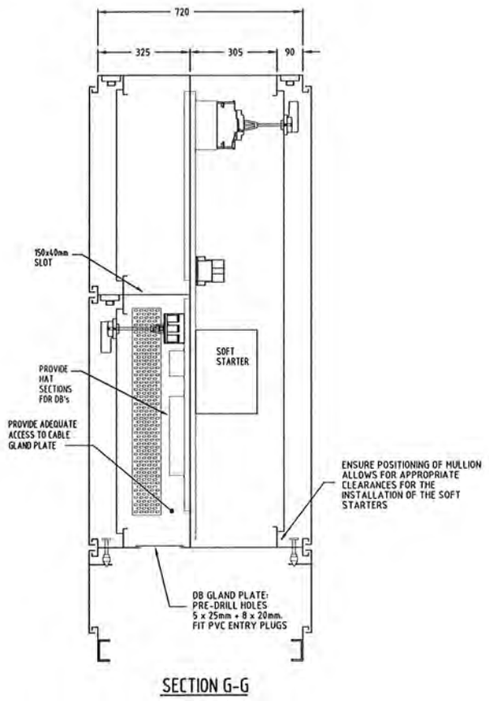
SECTION D-D



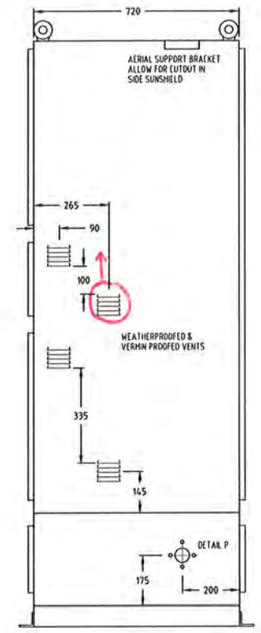
SECTION E-E



SECTION F-F

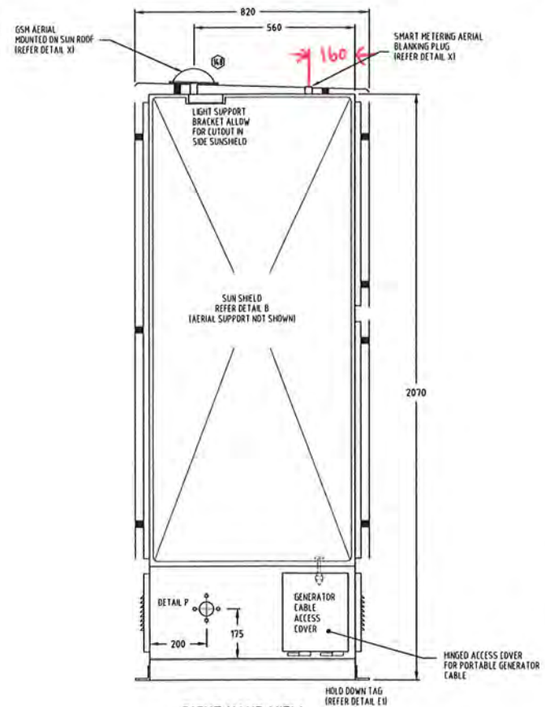


SECTION G-G

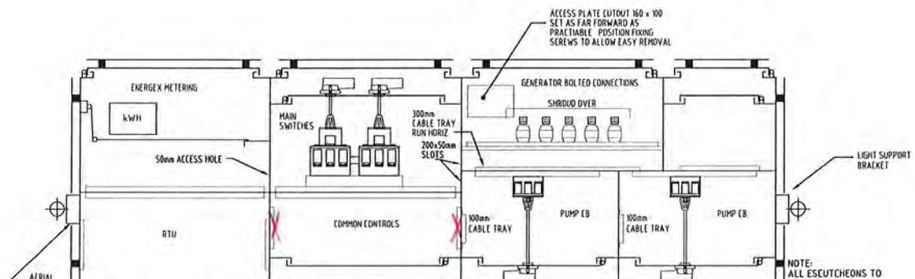


LEFT HAND ELEVATION

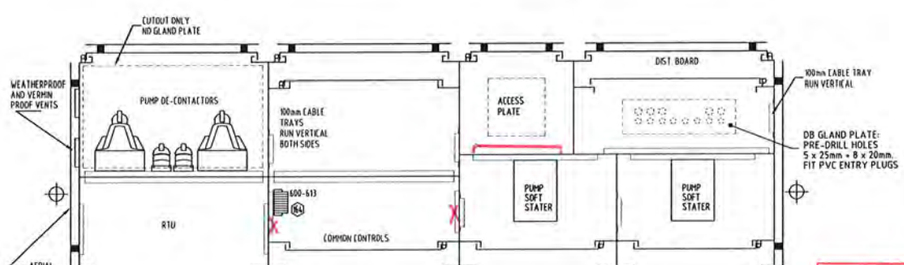
SHIELDS REMOVED



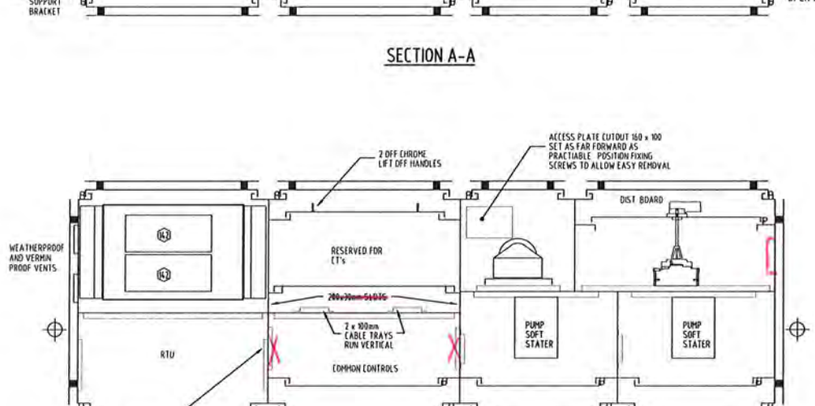
RIGHT HAND VIEW



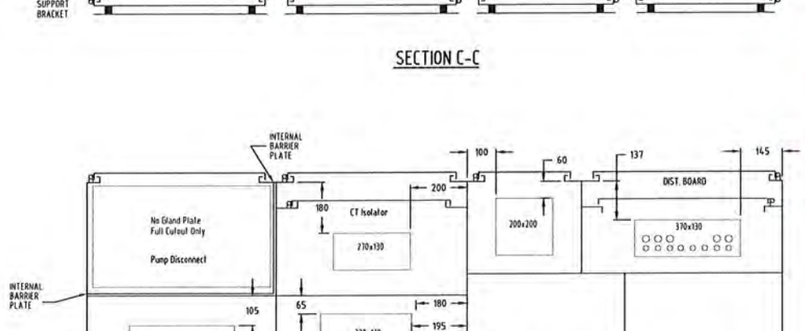
SECTION A-A



SECTION C-C



SECTION B-B



GLAND/INSPECTION PLATE CUTOUTS

ELECTRICAL AS BUILT DETAILS

I CERTIFY THAT THE "AS CONSTRUCTED" DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS

REV

COMPANY: J & P Richardson Industries Pty Ltd

NAME: Justin Read

SIGNATURE: Justin Read

RPEQ No: 9727 DATE: 12/7/13

Sheet 28

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
O	11.12	ISSUED FOR TENDER	P.H.	A.W.
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED	P.HAGUE
DRAFTING CHECK	A.WITTHOFT
CAD FILE	57-0297set_A
B.C.C. FILE No.	

Original Signed by P.HAGUE			6-11-12
DESIGN	R.P.E.Q. No.	DATE	
Original signed by A.WITTHOFT	8895		6-11-12
DESIGN CHECK	R.P.E.Q. No.	DATE	

.	.
PRINCIPAL DESIGN MANAGER	DATE
.	.
CLIENT DELEGATE	DATE

QUEENSLAND UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP143
LINKS AVE SOUTH
SEWAGE PUMP STATION

TITLE
SWITCHBOARD
GENERAL ARRANGEMENT
SECTIONS

SHEET No. 28

Queensland Urban Utilities DRAWING No.
486/5/7-0297-028

AMEND.
A

6 SERVICE & MAINTENANCE

This product is designed to operate under specific environmental, supply and load conditions. Should these conditions change, consult a licenced electrician or electrical engineer before operating this product.

