

END OF DAY CHECKLIST				A-02B	
Project Name			Project No.		
Asset Description			Location		
Date			Time		
General for all Sites			PASS	N/A	COMMENTS
1	Confirm As-built mark ups folders are on site and current		☐	☐	
2	Review alarms list, confirm no alarms of concern		☐	☐	
3	Review inhibits and remove any which do not need to be enabled, update inhibit log		☐	☐	
4	Brief On call staff and site controller on current status and issues		☐	☐	
5	Central Control room notified, and process control handed over		☐	☐	
6	All staff and contractors have left site and site is secure		☐	☐	
7	Security System is armed		☐	☐	
DCS or Delta V Site Specific					
1	Confirm DCS Cold start memory downloaded		☐	☐	
2	Download setup date to propagate graphics		☐	☐	
3	Alarm areas assigned to workstations and remote client session		☐	☐	
RTU / SCADA Site Specific					
1	Scada to RTU communication and alarming is working (test with door open / intruder alarm)		☐	☐	
2	Correct equipment status is being shown and trended on CCR SCADA		☐	☐	
3	Software backups completed		☐	☐	
Defects reason and actions:					
COMPLETED BY:		COMPANY	PRINT NAME	SIGNATURE	

HV and MV CABLES			E-02B		
Asset Description			Project No.		
Location			System		
Tag Number			Cable Size		
Termination Drawing			SLD Drawing		
			PASS	N/A	COOMMENT
1	Confirm installation is complete and ITR E02A is complete and in the completion's dossier		☐	☐	
2	Insulation Resistance Test (before pressure test): - 5kV Megger (Min value 100 MΩ)/ L1 – L2+L3+E _____ MΩ L2 – L1+L3+E _____ MΩ L3 – L1+L2+E _____ MΩ		☐	☐	
3	Pressure Test: - record leakage current mA / Test Voltage: - 15kV DC / Test Duration 15 mins L1 – L2+L3+E _____ mA L2 – L1+L3+E _____ mA L2 – L1+L3+E _____ mA		☐	☐	
4	Insulation Resistance Test (after pressure test): - 5kV Megger (Min value 100 MΩ) L1 – L2+L3+E _____ MΩ L2 – L1+L3+E _____ MΩ L3 – L1+L2+E _____ MΩ Ensure after completing tests 2, 3 & 4 all cores are discharged to earth for 15 mins*		☐	☐	
5	Reconnect cable cores and confirm correct terminations. End 'A' End 'B'		☐	☐	
6	Record torque settings and bolt size End 'A' _____ Nm _____ mm End 'B' _____ Nm _____ mm		☐	☐	
7	Gland body to earth path resistance (Max 0.1Ω)		☐	☐	
8	Confirm mechanical protective measures, kick plates, covers, etc are fitted correctly		☐	☐	
9	Replace covers and doors, and check all bolts are correct and none missing		☐	☐	
Defects reason and action:					
Test Equipment					
Make:		Model:		Serial No:	Cal Expiry Date:
COMPLETED BY: (Construction)		REVIEWED BY: (Project Engineer)		WITNESSED BY: (Commissioning engineer) If flagged in ITP	
COMPANY					
SIGNATURE					

PRINT NAME			
DATE			

LV SWITCHBOARDS			E-03B		
Asset Description		Tag Number			
Site		Process Area			
Project/Project No		Manufacturer			
Layout Drawing		Model			
SLD Drawing		Serial number			
Note Switchboards must adhere to section 13.13.4 of the Material Supply Standard the Electrical and section 3 of the Electrical Design Standard. Note for HV Switchboards Pre Commissioning tests must be supplied by the manufacturer and or competent consultant			Pass	N/A	Comment
1	Record the following rating information: Rating: _____ Volts _____ Amps Fault Level: _____ MVA _____ Secs		☐	☐	
2	Confirm Vendor Test Documentation is complete and in the Completion Dossier		☐	☐	
3	Ensure that the SWBD Installation Checks are complete and satisfactory as per ITR E-03A		☐	☐	
4	Confirm Protection Settings on Main Incomer CB and Generator CB		☐	☐	
5	Confirm Protection Settings of all Feeder Cells		☐	☐	
6	Is Protection Relay Commissioning by secondary test injection required		☐ a1	☐	
7	Confirm correct rating of MCBs and fuse links		☐	☐	
	Metering ROI and COC		☐	☐	
1	Normally the Inspector will install the Revenue Meter before initial Switchboard Livening, the Inspector will require a COC to be completed for the SWBD before they will install the Revenue Meter and conduct their post livening checks		☐	☐	
2	SWBD COC completed and signed by installation contractor		☐	☐	
3	Note this check sheet is designed for typical instances when most of the field wiring is not connected to the switchboard. It is designed to capture the checks required to ensure the SWBD is safe to liven and is safe after livening.		☐	☐	
Pre Livening Checks					
	Visual Checks				
1	Inspect the SWBD to determine if it is practically complete and safe to liven.		☐	☐	
2	All incoming cables are terminated to their correct locations.		☐	☐	
3	All outgoing cables are terminated and safe to liven, or they are disconnected and/or that feeder cell is padlocked in the open position. Ie the act of livening this SWBD will not constitute a hazard to plant or personnel		☐	☐	
4	Inspect all switchboard, covers, shrouds, door and barriers to ensure that there are effective barriers between personnel and any livened parts of the switchboard		☐	☐	
5	Ensure that the SWBD environment and surrounds are sufficiently complete to offer adequate environmental protection and access and egress control once the switchboard is livened.		☐	☐	
	Earthing and Continuity				
1	Inspect the connection to the Earth Matt, pin or grid if practicable.		☐	☐	

