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

SP253 – HALLEY CRESCENT

Developed by:

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DOCUMENT CHANGE HISTORY

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1	Roland Barrett	Draft for Comment	Signed	27/03/13

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1.0	Andrew Hanlon	QUU Project Manager	Original Signed	21/10/13

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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
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SWITCHBOARD & SHEETMETAL INSPECTION REPORT

Customer Name: QUU	**Job No: M63000/S63000**
Item: SP253 Halley Crescent	**Drawing No: 57-0310set_A**

TASK	PRODUCT DETAIL	INSPECTED BY	DATE	PASS / FAIL	CORRECTIVE ACTION REQUEST OR COMMENTS
Design	Documents	R.B.	1/02/2013	✓	
Drafting	Documents				
Sheetmetal	Switchboard	DC	21/3	P	
(Refer F1018 for details)	Doors				
	Cell/Panels				
Painting					
Process	Powder / Wet				
Min DFT (40 STD)					
Cure Test					
Colour Exterior		[illegible]	27/03/13	P	HW
Colour Internal					
Colour Panels					
Cubicle Erection		[illegible]	04/5/13	Pass	~~Waiting on Lock boards~~
Electrical Fitout					
(In accordance with drawings)					
Inspection & Test		A.VARY	22-4-13	PASS	
(Refer to F1019)					
Packing					

Comments: NATHAN

All Reqs Done [illegible] 27/03/13

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

[illegible] 29/4/13

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SWITCHBOARD / SHEETMETAL INSPECTION CHECKLIST

CLIENT: Queensland Urban Utilities			**JOB NO:** S63000		
PRODUCT DESCRIPTION: SP253 Halley Crescent			**DRAWING & SCHEDULE NUMBERS** 57-0310set_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**			N/A		
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**			✓		

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SWITCHBOARD / SHEETMETAL INSPECTION CHECKLIST

CONSTRUCTION	QUALITY		COMPLIANCE WITH DRAWINGS		REMARKS OR ACTION
	GOOD	POOR	YES	NO	
27. **Mullion Welded to Divider**			✓		
28. **Double Hinge Meter Panel Fitted**			✓		
29. **Plinth Fitted**			✓		
30. **Wall Mount Brackets**			✓		
31. **Light Switch Brackets**			✓		
32. **Cowls**			N/A		
INSPECTED BY: D. CRANE	**DATE:** 20/3/13				

AFFIX STATUS HERE

Yellow	Awaiting Inspection
Green	Inspected/Tested Passed
Red	Inspected/Tested Awaiting Rectification

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SWITCHBOARD ELECTRICAL INSPECTION & TEST REPORT

Customer Name: QUU

Project: SP253 HALLEY CR. PUMP STATION

JPR Job No: M 63008 **Item:** PUMP CONTROL BOARD

Constructed by: **Tested by:** A. VARY **Date:** 22-4-13

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***
MAINS 1000v Test (MΩ)	500	500	500	500	500	500	
GENERATOR " "	500	500	500	500	500	500	

Earth Leakage							
Earth Leakage Test		Rated Current		Trip Current		Trip Time	

Comments:

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SWITCHBOARD ELECTRICAL INSPECTION & TEST REPORT
EARTH LEAKAGE TEST

Customer Name:	QUU				
JPR Job No:	M63008	**Item:**	SP253		
Constructed by:		**Tested by:**	A.VARY	**Date:**	22-4-13
Test Unit	**Megger RCDT330**	✓	**Other**		

Circuit Breaker	Phase	Rated Current (mA)		Trip Current (mA)		Trip Time (mS)	Comments
Q11	R	30		25		28.3	
Q12	W	30		25		28.3	
Q13	B	30		23		28.7	
Q14	R	30		25		28.3	
Q15	W	30		25		28.6	
Q16	B	30		25		28.5	
	R			29		20.2	
Q20	W	30		25		21.2	
	B			25		18.4	

Comments:-

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SWITCHBOARD ELECTRICAL INSPECTION & TEST REPORT
VFD & SOFT STARTER SETUP

Customer Name: QUU			
Project: HALLEY CR. SEWAGE PUMP STATION			
JPR Job No: M63000	**Item:** SP253	**Drive:**	
Constructed by:	**Tested by:** A.VARY	**Date:** 22/4/13	
Drive Type: Danfoss MCD5 Soft Starter			
Drive Rating:			
Drive Setup Details:			

Parameter	*Setting*		*Function*
1-1	14 A		FLC
1-10	TVR		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
6-1	Reset Group A+B		Auto Reset Action
8-9	415V		Mains Reference Voltage

All other parameters are default settings.

Comments:

Loose Supply Item - Checklist			
Customer Name:	Queensland Urban Utilities	**Job No.**	M63000
Item:	HALLEY CR SEWAGE PUMP STATION	**Date**	29-4-13
	SP253	**Sheet**	1 of 1

Description	Quantity
Vegawell52 - Primary wet well probe	1
Vegabar52 - Delivery pressure transmitter	1
Triclove fitting for Vegabar52	1
Cable clamp suspension eyelet for Vegawell level probe	1
Radio antenna	N/A
Coax plugs for external coax cable	N/A
Test plug	1
Energex padlock key 325	1
Multitrode single probe shielded	2
Corrosion inhibitor	4
Antenna 'U' clamp	N/A
Equipment manuals	1 Box

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: 24/4/13

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: 29/4/13

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
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:** 6./.5./.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
(Signature) JPR Person in Control		• Switchboard rescue kit in test	☑ YES
		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:					
Name Printed:	John Clayton	Mitchell Ryan			
Date:	6/5/13	6/5/13			

SP253 Halley Crescent	Date	6/05/2013

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 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.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 John Clayton **Date** 6/5/13

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.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 John Clayton **Date** 6/5/13

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.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 John Clayton **Date** 6/5/13

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** 29-4-13

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

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 6/5/13

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
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** 29-4-13

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

Queensland Urban Utilities Electrical Inspector J. Clayton **Date** 6/5/13

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** 29-4-13

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

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 6/5/13

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	✓				

Contractor's Signature ..... **Date** 29-4-13

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

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 6/5/13

QUEENSLAND UrbanUtilities

CA17a - Factory Inspection Tests

Major Projects & Commercial Services
SQUV SP Reliability Improve – Stage2

C.8	IP Rating as per specifications. Fitting of sun shields shall maintain IP56 rating.	✓			✓	
C.9	All bolts fitted / tight	✓			✓	
C.10	All sheet metal edging to be de-burred, special attention given to handle/lock access heat shield cuts.	✓			✓	
C.11	Door, hinges and locks are properly fitted to allow closing without forcing the door or being loose.	✓			✓	
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	✓				Waiting on barrels
C.14	Energex Padlock Supplied	✓			✓	

Contractor's Signature ..... **Date** 29-4-13

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

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 6/5/13

QUEENSLAND UrbanUtilities

CA17a - Factory Inspection Tests

Major Projects & Commercial Services
SQUV SP Reliability Improve – Stage2

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** 29-4-13

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

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 6/5/13

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 29-4-13

Company Name J & P Richardson Industries

Company Electrical Licence No. 756

Queensland Urban Utilities Electrical Inspector .....

Date 6/5/13

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.			✓		JPR LAPTOP TRAY
C.27	Drawings & log book holder provided	✓				
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** 29-4-13

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

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 6/5/13

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.	✓				MAIN LABEL Supplied by QUU.

Contractor's Signature ..... **Date** 25-4-13

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

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 6/5/13

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			✓		DIRECT READ METER
D.6	Surge diverter earthed to adjacent stud.			✓		WIRED TO MAIN NEUTRAL BAR
D.7	Confirm a Direct connection from main earth bar to switchboard chassis	✓				ASA 5.3

Contractor's Signature ..... **Date** 29-4-13

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

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 6/5/13

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** 29-4-13

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

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 6/5/13

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 29-4-13

Company Name J & P Richardson Industries

Company Electrical Licence No. 756

Queensland Urban Utilities Electrical Inspector John Clayton

Date 6/5/13

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 29-4-13

Company Name J & P Richardson Industries

Company Electrical Licence No. 756

Queensland Urban Utilities Electrical Inspector John Clayton

Date 6/5/13

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)	✓				
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** 25-4-13

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

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 6/5/13

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.	✓				LABEL 24VDC PowerSupply "240VAC"
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** 25-4-13

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

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 6/5/13

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** 29-4-13

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

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 6/5/13

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** 29-4-13

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

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 6/5/13

QUEENSLAND UrbanUtilities	CA17a - Factory Inspection Tests	***Major Projects & Commercial Services*** *SQUV SP Reliability Improve – Stage2*

F.7	Verify that all Soft starter operation and all display parameters are displaying correctly. ~~Confirm current CTs are the correct polarity~~	✓			[initials]	
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.	✓			[initials]	27-33VDC
F.10	Record output of 24VDC power supply when disconnected to 240 VAC main.	✓			[initials]	24.93VDC
F.11	~~Logica~~ RTU provided with corresponding firmware/ software					**Software Version:**__________.
F.12	Redlion HMI provided with corresponding software configuration					**Software Version:** SP12F_19_11 070810/A.
F.13	I/O tested to RTU terminals	✓			[initials]	
F.14	Manual functions tested	✓			[initials]	

Contractor's Signature ......[signature]...... **Date** 29-4-13

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

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

G. Non-Conformances and Unauthorised Modifications

G.1	FIT "240VAC" LABEL TO 24VDC POWER SUPPLIES.
G.2	LABEL NOT STRAIGHT.
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 **Company Electrical Licence No.** 756

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

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	✓		J Clayton

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** 29-4-13

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

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 6/5/13

QUEENSLAND UrbanUtilities

CA17 - Site Inspection Tests

Major Projects & Commercial Services
SQUV SP Reliability Improve – Stage2

SP253 Halleys Crescent	**Date**	5/6/13.

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** 5/6/13

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

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 5/6/13

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.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** 5/6/13

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

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 5/6/13

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** 5/6/13

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

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 5/6/13

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. NOT CONNECTED.
A.15	Verify that all possible gas penetrations have been eliminated	✓				

Contractor's Signature ..... **Date** 5/6/13

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

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 5/6/13.

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** 5/6/13

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

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 5/6/13

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		
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** 5/6/13

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

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 5/6/13

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** 5/6/13

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

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 5/6/13

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** 5/6/13

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

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 5/6/13

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** 5/6/13

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

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 5/6/13

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** 5/6/13

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

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 5/6/13

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** 5/6/13

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

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 5/6/13

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** 5/6/13

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

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 5/6/13

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** 5/6/13

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

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 5/6/13

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** 5/6/13

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

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 5/6/13

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.

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

Contractor's Signature ..... **Date** 5/6/13

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

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 5/6/13

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

Contractor's Signature ..... **Date** 5/6/13

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

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 5/6/13

Item No.	Activity Description	Results Acc	Results Rej	Results N/A	Signed QUU	Results and comments
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** 5/6/13

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

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 5/6/13

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
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** 5/6/13

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

Queensland Urban Utilities Electrical Inspector John Cloyne **Date** 6/6/13

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 AS3017:2007 Section 3.7 As Per Contractor test sheets

Contractor's Signature ..... **Date** 5/6/13

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

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 5/6/13

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	✓				
F.6	Manual Functions Tested	✓				
F.7	Automatic / Remote Functions Tested	✓				

Contractor's Signature ..... **Date** 5/6/13

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

Queensland Urban Utilities Electrical Inspector John Clayton **Date** 5/6/13

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** 5/6/13

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

Queensland Urban Utilities Electrical Inspector John Clayton ..... **Date** 5/6/13

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** .....

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

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

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:** Halleys Cres

MCC / DISTRIBUTION BOARD NO: SP 253

Tested By:	Simon Truloff	Date:	5/6/13	Certificate No:	109547

CIRCUIT EQUIPMENT	INSULATION RESISTANCE	EARTH CONTINUITY	FAULT LOOP IMPEDANCE	PHASE ROTATION	RCD TRIP TIME	RCD TEST TRIP CURRENT	REMARKS
Mains	100 MΩ	0.05Ω		Clock			
Pump 1	150 Ω			Anti			
Pump 2	180 MΩ			Clock			
Ex. Lights	200 MΩ	0.15Ω					

J&P RICHARDSON INDUSTRIES PTY LTD
Electrical Contractors and Engineers
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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	SP253 Halleys Cresent
Commissioning Date	5/6/13

In Attendance

Name	Role During Commissioning	Company
Simon Tryloff	Electrician	JPR
John Clayton	Commissioning Manager	QU

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 15/6/13 @ 11:00AM (time) Ref #

2.4 NEW RADIO ANTENNA MASK 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.	Location OK ☐ Antenna dir. _____O

N/A

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 500 kPA	Installed OK ☑ Range 0 (m) to 50 (m)

2.6 TEMPORARY GENERATOR SIZE

J&P Richardson Task	Completed
Note the kW of each pump.	Pump #1 7.4 kW Pump #2 7.4 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 ☑
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 Trudgett
Date: 5/6/13
Signature:

QUU Commissioning Manager
Name: John Clayton
Date: 5/6/13
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: _____ CRO: _____ Time: 0600

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.	#- 4-305529
Record 3 phase motor currents Pump #1 Pump #2	U.9 V.10 W.9 U.9 V.9 W.10

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 Trubee .....
Date: ..... 5/6/13 .....
Signature: .....

QUU Commissioning Manager
Name: John Clayton .....
Date: ..... 5/6/13 .....
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: 0700

Electrical Contactor's Supervisor
Name: ..... Simon Trudgett .....
Date: ..... 5/6/13 .....
Signature: .....

QUU Commissioning Manager
Name: John Clayton .....
Date: ..... 5/6/13 .....
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 Trudoff.....
Date: 5/6/13
Signature: .....

QUU Commissioning Manager
Name: John Clayton
Date: .....5/6/13.....
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 100 Megohm B 100 Megohm. C 100 Megohm
Record earth resistance	0.05 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 416 V BC 416 V CA 415 V
Check phase rotation and ensure it is the same as determined earlier.	OK ☑ Changed to
Check MEN connection.	OK ☑

Electrical Contactor's Supervisor
Name: Simon Trotter
Date: 5/6/13
Signature:

QUU Commissioning Manager
Name: John Clayton
Date: 5/6/13
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 0.5m
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 10.8 Amps B 10.8 Amps C 10.8 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 50 Mtrs
Install and connect the Multitrode LR3 wet well high level relay Probe	OK ☑ at 1.8 Mtrs
Install and connect the Multitrode SIR surcharge imminent level relay Probe	OK ☑ at 1.5 Mtrs
Connect the thermistors for each pump (sites with option I 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 Tridoff
Date: 5/6/13
Signature:

QUU Commissioning Manager
Name: John Clayton
Date: 5/6/13
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 11 Amps B 11 Amps C 11 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 Trufoff .....
Date: ..... 5/6/13 .....
Signature: .....

QUU Commissioning Manager
Name: John Clayton .....
Date: 5/6/13 .....
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 Trulock .....
Date: 5/6/13
Signature: .....

QUU Commissioning Manager
Name: ..... John Clayton .....
Date: 5/6/13
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	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 Fudge .....
Date: ..... 5/6/13 .....
Signature: .....

QUU Commissioning Manager
Name: ..... John Clayton .....
Date: ..... 5/6/13 .....
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 Trukse .....
Date: ..... 5/6/13 .....
Signature: .....

QUU Commissioning Manager
Name: ....
Date: ..... 5/6/13 .....
Signature: .....

Lic No. 756

J. & P. RICHARDSON INDUSTRIES PTY. LTD.

A.B.N. 23 001 952 325

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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

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IPSWICH
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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

rb0044/lb

Job Ref: C63000

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

8 May 2013

Queensland Urban Utilities

Attention: Mr. Andrew Hanlon

Dear Sir,

Certificate of Compliance
SP253 Halley Crescent

Please be advised the above mentioned switchboard and its containing equipment has been manufactured as per our offer and supplied drawings 57-0310set_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

"A Family owned company providing Electrical Services since 1958."

J. & P. RICHARDSON INDUSTRIES PTY. LTD.

A.B.N. 23 001 952 325

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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

Letter Ref: ca1222/bn

Job No. C63000

06 June 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 SP253 Halley Cres 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

FUNCTION TEST
J & P RICHARDSON IND.
NAME: ANDREW VARY LICENCE: 756
DATE: 29-4-13
SIGNATURE:

SP253 HALLEY CRESCENT SEWAGE PUMPING STATION

SITE COVER SHEET

ELECTRICAL DRAWINGS INDEX

DWG N°.	TITLE	SHEET	REVISIONS
486/5/7-0310-000	SITE COVER SHEET	00	P1 O A
486/5/7-0310-001	POWER DISTRIBUTION SCHEMATIC DIAGRAM	01	P1 O A
486/5/7-0310-002	PUMP 01 SCHEMATIC DIAGRAM	02	P1 O A
486/5/7-0310-003	PUMP 02 SCHEMATIC DIAGRAM	03	P1 O A
486/5/7-0310-004	*RESERVED FOR PUMP 03 SCHEMATIC DIAGRAM*	04	
486/5/7-0310-005	*RESERVED (DRY WELL SUMP & EM STORAGE DEWATEING PUMP)*	05	
486/5/7-0310-006	*RESERVED (GENERATOR CONTROL)*	06	
486/5/7-0310-007	COMMON CONTROLS SCHEMATIC DIAGRAM	07	P1 O A
486/5/7-0310-008	COMMON RTU I/O SCHEMATIC DIAGRAM	08	P1 O A
486/5/7-0310-009	RTU POWER DISTRIBUTION SCHEMATIC DIAGRAM	09	P1 O A
486/5/7-0310-010	RTU DIGITAL INPUTS TERMINATION DIAGRAM - SHEET 1 OF 3	10	P1 O A
486/5/7-0310-011	RTU DIGITAL INPUTS TERMINATION DIAGRAM - SHEET 2 OF 3	11	P1 O A
486/5/7-0310-012	RTU DIGITAL INPUTS TERMINATION DIAGRAM - SHEET 3 OF 3	12	P1 O A
486/5/7-0310-013	RTU DIGITAL OUTPUTS TERMINATION DIAGRAM - SHEET 1 OF 2	13	P1 O A
486/5/7-0310-014	RTU DIGITAL OUTPUTS TERMINATION DIAGRAM - SHEET 2 OF 2	14	P1 O A
486/5/7-0310-015	RTU ANALOG INPUTS TERMINATION DIAGRAM	15	P1 O A
486/5/7-0310-016	RTU ANALOG OUTPUTS TERMINATION DIAGRAM	16	P1 O A
486/5/7-0310-017	COMMON CONTROLS TERMINATION DIAGRAM	17	P1 O A
486/5/7-0310-018	EQUIPMENT LIST	18	P1 O A
486/5/7-0310-019	CABLE SCHEDULE	19	P1 O A
486/5/7-0310-020	SWITCHBOARD LABEL SCHEDULE	20	P1 O A
486/5/7-0310-021	SWITCHBOARD CONSTRUCTION DETAILS - SHEET 1 of 3	21	P1 O A
486/5/7-0310-022	SWITCHBOARD CONSTRUCTION DETAILS - SHEET 2 of 3	22	P1 O A
486/5/7-0310-023	SWITCHBOARD CONSTRUCTION DETAILS - SHEET 3 of 3	23	P1 O A
486/5/7-0310-024	FIELD INSTRUMENTATION - INSTALLATION DETAILS	24	P1 O A
486/5/7-0310-025	CATHODIC PROTECTION UNIT - CONSTRUCTION AND WIRING DETAILS	25	P1 O A
486/5/7-0310-026	*RESERVED (FIELD DISCONNECTION BOX)*	26	
486/5/7-0310-027	SWBD GENERAL ARRANGEMENT ELEVATIONS	27	P1 O A
486/5/7-0310-028	SWBD GENERAL ARRANGEMENT SECTIONS	28	P1 O A
486/5/7-0310-029	*RESERVED (GENERATOR EXTERNAL CONNECTION BOX)*	29	
486/5/7-0310-030	SWITCHBOARD SLAB - LOCALITY AND SITE PLANS - SHEET 1 of 3	30	P1 O A
486/5/7-0310-031	SWITCHBOARD SLAB AND CONDUIT DETAILS - SHEET 2 of 3	31	P1 O A
486/5/7-0310-032	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	32A S125GJ/32
PUMP2 CIRCUIT BREAKER	32A S125GJ/32
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	7.4kW 14A
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 2.5m
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	BRS2XXCA1FHPMAS L=12 50m
RADIO	*NOT APPLICABLE*
EMERGENCY PUMPING TIME	2 5 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 + PSTN	YES ☒
J	PUMP CONNECTION (Via De-contactors)	YES ☒
K	CATHODIC PROTECTION - (Intergrated in Swicthboard)	YES ☒
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*	☒ NO
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 16/4/13

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-JP Ver32

DRAFTED P.HAGUE
DRAFTING CHECK A.WITTHOFT
CAD FILE 57-0310set_A
B.C.C. FILE No.

Original Signed by P.HAGUE 6-1-12
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
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
SITE COVER SHEET

SHEET No. 0
Queensland Urban Utilities DRAWING No. 486/5/7-0310-000
AMEND. A

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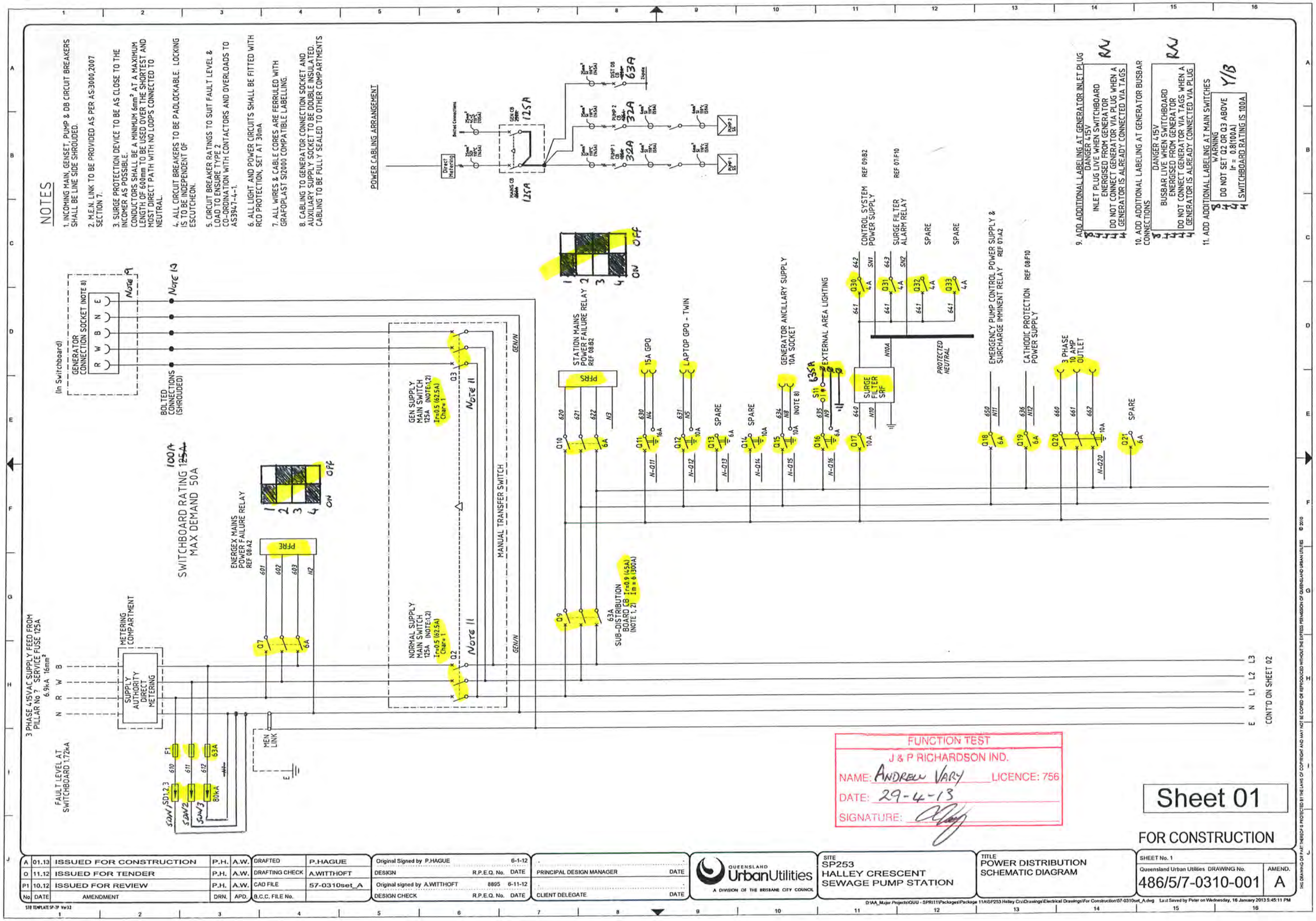
NOTES
1. INCOMING MAIN, GENSET, PUMP & DB CIRCUIT BREAKERS SHALL BE LINE SIDE SHROUDED.
2. M.E.N. LINK TO BE PROVIDED AS PER AS:3000,2007 SECTION 7.
3. SURGE PROTECTION DEVICE TO BE AS CLOSE TO THE INCOMER AS POSSIBLE. CONDUCTORS SHALL BE A MINIMUM 6mm² AT A MAXIMUM LENGTH OF 600mm TO BE USED OVER THE SHORTEST AND MOST DIRECT PATH WITH NO LOOPS CONNECTED TO THE 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
Direct Metering
MAINS CB 125A
GEN CB 125A
PUMP 1 CB 32A
PUMP 2 CB 32A
DIST DB CB 63A
PUMP 1 SS
PUMP 2 SS
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
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
11. ADD ADDITIONAL LABELING AT MAIN SWITCHES
WARNING
DO NOT SET Q2 OR Q3 ABOVE
Ir = 0.8(100A)
SWITCHBOARD RATING IS 100A
(In Switchboard)
GENERATOR CONNECTION SOCKET (NOTE 8)
R W B N E
BOLTED CONNECTIONS (SHROUDED)
SWITCHBOARD RATING 100A
MAX DEMAND 50A
ENERGEX MAINS POWER FAILURE RELAY REF 08:A2
PFRE
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
MANUAL TRANSFER SWITCH
STATION MAINS POWER FAILURE RELAY REF 08:B2
PFRS
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
CATHODIC PROTECTION POWER SUPPLY REF 08:F10
3 PHASE 10 AMP OUTLET
63A SUB-DISTRIBUTION BOARD CB Ir=0.9 (45A) Im = 6 (300A) (NOTE 1, 2)
3 PHASE 415VAC SUPPLY FEED FROM PILLAR No ? SERVICE FUSE 125A 6.9kA 16mm²
METERING COMPARTMENT
SUPPLY AUTHORITY DIRECT METERING
FAULT LEVEL AT SWITCHBOARD 1.72kA
MEN LINK
CONT'D ON SHEET 02
FUNCTION TEST
J & P RICHARDSON IND.
NAME: ANDREW VARY LICENCE: 756
DATE: 29-4-13
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.
DRAFTED P.HAGUE
DRAFTING CHECK A.WITTHOFT
CAD FILE 57-0310set_A
Original Signed by P.HAGUE 6-1-12
Original signed by A.WITTHOFT 8895 6-11-12
QUEENSLAND UrbanUtilities A DIVISION OF THE BRISBANE CITY COUNCIL
SITE SP253 HALLEY CRESCENT SEWAGE PUMP STATION
TITLE POWER DISTRIBUTION SCHEMATIC DIAGRAM
SHEET No. 1
Queensland Urban Utilities DRAWING No. 486/5/7-0310-001
AMEND. A

04-04-13

CONT'D FROM SHEET 01

E N R W B

Q4 32A
Ir=0.63 (20.2A)
Im= 6 (192A)
Note 1

1K1

Q4-1 4A

PUMP 1 POWER SUPPLY
PS-P1 5A 24VDC

QD4 10A

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

L1 L2 L3 T1 T2 T3 PE 5 6

DE-CONTACTORS

SUBMERSIBLE PUMP No1 7.4kW 14AMPS

MOTOR THERMISTORS

AUX PLUG

KEYPAD

1K6 17 RUN
18 +24V
1K21 25 RESET
1K4 11 E.STOP
15
16 +24V

A5 A6

FAULT 21 24 1K3 STARTER FAULT RELAY REF 02:C12
OPERATE 13 14 1K1 LINE CONTACTOR REF 02:A3
RUN 33 34 1K2 STARTER RUNNING RELAY REF 02:C13
HRM1 HOURS RUN METER

MODBUS MODULE
B6 B8 B7

Set terminating switch to 'OFF'

RS485+ Wt/Gn
RS485- Cable 16 Bu
FROM RTU REF 09:F12

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

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

1S5 EM.START OFF ON
1K4 105 1K20 EMG1 REF 07:B5
1K6 RUN RELAY REF 02:B5

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

1H5 EMERGENCY PUMP MODE SELECTED

CONT'D ON SHEET 03

RTU DIGITAL INPUTS

+ 24VDC POWER SUPPLY - REFER SHEET 09:C7

DI01	CONTROL POWER
DI02	START PUSHBUTTON
DI03	STOP PUSHBUTTON
DI04	E.STOP RELAY HEALTHY
DI05	RESET PUSHBUTTON
DI06	RUNNING
DI07	STARTER FAULT
DI08	SPARE
DI09	SPARE
DI10	SPARE

RTU DIGITAL OUTPUTS

+ 24VDC POWER SUPPLY - REFER SHEET 09:C7

DO01	RUN COMMAND REF 02:F4
DO02	FAULT RESET REF 02:C3
DO03	EMERGENCY MODE INTERRUPT REF 07: B3
DO04	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

FUNCTION TEST
J & P RICHARDSON IND.
NAME: ANDREW VARY LICENCE: 756
DATE: 29-4-13
SIGNATURE:

Sheet 02
FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
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DRAFTED P.HAGUE
DRAFTING CHECK A.WITTHOFT
CAD FILE 57-0310set_A
B.C.C. FILE No.

Original Signed by P.HAGUE 6-1-12
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: SP253 HALLEY CRESCENT SEWAGE PUMP STATION

TITLE: PUMP No1 SCHEMATIC DIAGRAM

SHEET No. 2
Queensland Urban Utilities DRAWING No. 486/5/7-0310-002
AMEND. A

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STD TEMPLATE SP-2P Ver32

09-04-13

CONT'D FROM SHEET 02

E N R W B

Q5 32A
Ir=0.63 (20.2A)
Im= 6 (192A)
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 I Medium Duty 17A
SOFT STARTER 2U1

L1 L2 L3 T1 T2 T3 PE

5 230
6 231

DE-CONTACTORS

M 3~ SUBMERSIBLE PUMP No2 7.4kW 14AMPS

MOTOR THERMISTORS

AUX PLUG

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 204 204 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+ 1 2A J6- R0S3 R0S3+ R0S3- COM

DI17	2K5	2S1	DI17	CONTROL POWER
DI18			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			DI24	SPARE
DI25			DI25	SPARE
DI26			DI26	SPARE

RTU DIGITAL OUTPUTS

+ 24VDC POWER SUPPLY - REFER SHEET 09:C7

R0S7+ R0S7 J6+ 2 1 2A J6- R0S7- R0S7 3

DO17	2C 1NO	2K20	DO17	RUN COMMAND REF 03:F4
DO18	4C 3NO	2K21	DO18	FAULT RESET REF 03:C3
DO19	6C 5NO	2K22	DO19	EMERGENCY MODE INTERRUPT REF 07: C3
DO20	8C 7NO			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
- D001 DIGITAL INPUT
- D001 DIGITAL OUTPUT
- A001 ANALOG INPUT
- A001 ANALOG OUTPUT

FUNCTION TEST
J & P RICHARDSON IND.
NAME: ANDREW VARY LICENCE: 756
DATE: 29-4-13
SIGNATURE:

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.

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DRAFTING CHECK A.WITTHOFT
CAD FILE 57-0310set_A
B.C.C. FILE No.

Original Signed by P.HAGUE 6-1-12 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 SP253 HALLEY CRESCENT SEWAGE PUMP STATION

TITLE PUMP No2 SCHEMATIC DIAGRAM

SHEET No. 3
Queensland Urban Utilities DRAWING No. 486/5/7-0310-003
AMEND. A

STD TEMPLATE SP-2P Ver3.2

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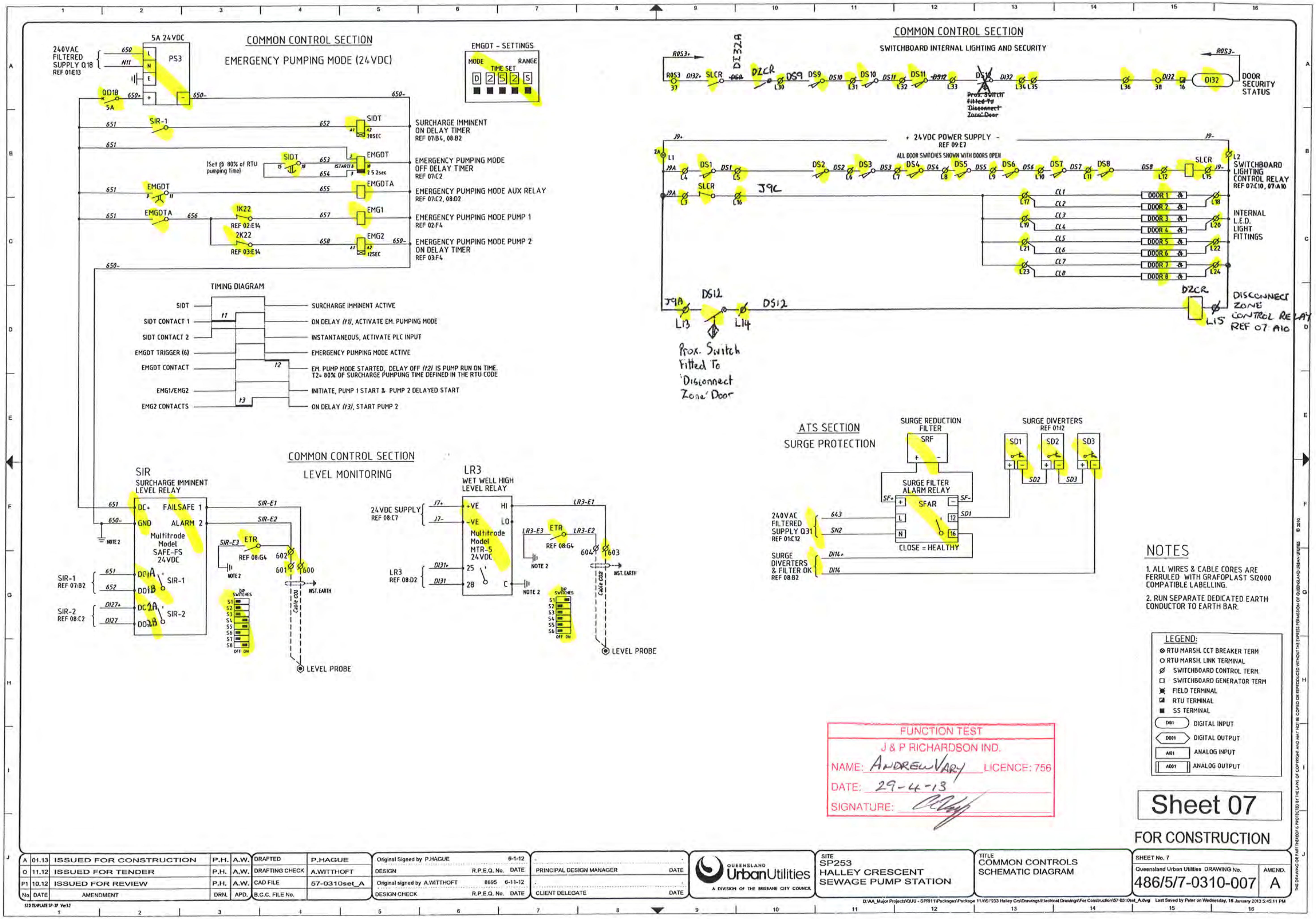
COMMON CONTROL SECTION
EMERGENCY PUMPING MODE (24VDC)
5A 24VDC
PS3
240VAC FILTERED SUPPLY Q18 REF 01:E13
QD18 5A
SIR-1
SIDT 20SEC
EMGDT
(Set @ 80% of RTU pumping time)
EMGDTA
EMG1
EMG2 12SEC
1K22 REF 02:E14
2K22 REF 03:E14
SURCHARGE IMMINENT ON DELAY TIMER REF 07:B4, 08:B2
EMERGENCY PUMPING MODE OFF DELAY TIMER REF 07:C2
EMERGENCY PUMPING MODE AUX RELAY REF 07:C2, 08:D2
EMERGENCY PUMPING MODE PUMP 1 REF 02:F4
EMERGENCY PUMPING MODE PUMP 2 ON DELAY TIMER REF 03:F4
EMGDT - SETTINGS
MODE
TIME SET
RANGE
D 2 5 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
DI32A
DZCR
DOOR SECURITY STATUS
DI32
Prox. Switch Fitted To 'Disconnect Zone' Door
+ 24VDC POWER SUPPLY - REF 09:E7
ALL DOOR SWITCHES SHOWN WITH DOORS OPEN
SLCR
SWITCHBOARD LIGHTING CONTROL RELAY REF 07:C10, 07:A10
J9C
DOOR 1
DOOR 2
DOOR 3
DOOR 4
DOOR 5
DOOR 6
DOOR 7
DOOR 8
INTERNAL L.E.D. LIGHT FITTINGS
DS12
DISCONNECT ZONE CONTROL RELAY REF 07 A10
COMMON CONTROL SECTION
LEVEL MONITORING
SIR
SURCHARGE IMMINENT LEVEL RELAY
Multitrode Model SAFE-FS 24VDC
FAILSAFE 1
ALARM 2
SIR-1 REF 07:B2
SIR-2 REF 08:C2
ETR REF 08:G4
DIP SWITCHES
INST. EARTH
LEVEL PROBE
LR3
WET WELL HIGH LEVEL RELAY
Multitrode Model MTR-5 24VDC
24VDC SUPPLY REF 08:C7
LR3 REF 08:D2
ATS SECTION
SURGE PROTECTION
SURGE REDUCTION FILTER
SRF
SURGE FILTER ALARM RELAY
SFAR
CLOSE = HEALTHY
240VAC FILTERED SUPPLY Q31 REF 01:C12
SURGE DIVERTERS & FILTER OK REF 08:B2
SURGE DIVERTERS REF 01:I2
SD1
SD2
SD3
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
DIGITAL INPUT
DIGITAL OUTPUT
ANALOG INPUT
ANALOG OUTPUT
FUNCTION TEST
J & P RICHARDSON IND.
NAME: ANDREW VARY LICENCE: 756
DATE: 29-4-13
SIGNATURE:
Sheet 07
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.
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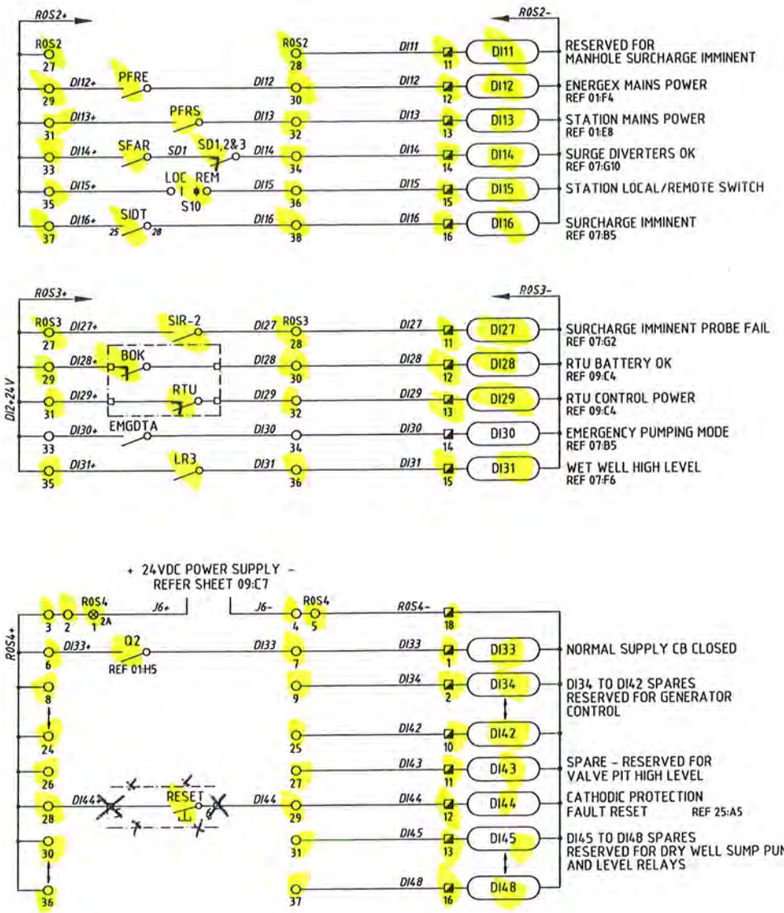
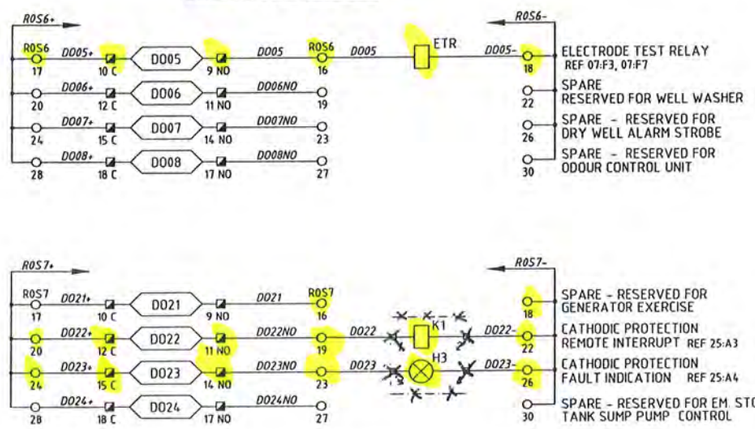
PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE
QUEENSLAND UrbanUtilities A DIVISION OF THE BRISBANE CITY COUNCIL
SITE SP253 HALLEY CRESCENT SEWAGE PUMP STATION
TITLE COMMON CONTROLS SCHEMATIC DIAGRAM
SHEET No. 7
Queensland Urban Utilities DRAWING No. 486/5/7-0310-007
AMEND. A

