BRISBANE CITY COUNCIL

Sewage Pump Station SP117

Saltash St

Contract : **BW 70103-037**

Job Number : **WT400089**

ELECTRICAL INSTALLATION

OPERATIONS and MAINTENANCE MANUAL

VOLUME 2

INSTALLATION BY:

SJ Electric (Qld) Pty Ltd
19 Elliot Street
Albion Qld 4010

Telephone: 07 3256 1522 Fax: 07 3256 1533

INDEX

3. DRAWINGS

3. DRAWINGS

4 INSPECTION & TEST RESULTS

4. INSPECTION & TEST RESULTS

SSM089

FIXED SPEED SEWAGE PUMP STATION

SWITCHBOARD CHANGEOVER COMMISSIONING PLAN

Site ID and Name	**SP117 Saltash Street**
Commissioning Date	22/06/2010

In Attendance

Name	Role During Commissioning	Company
John Clayton	**Commissioning Manager**	**QUU Projects**
PETER CROSS	P. MANAGER	**SJ Electric**
		SJ Electric
		SJ Electric

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 cut-over procedure is as follows:

1. Install temporary pumping system (pump controller and generator).
2. Disconnect sewage Pump #2 from existing switchboard and connect to temporary pumping system.

PUMP #1 IS NOW RUNNING THE STATION FROM EXISTING SWITCHBOARD

3. Fully commission Pump #2 on the temporary pumping system.

PUMP #2 IS NOW RUNNING THE STATION FROM TEMPORARY PUMPING SYSTEM

4. Disconnect Pump #1, consumer mains, on site generator and all field instrumentation from the existing switchboard.
5. Install new switchboard and connect to consumer mains.
6. 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.

7. Connect all field instrumentation.
8. Fully commission Pump #1 on the new switchboard to operate in "Local" and "Remote" modes.

PUMP #1 IS NOW RUNNING THE STATION FROM NEW SWITCHBOARD

9. Connect Pump #2 to the new switchboard and fully commission on the new switchboard to operate in all modes.
10. Complete the Site Acceptance Test (SAT) including all pump, 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 (ie tankers or temporary pumps).

2 PRE - CHANGE OVER WORKS CHECKLIST

The following checklist is to be completed and signed by the electrical contractor.

2.1 SWITCHBOARD FACTORY ACCEPTANCE TEST

Contractor Task	Completed
FAT has been completed as per BW FAT Document and all defects that were identified have been rectified.	18/6/10

2.2 CONCRETE SLAB EXTENSION

Contractor Task	Result
Confirm the concrete slab extension is complete including all necessary conduits.	OK ☑ NA ☐

2.3 SUPPLY AUTHORITY

Contractor Task	Outcome
The relevant supply authority has been organised to install the metering into the New Switchboard. N/A ✓	Company _____ Booked for / / @ _____(time) Ref # _____

2.4 NEW RADIO ANTENNA MAST LOCATION

Contractor 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. _____°

2.5 DISCHARGE MAINS PRESSURE TRANSDUCER

Contractor Task	Completed
Install delivery pressure transducer on the discharge rising main. Transducer is calibrated to the specified range (as per spec). Calibration sheet to be supplied with AS BUILT drawings. 0kPA to _____kPA	Installed OK ☐ Range 0(m) to____(m)

2.6 TEMPORARY GENERATOR SIZE

Contractor Task	Completed
Note the kW of each pump. 4.6kW	Pump #1 4.6 kW Pump #2 4.6 kW
Determine the type of generator and size of pump starter required. Confirm generator starting battery is in good condition, (have a contingency plan) ✓ OK	Genset Size _____ kVA Date Booked / / Delivery Date 22/6/10 Delivery Time _____

Electrical Contactor's Supervisor

Name:...Peter Crust Date: 22/6/10

Signature: .....

QUU Commissioning Manager

Name:...John Clayton Date: 22/6/10

Signature: ..... J. Clayton .....

3 CHANGE OVER WORKS

The following sequence of works that must be carried out in order. 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 STEP 1 - INSTALL TEMPORARY PUMPING SYSTEM

3.1.1 Register with Control Room

Contractor Task	Outcome
Call the Brisbane Water 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 a contact name and number and ask that he contact you if any level alarm is activated on site.	Name: ✓ CRO: _____ Time: 0630

3.1.2 Existing Switchboard Parameters

Contractor Task		Outcome
Ensure that the station is fully functional (pump can run)		OK ☑
Record the direction of the installed antenna for later reference.		Antenna dir. ~ °
Record the kWhr meter serial numbers.		# _____
Record 3 phase motor currents. Note rate of wet well pump down time.	Pump #1 Pump #2	U. 7.1 V. 6.9 W. 6.9 U 6.5 V. 6.6 W. 6.5
Record pump rotation **Mains** Supply	C'wise (RWB) ☐ Anti C'wise ☑	C'wise (RWB) Anti C'wise
	Pump #1	☐ ☑
	Pump #2	☐ ☑

3.1.3 Prepare and Install Temporary Pump Controller and Generator

Contractor Task	Outcome
Position generator in an appropriate location. Locate away from the work site to reduce noise.	OK ☑
Position fire extinguisher and oil spill bund as per risk analysis.	OK ☑
Connect the temporary pump controller to the generator and test connection (ie point to point to confirm correct connection)	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 ☐ NO
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 and record the phase rotation.	C'wise (RWB) ☑ Anti C'wise ☐

Electrical Contactor's Supervisor

Name: Peter Crust Date: 22/6/10

Signature: .....

BW Commissioning Manager

Name: John Clayton Date: 22/6/10

Signature: J. Clayton

3.2 STEP 2 - CONNECT PUMP #2 TO TEMPORARY PUMPING SYSTEM

Contractor 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 and control cables from the switchboard.	OK ☑
Connect Pump #2 power and control cables to the **temporary pump controller**.	OK ☑
Electrically test Pump #2 to temporary pump controller connections.	OK ☐
Switch the existing switchboard to "Local" and stop Pump #1.	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: 2-00

3.3 STEP 3 - DISCONNECT EXISTING SWITCHBOARD AND REMOVE

3.3.1 Contact Control Room

3.3.2 Disconnect Pump #1 and Remove Existing Switchboard

Contractor 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 and place near the temporary system so as to enable a quick changeover for Pump #2 if required.	OK ☑
Isolate main incomer at the switchboard. Ensure all secondary sources of power (ie on site Generator) are also isolated. Confirm there is no load.	OK ☐
Remove primary 3-phase fuses from power pole. Lock fuses in lockout box as per BW Isolation and Lock Out procedure. Fuse Size ~~25~~ amps	OK ☑
Disconnect mains cable from the switchboard.	OK ☐
Disconnect all other control and communication cables and remove	OK ☑
Remove the existing switchboard away from job site.	OK ☐

Electrical Contactor's Supervisor

Name: Peter Crust Date: 22/6/10

Signature: .....

BW Commissioning Manager

Name: **John Clayton**..... Date: 22/6/10

Signature: .....

3.4 STEP 4 - INSTALL NEW SWITCHBOARD

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

Contractor Task	Outcome
Install and connect the required (new or existing) mains and earth as per the contract. Install mains cable within the switchboard in steelflex conduit	New ☑ Existing ☐
Record the cable insulation resistance of the 3 phases	A >200 Megohm B >200 Megohm. C >200 Megohm
Record earth resistance	_____ ohms
Point to point phase continuity	**R to L1** OK☑ **W to L2** OK☑ **B to L3** OK☑

3.4.2 Install Supply Authority Metering

Task	Outcome
Install the direct connected kWhr Meter or Energex to connect CT metered metering as per 2.3	OK ☑

3.4.3 Energise New Switchboard

Contractor 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. Check MEN connection.	OK ☐ OK ☐
Turn on mains switch	OK ☑
Check 3 phase voltages	AB 415 V BC 415 V CA 415 V
Check phase rotation and ensure it is the same as determined earlier.	OK ☑
Confirm that a corrosion inhibitors has been positioned in the switchboard	OK ☐

Electrical Contactor's Supervisor

Name: Peter Crust Date: 22/6/10

Signature: .....

BW Commissioning Manager

Name:...**John Clayton**..... Date: 22/8/10

Signature: .....

3.5 STEP 5 - CONNECT PUMP #1 TO NEW SWITCHBOARD

Contractor 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 BW Isolation and Lock Out procedure.	OK ☑
Via the MERACHAL plug in sockets provided on the switchboard reconnect the power and control cables for Pump #1 only (the pump that is **not** connected to the generator set) If VFD connection is direct connect.	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. Monitor pump / wet level operating parameters.	OK ☐ ✓
Check the 3 phase motor current and compare with original readings. **PUMP #1 Can now be run in an emergency under the control of the new switchboard.** **When checking is complete - Isolate Pump #1**	A 7.2 Amps B 7.2 Amps C 7.2 Amps
De-isolate Pump #2 so that the station is again under the control of the temporary switchboard.	OK ☐ ✓

3.6 STEP 6 - CONNECT FIELD INSTRUMENTATION TO NEW SWITCHBOARD

3.6.1 Field Devices

Contractor Task	Outcome
Install and connect the hydrostatic level probe to the transmitter **Do not tighten shroud cable compression gland**	OK ☐ 0 to 6 Mtrs
Connect the delivery pressure probe to the transmitter	OK ☐ 0 to ___Mtrs
Install and connect the Multitrode LR3 wet well high level relay Probe	OK ☐ at ___ Mtrs
Install and connect the Multitrode SIR surcharge imminent level relay Probe	OK ☐ at ___ Mtrs
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 Dry well high/trip probes (sites with option E only) High = 50mm off the floor, Drip 200mm below the first flood exposed equipment	OK ☐ N/A ☑
Connect the sump pump (sites with option E only)	OK ☐ N/A ☑
Connect the generator IO cables (sites with option F only)	OK ☐ N/A ☑
Connect the thermistors for each pump (sites with option I only)	OK ☑ N/A ☐

Electrical Contactor's Supervisor

Name: Peter Crust Date: 22/6/10

Signature: .....

BW Commissioning Manager

Name:...**John Clayton**..... Date: 22/6/10

Signature: .....

3.6.2 Install Generator Mains (For Sites with Permanent Generators)

Contractor Task	Outcome
Record insulation resistance of the 3-phases	A ____ Megohm B ____ Megohm. C ____ Megohm
Record earth resistance	____ ohms
Point to point phase continuity	**R to L1** OK☐ **W to L2** OK☐ **B to L3** OK☐

3.6.3 Radio Antenna Installation

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

3.6.4 Telemetry and SCADA Communications Checks

BW Programmer Task	Outcome
Brisbane Water 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***	OK ☑

3.7 STEP 7 - COMMISSIONING PUMP #1

BW Programmer & Contractor Task	Outcome
Before doing 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 ☑
At this stage the Brisbane Water Programmer must complete the following procedures ***From the SSM086 Standard Fixed Speed Sewage Pumping Station (S.A.T.)*** ***Section2 : On Site Commissioning Procedure (Pump #1 Only)***	OK ☐
Once Pump #1 has been commissioned, leave the new switchboard in control of the site operating under "Remote" control.	OK ☐

Electrical Contactor's Supervisor

Name: Peter Crust Date: 22/6/10

Signature: .....

BW Commissioning Manager

Name:...**John Clayton**..... Date: 22/6/10

Signature: J. Clayton

3.8 STEP 8 - CONNECT PUMP #2 AND COMMISSION

3.8.1 Connect Pump #2 to New Switchboard

Contractor 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 of this submersible pump by bumping the pump On / Off via the local "Emergency Start" switch.	OK ☐
Check the 3-phase motor current and compare with original results. **PUMP #2 Can now be run in an emergency under the control of the new switchboard.**	A 7 Amps B 7 Amps C 7 Amps

3.8.2 Commissioning of Pump #2

BW Programmer & Contractor Task	Outcome
Before beginning the next step ensure that the well level is between "Start and Stop" level and Pump #1 is not running. (Station under the control of the new board) **Isolate Pump #1 to prevent it from running during the next test.**	OK ☐
Brisbane Water Programmer must complete the following procedures ***From the SSM086 Standard Fixed Speed Sewage Pumping Station (S.A.T.)*** ***Section2: On Site Commissioning Procedure – (Pump #2 Only)***	OK ☐
Once Pump #2 has been commissioned, de-isolate Pump #1 and leave that new switchboard in control of the site operating under remote control with both pumps able to run	OK ☐

Electrical Contactor's Supervisor

Name: Peter Crust Date: 22/6/10

Signature: .....

BW Commissioning Manager

Name: John Clayton..... Date: 22/6/10

Signature: .....

3.9 STEP 9 - COMPLETE TESTING

3.9.1 Site Acceptance Testing (S.A.T) – Remaining Tests

BW Programmer & Contractor 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 ☑

3.9.2 SCADA Testing

BW Programmer & Contractor Task	Outcome
The Brisbane Water 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 ☑

3.9.3 Preliminary Work Completion by Electrical Contractors

Contractor Task	Outcome
Leave the site clean and tidy and hazard free.	OK ☑
Confirm with BW that the job is complete and their staff can leave.	OK ☑
Confirm with BW that BW 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 ☑

3.9.4 Register Control Room

BW Programmer & Contractor 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: 1600

BW Commissioning Manager

Name:.....John Clayton..... Date: 22/6/10

Signature: .....

4 POST CHANGE OVER CHECKLIST

4.1 DELIVERABLES FROM RTU PROGRAMMER

BW Programmer	Date Completed
Within 7 days of the change over the following must be completed and signed off by the BW Programmer0 Complete **Section 4: Post Commissioning** ***from the SSM086 Standard Fixed Speed Sewage Pumping Station (S.A.T.)***	/ /
The BW 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 CONTRACTOR

Contractor 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

BW Commissioning Manager

Name:……John Clayton…… Date: …… ……

Signature: …… ……

ELECTRIC

TEST BEFORE YOU TOUCH

№ 10477

TEST SHEET

CUSTOMER NAME: BRISBANE WATER. SWITCHBOARD ID: SP117 DATE: 22-6-2010

CUSTOMERS ADDRESS: SLATASH STREET JOB No.: WTH00089

C/B NO.	CABLE SIZE	C/B SIZE	N NO.	CIRCUIT DESCRIPTION	VISUAL INSPECTION	CORRECT CIRCUIT CONNECTION	EARTH CONT.	A - E MΩ	N - E M Ω	A - E VOLTS	A - N VOLTS	ø - ø VOLTS	RCD TEST mA	RCD TEST mS	Fault loop Impendance measurement
	16	FUSE 80A		MAINS (FROM POLE TO BOARD	✓	✓	OR	∝	∝	239	241	423			
	16	80A			✓	✓		∝		245	246	425			
	16	80A			✓	✓		∝		243	243				

TEST EQUIPMENT: MEGGER MULTIMETER

SERIAL NO: 5103060 00000000359

TEST DUE DATE: 12-10-2010 12-10-20

NAME: Martin Coogan

LIC NO: 112578

SIGNATURE:

SJ Electric Pty Ltd

Ref: SJQF 502
Date: 19 July 2007

Inspection and Test Check List

Project: Brisbane Water SP117		
Contractor / Order No.		SJ Electric Job No. BT430022
ITC No. 003	Date: 17/6/10	Corresponding ITP No. 001

General Data

Built By: Brendan Stringer, Thomas Chan	Test Equipment:	Megger / Multimeter
Location: Workshop	Type:	Kyoritsu / Fluke
Drg rev No.	Serial No.	5149622 / 10620027

Check List (Tick ( ) acceptable items only, note deviations under "REMARKS") (If not applicable mark as N/A)

Switch Board and Control Panels Construction Check List

Item	Activity Description	Hold Points	Checked	By (Initial)
	Busbar		( )	
1	Correct size busbar to rated current load to meet AS 2067		(✓)	
2	Appearance is good i.e. Straight & level		(✓)	
3	Correct phase identification		(✓)	
4	Correct hole sizes for joins and terminations		(✓)	
5	All clearances have been meet		(✓)	
6	Correct busbar support material has been used		(✓)	
7	Busbar supports are at the correct distances apart		(✓)	
8	Correct tensioning & blue spotted at all joins & terminations		(✓)	
9	Correct hole format in joining cubicle		(✓)	
10	Sufficient clearances for terminating cable		(✓)	
11	Heat shrink attached to flags for terminations		(✓)	
12	All joins are dressed flat & polished		(✓)	
13	Busbar is insulated at supports		(✓)	
	Cabling			
15	Correct size for demand of circuit		(✓)	
16	Correct phase colouring		(✓)	
17	Correct termination & insulated		(✓)	
18	Correct numbering		(✓)	
19	Correctly formed and neat		(✓)	
20	Correctly supported		(✓)	
21	All cable entry holes are insulated		(✓)	
22	Check cable tray is mounted correctly & all sharp surfaces are removed		(✓)	
23	All cable ties are neatly trimmed		(✓)	
24	All cable clear from busbar's		(✓)	
25	Check all analog inputs and outputs are shielded		(✓)	
26	All shielded cables have been earthed		(✓)	

Remarks/Remedial Action Required Hold Points:

Remedial Actions Completed ☐ **Signature:** ..... **Date:**

Checked By: Brendan Stringer		
Signature:	**Approved By: Renee Wardrop**	
Electrical Licence No. 114766	**Signature:**	**Date: 17/6/10**

All the above signatories certify that the Electrical switchboard work listed has been checked and tested in accordance with the prescribed procedure and that such work complies in every respect with the requirements of the Electricity Act, AS3000 2007 and AS3008.1.1 1998

SJ Electric Pty Ltd

Ref: SJQF 502
Date: 19 July 2007

Inspection and Test Check List

Switch Board and Control Panels Construction Check List (SJQF 502)				
Item	**Activity Description**	**Hold Points**	**Checked**	**By (Initial)**
	Switchgear			
1	Check all main switches & circuit breakers are the correct			
	• current rating		✓	
	• ka rating.		✓	
	• trip settings		✓	
	• correct to cabling		✓	
	• to labels.		✓	
	• shunt trips		✓	
	• inter locks		✓	
2	Check the fixings		✓	
3	Check the number of poles		✓	
4	Check correct operation		✓	
5	Correct mechanism		✓	
	Control Switches			
6	Check correct number of positions		✓	
7	Check correct size		✓	
8	Check correct to labels		✓	
9	Check mountings		✓	
	Contactors			
10	Check for correct model no		✓	
11	Check for correct current rating to control		✓	
12	Correct auxiliary contacts		✓	
13	Correct phasing		✓	
14	Correct coil size		✓	
15	Check that it is accessible		✓	
16	Check it has correct overloads		✓	
17	Correct labelling		✓	
	Relays and Timers			
18	Check correct rated voltage		✓	
19	Correct contacts		✓	
20	Correct variances		✓	
21	Dip switches in required position		✓	
22	Timers set to correct settings		✓	
23	Correct operation		✓	
24	Correct auxiliaries		✓	
	Transformers and Power Supplies			
25	Check for correct voltage ratings		✓	
26	Check for correct current ratings		✓	
27	Check cabling is correct (no crossed voltage)		✓	
28	Check the secondary has been earthed when applicable		✓	
29	Check correct labelling		✓	
30	Check mountings		✓	
31	Check for clearance around for heat extraction		✓	

Remarks/Remedial Action Required:

Remedial Actions Completed ☐ **Signature:** ..... **Date:**

Checked By: Brendan Stringer		
Signature:	**Approved By: Renee Wardrop**	
Electrical Licence No. 114766	**Signature:**	**Date: 17/6/10**

All the above signatories certify that the Electrical switchboard work listed has been checked and tested in accordance with the prescribed procedure and that such work complies in every respect with the requirements of the Electricity Act 2002, AS3000 2007 and AS3008.1 1998