	Is the connection accessible, labelled and in good condition			
2	Is the Main Earthing conductor of the correct size and current rating for the installation e.g table 5.1 AS/NZS3000 record size of Earthing Conductor	☐	☐	
3	Is there proof of main earthing continuity and resistance test as per AS/NZS 017.2007 3.1.2 Record value of continuity and resistance test	☐	☐	
4	Inspect the MEN link is it accessible and connected	☐	☐	
5	Undertake an equipotential bonding test to the exposed metal of the SWBD and other metallic objects adjacent to the SWBD to be livened. Record points tested and maximum value in ohms 1 2 3 4 5 6	☐	☐	
	Insulation Resistance			
1	A satisfactory IR test on the SWBD main busbar sections must be completed before livening. All elements that will affect this test shall be disconnected, eg contactor coils, power supplies, surge divertors and other devices which will cause a low test. Busbar IR to ground and between phases shall exceed 100M Ohm preferably equal to the accepted FAT values. IR R-W IR W-B IR B-W IR R-E IR W-E IR B-E Remove MEN Link and test R-W-B to N to ensure Neutral is fully insulated from all phases IR N-E IR N- R IR N-W IR N-B Reinstate MEN link on completion of this test.	☐	☐	
2	Note Micrologix 6.0 units and other voltage sensitive loads may need to be disconnected before the IR test to prevent damage and low IR readings	☐	☐	
	Immediate Post Livening Tests			
1	With all Feeder Breakers Open so initially only the Main Bus sections are livened and no sub circuits are energised, confirm voltage indication, polarity and phase rotation after initial livening.	☐	☐	
2	Confirm Presence and value of 3 phases R-W W-B B-W R-E W-E B-E	☐	☐	

3	(Consumer Mains Test) Using and Independent Earth confirm polarity of Neutral Record result	☐	☐	
4	(Submains test polarity) Using and Independent Earth confirm polarity of Neutral Record Result	☐	☐	
5	(Final Subcircuit test polarity and connection) Using and Independent Earth confirm polarity of Neutral Record Result	☐	☐	
6	Confirm Phase Rotation is Clockwise Record Result	☐	☐	
7	Undertake an ELI for L-E (Suitable L point eg Phase Failure Relay to Earth Bar) Use Table 8.1 AS/NZS3000 as a guide for acceptable results Record result	☐	☐	
8	Undertake an ELI test for L-N (Suitable L point eg Phase Failure Relay to Neutral Bar) Use Table 8.1 AS/NZS3000 as a guide for acceptable results Record result	☐	☐	
9	Note: Often the Inspector will connect a temporary resistive load to a convenient subcircuit to prove revenue metering operation	☐	☐	
10	ROI for SWBD issued by Inspector	☐	☐	
11	Note Phase polarity checks on switchboards with different supplies e.g 2 supplies feeding a split bus SWBD, measurements across phases must be made to ensure that e.g red phase source 1 is in phase with red phase source 2 etc R1-R2 V W1-W2 V B1-B2 V	☐	☐	
12	Verification of RCD if actively in Service 1 2 3 4 5 6	☐	☐	
Functional Checks				
1	Confirm operation of Phase Failure Relays Activates on loss of supply Incomer Generator Main Bus	☐	☐	
2	Confirm Operation of PQM Accurately reflects actual SWBD Voltages, and Currents if load is present	☐	☐	
3	Check mechanical interlocking facilities functioning correctly These are a repeat of the FAT tests, ensure there are not dual supplies available during these tests in case of actual interlock failure. Mains – Generator Record Result	☐	☐	

	Busties- if fitted Record Result			
4	Confirm fuse links, MCB ratings and protection settings are as design schedule	☐	☐	
5	Confirm ACB tripping, closing, from ACB and remotely if applicable, check that and test position is functional if the ACB is withdrawable. Test position ACB operation OK Local ACB operation OK Remote ACB operation OK	☐	☐	
6	Energise anti-condensation heaters and confirm operation of thermostats	☐	☐	
7	PS/UPS/Batt Systems -- Check operation of any power supply, UPS, or battery system built into the SWBD Record 24VDC Current draw Record Battery Charging Current Record Battery Charging Volts Simulate an AC power Supply failure to check Battery still supplies load If possible, check operation of Battery low volts cut out relay (prevents full battery discharge)	☐	☐	
8	LV – Main AC Breakers and check interlocks ie remote tripping Check operation of any mechanical interlock or key lock system that prevents breakers from simultaneously closing	☐	☐	
9	ATS Non-Generator Separate Test Sequence required	☐	☐	
10	ATS Generator Separate Test Sheet for Generator ATS	☐	☐	
11	Feeder Breaker Cell Basic check ie presence of voltage, and indication if fitted	☐	☐	
12	DOL Starter Cell Basic Check depending on state of downstream cabling, Power Supply operational, Voltage present. Full function checks on separate sheet when field circuits are practically complete	☐	☐	
13	VSD Starter Cell Basic Check depending on state of downstream cabling, Power Supply operational, Voltage present. Full function checks on separate sheet when field circuits are practically complete	☐	☐	

14	On completion of function checks, confirm any temporary links have been removed	☐	☐	
15	Ensure accurate red line markups are available on site after livening	☐	☐	

Defects reason and actions:

Test Equipment			
Make:	Model:	Serial No:	Cal Expiry Date:
	COMPLETED BY: (Construction)	REVIWED BY: (Project Engineer)	WITNESSED BY: (Commissioning Engineer) If flagged on ITP
COMPANY			
SIGNATURE			
PRINT NAME			
DATE			

DISTRIBUTION BOARDS, CONTROL PANELS, JB			E-04B	
Asset Description		Project No.		
Location		System		
Tag Number		Manufacturer		
SLD Drawing		Model		
Schematic Drawing		Serial number		
			PASS	N/A
1	Record the following rating information: Rating _____ Volts _____ Amps		☐	☐
2	Confirm Vendor Test Documentation is complete and in the Completion Dossier		☐	☐
3	Prove manual operation of isolators, switches, pushbuttons		☐	☐
4	Confirm correct scale and operation of local ammeter if fitted		☐	☐
5	Confirm local indicators operate correctly and lamps are correctly rated		☐	☐
6	Confirm MCB / Fuse ratings are correct		☐	☐
7	Confirm MCB / Fuse ratings at feeder source		☐	☐
8	Function check feeder cubicle inclusive of local / remote functions		☐	☐
9	Ensure any outgoing circuits are isolated. Energise Panel supplies and check voltage and phase sequence		☐	☐
10	Carry out energised operational checks and prove that all internal logic and interlocks function as per design philosophy		☐	☐
11	Energise anti-condensation heaters and confirm operation		☐	☐
12	Confirm all covers are intact, gaskets are installed, locking mechanisms fully functional, all enclosure bolts installed.		☐	☐
13	Ensure an "As Built" documentation is complete		☐	☐
Defects reason and action:				
Test Equipment				
Make:	Model:	Serial No:	Cal Expiry Date:	
	COMPLETED BY: (Construction)	REVIEWED BY: (Project Engineer)	WITNESSED BY: (Commissioning engineer) If flagged in ITP	
COMPANY				
SIGNATURE				
PRINT NAME				
DATE				