04-04-13

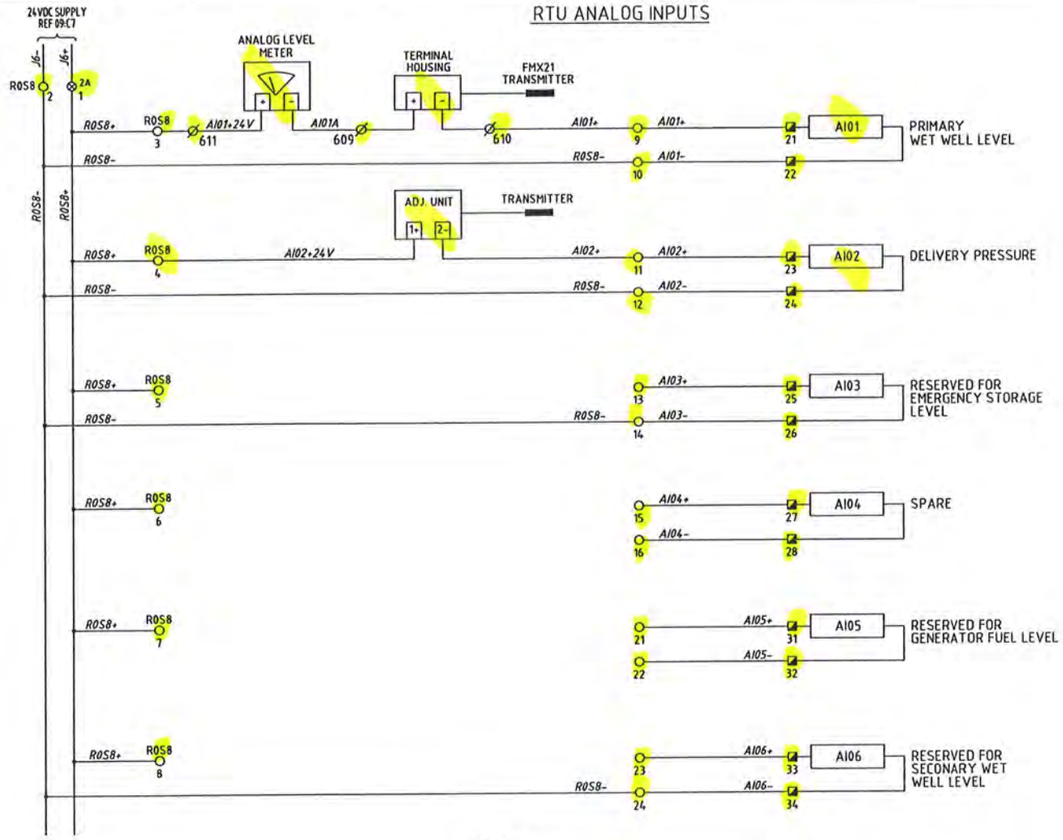
RTU DIGITAL INPUTS

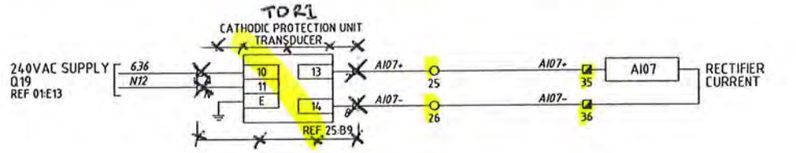


RTU DIGITAL OUTPUTS

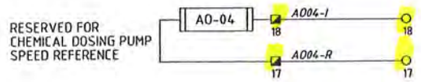


RTU ANALOG INPUTS





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

FUNCTION TEST
J & P RICHARDSON IND.
NAME: ANDREW VARY LICENCE: 756
DATE: 29-4-13
SIGNATURE:

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	57-0310set_A		

Original Signed by P.HAGUE 6-1-12 — 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: SP253 HALLEY CRESCENT SEWAGE PUMP STATION

TITLE: COMMON RTU I/O SCHEMATIC DIAGRAM

SHEET No. 8

Queensland Urban Utilities DRAWING No. 486/5/7-0310-008 — AMEND. A

STD TEMPLATE SP-39 Ver3.2

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04-04-13

POWERBOX
PB251-24CM-CC-T

PS1
26-28VDC

SHROUD

240VAC FILTERED SUPPLY Q30
REF 01:C11

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

SPARE
RESERVED FOR RADIO

RTU 24VDC CARD SUPPLY
REF 02:A13

WET WELL HIGH LEVEL RELAY LR3
REF 07:F6

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

GSM MODEM
REF 09:C16

SPARE
RESERVED FOR WELL WASHER

SPARE
RESERVED FOR STATION MANHOLE SURCHARGE IMMINENT

SPARE
RESERVED FOR EMERGENCY STORAGE TANK SUMP PUMP

TELSTRA PHONE LINE
SURGE DIVERTER
PSTN MODEM
9VDC SUPPLY
REF 09:F8

GSM ANTENNA
GSM MODEM
24VDC SUPPLY
REF 09:H7
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
	SERIAL 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	4AO/8AI +/-20mA
	PLUG IN 2	DI01-DI16	DI17-DI32	DI33-DI48	DI49-DI64	DO01-DO16	DO17-DO32	AI01 - AI08 AO01 - AO04
	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
Set terminating switch to 'OFF'
Set terminating switch to 'ON'
RS485- Bn
RS485+ Wt/Gn
Cable 16
RS485A-
RS485A+
Cable 17 Wt/Bn
Bn/Wt
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.

FUNCTION TEST
J & P RICHARDSON IND.
NAME: ANDREW VARY LICENCE: 756
DATE: 29-4-13
SIGNATURE:

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	Original Signed by P.HAGUE	6-1-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0310set_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
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
RTU POWER DISTRIBUTION
SCHEMATIC DIAGRAM

SHEET No. 9
Queensland Urban Utilities DRAWING No. 486/5/7-0310-009
AMEND. A

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STD TEMPLATE SP-2P Ver32

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 … DI10 — 1 … 10 — (1) … (10)
DI11 — 11 — (11)
DI12 — 12 — (12)
DI13 — 13 — (13)
DI14 — 14 — (14)
DI15 — 15 — (15)
DI16 — 16 — (16)
+24V — 17 — (17)
COM1 — 18 — (18)
PGND1 — 19 — (19)
PGND1 — 20 — (20)

MOTOROLA WIRED CABLE BRAID & 20 WAY TB HOLDER

DI1

ROS2+ (17)
ROS2- (18)
DI01 (1) … DI10 (10)
DI11 (11) … DI16 (16)
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 — SPAR — 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

FUNCTION TEST
J & P RICHARDSON IND.
NAME: ANDREW VARY LICENCE: 756
DATE: 29-4-13
SIGNATURE:

LEGEND:
- C?? — CABLE IDENTIFIER
- 2A — 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	P.H.	A.W.	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 57-0310set_A
B.C.C. FILE No.

Original Signed by P.HAGUE 6-1-12
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
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
RTU DIGITAL INPUTS
TERMINATION DIAGRAM
SHEET 1 OF 3

SHEET No. 10
Queensland Urban Utilities DRAWING No. 486/5/7-0310-010
AMEND. A

STD TEMPLATE SP-2F Ver3.2

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04-04-13

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

DI17
ROS3+ 2A 1
ROS3+ (17) 2
ROS3- 3
ROS3- (18) 4
5
DI17 (1) 6
7
DI18 (2) 8
9
DI19 (3) 10
11
DI20 (4) 12
13
DI21 (5) 14
15
DI22 (6) 16
17
DI23 (7) 18
19
DI24 (8) 20
21
DI25 (9) 22
23
DI26 (10) 24
25
DI27 (11) 26
27
DI28 (12) 28
29
DI29 (13) 30
31
DI30 (14) 32
33
DI31 (15) 34
35
DI32 (16) 36
37
ROS3-E (19) 38
ROS3-E (20) 39
40

LINK BARS

TO INSULATED INSTRUMENT EARTH

CONT ON SHEET 10

0 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

FIELD

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

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

DI3
ROS4+ 2A 1
ROS4+ (17) 2
3
ROS4- (18) 4
5
DI33 (1) 6
7
DI34 (2) 8
9
DI35 (3) 10
11
DI36 (4) 12
13
DI37 (5) 14
15
DI38 (6) 16
17
DI39 (7) 18
19
DI40 (8) 20
21
DI41 (9) 22
23
DI42 (10) 24
25
DI43 (11) 26
27
DI44 (12) 28
29
DI45 (13) 30
31
DI46 (14) 32
33
DI47 (15) 34
35
DI48 (16) 36
37
ROS4-E (19) 38
ROS4-E (20) 39
40

LINK BARS

TO INSULATED INSTRUMENT EARTH

CONT ON SHEET 12

0 V

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

COMMON COMPARTMENT.

~~CATHODIC PROTECTION UNIT~~

DI44+ DI44 S2 FAULT RESET
REF 08:F2

Gy

FUNCTION TEST
J & P RICHARDSON IND.
NAME: ANDREW VARY LICENCE: 756
DATE: 29-4-13
SIGNATURE:

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

A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.	DRAFTED	P.HAGUE	Original Signed by P.HAGUE	6-1-12	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		CLIENT DELEGATE DATE
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.	CAD FILE	57-0310set_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		

QUEENSLAND UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
RTU DIGITAL INPUTS
TERMINATION DIAGRAM
SHEET 2 OF 3

SHEET No. 11
Queensland Urban Utilities DRAWING No. 486/5/7-0310-011
AMEND. A

STD TEMPLATE SP-2F Ver33

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04-04-13

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

ROSS+ DI4

2A		1	
ROSS+	(17)	3	
ROSS-	(18)	5	
DI49	(1)	7	
DI50	(2)	9	
DI51	(3)	11	
DI52	(4)	13	
DI53	(5)	15	
DI54	(6)	17	
DI55	(7)	19	
DI56	(8)	21	
DI57	(9)	23	
DI58	(10)	25	
DI59	(11)	27	
DI60	(12)	29	
DI61	(13)	31	
DI62	(14)	33	
DI63	(15)	35	
DI64	(16)	37	
ROSS-E	(19)	39	
ROSS-E	(20)	40	
		2	
		4	
		6	
		8	
		10	
		12	
		14	
		16	
		18	
		20	
		22	
		24	
		26	
		28	
		30	
		32	
		34	
		36	
		38	

0V
V

LINK BARS

TO INSULATED INSTRUMENT EARTH

CONT ON SHEET 11

CONT ON SHEET 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

FUNCTION TEST
J & P RICHARDSON IND.
NAME: ANDREW VARY LICENCE: 756
DATE: 29-4-13
SIGNATURE:

Sheet 12

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DRAFTED	P.HAGUE
DRAFTING CHECK	A.WITTHOFT
CAD FILE	57-0310set_A
B.C.C. FILE No.	

Original Signed by P.HAGUE			6-1-12
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
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
RTU DIGITAL INPUTS
TERMINATION DIAGRAM
SHEET 3 OF 3

SHEET No. 12

Queensland Urban Utilities DRAWING No. 486/5/7-0310-012

AMEND. A

STB TEMPLATE SP-2P Ver3.2

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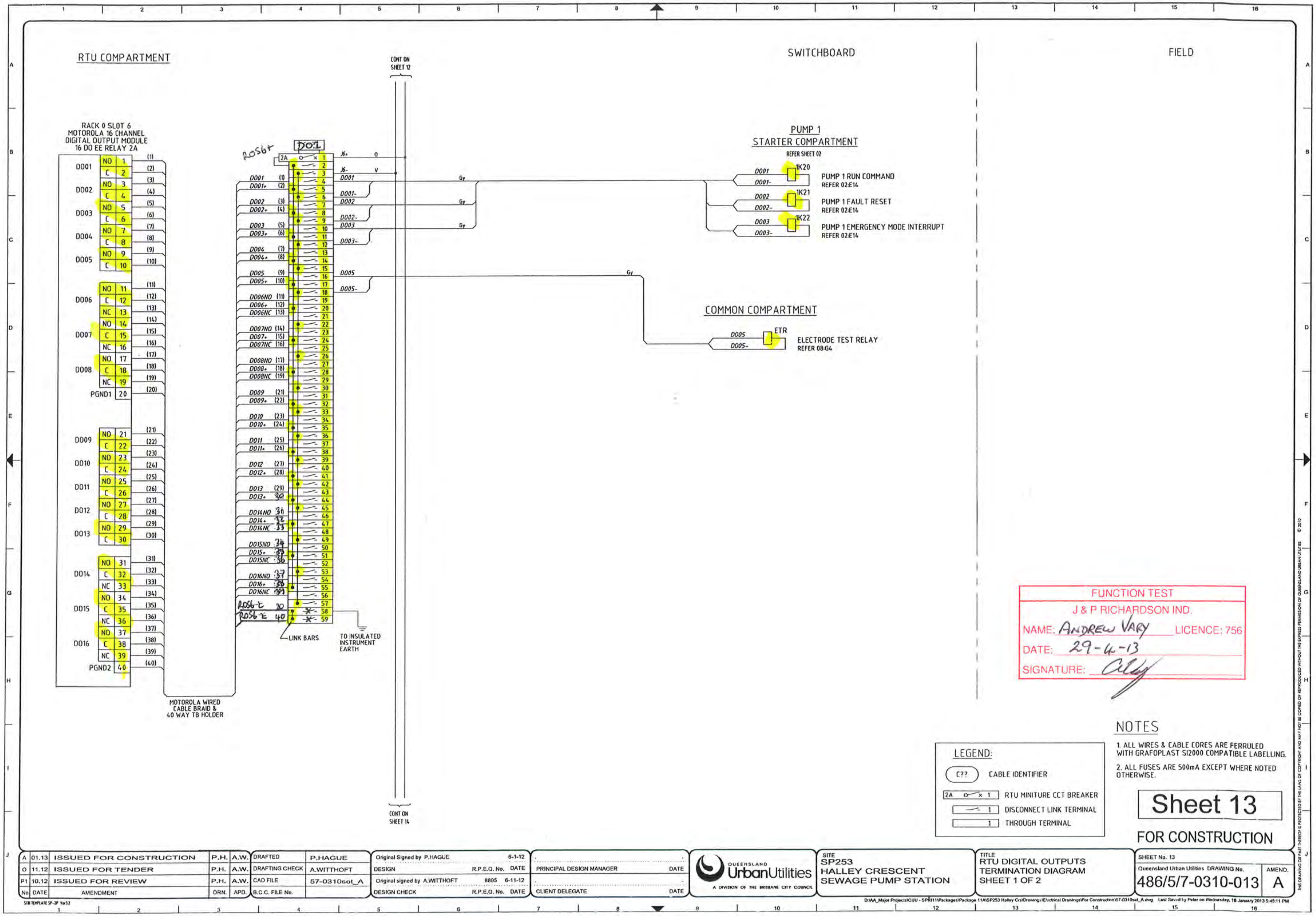
04-04-13


RTU COMPARTMENT
SWITCHBOARD
FIELD
RACK 0 SLOT 6
MOTOROLA 16 CHANNEL
DIGITAL OUTPUT MODULE
16 DO EE RELAY 2A
DO01 DO02 DO03 DO04 DO05 DO06 DO07 DO08 PGND1
DO09 DO10 DO11 DO12 DO13 DO14 DO15 DO16 PGND2
CONT ON SHEET 12
CONT ON SHEET 14
DO1
2A
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
LINK BARS
TO INSULATED INSTRUMENT EARTH
MOTOROLA WIRED CABLE BRAID & 40 WAY TB HOLDER
FUNCTION TEST
J & P RICHARDSON IND.
NAME: ANDREW VARY LICENCE: 756
DATE: 29-4-13
SIGNATURE:
LEGEND:
C?? CABLE IDENTIFIER
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 13
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 57-0310set_A
B.C.C. FILE No.
Original Signed by P.HAGUE 6-1-12
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
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION
TITLE
RTU DIGITAL OUTPUTS
TERMINATION DIAGRAM
SHEET 1 OF 2
SHEET No. 13
Queensland Urban Utilities DRAWING No.
486/5/7-0310-013
AMEND.
A

04-04-13

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)
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

DO2

RO57+ 2A

		1	
		2	
DO17	(1)	3	DO17
DO17+	(2)	4	
		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
DO22+	(12)	19	
DO22NC	(13)	20	
		21	DO22-
DO23NO	(14)	22	DO23
DO23+	(15)	23	
DO23NC	(16)	24	
		25	DO23-
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	
RO57-E	20	57	
RO57-E	40	58	
		59	

LINK BARS

TO INSULATED INSTRUMENT EARTH

CONT ON SHEET 15

DO17 (1) — Gy
DO17+ (2)
DO18 (3) — Gy
DO18+ (4)
DO19 (5) — Gy
DO19+ (6)
DO22NO (11) — Gy
DO22+ (12)
DO22NC (13)
DO23NO (14) — Gy
DO23+ (15)
DO23NC (16)

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-		

COMMON COMPARTMENT

~~CATHODIC PROTECTION UNIT~~

DO22	K1	REMOTE INTERRUPT REFER 08:14
DO22-		
DO23	H3	FAULT INDICATION REFER 08:14
DO23-		

FUNCTION TEST
J & P RICHARDSON IND.
NAME: ANDREW VARY LICENCE: 756
DATE: 29-4-13
SIGNATURE:

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 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
DRAFTING CHECK	A.WITTHOFT
CAD FILE	57-0310set_A
B.C.C. FILE No.	

Original Signed by P.HAGUE 6-1-12 — 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
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
RTU DIGITAL OUTPUTS
TERMINATION DIAGRAM
SHEET 2 OF 2

SHEET No. 14

Queensland Urban Utilities DRAWING No. 486/5/7-0310-014

AMEND. A

STD TEMPLATE SP-2P Ver12

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04-04-13

RTU COMPARTMENT

SWITCHBOARD

COMMON COMPARTMENT

FIELD

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

AI1

Ros8+

CONT ON SHEET 14

USE SCREENED CABLES

ANALOG LEVEL METER

VEGADIS62 ADJ. UNIT

VEGABAR52 ADJ. UNIT

PRIMARY WET WELL LEVEL TRANSMITTER

DELIVERY PRESSURE TRANSMITTER

I1

I2

Breather

INST. EARTH

LINK BARS

TO INSULATED INSTRUMENT EARTH

(Part Off)

MOTOROLA WIRED CABLE BRAID & 40 WAY TB HOLDER

PART OFF
MIXED ANALOG MODULE
REF 16:B1

(Not Used)

TDR1

CATHODIC PROTECTION UNIT

CATHODIC PROTECTION PROBES

USE SCREENED CABLES

NOTES

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

FUNCTION TEST
J & P RICHARDSON IND.
NAME: ANDREW VARY LICENCE: 756
DATE: 29-4-13
SIGNATURE:

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.
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DRAFTING CHECK A.WITTHOFT
CAD FILE 57-0310set_A
B.C.C. FILE No.

Original Signed by P.HAGUE 6-1-12
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
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
RTU ANALOG INPUTS
TERMINATION DIAGRAM

SHEET No. 15
Queensland Urban Utilities DRAWING No. 486/5/7-0310-015
AMEND. A

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STD TEMPLATE SP-3P Ver3.2

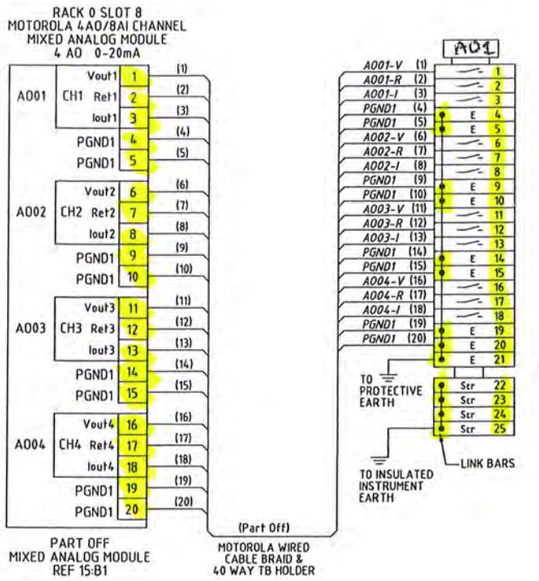
22-2-13

RTU COMPARTMENT

SWITCHBOARD

STARTER COMPARTMENT

FIELD



FUNCTION TEST
J & P RICHARDSON IND.
NAME: ANDREW VARY LICENCE: 756
DATE: 29-4-13
SIGNATURE:

LEGEND:
- C?? CABLE IDENTIFIER
- 2A x 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	6-1-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0310set_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
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
RTU ANALOG OUTPUTS
TERMINATION DIAGRAM

SHEET No. 16
Queensland Urban Utilities DRAWING No. 486/5/7-0310-016
AMEND. A

S10 TEMPLATE SP-2P Ver3.2

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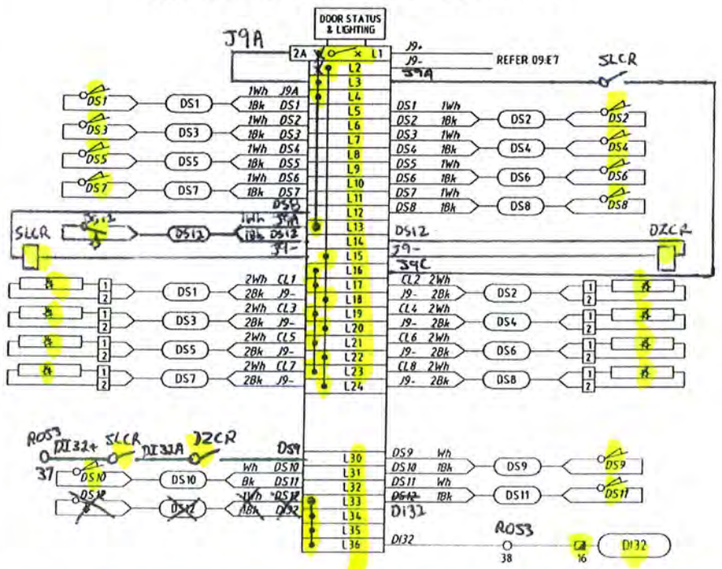
22-2-13

SWITCHBOARD INTERNAL LIGHTING AND SECURITY



FUNCTION TEST
J & P RICHARDSON IND.
NAME: ANDREW VARY LICENCE: 756
DATE: 29-4-13
SIGNATURE:

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	6-1-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0310set_A	Original signed by A.WITTHOFT 8805	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
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
COMMON CONTROLS
TERMINATION DIAGRAM

SHEET No. 17
Queensland Urban Utilities DRAWING No. 486/5/7-0310-017
AMEND. A

STD TEMPLATE SP-29 Ver32

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04-04-13

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/32	-	Set Ir=0.63 (20.2A) Im=6 (192A)
5	1	Q5 PUMP2 CIRCUIT BREAKER + T2HS Handle	TERASAKI	S125GJ/32	-	Set Ir=0.63 (20.2A) Im=6 (192A)
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 CATHODIC PROTECTION POWER SUPPLY	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 ~~DO~~-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 ~~D&L~~ ELEC.	~~DLAH6~~ 165E12	-	INSULATED c/w E FEET
46	1	MAIN EARTH LINK	Dore ~~D&L~~ ELEC.	~~DLAHE6~~ 165E12	-	
47	1	DIST. BD NEUTRAL LINK	Dore ~~D&L~~ ELEC.	~~20LA18~~ 165E24	-	INSULATED c/w E FEET
48	1	DIST. BD EARTH LINK	Dore ~~D&L~~ ELEC.	~~20LAE18~~ 165E24	-	
49	~~1~~	~~SURGE DIVERTER NEUTRAL LINK~~	~~CLIPSAL~~	~~L5A~~	-	~~INSULATED~~
50	1	INSTRUMENT EARTH LINK	Clipsal ~~D&L ELEC.~~	~~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		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-~~N3?~~ NUR	-	+ 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	-	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 01RG	-	0-100% ADJ RED POINTER
122					J	
173	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	1	CATHODIC PROTECTION UNIT	SWBD BUILDER	SHEET 25	K	
131					S	
132					H	
133	1	PRIMARY WET WELL LEVEL PROBE	VEGA - VEGAWELL52	WL52XXA4ALD1DD1X	-	SET RANGE TO =2.5m 2429588
134	1	PRIMARY WET WELL LEVEL ADJUSTMENT UNIT	VEGA - VEGADIS62	DIS62XXKMAXX	-	24295908
135					G	
136					-	
137	1	DELIVERY PRESSURE TRANSMITTER	VEGA VEGABAR52	BR52XXCA1FHPMAS L=12	U	RANGE = 50m 24295920
138	1	TRICLOVE FITTING FOR VEGABAR52	VEGA	ADAPTOR 4	U	
139	1	CONTROL SYSTEM POWER SUPPLY 24VDC	POWERBOX	PB251A-24CM-CC-T-S	-	A
140					R	
141	1	PSTN MODEM 24V/9VDC CONVERTER	POWERBOX	PBBA-2409F-CM-CC	I	
142	2	BATTERIES - INCLUDING SPILL TRAYS	YUASA	UXH50-12	-	
143					R	
144					R	
145					R	
146	1	TELEMETRY UNIT	MOTOROLA	ACE - 3600	-	
147	1	PSTN MODEM	WOOMERA	56K V.90		
148	1	PSTN MODEM SURGE PROTECTION UNIT	CRITEC	SLP1-RJ11-A		
150	1	GRAPHIC DISPLAY	REDLION	G306A000		
153	1	GSM MODEM	WAVECOM	FASTRACK Supreme	I	c/w 5 M Cable
156	1	GSM CELLULAR TRANSIT ANTENNA	RF INDUSTRIES	TLA2000	I	
157					R	
158					R	
159					R	
160					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	6	CATHODIC PROTECTION PROBE TERMINALS	PHOENIX CONTACT	UIK16	-	16mm² Capacity
166	14	CATHODIC PROTECTION TEST TERMINALS + TEST SOCKET	PHOENIX CONTACT	UK6N + PSB4	-	6mm² Capacity
169		EARTH TERMINALS	PHOENIX CONTACT			
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: 57-0310set_A
B.C.C. FILE No.

DESIGN: Original Signed by P.HAGUE — R.P.E.Q. No. — DATE 6-1-12
DESIGN CHECK: Original signed by A.WITTHOFT — R.P.E.Q. No. 8895 — DATE 6-11-12

PRINCIPAL DESIGN MANAGER — DATE
CLIENT DELEGATE — DATE

QUEENSLAND UrbanUtilities — A DIVISION OF THE BRISBANE CITY COUNCIL

SITE: SP253 HALLEY CRESCENT SEWAGE PUMP STATION

TITLE: EQUIPMENT LIST

SHEET No. 18
Queensland Urban Utilities DRAWING No. 486/5/7-0310-018 — AMEND. A

STD TEMPLATE SP-2P Ver3.2

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CABLE No.	STATUS	SIZE	CORES	TYPE	LENGTH (m) Note 1	FROM	TO	CABLE FUNCTION	NOTES
P01	EXISTING	16mm²	4C	PVC/CU/PVC Note2		ENERGEX Supply PILLAR No ?	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-Contractor	Pump No1	Pump 1 Motor Feed + Thermistors	
		-							
P08	EXISTING	2.5mm²	3C+E+2pilots	Flexible (Submersible)		Switchboard - Pump De-Contractor	Pump No2	Pump 2 Motor Feed + Thermistors	
		-							
P23	NEW	2.5mm²	2C+E	PVC/CU/PVC		Switchboard	External Area Lights	Area Lighting	
		-							
C01	NEW	1.5mm²	2C	Vendor-42013GFSP-Shield		Switchboard	Surcharge Imminent Probe	Surcharge Imminent Signal (SIR)	
C02	NEW	1.5mm²	2C	Vendor-42013GFSP-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	

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.
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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 6-1-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No. DATE
CAD FILE	57-0310set_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
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
CABLE SCHEDULE

SHEET No. 19

Queensland Urban Utilities DRAWING No. 486/5/7-0310-019 AMEND. A

STD TEMPLATE SP-2P Ver3.2

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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 32A	PUMP No2 32A	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	10 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		4	4
14		SPARE CIRCUIT BREAKER	SPARE Q14		4	4
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	K	CATHODIC PROTECTION POWER SUPPLY CB	CATHODIC PROTECTION Q19		4mm 4mm	ABS PLASTIC W/B
20		3 PHASE OUTLET CIRCUIT BREAKER	30 OUTLET Q20		4mm 4mm	ABS PLASTIC W/B
21		SPARE CIRCUIT BREAKER	SPARE Q21		4	4
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		4	4
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 Q04	PUMP No2 Q05 EM PUMPING Q018	4mm 4mm	ABS PLASTIC W/B
33		BATTERY CIRCUIT BREAKER	BATTERY Q08		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	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 IMMENT - 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
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
130	K	CATHODIC PROTECTION UNIT	CATHODIC PROTECTION UNIT		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
141	I	MODEM 24V/9VDC CONVERTER	24/9 VDC CONVERTER - MODEM		4mm 4mm	ABS PLASTIC W/B
146		TELEMETRY UNIT	RTU		4mm	ABS PLASTIC W/B
147	I	MODEM	MODEM		4mm	ABS PLASTIC W/B
148	I	MODEM SURGE PROTECTION UNIT	MODEM SURGE PROTECTION		4mm	ABS PLASTIC W/B

ITEM #	OPT.	DESCRIPTION - INTERNAL LABEL	LABEL 1	LABEL 2 (IF NECESSARY)	TEXT HEIGHT	MATERIAL / COLOUR
153	I	MODEM	MODEM		4mm	ABS PLASTIC W/B
4OFF		ACCESS PLATE - DO NOT DRILL	INSPECTION PLATE DO NOT INSTALL CHANNELS		6mm 4mm	W/B ABS PLASTIC W/B
165	K	CATHODIC PROTECTION TERMINALS	CP TERMINALS			
		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 LINK WHEN SWITCHBOARD ENERGISED FROM GENERATOR~~	REFER SHEET 01 NOTE 10	4mm 4mm	ABS PLASTIC R/W
204	~~X1~~	~~CATHODIC PROTECTION CONNECTIONS~~	CATHODIC PROTECTION		4mm 4mm	~~ABS PLASTIC W/B~~
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						

EXTERNAL DOOR LABEL LIST

LABEL	TEXT	TEXT HEIGHT	PAINT FILL LETTERING	QTY
A	SP253	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
X	WARNING THIS SITE IS CONTINUOUSLY MONITORED CONTACT CONTROL ROOM BEFORE OPENING METER DOOR & PRIOR TO LEAVING SITE			
Y	Phone 340 71474 (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

13 2657

FIELD LABEL LIST

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

ITEM #	OPT.	DESCRIPTION - INTERNAL LABEL	LABEL 1	TEXT HEIGHT	MATERIAL / COLOUR
134.1		CATHODIC PROTECTION DIODE BRIDGE	BDI	4mm	ABS PLASTIC W/B
134.2		CATHODIC PROTECTION DC OUTPUT FUSE	F1 20/4A	4mm	ABS PLASTIC W/B
134.3		CATHODIC PROTECTION POWER ON INDICATOR	POWER ON	4mm	ABS PLASTIC W/B
134.4		CATHODIC PROTECTION INTERRUPT INDICATOR	INTERRUPT	4mm	ABS PLASTIC W/B
134.5		CATHODIC PROTECTION FAULT INDICATOR	FAULT	4mm	ABS PLASTIC W/B
134.6		CATHODIC PROTECTION INTERRUPT RELAY	K1	4mm	ABS PLASTIC W/B
134.7		CATHODIC PROTECTION LOCAL INTERRUPT P/B	INTERRUPT	4mm	ABS PLASTIC W/B
134.8		CATHODIC PROTECTION FAULT RESET P/B	RESET	4mm	ABS PLASTIC W/B
134.9		CATHODIC PROTECTION TRANSDUCER	TDR1	4mm	ABS PLASTIC W/B
134.10		CATHODIC PROTECTION TRANSFORMER	T1	4mm	ABS PLASTIC W/B

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.
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DRAFTED P.HAGUE
DRAFTING CHECK A.WITTHOFT
CAD FILE 57-0310set_A
B.C.C. FILE No.

Original Signed by P.HAGUE 6-1-12
DESIGN R.P.E.Q. No. DATE
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Original signed by A.WITTHOFT 8895 6-11-12
DESIGN CHECK R.P.E.Q. No. DATE
CLIENT DELEGATE DATE

QUEENSLAND Urban Utilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
SWITCHBOARD
LABEL SCHEDULE

SHEET No. 20
Queensland Urban Utilities DRAWING No. 486/5/7-0310-020
AMEND. A

STD TEMPLATE SP-2P Ver32

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09-04-13

CONSTRUCTION - EXTERNAL SWITCHBOARD

Cubicle construction ~~3~~6m Marine grade Aluminium (5251). 80x40
Plinth construction ~~75x60~~ 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

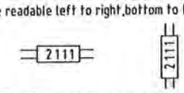
DORE ELECTRICS - Swing Handle SHPSS Padlockable - 316
DORE ELECTRICS - 3 point lock rod set - TLR24
ENERGEX padlock, S/Steel Shackle, 45mm brass pin tumbler.
Energex Key No325. c/w 2 keys.

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)	1~~000~~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 (OD SECTION FORM 2)

WIRING - Control

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 V90 0.6/1kV 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

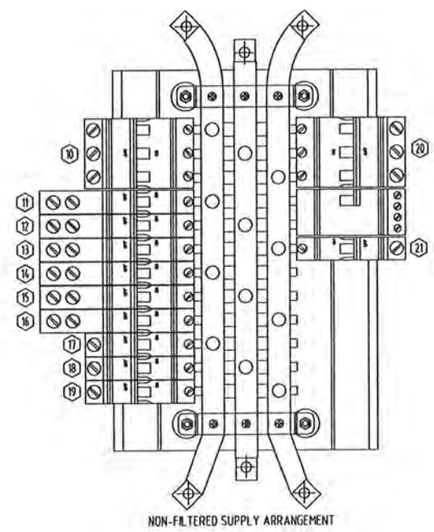
Aluminium Surface Preparation.
Finish smooth all exposed welds, clean, descale, and degrease all surfaces.
Surfaces pretreatment in accordance with AS 1580 & AS 3715 using Novox LF acid etch cleaner, Novacoat 12 conversion coating, & clean water rinses.
Apply DULUX ALPHATECH 3000 powder coat to manufacturer's 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.

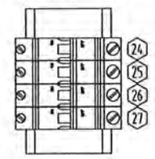
Main switch label	MAIN SWITCH 400A	10mm / 4mm	Material ABS PLASTIC Colour B/W
Pump CB labels	PUMP No1 250A	6mm / 4mm	Material ABS PLASTIC Colour W/B
Compartment labels	RTU	10mm	Material Stainless Steel
E/Stop labels	EMERGENCY STOP	4mm	Material ABS PLASTIC Colour Y/B
Warning labels	DANGER 415V ISOLATE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

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 57-0310set_A
B.C.C. FILE No.

Original Signed by P.HAGUE 6-1-12
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
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
SWITCHBOARD
CONSTRUCTION DETAILS
SHEET 1 OF 3

SHEET No. 21
Queensland Urban Utilities DRAWING No. 486/5/7-0310-021
AMEND. A

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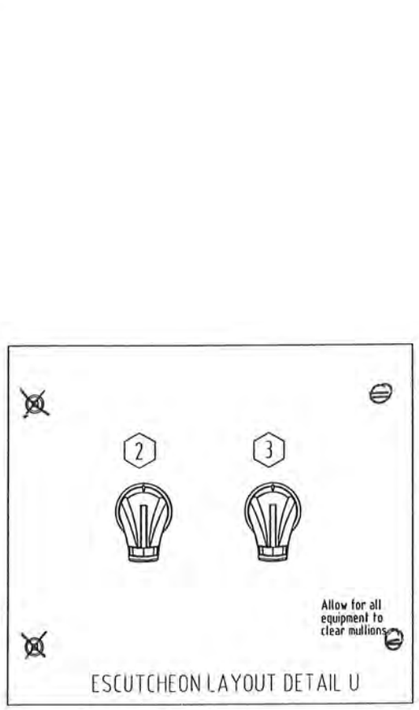
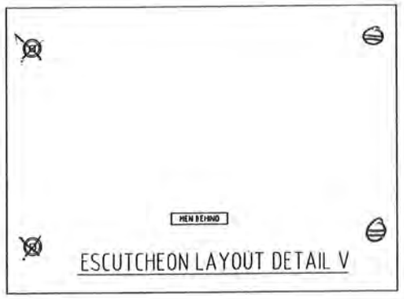
STD TEMPLATE SP-2P Ver32

27-2-13



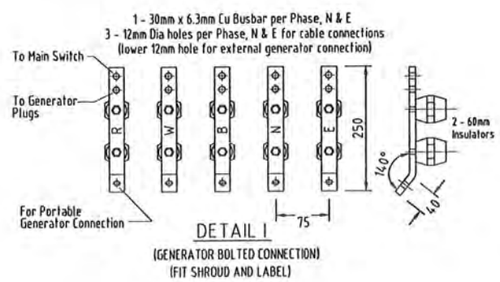
ESCUTCHEON LAYOUT DETAIL U



ESCUTCHEON LAYOUT DETAIL V

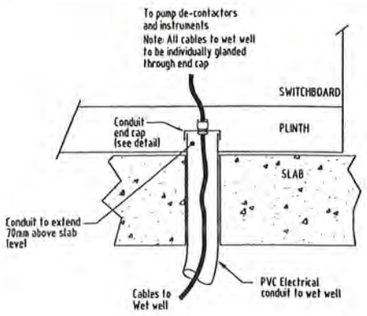
ESCUTCHEON LAYOUT DETAIL X

Allow for all equipment to clear mullions



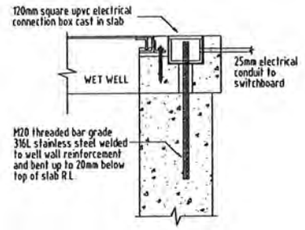
DETAIL I

(GENERATOR BOLTED CONNECTION)
(FIT SHROUD AND LABEL)



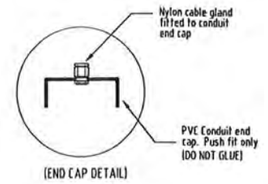
DETAIL W

(WET WELL CONDUIT SEALING DETAIL)

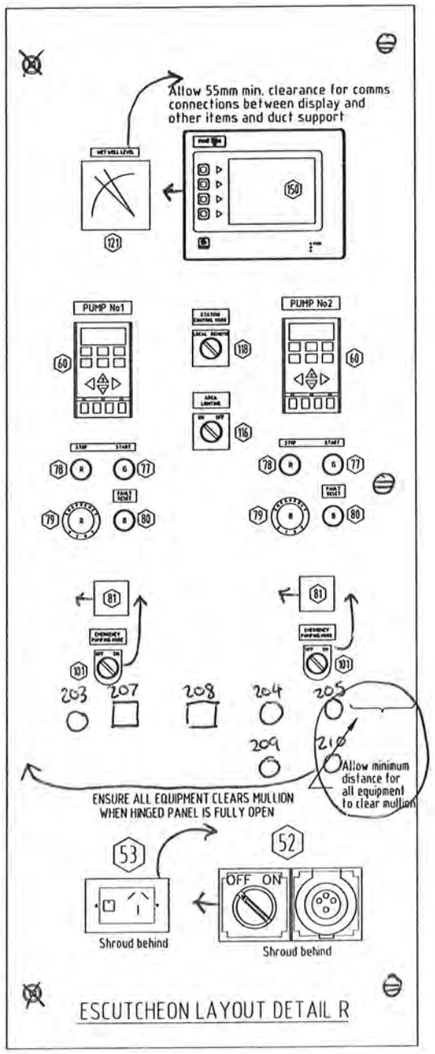


DETAIL Y

(REINFORCING CONNECTION BOX DETAIL)



(END CAP DETAIL)

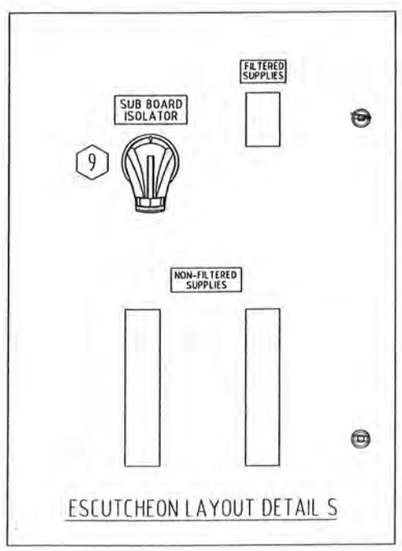


ESCUTCHEON LAYOUT DETAIL R

DUPLICATE FOR PUMPS 1 & 2

ESCUTCHEON LAYOUT DETAIL T

NOTE:
ALL ESCUTCHEONS
TO OPEN 90° min.