SJ Electric Pty Ltd

Ref: SJQF 502
Date: 19 July 2007

Inspection and Test Check List

Switch Board and Control Panels Construction Check List (SJQF 502)				
Item	**Activity Description**	**Hold Points**	**Checked**	**By (Initial)**
	Fuses			
1	Check that the cartridge is correct size		✓	
2	Correct mountings		✓	
3	Correct labelling		✓	
4	Check that line side conductors are SDI and < 500mm		✓	
5	Current Transformers		✓	
6	Correct ratio & size		✓	
7	Correct direction of feed		✓	
8	Correct earthing		✓	
9	Correct cabling		✓	
	Voltage / Current Monitoring Equipment			
10	Correct voltage / current range on meter to the installation		✓	
11	Correct to ratio on Cts		✓	
12	Voltmeter terminations are insulated		✓	
13	Check that all meters are preset to zero		✓	
14	Correct indication labels applied		✓	
	Indication Equipment			
15	Correct colour		✓	
16	Correct voltage size with matching lamp attached		✓	
17	Correct operation eg. Push to test		✓	
18	Correct labelling		✓	
	Terminal Blocks			
19	Correct size to cable		✓	
20	Correct colour coding		✓	
21	Correct numbering		✓	
22	Correctly mounted with lock ends		✓	
23	Correct labels		✓	
	Neutral Links			
24	Check that they are accessible		✓	
25	Correct labelling		✓	
26	Correct numbers stamped to match circuit identification		✓	
27	Correct cabling to circuit identification		✓	
28	Check that all neutral links & bar are insulated from the switchboard frame		✓	
	Earthing			
29	Check that all main earth bar is correct size		✓	
30	Check that the main earth is continuous		✓	
31	Correctly labelled		✓	
32	Continuous for CT wiring		✓	
33	Check that all doors with equipment mount are electrically earth		✓	
34	Check all frames are earthed		✓	

Remarks/Remedial Action Required:

Remedial Actions Completed ☐ **Signature:** ..... **Date:**

Checked By: Brendan Stringer	
Signature:	**Approved By: Renee Wardrop**
Electrical Licence No. 114766	**Signature:** **Date: 17/6/10**

All the above signatories certify that the Electrical switchboard work listed has been checked and tested in accordance with the prescribed procedure and that such work complies in every respect with the requirements of the Electricity Act 2002, AS3000 2007 and AS3008.1 1998

SJ Electric Pty Ltd

Ref: SJQF 502
Date: 19 July 2007

Inspection and Test Check List

Switch Board and Control Panels Construction Check List (SJQF 502)				
Item	**Activity Description**	**Hold Points**	**Result**	**By (Initial)**
	Earthing Resistance & Continuity Test (Note all readings should be <.5 ohms)			
1	Make sure the MEN connection is removed			
2	Attach lead to main earth connection point than test with other lead between			
3	The frame of each section		<.1Ω	
4	The doors		<.1Ω	
5	All mounting bolts to all equipment		<.1Ω	
6	All brackets		<.1Ω	
7	All earth links		<.1Ω	
8	All bolts & threads for the mounting of escutcheon		<.1Ω	
9	All gland plates		<.1Ω	
10	All cable trays		<.1Ω	
11	All earth connection		<.1Ω	
12	Earth secondary of transformers and power supplies where applicable		<.1Ω	
13	Earth surge diverters		<.1Ω	
14	Current transformers		<.1Ω	
	Insulation Test	**Hold Points**	**Test Result**	**By (Initial)**
1	Make sure all control fuses and earths are removed from all electronic equipment before this test is carried out		(✓)	
2	Set insulation tester (meggar) to 500 volts before proceeding		(✓)	
3	Test between:			
	• Red - White		>200MΩ	
	• Red - Blue		>200MΩ	
	• Red - Earth		>200MΩ	
	• Red - Neutral		>200MΩ	
	• White - Blue		>200MΩ	
	• White - Earth		>200MΩ	
	• White - Neutral		>200MΩ	
	• Blue - Earth		>200MΩ	
	• Blue - Neutral		>200MΩ	
4	If all readings are clear the insulation tester is to be set at 1000 volts then proceed with the following		(✓)	
5	Test between:			
	• Red - White		>200MΩ	
	• Red - Blue		>200MΩ	
	• White - Blue		>200MΩ	

Remarks/Remedial Action Required:

Remedial Actions Completed ☐ **Signature:** ..... **Date:**

Checked By: Brendan Stringer		
Signature:	**Approved By: Renee Wardrop**	
Electrical Licence No. 114766	**Signature:**	**Date: 17/6/10**

All the above signatories certify that the Electrical switchboard work listed has been checked and tested in accordance with the prescribed procedure and that such work complies in every respect with the requirements of the Electricity Act 2002, AS3000 2007 and AS3008.1 1998

SJ Electric Pty Ltd

Ref: SJQF 502
Date: 19 July 2007

Inspection and Test Check List

Switch Board and Control Panels Construction Check List (SJQF 502)				
Item	**Activity Description**	**Hold Points**	**Checked**	**By (Initial)**
	2.5 KV Test This test is used to prove all busbar construction			
1	Make sure all control fuses and earths are removed from all electronic equipment before this test is carried out		( )	
2	All the following tests must be set at a 1 minute time period, result should be 0 Amps		( )	
		Hold Points	**Test Result**	**By (Initial)**
3	Test between: • Red - White			
	• Red - Blue			
	• Red - Earth			
	• Red - Neutral			
	• White - Blue			
	• White - Earth			
	• White - Neutral			
	• Blue -Earth			
	• Blue - Neutral			
	Supply Authority section			
1	Check supply authority main isolator lockable in the on position		(✓)	
2	Check all doors before the Ct's. Or meters are lockable		(✓)	
3	Check where the neutral link is located for the site connection if metres are remotely mounted		(✓)	
4	Check where the earth link is located for the site connection if meters are remotely mounted		(✓)	
5	Check double insulated cable for POT fuses are less than 800 mm		(✓)	
6	Check double insulated cable are taken on line side of Ct.s		(✓)	
7	Check metre wiring is in building wire and correct size		(✓)	
8	Check if Ct meter wiring is in steel conduit when closer than 100mm to other conductors		(✓)	
9	Check there is no equipment connected before on the line side of meters or Ct.s (i.e., surge diverters)		(✓)	
10	Check list may vary if switch board is going interstate. Alter where applicable		(✓)	

Remarks/Remedial Action Required:

Remedial Actions Completed ☐ **Signature:** ..... **Date:**

Checked By: Brendan Stringer		
Signature:	**Approved By: Renee Wardrop**	
Electrical Licence No. 114766	**Signature:**	**Date: 17/6/10**

All the above signatories certify that the Electrical switchboard work listed has been checked and tested in accordance with the prescribed procedure and that such work complies in every respect with the requirements of the Electricity Act 2002, AS3000 2007 and AS3008.1 1998

SJ Electric Pty Ltd

Ref: SJQF 502
Date: 19 July 2007

Inspection and Test Check List

Switch Board and Control Panels Construction Check List (SJQF 502)				
Item	**Activity Description**	**Hold Points**	**Checked**	**By (Initial)**
	Functional Test			
Prior to connection of supply all inspection and test check lists must be completed		**Hold Points**	**Checked**	**By (Initial)**
1	Point to point test on all cables as per schematic and single line drgs. (Leave spot for drawing. No's and Rev No's		(✓)	
2	Check all Cts are not open circuit			
Connect supply (personal protection equipment must be used)		**Hold Points**	**Test Result**	**By (Initial)**
3	Check polarity of connection			
	• Red - White	415 V	(✓)	
	• Red - Blue	415 V	(✓)	
	• Red - Earth	240 V	(✓)	
	• Red - Neutral	240 V	(✓)	
	• White - Blue	415 V	(✓)	
	• White - Earth	240 V	(✓)	
	• White - Neutral	240 V	(✓)	
	• Blue -Earth	240 V	(✓)	
	• Blue - Neutral	240		
		Hold Points	**Checked**	**By (Initial)**
4	Correct voltage / current range on meter to the installation		(✓)	
5	Check functional operation of switchboard following specific construction issue drawings (leave spot for drawing No's and Rev No's		(✓)	
6	Check operation of all RCD's < .03s		(✓)	
	Pre delivery check list		( )	
1	Check all punch list items are complete		(✓)	
2	Check if Compliance label is mounted and correct		(✓)	
3	Check if heat shrinks is supplied when necessary		(✓)	
4	Check all load bolts are supplied		(✓)	
5	Check if m.e.n is mounted after testing		(✓)	
6	All drawings have been as built red lined and supplied and signed for to drafting office		(✓)	
	Received by drafting Office (Sign)		(✓)	
7	Photos have been taken of every section and given to manager		(✓)	
8	Test reports have been photo copied and placed in the client folder and SJ Electric folder		(✓)	
9	As built drawings received back from drafting office , verify Rev No.		(✓)	
	Received by Work shop (Sign)		(✓)	
10	Manuals placed in client folder		(✓)	
11	Switch Board wrapped with delivery details supplied		(✓)	
12	As built drawings placed in client folder. (Latest revision ( )	Copy of red lined marked Drawing ( )		

Remarks/Remedial Action Required:

Remedial Actions Completed ☐ **Signature:** ..... **Date:**

Checked By: Brendan Stringer		
Signature:	**Approved By: Renee Wardrop**	
Electrical Licence No. 114766	**Signature:**	**Date: 17/6/10**

All the above signatories certify that the Electrical switchboard work listed has been checked and tested in accordance with the prescribed procedure and that such work complies in every respect with the requirements of the Electricity Act 2002, AS3000 2007 and AS3008.1 1998

J Electric (Qld) Pty. Ltd.

FACTORY ACCEPTANCE TEST SHEET 1:

Project: Pump Station SP 117
Client: QLD Urban Utilities
Job No. BTH0022
Equipment: SP 117 Switchboard
Section: Incomer
Drawing: 486/5/7-0130 Sheet 1

	Process Operation	Reference/ Acceptance Criteria	Passed	
1.	Ensure Insulation test as per QA3CH-15 have been completed	SJ QA3CH-15 AS 3000 Insulation resistance greater than 1 megohm ph to earth Hi pot test 2.5 kv ph-eth for 1 minute	✓	17/6/10
2.	Ensure Checks 1 to 11 as per QA3CH-020 have been completed	SJ QA3CH-020 Point to Point check of schematics. Visual Check of wiring.	✓	17/6/10
3.	Check Manual Transfer Switch is functioning by confirming power to the line and then load sides of the switches when energized and de-energized.	Drawing _____	✓	17/6/10
4.	Check operation of Energex Power On phase failure relay PFRE and correct signal is being received by RTU	Drawing _____ Remove one phase from relay sensing circuit to simulate loss of power.	✓	17/6/10
5.	Check operation of Station Power On phase failure relay PFRS and correct signal is being received by RTU	Drawing _____ Remove one phase from relay sensing circuit to simulate loss of power.	✓	17/6/10

Electric (Qld) Pty. Ltd.

Tests Completed By	Witnessed By	Accepted By
Brendon Stanyon	Renee Wardrop	
Date 17/6/10	Date 17/6/10	Date
Comments:		
Instruments Used:		

I Electric (Qld) Pty. Ltd.

FACTORY ACCEPTANCE TEST SHEET 2:

Project: **Pump Station SP** 117
Client: **QLD Urban Utilities**
Job No. _____
Equipment: **SP____ Switchboard**
Section: **DB**
Drawing: _____ **Sheet 1**

	Process Operation	Reference/ Acceptance Criteria	Passed	Date
1.	Ensure Insulation test as per QA3CH-15 have been completed	SJ QA3CH-15 AS 3000 Insulation resistance greater than 1 megohm ph to earth Hi pot test 2.5 kv ph-eth for 1 minute	✓	17/6/10
2.	Ensure Checks 1 to 11 as per QA3CH-020 have been completed	SJ QA3CH-020 Point to Point check of schematics. Visual Check of wiring.	✓	17/6/10
3.	Check voltage is available on line side of circuit breaker Q9	Drawing _____ 415 vac ph to ph. 240 vac ph to n 240 vac ph to e	✓	17/6/10
4.	Ensure all distribution circuit breakers are "OFF" and operate circuit breaker Q9 and confirm voltage is available to distribution chassis.	Drawing _____ 415 vac ph to ph. 240 vac ph to n 240 vac ph to e	✓	17/6/10
5.	Ensure Station Mains Power Failure Relay Circuit Breaker Q10 is "OFF" and close circuit breaker for PFRS Relay supply.	Drawing _____	✓	17/6/10
6.	Confirm voltage is available to line side of Station Mains Power Failure Relay Circuit Breaker. Close circuit breaker and confirm voltage is available to Line side of PFRS Relay.	Drawing _____ 415 vac ph to ph. 240 vac ph to n 240 vac ph to e	✓	17/6/10
7.	Repeat Step 6 above for circuit breaker Q11, Q12, Q13, Q14, Q16, Q17, Q19, Q20 and Q21	Drawing _____ 415 vac ph to ph (Where applicable). 240 vac ph to n 240 vac ph to e	✓	17/6/10

Electric (Qld) Pty. Ltd.

8.	Check operation of the following RCD's and note tripping times: • Q11 17ms • Q12 28ms • Q13 27ms • Q19 27ms • Q21 ~~27ms~~ PASS	Drawing 496/5/7-0186 Tripping Time:	17/6/10

Tests Completed By	Witnessed By	Accepted By
Brenton Grainger	Renee Wardrop	
Date 17/6/10	Date 17/6/10	Date
Comments:		
Instruments Used:		

Electric (Qld) Pty. Ltd.

FACTORY ACCEPTANCE TEST SHEET 3:

Project: Pump Station SP 117
Client: QLD Urban Utilities
Job No. _____
Equipment: SP___ Switchboard
Section: RTU Connection
Drawing: _____ Sheets 1 & 6

	Process Operation	Reference/ Acceptance Criteria	Passed	Date
1.	Ensure Insulation test as per QA3CH-15 have been completed	SJ QA3CH-15 AS 3000 Insulation resistance greater than 1 megohm ph to earth Hi pot test 2.5 kv ph-eth for 1 minute		17/6/10
2.	Ensure Checks 1 to 11 as per QA3CH-020 have been completed	SJ QA3CH-020 Point to Point check of schematics. Visual Check of wiring.		17/6/10
3.	Ensure Laptop GPO, circuit breaker Q13 is "OFF" and operate RTU circuit breaker Q30 on DB Chassis and ensure: RTU Power Supplies are operating correctly.	Drawing _____ Sheet 1 240 vac ph to n on power supply input. 24 vdc on power supply output		17/6/10
4.	Close Laptop GPO Circuit Breaker and: Check GPO polarity. Check GPO switch is functioning. Check operation of RCD device.	Drawing _____ Sheet 1		17/6/10
7.	Confirm operation of door switches.	Drawing _____ Sheet 1 & 6		17/6/10

I Electric (Qld) Pty. Ltd.

Tests Completed By	Witnessed By	Accepted By
Brenton Stamp	Renee Wardrop	
Date 17/6/10	Date 17/6/10	Date
Comments:		
Instruments Used:		

Electric (Qld) Pty. Ltd.

FACTORY ACCEPTANCE TEST SHEET 4:

Project: **Pump Station SP** 117
Client: **QLD Urban Utilities**
Job No. _____
Equipment: **SP____ Switchboard**
Section: **Pump 1**
Drawing: _____ **Sheet 2**

	Process Operation	Reference/ Acceptance Criteria	Passed	Date
1.	Ensure Insulation test as per QA3CH-15 have been completed	SJ QA3CH-15 AS 3000 Insulation resistance greater than 1 megohm ph to earth Hi pot test 2.5 kv ph-eth for 1 minute	✓	17/6/10
2.	Ensure Checks 1 to 11 as per QA3CH-020 have been completed	SJ QA3CH-020 Point to Point check of schematics. Visual Check of wiring.	✓	17/6/10
3.	Check voltage is available on line side of motor circuit breaker Q4.	415 vac ph to ph	✓	17/6/10
4.	Ensure control circuit breaker Q4-1 is "OFF" and emergency stop is operated, close circuit breaker Q4 and confirm voltage is available on line side of circuit breaker Q4.	415 vac ph to ph	✓	17/6/10
5.	Check voltage is available on line side of control circuit breaker Q4-1, close circuit breaker and ensure: • 1K2 Control Supply Relay is operating correctly.	240 vac ph to n	✓	17/6/10
6.	Release emergency stop and confirm operation of isolating contactor 1K1 and confirm voltage is available to VSD.	415 vac ph to ph	✓	17/6/10

Electric (Qld) Pty. Ltd.

7.	Confirm operation of Pump 1 Digital Inputs.	Drawing _____ Sheet 2	✓	17/6/10
8.	Confirm Operation of Pump 1 Digital Outputs	Drawing _____ Sheet 2	✓	17/6/10
9.	Confirm Operation of Pump 1 Analog I/O	Drawing _____ Sheet 2		
10.	Confirm Operation of cubicle fan by manually operating the thermostat 1FC	Drawing _____ Sheet 2	N A	17/6/10

Tests Completed By	**Witnessed By**	**Accepted By**
Brenton Stringer	Renee Wardrop	
Date 17/6/10	**Date** 17/6/10	**Date**
Comments:		
Instruments Used:		

I Electric (Qld) Pty. Ltd.

FACTORY ACCEPTANCE TEST SHEET 5:

Project: Pump Station SP 117
Client: QLD Urban Utilities
Job No.
Equipment: SP____ Switchboard
Section: Pump 2
Drawing: _____ Sheet 3

	Process Operation	Reference/ Acceptance Criteria	Passed	Date
1.	Ensure Insulation test as per QA3CH-15 have been completed	SJ QA3CH-15 AS 3000 Insulation resistance greater than 1 megohm ph to earth Hi pot test 2.5 kv ph-eth for 1 minute	✓	17/6/10
2.	Ensure Checks 1 to 11 as per QA3CH-020 have been completed	SJ QA3CH-020 Point to Point check of schematics. Visual Check of wiring.	✓	17/6/10
3.	Check voltage is available on line side of motor circuit breaker Q5.	415 vac ph to ph	✓	17/6/10
4.	Ensure control circuit breaker Q5-1 is "OFF" and emergency stop is operated, close circuit breaker Q5 and confirm voltage is available on line side of circuit breaker Q5.	415 vac ph to ph	✓	17/6/10
5.	Check voltage is available on line side of control circuit breaker Q5-1, close circuit breaker and ensure: • 2K2 Control Supply Relay is operating correctly.	240 vac ph to n	✓	17/6/10
6.	Release emergency stop and confirm operation of isolating contactor 2K1 and confirm voltage is available to VSD.	415 vac ph to ph	✓	17/6/10

Electric (Qld) Pty. Ltd.