ELECTRIC MOTORS					E-05B		
Asset Description				Project No.			
Location				System			
Tag Number				Manufacturer			
Fed From				Model			
Schematic Drawing				Serial number			
					PASS	N/A	COMMENTS
1	Confirm electric motors installation test sheet (E-05A) has been completed and signed				☐	☐	
2	Record the following rating information: Rating: _____ Volts _____ Amps _____ HZ _____ KW _____ RPM				☐	☐	
3	Confirm Vendor Test Documentation is complete and in the Completion Dossier				☐	☐	
4	Confirm MCB / Fuse rating are correct to latest design drawings				☐	☐	
5	Confirm motor management / protection, relays are configured correctly and settings are as per latest design schedule				☐	☐	
6	Test and record insulation resistance of anti-condensation heater _____ MΩ				☐	☐	
CONDUCTOR CONTINUITY		☐ R ☐ W ☐ B ☐ E					
7	Test and record motor insulation resistance – 500V Megger at 1min				☐	☐	☐
INSULATION RESISTANCE		R – W: _____ MΩ		W – B: _____ MΩ		R – B: _____ MΩ	
		R - E: _____ MΩ		W - E: _____ MΩ		B-E: _____ MΩ	
8	Confirm a point-to-point test is completed of motor to supply point i.e. MCC feeder cell				☐	☐	
9	Where applicable check continuity of winding thermistor devices				☐	☐	
10	Confirm anti-condensation heater operates satisfactorily: Record Current _____ A				☐	☐	
11	Confirm Bearings have been lubricated with the correct grease. Grease type _____				☐	☐	
12	Check motor shaft end play and free rotation				☐	☐	
MOTOR OFF LOAD RUN-IN (4 HOURS)		OPEN GREASE PLUGS AND FILL			MOTOR ROTATION		
		VIBRATION		BEARING TEMP		NO LOAD CURRENT	
13	Ensure an “As Built” documentation is complete				☐	☐	☐
Defects reason and action:							
Test Equipment							
Make:		Model:		Serial No:		Cal Expiry Date:	
		COMPLETED BY: (Construction)		REVIEWED BY: (Project Engineer)		WITNESSED BY: (Commissioning engineer) If flagged in ITP	
COMPANY							
SIGNATURE							
PRINT NAME							
DATE							

BATTERIES, CHARGERS, UPS, INVERTERS			E-06B		
Asset Description		Project No.			
Location		System			
Tag Number		Manufacturer			
Fed From		Model			
Schematic Drawing		Serial number			
BATTERIES			PASS	N/A	COMMENTS
1	Record the following information: Number of Cells _____ Capacity _____ A/Hrs Nominal Voltage _____ V		☐	☐	
2	Confirm Vendor Test Documentation and ITR-E-06A is complete and in the Completion Dossier.		☐	☐	
3	In accordance with the relevant commissioning procedure, connect load bank to bus bars of distribution board and set to rated load		☐	☐	
4	Demonstrate automatic discharge test and record discharge current		☐	☐	
5	Confirm automatic discharge period ceases after 5mins		☐	☐	
6	Isolate AC supply and discharge the battery bank as per vendor recommendations.		☐	☐	
7	Record Discharge Current _____ A. Record Battery Start Voltage: _____ V		☐	☐	
8	Record discharge current and cell voltages at regular intervals Attach Vendor battery discharge sheets showing individual cell voltages during discharge. (If vendor sheet not available, site developed sheet showing cell voltages before test, after test and at regular intervals during test. Discharge current to be recorded at each interval.)		☐	☐	
9	Confirm tests were conducted in accordance with design requirements and manufacturers data		☐	☐	
10	Confirm that cell end voltages comply with design requirements and manufacturers data. Minimum cell end volts requirement: _____ V, lowest cell voltage: _____ V Minimum battery end volts requirements: _____ V, Actual Battery end voltage: _____ V		☐	☐	
11	Recharge battery bank over 12-hour period and record final open circuit terminal voltage and surface temperature. Terminal Voltage (minimum 90% nominal value): _____ V Ambient Temperature: _____ °C, Surface Temperature _____ °C		☐	☐	
CHARGERS / UPS / INVERTERS			OK	N/A	
1	Record the following information: Input Rating: _____ V _____ A _____ Hz Output Rating: _____ V _____ A _____ Hz		☐	☐	
2	Confirm Vendor Test Documentation and ITR-E-06A is complete and in the Completion Dossier.		☐	☐	
3	Confirm Feeder MCB's / Fuse rating are correct to latest design drawings		☐	☐	
4	Function check feeder cubicle and prove remote controls / shutdowns		☐	☐	
5	Prove manual operation of isolators, switches, pushbuttons		☐	☐	
6	Confirm correct scale and operation of instruments and HMI		☐	☐	

7	Confirm Outgoing MCB's / Fuse rating are correct to latest design drawings				☐	☐	
8	Carry out IR tests on main AC circuits (*note: -disconnect electronics)				☐	☐	
9	Energise charger confirm output polarity and record Float Charge Values. _____ A _____ V				☐	☐	
10	Carry out energised operational checks and prove that all internal logic and interlocks function as per design philosophy				☐	☐	
11	Alarms and Trips Function Test:				☐	☐	
	Device	Alarm Setting	Trip Setting		Comments		
12	Energise charger confirm output polarity and record following values: -						
	Float Charge Rate	Amps			Volts		
13	Output voltage ripple within tolerance				☐	☐	
14	Confirm operation of current limit				☐	☐	
15	Confirm continuity of output voltage on failure of input AC supply				☐	☐	
16	Confirm operation of battery isolator on external trip signal				☐	☐	
17	Ensure all Vendor energised tests complete. Attach copy of vendor test report				☐	☐	
18	Ensure an "As Built" documentation is complete				☐	☐	
19	Confirm output from Inverter maintained under the following conditions: - Loss of mains input Operation of by-pass Switch				☐ ☐	☐ ☐	
20	Confirm battery paralleling contractor operating				☐	☐	
21	Energise Inverter and load test in accordance with manufacturers recommendations and record the following values: -				☐	☐	
22		No Load	25% FLC	50% FLC	75% FLC	100% FLC	
	Load kW						
	DC Volts in						
	DC Amps in						
	AC Volts out						
	AC Amps out						
	Distortion (mV)						
	Output Amps Limit						
Defects reason and action:							
Test Equipment							
Make:		Model:		Serial No:		Cal Expiry Date:	