ESCUTCHEON LAYOUT DETAIL S

Sheet 22

FOR CONSTRUCTION

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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	57-0310set_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
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
SWITCHBOARD
CONSTRUCTION DETAILS
SHEET 2 OF 3

SHEET No. 22
Queensland Urban Utilities DRAWING No. 486/5/7-0310-022
AMEND. A

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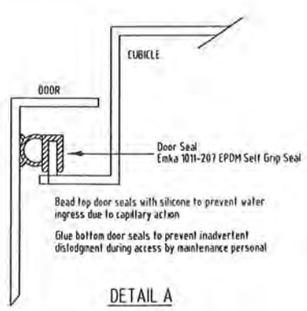
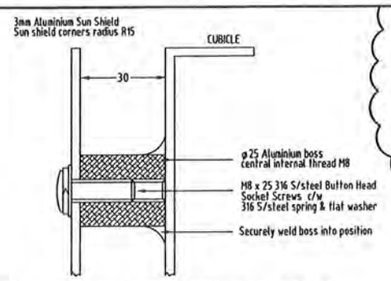


DETAIL A

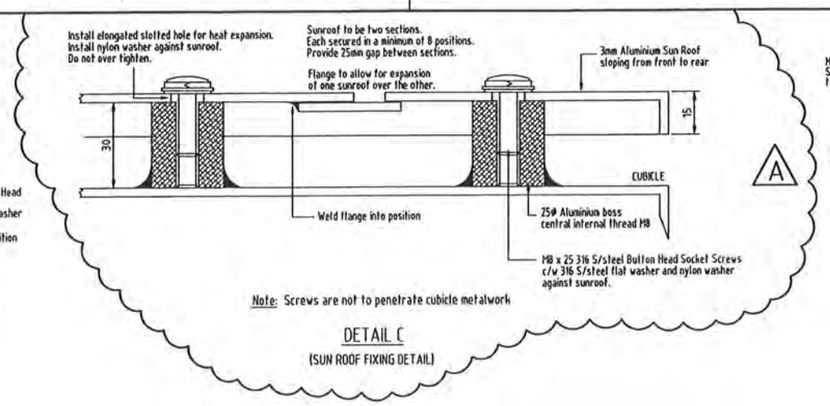
DOOR SEAL
EXTERNAL SWITCHBOARD



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

DETAIL B

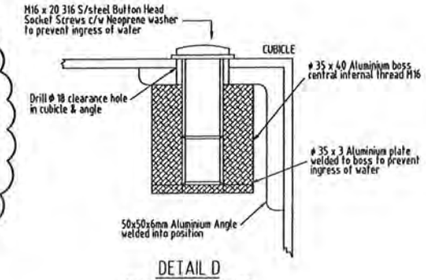
(SUN SHIELD MOUNTING TO ENDS, REAR AND DOORS)



Note: Screws are not to penetrate cubicle metalwork

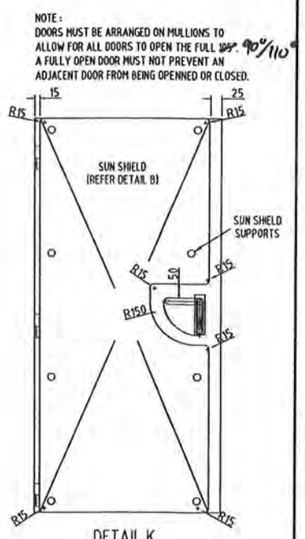
DETAIL C

(SUN ROOF FIXING DETAIL)



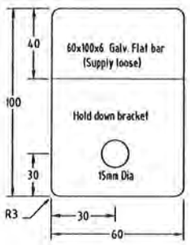
DETAIL D

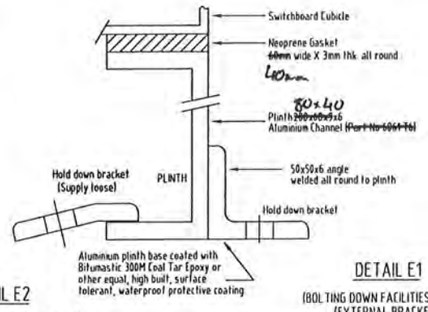
(EYE BOLT FIXING DETAIL)

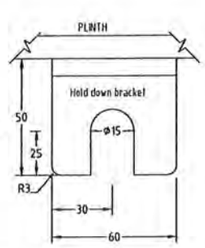


DETAIL K

(DOOR SUN SHIELD DETAIL)







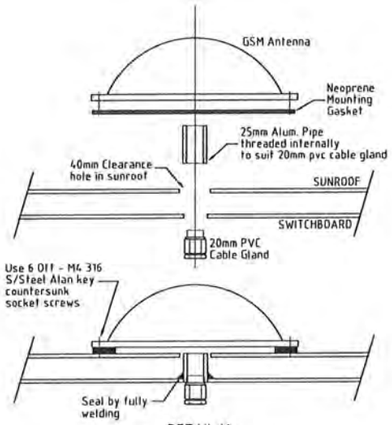
DETAIL E2

(BOLTING DOWN FACILITIES DETAIL)
(INTERNAL BRACKET)

DETAIL E1

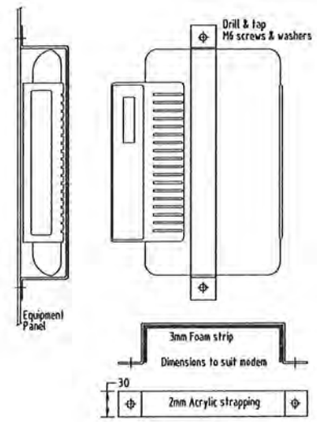
(BOLTING DOWN FACILITIES DETAIL)
(EXTERNAL BRACKET)

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

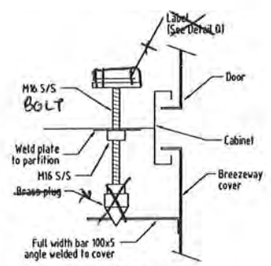
(GSM ANTENNA MOUNTING DETAIL)



Support bracket fixed to equipment panel.
Foam strip used to hold modem securely in place.

DETAIL U

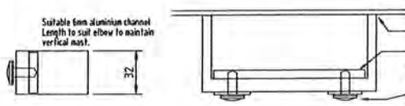
(MODEM MOUNTING BRACKET)



DETAIL V

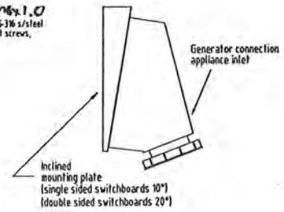
(BREEZEWAY LATCH INSTALLATION DETAIL)

DOOR CLEARANCES



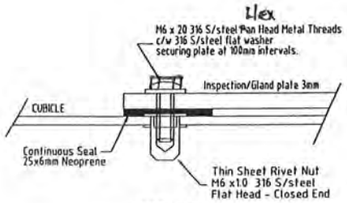
DETAIL N

(AERIAL SUPPORT BRACKET DETAIL)



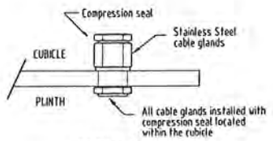
DETAIL O

(INCLINED MOUNTING PLATE DETAIL)



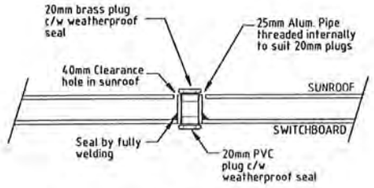
DETAIL F

(GLAND/INSPECTION PLATE FIXING DETAIL)



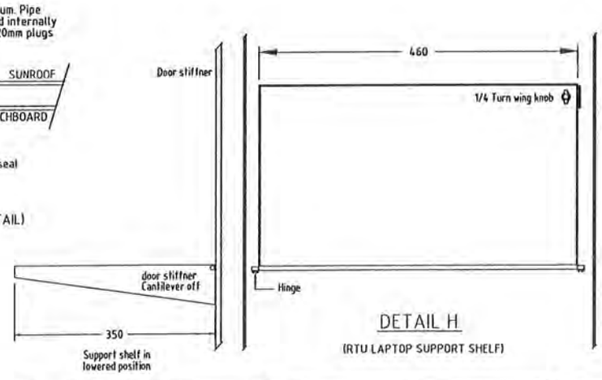
DETAIL G

(CABLE GLAND INSTALLATION DETAIL)



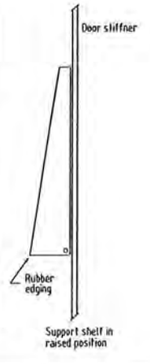
DETAIL X

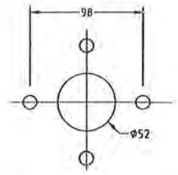
(SMART METERING ANTENNA PLUG DETAIL)



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)

Sheet 23

FOR CONSTRUCTION

A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.	DRAFTED	P.HAGUE	Original Signed by P.HAGUE	6-1-12	.	.	
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	57-0310set_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 Urban Utilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
SWITCHBOARD
CONSTRUCTION DETAILS
SHEET 3 OF 3

SHEET No. 23
Queensland Urban Utilities DRAWING No. 486/5/7-0310-023
AMEND. A

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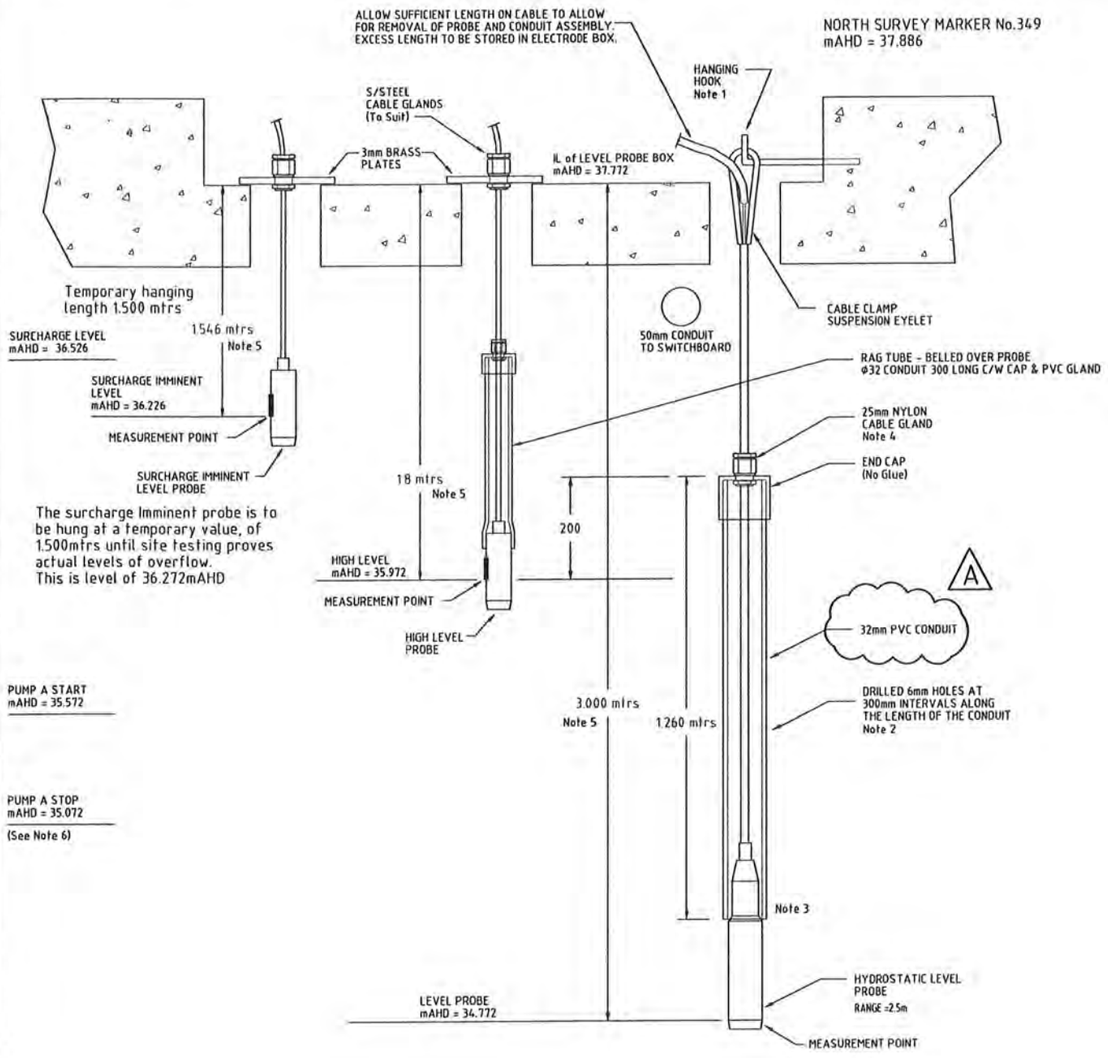
519 TEMPLATE SP-2F Ver3.1

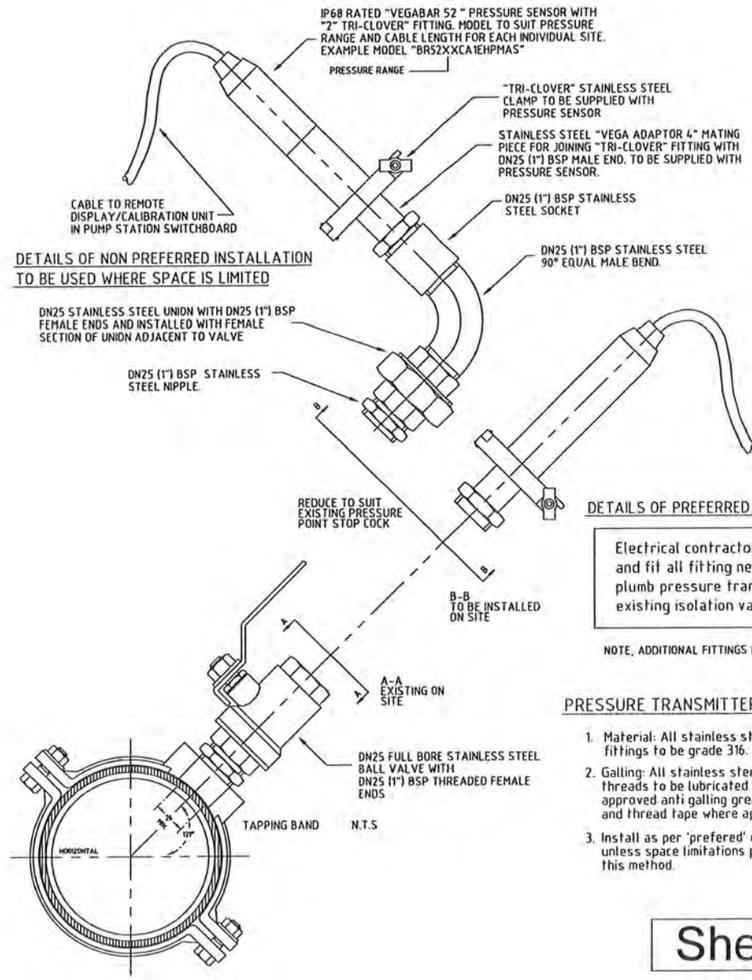
04-04-13



	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.
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 57-0310set_A
B.C.C. FILE No.

Original Signed by P.HAGUE 6-1-12
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
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
FIELD INSTRUMENTATION
INSTALLATION DETAILS

SHEET No. 24
Queensland Urban Utilities DRAWING No. 486/5/7-0310-024
AMEND. A

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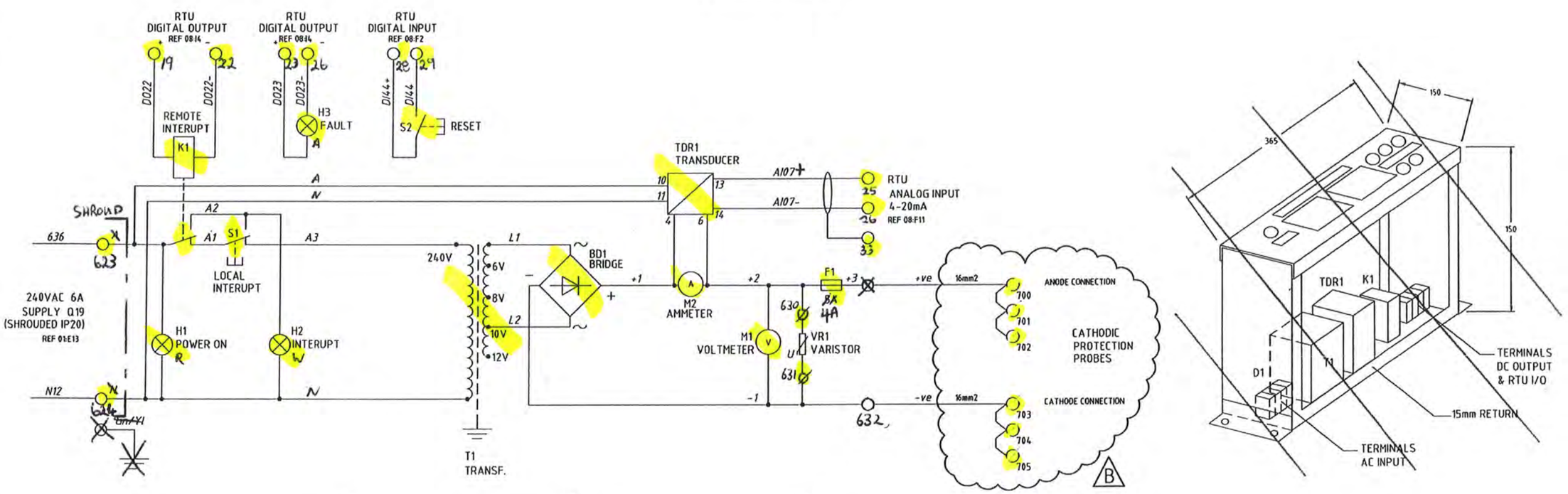
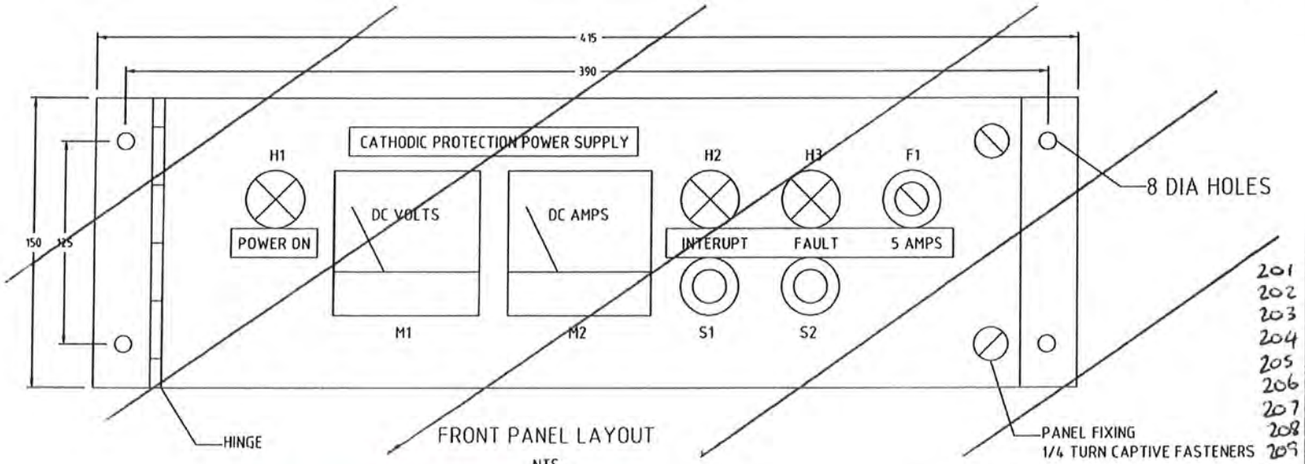
OPTION K





FRONT PANEL LAYOUT
NTS

ITEM	QTY	DESCRIPTION (RS _____ = RS COMPONENTS PART NUMBER)
201 BD1	1	DIODE BRIDGE SINGLE PHASE 35A 600V ISOLATED METAL BASE. RS2278772
202 F1	1	DC CUTOUT FUSE 4A – NHP NV20FW + NNS4
203 H1	1	POWER INDICATOR 240VAC – S+S D7P-P4-PN7R
204 H2	1	INTERUPT INDICATOR 240VAC – S+S D7P-P7-PN7W
205 H3	1	FAULT INDICATOR 24VDC – S+S D7P-P0-PN3A
206 K1	1	REMOTE INTERUPT – RELAY 24VDC 2A CHANGEOVER + FW BASE RH2B-~~X~~-24VDC + SH2B-05C
207 M1	1	VOLTMETER 0-15 V RS 244-862 ULD
208 M2	1	AMMETER 0-5 A RS 244-907
209 S1	1	LOCAL INTERUPT – S+S D7P-F4-PX01
210 S2	1	FAULT RESET – S+S D7P-F6-PX10
211 TDR1	1	TRANSDUCER – MANN INDUSTRIES FTXDMV 0-150mV/4-20mA/240vAC
212 T1	1	TRANSFORMER – 240VAC PRIM/6,8,10,12VAC SEC 60VA
213 VR1	1	VARISTOR – SURGE SUPPRESSOR RS _____ (CLAMP 76V10Ap) (31VDC CONTINUOUS)
214.1 -	6	TERMINALS 16mm² – PHOENIX – UT16 3044199
214.2	2	TERMINAL END PLATE – PHOENIX D-UT16 3047206 RS 543-5215
214.3	4	TERMINAL PLUG-IN BRIDGE – PHOENIX FBS2-12 3005950

FUNCTION TEST
J & P RICHARDSON IND.
NAME: ANDREW VARY LICENCE: 756
DATE: 29-4-13

LEGEND
Ø SWITCHBOARD CONTROL TERMINAL
~~O CATHODIC PROTECTION UNIT TERM.~~

Sheet 25

FOR CONSTRUCTION

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PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

QUEENSLAND Urban Utilities — A DIVISION OF THE BRISBANE CITY COUNCIL

SITE: SP253 HALLEY CRESCENT SEWAGE PUMP STATION

TITLE: CATHODIC PROTECTION UNIT CONSTRUCTION & WIRING DIAGRAM

SHEET No. 25
Queensland Urban Utilities DRAWING No. 486/5/7-0310-025
AMEND. A

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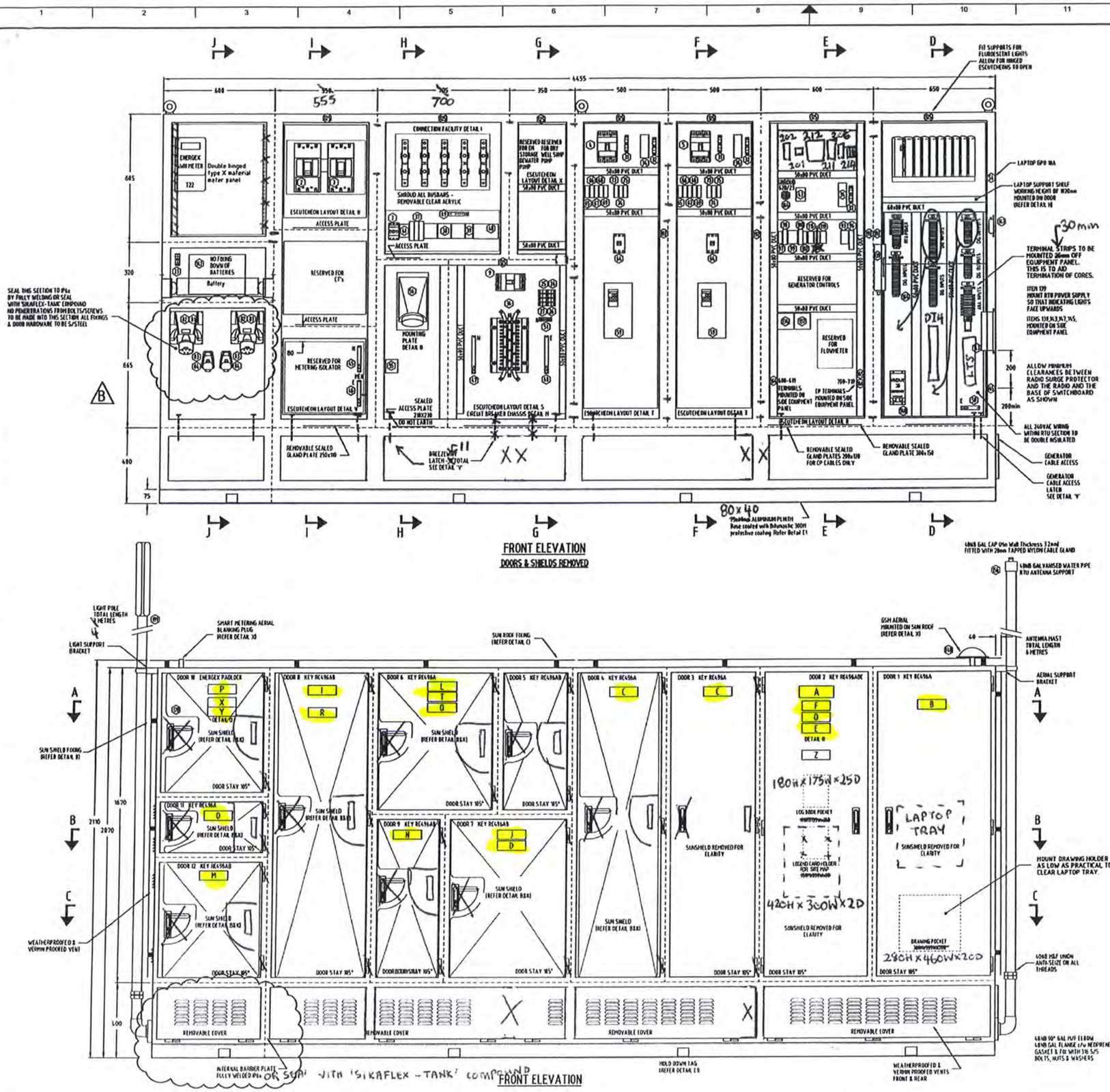
04-04-13



Sheet 27

FOR CONSTRUCTION

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P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.

DRAFTED	P.HAGUE
DRAFTING CHECK	A.WITTHOFT
CAD FILE	57-0310set_A
B.C.C. FILE No.	

Original Signed by P.HAGUE			6-1-12
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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
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
SWITCHBOARD
GENERAL ARRANGEMENT
ELEVATIONS

SHEET No. 27

Queensland Urban Utilities DRAWING No. 486/5/7-0310-027

AMEND. A

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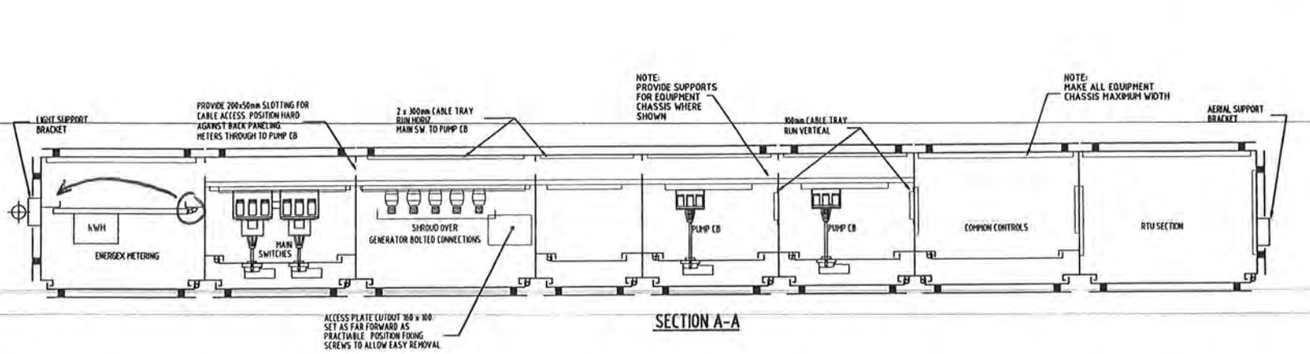
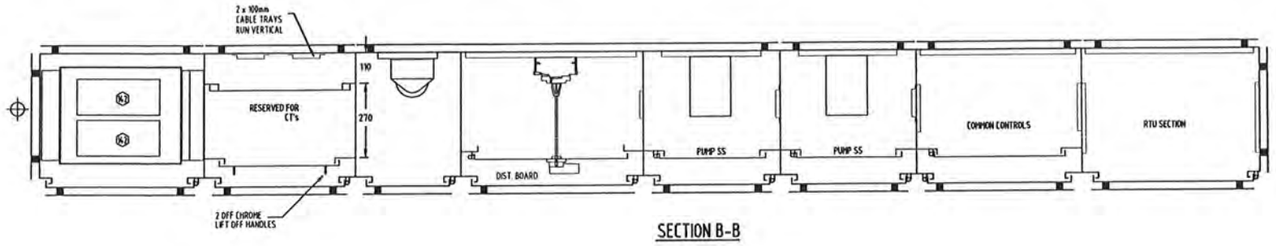


SECTION A-A



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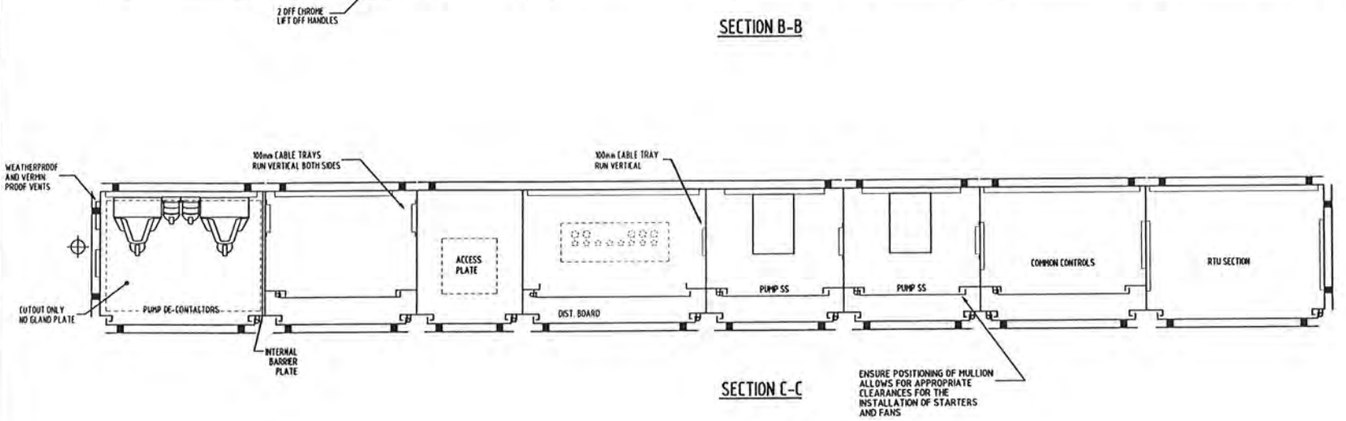

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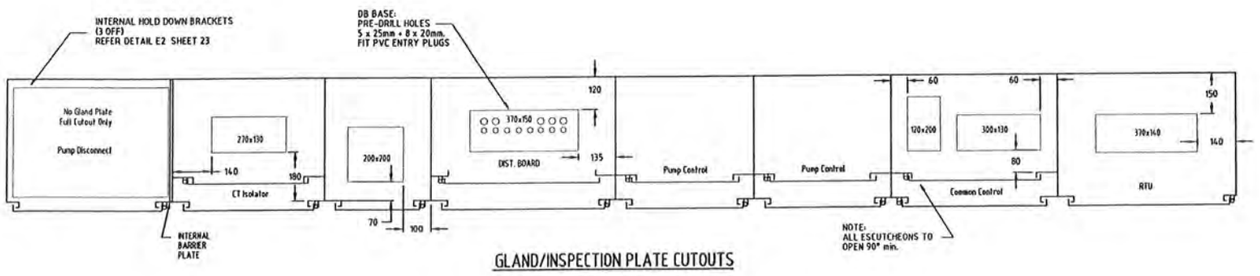
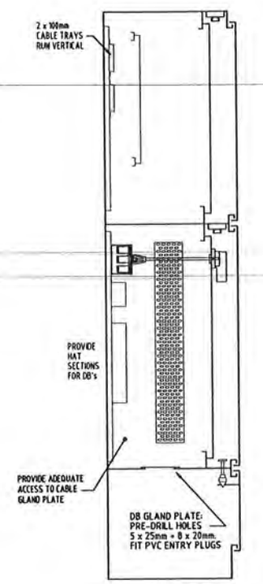
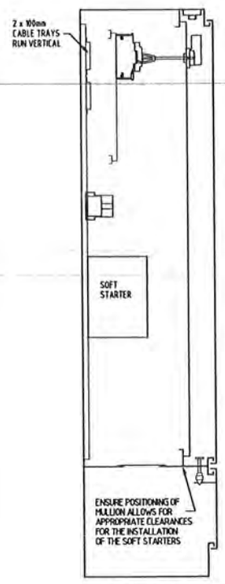


GLAND/INSPECTION PLATE CUTOUTS



SECTION G-G



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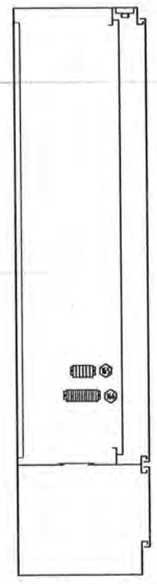

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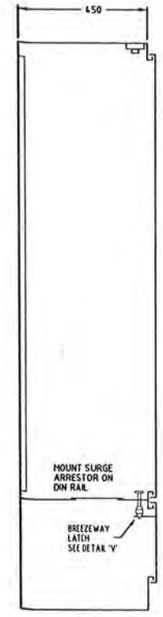

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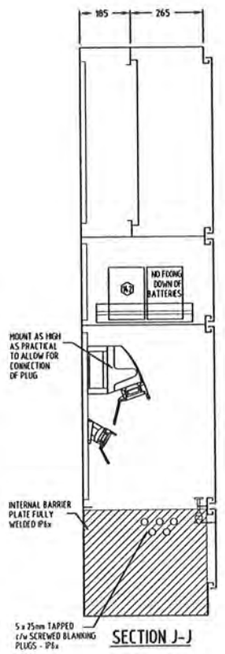
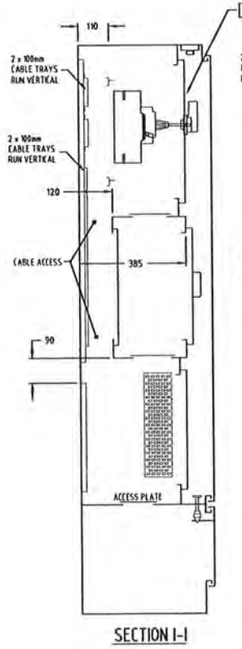


SECTION J-J



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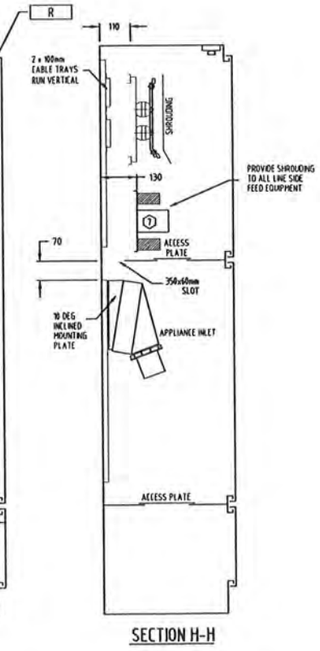

SECTION H-H

Sheet 28

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.
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DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0310set_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
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
SWITCHBOARD
GENERAL ARRANGEMENT
SECTIONS

SHEET No. 28
Queensland Urban Utilities DRAWING No. 486/5/7-0310-028
AMEND. A

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QUEENSLAND Urban Utilities

POINT TO POINT TEST
J & P RICHARDSON IND.
NAME: ANDREW VARY LICENCE: 756
DATE: 29-4-13
SIGNATURE:

SP253 HALLEY CRESCENT SEWAGE PUMPING STATION

SITE COVER SHEET

ELECTRICAL DRAWINGS INDEX

DWG N°.	TITLE	SHEET	REVISIONS
486/5/7-0310-000	SITE COVER SHEET	00	P1 0 A
486/5/7-0310-001	POWER DISTRIBUTION SCHEMATIC DIAGRAM	01	P1 0 A
486/5/7-0310-002	PUMP 01 SCHEMATIC DIAGRAM	02	P1 0 A
486/5/7-0310-003	PUMP 02 SCHEMATIC DIAGRAM	03	P1 0 A
486/5/7-0310-004	*RESERVED FOR PUMP 03 SCHEMATIC DIAGRAM*	04	
486/5/7-0310-005	*RESERVED (DRY WELL SUMP & EM STORAGE DEWATEING PUMP)*	05	
486/5/7-0310-006	*RESERVED (GENERATOR CONTROL)*	06	
486/5/7-0310-007	COMMON CONTROLS SCHEMATIC DIAGRAM	07	P1 0 A
486/5/7-0310-008	COMMON RTU I/O SCHEMATIC DIAGRAM	08	P1 0 A
486/5/7-0310-009	RTU POWER DISTRIBUTION SCHEMATIC DIAGRAM	09	P1 0 A
486/5/7-0310-010	RTU DIGITAL INPUTS TERMINATION DIAGRAM - SHEET 1 OF 3	10	P1 0 A
486/5/7-0310-011	RTU DIGITAL INPUTS TERMINATION DIAGRAM - SHEET 2 OF 3	11	P1 0 A
486/5/7-0310-012	RTU DIGITAL INPUTS TERMINATION DIAGRAM - SHEET 3 OF 3	12	P1 0 A
486/5/7-0310-013	RTU DIGITAL OUTPUTS TERMINATION DIAGRAM - SHEET 1 OF 2	13	P1 0 A
486/5/7-0310-014	RTU DIGITAL OUTPUTS TERMINATION DIAGRAM - SHEET 2 OF 2	14	P1 0 A
486/5/7-0310-015	RTU ANALOG INPUTS TERMINATION DIAGRAM	15	P1 0 A
486/5/7-0310-016	RTU ANALOG OUTPUTS TERMINATION DIAGRAM	16	P1 0 A
486/5/7-0310-017	COMMON CONTROLS TERMINATION DIAGRAM	17	P1 0 A
486/5/7-0310-018	EQUIPMENT LIST	18	P1 0 A
486/5/7-0310-019	CABLE SCHEDULE	19	P1 0 A
486/5/7-0310-020	SWITCHBOARD LABEL SCHEDULE	20	P1 0 A
486/5/7-0310-021	SWITCHBOARD CONSTRUCTION DETAILS - SHEET 1 of 3	21	P1 0 A
486/5/7-0310-022	SWITCHBOARD CONSTRUCTION DETAILS - SHEET 2 of 3	22	P1 0 A
486/5/7-0310-023	SWITCHBOARD CONSTRUCTION DETAILS - SHEET 3 of 3	23	P1 0 A
486/5/7-0310-024	FIELD INSTRUMENTATION - INSTALLATION DETAILS	24	P1 0 A
486/5/7-0310-025	CATHODIC PROTECTION UNIT - CONSTRUCTION AND WIRING DETAILS	25	P1 0 A
486/5/7-0310-026	*RESERVED (FIELD DISCONNECTION BOX)*	26	
486/5/7-0310-027	SWBD GENERAL ARRANGEMENT ELEVATIONS	27	P1 0 A
486/5/7-0310-028	SWBD GENERAL ARRANGEMENT SECTIONS	28	P1 0 A
486/5/7-0310-029	*RESERVED (GENERATOR EXTERNAL CONNECTION BOX)*	29	
486/5/7-0310-030	SWITCHBOARD SLAB - LOCALITY AND SITE PLANS - SHEET 1 of 3	30	P1 0 A
486/5/7-0310-031	SWITCHBOARD SLAB AND CONDUIT DETAILS - SHEET 2 of 3	31	P1 0 A
486/5/7-0310-032	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	32A S125GJ/32
PUMP2 CIRCUIT BREAKER	32A S125GJ/32
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	7.4kW 14A
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 + S1BA058
PUMP INLET PLUG + HANDLE	DS1 3118013972 + 311A013
WET WELL LEVEL TRANSMITTER	WLS2XXA4ALD1DD1X 2.5m
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	BRS2XXCA1FHPMAS L=12 50m
RADIO	*NOT APPLICABLE*
EMERGENCY PUMPING TIME	2 5 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 + PSTN	YES ☒
J	PUMP CONNECTION (Via De-contactors)	YES ☒
K	CATHODIC PROTECTION - (Intergrated in Swicthboard)	YES ☒
L	MOTOR THERMISTORS (Via De-contactors)	YES ☒
M	*ODDUR 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*	☒ NO
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 16/4/13

Sheet 00

FOR CONSTRUCTION

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PRINCIPAL DESIGN MANAGER DATE
CLIENT DELEGATE DATE

QUEENSLAND Urban Utilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
SITE COVER SHEET

SHEET No. 0
Queensland Urban Utilities DRAWING No. 486/5/7-0310-000
AMEND. A

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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
   RW
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
    RW
11. ADD ADDITIONAL LABELING AT MAIN SWITCHES
    WARNING
    DO NOT SET Q2 OR Q3 ABOVE Ir = 0.6(100A)
    SWITCHBOARD RATING IS 100A
    Y/B

(In Switchboard)
GENERATOR CONNECTION SOCKET (NOTE 8)
R W B N E
Note 9
Note 13
BOLTED CONNECTIONS (SHROUDED)
GEN SUPPLY MAIN SWITCH 125A (NOTE 1,2) Ir=0.5 (62.5A) Char=1
Q3
Note 11
GEN/N
MANUAL TRANSFER SWITCH
SWITCHBOARD RATING 125A → 100A
MAX DEMAND 50A
ENERGEX MAINS POWER FAILURE RELAY REF 08A2
PFRE
601 602 603 N2
Q7 6A
NORMAL SUPPLY MAIN SWITCH 125A (NOTE 1,2) Ir=0.5 (62.5A) Char=1
Q2
Note 11
GEN/N
63A SUB-DISTRIBUTION BOARD CB Ir=0.9 (63A) Im = 6 (300A) (NOTE 1, 2)
Q9
3 PHASE 415VAC SUPPLY FEED FROM PILLAR No ? SERVICE FUSE 125A 6.9kA 16mm²
N R W B
SUPPLY AUTHORITY DIRECT METERING
METERING COMPARTMENT
FAULT LEVEL AT SWITCHBOARD 1.72kA
F1 610 611 612 63A 80kA
SDI1,2,3
SDN1 SDN2 SDN3
MEN LINK
STATION MAINS POWER FAILURE RELAY REF 08B2
PFRS 620 621 622 N3
Q10 6A
15A GPO 630 N4 Q11 16A N-Q11
LAPTOP GPO - TWIN 631 N5 Q12 10A N-Q12
SPARE Q13 6A N-Q13
SPARE Q14 10A N-Q14
GENERATOR ANCILLARY SUPPLY 10A SOCKET 634 N8 (NOTE 8) Q15 10A N-Q15
EXTERNAL AREA LIGHTING 635 N9 S11 Q16 6A N-Q16
SURGE FILTER SRF 640 N10 Q17 10A
CONTROL SYSTEM POWER SUPPLY REF 09B2 641 N11 Q30 4A SN1
SURGE FILTER ALARM RELAY REF 07F10 641 N11 Q31 4A SN2
SPARE Q32 4A
SPARE Q33 4A
N10A
PROTECTED NEUTRAL
EMERGENCY PUMP CONTROL POWER SUPPLY & SURCHARGE IMMINENT RELAY REF 07A2 650 N11 Q18 6A
CATHODIC PROTECTION POWER SUPPLY REF 08F10 636 N12 Q19 6A
3 PHASE 10 AMP OUTLET 660 661 662 Q20 10A N-Q20
SPARE Q21 6A
L3 L2 L1 N E
CONT'D ON SHEET 02

POINT TO POINT TEST
J & P RICHARDSON IND.
NAME: ANDREW VARY LICENCE: 756
DATE: 29-4-13
SIGNATURE:

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 57-0310set_A
B.C.C. FILE No.