7.	Confirm operation of Pump 1 Digital Inputs.	Drawing _____ Sheet 3	✓	17/6/10
8.	Confirm Operation of Pump 1 Digital Outputs	Drawing _____ Sheet 3	✓	17/6/10
9.	Confirm Operation of Pump 1 Analog I/O	Drawing _____ Sheet 3		
10.	Confirm Operation of cubicle fan by manually operating the thermostat 2FC	Drawing _____ Sheet 3	N/A	17/6/10

Tests Completed By	**Witnessed By**	**Accepted By**
Brenton Sturgess	Renee Wardrop	
Date 17/6/10	**Date** 17/6/10	**Date**
Comments:		
Instruments Used:		

Sewage Pump Station SP117

Saltash St

Electrical Drawing List 2

Factory Test

Sheet No.	Drawing No.	Title
00	486/5/7-0103-000	Site Cover Sheet
01	486/5/7-0103-001	Power Distribution Schematic Diagram
02	486/5/7-0103-002	Pump 01 Schematic Diagram
03	486/5/7-0103-003	Pump 02 Schematic Diagram
04	486/5/7-0103-004	[RESERVED] Sump Pump Schematic Diagram
05	486/5/7-0103-005	[RESERVED] Generator Control Schematic Diagram
06	486/5/7-0103-006	Common Controls Schematic Diagram
07	486/5/7-0103-007	Common RTU I/O Schematic Diagram
08	486/5/7-0103-008	RTU Power Distribution Schematic Diagram
09	486/5/7-0103-009	RTU Digital Inputs Termination Diagram
10	486/5/7-0103-010	RTU Digital Inputs Termination Diagram
11	486/5/7-0103-011	RTU Digital Outputs Termination Diagram
12	486/5/7-0103-012	RTU Analogs & Miscellaneous Termination Diagram
13	486/5/7-0103-013	[RESERVED] Common Controls Termination Diagram
14	486/5/7-0103-014	Equipment List
15	486/5/7-0103-015	Cable Schedule
16	486/5/7-0103-016	Switchboard Label Schedule
17	486/5/7-0103-017	Switchboard Construction Details
18	486/5/7-0103-018	Switchboard Construction Details
19	486/5/7-0103-019	Level Probes and Pressure Transmitter Installation Details
20	486/5/7-0103-020	[RESERVED] Cathodic Protection Unit
21	486/5/7-0103-021	[RESERVED] Field Disconnection Box
22	486/5/7-0103-022	Switchboard General Arrangement Elevations - Double Sided
23	486/5/7-0103-023	Switchboard General Arrangement Sections - Double Sided
24	486/5/7-0103-024	Slab & Conduit Details
25	486/5/7-0103-025	Slab & Conduit Details
26	486/5/7-0103-026	Slab & Conduit Details

SJ Electric 7623
Brendan Stringer 114766
17/6/10 Blya

Test copy

QUEENSLAND Urban Utilities
ABN 72 002 765 795

SP117 SALTASH STREET SEWAGE PUMPING STATION

SITE COVER SHEET

ELECTRICAL DRAWINGS INDEX

DWG N°.	TITLE	SHEET	REVISIONS
486/5/7-0180-000	SITE COVER SHEET	00	0 A
486/5/7-0180-001	POWER DISTRIBUTION SCHEMATIC DIAGRAM	01	0 A
486/5/7-0180-002	PUMP 01 SCHEMATIC DIAGRAM	02	0 A
486/5/7-0180-003	PUMP 02 SCHEMATIC DIAGRAM	03	0 A
486/5/7-0180-004	*RESERVED (SUMP PUMP)*	04	
486/5/7-0180-005	*RESERVED (GENERATOR CONTROL)*	05	
486/5/7-0180-006	COMMON CONTROLS SCHEMATIC DIAGRAM	06	0 A
486/5/7-0180-007	COMMON RTU I/O SCHEMATIC DIAGRAM	07	0 A
486/5/7-0180-008	RTU POWER DISTRIBUTION SCHEMATIC DIAGRAM	08	0 A
486/5/7-0180-009	RTU DIGITAL INPUTS TERMINATION DIAGRAM	09	0 A
486/5/7-0180-010	RTU DIGITAL INPUTS TERMINATION DIAGRAM	10	0 A
486/5/7-0180-011	RTU DIGITAL OUTPUTS TERMINATION DIAGRAM	11	0 A
486/5/7-0180-012	RTU ANALOGS & MISCELLANEOUS TERMINATION DIAGRAM	12	0 A
486/5/7-0180-013	*RESERVED (COMMON CONTROLS TERMINATION DIAGRAM)*	13	
486/5/7-0180-014	EQUIPMENT LIST	14	0 A
486/5/7-0180-015	CABLE SCHEDULE	15	0 A
486/5/7-0180-016	SWITCHBOARD LABEL SCHEDULE	16	0 A
486/5/7-0180-017	SWITCHBOARD CONSTRUCTION DETAILS	17	0 A
486/5/7-0180-018	SWITCHBOARD CONSTRUCTION DETAILS	18	0 A
486/5/7-0180-019	LEVEL PROBES AND PRESSURE TRANSMITTER INSTALLATION DETAILS	19	0 A
486/5/7-0180-020	*RESERVED (CATHODIC PROTECTION UNIT)*	20	
486/5/7-0180-021	*RESERVED (FIELD DISCONNECTION BOX)*	21	
486/5/7-0180-022	SWITCHBOARD GENERAL ARRANGEMENT ELEVATIONS - DOUBLE SIDED	22	0 A
486/5/7-0180-023	SWITCHBOARD GENERAL ARRANGEMENT SECTIONS - DOUBLE SIDED	23	0 A
486/5/7-0180-024	*RESERVED (GENERATOR EXTERNAL CONNECTION BOX)*	24	
486/5/7-0180-025	SLAB & CONDUIT DETAILS - SHEET 1 of 3	25	0 A
486/5/7-0180-026	SLAB & CONDUIT DETAILS - SHEET 2 of 3	26	0 A
486/5/7-0180-027	SLAB & CONDUIT DETAILS - SHEET 3 of 3	27	0 A

STANDARD VARIABLES

DESCRIPTION	VALUES
CT METERING ISOLATOR	*NOT APPLICABLE*
NORMAL SUPPLY MAIN SWITCH	125A S250PE/125
GENERATOR SUPPLY MAIN SWITCH	125A S250PE/125
PUMP1 CIRCUIT BREAKER	20A S125GJ/20
PUMP2 CIRCUIT BREAKER	20A S125GJ/20
DRY WELL SUMP PUMP CIRCUIT BREAKER	*NOT APPLICABLE*
PUMP SOFT STARTER SIZE	MSF-017 + Max 7.5kW
PUMP RATING	4.6kW 10.5A
PUMP LINE CONTACTOR	CA7-9
PUMP BYPASS CONTACTOR	CA7-9
SUMP PUMP RATING	*NOT APPLICABLE*
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	FMX21AA22.1H1G.D.11A.P0PS 4m
EMERGENCY STORAGE WELL LEVEL TRANSMITTER	*NOT APPLICABLE*
DELIVERY PRESSURE TRANSMITTER	BR74XXGG1EHA2X 25m
WET WELL ULTRASONIC LEVEL SENSOR	*NOT APPLICABLE*
FLOWMETER RANGE	*NOT APPLICABLE*
RADIO	DR900-06A02-D0
EMERGENCY PUMPING TIME	360sec
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	4mm²

STANDARD DESIGN OPTIONS

OPTION	DESCRIPTION	FITTED
A	*INDIVIDUAL PUMP MOISTURE IN OIL (MIO) SENSOR AND FAULT RELAY*	YES NO
B	*INDIVIDUAL PUMP MOTOR AUX PROTECTION SENSORS AND FAULT RELAYS*	YES NO
C	*INDIVIDUAL PUMP REFLUX VALVE MICROSWITCH*	YES NO
D	*STATION MANHOLE SURCHARGE IMMINENT*	YES NO
E	*STATION DRY WELL SUMP PUMP AND LEVEL INDICATION SENSORS AND RELAYS*	YES NO
F	*STATION PERMANENT GENERATOR - ATS AND CONTROL CONNECTIONS*	YES NO
G	*STATION EMERGENCY STORAGE LEVEL SENSOR*	YES NO
H	*STATION DELIVERY FLOWMETER*	YES NO
I	BACKUP COMMUNICATION - GSM	YES NO
J	PUMP CONNECTION (Via De-contactors)	YES NO
K	*CATHODIC PROTECTION*	YES NO
L	MOTOR THERMISTORS (Via De-contactors)	YES NO
M	*ODOUR CONTROL*	YES NO
N	*CURRENT TRANSFORMER (CT) METERING*	YES NO
O	*PUMPS ELECTRICAL INTERLOCK*	YES NO
P	*WET WELL WASHER*	YES NO
Q	*AUX PIT SUMP PUMP AND LEVEL PROBE*	YES NO
R	TELEMETRY RADIO	YES NO
S	*WET WELL ULTRASONIC LEVEL SENSOR*	YES NO
T	DOUBLE SIDED SWITCHBOARD PLINTH EXTENSION FITTED	YES NO
U	DELIVERY PRESSURE TRANSMITTER	YES NO
V	*CHEMICAL DOSING*	YES NO

Sheet 00

FOR CONSTRUCTION

DATE	AMENDMENT	DRN.	APD.
04.10	ISSUED FOR CONSTRUCTION	P.H.	A.W.
04.10	ISSUED FOR TENDER	P.H.	A.W.

DRAFTED	P.HAGUE		
DRAFTING CHECK	A.WITTHOFT		
CAD FILE	57-0180sel_A		
B.C.C. FILE No.			

Original Signed by G.ANDERSON 09-04-10
DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 09-04-10
DESIGN CHECK R.P.E.Q. No. DATE

Original Signed by K.VAHEESAN 13-04-10
PRINCIPAL DESIGN MANAGER DATE
Original Signed by P.SHERRIFF 12-04-10
CLIENT DELEGATE DATE

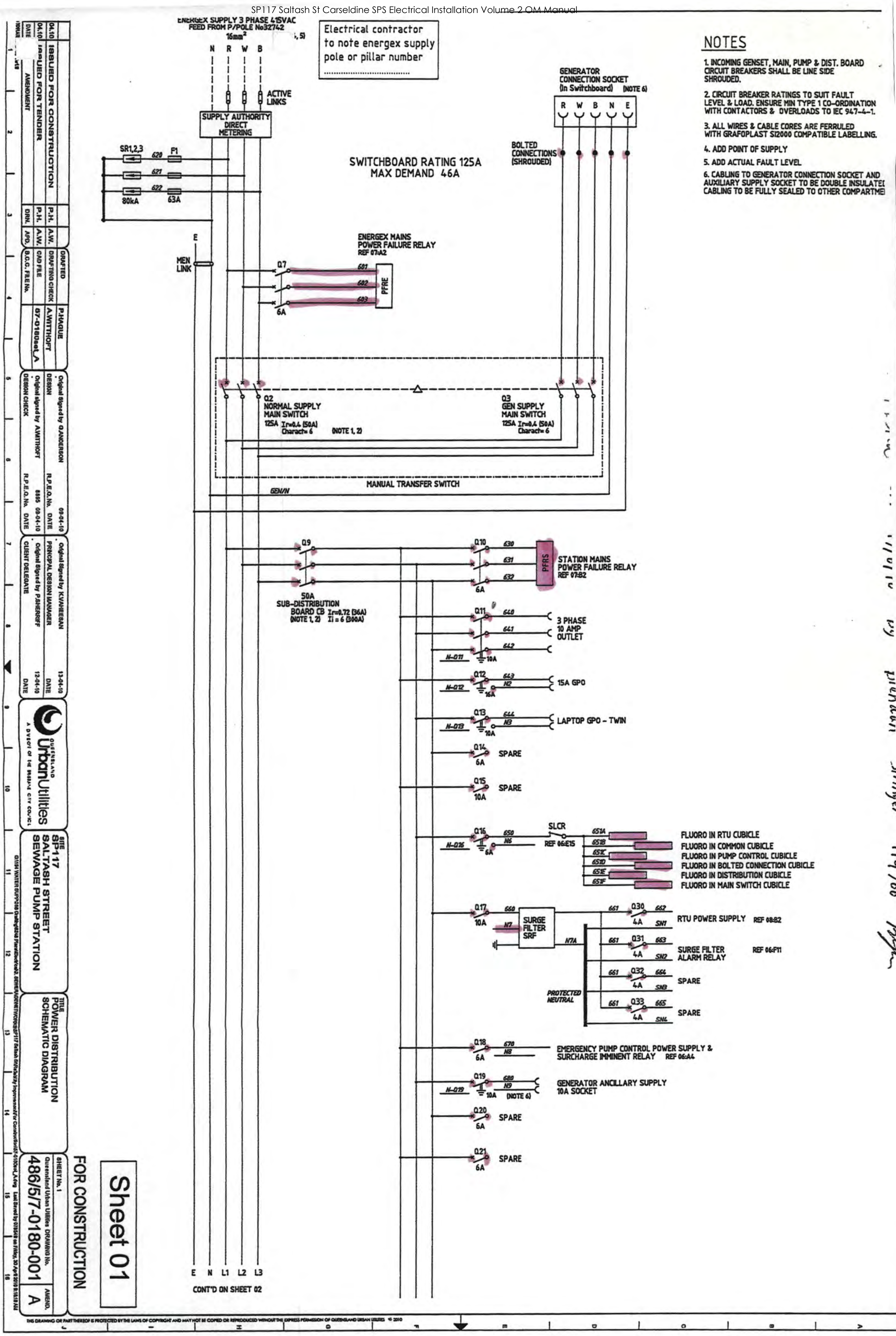
QUEENSLAND Urban Utilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE SP117 SALTASH STREET SEWAGE PUMP STATION

TITLE SITE COVER SHEET

SHEET No. 0
Queensland Urban Utilities DRAWING No. 486/5/7-0180-000
AMEND. A

G:\194 WATER SUPPLIES Drafting\8348 Parcel\Electrical\2. SEWERAGE NETWORKS\SP117 Saltash St\As Built\By Improvement\For Construction\57-0180sel_A.dwg Last Saved by 078548 on Friday, 30 April 2010 9:16:18 AM


ENERGEX SUPPLY 3 PHASE 415VAC
FEED FROM P/POLE No32742
16mm²
N R W B
ACTIVE LINKS
SUPPLY AUTHORITY DIRECT METERING
Electrical contractor to note energex supply pole or pillar number
SR1,2,3
620
621
622
F1
80kA
63A
SWITCHBOARD RATING 125A
MAX DEMAND 46A
GENERATOR CONNECTION SOCKET (In Switchboard) (NOTE 6)
R W B N E
BOLTED CONNECTIONS (SHROUDED)
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. ADD POINT OF SUPPLY
5. ADD ACTUAL FAULT LEVEL
6. CABLING TO GENERATOR CONNECTION SOCKET AND AUXILIARY SUPPLY SOCKET TO BE DOUBLE INSULATE CABLING TO BE FULLY SEALED TO OTHER COMPARTME
E
MEN LINK
ENERGEX MAINS POWER FAILURE RELAY REF 07:A2
Q7
601
602
603
6A
PFRE
Q2 NORMAL SUPPLY MAIN SWITCH
125A Ir=0.4 (50A) Charact= 6 (NOTE 1, 2)
Q3 GEN SUPPLY MAIN SWITCH
125A Ir=0.4 (50A) Charact= 6
MANUAL TRANSFER SWITCH
GEN/N
Q9
50A
SUB-DISTRIBUTION BOARD CB Ir=0.72 (36A) Ii = 6 (300A)
(NOTE 1, 2)
Q10
630
631
632
6A
PFRS
STATION MAINS POWER FAILURE RELAY REF 07:B2
Q11
640
641
642
N-Q11
10A
3 PHASE 10 AMP OUTLET
Q12
643
N2
N-Q12
16A
15A GPO
Q13
644
N3
N-Q13
10A
LAPTOP GPO - TWIN
Q14 6A SPARE
Q15 10A SPARE
Q16
650
N6
N-Q16
6A
SLCR
REF 06:E15
651A FLUORO IN RTU CUBICLE
651B FLUORO IN COMMON CUBICLE
651C FLUORO IN PUMP CONTROL CUBICLE
651D FLUORO IN BOLTED CONNECTION CUBICLE
651E FLUORO IN DISTRIBUTION CUBICLE
651F FLUORO IN MAIN SWITCH CUBICLE
Q17
10A
660
N7
SURGE FILTER SRF
N7A
PROTECTED NEUTRAL
661 Q30 4A 662 SN1 RTU POWER SUPPLY REF 08:B2
661 Q31 4A 663 SN2 SURGE FILTER ALARM RELAY REF 06:F11
661 Q32 4A 664 SN3 SPARE
661 Q33 4A 665 SN4 SPARE
Q18 6A 670 N8
EMERGENCY PUMP CONTROL POWER SUPPLY & SURCHARGE IMMINENT RELAY REF 06:A4
Q19 680 N9 N-Q19 10A (NOTE 6)
GENERATOR ANCILLARY SUPPLY 10A SOCKET
Q20 6A SPARE
Q21 6A SPARE
E N L1 L2 L3
CONT'D ON SHEET 02
Sheet 01
FOR CONSTRUCTION
04.10 ISSUED FOR CONSTRUCTION P.H. A.W.
04.10 ISSUED FOR TENDER P.H. A.W.
DATE AMENDMENT DRN. APD.
DRAFTED P.HAGUE
DRAFTING CHECK A.WITTHOFT
CAD FILE
B.C.C. FILE No. 57-0180set_A
Original Signed by G.ANDERSON
DESIGN R.P.E.Q.No. 09-04-10 DATE
Original signed by A.WITTHOFT
DESIGN CHECK R.P.E.Q.No. 8895 09-04-10 DATE
Original Signed by K.VAHEESAN
PRINCIPAL DESIGN MANAGER 13-04-10 DATE
Original Signed by P.SHERRIFF
CLIENT DELEGATE 12-04-10 DATE
QUEENSLAND UrbanUtilities
SITE SP117 SALTASH STREET SEWAGE PUMP STATION
TITLE POWER DISTRIBUTION SCHEMATIC DIAGRAM
SHEET No. 1
Queensland Urban Utilities DRAWING No.
486/5/7-0180-001
AMEND. A
THIS DRAWING OR PART THEREOF IS PROTECTED BY THE LAWS OF COPYRIGHT AND MAY NOT BE COPIED OR REPRODUCED WITHOUT THE EXPRESS PERMISSION OF QUEENSLAND URBAN UTILITIES © 2010

by Brendan Stringer 114766

E N R W B

Q4 20A [r=0.63 (12.5A) [m= 6 (120A) Note 1

1K1

1K2

Q4-1 6A

EMOTRON MSF-017 + MODBUS Max 7.5kW SOFT STARTER 1U1

L1 L2 L3 T1 T2 T3 PE 69 70 75 76 77

DE-CONTACTORS

SUBMERSIBLE PUMP No1 4.6kW 10.5AMPS

MOTOR THERMISTORS

P1 P2

1K6 12 RUN

1K21 13 COMMON 11 RESET

1S3 E/STOP

31 FAULT 33

21 OPERATE 22

23 FULL VOLT 24

2

STARTER FAULT RELAY REF 02:C12

LINE CONTACTOR REF 02:B3, E5

BY-PASS CONTACTOR REF 02:A6, C13

RS485 1 2 3 4 Set terminating switch to 'OFF'

FROM GRAPHIC DISPLAY REF 08:11 RS485A+ RS485A- Cable 17

TO SOFT STARTER 2 REF 03:E6 RS485B+ RS485B- Cable 18

1K20 EMG1 REF 06:C6 OFF ON 155 EMSTART

HRM1 HOURS RUN METER

RUN RELAY REF 02:B4

CONTROL CCT 'POWER ON' RELAY REF 02:B12

100V

CONT'D ON SHEET 03

RTU DIGITAL INPUTS

+ 24VDC POWER SUPPLY - REFER SHEET 08:C7

DI-00	CONTROL POWER
DI-01	START PUSHBUTTON
DI-02	STOP PUSHBUTTON
DI-03	E/STOP PUSHBUTTON
DI-04	RESET PUSHBUTTON
DI-05	RUNNING
DI-06	STARTER FAULT
DI-07	SPARE
DI-08	SPARE
DI-09	SPARE

SHEET 07 CONT'D ON

SHEET 07 CONT'D ON

RTU DIGITAL OUTPUTS

+ 24VDC POWER SUPPLY - REFER SHEET 08:C7

DO-00	RUN COMMAND REF 02:E5
DO-01	FAULT RESET REF 02:C5
DO-02	EMERGENCY MODE INTERRUPT REF 06:C4
DO-03	SPARE

CONT'D ON SHEET 07

CONT'D ON SHEET 07

LEGEND:

- SWITCHBOARD POWER TERMINAL
- SWITCHBOARD CONTROL TERMINAL
- SWITCHBOARD GENERATOR TERM.
- FIELD TERMINAL
- PLC TERMINAL
- RTU TERMINAL
- SS TERMINAL
- PLC/RTU MARSH. FUSE TERMINAL
- PLC/RTU MARSH. LINK TERMINAL
- DISCONNECT PLUG
- RTU DIGITAL INPUT
- RTU DIGITAL OUTPUT
- RTU ANALOGUE INPUT
- RTU ANALOGUE OUTPUT