	COMPLETED BY: (Construction)	REVIEWED BY: (Project Engineer)	WITNESSED BY: (Commissioning engineer) If flagged in ITP
COMPANY			
SIGNATURE			
PRINT NAME			
DATE			

GENERATOR / ALTERNATOR					E-07B																	
Asset Description				Project No.																		
Location				System																		
Tag Number				Manufacturer																		
Frame Size				Model																		
Engine Type				Rating																		
Schematic Drawing				Serial number																		
					PASS	N/A	COMMENTS															
1	Record the following information: Full Load _____ V _____ A _____ Hz _____ RPM				☐	☐																
2	Confirm Vendor Test Documentation (FAT, SAT or ITR-E-07A) is complete and in the Completion Dossier.				☐	☐																
3	*Note: Before tests short out the rotating diodes Alternator Test Results (Test Voltage 5kV) <table border="1"> <tr> <td>*Winding IR (min 150 MΩ)</td> <td colspan="3">MΩ</td> </tr> <tr> <td>Winding Resistance</td> <td>U – V</td> <td>Ω</td> <td>V – W</td> </tr> <tr> <td></td> <td></td> <td>Ω</td> <td>W – U</td> </tr> </table> Exciter Test Results (Test Voltage 500V) <table border="1"> <tr> <td>*Winding IR (min 10 MΩ)</td> <td>MΩ</td> <td>*Winding Resistance</td> </tr> </table>				*Winding IR (min 150 MΩ)	MΩ			Winding Resistance	U – V	Ω	V – W			Ω	W – U	*Winding IR (min 10 MΩ)	MΩ	*Winding Resistance	☐	☐	
*Winding IR (min 150 MΩ)	MΩ																					
Winding Resistance	U – V	Ω	V – W																			
		Ω	W – U																			
*Winding IR (min 10 MΩ)	MΩ	*Winding Resistance																				
4	On completion of IR tests, discharge the windings residual charge to earth <table border="1"> <tr> <td>PI Test Results (min. value 2.0 MΩ)</td> <td>After 1 Min</td> <td>MΩ</td> <td>After 10 Min</td> </tr> <tr> <td>Pedestal Bearing IR</td> <td>MΩ</td> <td colspan="2">Anti-Condensation Heater IR</td> </tr> </table>				PI Test Results (min. value 2.0 MΩ)	After 1 Min	MΩ	After 10 Min	Pedestal Bearing IR	MΩ	Anti-Condensation Heater IR		☐	☐								
PI Test Results (min. value 2.0 MΩ)	After 1 Min	MΩ	After 10 Min																			
Pedestal Bearing IR	MΩ	Anti-Condensation Heater IR																				
5	Remove shorting links and test each diode for conduction				☐	☐																
6	Energise anti-condensation heaters and space heaters				☐	☐																
7	Confirm all covers and guards have been replaced				☐	☐																
Defects reason and action:																						
Test Equipment																						
Make:		Model:		Serial No:		Cal Expiry Date:																
COMPLETED BY: (Construction)		REVIEWED BY: (Project Engineer)		WITNESSED BY: (Commissioning engineer) If flagged in ITP																		
COMPANY																						
SIGNATURE																						
PRINT NAME																						
DATE																						

POWER TRANSFORMER				E-08B							
Asset Description			Project No.								
Location			System								
Tag Number			Manufacturer								
Insulation Medium			Model								
IP Rating			Serial number								
Schematic Drawing			SLD Drawing								
				PASS	N/A						
				COMMENTS							
1	Record the following information: Rating: _____ KVA AN _____ KVA AF _____ Hz Fault Level _____ MVA _____ Secs Primary Voltage: _____ V Secondary Voltage _____ V Tap Range: _____ Vector Group _____ % Impedance _____			☐	☐						
2	Confirm Vendor Test Documentation (FAT, SAT or ITR-E-08A) is complete and in the Completion Dossier.			☐	☐						
3	Confirm balanced resistance values of transformer windings. <table border="1"> <tr> <td>L1 – L2</td> <td>Ω</td> <td>L2 – L3</td> <td>Ω</td> <td>L3–L1</td> </tr> </table>			L1 – L2	Ω	L2 – L3	Ω	L3–L1	☐	☐	
L1 – L2	Ω	L2 – L3	Ω	L3–L1							
4	Remove N – E link and perform winding insulation test (test duration:- 1min) Winding Insulation Resistance Test Results (before pressure test) <table border="1"> <tr> <td>MV – LV, E</td> <td>MΩ</td> <td>Use 5kV Megger (Min value 150</td> </tr> <tr> <td>LV – MV, E</td> <td>MΩ</td> <td>Use 1 kV Megger (Min value 10 M</td> </tr> </table>			MV – LV, E	MΩ	Use 5kV Megger (Min value 150	LV – MV, E	MΩ	Use 1 kV Megger (Min value 10 M	☐	☐
MV – LV, E	MΩ	Use 5kV Megger (Min value 150									
LV – MV, E	MΩ	Use 1 kV Megger (Min value 10 M									
5	Short LV windings to earth and pressure test primary connections for 1min <table border="1"> <tr> <td>Test Voltage</td> <td>kV DC</td> <td>Leakage Current</td> </tr> </table>			Test Voltage	kV DC	Leakage Current	☐	☐			
Test Voltage	kV DC	Leakage Current									
6	Discharge both LV and MV windings to earth for 30mins			☐	☐						
7	Remove N – E link and perform winding insulation test (test duration: - 1min) Winding Insulation Resistance Test Results (after pressure test) <table border="1"> <tr> <td>MV – LV, E</td> <td>MΩ</td> <td>Use 5kV Megger (Min value 150</td> </tr> <tr> <td>LV – MV, E</td> <td>MΩ</td> <td>Use 1 kV Megger (Min value 10 M</td> </tr> </table>			MV – LV, E	MΩ	Use 5kV Megger (Min value 150	LV – MV, E	MΩ	Use 1 kV Megger (Min value 10 M	☐	☐
MV – LV, E	MΩ	Use 5kV Megger (Min value 150									
LV – MV, E	MΩ	Use 1 kV Megger (Min value 10 M									
8	Confirm no deterioration of insulation resistance since pressure test			☐	☐						
9	Confirm operation of winding temperature monitoring system, remote indications, alarms trips and forced fan units			☐	☐						
10	Function check VCB/ACB control circuits and verify inter-trips and protection trips			☐	☐						
11	Confirm tap setting is correct			☐	☐						
12	On completion of tests confirm transformer is left in a safe condition			☐	☐						
Defects reason and action:											
Test Equipment											
Make:		Model:		Serial No:							
				Cal Expiry Date:							