Original Signed by P.HAGUE 6-1-12 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: SP253 HALLEY CRESCENT SEWAGE PUMP STATION

TITLE: POWER DISTRIBUTION SCHEMATIC DIAGRAM

SHEET No. 1
Queensland Urban Utilities DRAWING No. 486/5/7-0310-001
AMEND. A

STD TEMPLATE SP-2P Ver3.2

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04-04-13

CONT'D FROM SHEET 01

E N R W B

Q4 32A
Ir=0.63 (20.2A)
Im= 6 (192A)
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

SUBMERSIBLE PUMP No1
7.4kW 14AMPS

MOTOR THERMISTORS

AUX PLUG

KEYPAD

1K6 113 17 RUN
117 18 +24V
1K21 114 25 RESET
1K4 115 11 E.STOP
116 15
116 16 +24V

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+ Wt/Gn
RS485- Cable 16 Bw
FROM RTU REF 09:F12

RS485A+ Lt/Bn
RS485A- Cable 17 Bn/Wt
TO SOFT STARTER 2 REF 03:E7

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 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		DI08	SPARE
DI09		DI09	SPARE
DI10		DI10	SPARE

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			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: ANDREW VARY LICENCE: 756
DATE: 29-4-13
SIGNATURE:

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	6-1-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0310set_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 SP253 HALLEY CRESCENT SEWAGE PUMP STATION

TITLE PUMP No1 SCHEMATIC DIAGRAM

SHEET No. 2
Queensland Urban Utilities DRAWING No. 486/5/7-0310-002
AMEND. A

STD TEMPLATE SP-2P Ver3.2

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09-04-13

CONT'D FROM SHEET 02

E N R W B

Q5 32A
Ir=0.63 (20.2A)
Im= 6 (192A)
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 I Medium Duty 17A
SOFT STARTER 2U1

L1 L2 L3 T1 T2 T3 PE

5 230
6 231

DE-CONTACTORS

SUBMERSIBLE PUMP No2 7.4kW 14AMPS

MOTOR THERMISTORS

AUX PLUG

KEYPAD

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

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

2S5 EM.START OFF ON
2K20
EMG2 REF 07:B5

201 2K4 205 207 2K6 RUN RELAY REF 03:B5

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

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

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

RTU DIGITAL OUTPUTS

+ 24VDC POWER SUPPLY - REFER SHEET 09:C7

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

DO17+	DO17	DO17	2K20	DO17- RUN COMMAND REF 03:F4
DO18+	DO18	DO18	2K21	DO18- FAULT RESET REF 03:C3
DO19+	DO19	DO19	2K22	DO19- EMERGENCY MODE INTERRUPT REF 07: C3
DO20+	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: ANDREW VARY LICENCE: 756
DATE: 29-4-13
SIGNATURE:

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	6-1-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0310set_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 SP253 HALLEY CRESCENT SEWAGE PUMP STATION

TITLE PUMP No2 SCHEMATIC DIAGRAM

SHEET No. 3
Queensland Urban Utilities DRAWING No. 486/5/7-0310-003
AMEND. A

STD TEMPLATE SP-2P Ver3.2

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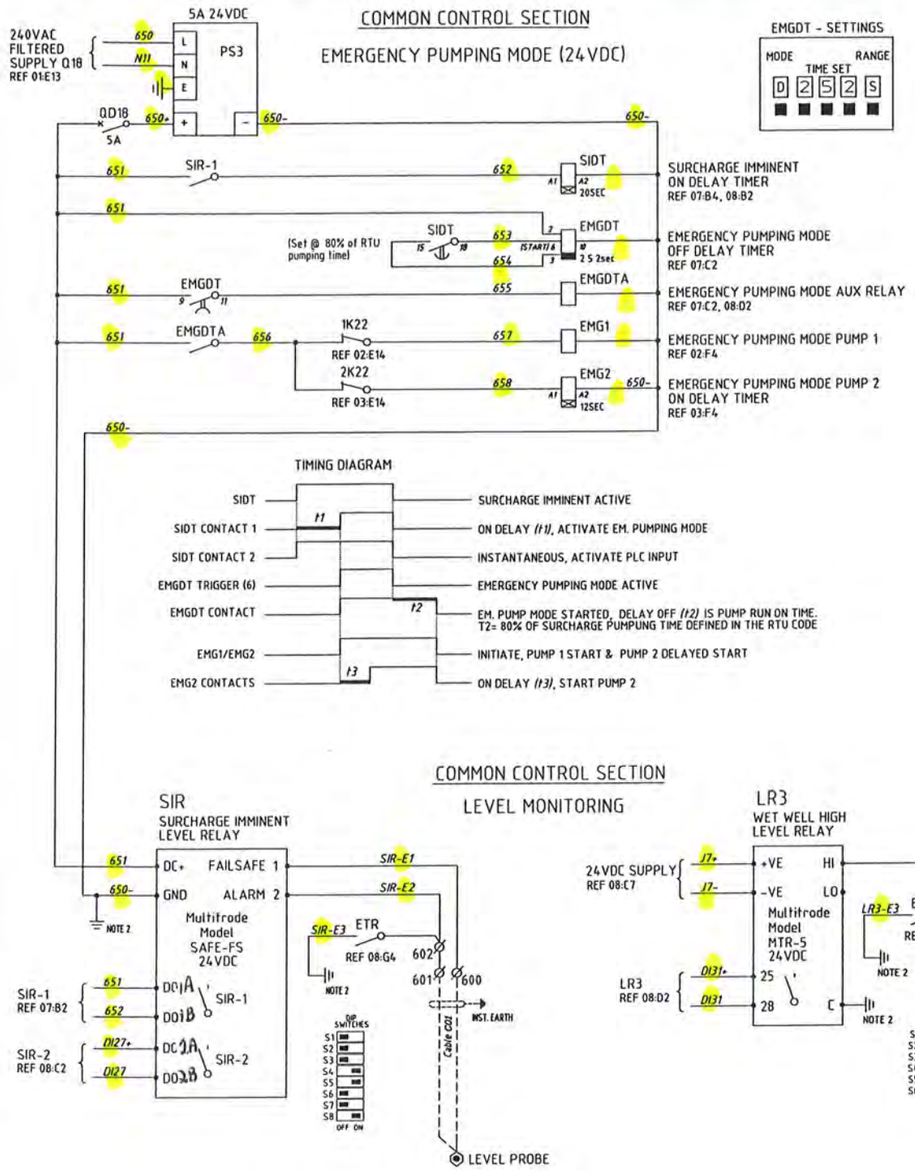
09-04-13

COMMON CONTROL SECTION

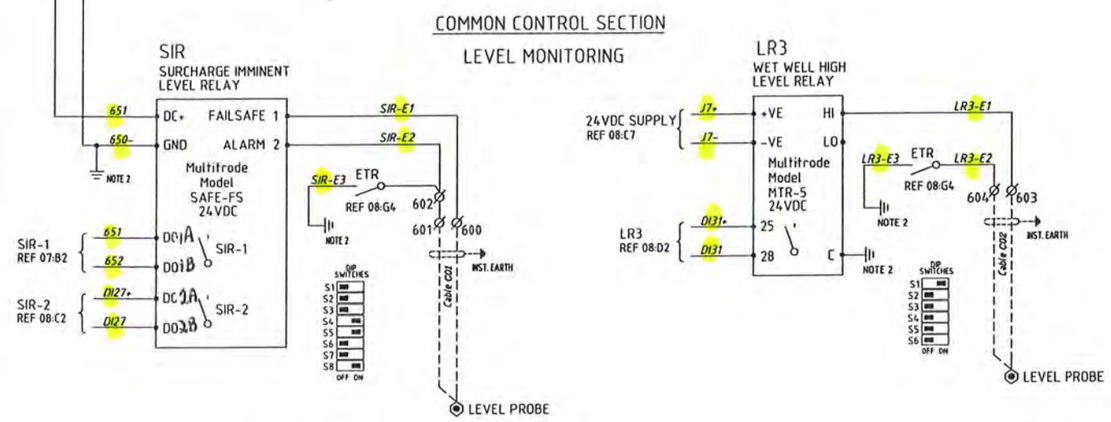
EMERGENCY PUMPING MODE (24VDC)



TIMING DIAGRAM

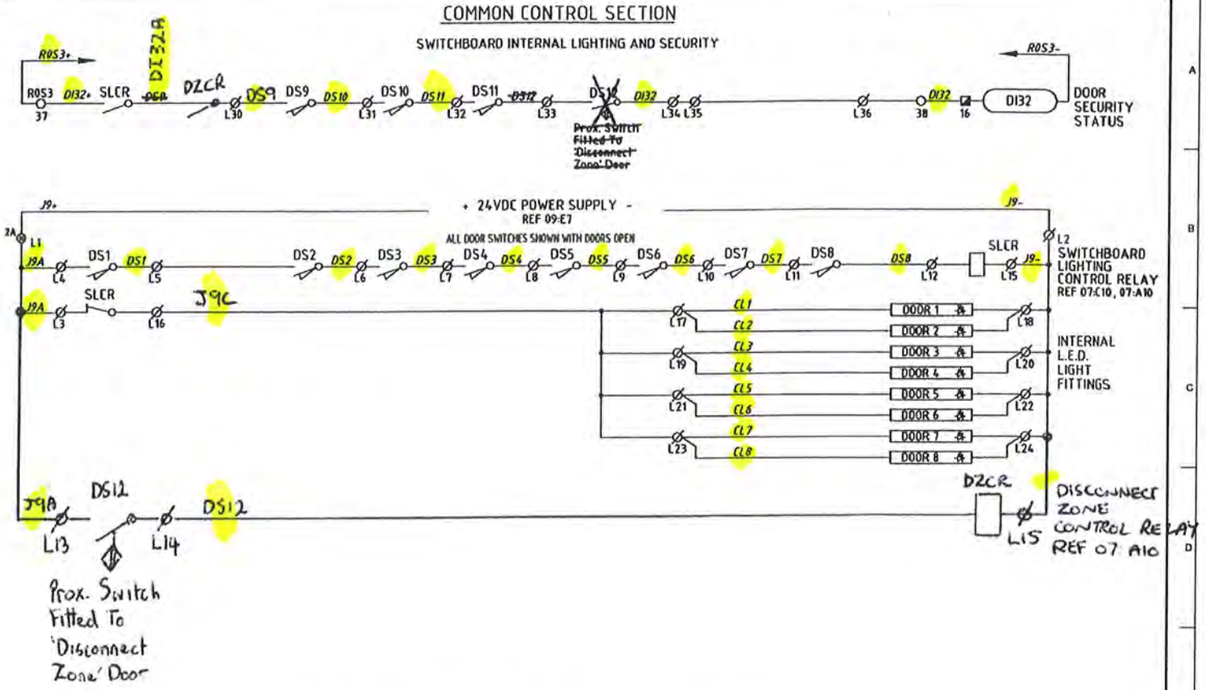
COMMON CONTROL SECTION

LEVEL MONITORING



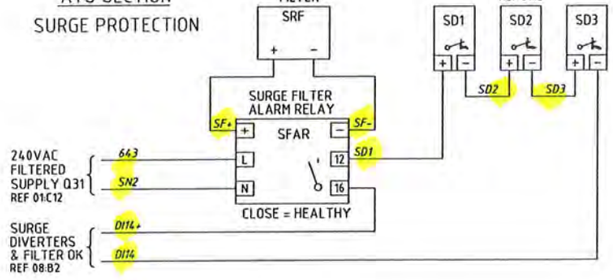
COMMON CONTROL SECTION

SWITCHBOARD INTERNAL LIGHTING AND SECURITY



ATS SECTION

SURGE PROTECTION



NOTES

1. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST 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: ANDREW VAR-1 LICENCE: 756
DATE: 29-4-13
SIGNATURE:

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	6-1-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0310set_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: SP253 HALLEY CRESCENT SEWAGE PUMP STATION

TITLE: COMMON CONTROLS SCHEMATIC DIAGRAM

SHEET No. 7
Queensland Urban Utilities DRAWING No. 486/5/7-0310-007
AMEND. A

STD TEMPLATE SP-29 Ver3.2

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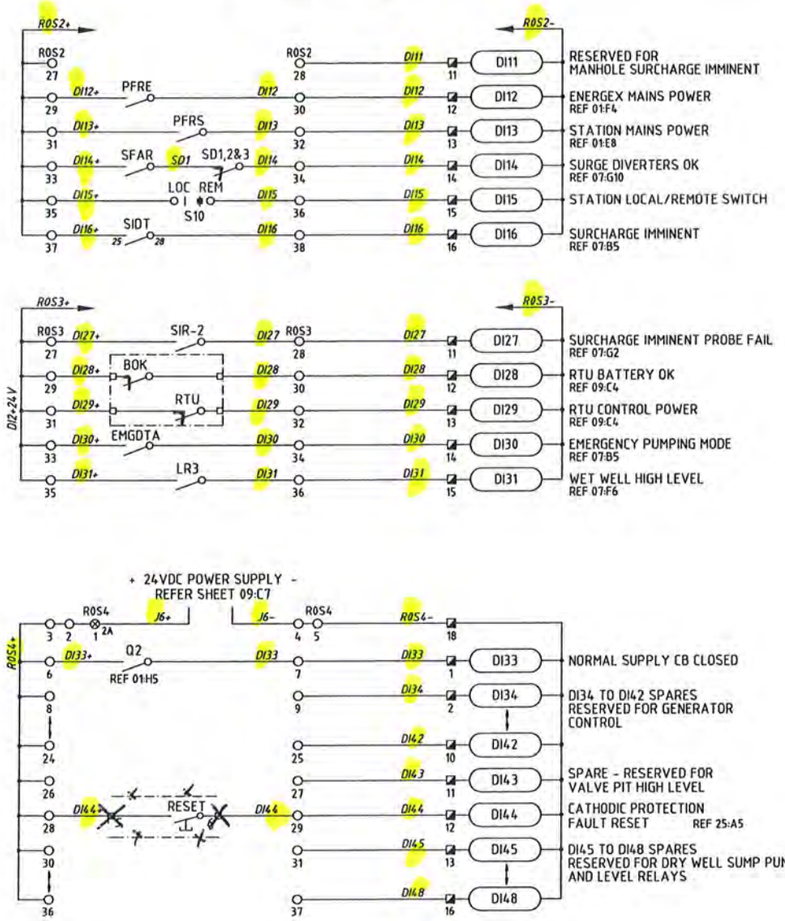
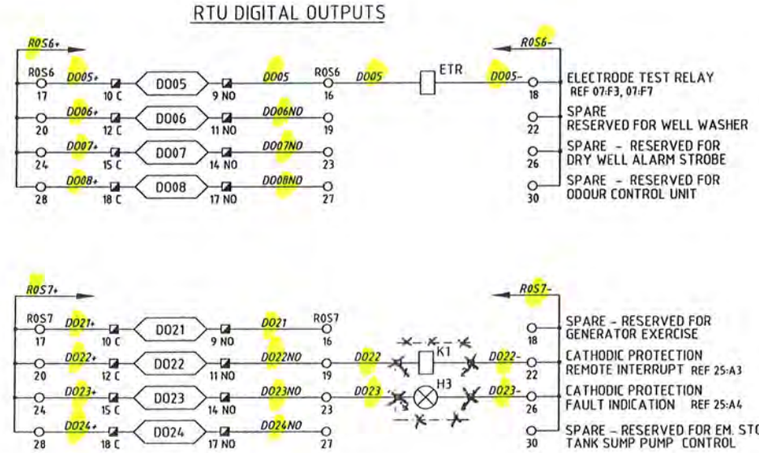
04-04-13

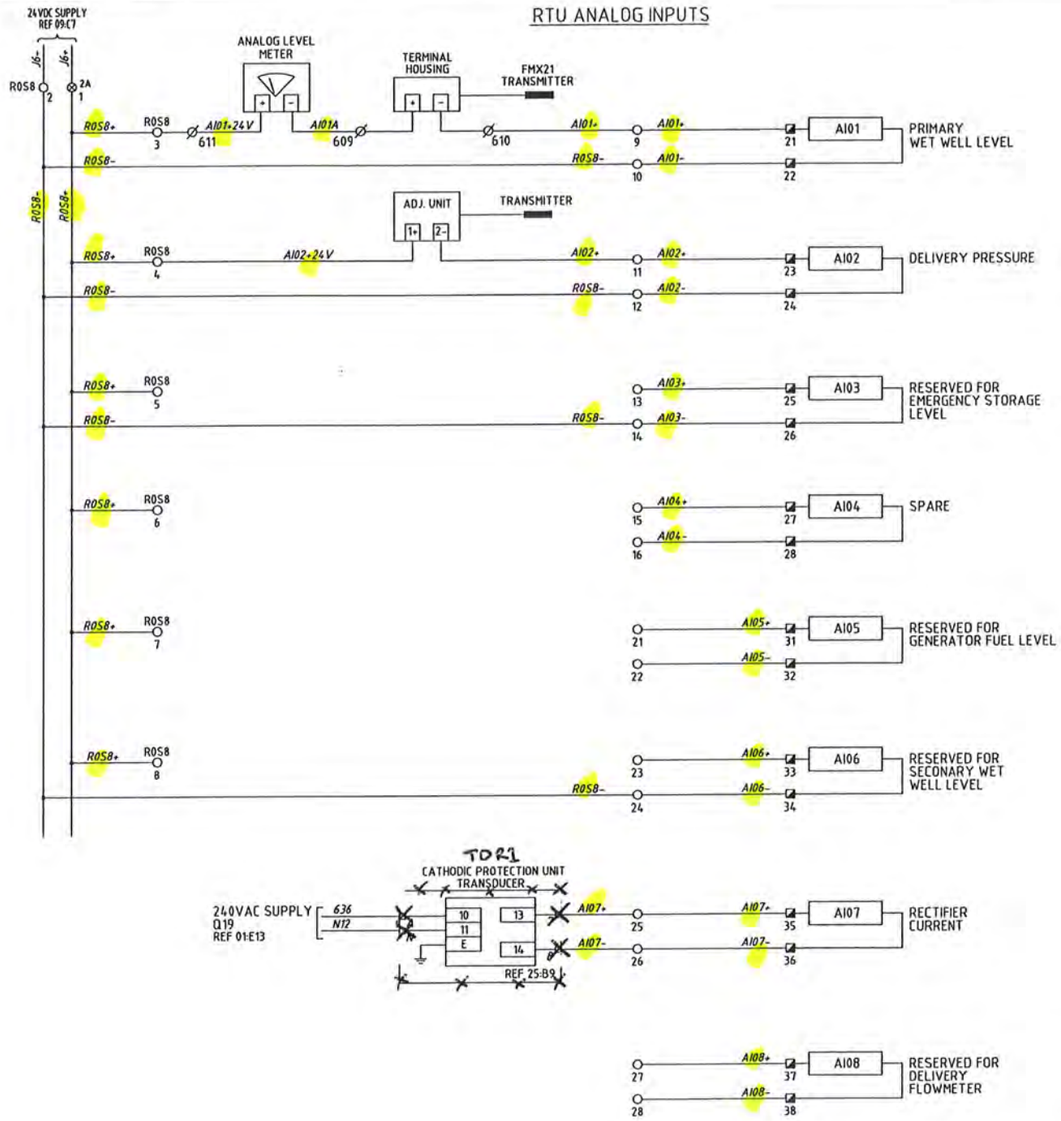
RTU DIGITAL INPUTS



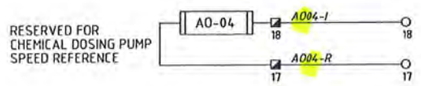
RTU DIGITAL OUTPUTS



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: ANDREW VARY LICENCE: 756
DATE: 29-4-13
SIGNATURE:

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	6-1-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0310set_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: SP253 HALLEY CRESCENT SEWAGE PUMP STATION

TITLE: COMMON RTU I/O SCHEMATIC DIAGRAM

SHEET No. 8

Queensland Urban Utilities DRAWING No. 486/5/7-0310-008 AMEND. A

STD TEMPLATE SP-2P Ver32

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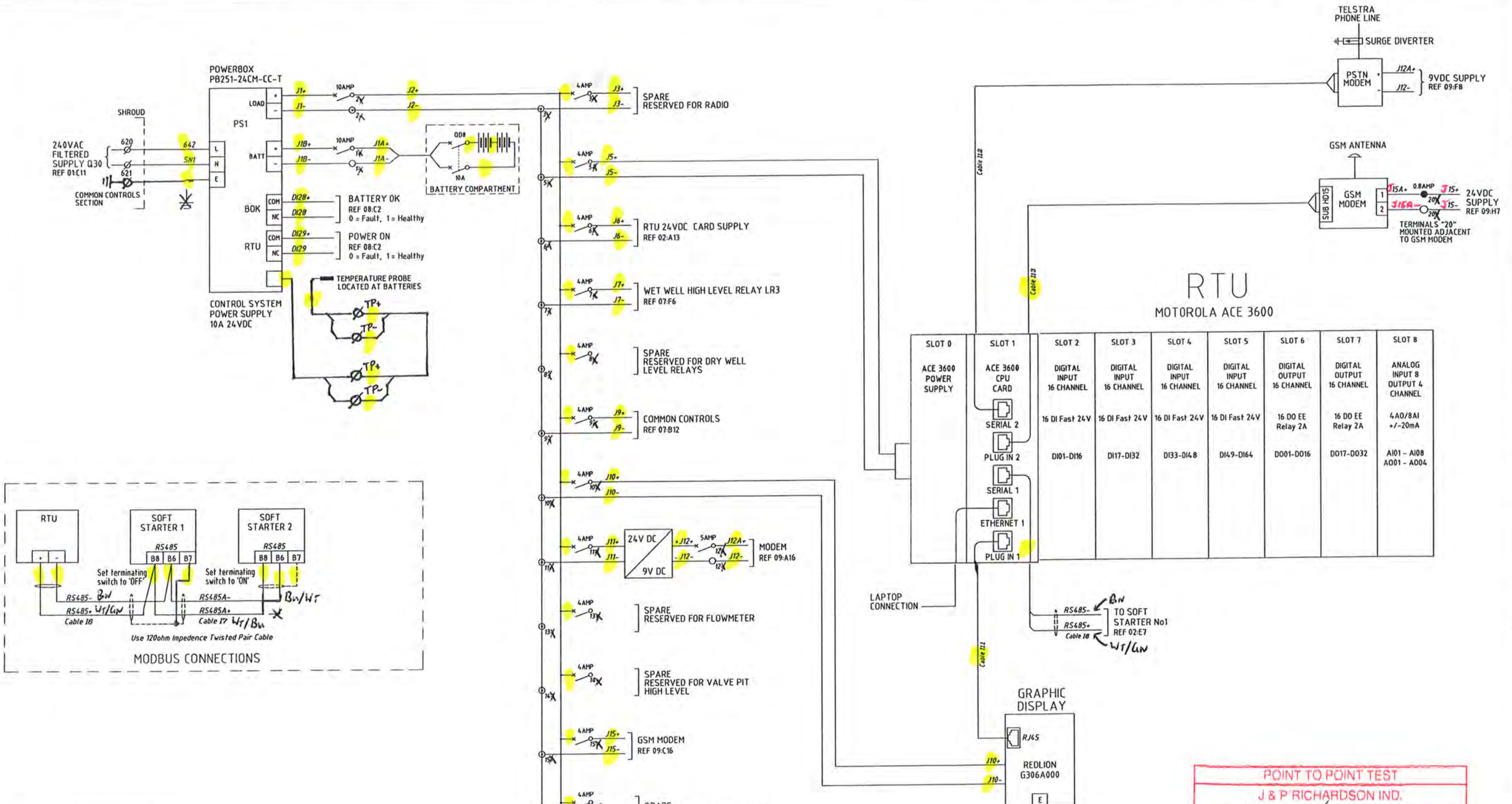
04-04-13


POWERBOX
PB251-24CM-CC-T
PS1
LOAD
BATT
BOK
RTU
CONTROL SYSTEM
POWER SUPPLY
10A 24VDC
SHROUD
240VAC
FILTERED
SUPPLY Q30
REF 01:C11
COMMON CONTROLS
SECTION
620
621
642
SN1
10AMP
J1+
J1-
J2+
J2-
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-
4AMP
J3+
J3-
SPARE
RESERVED FOR 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-
24V DC
9V DC
J12+
J12-
5AMP
J12A+
MODEM
REF 09:A16
SPARE
RESERVED FOR FLOWMETER
SPARE
RESERVED FOR VALVE PIT
HIGH LEVEL
J15+
J15-
GSM MODEM
REF 09:C16
SPARE
RESERVED FOR WELL WASHER
SPARE
RESERVED FOR STATION MANHOLE
SURCHARGE IMMINENT
SPARE
RESERVED FOR EMERGENCY
STORAGE TANK SUMP PUMP
TELSTRA
PHONE LINE
SURGE DIVERTER
PSTN
MODEM
9VDC SUPPLY
REF 09:F8
GSM ANTENNA
GSM
MODEM
SUB HD15
J15A+
J15A-
0.8AMP
24VDC
SUPPLY
REF 09:H7
TERMINALS "20"
MOUNTED ADJACENT
TO GSM MODEM
Cable 112
Cable 113
Cable 111
RTU
MOTOROLA ACE 3600
SLOT 0
ACE 3600
POWER
SUPPLY
SLOT 1
ACE 3600
CPU
CARD
SERIAL 2
PLUG IN 2
SERIAL 1
ETHERNET 1
PLUG IN 1
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 I8
TO SOFT
STARTER No1
REF 02:E7
Bn
Wt/Gn
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'
RS485-
RS485+
Cable I6
RS485A-
RS485A+
Cable I7
Bn/Wt
Wt/Bn
Use 120ohm Impedence Twisted Pair Cable
MODBUS CONNECTIONS

LEGEND:
- ⊗ RTU MARSH. CCT BREAKER TERM
- O 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. 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: Andrew Vary LICENCE: 756
DATE: 29-4-13
SIGNATURE: [signature]

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	57-0310set_A
B.C.C. FILE No.	

Original Signed by P.HAGUE 6-1-12
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
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
RTU POWER DISTRIBUTION
SCHEMATIC DIAGRAM

SHEET No. 9
Queensland Urban Utilities DRAWING No. 486/5/7-0310-009
AMEND. A

STD TEMPLATE SP-3P Ver3.2

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09-04-13

RTU COMPARTMENT

24VDC POWER DISTRIBUTION

SWITCHBOARD

FIELD

24VDC DIST

SHEET 09 REFER

REFER SHEET 09

J12A+

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) … 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

DI1

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

SD 7 3 Off

STARTER COMPARTMENT

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

COMMON COMPARTMENT

DI16+ / DI16 — SIDT 25 28 — SURCHARGE IMMINENT — REF 07:B5

POINT TO POINT TEST
J & P RICHARDSON IND.
NAME: ANDREW VARY LICENCE: 756
DATE: 29-4-13
SIGNATURE:

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	Original Signed by P.HAGUE	6-1-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0310set_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: SP253 HALLEY CRESCENT SEWAGE PUMP STATION

TITLE: RTU DIGITAL INPUTS TERMINATION DIAGRAM SHEET 1 OF 3

SHEET No. 10

Queensland Urban Utilities DRAWING No. 486/5/7-0310-010

AMEND. A

STD TEMPLATE SP-2P Ver32

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04.04.13

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

DI7

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)

LINK BARS

TO INSULATED INSTRUMENT EARTH

CONT ON SHEET 10

SWITCHBOARD

FIELD

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

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)
PGND2 20 (20)

MOTOROLA WIRED CABLE BRAID & 20 WAY TB HOLDER

DI3

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)

LINK BARS

TO INSULATED INSTRUMENT EARTH

CONT ON SHEET 12

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

COMMON COMPARTMENT

CATHODIC PROTECTION UNIT

DI44+ / DI44 — S2 — FAULT RESET
REF 08:F2

POINT TO POINT TEST
J & P RICHARDSON IND.
NAME: ANDREW VARY LICENCE: 756
DATE: 29-4-13
SIGNATURE:

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 RTU MINITURE CCT BREAKER
1 DISCONNECT LINK TERMINAL
1 THROUGH TERMINAL

Sheet 11
FOR CONSTRUCTION

No	DATE	AMENDMENT	P.H.	A.W.
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 6-1-12
DRAFTING CHECK A.WITTHOFT — DESIGN R.P.E.Q. No. DATE
CAD FILE 57-0310set_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: SP253 HALLEY CRESCENT SEWAGE PUMP STATION

TITLE: RTU DIGITAL INPUTS TERMINATION DIAGRAM SHEET 2 OF 3

SHEET No. 11
Queensland Urban Utilities DRAWING No. 486/5/7-0310-011
AMEND. A

STD TEMPLATE SP-2F Ver32

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04-04-13

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

ROSS+ DI4

	2A	1
		2
R055+	(17)	3
R055-	(18)	4
		5
DI49	(1)	6
		7
DI50	(2)	8
		9
DI51	(3)	10
		11
DI52	(4)	12
		13
DI53	(5)	14
		15
DI54	(6)	16
		17
DI55	(7)	18
		19
DI56	(8)	20
		21
DI57	(9)	22
		23
DI58	(10)	24
		25
		26
DI59	(11)	27
		28
DI60	(12)	29
		30
DI61	(13)	31
		32
DI62	(14)	33
		34
DI63	(15)	35
		36
DI64	(16)	37
		38
R055-E	(19)	39
R055-E	(20)	40

LINK BARS

TO INSULATED INSTRUMENT EARTH

CONT ON SHEET 11

0 V

CONT ON SHEET 13

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: ANDREW VARY LICENCE: 756
DATE: 29-4-13
SIGNATURE:

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
DRAFTING CHECK	A.WITTHOFT
CAD FILE	57-0310set_A
B.C.C. FILE No.	