NOTES

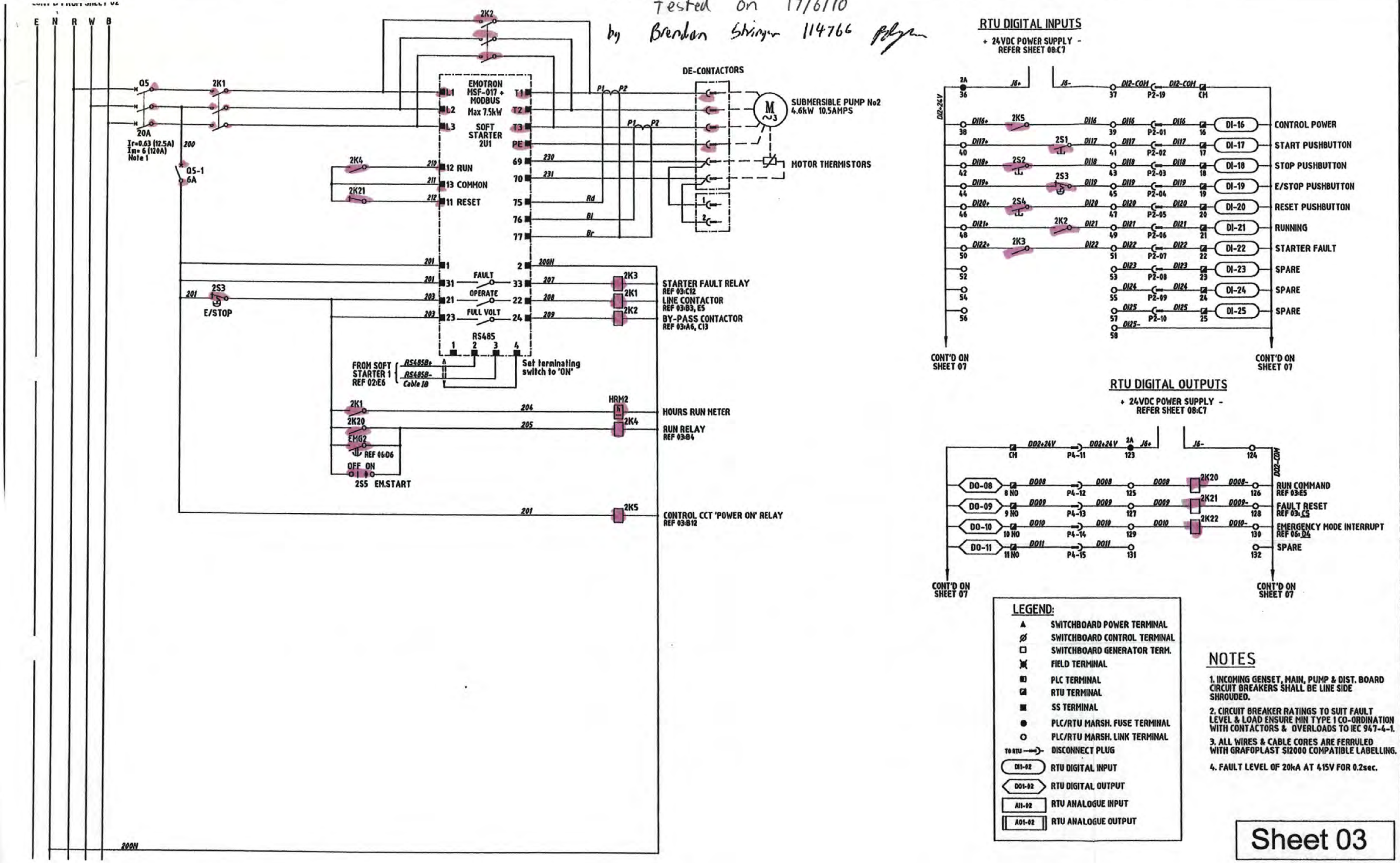
1. INCOMING GENSET, MAIN, PUMP & DIST. BOARD CIRCUIT BREAKERS SHALL BE LINE SIDE SHROUDED.
2. CIRCUIT BREAKER RATINGS TO SUIT FAULT LEVEL & LOAD ENSURE MIN TYPE 1 CO-ORDINATION WITH CONTACTORS & OVERLOADS TO IEC 947-4-1.
3. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.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

Sheet 02

FOR CONSTRUCTION

A	04.10	ISSUED FOR CONSTRUCTION		P.H.	A.W.	DRAFTED	P.HAGUE	Original Signed by G.ANDERSON 09-04-10 DESIGN R.P.E.Q. No. DATE	Original Signed by K.VAHEESAN 13-04-10 PRINCIPAL DESIGN MANAGER DATE	QUEENSLAND UrbanUtilities A DIVISION OF THE BRISBANE CITY COUNCIL	SITE SP117 SALTASH STREET SEWAGE PUMP STATION	TITLE PUMP No1 SCHEMATIC DIAGRAM	SHEET No. 2
D	04.	SUED FOR TENDER		P.H.	A.W.	DRAFTING CHECK	A.WITTHOFT	Original signed by A.WITTHOFT 8895 09-04-10 DESIGN CHECK R.P.E.Q. No. DATE	Original Signed by P.SHERRIFF 12-04-10 CLIENT DELEGATE DATE				Queensland Urban Utilities DRAWING No. 486/5/7-0180-002
	DA	AMENDMENT		DRN.	APD.	CAD FILE	57-0180set_A						AMEND. A
						B.C.G. FILE No.							

Tested on 17/6/10 by Brendan Stringer 114766


CONT'D FROM SHEET 02
E N R W B
Q5
20A
Ir=0.63 (12.5A)
Im= 6 (120A)
Note 1
2K1
2K2
200
Q5-1
6A
EMOTRON
MSF-017 +
MODBUS
Max 7.5kW
SOFT
STARTER
2U1
L1
L2
L3
T1
T2
T3
PE
2K4
2K21
12 RUN
13 COMMON
11 RESET
69
70
75
76
77
230
231
Rd
Bl
Br
P1
P2
DE-CONTACTORS
SUBMERSIBLE PUMP No2
4.6kW 10.5AMPS
MOTOR THERMISTORS
201
200N
FAULT
OPERATE
FULL VOLT
RS485
2S3
E/STOP
2K3
STARTER FAULT RELAY
REF 03:C12
LINE CONTACTOR
REF 03:B3, E5
BY-PASS CONTACTOR
REF 03:A6, C13
FROM SOFT STARTER 1
REF 02:E6
RS485B+
RS485B-
Cable 18
Set terminating switch to 'ON'
2K20
EMG2
REF 06:D6
OFF ON
2S5 EM.START
HRM2
HOURS RUN METER
2K4
RUN RELAY
REF 03:B4
2K5
CONTROL CCT 'POWER ON' RELAY
REF 03:B12
RTU DIGITAL INPUTS
+ 24VDC POWER SUPPLY -
REFER SHEET 08:C7
DI2+24V
DI2-COM
P2-19
CM
DI-16 CONTROL POWER
DI-17 START PUSHBUTTON
DI-18 STOP PUSHBUTTON
DI-19 E/STOP PUSHBUTTON
DI-20 RESET PUSHBUTTON
DI-21 RUNNING
DI-22 STARTER FAULT
DI-23 SPARE
DI-24 SPARE
DI-25 SPARE
CONT'D ON SHEET 07
RTU DIGITAL OUTPUTS
+ 24VDC POWER SUPPLY -
REFER SHEET 08:C7
DO2+24V
DO2-COM
DO-08 RUN COMMAND
REF 03:E5
DO-09 FAULT RESET
REF 03:C5
DO-10 EMERGENCY MODE INTERRUPT
REF 06:D4
DO-11 SPARE
CONT'D ON SHEET 07
LEGEND:
SWITCHBOARD POWER TERMINAL
SWITCHBOARD CONTROL TERMINAL
SWITCHBOARD GENERATOR TERM.
FIELD TERMINAL
PLC TERMINAL
RTU TERMINAL
SS TERMINAL
PLC/RTU MARSH. FUSE TERMINAL
PLC/RTU MARSH. LINK TERMINAL
DISCONNECT PLUG
RTU DIGITAL INPUT
RTU DIGITAL OUTPUT
RTU ANALOGUE INPUT
RTU ANALOGUE 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

04.10	ISSUED FOR CONSTRUCTION	P.H.	A.W.	DRAFTED	P.HAGUE
04.	...UED FOR TENDER	P.H.	A.W.	DRAFTING CHECK	A.WITTHOFT
DA...	AMENDMENT	DRN.	APD.	CAD FILE	67-0180set_A
				B.C.C. FILE No.	

Original Signed by G.ANDERSON		09-04-10
DESIGN	R.P.E.Q. No.	DATE
Original signed by A.WITTHOFT	6895	09-04-10
DESIGN CHECK	R.P.E.Q. No.	DATE
Original Signed by K.VAHEESAN		13-04-10
PRINCIPAL DESIGN MANAGER		DATE
Original Signed by P.SHERRIFF		12-04-10
CLIENT DELEGATE		DATE

Queensland Urban Utilities — A DIVISION OF THE BRISBANE CITY COUNCIL

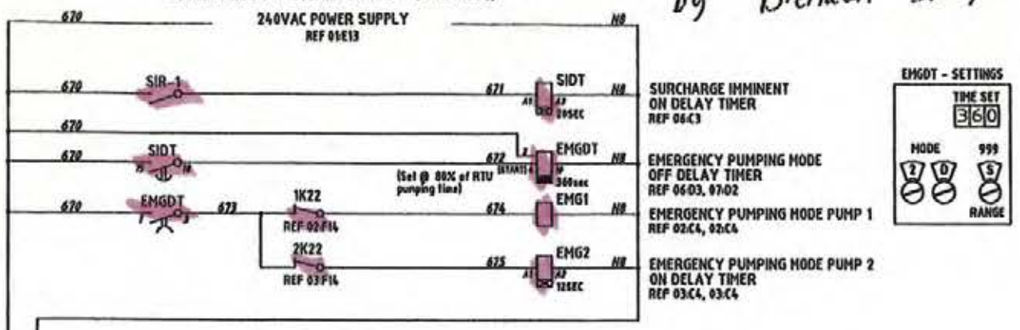
SITE SP117 SALTASH STREET SEWAGE PUMP STATION

TITLE PUMP No2 SCHEMATIC DIAGRAM

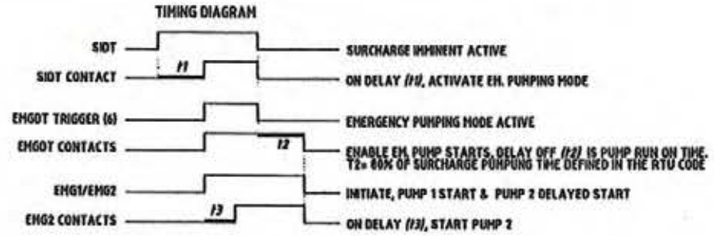
SHEET No. 3 — Queensland Urban Utilities DRAWING No. 486/5/7-0180-003 — AMEND. A

by Brendan Stringer Bligh 114766

EMERGENCY PUMPING MODE (240VAC)

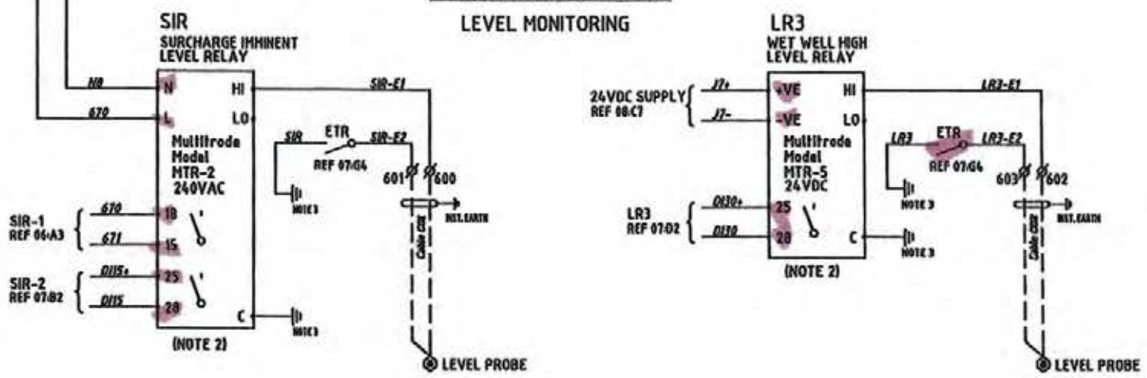


TIMING DIAGRAM



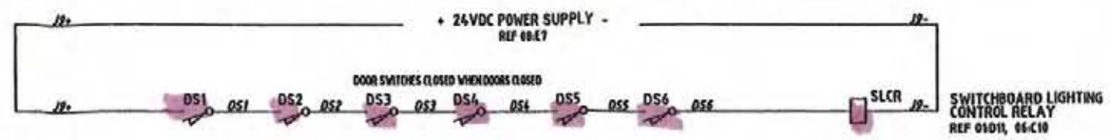
COMMON CONTROL SECTION

LEVEL MONITORING

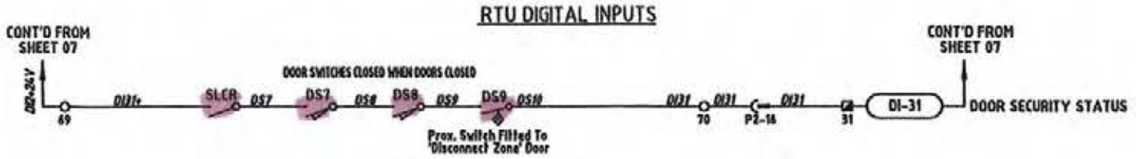


COMMON CONTROL SECTION

SWITCHBOARD INTERNAL LIGHTING

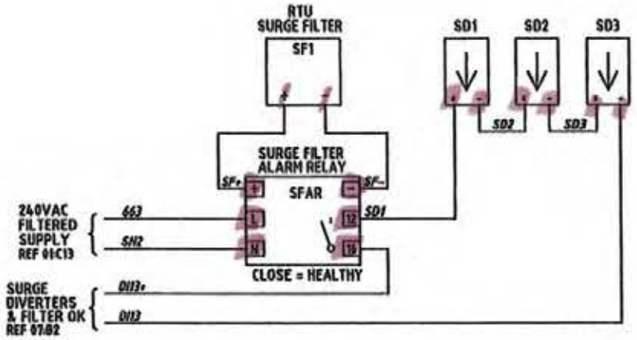


RTU DIGITAL INPUTS



ATS SECTION

SURGE DIVERTERS



LEGEND:

- SWITCHBOARD POWER TERMINAL
- SWITCHBOARD CONTROL TERMINAL
- SWITCHBOARD GENERATOR TERM.
- FIELD TERMINAL
- PLC TERMINAL
- RTU TERMINAL
- SS TERMINAL
- PLC/RTU MARSH. FUSE TERMINAL
- PLC/RTU MARSH. LINK TERMINAL
- 10 ATU — DISCONNECT PLUG
- DI1-32 — RTU DIGITAL INPUT
- DO1-32 — RTU DIGITAL OUTPUT
- AI1-32 — RTU ANALOGUE INPUT
- AO1-32 — RTU ANALOGUE OUTPUT

NOTES

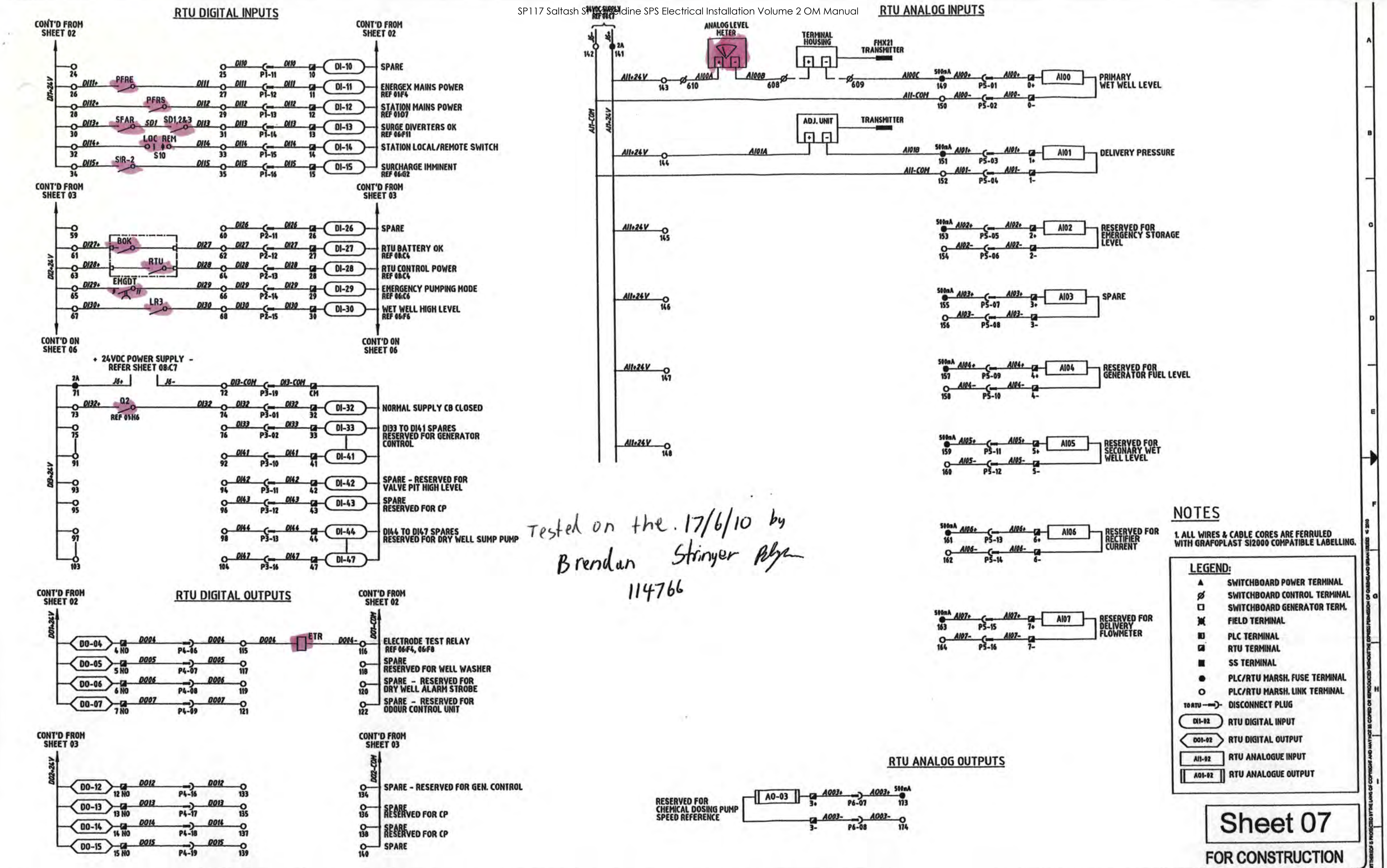
1. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.
2. SET DIPSWITCH TO 'DISCHARGE' MODE.
3. RUN SEPARATE DEDICATED EARTH CONDUCTOR TO EARTH BAR.

Sheet 06

FOR CONSTRUCTION

04.10	ISSUED FOR CONSTRUCTION	P.H.	A.W.	DRAFTED	P.HAGUE	Original Signed by G.ANDERSON	09-04-10	Original Signed by K.VAHEESAN	13-04-10	SITE: SP117 SALTASH STREET SEWAGE PUMP STATION	SHEET No. 6
04.10	ISSUED FOR TENDER	P.H.	A.W.	DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q.No.	DATE	PRINCIPAL DESIGN MANAGER	DATE	TITLE: COMMON CONTROLS SCHEMATIC DIAGRAM	Queensland Urban Utilities DRAWING No. 486/5/7-0180-006
DATE	AMENDMENT	DRN.	APD.	CAD FILE	87-0180set_A	Original signed by A.WITTHOFT 8895	09-04-10	Original Signed by P.SHERRIFF	12-04-10		AMEND. A
				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



Tested on the. 17/6/10 by
Brendan Stringer [signature]
114766

NOTES

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

LEGEND:

- ▲ SWITCHBOARD POWER TERMINAL
- ø SWITCHBOARD CONTROL TERMINAL
- □ SWITCHBOARD GENERATOR TERM.
- FIELD TERMINAL
- PLC TERMINAL
- RTU TERMINAL
- SS TERMINAL
- ● PLC/RTU MARSH. FUSE TERMINAL
- ○ PLC/RTU MARSH. LINK TERMINAL
- TO RTU —) DISCONNECT PLUG
- DI1-02 RTU DIGITAL INPUT
- DO1-02 RTU DIGITAL OUTPUT
- AI1-02 RTU ANALOGUE INPUT
- AO1-02 RTU ANALOGUE OUTPUT

Sheet 07

FOR CONSTRUCTION

04.10	UED FOR CONSTRUCTION	P.H.	A.W.	DRAFTED	P.HAGUE
04.10	UED FOR TENDER	P.H.	A.W.	DRAFTING CHECK	A.WITTHOFT
DATE	AMENDMENT	DRN.	APD.	CAD FILE	57-0180set_A
				B.C.C. FILE No.	