These procedures are to be performed only by a licenced electrician as they may expose live equipment.

The Switchgear and Control gear Assembly is essentially maintenance free, however the following safety measures and routine maintenance is recommended.

Where fitted, ensure cabinet vents and filters are clear and clean.
During operation, ensure all doors and covers are secure and closed.
All faults are to be investigated and repaired by an appropriately licenced electrician.
All components to be operated in accordance with manufacturers data.
The protective devices within switchboards are designed to operate in the event of a short circuit or overload condition. In the event of these devices operating under such conditions the device or devices must be inspected and tested by a suitably trained person to ascertain its condition prior to reconnecting the protective device to the supply.

Periodic checks should ensure

The switchboard is clean and free of any contaminants, which could reduce the insulation properties of the switchboard.
All entries are sealed to ensure no vermin can enter.
There is no evidence of overheating, arcing or moisture.
The earthing system is maintained and is adequate to allow correct operation of protective devices.
Insulation resistance is maintained to appropriate levels.
Check terminations for correct tension.
Test operation of protective devices.
Re-calibrate instrument loops as required.

Refer to AS-INSTALLED electrical drawings for details of protection equipment settings.

No special tools or equipment are required to perform routine maintenance.

7 ELECTRICAL EQUIPMENT TECHNICAL INFORMATION

Part 1 - TMS581
Part 2 - TMS582