Original Signed by P.HAGUE			6-1-12
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
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
RTU DIGITAL INPUTS
TERMINATION DIAGRAM
SHEET 3 OF 3

SHEET No. 12

Queensland Urban Utilities DRAWING No. 486/5/7-0310-012

AMEND. A

STB TEMPLATE SP-JP Ver3.2

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04-04-13

RTU COMPARTMENT

SWITCHBOARD

FIELD

RACK 0 SLOT 6
MOTOROLA 16 CHANNEL
DIGITAL OUTPUT MODULE
16 DO EE RELAY 2A

DO01	NO	1	(1)
	C	2	(2)
DO02	NO	3	(3)
	C	4	(4)
DO03	NO	5	(5)
	C	6	(6)
DO04	NO	7	(7)
	C	8	(8)
DO05	NO	9	(9)
	C	10	(10)
DO06	NO	11	(11)
	C	12	(12)
	NC	13	(13)
DO07	NO	14	(14)
	C	15	(15)
	NC	16	(16)
DO08	NO	17	(17)
	C	18	(18)
	NC	19	(19)
	PGND1	20	(20)
DO09	NO	21	(21)
	C	22	(22)
DO10	NO	23	(23)
	C	24	(24)
DO11	NO	25	(25)
	C	26	(26)
DO12	NO	27	(27)
	C	28	(28)
DO13	NO	29	(29)
	C	30	(30)
DO14	NO	31	(31)
	C	32	(32)
	NC	33	(33)
DO15	NO	34	(34)
	C	35	(35)
	NC	36	(36)
DO16	NO	37	(37)
	C	38	(38)
	NC	39	(39)
	PGND2	40	(40)

MOTOROLA WIRED CABLE BRAID & 40 WAY TB HOLDER

DO1

		2A	1
			2
DO01	(1)		3
DO01+	(2)		4
DO02	(3)		5
DO02+	(4)		6
DO03	(5)		7
DO03+	(6)		8
DO04	(7)		9
DO04+	(8)		10
DO05	(9)		11
DO05+	(10)		12
DO06NO	(11)		13
DO06+	(12)		14
DO06NC	(13)		15
DO07NO	(14)		16
DO07+	(15)		17
DO07NC	(16)		18
DO08NO	(17)		19
DO08+	(18)		20
DO08NC	(19)		21
DO09	(21)		22
DO09+	(22)		23
DO10	(23)		24
DO10+	(24)		25
DO11	(25)		26
DO11+	(26)		27
DO12	(27)		28
DO12+	(28)		29
DO13	(29)		30
DO13+	(30)		31
DO14NO	(31)		32
DO14+	(32)		33
DO14NC	(33)		34
DO15NO	(34)		35
DO15+	(35)		36
DO15NC	(36)		37
DO16NO	(37)		38
DO16+	(38)		39
DO16NC	(39)		40
			41
			42
			43
			44
			45
			46
			47
			48
			49
			50
			51
			52
			53
			54
			55
			56
			57
			58
			59

CONT ON SHEET 12

M+ 0

M- V

DO01 Gy

DO01- Gy

DO02 Gy

DO02- Gy

DO03 Gy

DO03-

DO05 Gy

DO05-

LINK BARS

TO INSULATED INSTRUMENT EARTH

CONT ON SHEET 14

PUMP 1
STARTER COMPARTMENT
REFER SHEET 02

DO01 1K20
DO01- PUMP 1 RUN COMMAND
REFER 02:E14

DO02 1K21
DO02- PUMP 1 FAULT RESET
REFER 02:E14

DO03 1K22
DO03- PUMP 1 EMERGENCY MODE INTERRUPT
REFER 02:E14

COMMON COMPARTMENT

DO05 ETR
DO05- ELECTRODE TEST RELAY
REFER 08:G4

POINT TO POINT TEST
J & P RICHARDSON IND.
NAME: ANDREW VARY LICENCE: 756
DATE: 29-4-13
SIGNATURE:

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 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.
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DRAFTED	P.HAGUE	Original Signed by P.HAGUE	6-1-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0310set_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
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
RTU DIGITAL OUTPUTS
TERMINATION DIAGRAM
SHEET 1 OF 2

SHEET No. 13

Queensland Urban Utilities DRAWING No. 486/5/7-0310-013

AMEND. A

S10 TEMPLATE SP-JP Ver12

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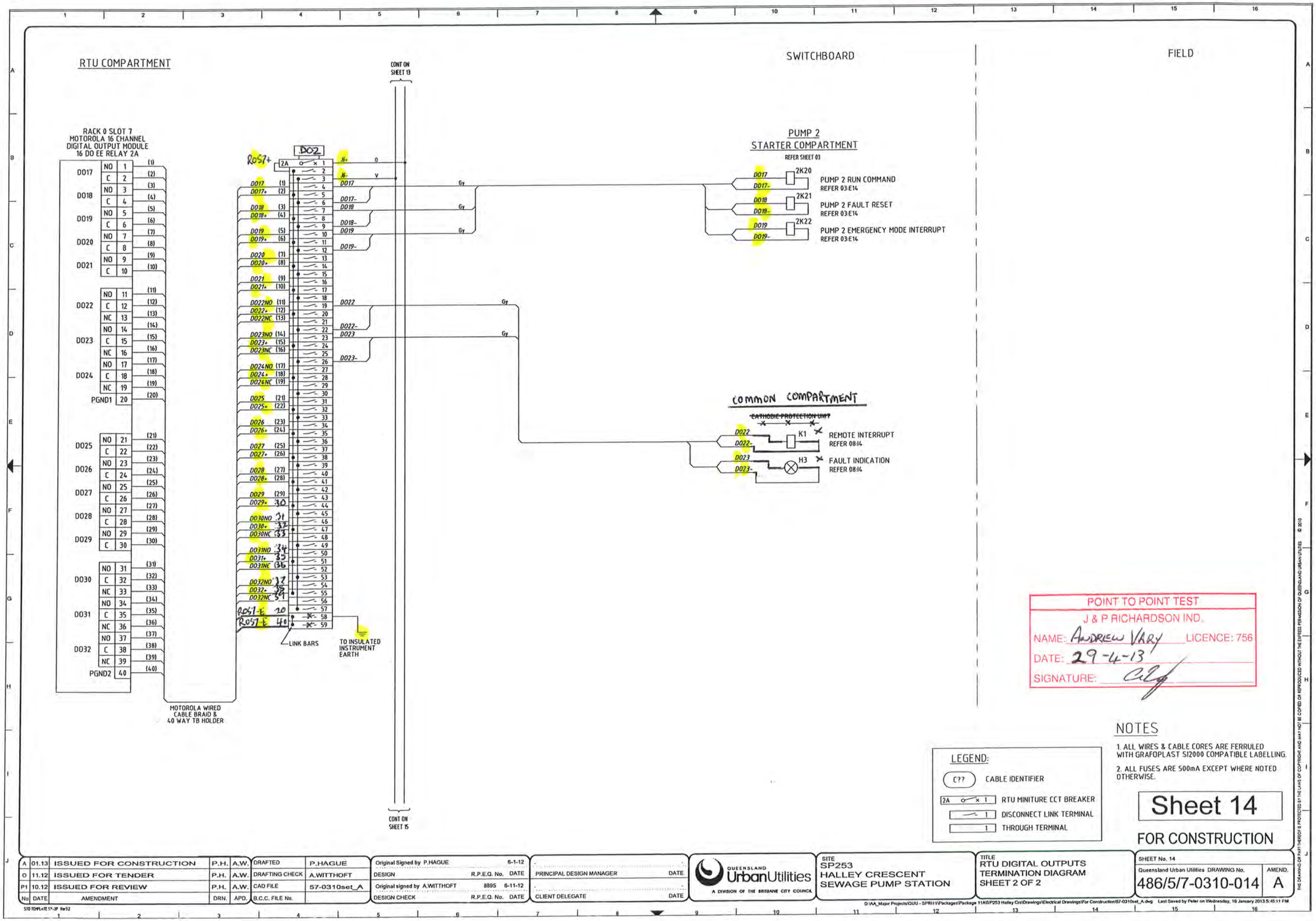
04-04-13


RTU COMPARTMENT
SWITCHBOARD
FIELD
RACK 0 SLOT 7
MOTOROLA 16 CHANNEL
DIGITAL OUTPUT MODULE
16 DO EE RELAY 2A
DO17
DO18
DO19
DO20
DO21
DO22
DO23
DO24
PGND1
DO25
DO26
DO27
DO28
DO29
DO30
DO31
DO32
PGND2
MOTOROLA WIRED
CABLE BRAID &
40 WAY TB HOLDER
DO2
CONT ON
SHEET 13
CONT ON
SHEET 15
LINK BARS
TO INSULATED
INSTRUMENT
EARTH
PUMP 2
STARTER COMPARTMENT
REFER SHEET 03
2K20
PUMP 2 RUN COMMAND
REFER 03:E14
2K21
PUMP 2 FAULT RESET
REFER 03:E14
2K22
PUMP 2 EMERGENCY MODE INTERRUPT
REFER 03:E14
COMMON COMPARTMENT
CATHODIC PROTECTION UNIT
K1
REMOTE INTERRUPT
REFER 08:14
H3
FAULT INDICATION
REFER 08:14
POINT TO POINT TEST
J & P RICHARDSON IND.
NAME: ANDREW VARY
LICENCE: 756
DATE: 29-4-13
SIGNATURE:
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 14
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
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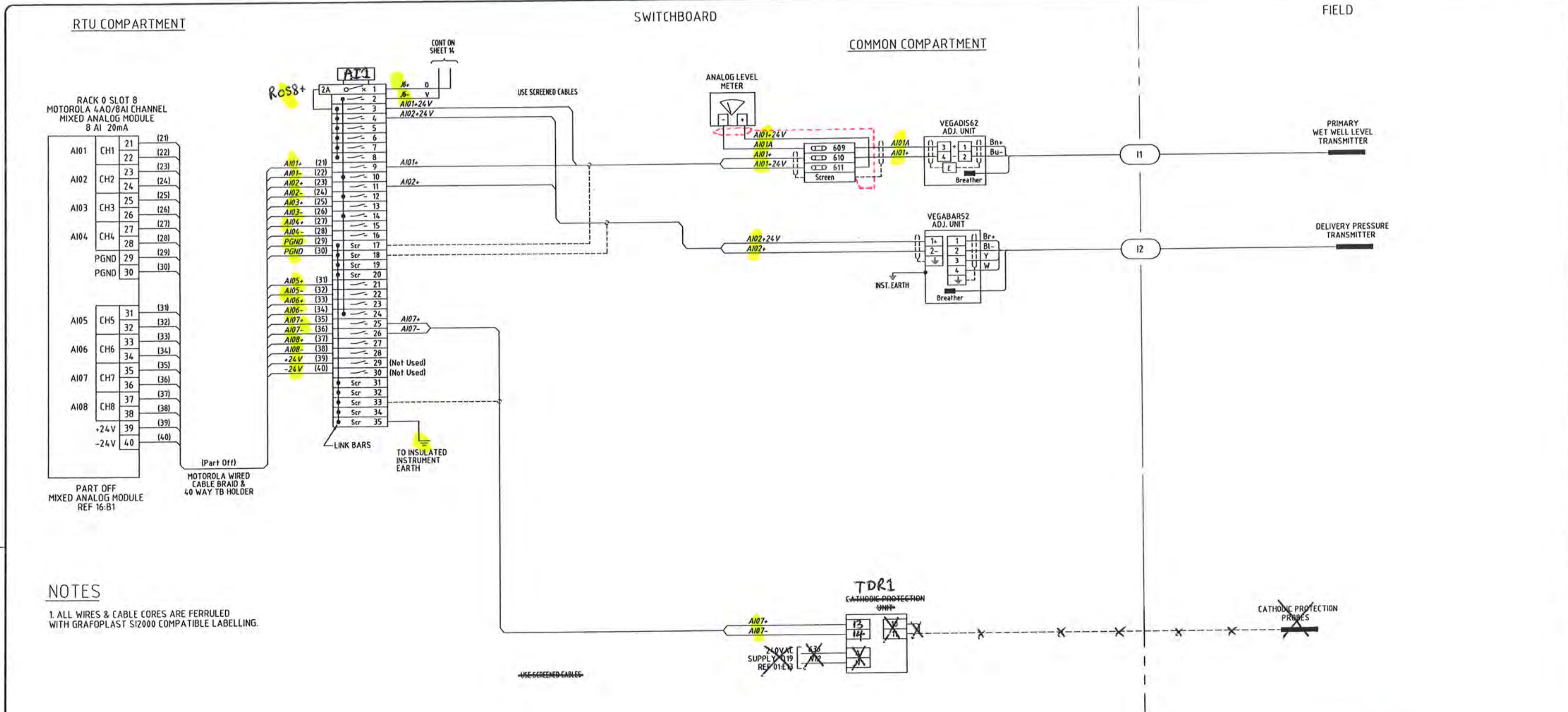
CLIENT DELEGATE DATE
QUEENSLAND UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL
SITE
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION
TITLE
RTU DIGITAL OUTPUTS
TERMINATION DIAGRAM
SHEET 2 OF 2
SHEET No. 14
Queensland Urban Utilities DRAWING No.
486/5/7-0310-014
AMEND.
A

04-04-13



NOTES

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

POINT TO POINT TEST
J & P RICHARDSON IND.
NAME: Andrew Vary LICENCE: 756
DATE: 29-4-13
SIGNATURE: [signature]

LEGEND:

- (??) CABLE IDENTIFIER
- 2A RTU MINITURE CCT BREAKER
- DISCONNECT LINK TERMINAL
- 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: 57-0310set_A
B.C.C. FILE No.

Original Signed by P.HAGUE 6-1-12
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
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
RTU ANALOG INPUTS
TERMINATION DIAGRAM

SHEET No. 15
Queensland Urban Utilities DRAWING No.
486/5/7-0310-015
AMEND. A

STD TEMPLATE SP-2P Ver3.2

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22-2-13

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 Ret1	2	(2)
	Iout1	3	(3)
	PGND1	4	(4)
	PGND1	5	(5)
AO02	Vout2	6	(6)
	CH2 Ret2	7	(7)
	Iout2	8	(8)
	PGND1	9	(9)
	PGND1	10	(10)
AO03	Vout3	11	(11)
	CH3 Ret3	12	(12)
	Iout3	13	(13)
	PGND1	14	(14)
	PGND1	15	(15)
AO04	Vout4	16	(16)
	CH4 Ret4	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

POINT TO POINT TEST
J & P RICHARDSON IND.
NAME: ANDREW VARY LICENCE: 756
DATE: 29-4-13
SIGNATURE:

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.
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	6-1-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0310set_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
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
RTU ANALOG OUTPUTS
TERMINATION DIAGRAM

SHEET No. 16

Queensland Urban Utilities DRAWING No. 486/5/7-0310-016

AMEND. A

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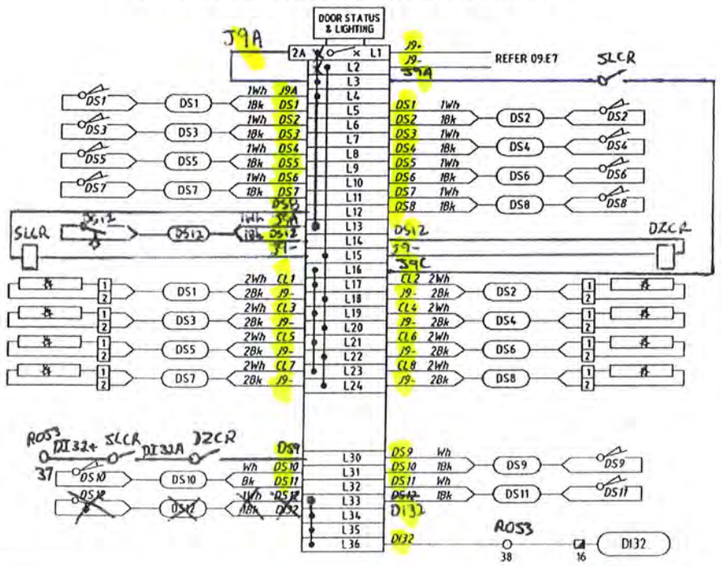
STD TEMPLATE SP-2F Ver12

22-2-13

SWITCHBOARD INTERNAL LIGHTING AND SECURITY



POINT TO POINT TEST
J & P RICHARDSON IND.
NAME: ANDREW VARY LICENCE: 756
DATE: 29-4-13
SIGNATURE:

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.
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DRAFTED	P.HAGUE	Original Signed by P.HAGUE	6-1-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0310set_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
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
COMMON CONTROLS
TERMINATION DIAGRAM

SHEET No. 17
Queensland Urban Utilities DRAWING No. 486/5/7-0310-017
AMEND. A

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STD TEMPLATE SP-2P Ver12

04-04-13

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/32	-	Set Ir=0.63 (20.2A) Im=6 (192A)
5	1	Q5 PUMP2 CIRCUIT BREAKER + T2HS Handle	TERASAKI	S125GJ/32	-	Set Ir=0.63 (20.2A) Im=6 (192A)
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 CATHODIC PROTECTION POWER SUPPLY	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 ~~DC~~-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 ~~DBL~~ ELEC.	~~DLAH6~~ 165E12	-	INSULATED c/w E FEET
46	1	MAIN EARTH LINK	DORE ~~DBL~~ ELEC.	~~DLAHE6~~ 165E12	-	
47	1	DIST. BD NEUTRAL LINK	DORE ~~DBL~~ ELEC.	~~20LA18~~ 165E24	-	INSULATED c/w E FEET
48	1	DIST. BD EARTH LINK	DORE ~~DBL~~ ELEC.	~~20LAE18~~ 165E24	-	
49	~~1~~	~~SURGE DIVERTER NEUTRAL LINK~~	~~CLIPSAL~~	~~L5A~~	-	~~INSULATED~~
50	1	INSTRUMENT EARTH LINK	CLIPSAL ~~DBL ELEC.~~	~~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		(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-~~N37~~ NW	/	+ 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	1	CATHODIC PROTECTION UNIT	SWBD BUILDER	SHEET 25	K	
131					S	
132					H	
133	1	PRIMARY WET WELL LEVEL PROBE	VEGA - VEGAWELL52	WL52XXA4ALD1DD1X	-	SET RANGE TO =2.5m
134	1	PRIMARY WET WELL LEVEL ADJUSTMENT UNIT	VEGA - VEGADIS62	DIS62XXKMAXX	-	
135					G	
136					-	
137	1	DELIVERY PRESSURE TRANSMITTER	VEGA VEGABAR52	BR52XXCA1FHPMAS L=12	U	RANGE = 50m
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					R	
141	1	PSTN MODEM 24V/9VDC CONVERTER	POWERBOX	PBBA-2409F-CM-CC	I	
142	2	BATTERIES - INCLUDING SPILL TRAYS	YUASA	UXH50-12	-	
143					R	
144					R	
145					R	
146	1	TELEMETRY UNIT	MOTOROLA	ACE - 3600	-	
147	1	PSTN MODEM	WOOMERA	56K V.90		
148	1	PSTN MODEM SURGE PROTECTION UNIT	CRITEC	SLP1-RJ11-A		
150	1	GRAPHIC DISPLAY	REDLION	G306A000		
153	1	GSM MODEM	WAVECOM	FASTRACK Supreme	I	c/w 5 M Cable
156	1	GSM CELLULAR TRANSIT ANTENNA	RF INDUSTRIES	TLA2000	I	
157					R	
158					R	
159					R	
160					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	6	CATHODIC PROTECTION PROBE TERMINALS	PHOENIX CONTACT	UIK16	-	$16mm^2$ Capacity
166	14	CATHODIC PROTECTION TEST TERMINALS + TEST SOCKET	PHOENIX CONTACT	UK6N + PSB4	-	$6mm^2$ Capacity
169		EARTH TERMINALS	PHOENIX CONTACT			
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: 57-0310set_A
B.C.C. FILE No.

DESIGN: Original Signed by P.HAGUE — R.P.E.Q. No. — DATE 6-1-12
DESIGN CHECK: Original signed by A.WITTHOFT — R.P.E.Q. No. 8895 — DATE 6-11-12
PRINCIPAL DESIGN MANAGER — DATE
CLIENT DELEGATE — DATE

QUEENSLAND UrbanUtilities — A DIVISION OF THE BRISBANE CITY COUNCIL

SITE: SP253 HALLEY CRESCENT SEWAGE PUMP STATION

TITLE: EQUIPMENT LIST

SHEET No. 18
Queensland Urban Utilities DRAWING No. 486/5/7-0310-018 — AMEND. A

STD TEMPLATE SP-3P Ver32

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CABLE No.	STATUS	SIZE	CORES	TYPE	LENGTH (m) Note 1	FROM	TO	CABLE FUNCTION	NOTES
P01	EXISTING	16mm²	4C	PVC/CU/PVC Note2		ENERGEX Supply PILLAR No ?	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	2.5mm²	3C+E+2pilots	Flexible (Submersible)		Switchboard - Pump De-Contactor	Pump No2	Pump 2 Motor Feed + Thermistors	
P23	NEW	2.5mm²	2C+E	PVC/CU/PVC		Switchboard	External Area Lights	Area Lighting	
C01	NEW	1.5mm²	2C	Vendor-020136FSP-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)	
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	

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

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.

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	6-1-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0310set_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
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
CABLE SCHEDULE

SHEET No. 19

Queensland Urban Utilities DRAWING No.
486/5/7-0310-019

AMEND.
A

STD TEMPLATE SP-2P Ver32

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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 32A	PUMP No2 32A	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	10 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	K	CATHODIC PROTECTION POWER SUPPLY CB	CATHODIC PROTECTION Q19		4mm 4mm	ABS PLASTIC W/B
20		3 PHASE OUTLET CIRCUIT BREAKER	30 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 Q04	PUMP No2 Q05 EM PUMPING Q018	4mm 4mm	ABS PLASTIC W/B
33		BATTERY CIRCUIT BREAKER	BATTERY Q08		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	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 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		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	EMGOT		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	Emergency Pumping Mode OFF ON	4mm	ABS PLASTIC W/B
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
130	K	CATHODIC PROTECTION UNIT	CATHODIC PROTECTION UNIT		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
141	I	MODEM 24V/9VDC CONVERTER	24/9 VDC CONVERTER - MODEM		4mm 4mm	ABS PLASTIC W/B
146		TELEMETRY UNIT	RTU		4mm	ABS PLASTIC W/B
147	I	MODEM	MODEM		4mm	ABS PLASTIC W/B
148	I	MODEM SURGE PROTECTION UNIT	MODEM SURGE PROTECTION		4mm	ABS PLASTIC W/B

ITEM #	OPT.	DESCRIPTION - INTERNAL LABEL	LABEL 1	LABEL 2 (IF NECESSARY)	TEXT HEIGHT	MATERIAL / COLOUR
153	I	MODEM	MODEM		4mm	ABS PLASTIC W/B
4OFF		ACCESS PLATE - DO NOT DRILL	INSPECTION PLATES DO NOT INSTALL GLANDS		6mm 4mm	W/B
165	K	CATHODIC PROTECTION TERMINALS	CP TERMINALS		4mm	ABS PLASTIC W/B
		TERMINAL HEADER	SWITCHBOARD LIGHTING			
		TERMINAL HEADER	24VDC POWER DISTRIBUTION	DIGITAL INPUTS DI1-4	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 (Inconer 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 LINK WHEN SWITCHBOARD ENERGISED FROM GENERATOR~~	Refer Sheet 01 Note 10	4mm 4mm	ABS PLASTIC R/W
204	~~43~~	~~CATHODIC PROTECTION CONNECTION~~	~~CATHODIC PROTECTION~~		~~4mm 4mm~~	~~ABS PLASTIC W/B~~
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						

EXTERNAL DOOR LABEL LIST

LABEL	TEXT	TEXT HEIGHT	PAINT FILL LETTERING	QTY
A	SP253	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

ITEM #	DPT.	DESCRIPTION - INTERNAL LABEL	LABEL 1	TEXT HEIGHT (LABEL 2 IF NECESSARY)	MATERIAL / COLOUR
131.1		CATHODIC PROTECTION DIODE BRIDGE	BD1	4mm	ABS PLASTIC W/B
131.2		CATHODIC PROTECTION DC OUTPUT FUSE	F1 20/4A	4mm	ABS PLASTIC W/B
131.3		CATHODIC PROTECTION POWER ON INDICATOR	POWER ON	4mm	ABS PLASTIC W/B
131.4		CATHODIC PROTECTION INTERUPT INDICATOR	INTERUPT	4mm	ABS PLASTIC W/B
131.5		CATHODIC PROTECTION FAULT INDICATOR	FAULT	4mm	ABS PLASTIC W/B
131.6		CATHODIC PROTECTION INTERUPT RELAY	K1	4mm	ABS PLASTIC W/B
131.7		CATHODIC PROTECTION LOCAL INTERUPT P/B	INTERUPT	4mm	ABS PLASTIC W/B
131.8		CATHODIC PROTECTION FAULT RESET P/B	RESET	4mm	ABS PLASTIC W/B
131.9		CATHODIC PROTECTION TRANSDUCER	TDR1	4mm	ABS PLASTIC W/B
131.10		CATHODIC PROTECTION TRANSFORMER	T1	4mm	ABS PLASTIC W/B

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	6-1-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0310set_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: SP253 HALLEY CRESCENT SEWAGE PUMP STATION

TITLE: SWITCHBOARD LABEL SCHEDULE

SHEET No. 20

Queensland Urban Utilities DRAWING No. 486/5/7-0310-020 AMEND. A

Sheet 20
FOR CONSTRUCTION

STD TEMPLATE SP-JP Ver32

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09-04-13

CONSTRUCTION – EXTERNAL SWITCHBOARD

Cubicle construction 3mm Marine grade Aluminium (5251).
Plinth construction ~~75x60~~ 80x40 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

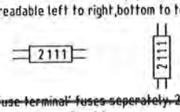
Locks Door 10
DORE ELECTRICS - Swing Handle SHPSS Padlockable - 316
DORE ELECTRICS - 3 point lock rod set – TLR24
ENERGEX padlock, S/Steel Shackle, 45mm brass pin tumbler.
Energex Key No325. c/w 2 keys.

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 (DD SECTION Form 2)

WIRING – Control

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 V90 0.6/1kV 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

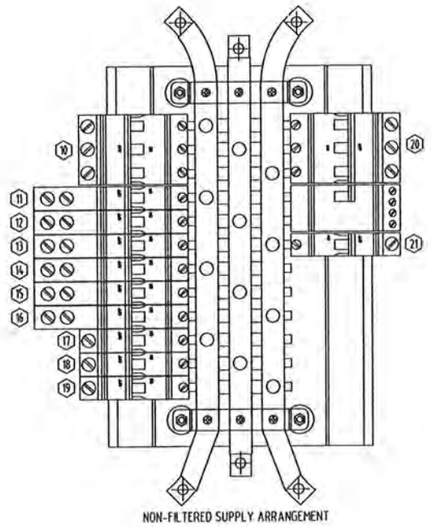
Aluminium Surface Preparation.
Finish smooth all exposed welds, clean, descale, and degrease all surfaces.
Surfaces pretreatment in accordance with AS 1580 & AS 3715 using Novox LF acid etch cleaner, Novacoat 12 conversion coating, & clean water rinses.
Apply DULUX ALPHATECH 3000 powder coat to manufacturer's 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.

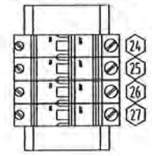
Main switch label	MAIN SWITCH 400A	10mm / 4mm	Material ABS PLASTIC Colour B/W
Pump CB labels	PUMP No1 250A	6mm / 4mm	Material ABS PLASTIC Colour W/B
Compartment labels	RTU	10mm	Material Stainless Steel
E/Stop labels	EMERGENCY STOP	4mm	Material ABS PLASTIC Colour Y/B
Warning labels	DANGER 415V ISOLATE 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 57-0310set_A
B.C.C. FILE No.

Original Signed by P.HAGUE 6-1-12
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
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
SWITCHBOARD
CONSTRUCTION DETAILS
SHEET 1 OF 3

SHEET No. 21
Queensland Urban Utilities DRAWING No. 486/5/7-0310-021
AMEND. A

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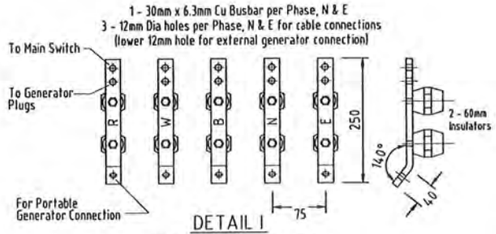
27-2-13

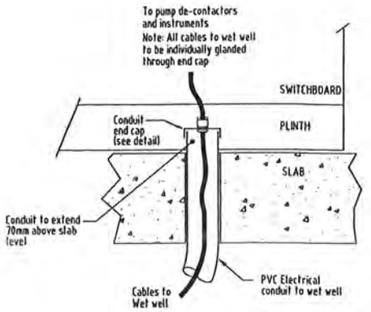
ESCUTCHEON LAYOUT DETAIL V

ESCUTCHEON LAYOUT DETAIL X

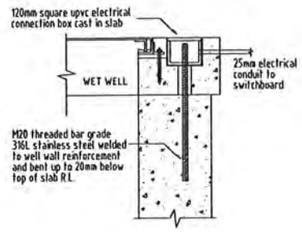
Allow for all equipment to clear mullions



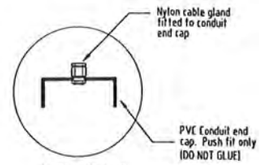
DETAIL I
(GENERATOR BOLTED CONNECTION)
(FIT SHROUD AND LABEL)



DETAIL W
(WET WELL CONDUIT SEALING DETAIL)

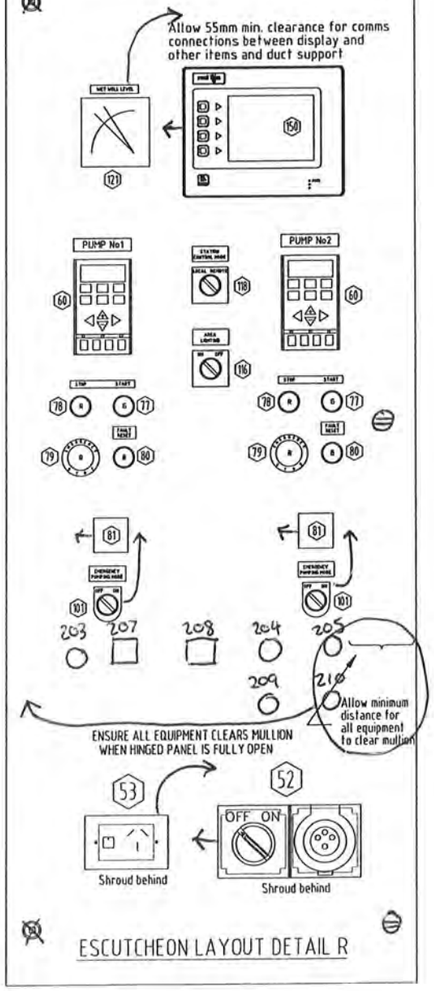


DETAIL Y
(REINFORCING CONNECTION BOX DETAIL)



(END CAP DETAIL)

ESCUTCHEON LAYOUT DETAIL U

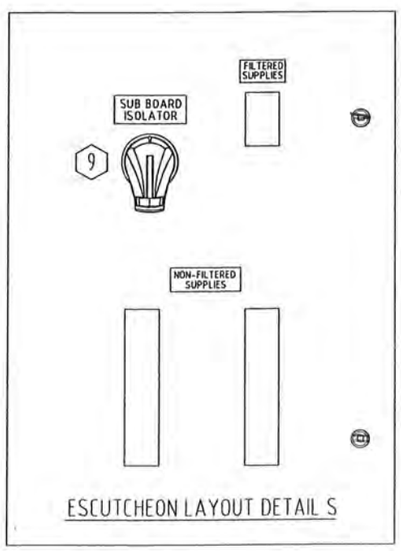


ESCUTCHEON LAYOUT DETAIL R

DUPLICATE FOR PUMPS 1 & 2

ESCUTCHEON LAYOUT DETAIL T

NOTE:
ALL ESCUTCHEONS
TO OPEN 90° min.



ESCUTCHEON LAYOUT DETAIL S

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	57-0310set_A
B.C.C. FILE No.	

Original Signed by P.HAGUE 6-1-12
DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8695 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
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
SWITCHBOARD
CONSTRUCTION DETAILS
SHEET 2 OF 3

SHEET No. 22
Queensland Urban Utilities DRAWING No. 486/5/7-0310-022
AMEND. A

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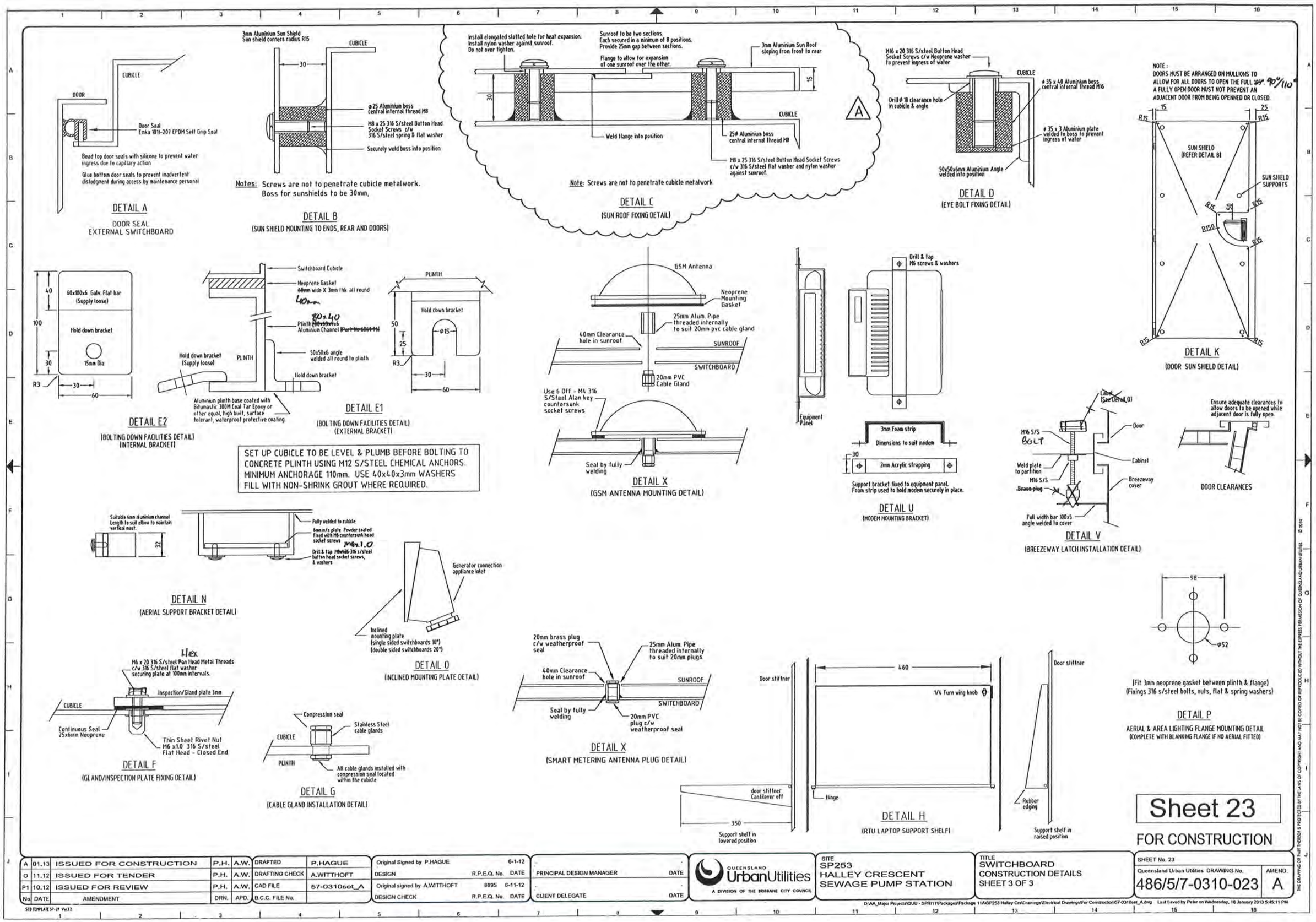
CUBICLE
DOOR
Door Seal
Emka 1011-207 EPDM Self Grip Seal
Bead top door seals with silicone to prevent water ingress due to capillary action
Glue bottom door seals to prevent inadvertent dislodgment during access by maintenance personal
DETAIL A
DOOR SEAL
EXTERNAL SWITCHBOARD
3mm Aluminium Sun Shield
Sun shield corners radius R15
CUBICLE
30
ø25 Aluminium boss
central internal thread M8
M8 x 25 316 S/steel Button Head
Socket Screws c/w
316 S/steel spring & flat washer
Securely weld boss into position
Notes: Screws are not to penetrate cubicle metalwork.
Boss for sunshields to be 30mm.
DETAIL B
(SUN SHIELD MOUNTING TO ENDS, REAR AND DOORS)
Install elongated slotted hole for heat expansion.
Install nylon washer against sunroof.
Do not over tighten.
Sunroof to be two sections.
Each secured in a minimum of 8 positions.
Provide 25mm gap between sections.
Flange to allow for expansion
of one sunroof over the other.
3mm Aluminium Sun Roof
sloping from front to rear
30
15
CUBICLE
Weld flange into position
25ø Aluminium boss
central internal thread M8
M8 x 25 316 S/steel Button Head Socket Screws
c/w 316 S/steel flat washer and nylon washer
against sunroof.
Note: Screws are not to penetrate cubicle metalwork
DETAIL C
(SUN ROOF FIXING DETAIL)
A
M16 x 20 316 S/steel Button Head
Socket Screws c/w Neoprene washer
to prevent ingress of water
CUBICLE
Drill ø 18 clearance hole
in cubicle & angle
ø 35 x 40 Aluminium boss
central internal thread M16
ø 35 x 3 Aluminium plate
welded to boss to prevent
ingress of water
50x50x6mm Aluminium Angle
welded into position
DETAIL D
(EYE BOLT FIXING DETAIL)
NOTE :
DOORS MUST BE ARRANGED ON MULLIONS TO
ALLOW FOR ALL DOORS TO OPEN THE FULL 180°. 90°/110°
A FULLY OPEN DOOR MUST NOT PREVENT AN
ADJACENT DOOR FROM BEING OPENNED OR CLOSED.
15
25
R15
SUN SHIELD
(REFER DETAIL B)
SUN SHIELD
SUPPORTS
50
R150
DETAIL K
(DOOR SUN SHIELD DETAIL)
40
100
60x100x6 Galv. Flat bar
(Supply loose)
Hold down bracket
15mm Dia
30
R3
30
60
DETAIL E2
(BOLTING DOWN FACILITIES DETAIL)
(INTERNAL BRACKET)
Switchboard Cubicle
Neoprene Gasket
40mm wide X 3mm thk all round
40mm
80x40
Plinth 100x50x6
Aluminium Channel (Part No 6061-T6)
50x50x6 angle
welded all round to plinth
Hold down bracket
(Supply loose)
PLINTH
Hold down bracket
Aluminium plinth base coated with
Bitumastic 300M Coal Tar Epoxy or
other equal, high built, surface
tolerant, waterproof protective coating.
PLINTH
Hold down bracket
50
25
ø15
R3
30
60
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.
GSM Antenna
Neoprene
Mounting
Gasket
25mm Alum. Pipe
threaded internally
to suit 20mm pvc cable gland
40mm Clearance
hole in sunroof
SUNROOF
SWITCHBOARD
20mm PVC
Cable Gland
Use 6 Off - M4 316
S/Steel Alan key
countersunk
socket screws
Seal by fully
welding
DETAIL X
(GSM ANTENNA MOUNTING DETAIL)
Equipment
Panel
Drill & tap
M6 screws & washers
3mm Foam strip
Dimensions to suit modem
30
2mm Acrylic strapping
Support bracket fixed to equipment panel.
Foam strip used to hold modem securely in place.
DETAIL U
(MODEM MOUNTING BRACKET)
L30x4
(See Detail G)
Door
M16 S/S
BOLT
Cabinet
Weld plate
to partition
M16 S/S
Breezeway
cover
Brass plug
Full width bar 100x5
angle welded to cover
DETAIL V
(BREEZEWAY LATCH INSTALLATION DETAIL)
Ensure adequate clearances to
allow doors to be opened while
adjacent door is fully open.
DOOR CLEARANCES
Suitable 6mm aluminium channel
Length to suit elbow to maintain
vertical mast.
32
Fully welded to cubicle
6mm s/s plate Powder coated
Fixed with M6 countersunk head
socket screws M6x1.0
Drill & tap M6x1.0-316 s/steel
button head socket screws,
& washers
DETAIL N
(AERIAL SUPPORT BRACKET DETAIL)
Generator connection
appliance inlet
Inclined
mounting plate
(single sided switchboards 10°)
(double sided switchboards 20°)
DETAIL O
(INCLINED MOUNTING PLATE DETAIL)
Flex
M6 x 20 316 S/steel Pan Head Metal Threads
c/w 316 S/steel flat washer
securing plate at 100mm intervals.
Inspection/Gland plate 3mm
CUBICLE
Continuous Seal
25x6mm Neoprene
Thin Sheet Rivet Nut
M6 x1.0 316 S/steel
Flat Head - Closed End
DETAIL F
(GLAND/INSPECTION PLATE FIXING DETAIL)
Compression seal
Stainless Steel
cable glands
CUBICLE
PLINTH
All cable glands installed with
compression seal located
within the cubicle
DETAIL G
(CABLE GLAND INSTALLATION DETAIL)
20mm brass plug
c/w weatherproof
seal
25mm Alum. Pipe
threaded internally
to suit 20mm plugs
40mm Clearance
hole in sunroof
SUNROOF
SWITCHBOARD
Seal by fully
welding
20mm PVC
plug c/w
weatherproof seal
DETAIL X
(SMART METERING ANTENNA PLUG DETAIL)
Door stiffner
460
1/4 Turn wing knob
door stiffner
Cantilever off
350
Hinge
Support shelf in
lowered position
DETAIL H
(RTU LAPTOP SUPPORT SHELF)
Door stiffner
Rubber
edging
Support shelf in
raised position
98
ø52
(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)
Sheet 23
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 57-0310set_A
B.C.C. FILE No.
Original Signed by P.HAGUE 6-1-12
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
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION
TITLE
SWITCHBOARD
CONSTRUCTION DETAILS
SHEET 3 OF 3
SHEET No. 23
Queensland Urban Utilities DRAWING No.
486/5/7-0310-023
AMEND.
A
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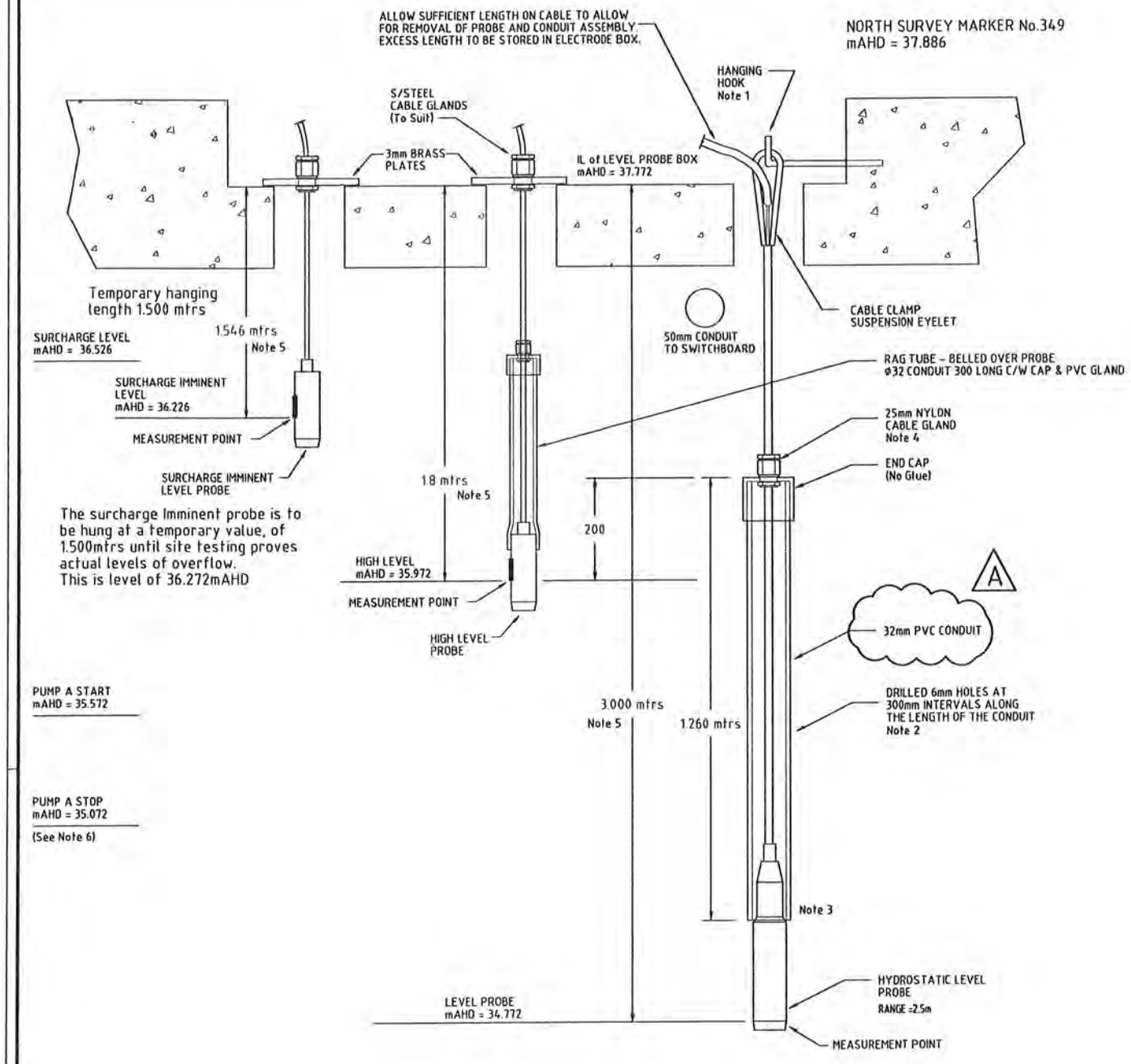
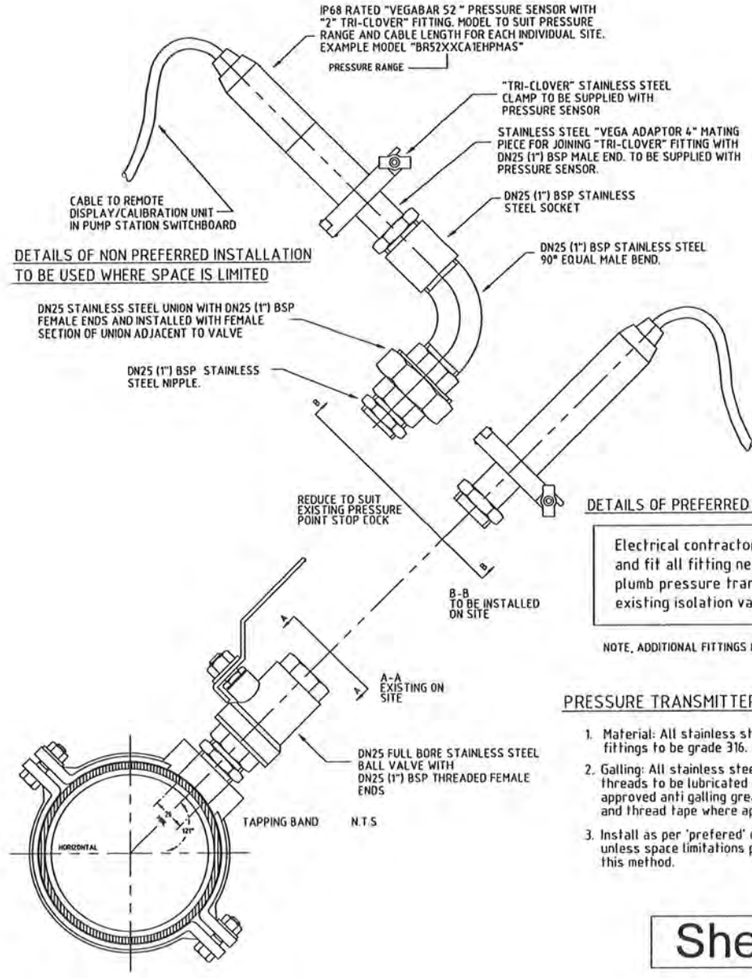
04-04-13