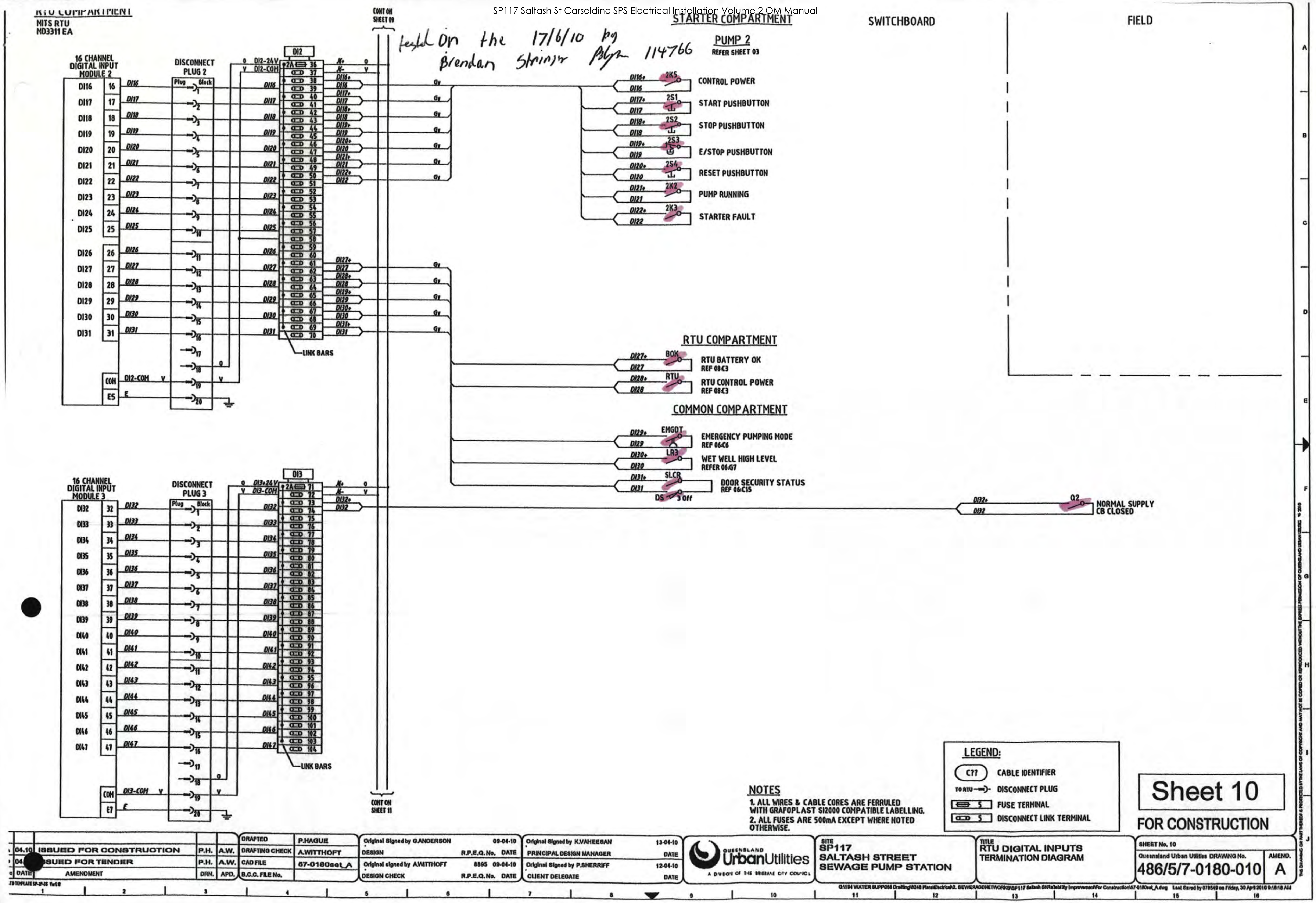
Original Signed by G.ANDERSON 09-04-10 DESIGN R.P.E.Q.No. DATE
Original signed by A.WITTHOFT 8895 09-04-10 DESIGN CHECK R.P.E.Q.No. DATE
Original Signed by K.VAHEESAN 13-04-10 PRINCIPAL DESIGN MANAGER DATE
Original Signed by P.SHERRIFF 12-04-10 CLIENT DELEGATE DATE

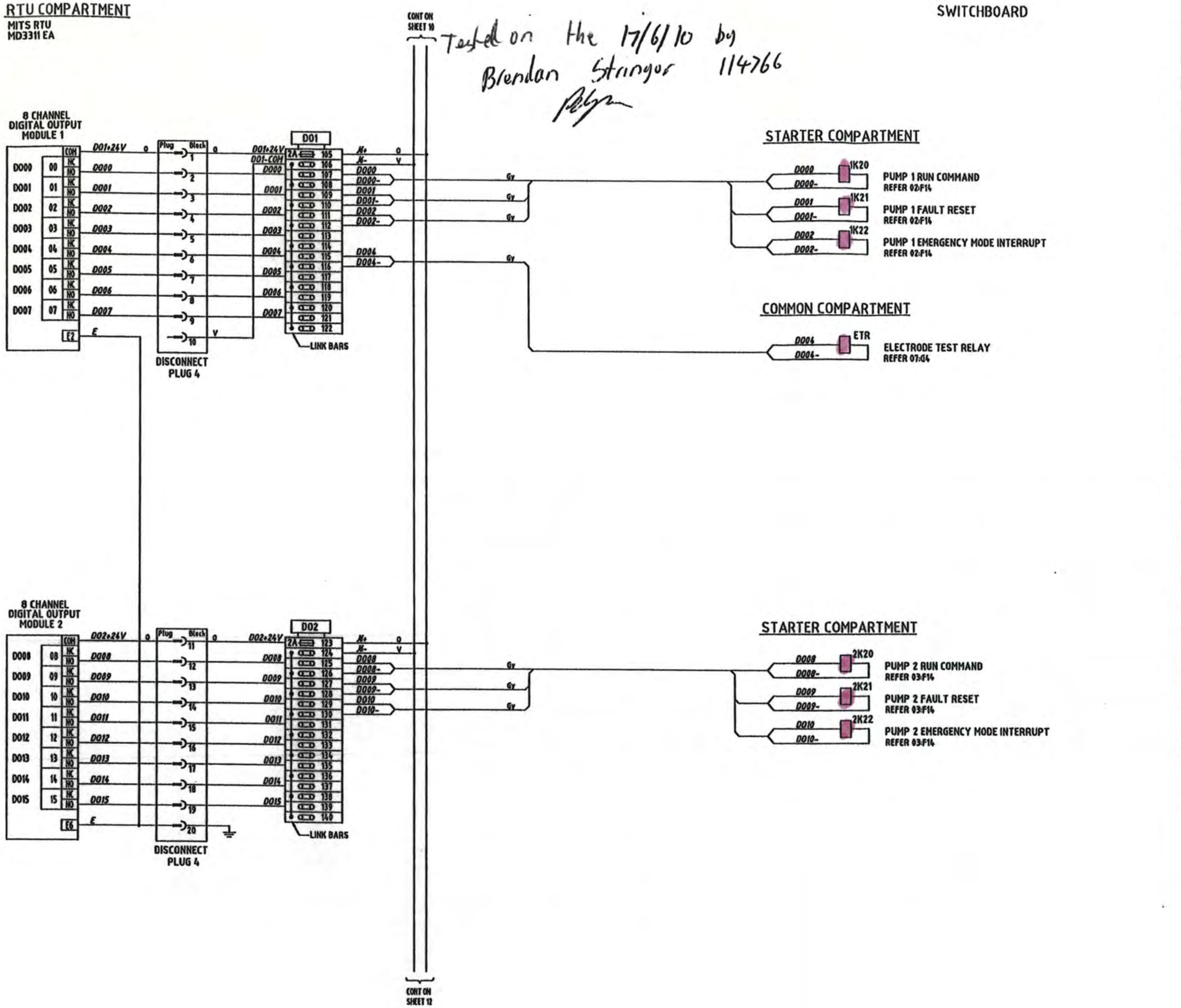
QUEENSLAND UrbanUtilities A DIVISION OF THE BRISBANE CITY COUNCIL

SITE SP117 SALTASH STREET SEWAGE PUMP STATION

TITLE COMMON RTU I/O SCHEMATIC DIAGRAM

SHEET No. 7
Queensland Urban Utilities DRAWING No. 486/5/7-0180-007 AMEND. A


RTU COMPARTMENT
MITS RTU
MD3311 EA
CONT ON SHEET 09
tested on the 17/6/10 by Brendan Strainer Blyn 114766
STARTER COMPARTMENT
SWITCHBOARD
FIELD
PUMP 2
REFER SHEET 03
16 CHANNEL DIGITAL INPUT MODULE 2
DISCONNECT PLUG 2
Plug
Block
DI2
DI2-24V
DI2-COM
CONTROL POWER
START PUSHBUTTON
STOP PUSHBUTTON
E/STOP PUSHBUTTON
RESET PUSHBUTTON
PUMP RUNNING
STARTER FAULT
LINK BARS
RTU COMPARTMENT
RTU BATTERY OK
REF 08:C3
RTU CONTROL POWER
REF 08:C3
COMMON COMPARTMENT
EMERGENCY PUMPING MODE
REF 06:C6
WET WELL HIGH LEVEL
REFER 06:G7
DOOR SECURITY STATUS
REF 06:C15
DS 3 Off
16 CHANNEL DIGITAL INPUT MODULE 3
DISCONNECT PLUG 3
DI3
DI3+24V
DI3-COM
NORMAL SUPPLY CB CLOSED
CONT ON SHEET 11
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
TO RTU DISCONNECT PLUG
FUSE TERMINAL
DISCONNECT LINK TERMINAL
Sheet 10
FOR CONSTRUCTION
04.10 ISSUED FOR CONSTRUCTION P.H. A.W.
04. ISSUED FOR TENDER P.H. A.W.
DATE AMENDMENT DRN. APD.
DRAFTED P.HAGUE
DRAFTING CHECK A.WITTHOFT
CAD FILE 67-0180set_A
B.C.C. FILE No.
Original Signed by G.ANDERSON 09-04-10
DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 09-04-10
DESIGN CHECK R.P.E.Q. No. DATE
Original Signed by K.VAHEESAN 13-04-10
PRINCIPAL DESIGN MANAGER DATE
Original Signed by P.SHERRIFF 12-04-10
CLIENT DELEGATE DATE
QUEENSLAND UrbanUtilities
A DIVISION OF THE BRISBANE CITY COUNCIL
SITE
SP117
SALTASH STREET
SEWAGE PUMP STATION
TITLE
RTU DIGITAL INPUTS
TERMINATION DIAGRAM
SHEET No. 10
Queensland Urban Utilities DRAWING No.
486/5/7-0180-010
AMEND.
A


RTU COMPARTMENT
MITS RTU
MD3311 EA
SWITCHBOARD
FIELD
CONT ON SHEET 10
Tested on the 17/6/10 by
Brendan Stringer 114766
8 CHANNEL DIGITAL OUTPUT MODULE 1
D000 D001 D002 D003 D004 D005 D006 D007
COM NC NO E2
D01+24V D01-COM
DISCONNECT PLUG 4
D01
LINK BARS
105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122
STARTER COMPARTMENT
1K20 PUMP 1 RUN COMMAND REFER 02:F14
1K21 PUMP 1 FAULT RESET REFER 02:F14
1K22 PUMP 1 EMERGENCY MODE INTERRUPT REFER 02:F14
COMMON COMPARTMENT
ETR ELECTRODE TEST RELAY REFER 07:G4
8 CHANNEL DIGITAL OUTPUT MODULE 2
D008 D009 D010 D011 D012 D013 D014 D015
E6
D02+24V
D02
123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140
STARTER COMPARTMENT
2K20 PUMP 2 RUN COMMAND REFER 03:F14
2K21 PUMP 2 FAULT RESET REFER 03:F14
2K22 PUMP 2 EMERGENCY MODE INTERRUPT REFER 03:F14
CONT ON SHEET 12

LEGEND:

C??	CABLE IDENTIFIER
TO RTU	DISCONNECT PLUG
Ø	SWITCHBOARD CONTROL TERMINAL
5	FUSE TERMINAL
5	DISCONNECT LINK 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

04.10	ISSUED FOR CONSTRUCTION	P.H.	A.W.	DRAFTED	P.HAGUE	Original Signed by G.ANDERSON 09-04-10	Original Signed by K.VAHEESAN 13-04-10	
04	ISSUED FOR TENDER	P.H.	A.W.	DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q. No. DATE	PRINCIPAL DESIGN MANAGER DATE	
DATE	AMENDMENT	DRN.	APD.	CAD FILE	57-0180set_A	Original signed by A.WITTHOFT 8895 09-04-10	Original Signed by P.SHERRIFF 12-04-10	
				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: SP117 SALTASH STREET SEWAGE PUMP STATION

TITLE: RTU DIGITAL OUTPUTS TERMINATION DIAGRAM

SHEET No. 11 — Queensland Urban Utilities DRAWING No. 486/5/7-0180-011 — AMEND. A

SWITCHBOARD

FIELD

RTU COMPARTMENT

MITS RTU
MD3311 EA

CONT ON SHEET 11

8 CHANNEL ANALOG INPUT MODULE 1

A100 0 A101 1 A102 2 A103 3 A104 4 A105 5 A106 6 A107 7 E8

Plug Block

DISCONNECT PLUG 5

A11

2A 141 142 143 144 145 146 147 148 149 150 Screen 151 152 Screen 153 154 Screen 155 156 Screen 157 158 Screen 159 160 Screen 161 162 Screen 163 164 Screen

NOTE 2

TO INSULATED INSTRUMENT EARTH

USE SCREENED CABLES

COMMON COMPARTMENT

ANALOG LEVEL METER

TERMINAL HOUSING

608 609 610 Screen

Breather

I1

PRIMARY WET WELL LEVEL TRANSMITTER

ADJ. UNIT - VEGADIS12

10+ 11-

Br+ Bl- G

INST. EARTH

Breather

I2

DELIVERY PRESSURE TRANSMITTER

tested on 17/6/10 by
Brendan Stringer 114766

NOTES

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

8 CHANNEL ANALOG OUTPUT MODULE 1

A000 0 A001 1 A002 2 A003 3 E8

DISCONNECT PLUG 6

A01

1&5 2A 166 167 168 Screen 169 170 Screen 171 172 Screen 173 174 Screen

NOTE 2

TO INSULATED INSTRUMENT EARTH

USE SCREENED CABLES

RTU TB1 POWER SUPPLY REF 08:B11

RTU TB2 COMMS PORT2 REF 08:A11

DISCONNECT PLUG 6

REFER SHEET 0807

I6

PUMP 1 SOFT STARTER REF 02:E6

LEGEND:

- C?? CABLE IDENTIFIER
- TO RTU DISCONNECT PLUG
- FUSE TERMINAL
- DISCONNECT LINK TERMINAL
- EARTH TERMINAL

Sheet 12

FOR CONSTRUCTION

No	DATE	AMENDMENT			DRAFTED	P.HAGUE	Original Signed by G.ANDERSON 09-04-10 DESIGN R.P.E.Q. No. DATE	Original Signed by K.VAHEESAN 13-04-10 PRINCIPAL DESIGN MANAGER DATE
A		ISSUED FOR CONSTRUCTION	P.H.	A.W.	DRAFTING CHECK	A.WITTHOFT		
0	09.10	ISSUED FOR TENDER	P.H.	A.W.	CAD FILE	07-0180set_A	Original signed by A.WITTHOFT 8595 09-04-10 DESIGN CHECK R.P.E.Q. No. DATE	Original Signed by P.SHERRIFF 12-04-10 CLIENT DELEGATE DATE
			DRN.	APD.	S.C.C. FILE No.			

QUEENSLAND UrbanUtilities A DIVISION OF THE BRISBANE CITY COUNCIL

SITE SP117 SALTASH STREET SEWAGE PUMP STATION

TITLE RTU ANALOGS & MISCELLANEOUS TERMINATION DIAGRAM

SHEET No. 12

Queensland Urban Utilities DRAWING No. 486/5/7-0180-012

AMEND. A

G:\194 WATER SUPP\268 Drafting\6248 Plans\Elect\cad\3. SEWERAGENETWORK\SP117 Saltash St\ReTab\By Improvement\For Construction\07-0180set_A.dwg Last Saved by 078548 on Friday, 30 Apr 2010 9:18:18 AM

SJ Electric 7623
Brendan Stringer 114766
17/6/10 Blyn

Point to point copy

QUEENSLAND Urban Utilities
ABN 72 002 765 795

SP117 SALTASH STREET SEWAGE PUMPING STATION

SITE COVER SHEET

ELECTRICAL DRAWINGS INDEX

DWG N°.	TITLE	SHEET	REVISIONS
486/5/7-0180-000	SITE COVER SHEET	00	0 A
486/5/7-0180-001	POWER DISTRIBUTION SCHEMATIC DIAGRAM	01	0 A
486/5/7-0180-002	PUMP 01 SCHEMATIC DIAGRAM	02	0 A
486/5/7-0180-003	PUMP 02 SCHEMATIC DIAGRAM	03	0 A
486/5/7-0180-004	*RESERVED (SUMP PUMP)*	04	
486/5/7-0180-005	*RESERVED (GENERATOR CONTROL)*	05	
486/5/7-0180-006	COMMON CONTROLS SCHEMATIC DIAGRAM	06	0 A
486/5/7-0180-007	COMMON RTU I/O SCHEMATIC DIAGRAM	07	0 A
486/5/7-0180-008	RTU POWER DISTRIBUTION SCHEMATIC DIAGRAM	08	0 A
486/5/7-0180-009	RTU DIGITAL INPUTS TERMINATION DIAGRAM	09	0 A
486/5/7-0180-010	RTU DIGITAL INPUTS TERMINATION DIAGRAM	10	0 A
486/5/7-0180-011	RTU DIGITAL OUTPUTS TERMINATION DIAGRAM	11	0 A
486/5/7-0180-012	RTU ANALOGS & MISCELLANEOUS TERMINATION DIAGRAM	12	0 A
486/5/7-0180-013	*RESERVED (COMMON CONTROLS TERMINATION DIAGRAM)*	13	
6/5/7-0180-014	EQUIPMENT LIST	14	0 A
6/5/7-0180-015	CABLE SCHEDULE	15	0 A
486/5/7-0180-016	SWITCHBOARD LABEL SCHEDULE	16	0 A
486/5/7-0180-017	SWITCHBOARD CONSTRUCTION DETAILS	17	0 A
486/5/7-0180-018	SWITCHBOARD CONSTRUCTION DETAILS	18	0 A
486/5/7-0180-019	LEVEL PROBES AND PRESSURE TRANSMITTER INSTALLATION DETAILS	19	0 A
486/5/7-0180-020	*RESERVED (CATHODIC PROTECTION UNIT)*	20	
486/5/7-0180-021	*RESERVED (FIELD DISCONNECTION BOX)*	21	
486/5/7-0180-022	SWITCHBOARD GENERAL ARRANGEMENT ELEVATIONS - DOUBLE SIDED	22	0 A
486/5/7-0180-023	SWITCHBOARD GENERAL ARRANGEMENT SECTIONS - DOUBLE SIDED	23	0 A
486/5/7-0180-024	*RESERVED (GENERATOR EXTERNAL CONNECTION BOX)*	24	
486/5/7-0180-025	SLAB & CONDUIT DETAILS - SHEET 1 of 3	25	0 A
486/5/7-0180-026	SLAB & CONDUIT DETAILS - SHEET 2 of 3	26	0 A
486/5/7-0180-027	SLAB & CONDUIT DETAILS - SHEET 3 of 3	27	0 A

STANDARD VARIABLES

DESCRIPTION	VALUES
CT METERING ISOLATOR	*NOT APPLICABLE*
NORMAL SUPPLY MAIN SWITCH	125A S250PE/125
GENERATOR SUPPLY MAIN SWITCH	125A S250PE/125
PUMP1 CIRCUIT BREAKER	20A S125GJ/20
PUMP2 CIRCUIT BREAKER	20A S125GJ/20
DRY WELL SUMP PUMP CIRCUIT BREAKER	*NOT APPLICABLE*
PUMP SOFT STARTER SIZE	MSF-017 • Max 7.5kW
PUMP RATING	4.6kW 10.5A
PUMP LINE CONTACTOR	CA7-9
PUMP BYPASS CONTACTOR	CA7-9
SUMP PUMP RATING	*NOT APPLICABLE*
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	FMX21AA22:1H6D.11A POPS 4m
EMERGENCY STORAGE WELL LEVEL TRANSMITTER	*NOT APPLICABLE*
DELIVERY PRESSURE TRANSMITTER	BR74XXGG1EHA2X 25m
WET WELL ULTRASONIC LEVEL SENSOR	*NOT APPLICABLE*
FLOWMETER RANGE	*NOT APPLICABLE*
RADIO	DR900-06A02-D0
EMERGENCY PUMPING TIME	360sec
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	4mm²

STANDARD DESIGN OPTIONS

OPTION	DESCRIPTION	FITTED
A	*INDIVIDUAL PUMP MOISTURE IN OIL (MIO) SENSOR AND FAULT RELAY*	YES NO
B	*INDIVIDUAL PUMP MOTOR AUX PROTECTION SENSORS AND FAULT RELAYS*	YES NO
C	*INDIVIDUAL PUMP REFLUX VALVE MICROSWITCH*	YES NO
D	*STATION MANHOLE SURCHARGE IMMINENT*	YES NO
E	*STATION DRY WELL SUMP PUMP AND LEVEL INDICATION SENSORS AND RELAYS*	YES NO
F	*STATION PERMANENT GENERATOR - ATS AND CONTROL CONNECTIONS*	YES NO
G	*STATION EMERGENCY STORAGE LEVEL SENSOR*	YES NO
H	*STATION DELIVERY FLOWMETER*	YES NO
I	BACKUP COMMUNICATION - GSM	YES NO
J	PUMP CONNECTION (Via De-contactors)	YES NO
K	*CATHODIC PROTECTION*	YES NO
L	MOTOR THERMISTORS (Via De-contactors)	YES NO
M	*ODOUR CONTROL*	YES NO
N	*CURRENT TRANSFORMER (CT) METERING*	YES NO
O	*PUMPS ELECTRICAL INTERLOCK*	YES NO
P	*WET WELL WASHER*	YES NO
Q	*AUX PIT SUMP PUMP AND LEVEL PROBE*	YES NO
R	TELEMETRY RADIO	YES NO
S	*WET WELL ULTRASONIC LEVEL SENSOR*	YES NO
T	DOUBLE SIDED SWITCHBOARD PLINTH EXTENSION FITTED	YES NO
U	DELIVERY PRESSURE TRANSMITTER	YES NO
V	*CHEMICAL DOSING*	YES NO

Sheet 00

FOR CONSTRUCTION

No	DATE	AMENDMENT		
A		ISSUED FOR CONSTRUCTION	P.H.	A.W.
0		ISSUED FOR TENDER	P.H.	A.W.