	COMPLETED BY: (Construction)	REVIEWED BY: (Project Engineer)	WITNESSED BY: (Commissioning engineer) If flagged in ITP
COMPANY			
SIGNATURE			
PRINT NAME			
DATE			

ELECTRIC HEATERS				E-09B	
Asset Description				Project No.	
Location				System	
Tag Number				Manufacturer	
Model				Serial number	
Schematic Drawing				SLD Drawing	
				PASS	N/A
				COMMENTS	
1	Record the following information: Rating: _____ V _____ A _____ Hz _____ KW _____ Phases			☐	☐
2	Confirm Vendor Test Documentation (FAT, SAT or ITR-E-09A) is complete and in the Completion Dossier.			☐	☐
2	Confirm MCB / Fuse rating at Switch Board feeder cubicle are correct			☐	☐
3	Confirm control equipment operating correctly			☐	☐
4	Confirm correct function of high temperature alarms and trips			☐	☐
5	Confirm low air flow trip functions correctly			☐	☐
6	Confirm external trips function correctly (i.e.; PSD/PCS etc.)			☐	☐
7	Carry out IR tests and point to point check prior to energisation checks			☐	☐
8	Element resistance per phase			☐	☐
9	Trip manual reset correct			☐	☐
10	Energise circuit and record the following:			☐	☐
	Cold _____ Amps		Hot _____		
11	Confirm heater response is satisfactory over temperature control range			☐	☐
12	For SCR controlled heaters confirm mode of operation of thyristors: -			☐	☐
	Single Cycle ☐		Burst Firing		
13	Confirm anti-condensation heater operational			☐	☐
14	Check all covers and guards are installed and no bolts missing			☐	☐
15	'Red Line' mark-up complete			☐	☐
16	Make safe heater and lock off supply at source			☐	☐
Defects reason and action:					
Test Equipment					
Make:		Model:		Serial No:	
COMPLETED BY: (Construction)		A1		WITNESSED BY: (Commissioning engineer) If flagged in ITP	
COMPANY					
SIGNATURE					
PRINT NAME					
DATE					

SOCKET OUTLET CIRCUITS						E-10B	
Asset Description				Project No.			
Location				System			
Schematic Drawing				SLD Drawing			
						PASS	N/A
						COMMENTS	
1	Record the following information: MCB Rating: _____ V _____ A _____ Phases RCD Rating _____ V _____ A _____ Trip mA _____ Type _____				☐	☐	
2	Confirm Vendor Test Documentation and ITR-E-10A is complete and in the Completion Dossier.				☐	☐	
3	Confirm MCB / RCD at Switch Board are correct				☐	☐	
4	Visually inspect circuit for external damage				☐	☐	
5	Perform Insulation Resistance check on circuit – minimum value 10MΩ				☐	☐	
6	Energise circuit and check voltage / polarity at each socket.				☐	☐	
7	Record Full load current of circuit at Distribution Board: _____ Amps				☐	☐	
8	Confirm mechanical interlock is operational at each socket				☐	☐	
9	Complete earth loop impedance test				☐	☐	
10	'Red Line' mark-up complete				☐	☐	
11	For welding outlet circuits, complete the following table						
		Outlet	MCB / Fuse Rating	Earth Continuity	Circuit IR	Volts at Welding Outlet	Phase Rotation
	1						
	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
Defects reason and action:							
Test Equipment							
Make:		Model:		Serial No:		Cal Expiry Date:	
	COMPLETED BY: (Construction)		REVIEWED BY: (Project Engineer)		WITNESSED BY: (Commissioning engineer) If flagged in ITP		
COMPANY							
SIGNATURE							
PRINT NAME							
DATE							

LIGHTING CIRCUITS				E-11B	
Asset Description				Project No.	
Location				System	
Schematic Drawing				SLD Drawing	
				PASS	N/A
				COMMENTS	
1	Record the following information: MCB Rating: _____ V _____ A _____ Phases RCD Rating _____ V _____ A _____ Trip mA _____ Type _____			☐	☐
2	Confirm Vendor Test Documentation and ITR-E-11A is complete and in the Completion Dossier.			☐	☐
3	Confirm MCB / RCD at Switch Board are correct			☐	☐
4	Visually inspect circuit for external damage			☐	☐
5	Perform Insulation Resistance check on circuit – minimum value 10MΩ			☐	☐
6	Energise circuit and check voltage / polarity at each light, and confirm they are working correctly			☐	☐
7	Record Full load current of circuit at Distribution Board: _____ Amps			☐	☐
8	Carry out live circuit earth loop impedance test from furthest luminaires (max. value 2 75Ω for 16A type 1 MCB)			☐	☐
9	Confirm correct alignment of floodlights, and function of any PIR detectors			☐	☐
10	For emergency luminaires, ensure batteries are fully charged and carry out discharge tests as per manufacturer's instructions or that UPS feeds are functioning			☐	☐
11	Confirm discharge times comply with design requirements			☐	☐
12	Re-energise circuit and confirm luminaires function correctly			☐	☐
13	'Red Line' mark-up complete			☐	☐
Defects reason and action:					
Test Equipment					
Make:		Model:		Serial No:	
				Cal Expiry Date:	
COMPLETED BY: (Construction)					
REVIEWED BY: (Commissioning)					
WITNESSED BY: (Commissioning engineer) If flagged in ITP					
COMPANY					
SIGNATURE					
PRINT NAME					
DATE					