	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.
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 57-0310set_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
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
FIELD INSTRUMENTATION
INSTALLATION DETAILS

SHEET No. 24
Queensland Urban Utilities DRAWING No. 486/5/7-0310-024
AMEND. A

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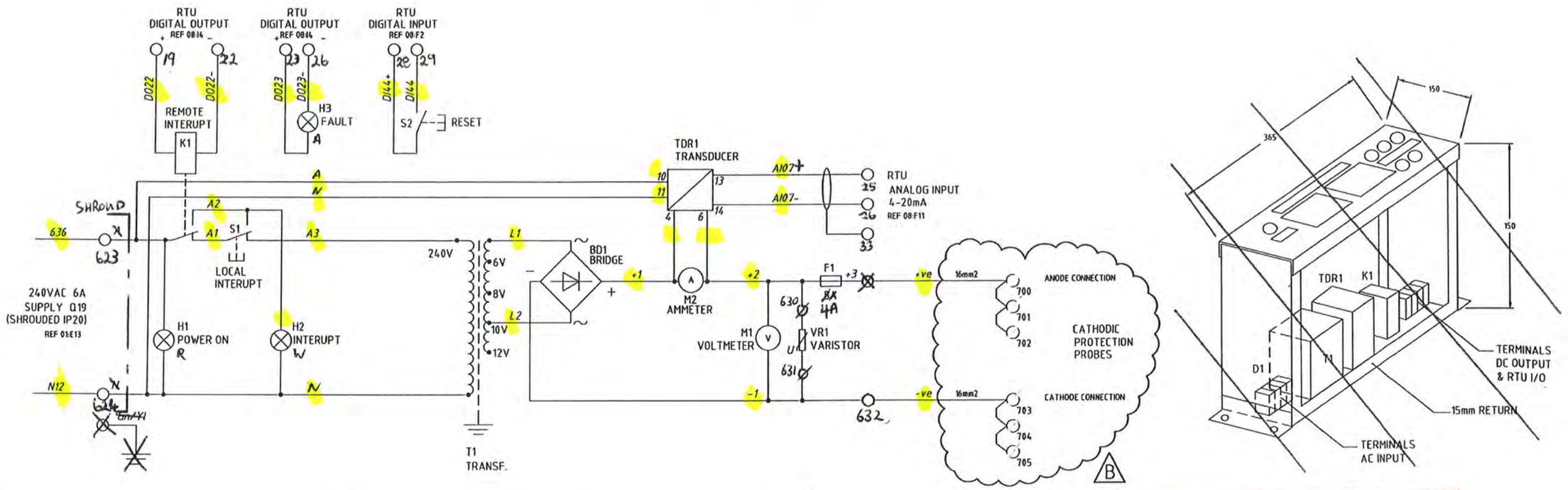
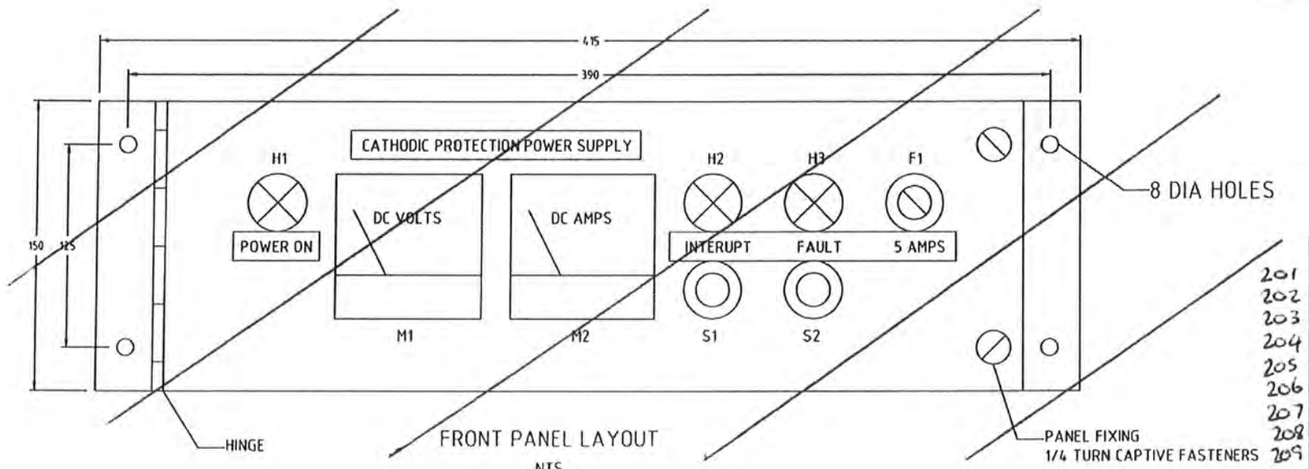
OPTION K





FRONT PANEL LAYOUT
NTS

LEGEND:
Ø SWITCHBOARD CONTROL TERMINAL
~~-O- CATHODIC PROTECTION UNIT TERM~~

POINT TO POINT TEST
J & P RICHARDSON IND.
NAME: ANDREW VARY LICENCE: 756
DATE: 29-4-13
SIGNATURE:

	ITEM	QTY	DESCRIPTION (RS _____ = RS COMPONENTS PART NUMBER)
201	BD1	1	DIODE BRIDGE SINGLE PHASE 35A 600V ISOLATED METAL BASE RS2278772
202	F1	1	DC CUTOUT FUSE 4A – NHP NV20FW + NNS4
203	H1	1	POWER INDICATOR 240VAC – S+S D7P-P4-PN7R
204	H2	1	INTERUPT INDICATOR 240VAC – S+S D7P-P7-PN7W
205	H3	1	FAULT INDICATOR 24VDC – S+S D7P-P0-PN3A
206	K1	1	REMOTE INTERUPT - RELAY 24VDC 2A CHANGEOVER + FW BASE RH2B-~~U~~-24VDC + SH2B-05C
207	M1	1	VOLTMETER 0-15 V RS 244-862 QLD
208	M2	1	AMMETER 0-5 A RS 244-907
209	S1	1	LOCAL INTERUPT - S+S D7P-F4-PX01
210	S2	1	FAULT RESET - S+S D7P-F6-PX10
211	TDR1	1	TRANSDUCER - MANN INDUSTRIES FTXDMV 0-150mV/4-20mA/240vAC
212	T1	1	TRANSFORMER - 240VAC PRIM/6,8,10,12VAC SEC 60VA
213	VR1	1	VARISTOR - SURGE SUPPRESSOR RS (CLAMP 76V10Ap) (31VDC CONTINUOUS)
214.1	-	6	TERMINALS 16mm² – PHOENIX – UT16 3044199
214.2		2	TERMINAL END PLATE – PHOENIX D-UT16 3047206 RS 543-5215
214.3		4	TERMINAL PLUG IN BRIDGE – PHOENIX FBS2-12 3005950

Sheet 25

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.

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DRAFTING CHECK A.WITTHOFT
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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
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
CATHODIC PROTECTION UNIT
CONSTRUCTION & WIRING DIAGRAM

SHEET No. 25
Queensland Urban Utilities DRAWING No. 486/5/7-0310-025
AMEND. A

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04-04-13

FRONT ELEVATION
DOORS & SHIELDS REMOVED

LEFT HAND ELEVATION
SHIELDS REMOVED

RIGHT HAND ELEVATION

FRONT ELEVATION

Sheet 27

FOR CONSTRUCTION

A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.	DRAFTED	P.HAGUE	Original Signed by P.HAGUE 6-1-12	.	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	.	CLIENT DELEGATE DATE
P1	10.12	ISSUED FOR REVIEW	P.H.	A.W.	CAD FILE	57-0310set_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		

QUEENSLAND UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
SWITCHBOARD
GENERAL ARRANGEMENT
ELEVATIONS

SHEET No. 27
Queensland Urban Utilities DRAWING No. 486/5/7-0310-027
AMEND. A

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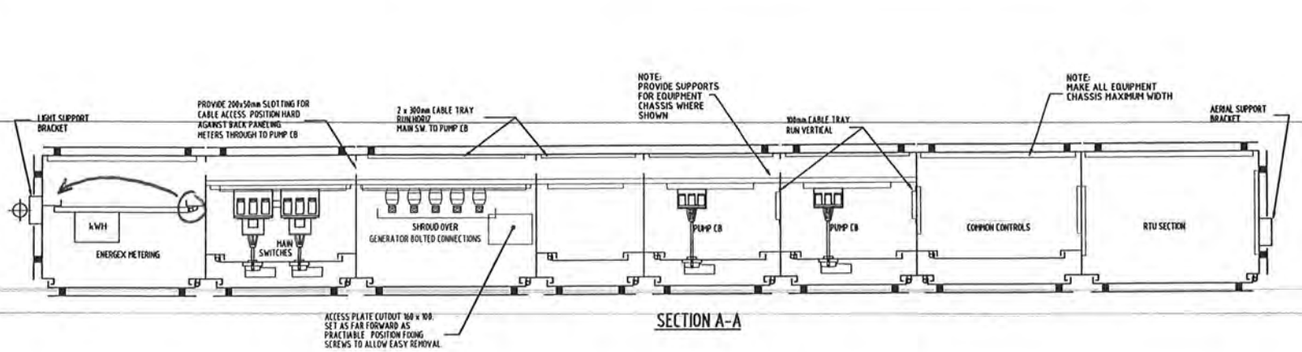
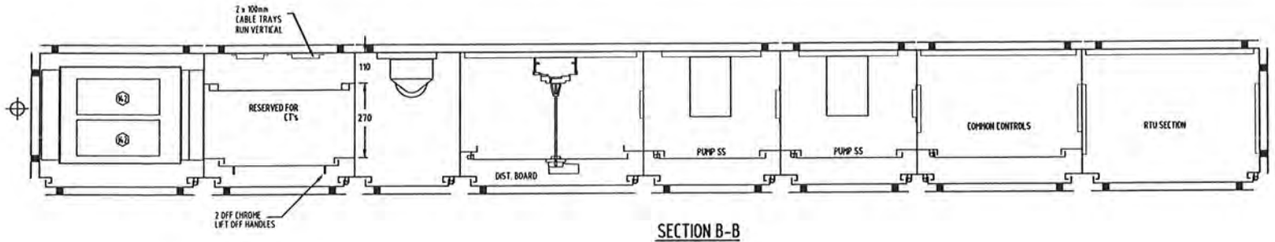
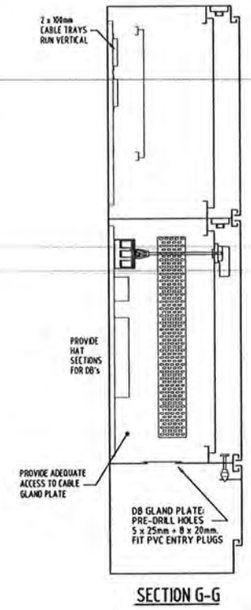
22-2-13



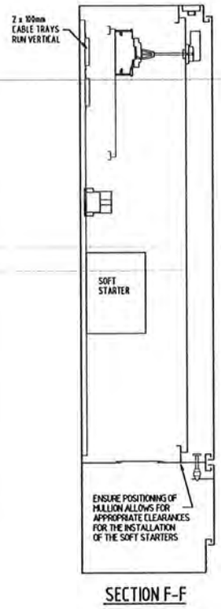
SECTION A-A



SECTION B-B



SECTION G-G



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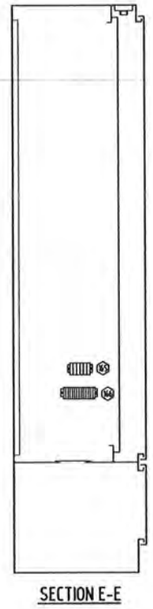
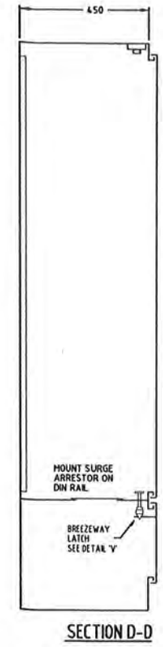
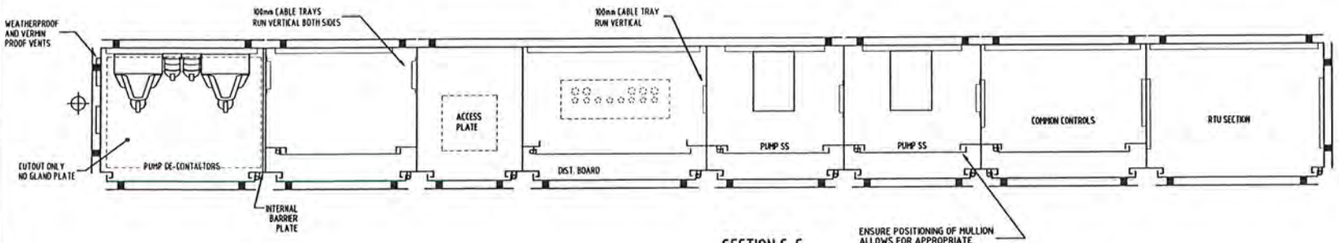


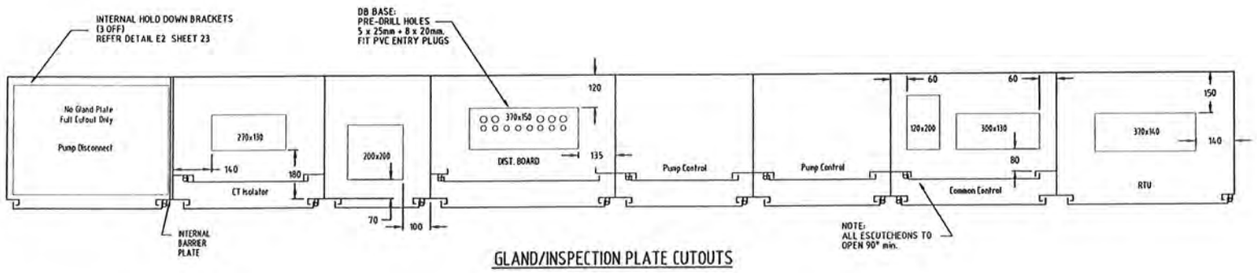
SECTION E-E



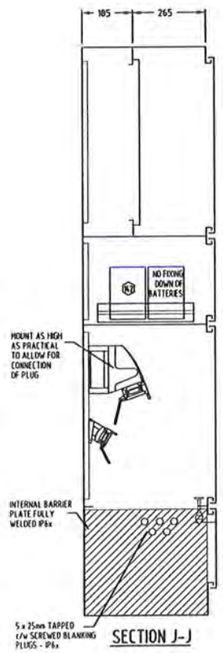
SECTION D-D



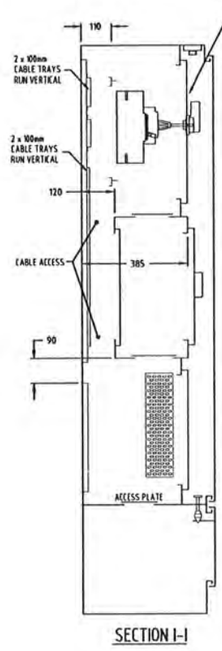
SECTION C-C



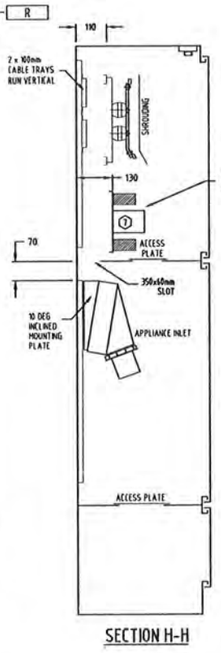
GLAND/INSPECTION PLATE CUTOUTS



SECTION J-J



SECTION I-I



SECTION H-H

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	57-0310set_A
B.C.C. FILE No.	

Original Signed by P.HAGUE			6-1-12
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
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
SWITCHBOARD
GENERAL ARRANGEMENT
SECTIONS

SHEET No. 28

Queensland Urban Utilities DRAWING No. 486/5/7-0310-028

AMEND. A

STD TEMPLATE SP-2P Ver3.2

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27-2-13

5 "AS INSTALLED" RED PENNED DRAWINGS

QUEENSLAND Urban Utilities

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: 12/6/13

SP253 HALLEY CRESCENT SEWAGE PUMPING STATION

SITE COVER SHEET

ELECTRICAL DRAWINGS INDEX

DWG N°.	TITLE	SHEET	REVISIONS
486/5/7-0310-000	SITE COVER SHEET	00	P1 0 A
486/5/7-0310-001	POWER DISTRIBUTION SCHEMATIC DIAGRAM	01	P1 0 A
486/5/7-0310-002	PUMP 01 SCHEMATIC DIAGRAM	02	P1 0 A
486/5/7-0310-003	PUMP 02 SCHEMATIC DIAGRAM	03	P1 0 A
486/5/7-0310-004	*RESERVED FOR PUMP 03 SCHEMATIC DIAGRAM*	04	
486/5/7-0310-005	*RESERVED (DRY WELL SUMP & EM STORAGE DEWATERING PUMP)*	05	
486/5/7-0310-006	*RESERVED (GENERATOR CONTROL)*	06	
486/5/7-0310-007	COMMON CONTROLS SCHEMATIC DIAGRAM	07	P1 0 A
486/5/7-0310-008	COMMON RTU I/O SCHEMATIC DIAGRAM	08	P1 0 A
486/5/7-0310-009	RTU POWER DISTRIBUTION SCHEMATIC DIAGRAM	09	P1 0 A
486/5/7-0310-010	RTU DIGITAL INPUTS TERMINATION DIAGRAM - SHEET 1 OF 3	10	P1 0 A
486/5/7-0310-011	RTU DIGITAL INPUTS TERMINATION DIAGRAM - SHEET 2 OF 3	11	P1 0 A
486/5/7-0310-012	RTU DIGITAL INPUTS TERMINATION DIAGRAM - SHEET 3 OF 3	12	P1 0 A
486/5/7-0310-013	RTU DIGITAL OUTPUTS TERMINATION DIAGRAM - SHEET 1 OF 2	13	P1 0 A
486/5/7-0310-014	RTU DIGITAL OUTPUTS TERMINATION DIAGRAM - SHEET 2 OF 2	14	P1 0 A
486/5/7-0310-015	RTU ANALOG INPUTS TERMINATION DIAGRAM	15	P1 0 A
486/5/7-0310-016	RTU ANALOG OUTPUTS TERMINATION DIAGRAM	16	P1 0 A
486/5/7-0310-017	COMMON CONTROLS TERMINATION DIAGRAM	17	P1 0 A
486/5/7-0310-018	EQUIPMENT LIST	18	P1 0 A
486/5/7-0310-019	CABLE SCHEDULE	19	P1 0 A
486/5/7-0310-020	SWITCHBOARD LABEL SCHEDULE	20	P1 0 A
486/5/7-0310-021	SWITCHBOARD CONSTRUCTION DETAILS - SHEET 1 of 3	21	P1 0 A
486/5/7-0310-022	SWITCHBOARD CONSTRUCTION DETAILS - SHEET 2 of 3	22	P1 0 A
486/5/7-0310-023	SWITCHBOARD CONSTRUCTION DETAILS - SHEET 3 of 3	23	P1 0 A
486/5/7-0310-024	FIELD INSTRUMENTATION - INSTALLATION DETAILS	24	P1 0 A
486/5/7-0310-025	CATHODIC PROTECTION UNIT - CONSTRUCTION AND WIRING DETAILS	25	P1 0 A
486/5/7-0310-026	*RESERVED (FIELD DISCONNECTION BOX)*	26	
486/5/7-0310-027	SWBD GENERAL ARRANGEMENT ELEVATIONS	27	P1 0 A
486/5/7-0310-028	SWBD GENERAL ARRANGEMENT SECTIONS	28	P1 0 A
486/5/7-0310-029	*RESERVED (GENERATOR EXTERNAL CONNECTION BOX)*	29	
486/5/7-0310-030	SWITCHBOARD SLAB - LOCALITY AND SITE PLANS - SHEET 1 of 3	30	P1 0 A
486/5/7-0310-031	SWITCHBOARD SLAB AND CONDUIT DETAILS - SHEET 2 of 3	31	P1 0 A
486/5/7-0310-032	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	32A S125GJ/32
PUMP2 CIRCUIT BREAKER	32A S125GJ/32
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	7.4kW 14A
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 2.5m
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	BRS2XXCA1FHPMAS L=12 50m
RADIO	*NOT APPLICABLE*
EMERGENCY PUMPING TIME	2.5 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 + PSTN	YES
J	PUMP CONNECTION (Via De-contactors)	YES
K	CATHODIC PROTECTION - (Intergrated in Swicthboard)	YES
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*	NO
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

Sheet 00

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DRAFTING CHECK	A.WITTHOFT
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B.C.C. FILE No.	

Original Signed by P.HAGUE 6-1-12
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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: SP253 HALLEY CRESCENT SEWAGE PUMP STATION

TITLE: SITE COVER SHEET

SHEET No. 0

Queensland Urban Utilities DRAWING No. 486/5/7-0310-000 AMEND. A

STD TEMPLATE SP-2P Ver3.2

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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

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
   RW
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
    RW
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

POWER CABLING ARRANGEMENT

(In Switchboard)
GENERATOR CONNECTION SOCKET (NOTE 8)
R W B N E
Note 9
Note 13
BOLTED CONNECTIONS (SHROUDED)
SWITCHBOARD RATING 125A 100A
MAX DEMAND 50A
3 PHASE 415VAC SUPPLY FEED FROM PILLAR No ? SERVICE FUSE 125A 6.9kA 16mm²
N R W B
METERING COMPARTMENT
SUPPLY AUTHORITY DIRECT METERING
FAULT LEVEL AT SWITCHBOARD 1.72kA
F1 63A 80kA
610 611 612
SD1,2,3
MEN LINK
ENERGEX MAINS POWER FAILURE RELAY REF 08A2
PFRE
601 602 603 N2
Q7 6A
GEN SUPPLY MAIN SWITCH 125A (NOTE1,2) Ir=0.5 (62.5A) Char=1
Q3
Note 11
GEN/N
MANUAL TRANSFER SWITCH
NORMAL SUPPLY MAIN SWITCH 125A (NOTE1,2) Ir=0.5 (62.5A) Char=1
Q2
Note 11
GEN/N
Direct Metering
Bolted Connections
MAINS CB 250A 125A
GEN CB 250A 125A
DGT DB 100A 63A
PUMP 2 CB 100A 32A
PUMP 1 CB 100A 32A
PUMP 2 SSC
PUMP 1 SSC
STATION MAINS POWER FAILURE RELAY REF 08B2
PFRS
620 621 622 N3
Q10 6A
15A GPO delay 63
630 N4 Q11 16A N-Q11
LAPTOP GPO - TWIN
631 N5 Q12 10A N-Q12
SPARE Q13 6A N-Q13
SPARE Q14 10A N-Q14
GENERATOR ANCILLARY SUPPLY 10A SOCKET
634 N8 Q15 10A N-Q15 (NOTE 8)
EXTERNAL AREA LIGHTING
635 N9 S11 63SA Q16 6A N-Q16
SURGE FILTER SRF
640 N10 Q17 10A N-Q17
SUB-DISTRIBUTION BOARD CB Ir=0.9 (45A) Im = 6 (300A) (NOTE 1, 2)
Q9 63A
CONTROL SYSTEM POWER SUPPLY REF 09B2
641 Q30 4A SW1
SURGE FILTER ALARM RELAY REF 07:F10
641 Q31 4A SW2 643
SPARE Q32 4A 641
SPARE Q33 4A 641
N10A
PROTECTED NEUTRAL
EMERGENCY PUMP CONTROL POWER SUPPLY & SURCHARGE IMMINENT RELAY REF 07:A2
650 N11 Q18 6A
CATHODIC PROTECTION POWER SUPPLY REF 08F10
636 N12 Q19 6A
3 PHASE 10 AMP OUTLET
660 Q20 6A
661
662 10A N-Q20
SPARE Q21 6A
CONT'D ON SHEET 02
E N L1 L2 L3

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: 12/6/13

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.
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DRAFTED P.HAGUE
DRAFTING CHECK A.WITTHOFT
CAD FILE 57-0310set_A
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Original Signed by P.HAGUE 6-1-12
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 SP253 HALLEY CRESCENT SEWAGE PUMP STATION
TITLE POWER DISTRIBUTION SCHEMATIC DIAGRAM
SHEET No. 1
Queensland Urban Utilities DRAWING No. 486/5/7-0310-001
AMEND. A

STD TEMPLATE SP-2P Ver3.2
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04-04-13

CONT'D FROM SHEET 01

E N R W B

Q4 32A

1K1

Ir=0.63 (20.2A)
Im= 6 (192A)
Note 1

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 7.4kW 14AMPS

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-

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+ Wt/Gn
RS485- Cable 16 Bu/Wt
FROM RTU REF 09:F12

RS485A+ Bu/Or
RS485A- Cable 17 Bu/Vt
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 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	1K20	DO01-	RUN COMMAND REF 02:F4
DO02	DO02	1K21	DO02-	FAULT RESET REF 02:C3
DO03	DO03	1K22	DO03-	EMERGENCY MODE INTERRUPT REF 07: B3
DO04	DO04			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.

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: 7927 | DATE: 12/6/13

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

Sheet 02

FOR CONSTRUCTION

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A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.
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CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities A DIVISION OF THE BRISBANE CITY COUNCIL

SITE SP253 HALLEY CRESCENT SEWAGE PUMP STATION

TITLE PUMP No1 SCHEMATIC DIAGRAM

SHEET No. 2
Queensland Urban Utilities DRAWING No. 486/5/7-0310-002
AMEND. A

S10 TEMPLATE SP-2P Ver3.2

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09-04-13

CONT'D FROM SHEET 02

E N R W B

Q5 32A
Ir=0.63 (20.2A)
Im= 6 (192A)
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 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 7.4kW 14AMPS

MOTOR THERMISTORS

AUX PLUG

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-

FAULT 201 21 24 209 2K3 STARTER FAULT RELAY REF 03:C12
OPERATE 204 13 14 210 2K1 LINE CONTACTOR REF 03:A3
RUN 204 33 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+ Yt/Bm
RS485A-
Cable 17 Bm/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 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 2A J6+ 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		DI24	SPARE
DI25		DI25	SPARE
DI26		DI26	SPARE

RTU DIGITAL OUTPUTS

+ 24VDC POWER SUPPLY - REFER SHEET 09:C7

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

DO17	1 NO	2K20	DO17-	RUN COMMAND REF 03:F4
DO18	3 NO	2K21	DO18-	FAULT RESET REF 03:C3
DO19	5 NO	2K22	DO19-	EMERGENCY MODE INTERRUPT REF 07: C3
DO20	7 NO			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: 7727 DATE: 12/6/13

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		6-1-12
DRAFTING CHECK	A.WITTHOFT	DESIGN	R.P.E.Q. No.	DATE
CAD FILE	57-0310set_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: SP253 HALLEY CRESCENT SEWAGE PUMP STATION

TITLE: PUMP No2 SCHEMATIC DIAGRAM

SHEET No. 3

Queensland Urban Utilities DRAWING No. 486/5/7-0310-003 AMEND. A

STD TEMPLATE SP-2P Ver32

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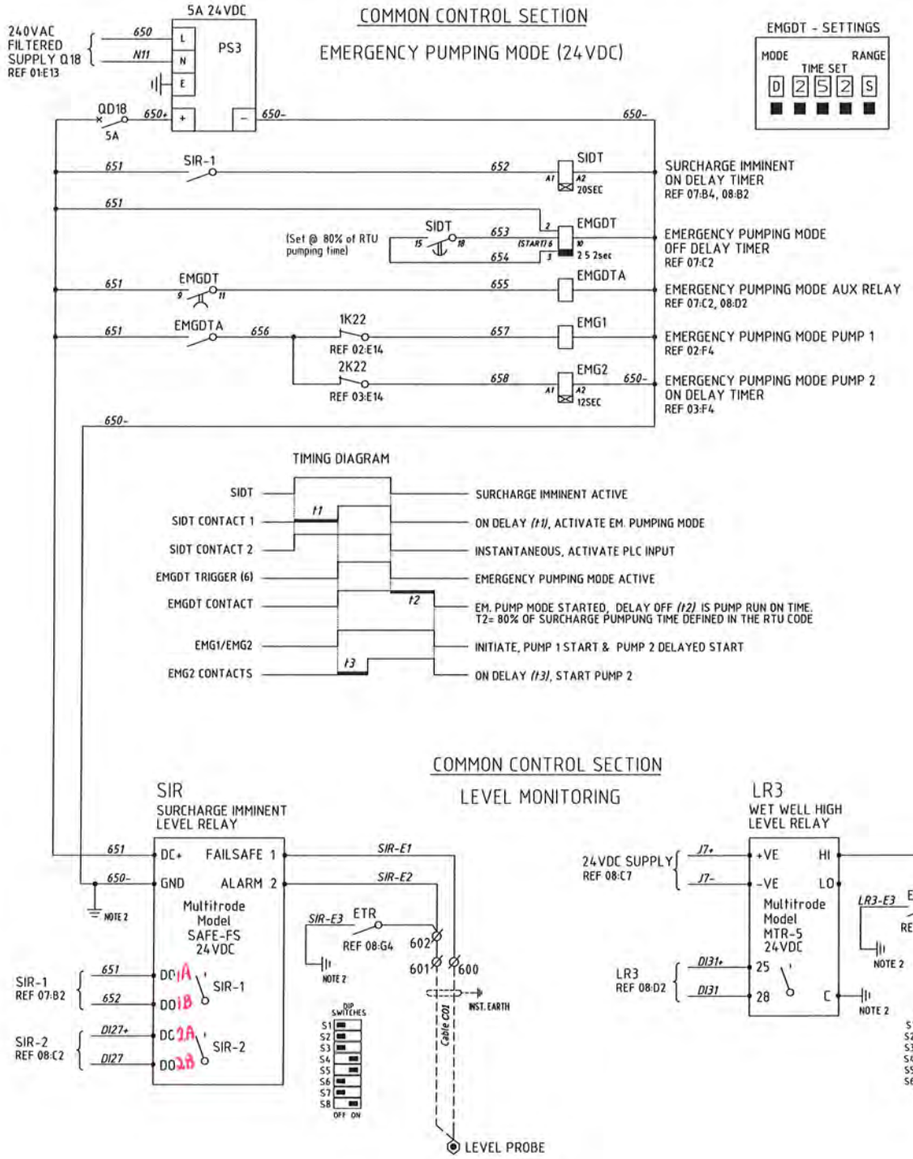
COMMON CONTROL SECTION
EMERGENCY PUMPING MODE (24VDC)

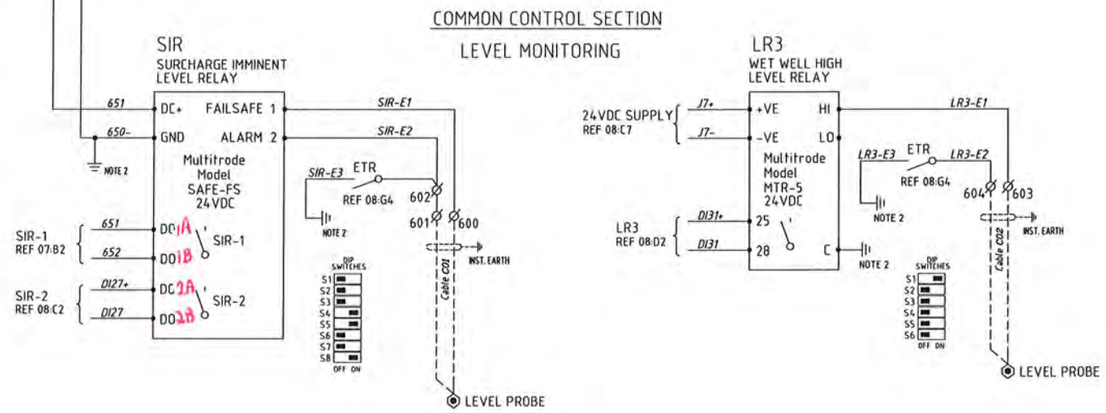


EMGDT - SETTINGS

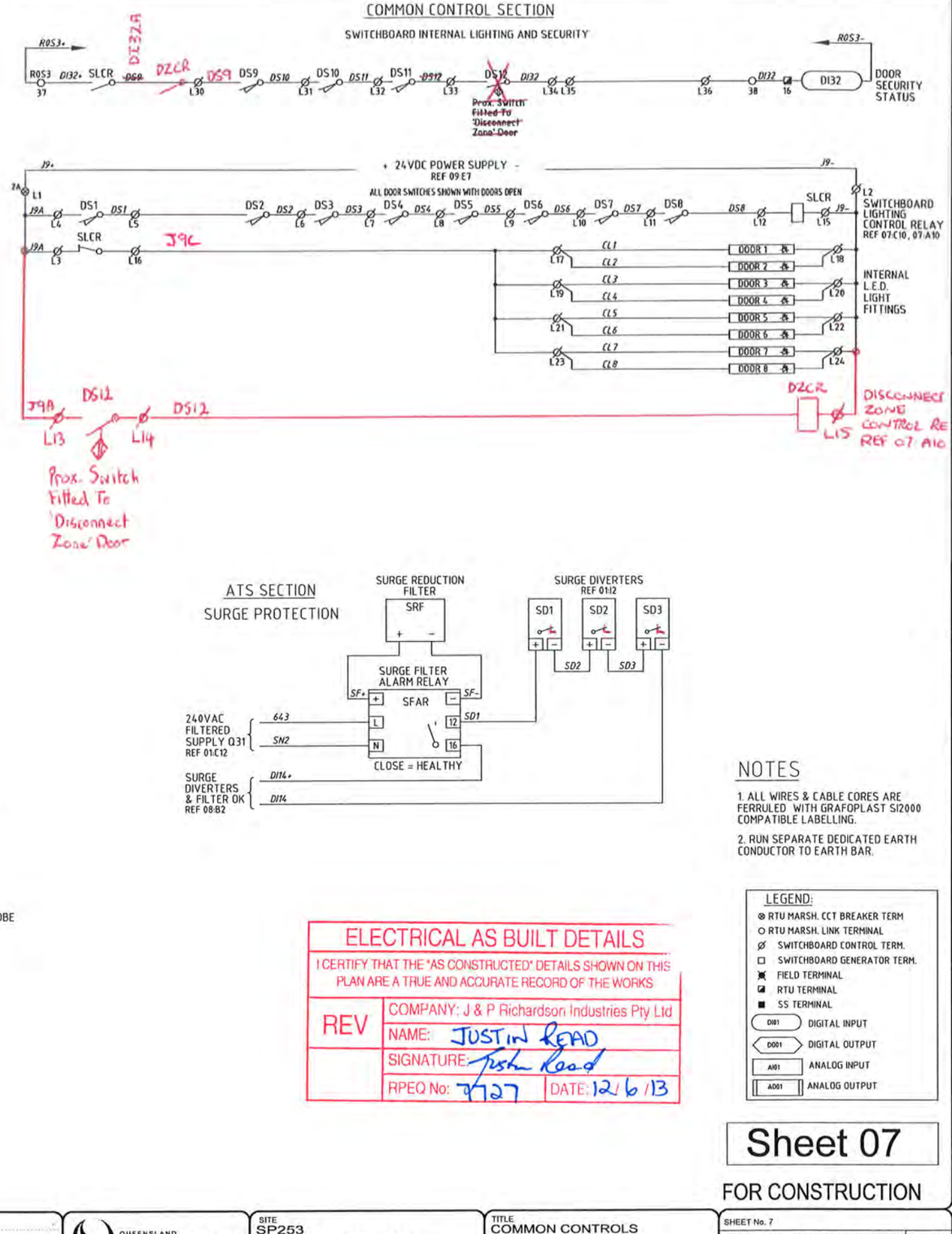
MODE	TIME SET	RANGE
D	2 5 2	S

TIMING DIAGRAM

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 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

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: 12/6/13

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	6-1-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0310set_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: SP253 HALLEY CRESCENT SEWAGE PUMP STATION

TITLE: COMMON CONTROLS SCHEMATIC DIAGRAM

SHEET No. 7

Queensland Urban Utilities DRAWING No. 486/5/7-0310-007 AMEND. A

STD TEMPLATE SP-1P Ver3.2

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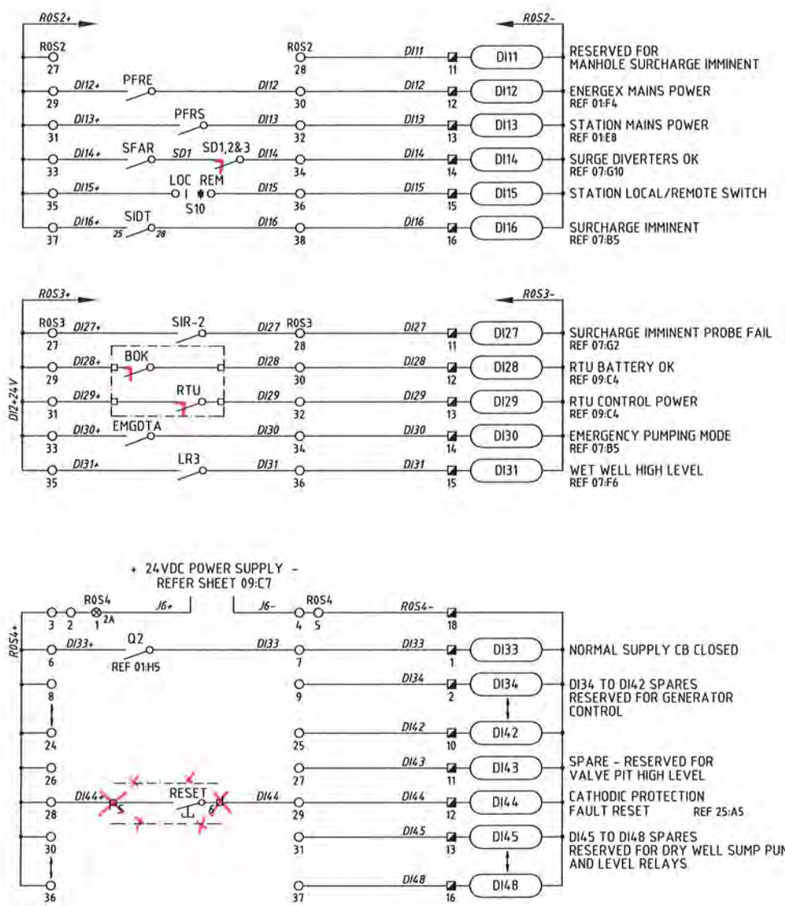
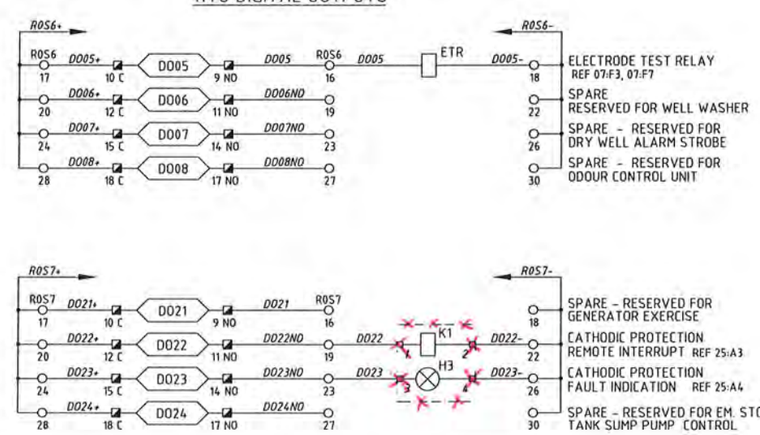
04-04-13

RTU DIGITAL INPUTS

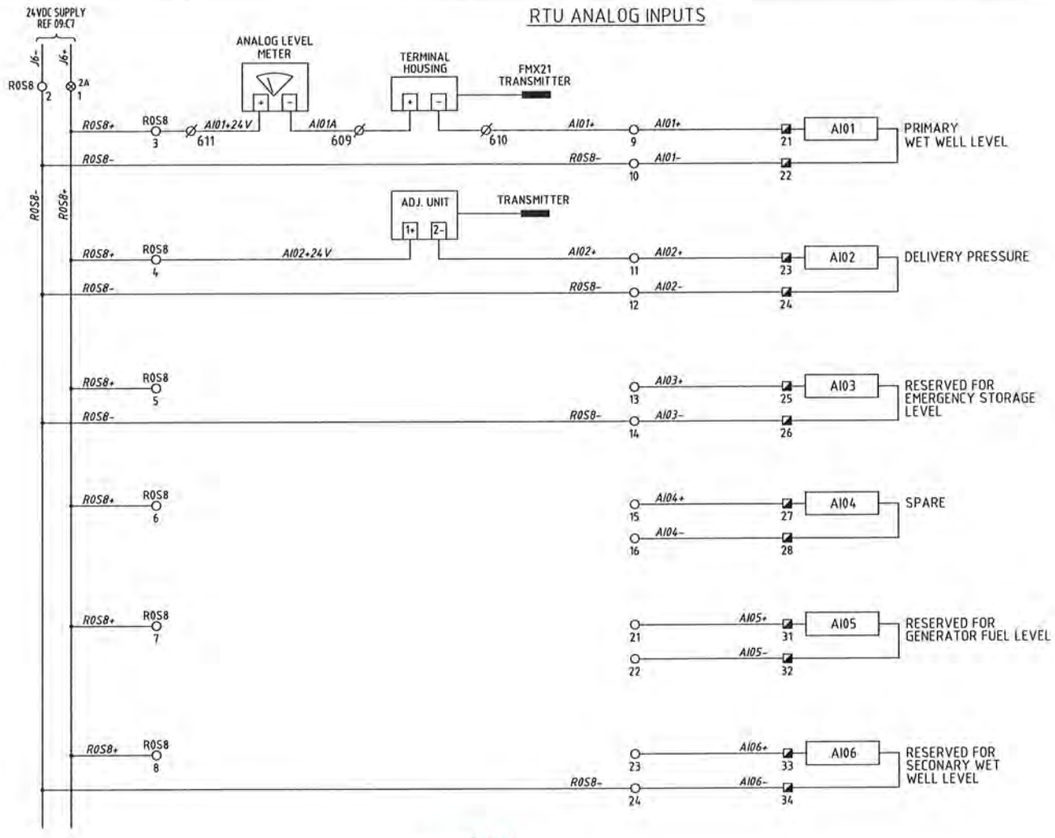


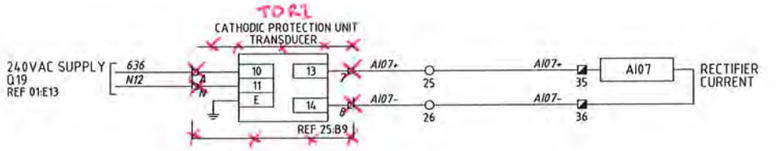
+ 24VDC POWER SUPPLY - REFER SHEET 09:C7

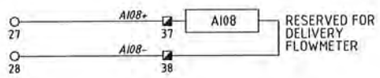
RTU DIGITAL OUTPUTS



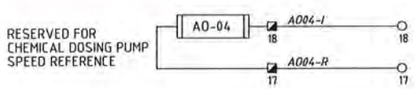
RTU ANALOG INPUTS







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: 7727 DATE: 12/6/13

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
DRAFTING CHECK	A.WITTHOFT
CAD FILE	57-0310set_A
B.C.C. FILE No.	