DRAFTED P.HAGUE
DRAFTING CHECK A.WITTHOFT
CAD FILE 67-0180set_A
B.C.C. FILE No.

Original Signed by G.ANDERSON 09-04-10
DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 09-04-10
DESIGN CHECK R.P.E.Q. No. DATE

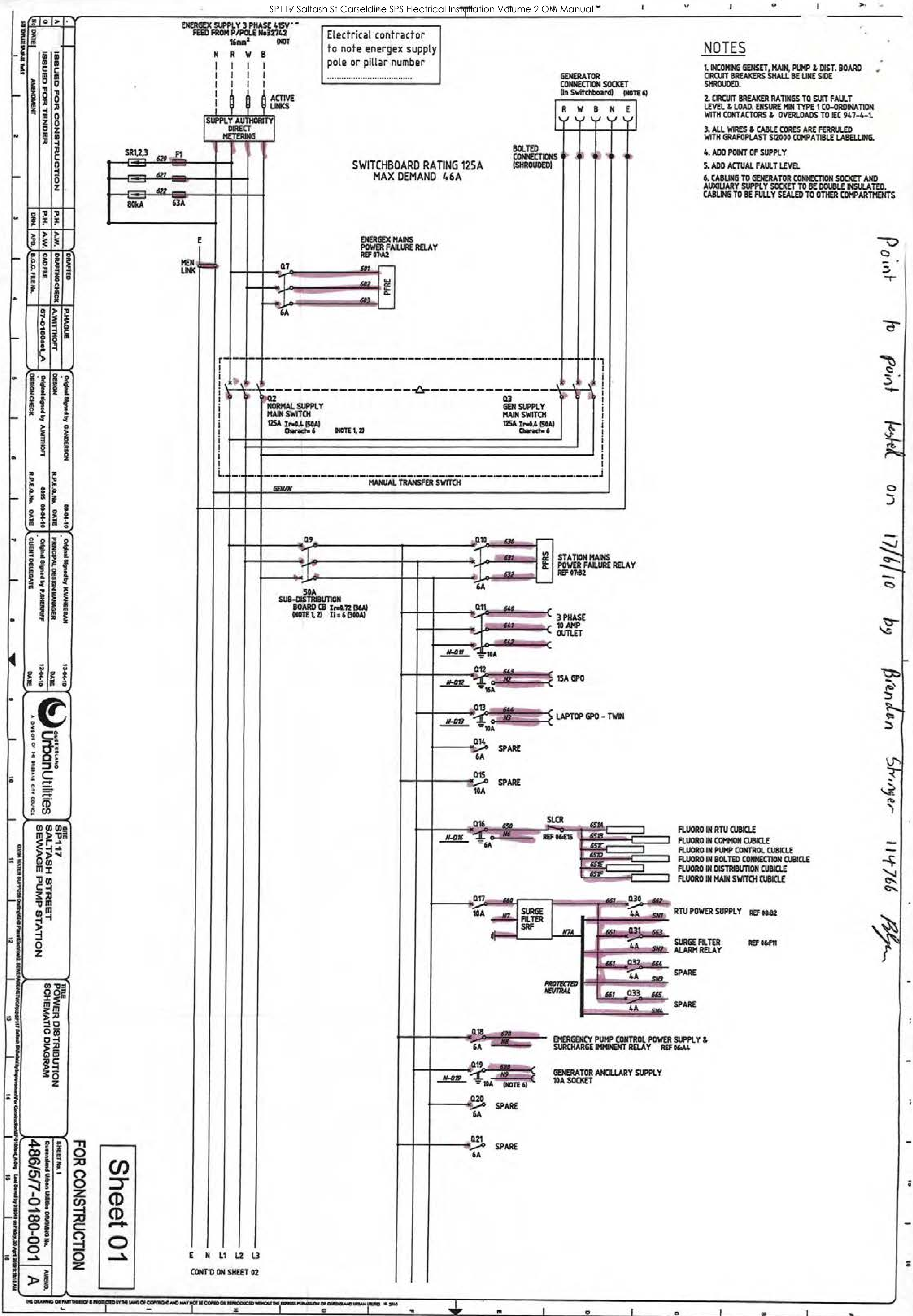
Original Signed by K.VAHEESAN 13-04-10
PRINCIPAL DESIGN MANAGER DATE
Original Signed by P.SHERRIFF 12-04-10
CLIENT DELEGATE DATE

QUEENSLAND Urban Utilities
A DIVISION OF THE BRISBANE CITY COUNCIL

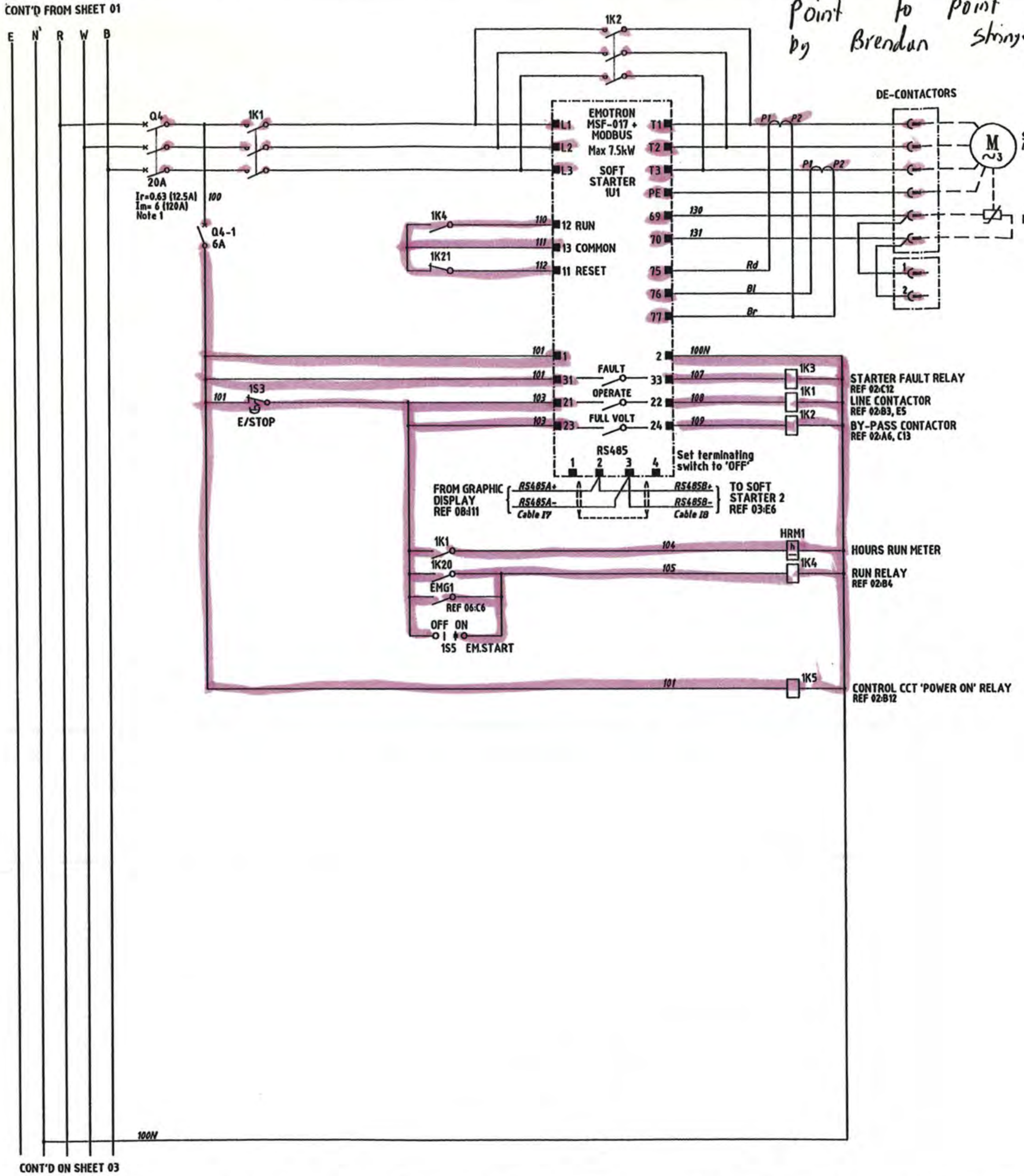
SITE
SP117
SALTASH STREET
SEWAGE PUMP STATION

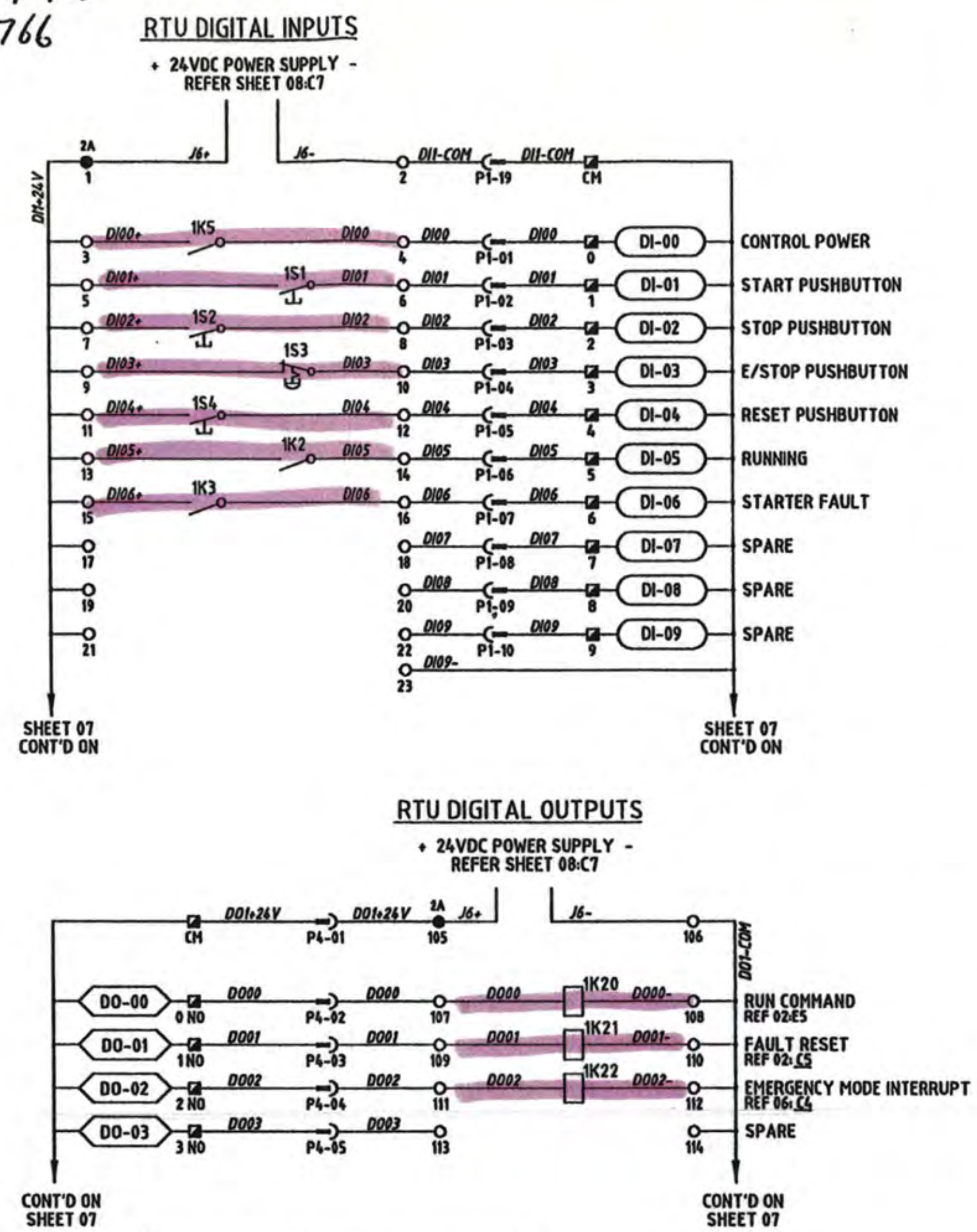
TITLE
SITE COVER SHEET

SHEET No. 0
Queensland Urban Utilities DRAWING No. 486/5/7-0180-000
AMEND. A


ENERGEX SUPPLY 3 PHASE 415V
FEED FROM P/POLE No32742
16mm²
Electrical contractor to note energex supply pole or pillar number ....
N R W B
ACTIVE LINKS
SUPPLY AUTHORITY DIRECT METERING
SR1,2,3
620 621 622
F1
80kA
63A
SWITCHBOARD RATING 125A
MAX DEMAND 46A
GENERATOR CONNECTION SOCKET (In Switchboard) (NOTE 6)
R W B N E
BOLTED CONNECTIONS (SHROUDED)
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. ADD POINT OF SUPPLY
5. ADD ACTUAL FAULT LEVEL
6. CABLING TO GENERATOR CONNECTION SOCKET AND AUXILIARY SUPPLY SOCKET TO BE DOUBLE INSULATED. CABLING TO BE FULLY SEALED TO OTHER COMPARTMENTS
E
MEN LINK
ENERGEX MAINS POWER FAILURE RELAY REF 07:A2
Q7 601 602 603 6A PFRE
Q2 NORMAL SUPPLY MAIN SWITCH 125A Ir=0.4 (50A) Charact= 6 (NOTE 1, 2)
Q3 GEN SUPPLY MAIN SWITCH 125A Ir=0.4 (50A) Charact= 6
MANUAL TRANSFER SWITCH
GEN/N
Q9 50A SUB-DISTRIBUTION BOARD CB Ir=0.72 (36A) (NOTE 1, 2) Ii = 6 (300A)
Q10 630 631 632 6A PFRS
STATION MAINS POWER FAILURE RELAY REF 07:B2
Q11 640 641 642 N-Q11 10A 3 PHASE 10 AMP OUTLET
Q12 643 N2 N-Q12 16A 15A GPO
Q13 644 N3 N-Q13 10A LAPTOP GPO - TWIN
Q14 6A SPARE
Q15 10A SPARE
Q16 650 N6 N-Q16 6A
SLCR REF 06:E15
651A FLUORO IN RTU CUBICLE
651B FLUORO IN COMMON CUBICLE
651C FLUORO IN PUMP CONTROL CUBICLE
651D FLUORO IN BOLTED CONNECTION CUBICLE
651E FLUORO IN DISTRIBUTION CUBICLE
651F FLUORO IN MAIN SWITCH CUBICLE
Q17 660 10A N7 SURGE FILTER SRF N7A
661 Q30 662 4A SN1 RTU POWER SUPPLY REF 08:B2
661 Q31 663 4A SN2 SURGE FILTER ALARM RELAY REF 06:P11
661 Q32 664 4A SN3 SPARE
PROTECTED NEUTRAL
661 Q33 665 4A SN4 SPARE
Q18 670 N8 6A EMERGENCY PUMP CONTROL POWER SUPPLY & SURCHARGE IMMINENT RELAY REF 06:A4
Q19 680 N9 N-Q19 10A (NOTE 6) GENERATOR ANCILLARY SUPPLY 10A SOCKET
Q20 6A SPARE
Q21 6A SPARE
E N L1 L2 L3
CONT'D ON SHEET 02
Point to point tested on 17/6/10 by Brendon Stringer 114766
Sheet 01
FOR CONSTRUCTION
A ISSUED FOR CONSTRUCTION P.H. A.W.
0 ISSUED FOR TENDER P.H. A.W.
No DATE AMENDMENT DRN. APD.
DRAFTED P.HAGUE
DRAFTING CHECK A.WITTHOFT
CAD FILE 67-0180sel_A
Original Signed by G.ANDERSON DESIGN R.P.E.Q. No. DATE 09-04-10
Original Signed by A.WITTHOFT DESIGN CHECK R.P.E.Q. No. 8895 09-04-10
Original Signed by K.VAHEESAN PRINCIPAL DESIGN MANAGER DATE 13-04-10
Original Signed by P.SHEROFF CLIENT DELEGATE DATE 12-04-10
Queensland Urban Utilities
SITE SP117 SALTASH STREET SEWAGE PUMP STATION
TITLE POWER DISTRIBUTION SCHEMATIC DIAGRAM
SHEET No. 1
Queensland Urban Utilities DRAWING No. 486/5/7-0180-001
AMEND. A

Point to point tested on 17/6/10 by Brendan Stringer [signature] 114766





LEGEND:

- ▲ SWITCHBOARD POWER TERMINAL
- Ø SWITCHBOARD CONTROL TERMINAL
- □ SWITCHBOARD GENERATOR TERM.
- FIELD TERMINAL
- PLC TERMINAL
- RTU TERMINAL
- SS TERMINAL
- ● PLC/RTU MARSH. FUSE TERMINAL
- ○ PLC/RTU MARSH. LINK TERMINAL
- TO RTU —) DISCONNECT PLUG
- (DI1-02) RTU DIGITAL INPUT
- <DO1-02> RTU DIGITAL OUTPUT
- [AI1-02] RTU ANALOGUE INPUT
- [AO1-02] RTU ANALOGUE OUTPUT

NOTES

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

Sheet 02

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A		ISSUED FOR CONSTRUCTION	P.H.	A.W.
0		ISSUED FOR TENDER	P.H.	A.W.