MISCELLANEOUS EQUIPMENT			E-12B	
Asset Description		Project No.		
Location		System		
Tag Number		Description		
Manufacturer		Serial Number		
Schematic Drawing		SLD Drawing		
			PASS	N/A
			COMMENTS	
1	Record the following information: MCB Rating: _____ V _____ A _____ Phases Equipment Rating: _____ V _____ A _____ Hz		☐	☐
2	Confirm Vendor Test Documentation and ITR-E-12A is complete and in the Completion Dossier.		☐	☐
3	Confirm MCB / RCD at Switch Board are correct		☐	☐
4	Visually inspect equipment for external damage		☐	☐
5	Function check Switch Board feeder cubicle inclusive of remote / locate controls		☐	☐
6	Prove manual operation of isolators, switches, pushbuttons		☐	☐
7	Confirm local indicators operate correctly		☐	☐
8	Energise circuit and check voltage / polarity and confirm everything is working correctly		☐	☐
9	Record Full load current of circuit at Distribution Board: _____ Amps		☐	☐
10	Carry out energised operational checks and prove that all internal logic and interlocks function as per design philosophy		☐	☐
11	'Red Line' mark-up complete		☐	☐
Defects reason and action:				
Test Equipment				
Make:	Model:	Serial No:	Cal Expiry Date:	
	COMPLETED BY: (Construction)	REVIEWED BY: (Commissioning)	WITNESSED BY: (Commissioning engineer) If flagged in ITP	
COMPANY				
SIGNATURE				
PRINT NAME				
DATE				

MAIN EARTHING				E-13B		
Asset Description			Project No.			
Location			System			
Tag Number			Description			
Schematic Drawing			Layout Drawing			
				PASS	N/A	COMMENTS
1	Confirm Vendor Test Documentation and ITR-E-13A is complete and in the Completion Dossier.			☐	☐	
2	Visually inspect the earth rod chamber / plant earth bus bar for internal & external damage			☐	☐	
3	Visually check Earth Electrode & pit / plant earth bus bar properly installed and labelled as per specification			☐	☐	
4	Earth conductor size correct as per site specification			☐	☐	
5	Carry out Earth Resistant Measurement using the Slope Method			☐	☐	
Earth Resistance Slope Test						
The following readings are taken with potential spike location of 5m intervals from earth system:					EC Distance =	
Position P Electrode		Distance of P from earth		Measured Earth Resistance		
1		5m				
2		10m				
3		15m				
4		20m				
5		25m				
6		30m				
Plot results onto a graph						
Calculate slope coefficient $U = R3-R2/R2-R1$			U=			
From table obtain PT/EC for value of U			PT/EC=			
Multiply the value PT/EC by EC to obtain PT			PT/ECxEC=			
From graph read of resistance value for PT			Earth Electrode / Nest / Bus Bar Resistance =			
6	'Red Line' mark-up complete			☐	☐	☐
Defects reason and action:						
Test Equipment						
Make:		Model:		Serial No:		Cal Expiry Date:
COMPLETED BY: (Construction)		REVIEWED BY: (Commissioning)		WITNESSED BY: (Commissioning engineer) If flagged in ITP		
COMPANY						
SIGNATURE						
PRINT NAME						
DATE						

PROTECTION RELAY / CIRCUIT			E-14B		
Asset Description		Project No.			
Location		System			
Tag Number		Description			
Schematic Drawing		Layout Drawing			
ALL			PASS	N/A	COMMENTS
1	Confirm Vendor Test Documentation is complete (FAT and SAT) and in the Completion Dossier.		☐	☐	
2	Confirm all transit packing removed		☐	☐	
3	Visually inspect equipment for damage		☐	☐	
Current Transformers					
4	Confirm all connection are correct, and CT mounted correctly		☐	☐	
5	Confirm CT class and ratio is correct to design data		☐	☐	
6	Confirm CT primary polarity is correct (P1 / P2)		☐	☐	
7	Confirm CT secondary connections are correct (S1 / S2)		☐	☐	
8	Prove CT polarity (Flick Test) if applicable and carry out ratio checks to confirm CT tolerance		☐	☐	
9	Confirm all secondary wiring is connected and there are no open circuits		☐	☐	
Voltage Transformers					
10	Confirm primary and secondary fuses are correctly rated		☐	☐	
11	Check earthing and confirm continuity of scraping earth		☐	☐	
12	Carry out 1 kV IR test on VT windings (min value 10 MΩ): - [MV – LV, E _____ MΩ] [LV – MV, E _____ MΩ]		☐	☐	
13	Confirm winding continuity: - [MV _____ Ω] [LV _____ Ω]		☐	☐	
14	Energise VT and confirm VT ratio / phasing		☐	☐	
Protection Relays					
15	Confirm all connections are correct, secure and there are no open circuits		☐	☐	
16	Confirm relay identification is correct to design schedule		☐	☐	
17	Confirm relay type and settings are correct to latest revision of design schedule		☐	☐	
18	Carry out appropriate primary injection tests and confirm satisfactory operation of protection and lock-out relays (Commissioning engineer to confirm test procedures and attach results)		☐	☐	
19	Check withdraw type contact and CT shorting with relay base operate & undamaged		☐	☐	
20	Confirm all secondary wiring is connected and there are no open circuits		☐	☐	
ALL					
21	On completion of tests, confirm that all wiring has been re-instated, all 'frigs' and short circuits removed and relay settings re-set to design schedule		☐	☐	
22	Confirm all relay front covers have been re-instated and seals attached		☐	☐	
23	'Red Line' mark-up complete		☐	☐	

Defects reason and action:

Test Equipment			
Make:	Model:	Serial No:	Cal Expiry Date:
	COMPLETED BY: (Construction)	REVIEWED BY: (Project Engineer)	WITNESSED BY: (Commissioning Engineer) If flagged in ITP
COMPANY			
SIGNATURE			
PRINT NAME			
DATE			

ELECTRIC ACTUATOR FOR MOV			E-15B		
Asset Description		Project No.			
Location		System			
Tag Number		Model			
Manufacturer		Serial Number			
Schematic Drawing		Layout Drawing			
			PASS	N/A	COMMENTS
1	Confirm Vendor Test Documentation is complete (FAT and SAT) and in the Completion Dossier.		☐	☐	
2	Confirm all transit packing removed		☐	☐	
3	Visually inspect equipment for damage		☐	☐	
4	Measure the Windings IR _____ MΩ		☐	☐	
5	Measure the Windings continuity resistance _____ Ω		☐	☐	
6	Power up the Actuator		☐	☐	
7	Confirm parameters are programmed to match the FD and design		☐	☐	
8	Operate the actuator and confirm Correct Limit and Torque switch operation and indications		☐	☐	
9	Confirm operation is smooth and quiet		☐	☐	
10	Total stroke time: - [Off Load _____ Seconds] [On Load _____ Seconds]		☐	☐	
11	Start Current: - [Off Load _____ Amps] [On Load _____ Amps]		☐	☐	
12	Running Current: - [Off Load _____ Amps] [On Load _____ Amps]		☐	☐	
13	'Red Line' mark-up complete		☐	☐	
Defects reason and action:					
Test Equipment					
Make:	Model:	Serial No:	Cal Expiry Date:		
	COMPLETED BY: (Construction)	REVIEWED BY: (Commissioning)	WITNESSED BY: (Commissioning engineer) If flagged in ITP		
COMPANY					
SIGNATURE					
PRINT NAME					
DATE					

CONTACTOR STARTER / FUSED SWITCH				E-16B	
Asset Description		Project No.			
Location		System			
Tag Number		Model			
Manufacturer		Serial Number			
Schematic Drawing		Layout Drawing			
			PASS	N/A	COMMENTS
1	Record the following information: Rating: _____ V _____ A _____ Hz _____ KW _____ Phases		☐	☐	
2	Confirm Vendor Test Documentation is complete (FAT and SAT) and in the Completion Dossier		☐	☐	
3	Confirm all transit packing removed		☐	☐	
4	Visually inspect equipment for damage		☐	☐	
5	Control circuit	I.R.	☐	☐	
6	Main circuit	I.R.	☐	☐	
7	Main circuit phasing is correct		☐	☐	
8	Protection settings verified with latest project setting schedule		☐	☐	
9	Check door, isolator and padlock operations are correct		☐	☐	
10	Over current protection testing complete		☐	☐	
11	Earth fault protection testing complete		☐	☐	
12	Indicating instrumentation testing complete		☐	☐	
13	Cubicle function checked and wiring correct to Schematic Dwg No.		☐	☐	
14	Prove operation of remote stop / start (SCADA / DCS)		☐	☐	
15	Remote annunciations correct (SCADA / DCS)		☐	☐	
16	'Red Line' mark-up complete		☐	☐	
Defects reason and action:					
Test Equipment					
Make:	Model:	Serial No:	Cal Expiry Date:		
COMPLETED BY: (Construction)					
REVIEWED BY: (Commissioning)					
WITNESSED BY: (Commissioning engineer) If flagged in ITP					
COMPANY					
SIGNATURE					
PRINT NAME					
DATE					

CIRCUIT BREAKER					E-17B			
Asset Description				Project No.				
Location				System				
Tag Number				Model				
Manufacturer				Serial Number				
Schematic Drawing				Layout Drawing				
						PASS	N/A	COMMENTS
1	Record the following information: Rating: _____ V _____ A _____ Phases Fault Rating _____ A				☐	☐		
2	Confirm Vendor Test Documentation is complete (FAT and SAT) and in the Completion Dossier				☐	☐		
3	Confirm all transit packing removed				☐	☐		
4	Insulation Resistance Test				☐	☐		
	Circuit Breaker Position		Test Between	MΩ				
	1	Closed	L1 – L2, L3, E					
	2	Closed	L2 – L1, L3, E					
	3	Closed	L3 – L1, L2, E					
	4	Open	L1, L2, L3 – E Busbar side L1, L2, L3 – E Circuit side					
	5	Test Voltage						
6	Duration							
5	Ducter Test				☐	☐		
	Circuit Breaker Position		Test Between	Resistance Rea				
	1	Closed	R Phase					
	2	Closed	Y Phase					
	3	Closed	B Phase					
6	Prove all electrical and mechanical interlocks				☐	☐		
7	Check and prove all wiring are correct				☐	☐		
8	Check control operation of tripping / closing circuit				☐	☐		
9	Check lock-off (padlock) facilities on:				☐	☐		
	• Isolator							
	• Cubicle door apertures and handle							
	• Bus bar circuit shutters							
10	Control _____ circuit I.R.				☐	☐		
11	With circuit breaker in the service position check:				☐	☐		
	• Manual closing							
	• CB trips by operation of local mechanical push button							
	• CB closes by operation of local control switch.							

	CB trips by manual operation, relays in shunt trip circuit and operation of remote-control switch.																							
12	Confirm fuse sizes are correct	☐	☐																					
13	Check all alarm indicators function correctly	☐	☐																					
14	Remote annunciations correct (SCADA / DCS)	☐	☐																					
15	'Red Line' mark-up complete	☐	☐																					
Defects reason and action:																								
Test Equipment <table border="1"> <tr> <td>Make:</td><td>Model:</td><td>Serial No:</td><td>Cal Expiry Date:</td></tr> <tr> <td></td><td></td><td></td><td></td></tr> <tr> <td></td><td></td><td></td><td></td></tr> </table>					Make:	Model:	Serial No:	Cal Expiry Date:																
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	COMPLETED BY: (Construction)	REVIEWED BY: (Commissioning)	WITNESSED BY: (Commissioning engineer) If flagged in ITP																					
COMPANY																								
SIGNATURE																								
PRINT NAME																								
DATE																								