Original Signed by P.HAGUE 6-1-12 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: SP253 HALLEY CRESCENT SEWAGE PUMP STATION

TITLE: COMMON RTU I/O SCHEMATIC DIAGRAM

SHEET No. 8

Queensland Urban Utilities DRAWING No. 486/5/7-0310-008 AMEND. A

S10 TEMPLATE SP-2P Ver3.2

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04-04-13

POWERBOX
PB251-24CM-CC-T

PS1

SHROUD

240VAC FILTERED SUPPLY Q30
REF 01:C11

620 642 SN1 621

COMMON CONTROLS SECTION

LOAD BATT BOK RTU

CONTROL SYSTEM POWER SUPPLY 10A 24VDC

TEMPERATURE PROBE LOCATED AT BATTERIES

TP+ TP- TP+ TP-

J1+ J1- 10AMP J2+ J2-

J1B+ J1B- 10AMP 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

4AMP J3+ J3- SPARE RESERVED FOR RADIO

4AMP J5+ J5- SPARE

4AMP J6+ J6- RTU 24VDC CARD SUPPLY
REF 02:A13

4AMP J7+ J7- WET WELL HIGH LEVEL RELAY LR3
REF 07:F6

4AMP SPARE RESERVED FOR DRY WELL LEVEL RELAYS

4AMP J9+ J9- COMMON CONTROLS
REF 07:B12

4AMP J10+ J10-

4AMP J11+ J11- 24V DC / 9V DC J12+ J12- 5AMP J12A+ J12- MODEM
REF 09:A16

4AMP SPARE RESERVED FOR FLOWMETER

4AMP SPARE RESERVED FOR VALVE PIT HIGH LEVEL

4AMP J15+ J15- GSM MODEM
REF 09:C16

4AMP SPARE RESERVED FOR WELL WASHER

4AMP SPARE RESERVED FOR STATION MANHOLE SURCHARGE IMMINENT

4AMP SPARE RESERVED FOR EMERGENCY STORAGE TANK SUMP PUMP

TELSTRA PHONE LINE

SURGE DIVERTER

PSTN MODEM J12A+ J12- 9VDC SUPPLY
REF 09:F8

GSM ANTENNA

SUB HD15 GSM MODEM 1 2 J15A+ 0.8AMP J15+ J15- 24VDC SUPPLY
REF 09:H7

TERMINALS "20" MOUNTED ADJACENT TO GSM MODEM

Cable 112

Cable 113

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
	SERIAL 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	4AO/8AI +/-20mA
	PLUG IN 2	DI01-DI16	DI17-DI32	DI33-DI48	DI49-DI64	DO01-DO16	DO17-DO32	AI01 - AI08 AO01 - AO04
	SERIAL 1							
	ETHERNET 1							
	PLUG IN 1							

LAPTOP CONNECTION

RS485- BN RS485+ WT/GN Cable 18 TO SOFT STARTER No1
REF 02:E7

Cable 111

GRAPHIC DISPLAY
RJ45
REDLION G306A000
J10+ J10-

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

MODBUS CONNECTIONS

LEGEND:
- ⊗ RTU MARSH. CCT BREAKER TERM
- O 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. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.
2. ALL FUSES ARE 500mA EXCEPT WHERE NOTED OTHERWISE.

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: 12/6/13

Sheet 09

FOR CONSTRUCTION

A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.	DRAFTED	P.HAGUE	Original Signed by P.HAGUE	6-1-12
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	57-0310set_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 UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
RTU POWER DISTRIBUTION
SCHEMATIC DIAGRAM

SHEET No. 9

Queensland Urban Utilities DRAWING No. 486/5/7-0310-009

AMEND. A

S10 TEMPLATE SP-JP Ver3.2

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02-05-13

RTU COMPARTMENT

24VDC POWER DISTRIBUTION

24VDC DIST

SHEET 09 REFER

REFER SHEET 09

SWITCHBOARD

FIELD

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

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 — SD 7 3 Off

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: 7727 DATE: 12/6/13

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 57-0310set_A
B.C.C. FILE No.

Original Signed by P.HAGUE 6-1-12 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: SP253 HALLEY CRESCENT SEWAGE PUMP STATION

TITLE: RTU DIGITAL INPUTS TERMINATION DIAGRAM SHEET 1 OF 3

SHEET No. 10
Queensland Urban Utilities DRAWING No. 486/5/7-0310-010
AMEND. A

S10 TEMPLATE SP-1P Ver32

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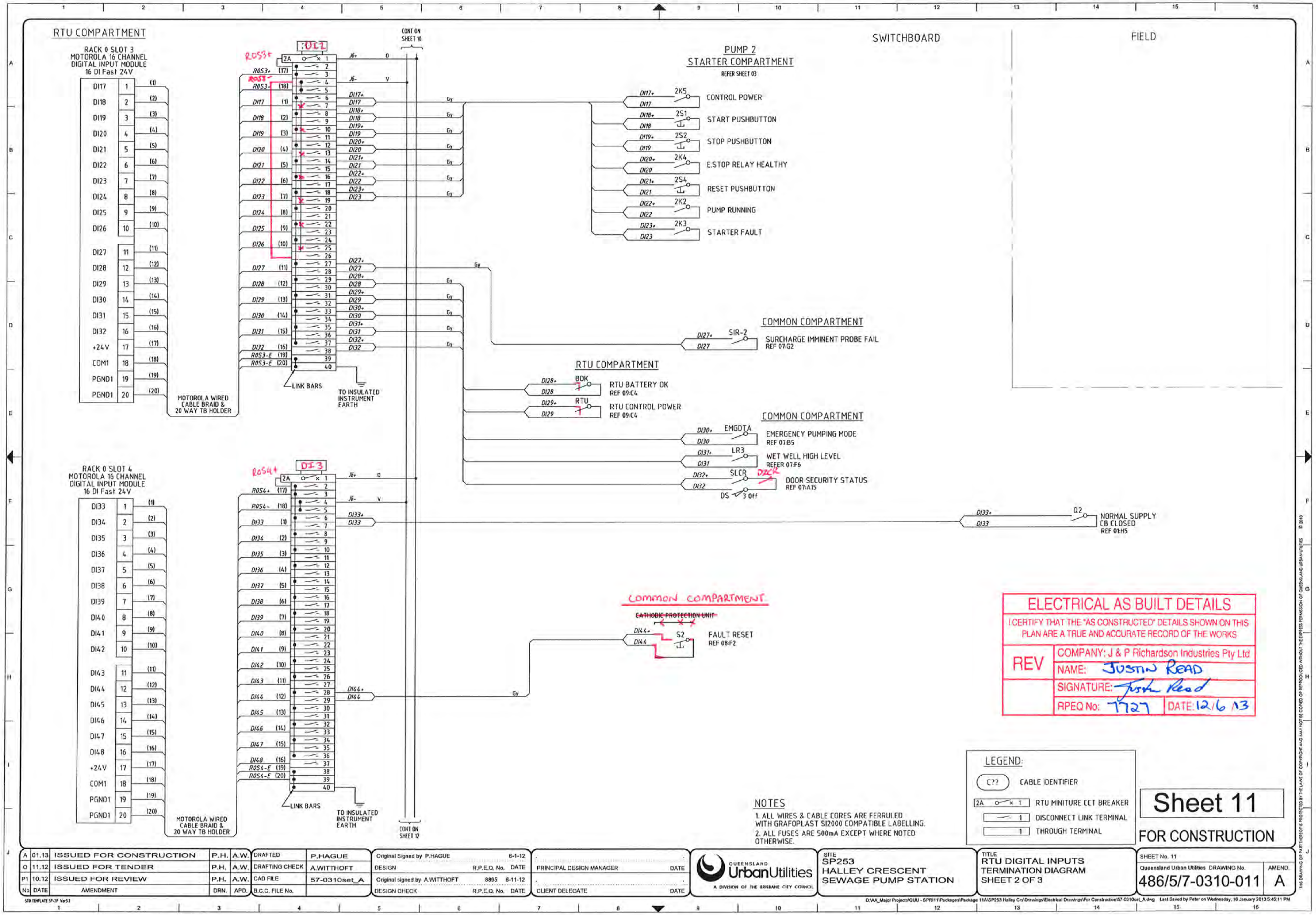
02-05-13


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
R0S3+
DI2
R0S3+ (17)
R0S3-
R0S3- (18)
R0S3-E (19)
R0S3-E (20)
LINK BARS
TO INSULATED INSTRUMENT EARTH
CONT ON SHEET 10
J6+ 0
J6- V
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
R0S4+
DI3
R0S4+ (17)
R0S4- (18)
R0S4-E (19)
R0S4-E (20)
CONT ON SHEET 12
Q2 NORMAL SUPPLY
CB CLOSED
REF 01:H5
COMMON COMPARTMENT
CATHODIC PROTECTION UNIT
S2 FAULT RESET
REF 08:F2
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:
RPEQ No: 7727
DATE: 12/6/13
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
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.
No DATE AMENDMENT DRN. APD.
DRAFTED P.HAGUE
DRAFTING CHECK A.WITTHOFT
CAD FILE 57-0310set_A
B.C.C. FILE No.
Original Signed by P.HAGUE 6-1-12
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 SP253 HALLEY CRESCENT SEWAGE PUMP STATION
TITLE RTU DIGITAL INPUTS TERMINATION DIAGRAM SHEET 2 OF 3
SHEET No. 11
Queensland Urban Utilities DRAWING No. 486/5/7-0310-011
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

ROSS+

DI4

CONT ON SHEET 11

2A

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)

16+ 0

16- V

LINK BARS

TO INSULATED INSTRUMENT EARTH

CONT ON SHEET 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

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: 7927 DATE: 12/6/13

Sheet 12

FOR CONSTRUCTION

A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.	DRAFTED	P.HAGUE	Original Signed by P.HAGUE		6-1-12
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	57-0310set_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 UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
RTU DIGITAL INPUTS
TERMINATION DIAGRAM
SHEET 3 OF 3

SHEET No. 12

Queensland Urban Utilities DRAWING No. 486/5/7-0310-012

AMEND. A

STD TEMPLATE SP-2P Ver1.2

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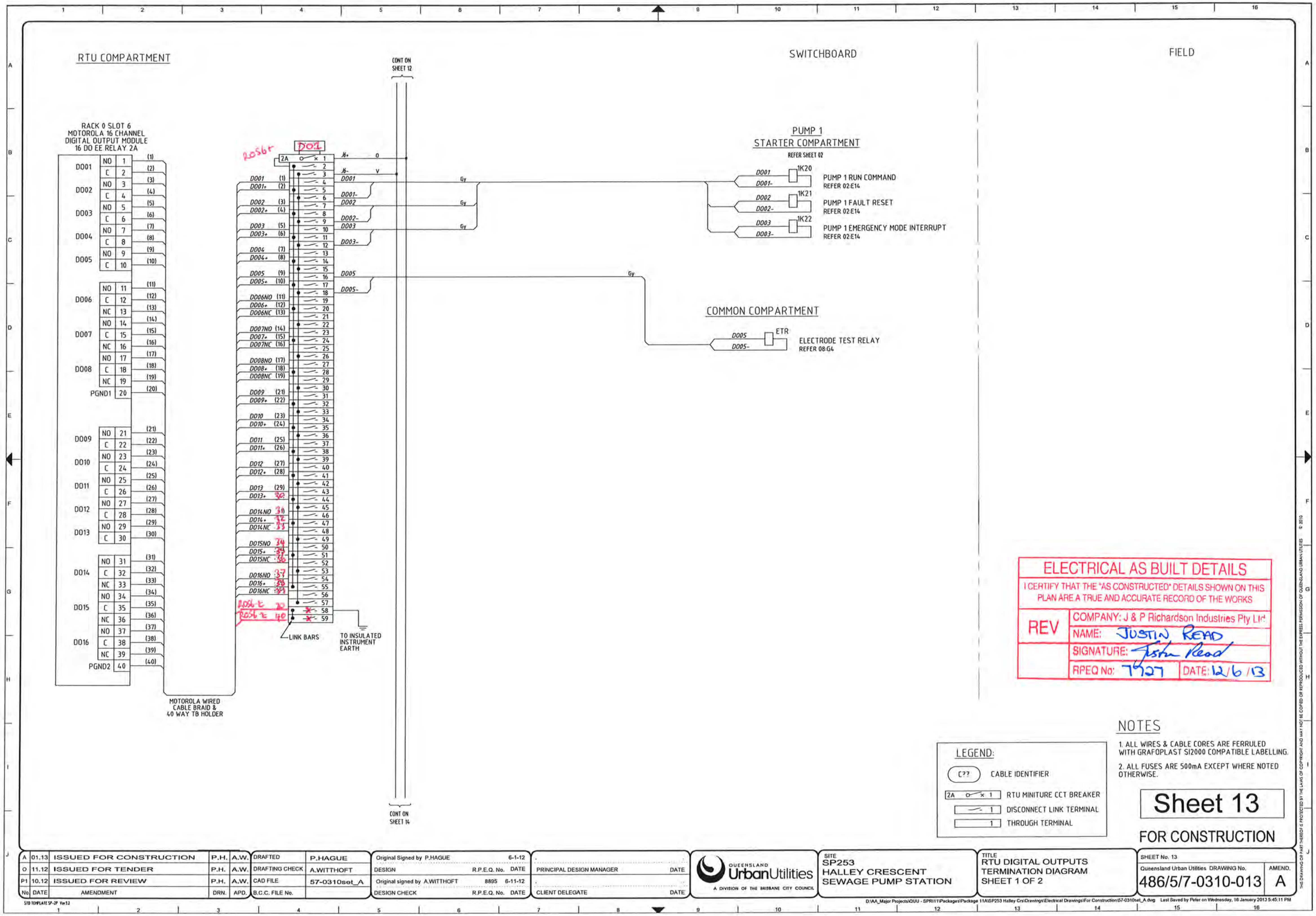
RTU COMPARTMENT
SWITCHBOARD
FIELD
RACK 0 SLOT 6
MOTOROLA 16 CHANNEL
DIGITAL OUTPUT MODULE
16 DO EE RELAY 2A
DO01 NO 1 C 2
DO02 NO 3 C 4
DO03 NO 5 C 6
DO04 NO 7 C 8
DO05 NO 9 C 10
DO06 NO 11 C 12 NC 13
DO07 NO 14 C 15 NC 16
DO08 NO 17 C 18 NC 19
PGND1 20
DO09 NO 21 C 22
DO10 NO 23 C 24
DO11 NO 25 C 26
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
R0S6 DO1
2A
J6+ 0
J6- V
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
R0S6-E 20
R0S6-E 40
LINK BARS
TO INSULATED
INSTRUMENT
EARTH
DO01 DO01- DO02 DO02- DO03 DO03- DO05 DO05-
Gy
CONT ON
SHEET 12
CONT ON
SHEET 14
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
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:
RPEQ No: 7727
DATE: 12/6/13
NOTES
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2. ALL FUSES ARE 500mA EXCEPT WHERE NOTED OTHERWISE.
LEGEND:
C?? CABLE IDENTIFIER
2A RTU MINITURE CCT BREAKER
DISCONNECT LINK TERMINAL
THROUGH TERMINAL
Sheet 13
FOR CONSTRUCTION
A 01.13 ISSUED FOR CONSTRUCTION P.H. A.W.
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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
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION
TITLE
RTU DIGITAL OUTPUTS
TERMINATION DIAGRAM
SHEET 1 OF 2
SHEET No. 13
Queensland Urban Utilities DRAWING No.
486/5/7-0310-013
AMEND.
A
STD TEMPLATE SP-2P Ver3.2
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04-04-13

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)
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

DO2

		2A	1	X+
			2	X-
DO17	(1)		3	DO17
DO17+	(2)		4	
			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
DO22+	(12)		19	
DO22NC	(13)		20	DO22-
			21	
DO23NO	(14)		22	DO23
DO23+	(15)		23	
DO23NC	(16)		24	DO23-
			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	
ROS7-E	20		57	
ROS7-E	40		58	
			59	

LINK BARS

TO INSULATED INSTRUMENT EARTH

ROS7+

Gy

PUMP 2
STARTER COMPARTMENT
REFER SHEET 03

DO17 — 2K20 — DO17-
PUMP 2 RUN COMMAND
REFER 03:E14

DO18 — 2K21 — DO18-
PUMP 2 FAULT RESET
REFER 03:E14

DO19 — 2K22 — DO19-
PUMP 2 EMERGENCY MODE INTERRUPT
REFER 03:E14

COMMON COMPARTMENT

~~CATHODIC PROTECTION UNIT~~

DO22 — K1 — DO22-
REMOTE INTERRUPT
REFER 08:I4

DO23 — H3 — DO23-
FAULT INDICATION
REFER 08:I4

CONT ON SHEET 15

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: 12/6/13

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 — 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
DRAFTING CHECK	A.WITTHOFT
CAD FILE	57-0310set_A
B.C.C. FILE No.	

Original Signed by P.HAGUE 6-1-12 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
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
RTU DIGITAL OUTPUTS
TERMINATION DIAGRAM
SHEET 2 OF 2

SHEET No. 14
Queensland Urban Utilities DRAWING No. 486/5/7-0310-014
AMEND. A

STD TEMPLATE SP-JP Ver32

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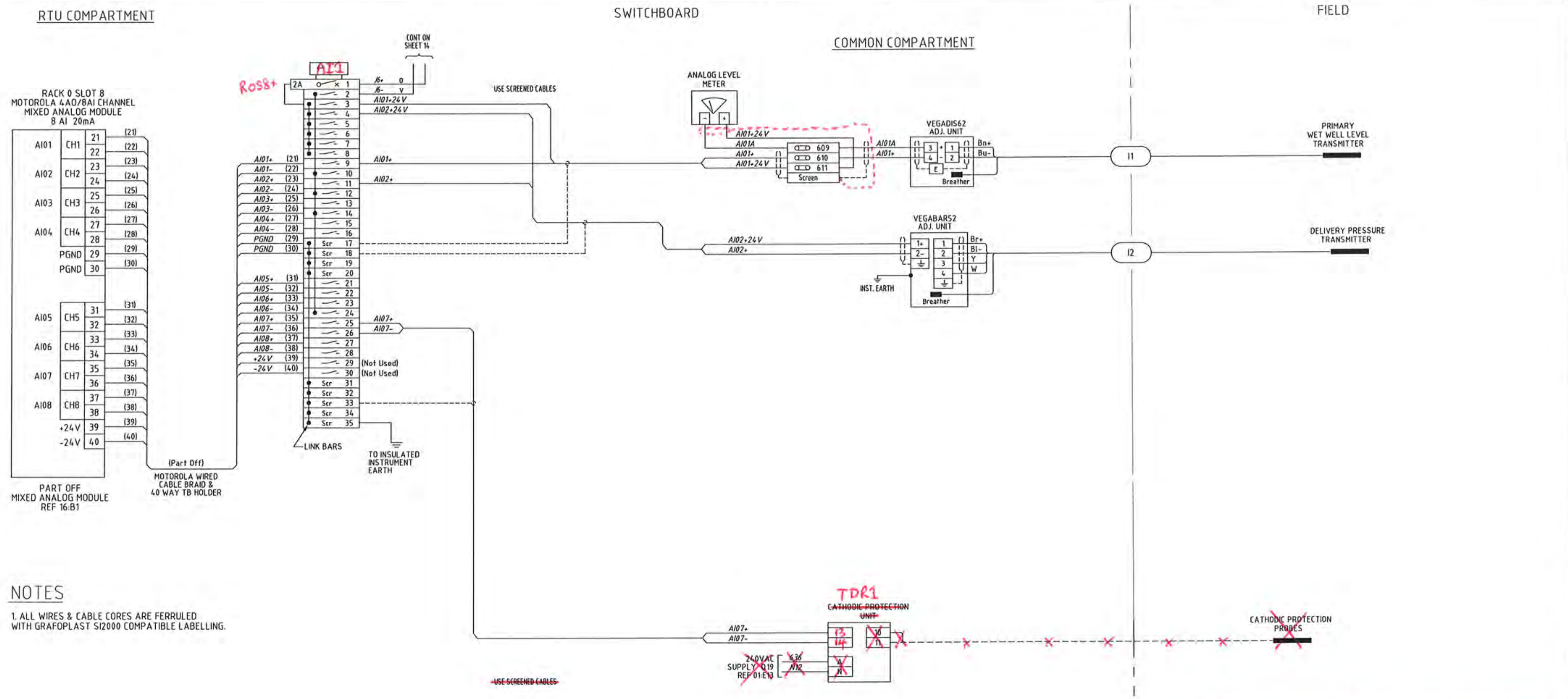
04-04-13



NOTES

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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: 12/6/13

LEGEND:

- (C??) CABLE IDENTIFIER
- 2A o—× 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
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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
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
RTU ANALOG INPUTS
TERMINATION DIAGRAM

SHEET No. 15
Queensland Urban Utilities DRAWING No. 486/5/7-0310-015
AMEND. A

STD TEMPLATE SP-2P Ver3.2

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2-5-13

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 Ret1	2	(2)
	Iout1	3	(3)
	PGND1	4	(4)
	PGND1	5	(5)
AO02	Vout2	6	(6)
	CH2 Ret2	7	(7)
	Iout2	8	(8)
	PGND1	9	(9)
	PGND1	10	(10)
AO03	Vout3	11	(11)
	CH3 Ret3	12	(12)
	Iout3	13	(13)
	PGND1	14	(14)
	PGND1	15	(15)
AO04	Vout4	16	(16)
	CH4 Ret4	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

NOTES

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

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: 12/6/13

LEGEND:

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

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	6-1-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0310set_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
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
RTU ANALOG OUTPUTS
TERMINATION DIAGRAM

SHEET No. 16
Queensland Urban Utilities DRAWING No. 486/5/7-0310-016
AMEND. A

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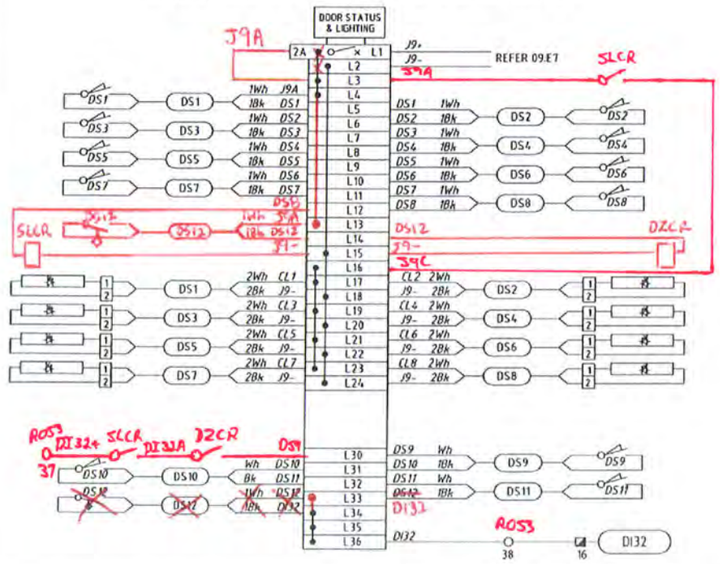
STD TEMPLATE SP-2P Ver32

22-2-13

SWITCHBOARD INTERNAL LIGHTING AND SECURITY



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REV	COMPANY: J & P Richardson Industries Pty Ltd	
	NAME: JUSTIN READ	
	SIGNATURE: Justin Read	
	RPEQ No: 7727	DATE: 12/6/13

LEGEND:

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

NOTES

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2. ALL FUSES ARE 500mA EXCEPT WHERE NOTED OTHERWISE.

Sheet 17

FOR CONSTRUCTION

A	01.13	ISSUED FOR CONSTRUCTION	P.H.	A.W.	DRAFTED	P.HAGUE	Original Signed by P.HAGUE	6-1-12	.	.	
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	
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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: SP253 HALLEY CRESCENT SEWAGE PUMP STATION

TITLE: COMMON CONTROLS TERMINATION DIAGRAM

SHEET No. 17

Queensland Urban Utilities DRAWING No. 486/5/7-0310-017

AMEND. A

STD TEMPLATE SP-2P Ver32

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04-04-13

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/32	-	Set Ir=0.63 (20.2A) Im=6 (192A)
5	1	Q5 PUMP2 CIRCUIT BREAKER + T2HS Handle	TERASAKI	S125GJ/32	-	Set Ir=0.63 (20.2A) Im=6 (192A)
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 CATHODIC PROTECTION POWER SUPPLY	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 ~~DD~~-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	Done ~~D&L~~ ELEC.	~~DLAH6~~ 165E12	-	INSULATED c/w E FEET
46	1	MAIN EARTH LINK	Done ~~D&L~~ ELEC.	~~DLAHE6~~ 165E12	-	
47	1	DIST. BD NEUTRAL LINK	Done ~~D&L~~ ELEC.	~~20LA18~~ 165E24	-	INSULATED c/w E FEET
48	1	DIST. BD EARTH LINK	Done ~~D&L~~ ELEC.	~~20LAE18~~ 165E24	-	
49	~~1~~	~~SURGE DIVERTER NEUTRAL LINK~~	~~CLIPSAL~~	~~L5A~~	-	~~INSULATED~~
50	1	INSTRUMENT EARTH LINK	Clipsal ~~D&L ELEC.~~	~~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		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-~~N3Y~~ NWL	-	+ 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				01AG	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	1	CATHODIC PROTECTION UNIT	SWBD BUILDER	SHEET 25	K	
131					S	
132					H	
133	1	PRIMARY WET WELL LEVEL PROBE	VEGA - VEGAWELL52	WL52XXA4ALD1DD1X	-	SET RANGE TO =2.5m
134	1	PRIMARY WET WELL LEVEL ADJUSTMENT UNIT	VEGA - VEGADIS62	DIS62XXKMAXX	-	
135					G	
136					-	
137	1	DELIVERY PRESSURE TRANSMITTER	VEGA VEGABAR52	BR52XXCA1FHPMAS L=12	U	RANGE = 50m
138	1	TRICLOVE FITTING FOR VEGABAR52	VEGA	ADAPTOR 4	U	
139	1	CONTROL SYSTEM POWER SUPPLY 24VDC	POWERBOX	PB251A-24CM-CC-T-S	-	A
140					R	
141	1	PSTN MODEM 24V/9VDC CONVERTER	POWERBOX	PBBA-2409F-CM-CC	I	
142	2	BATTERIES - INCLUDING SPILL TRAYS	YUASA	UXH50-12	-	
143					R	
144					R	
145					R	
146	1	TELEMETRY UNIT	MOTOROLA	ACE - 3600	-	
147	1	PSTN MODEM	WOOMERA	56K V.90		
148	1	PSTN MODEM SURGE PROTECTION UNIT	CRITEC	SLP1-RJ11-A		
150	1	GRAPHIC DISPLAY	REDLION	G306A000		
153	1	GSM MODEM	WAVECOM	FASTRACK Supreme	I	c/w 5 M Cable
156	1	GSM CELLULAR TRANSIT ANTENNA	RF INDUSTRIES	TLA2000	I	
157					R	
158					R	
159					R	
160					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	6	CATHODIC PROTECTION PROBE TERMINALS	PHOENIX CONTACT	UK16	-	16mm² Capacity
166	14	CATHODIC PROTECTION TEST TERMINALS + TEST SOCKET	PHOENIX CONTACT	UK6N + PSB4	-	6mm² Capacity
169		EARTH TERMINALS	PHOENIX CONTACT			
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: 12/6/13

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: 57-0310set_A
B.C.C. FILE No.

Original Signed by P.HAGUE 6-1-12
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
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
EQUIPMENT LIST

SHEET No. 18
Queensland Urban Utilities DRAWING No. 486/5/7-0310-018
AMEND. A

STD TEMPLATE SP-2P Ver3.2

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09-04-13

CABLE No.	STATUS	SIZE	CORES	TYPE	LENGTH (m) Note 1	FROM	TO	CABLE FUNCTION	NOTES
P01	EXISTING	16mm²	4C	PVC/CU/PVC Note2		ENERGEX Supply PILLAR No ?	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	2.5mm²	3C+E+2pilots	Flexible (Submersible)		Switchboard - Pump De-Contactor	Pump No2	Pump 2 Motor Feed + Thermistors	
P23	NEW	2.5mm²	2C+E	PVC/CU/PVC		Switchboard	External Area Lights	Area Lighting	
C01	NEW	1.5mm²	2C	Vendor-02013BFSP-Shield		Switchboard	Surcharge Imminent Probe	Surcharge Imminent Signal (SIRI	
C02	NEW	1.5mm²	2C	Vendor-02013BFSP-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	

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: 12/6/13

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

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.

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.
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STD TEMPLATE SP-3P Ver3.2

DRAFTED	P.HAGUE	Original Signed by P.HAGUE	6-1-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0310set_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
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
CABLE SCHEDULE

SHEET No. 19

Queensland Urban Utilities DRAWING No. 486/5/7-0310-019

AMEND. A

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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 32A	PUMP No2 32A	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	1Ø 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	K	CATHODIC PROTECTION POWER SUPPLY CB	CATHODIC PROTECTION Q19		4mm 4mm	ABS PLASTIC W/B
20		3 PHASE OUTLET CIRCUIT BREAKER	3Ø 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	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 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	4 4 4	
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
130	K	CATHODIC PROTECTION UNIT	CATHODIC PROTECTION UNIT		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
141	I	MODEM 24V/9VDC CONVERTER	24/9 VDC CONVERTER - MODEM		4mm 4mm	ABS PLASTIC W/B
146		TELEMETRY UNIT	RTU		4mm	ABS PLASTIC W/B
147	I	MODEM	MODEM		4mm	ABS PLASTIC W/B
148	I	MODEM SURGE PROTECTION UNIT	MODEM SURGE PROTECTION		4mm	ABS PLASTIC W/B

ITEM #	OPT.	DESCRIPTION - INTERNAL LABEL	LABEL 1	LABEL 2 (IF NECESSARY)	TEXT HEIGHT	MATERIAL / COLOUR
153	I	MODEM	MODEM		4mm	ABS PLASTIC W/B
164ff		Access Plate - Do Not Drill	Inspection Plate Do Not Install Glands		[illegible]	W/B
165	K	CATHODIC PROTECTION TERMINALS	CP TERMINALS		4mm	ABS PLASTIC 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		6mm 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	~~K1~~	~~CATHODIC PROTECTION CONNECTIONS~~	~~CATHODIC PROTECTION~~		~~4mm 4mm~~	~~ABS PLASTIC W/B~~
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						

ITEM #	OPT.	DESCRIPTION - INTERNAL LABEL	LABEL 1	LABEL 2 (IF NECESSARY)	TEXT HEIGHT	MATERIAL / COLOUR
130.1		CATHODIC PROTECTION DIODE BRIDGE	BD1		4mm	ABS PLASTIC W/B
130.2		CATHODIC PROTECTION DC OUTPUT FUSE	F1 20/4A		4mm 4mm	ABS PLASTIC W/B
130.3		CATHODIC PROTECTION POWER ON INDICATOR	POWER ON		4mm	ABS PLASTIC W/B
130.4		CATHODIC PROTECTION INTERUPT INDICATOR	INTERUPT		4mm	ABS PLASTIC W/B
130.5		CATHODIC PROTECTION FAULT INDICATOR	FAULT		4mm	ABS PLASTIC W/B
130.6		CATHODIC PROTECTION INTERUPT RELAY	K1		4mm	ABS PLASTIC W/B
130.7		CATHODIC PROTECTION LOCAL INTERUPT P/B	INTERUPT		4mm	ABS PLASTIC W/B
130.8		CATHODIC PROTECTION FAULT RESET P/B	RESET		4mm	ABS PLASTIC W/B
130.9		CATHODIC PROTECTION TRANSDUCER	TDR1		4mm	ABS PLASTIC W/B
130.10		CATHODIC PROTECTION TRANSFORMER	T1		4mm	ABS PLASTIC W/B

EXTERNAL DOOR LABEL LIST

DETAIL Q

LABEL	TEXT	TEXT HEIGHT	PAINT FILL LETTERING	QTY
A	SP253	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
X	Warning This site continuously monitored Contact control room before opening meter door & prior to leaving site			
Y	Phone: ~~3407 8414~~ 132657 (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.

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: 1727
DATE: 12/6/13

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: 57-0310set_A
B.C.C. FILE No.

Original Signed by P.HAGUE 6-1-12
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
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
SWITCHBOARD
LABEL SCHEDULE

SHEET No. 20
Queensland Urban Utilities DRAWING No. 486/5/7-0310-020
AMEND. A

STD TEMPLATE SP-2P Ver3.2

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02-05-13

CONSTRUCTION - EXTERNAL SWITCHBOARD

Cubicle construction ~~3mm~~ 80x40 Marine grade Aluminium (5251).
Plinth construction ~~75x60~~ 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

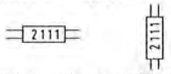
Locks Door 10
DORE ELECTRICS - Swing Handle SHPSS Padlockable - 316
DORE ELECTRICS - 3 point lock rod set - TLR24
ENERGEX padlock, S/Steel Shackle, 45mm brass pin tumbler.
Energex Key No325. c/w 2 keys.

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 (OD 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 V90 0.6/1kV 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

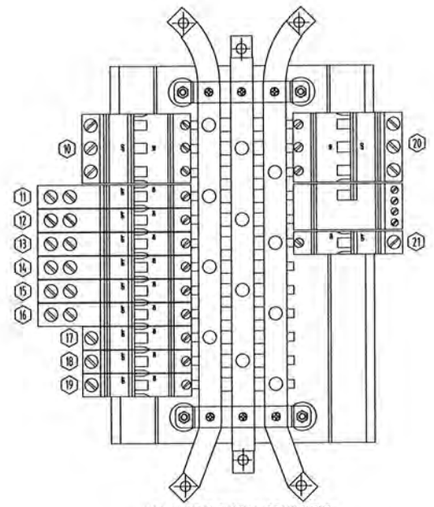
Internal labels W/B engraved ABS PLASTIC to label schedule.
Warning labels R/W engraved ABS PLASTIC to label schedule.
E/Stop labels Y/B engraved ABS PLASTIC to label schedule.
First letter = Background colour, Second letter = Lettering colour.

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.

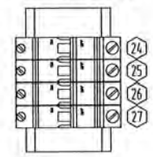
ELECTRICAL AS BUILT DETAILS
I CERTIFY THAT THE "AS CONSTRUCTED" DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS

REV		
	COMPANY: J & P Richardson Industries Pty Ltd	
	NAME: JUSTIN READ	
	SIGNATURE: Justin Read	
	RPEQ No: 8727	DATE: 12/6/13



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.
D	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 57-0310set_A | B.C.C. FILE No.