DRAFTED	P.HAGUE
DRAFTING CHECK	A.WITTHOFT
CAD FILE	57-0180set_A
B.C.C. FILE No.	

Original Signed by G.ANDERSON		09-04-10
DESIGN	R.P.E.Q. No.	DATE
Original signed by A.WITTHOFT	8895	09-04-10
DESIGN CHECK	R.P.E.Q. No.	DATE

Original Signed by K.VAHEESAN	13-04-10
PRINCIPAL DESIGN MANAGER	DATE
Original Signed by P.SHERRIFF	12-04-10
CLIENT DELEGATE	DATE

Queensland Urban Utilities — A DIVISION OF THE BRISBANE CITY COUNCIL

SITE SP117 SALTASH STREET SEWAGE PUMP STATION

TITLE PUMP No1 SCHEMATIC DIAGRAM

SHEET No. 2

Queensland Urban Utilities DRAWING No. 486/5/7-0180-002 AMEND. A

STD TEMPLATE SA-3P-SS Ver1.0

G:\184 WATER SUPP\268 Drafting\8248 Plans\Electrical\2. SEWERAGE\NETWORKS\SP117 Saltash St\Reliability Improvement\For Construction\57-0180set_A.dwg Last Saved by 078549 on Friday, 30 Apr 2010 9:18:18 AM

Point to point tested on 17/6/10
by Brendon Stringer 114766

CONT'D FROM SHEET 02

E N R W B

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

2K1

Q5-1 6A

2K2

EMOTRON MSF-017 + MODBUS Max 7.5kW SOFT STARTER 2U1

L1 L2 L3 T1 T2 T3 PE 69 70 75 76 77

DE-CONTACTORS

SUBMERSIBLE PUMP No2 4.6kW 10.5AMPS

MOTOR THERMISTORS

2K4 2K21

210 12 RUN
211 13 COMMON
212 11 RESET

Rd Bl Br

201 1 2 200N

201 31 FAULT 33 207 2K3 STARTER FAULT RELAY REF 03:C12

2S3 E/STOP

203 21 OPERATE 22 208 2K1 LINE CONTACTOR REF 03:B3, E5

203 23 FULL VOLT 24 209 2K2 BY-PASS CONTACTOR REF 03:A6, C13

RS485 1 2 3 4

FROM SOFT STARTER 1 REF 02:E6 RS485B+ RS485B- Cable 18

Set terminating switch to 'ON'

2K1 2K20 EMG2 REF 06:D6 OFF ON 2S5 EM.START

204 205 HRM2 2K4

HOURS RUN METER
RUN RELAY REF 03:B4

201 2K5

CONTROL CCT 'POWER ON' RELAY REF 03:B12

200N

RTU DIGITAL INPUTS

+ 24VDC POWER SUPPLY - REFER SHEET 08:C7

2A J6+ J6- DI2-COM DI2-COM

DI2+24V

36	37	P2-19	CM	
DI16+ 38	2K5	DI16 39	DI16 P2-01 DI16	DI-16 16 CONTROL POWER
DI17+ 40	2S1	DI17 41	DI17 P2-02 DI17	DI-17 17 START PUSHBUTTON
DI18+ 42	2S2	DI18 43	DI18 P2-03 DI18	DI-18 18 STOP PUSHBUTTON
DI19+ 44	2S3	DI19 45	DI19 P2-04 DI19	DI-19 19 E/STOP PUSHBUTTON
DI20+ 46	2S4	DI20 47	DI20 P2-05 DI20	DI-20 20 RESET PUSHBUTTON
DI21+ 48	2K2	DI21 49	DI21 P2-06 DI21	DI-21 21 RUNNING
DI22+ 50	2K3	DI22 51	DI22 P2-07 DI22	DI-22 22 STARTER FAULT
52		DI23 53	DI23 P2-08 DI23	DI-23 23 SPARE
54		DI24 55	DI24 P2-09 DI24	DI-24 24 SPARE
56		DI25 57	DI25 P2-10 DI25	DI-25 25 SPARE
		DI25- 58		

CONT'D ON SHEET 07

CONT'D ON SHEET 07

RTU DIGITAL OUTPUTS

+ 24VDC POWER SUPPLY - REFER SHEET 08:C7

DO2+24V CM DO2+24V P4-11 2A 123 J6+ J6- 124 DO2-COM

DO-08	8 NO	DO08 P4-12	DO08 125	2K20 DO08- 126	RUN COMMAND REF 03:E5
DO-09	9 NO	DO09 P4-13	DO09 127	2K21 DO09- 128	FAULT RESET REF 03:C5
DO-10	10 NO	DO10 P4-14	DO10 129	2K22 DO10- 130	EMERGENCY MODE INTERRUPT REF 06:D4
DO-11	11 NO	DO11 P4-15	DO11 131	132	SPARE

CONT'D ON SHEET 07

CONT'D ON SHEET 07

LEGEND:

- SWITCHBOARD POWER TERMINAL
- SWITCHBOARD CONTROL TERMINAL
- SWITCHBOARD GENERATOR TERM.
- FIELD TERMINAL
- PLC TERMINAL
- RTU TERMINAL
- SS TERMINAL
- PLC/RTU MARSH. FUSE TERMINAL
- PLC/RTU MARSH. LINK TERMINAL
- TO RTU — DISCONNECT PLUG
- DI1-02 RTU DIGITAL INPUT
- DO1-02 RTU DIGITAL OUTPUT
- AI1-02 RTU ANALOGUE INPUT
- AO1-02 RTU ANALOGUE 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		ISSUED FOR CONSTRUCTION	P.H.	A.W.
0	04.10	ISSUED FOR TENDER	P.H.	A.W.

DRAFTED P.HAGUE
DRAFTING CHECK A.WITTHOFT
CAD FILE 57-0180set_A
B.C.C. FILE No.

Original Signed by G.ANDERSON 09-04-10 DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 09-04-10 DESIGN CHECK R.P.E.Q. No. DATE
Original Signed by K.VAHEESAN 13-04-10 PRINCIPAL DESIGN MANAGER DATE
Original Signed by P.SHERRIFF 12-04-10 CLIENT DELEGATE DATE

QUEENSLAND UrbanUtilities A DIVISION OF THE BRISBANE CITY COUNCIL

SITE SP117 SALTASH STREET SEWAGE PUMP STATION

TITLE PUMP No2 SCHEMATIC DIAGRAM

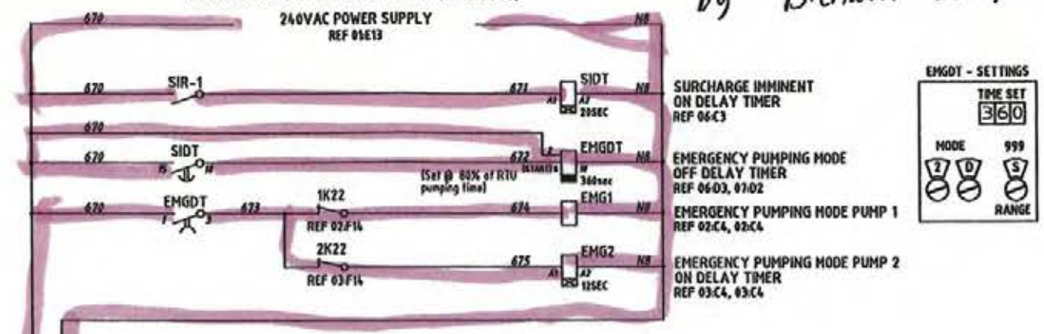
SHEET No. 3
Queensland Urban Utilities DRAWING No. 486/5/7-0180-003
AMEND. A

G:\184 WATER SUPPLY\300 Drafting\6248 Plans\Electrical\3. SEWERAGE\NETWORKS\SP117 Saltash St\Retrofit\By Improvement\For Construction\57-0180set_A.dwg Last Saved by 078549 on Friday, 30 April 2010 9:18:18 AM

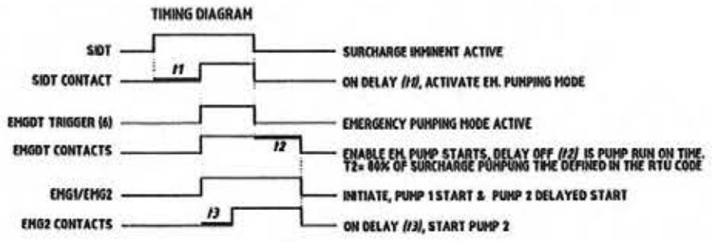
Point to point tested on 17/6/10
by Brendan Stringer Bligh 114766

COMMON CONTROL SECTION

EMERGENCY PUMPING MODE (240VAC)

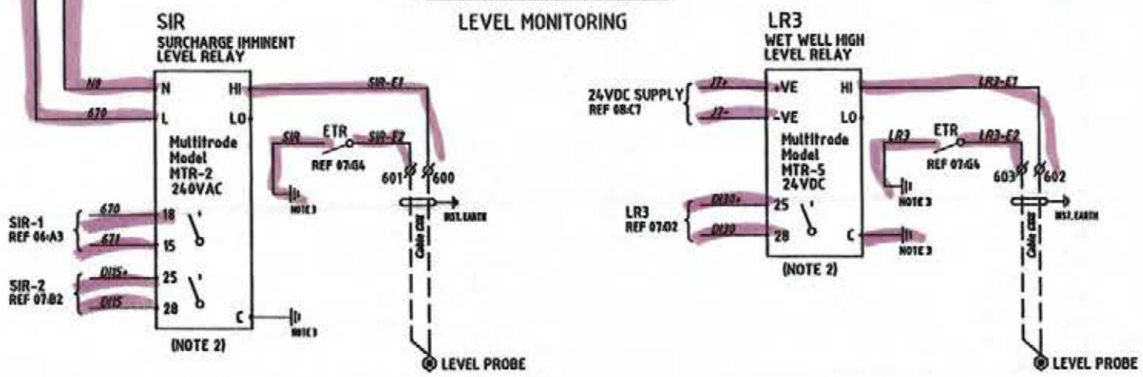


TIMING DIAGRAM



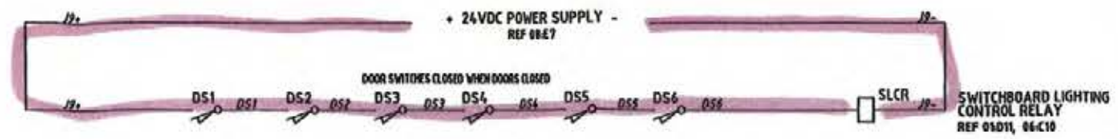
COMMON CONTROL SECTION

LEVEL MONITORING

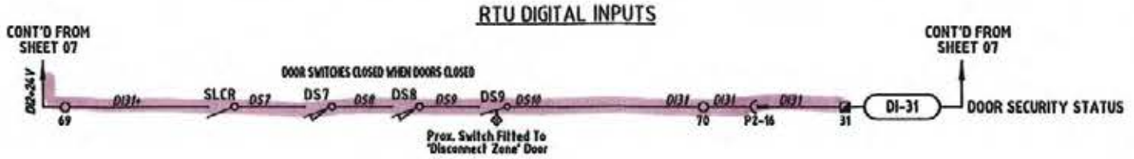


COMMON CONTROL SECTION

SWITCHBOARD INTERNAL LIGHTING

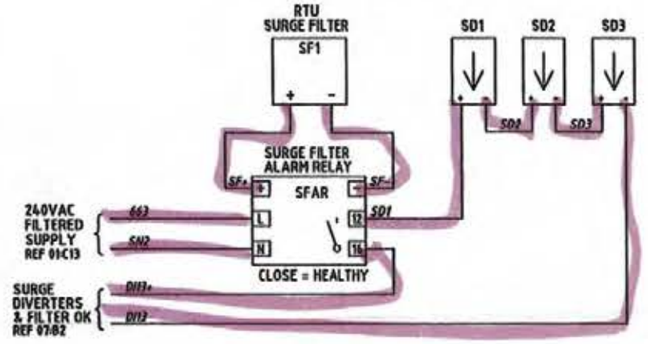


RTU DIGITAL INPUTS



ATS SECTION

SURGE DIVERTERS



LEGEND:

- ▲ SWITCHBOARD POWER TERMINAL
- ⌀ SWITCHBOARD CONTROL TERMINAL
- □ SWITCHBOARD GENERATOR TERM.
- ✖ FIELD TERMINAL
- ▣ PLC TERMINAL
- ◪ RTU TERMINAL
- ■ SS TERMINAL
- ● PLC/RTU MARSH. FUSE TERMINAL
- ○ PLC/RTU MARSH. LINK TERMINAL
- TO RTU → DISCONNECT PLUG
- DI1-32 RTU DIGITAL INPUT
- DO1-32 RTU DIGITAL OUTPUT
- AI1-32 RTU ANALOGUE INPUT
- AO1-32 RTU ANALOGUE OUTPUT

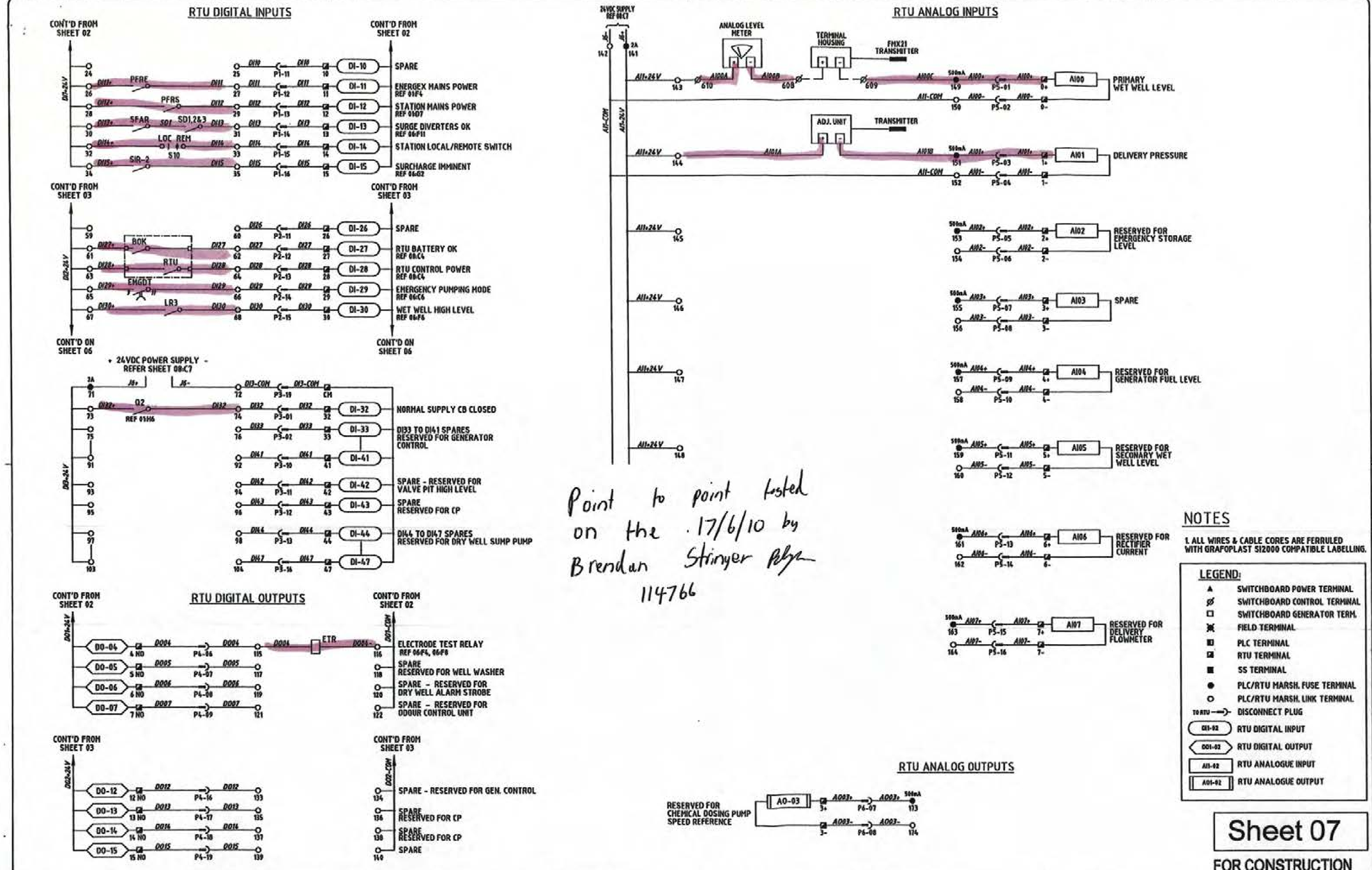
NOTES

1. ALL WIRES & CABLE CORES ARE FERRULED WITH GRAFOPLAST SI2000 COMPATIBLE LABELLING.
2. SET DIPSWITCH TO 'DISCHARGE' MODE.
3. RUN SEPARATE DEDICATED EARTH CONDUCTOR TO EARTH BAR.

Sheet 06

FOR CONSTRUCTION

A	ISSUED FOR CONSTRUCTION	P.H.	A.W.	DRAFTED	P.HAGUE	Original Signed by G.ANDERSON 09-04-10	Original Signed by K.VAHEESAN 13-04-10	Queensland Urban Utilities A DIVISION OF THE BRISBANE CITY COUNCIL	SITE: SP117 SALTASH STREET SEWAGE PUMP STATION	TITLE: COMMON CONTROLS SCHEMATIC DIAGRAM	SHEET No. 6
0	ISSUED FOR TENDER	P.H.	A.W.	DRAFTING CHECK	A.WITTHOFT	DESIGN R.P.E.Q.No. DATE	PRINCIPAL DESIGN MANAGER DATE				Queensland Urban Utilities DRAWING No. 486/5/7-0180-006
No	AMENDMENT	DRN.	APD.	CAD FILE	87-0180set_A	Original signed by A.WITTHOFT 8895 09-04-10	Original Signed by P.SHERRIFF 12-04-10				AMEND. A
				B.C.C. FILE No.		DESIGN CHECK R.P.E.Q.No. DATE	CLIENT DELEGATE DATE				



Sheet 07

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A		ISSUED FOR CONSTRUCTION	P.H.	A.W.
0	04.10	ISSUED FOR TENDER	P.H.	A.W.

DRAFTED	P.HAGUE
DRAFTING CHECK	A.WITTHOFT
CAD FILE	57-0180eel_A
B.C.C. FILE No.	

Original Signed by G.ANDERSON 09-04-10 — DESIGN — R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 6695 09-04-10 — DESIGN CHECK — R.P.E.Q. No. DATE
Original Signed by K.VAHEESAN 13-04-10 — PRINCIPAL DESIGN MANAGER — DATE
Original Signed by P.SHERRIFF 13-04-10 — CLIENT DELEGATE — DATE

QUEENSLAND UrbanUtilities — A DIVISION OF THE BRISBANE CITY COUNCIL

SITE SP117 SALTASH STREET SEWAGE PUMP STATION

TITLE COMMON RTU I/O SCHEMATIC DIAGRAM

SHEET No. 7 — Queensland Urban Utilities DRAWING No. 486/5/7-0180-007 — AMEND. A

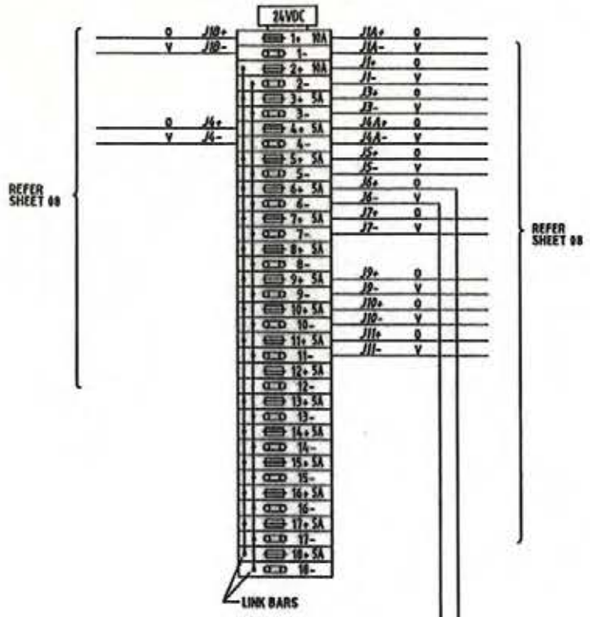
Point to point tested on the 17/6/10 by Brendan Stringer 114766

RTU COMPARTMENT
MITS RTU
MD3311 EA

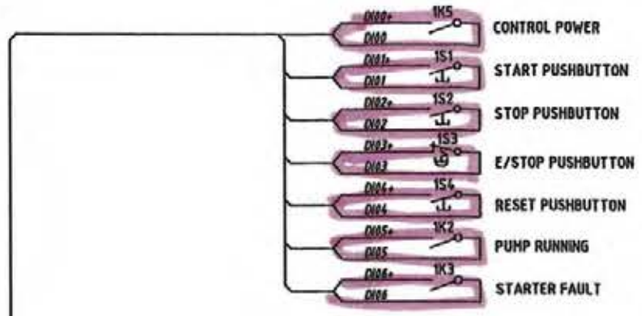
SWITCHBOARD

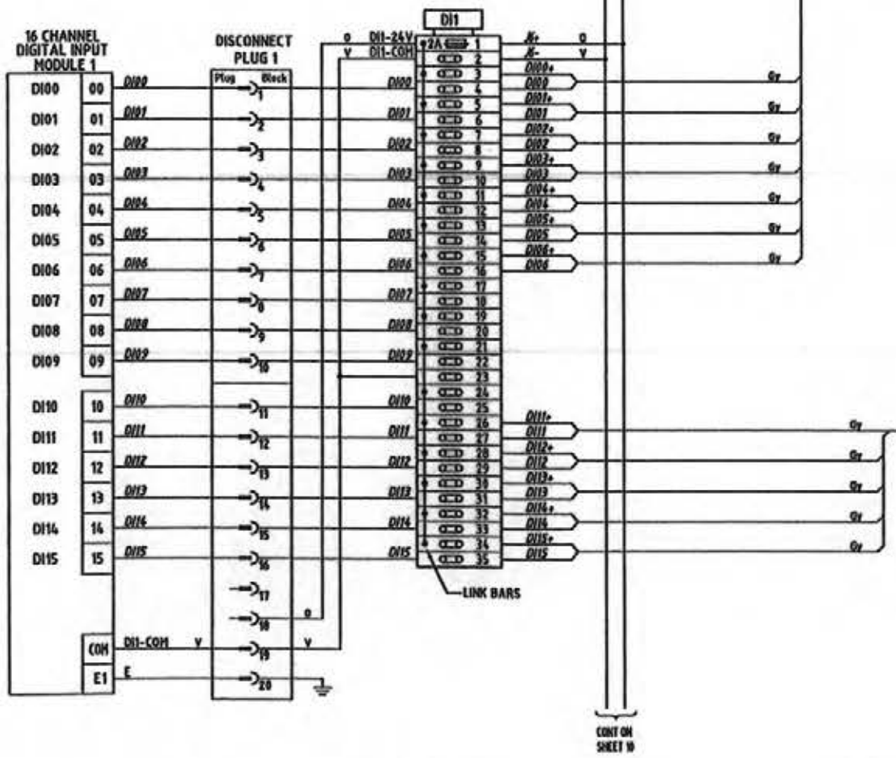
FIELD

RTU POWER SUPPLIES



STARTER COMPARTMENT
PUMP 1
REFER SHEET 02





COMMON COMPARTMENT
ENERGEX MAINS POWER
REF 01G4
STATION MAINS POWER
REF 01E9

ATS COMPARTMENT
SURGE DIVERTERS OK
REF 06/F13

STARTER COMPARTMENT
STATION LOCAL/REMOTE SWITCH

COMMON COMPARTMENT
SURCHARGE IMMINENT
REF 06-02

LEGEND:
- C?? CABLE IDENTIFIER
- TO RTU DISCONNECT PLUG
- 5 FUSE TERMINAL
- 5 DISCONNECT LINK TERMINAL

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

Sheet 09

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
		ISSUED FOR CONSTRUCTION	P.H.	A.W.
		ISSUED FOR TENDER	P.H.	A.W.

DRAFTED	P.HAGUE		
DRAFTING CHECK	A.WITTHOFT		
CAD FILE	S7-0180set_A		
B.C.C. FILE No.			

Original Signed by G.ANDERSON 09-04-10
DESIGN R.P.E.Q.No. DATE

Original signed by A.WITTHOFT 8895 09-04-10
DESIGN CHECK R.P.E.Q.No. DATE

Original Signed by K.VAHEESAN 13-04-10
PRINCIPAL DESIGN MANAGER DATE

Original Signed by P.SHERRIFF 12-04-10
CLIENT DELEGATE DATE

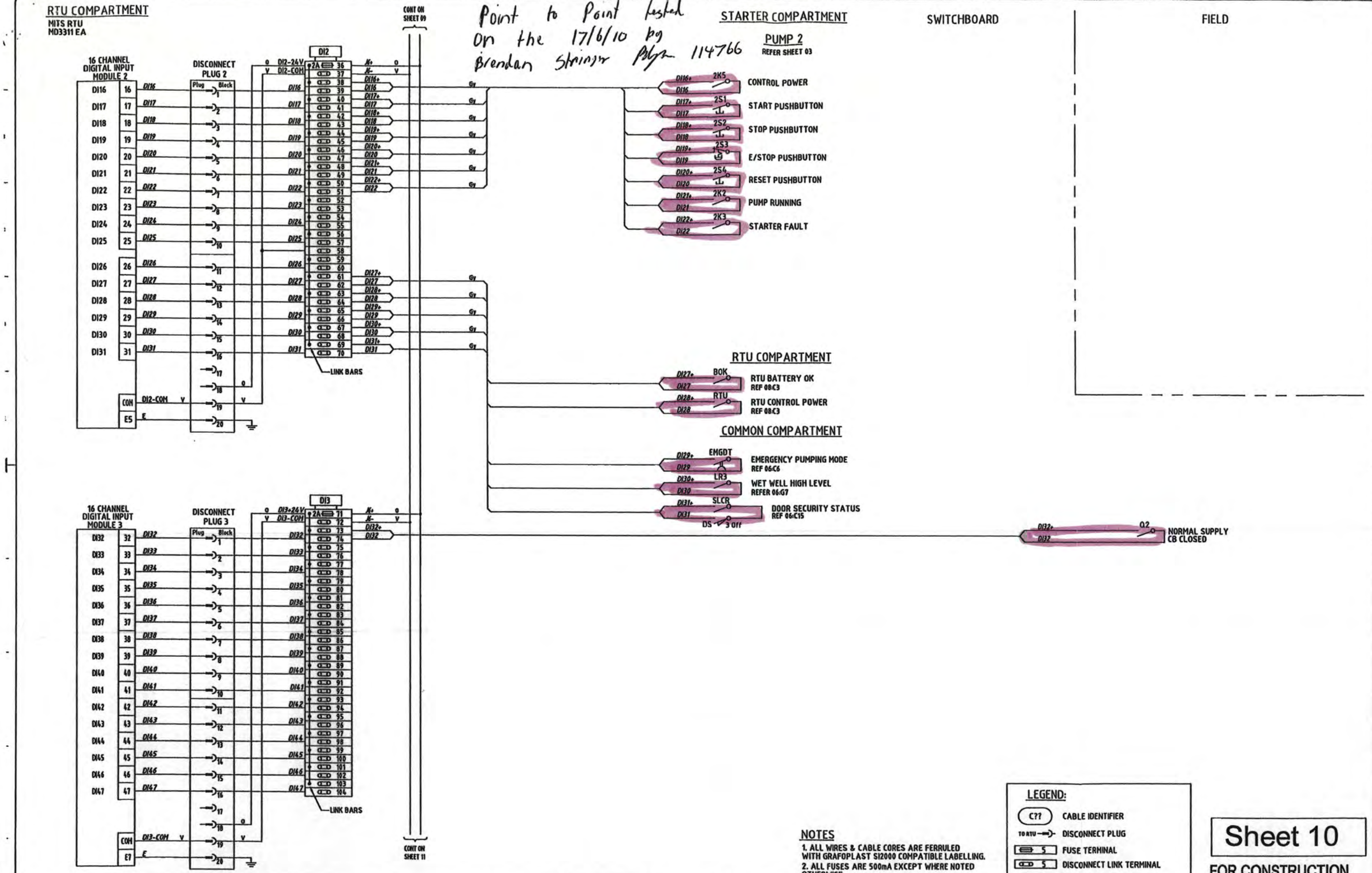
Queensland Urban Utilities
A DIVISION OF THE BRISBANE CITY COUNCIL

SITE
SP117
SALTASH STREET
SEWAGE PUMP STATION

TITLE
RTU DIGITAL INPUTS
TERMINATION DIAGRAM

SHEET No. 9
Queensland Urban Utilities DRAWING No. 486/5/7-0180-009
AMEND. A

Point to Point tested On the 17/6/10 by Brendan Stringer 114766



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
- TO RTU DISCONNECT PLUG
- 5 FUSE TERMINAL
- 5 DISCONNECT LINK TERMINAL

Sheet 10

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A		ISSUED FOR CONSTRUCTION	P.H.	A.W.
0	04.10	ISSUED FOR TENDER	P.H.	A.W.

DRAFTED	P.HAGUE
DRAFTING CHECK	A.WITTHOFT
CAD FILE	57-0180set_A
B.C.C. FILE No.	

Original Signed by G.ANDERSON 09-04-10 — DESIGN R.P.E.Q. No. DATE
Original signed by A.WITTHOFT 8895 09-04-10 — DESIGN CHECK R.P.E.Q. No. DATE
Original Signed by K.VAHEESAN 13-04-10 — PRINCIPAL DESIGN MANAGER DATE
Original Signed by P.SHERRIFF 12-04-10 — CLIENT DELEGATE DATE

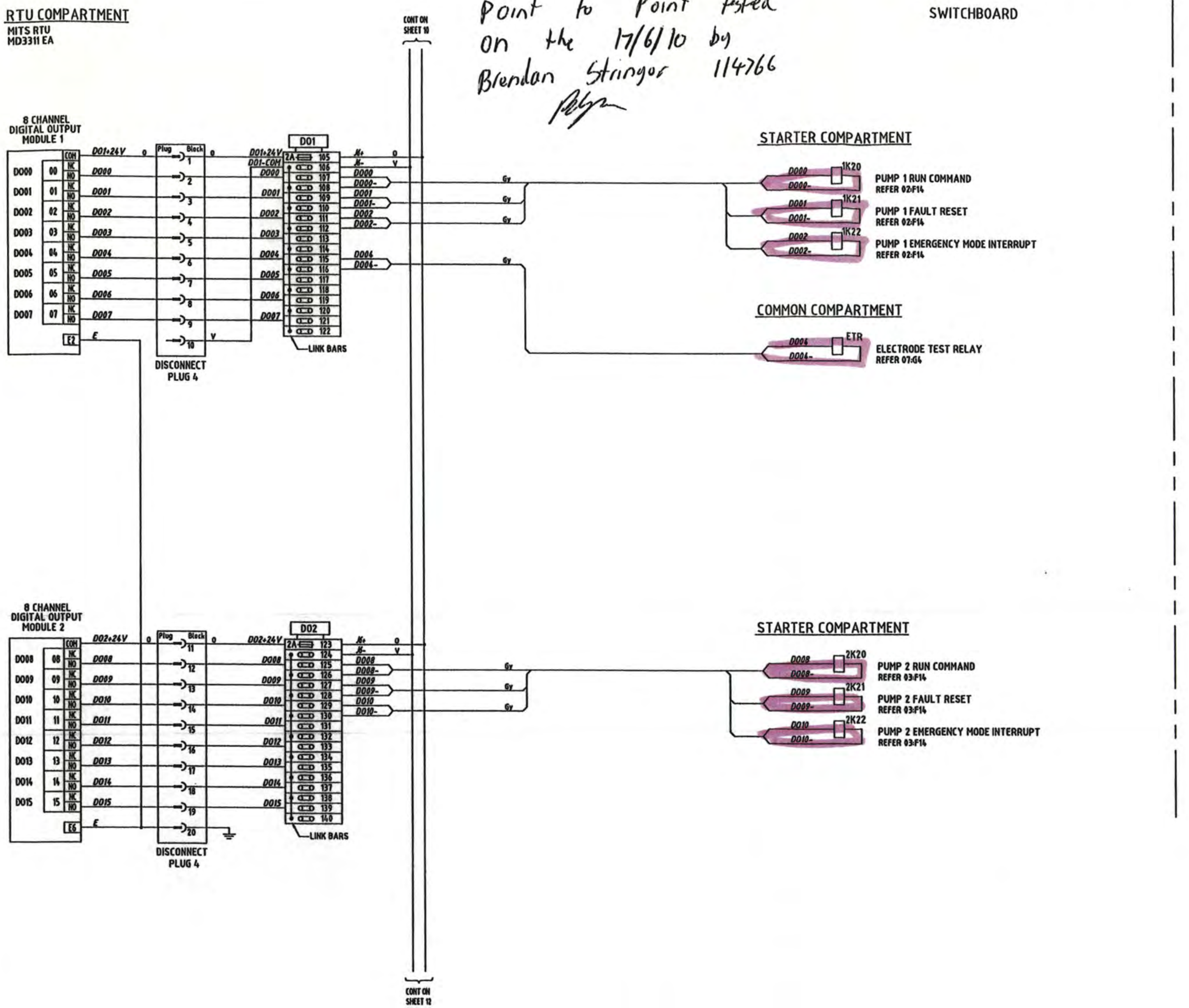
QUEENSLAND UrbanUtilities — A DIVISION OF THE BRISBANE CITY COUNCIL

SITE SP117 SALTASH STREET SEWAGE PUMP STATION

TITLE RTU DIGITAL INPUTS TERMINATION DIAGRAM

SHEET No. 10
Queensland Urban Utilities DRAWING No. 486/5/7-0180-010 AMEND. A

Point to Point tested on the 17/6/10 by Brendan Stringor 114766


RTU COMPARTMENT
MITS RTU
MD3311 EA
CONT ON SHEET 10
SWITCHBOARD
FIELD
8 CHANNEL DIGITAL OUTPUT MODULE 1
DO00
DO01
DO02
DO03
DO04
DO05
DO06
DO07
COM
NC
NO
E2
D01+24V
D01-COM
DISCONNECT PLUG 4
Plug
Block
D01
2A
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
LINK BARS
Gy
STARTER COMPARTMENT
1K20
PUMP 1 RUN COMMAND
REFER 02:F14
1K21
PUMP 1 FAULT RESET
REFER 02:F14
1K22
PUMP 1 EMERGENCY MODE INTERRUPT
REFER 02:F14
COMMON COMPARTMENT
ETR
ELECTRODE TEST RELAY
REFER 07:G4
8 CHANNEL DIGITAL OUTPUT MODULE 2
DO08
DO09
DO10
DO11
DO12
DO13
DO14
DO15
E6
D02+24V
D02
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
STARTER COMPARTMENT
2K20
PUMP 2 RUN COMMAND
REFER 03:F14
2K21
PUMP 2 FAULT RESET
REFER 03:F14
2K22
PUMP 2 EMERGENCY MODE INTERRUPT
REFER 03:F14
CONT ON SHEET 12

LEGEND:

- (C??) CABLE IDENTIFIER
- TO RTU —)- DISCONNECT PLUG
- Ø SWITCHBOARD CONTROL TERMINAL
- [5] FUSE TERMINAL
- [5] DISCONNECT LINK TERMINAL

NOTES

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

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

Sheet 11

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
A		ISSUED FOR CONSTRUCTION	P.H.	A.W.
0	04.10	ISSUED FOR TENDER	P.H.	A.W.

DRAFTED	P.HAGUE
DRAFTING CHECK	A.WITTHOFT
CAD FILE	57-0180set_A
B.C.C. FILE No.	

Original Signed by G.ANDERSON 09-04-10 — DESIGN R.P.E.Q.No. DATE
Original signed by A.WITTHOFT 8895 09-04-10 — DESIGN CHECK R.P.E.Q.No. DATE
Original Signed by K.VAHEESAN 13-04-10 — PRINCIPAL DESIGN MANAGER DATE
Original Signed by P.SHERRIFF 12-04-10 — CLIENT DELEGATE DATE

Queensland Urban Utilities — A DIVISION OF THE BRISBANE CITY COUNCIL

SITE SP117 SALTASH STREET SEWAGE PUMP STATION

TITLE RTU DIGITAL OUTPUTS TERMINATION DIAGRAM

SHEET No. 11 — Queensland Urban Utilities DRAWING No. 486/5/7-0180-011 — AMEND. A

STB TEMPLATE SP-3P-SS Ver1.2

SWITCHBOARD

FIELD

RTU COMPARTMENT

MITS RTU
MD3311 EA

8 CHANNEL ANALOG INPUT MODULE 1

DISCONNECT PLUG 5

TO INSULATED INSTRUMENT EARTH

NOTE 2

CONT ON SHEET 11

USE SCREENED CABLES

COMMON COMPARTMENT

ANALOG LEVEL METER

TERMINAL HOUSING

PRIMARY WET WELL LEVEL TRANSMITTER

ADJ. UNIT - VEGADIS12

DELIVERY PRESSURE TRANSMITTER

INST. EARTH

Point to point tested
on 17/6/10 by
Brendan Stringer 114766

8 CHANNEL ANALOG OUTPUT MODULE 1

DISCONNECT PLUG 6

TO INSULATED INSTRUMENT EARTH

USE SCREENED CABLES

RTU TB1 POWER SUPPLY REF 08B11

RTU TB2 COMMS PORT2 REF 08A11

REFER SHEET 08B7

PUMP 1 SOFT STARTER REF 02E6

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
- TO RTU → DISCONNECT PLUG
- FUSE TERMINAL
- DISCONNECT LINK TERMINAL
- EARTH TERMINAL

Sheet 12

FOR CONSTRUCTION

No	DATE	AMENDMENT	DRN.	APD.
1		ISSUED FOR CONSTRUCTION	P.H.	A.W.
0		ISSUED FOR TENDER	P.H.	A.W.

DRAFTED	P.HAGUE		
DRAFTING CHECK	A.WITTHOFT		
CAD FILE	67-0180set_A		
S.C.C. FILE No.			

Original Signed by G.ANDERSON		09-04-10	
DESIGN	R.P.E.Q. No.	DATE	
Original signed by A.WITTHOFT	8885	09-04-10	
DESIGN CHECK	R.P.E.Q. No.	DATE	

Original Signed by K.VAHEESAN		13-04-10
PRINCIPAL DESIGN MANAGER		DATE
Original Signed by P.SHERRIFF		12-04-10
CLIENT DELEGATE		DATE

Queensland Urban Utilities — A DIVISION OF THE BRISBANE CITY COUNCIL

SITE: SP117 SALTASH STREET SEWAGE PUMP STATION

TITLE: RTU ANALOGS & MISCELLANEOUS TERMINATION DIAGRAM

SHEET No. 12

Queensland Urban Utilities DRAWING No. 486/5/7-0180-012

AMEND. A

5. COMPLIANCE
CERTIFAICATES

SJ ELECTRIC PTY LTD
Queensland

Ref: Test Certificate P117.doc

TEST CERTIFICATE

SJ Electric (Qld) Pty. Ltd.
19 Elliot Street.
Albion Qld. 4010
R.E.C. 7623

Attention: Wendy Wong

Level 2 TC Beirne Centre, 315 Brunswick Street Mall, Fortitude Valley Q 4006

Work performed for Brisbane Water at SP117 Saltash St Virgina 4014 under contract BW: 70103-037 (SJ Electric Job Number WT400089)

Installation Tested / Equipment Tested

- New Sewage pump station switchboard
- New main earth
- Earth bonding to main earth link and all switchboard components.

All supporting test sheets attached.

Test Date
22/06/10

For the electrical installation, this certificate certifies that the electrical installation to the extent it is affected by the electrical work has been tested to ensure it is electrically safe and is in accordance with the requirements of the wiring rules and the electrical safety regulation 2002. C.J. Holmes (endorsee to electrical contracting license 7623)

For the electrical equipment, this certificate certifies that the electrical equipment, to the extent it is affected by the electrical work, is electrically safe. C.J. Holmes (endorsee to electrical contracting license 7623)

Signed.