Original Signed by P.HAGUE 6-1-12 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: SP253 HALLEY CRESCENT SEWAGE PUMP STATION

TITLE: SWITCHBOARD CONSTRUCTION DETAILS SHEET 1 OF 3

SHEET No. 21
Queensland Urban Utilities DRAWING No. 486/5/7-0310-021
AMEND. A

STD TEMPLATE SP-2P Ver3.2

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27-2-13

ESCUTCHEON LAYOUT DETAIL V

MEN BEHIND

ESCUTCHEON LAYOUT DETAIL U

2 3

Allow for all equipment to clear mullions

ESCUTCHEON LAYOUT DETAIL S

SUB BOARD ISOLATOR

FILTERED SUPPLIES

NON-FILTERED SUPPLIES

9

ESCUTCHEON LAYOUT DETAIL R

Allow 55mm min. clearance for comms connections between display and other items and duct support

PUMP No1

PUMP No2

ENSURE ALL EQUIPMENT CLEARS MULLION WHEN HINGED PANEL IS FULLY OPEN

Allow minimum distance for all equipment to clear mullion

Shroud behind

Shroud behind

ESCUTCHEON LAYOUT DETAIL X

Allow for all equipment to clear mullions

DUPLICATE FOR PUMPS 1 & 2

ESCUTCHEON LAYOUT DETAIL T

NOTE:
ALL ESCUTCHEONS TO OPEN 90° min.

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)

To Main Switch

To Generator Plugs

For Portable Generator Connection

R W B N E

250

140°

40

75

2 - 60mm Insulators

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

To pump de-contactors and instruments
Note: All cables to wet well to be individually glanded through end cap

SWITCHBOARD

PLINTH

Conduit end cap (see detail)

SLAB

Conduit to extend 70mm above slab level

Cables to Wet well

PVC Electrical conduit to wet well

DETAIL W
(WET WELL CONDUIT SEALING DETAIL)

120mm square upvc electrical connection box cast in slab

WET WELL

25mm electrical conduit to switchboard

M20 threaded bar grade 316L stainless steel welded to well wall reinforcement and bent up to 20mm below top of slab R.L

DETAIL Y
(REINFORCING CONNECTION BOX DETAIL)

Nylon cable gland fitted to conduit end cap

PVC Conduit end cap. Push fit only (DO NOT GLUE)

(END CAP DETAIL)

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 / 6 / 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	Original Signed by P.HAGUE	6-1-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0310set_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
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
SWITCHBOARD
CONSTRUCTION DETAILS
SHEET 2 OF 3

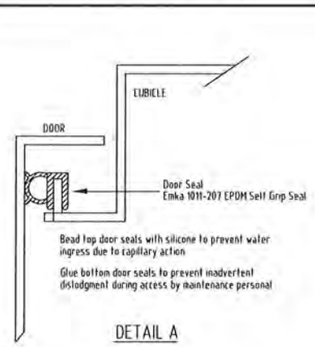
SHEET No. 22

Queensland Urban Utilities DRAWING No. 486/5/7-0310-022

AMEND. A

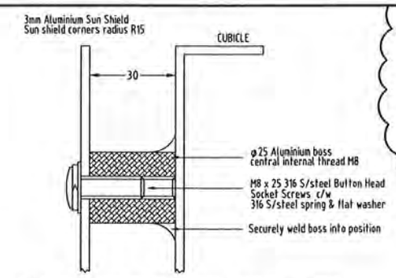
STD TEMPLATE SP-7P Ver12

D:\AA_Major Projects\QUU - SPR111\Packages\Package 11A\SP253 Halley Cts\Drawings\Electrical Drawings\For Construction\57-0310set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:45:11 PM



DETAIL A

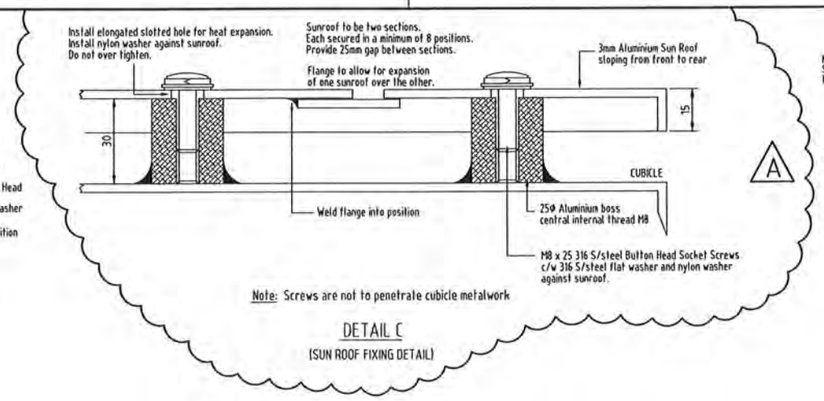
DOOR SEAL
EXTERNAL SWITCHBOARD



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

DETAIL B

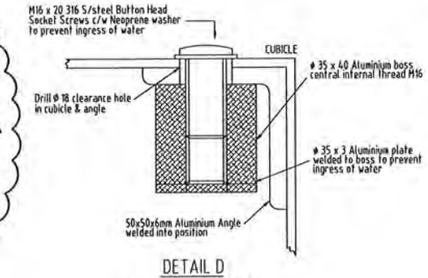
(SUN SHIELD MOUNTING TO ENDS, REAR AND DOORS)



Note: Screws are not to penetrate cubicle metalwork

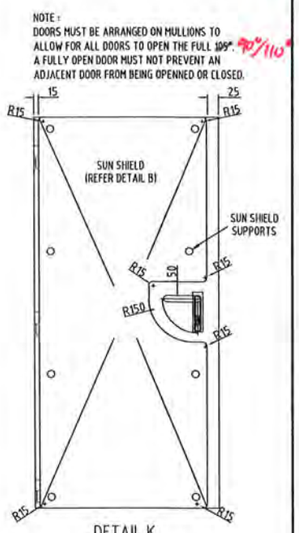
DETAIL C

(SUN ROOF FIXING DETAIL)



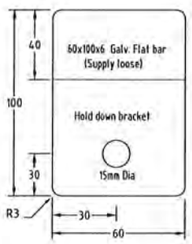
DETAIL D

(EYE BOLT FIXING DETAIL)



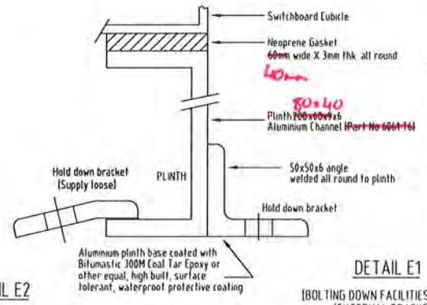
DETAIL K

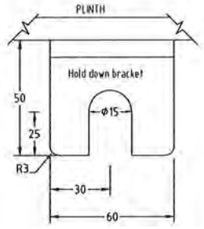
(DOOR SUN SHIELD DETAIL)



DETAIL E2

(BOLTING DOWN FACILITIES DETAIL)
(INTERNAL BRACKET)

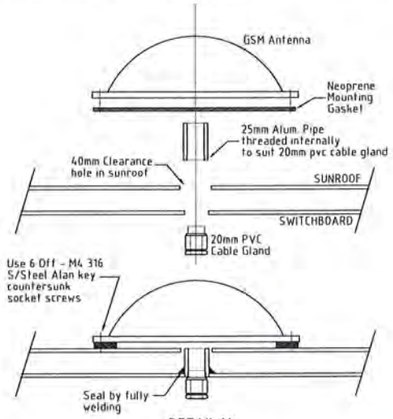




DETAIL E1

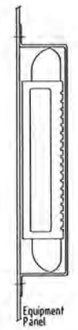
(BOLTING DOWN FACILITIES DETAIL)
(EXTERNAL BRACKET)

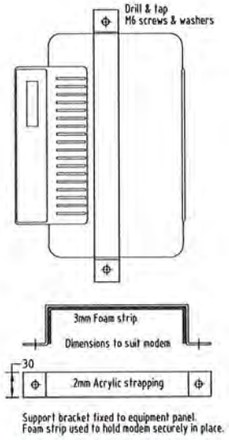
SET UP CUBICLE TO BE LEVEL & PLUMB BEFORE BOLTING TO CONCRETE PLINTH USING M12 S/STEEL CHEMICAL ANCHORS. MINIMUM ANCHORAGE 110mm. USE 40x40x3mm WASHERS FILL WITH NON-SHRINK GROUT WHERE REQUIRED.



DETAIL X

(GSM ANTENNA MOUNTING DETAIL)

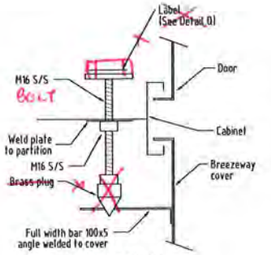




Support bracket fixed to equipment panel.
Foam strip used to hold modem securely in place.

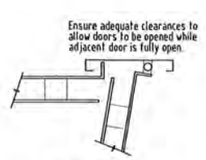
DETAIL U

(MODEM MOUNTING BRACKET)

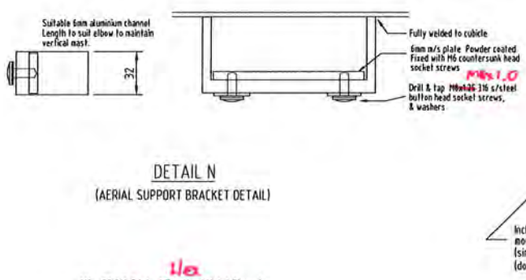


DETAIL V

(BREEZEWAY LATCH INSTALLATION DETAIL)

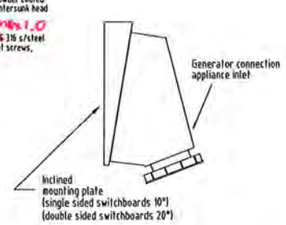


DOOR CLEARANCES



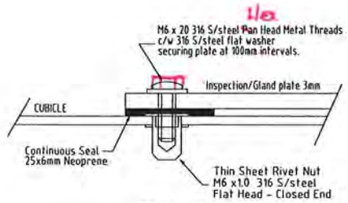
DETAIL N

(AERIAL SUPPORT BRACKET DETAIL)



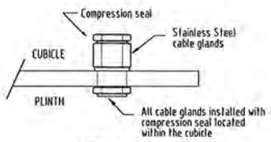
DETAIL O

(INCLINED MOUNTING PLATE DETAIL)



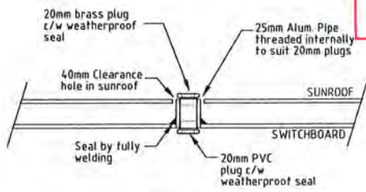
DETAIL F

(GLAND/INSPECTION PLATE FIXING DETAIL)



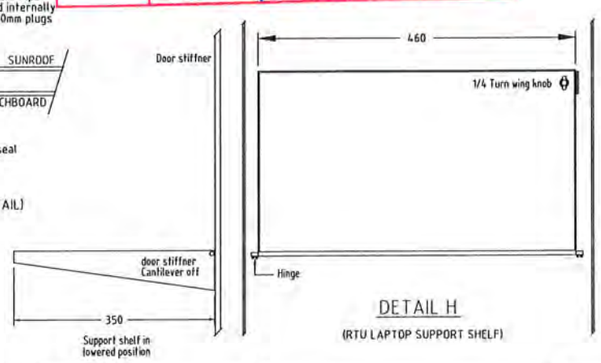
DETAIL G

(CABLE GLAND INSTALLATION DETAIL)



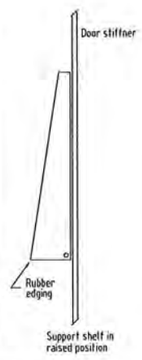
DETAIL X

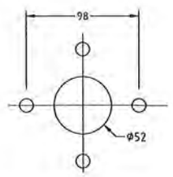
(SMART METERING ANTENNA PLUG DETAIL)



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: 12/6/13

Sheet 23

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	6-1-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0310set_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
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
SWITCHBOARD
CONSTRUCTION DETAILS
SHEET 3 OF 3

SHEET No. 23
Queensland Urban Utilities DRAWING No. 486/5/7-0310-023
AMEND. A

S10 TEMPLATE SP-2P Ver3.2

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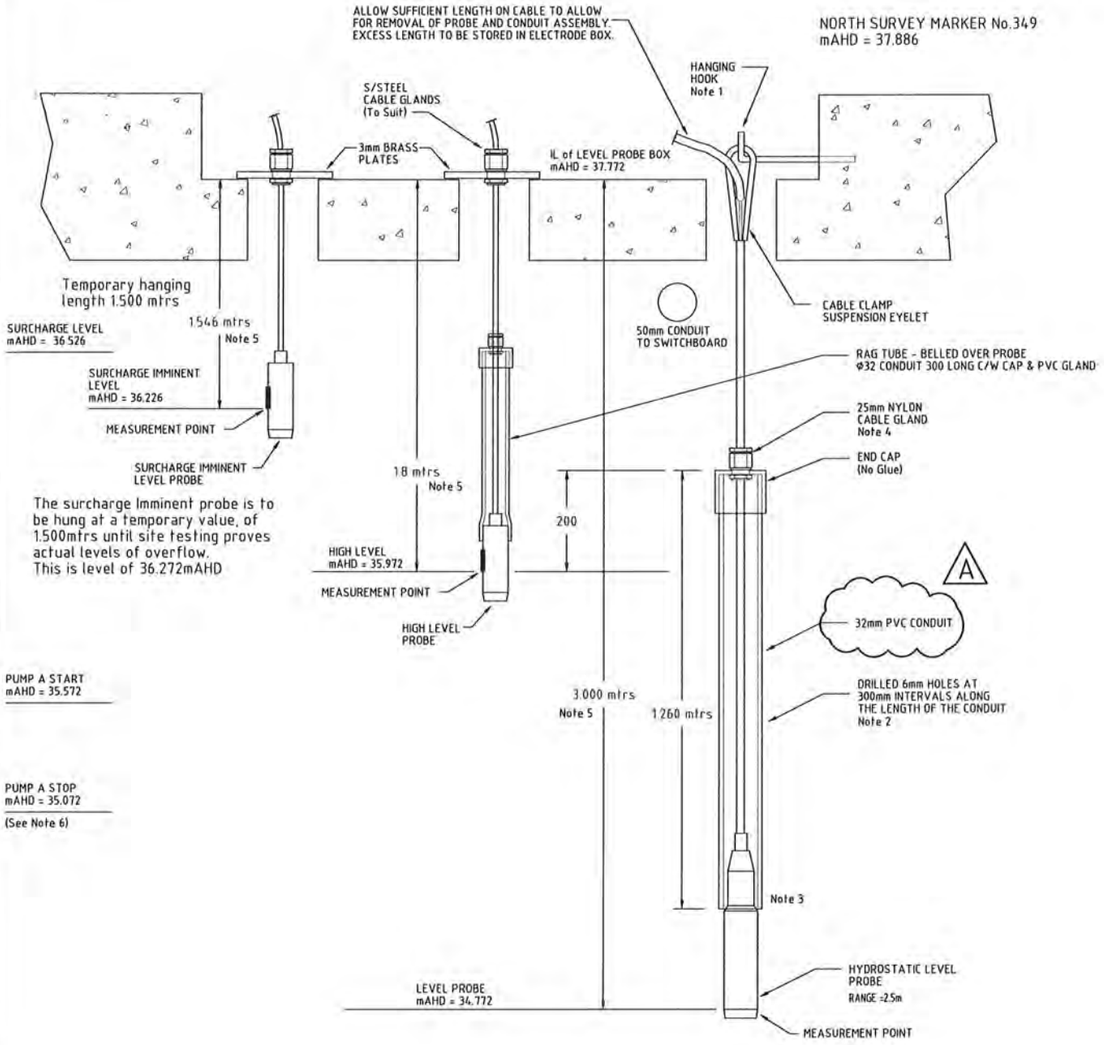
04-04-13



ELECTRICAL AS BUILT DETAILS

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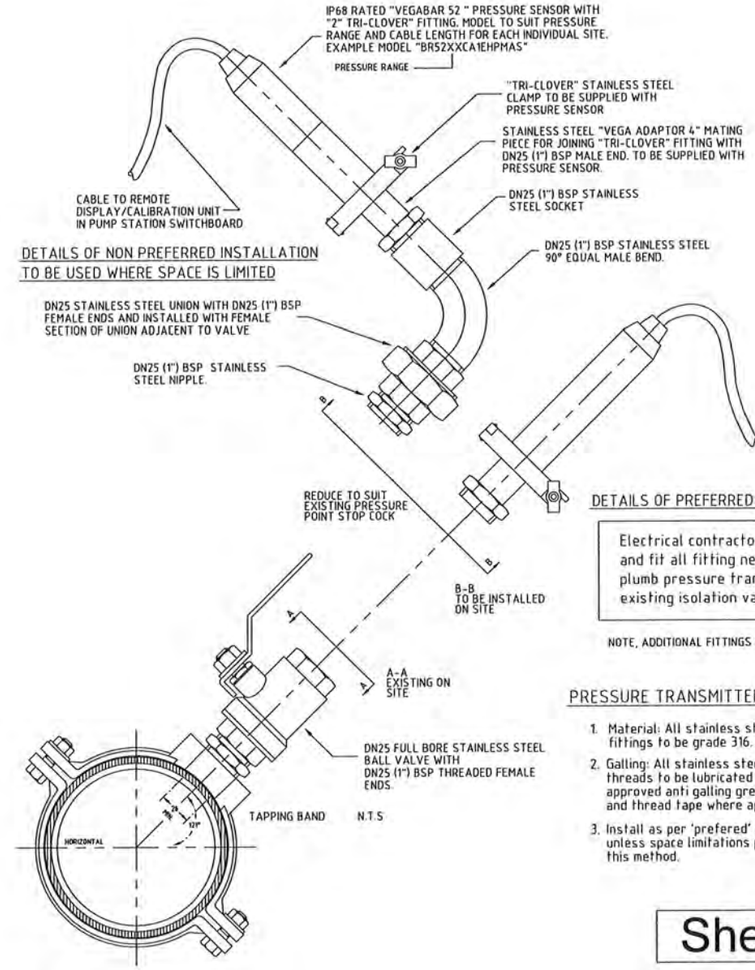
	NAME: JUSTIN READ	
	SIGNATURE: Justin Read	
	RPEQ No: 7727	DATE: 12/6/13



	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.
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DRAFTED	P.HAGUE	Original Signed by P.HAGUE	6-1-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0310set_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: SP253 HALLEY CRESCENT SEWAGE PUMP STATION

TITLE: FIELD INSTRUMENTATION INSTALLATION DETAILS

SHEET No. 24 | Queensland Urban Utilities DRAWING No. 486/5/7-0310-024 | AMEND. A

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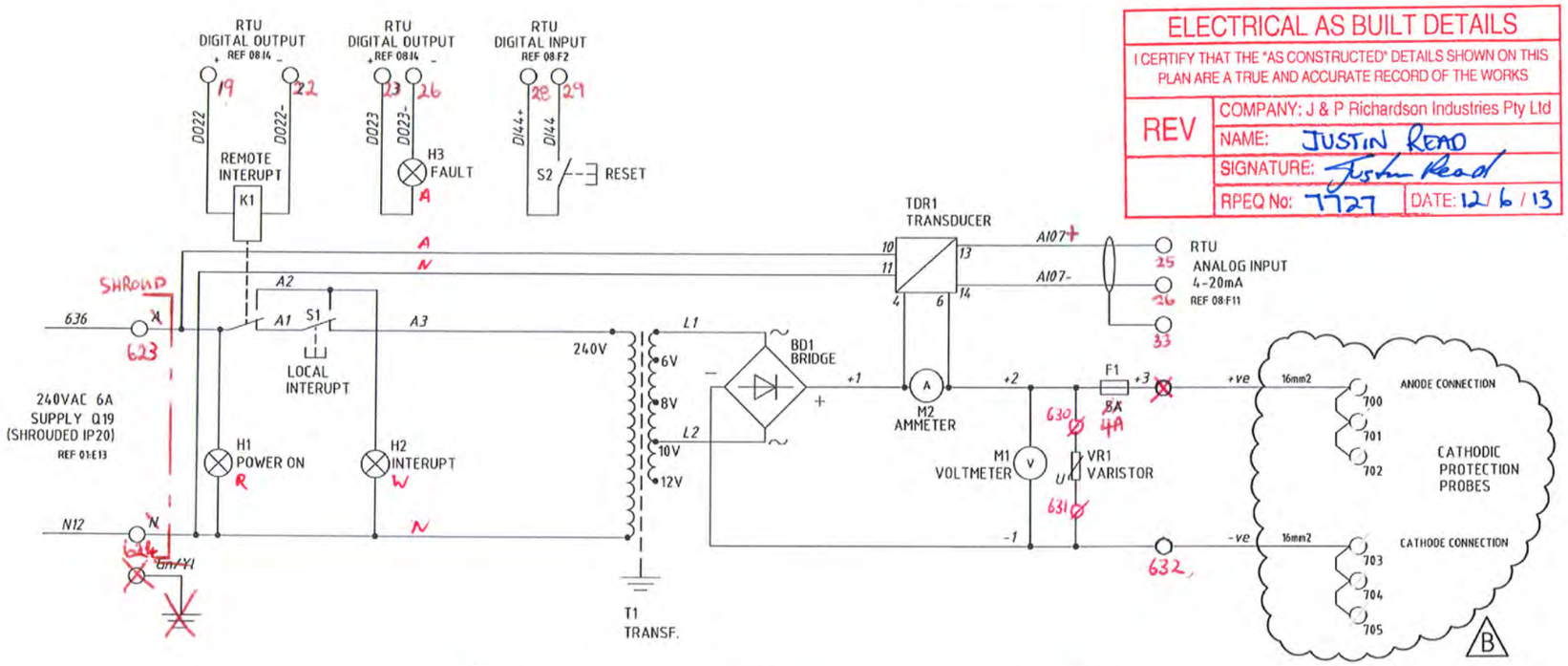
STD TEMPLATE SP-2P Ver3.2

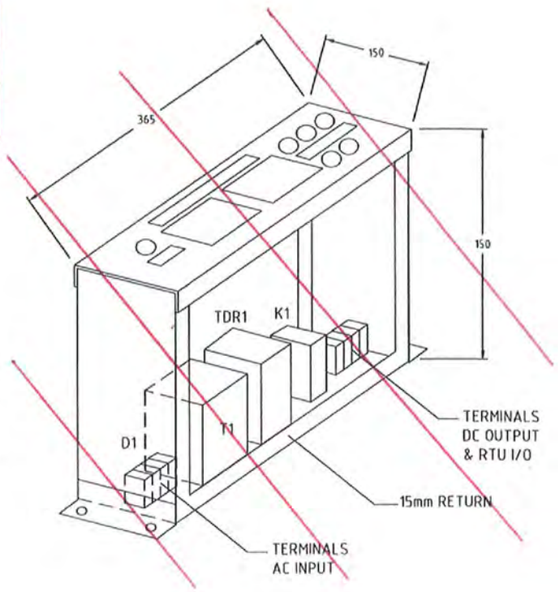
OPTION K

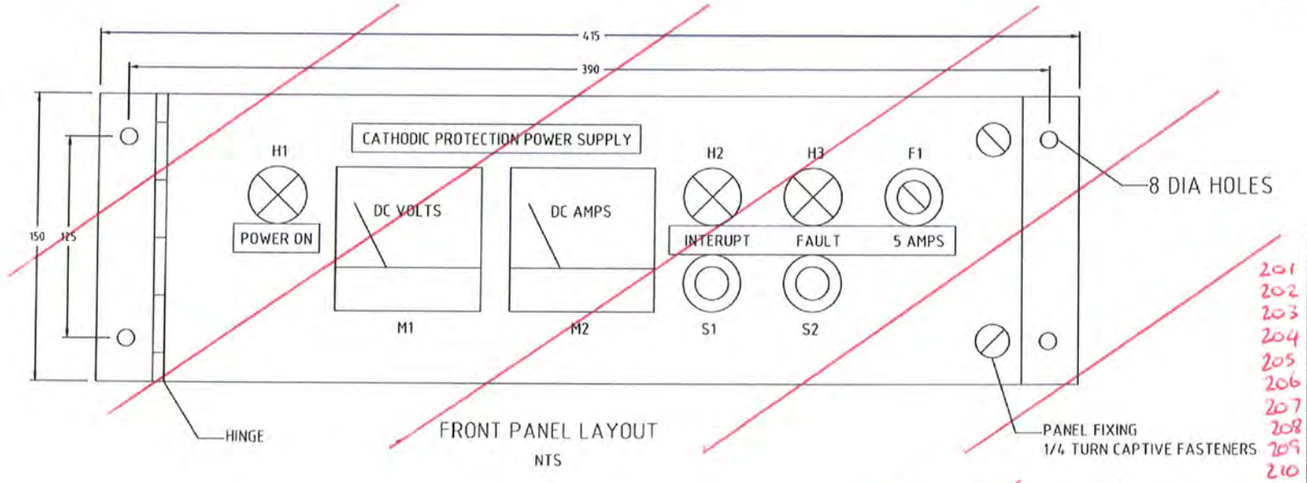
ELECTRICAL AS BUILT DETAILS

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: 12/6/13







FRONT PANEL LAYOUT
NTS

LEGEND:
- Ø SWITCHBOARD CONTROL TERMINAL
- O CATHODIC PROTECTION UNIT TERM.

	ITEM	QTY	DESCRIPTION (RS _____ = RS COMPONENTS PART NUMBER)
201	BD1	1	DIODE BRIDGE SINGLE PHASE 35A 600V ISOLATED METAL BASE RS2278772
202	F1	1	DC CUTOUT FUSE 4A – NHP NV20FW + NNS4
203	H1	1	POWER INDICATOR 240VAC – STS D7P-P4-PN7R
204	H2	1	INTERUPT INDICATOR 240VAC – STS D7P-P7-PN7W
205	H3	1	FAULT INDICATOR 24VDC – STS D7P-P0-PN3A
206	K1	1	REMOTE INTERUPT – RELAY 24VDC 2A CHANGEOVER + FW BASE RH2B-~~DC~~-24VDC + SH2B-05C
207	M1	1	VOLTMETER 0-15 V RS 244-862 GLD
208	M2	1	AMMETER 0-5 A RS 244-907
209	S1	1	LOCAL INTERUPT – STS D7P-F4-PX01
210	S2	1	FAULT RESET – STS D7P-F6-PX10
211	TDR1	1	TRANSDUCER – MANN INDUSTRIES FTXDMV 0-150mV/4-20mA/240vAC
212	T1	1	TRANSFORMER – 240VAC PRIM/6,8,10,12VAC SEC 60VA
213	VR1	1	VARISTOR – SURGE SUPPRESSOR RS (CLAMP 76V10Ap) (31VDC CONTINUOUS)
214.1	-	6	TERMINALS 16mm² – PHOENIX – UT16 3044199
214.2		2	TERMINAL END PLATE – PHOENIX D-UT16 3047206 RS 543-5215
214.3		4	TERMINAL PLUG IN BRIDGE – PHOENIX FBS2-12 3005950

Sheet 25

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.
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DRAFTED	P.HAGUE	Original Signed by P.HAGUE	6-1-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0310set_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: SP253 HALLEY CRESCENT SEWAGE PUMP STATION

TITLE: CATHODIC PROTECTION UNIT CONSTRUCTION & WIRING DIAGRAM

SHEET No. 25

Queensland Urban Utilities DRAWING No. 486/5/7-0310-025 AMEND. A

S10 TEMPLATE SP-2P Ver32

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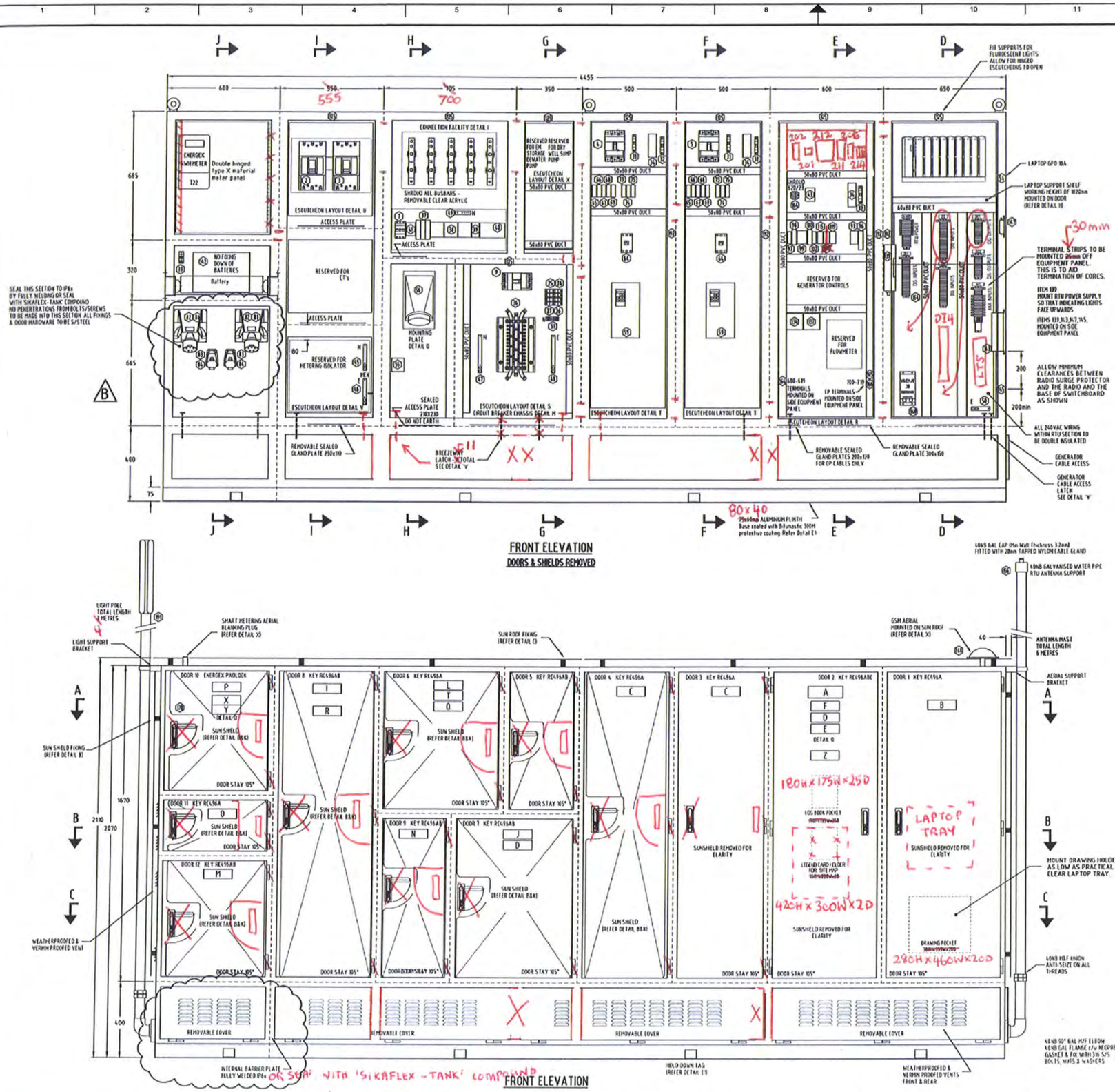

ELECTRICAL AS BUILT DETAILS

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: 12/6/13

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	6-1-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0310set_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
SP253
HALLEY CRESCENT
SEWAGE PUMP STATION

TITLE
SWITCHBOARD
GENERAL ARRANGEMENT
ELEVATIONS

SHEET No. 27

Queensland Urban Utilities DRAWING No. 486/5/7-0310-027

AMEND. A

STD TEMPLATE SP-2P Ver32

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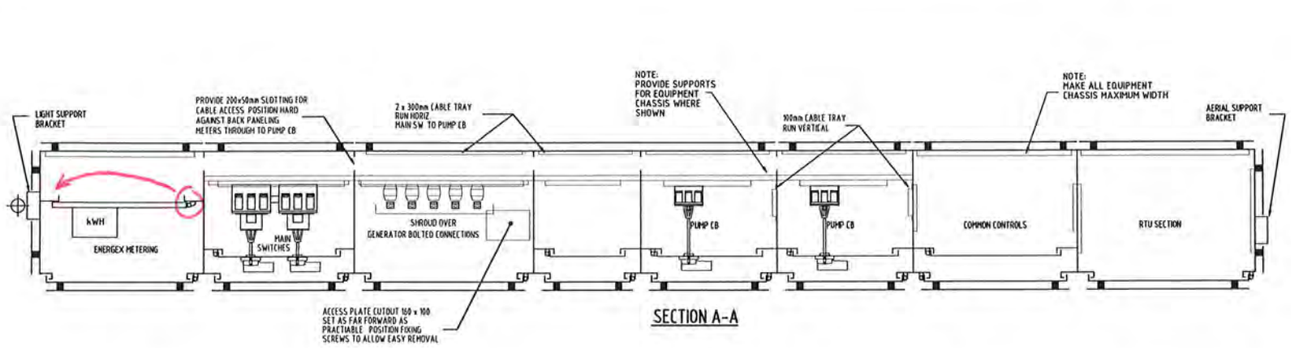
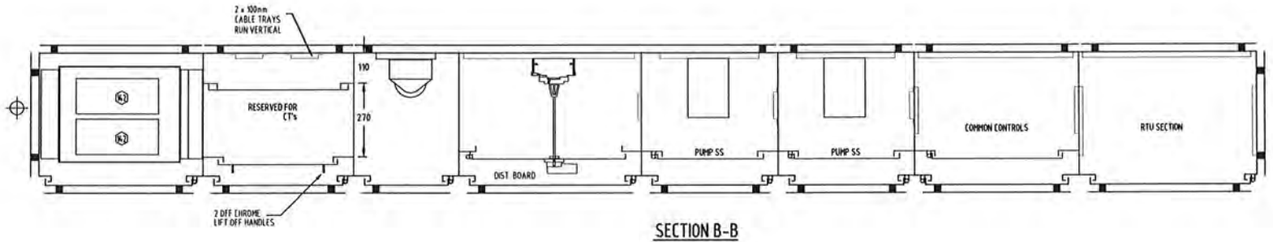
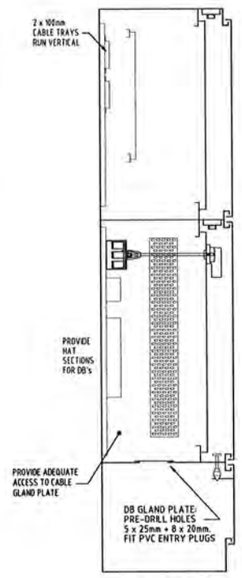
22-2-13



SECTION A-A



SECTION B-B



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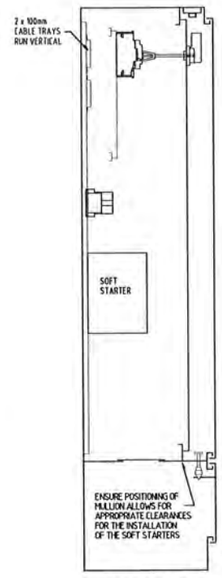

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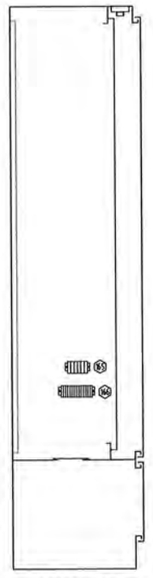

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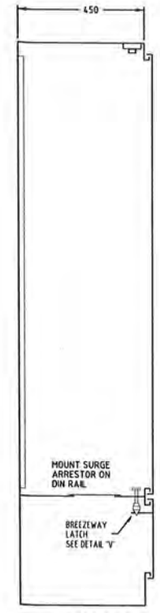
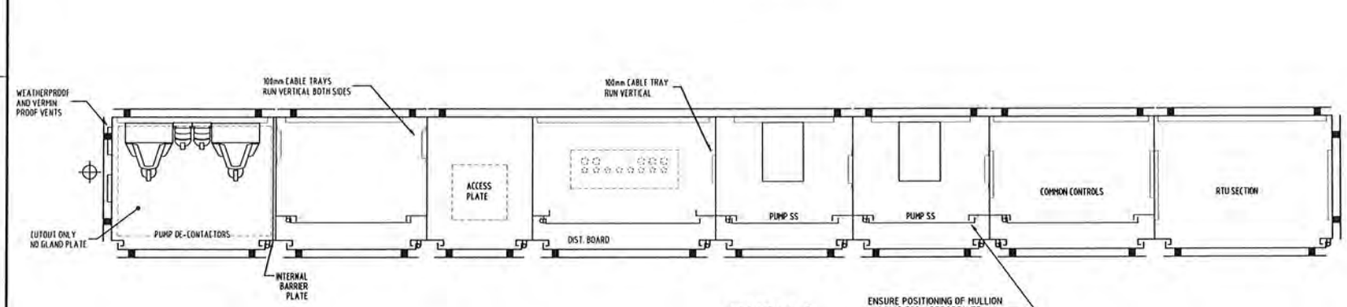


SECTION D-D



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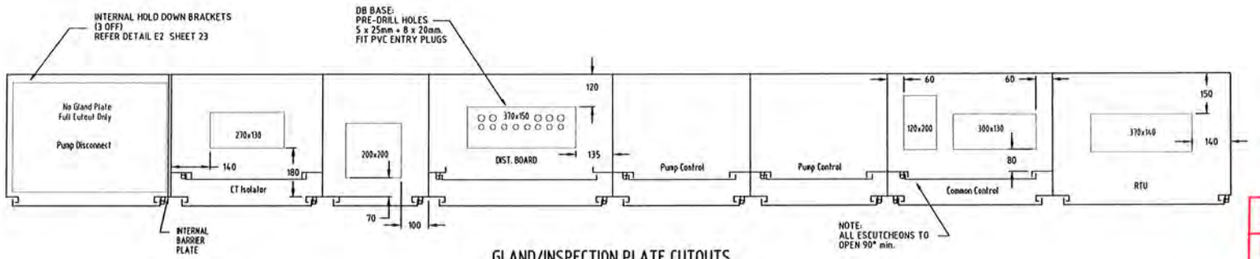
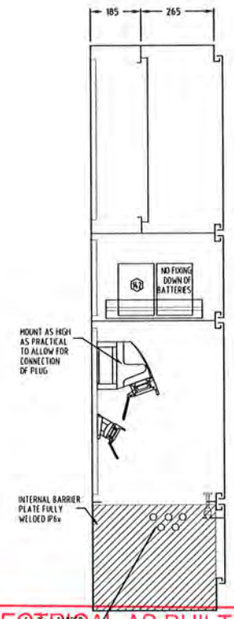
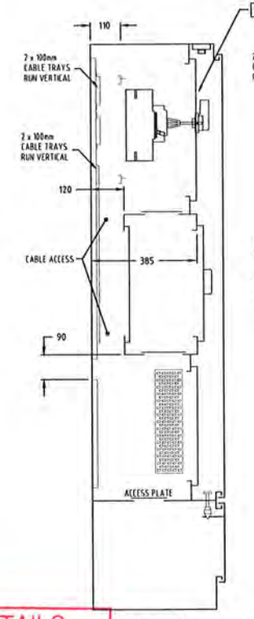


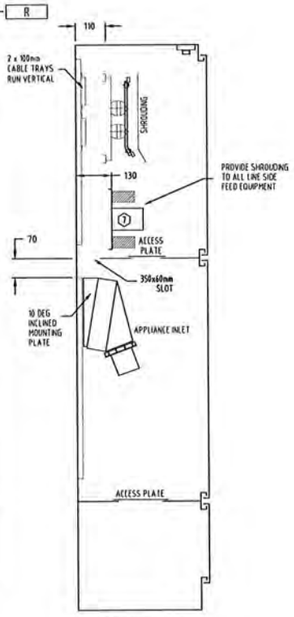
GLAND/INSPECTION PLATE CUTOUTS



SECTION J-J



SECTION I-I



SECTION H-H

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 12/6/13

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	Original Signed by P.HAGUE	6-1-12
DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No.	DATE
CAD FILE	57-0310set_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: SP253 HALLEY CRESCENT SEWAGE PUMP STATION

TITLE: SWITCHBOARD GENERAL ARRANGEMENT SECTIONS

SHEET No. 28

Queensland Urban Utilities DRAWING No. 486/5/7-0310-028 AMEND. A

STD TEMPLATE SP-2P Ver3.2

D:\AA_Major Projects\QUU - SPR111\Packages\Package 11A\SP253 Halley Cre\Drawings\Electrical Drawings\For Construction\57-0310set_A.dwg Last Saved by Peter on Wednesday, 16 January 2013 5:45:11 PM

22-2-13

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