CONTACTOR CONTROL UNIT					E-19B	
Asset Description		Project No.				
Location		System				
Tag Number		Model				
Manufacturer		Serial Number				
Schematic Drawing		Layout Drawing				
			PASS	N/A	COMMENTS	
1	Record the following information: Rating: _____ V _____ A _____ Phases _____ KW		☐	☐		
2	Confirm Vendor Test Documentation is complete (FAT and SAT) and in the Completion Dossier		☐	☐		
2	Test position switch functions OK		☐	☐		
3	Auxiliary contact operates		☐	☐		
4	Earth fault trips unit after 0.75 seconds		☐	☐		
5	Over current protection functions OK		☐	☐		
Note: The following test will be carried out with MCC in the test position						
6	Contactor A closes		☐	☐		
7	Contactor A opens		☐	☐		
8	Contactor B closes		☐	☐		
9	Contactor B opens		☐	☐		
10	With contactor A closed check - Emergency stop operates - Plant interlock operates - Plant trip operates - Remote stop operates - Input No.1 operates - Input No.2 operates		☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐		
11	With contactor A or B open & manual selected check - Remote start A operates - Remote start b operates		☐ ☐	☐ ☐		
12	Record Starter details:					
	Starter Type: _____					
	Units	Original	1 st Change	2 nd Change	Final	N/A
Overload						
Star / Delta changeover time	Secs					
Star / Delta transition time	mSec					
Current transformer	OPEN or STAY					

Link fail						
Display	% or AMPS					
System	3 or 4					
Input No.1 Trip	OPEN or STAY					
Input No.2 Trip	OPEN or STAY					
Input No.1 Manual	RUN or INCH					
Reset in Monitor						
Full Load current						
Undercurrent	OFF					
Undercurrent level	%					
Undercurrent time						
Reset 3p						
Start overload	OFF / WARN / TRIP					
Start level	%					
Max. Start time	Secs					
Actual load current level	%					
Actual load current level	Secs					
Actual load current set time	%					
Inst. actual load current	OFF / WARN / TRIP					
Inst. Actual load current	%					
Earth fault	mS / INST					
13	Check all alarm indicators function correctly	☐	☐			
14	Remote annunciations correct (SCADA / DCS)	☐	☐			
15	'Red Line' mark-up complete	☐	☐			
Defects reason and action :						
Test Equipment						
Make:	Model:	Serial No:	Cal Expiry Date:			
	COMPLETED BY: (Construction)	REVIEWED BY: (Commissioning)	WITNESSED BY: (Commissioning engineer) If flagged in ITP			
COMPANY						
SIGNATURE						
PRINT NAME						
DATE						

VOLTMETER / AMMETER					E-20B		
Asset Description				Project No.			
Location				System			
Tag Number				Model			
Manufacturer				Serial Number			
Schematic Drawing				Layout Drawing			
					PASS	N/A	COMMENTS
1	Record the following information: Rating: _____ V _____ A _____ VT Ratio _____ CT Ratio				☐	☐	
2	Confirm Vendor Test Documentation is complete (FAT and SAT) and in the Completion Dossier				☐	☐	
3	Test Results: - Ammeter				☐	☐	
	Meter F.S.D.	Red Phase	Yellow Phase	Blue Phase			
	Injected						
	Indicated						
4	Phase selection switch operation checked				☐	☐	
5	Remote annunciations correct (SCADA / DCS)				☐	☐	
6	'Red Line' mark-up complete				☐	☐	
Defects reason and actions:							
Test Equipment							
Make:		Model:		Serial No:		Cal Expiry Date:	
	COMPLETED BY: (Construction)		REVIEWED BY: (Commissioning)		WITNESSED BY: (Commissioning engineer) If flagged in ITP		
COMPANY							
SIGNATURE							
PRINT NAME							
DATE							

CURRENT TRANSFORMER			E-21B	
Asset Description		Project No.		
Location		System		
Tag Number		Model		
Manufacturer		Serial Number		
Schematic Drawing		Layout Drawing		
			PASS	N/A
1	Confirm Vendor Test Documentation is complete (FAT and SAT) and in the Completion Dossier		☐	☐
2	Check all connections are correct, tight, star point is earthed and CT is mounted correctly		☐	☐
3	If ammeter CT is fitted without meter being connected ensure CT is shorted at terminal box		☐	☐
4	Confirm connection S1 and S2 are in accordance with wiring diagram		☐	☐
5	Perform CT magnetisation curve and confirm it is correct to Vendor curve, protection CT's only		☐	☐
6	Prove CT polarity by means of a Flick test		☐	☐
7	Confirm ratio checks are within the tolerance of the CT		☐	☐
8	Reconnect all wiring		☐	☐
9	'Red Line' mark-up complete		☐	☐
Defects reason and action:				
Test Equipment				
Make:	Model:	Serial No:	Cal Expiry Date:	
	COMPLETED BY: (Construction)	REVIEWED BY: (Commissioning)	WITNESSED BY: (Commissioning engineer) If flagged in ITP	
COMPANY				
SIGNATURE				
PRINT NAME				
DATE				

MINIATURE CIRCUIT BREAKER				E-22B			
Asset Description			Project No.				
Location			System				
Tag Number			Model				
Manufacturer			Serial Number				
Schematic Drawing			Layout Drawing				
					PASS	N/A	COMMENTS
1	Record the following information: Rating: _____ V _____ A _____ Phases			☐	☐		
2	Confirm Vendor Test Documentation is complete (FAT and SAT) and in the Completion Dossier			☐	☐		
2	Ambient temperature oC			☐	☐		
3	Injected current			☐	☐		
4	Time taken to trip Seconds / Actual: / Curve Time:			☐	☐		
5	Mechanical linkage OK			☐	☐		
6	All poles trip			☐	☐		
7	'Red Line' mark-up complete			☐	☐		
Defects reason and action:							
Test Equipment							
Make:		Model:		Serial No:		Cal Expiry Date:	
		COMPLETED BY: (Construction)		REVIEWED BY: (Commissioning)		WITNESSED BY: (Commissioning engineer) If flagged in ITP	
COMPANY							
SIGNATURE							
PRINT NAME							
DATE							

Direct-On-Line (DOL) Starter			E-23B		
Asset Description		Project No.			
Location		System			
Tag Number		Manufacturer			
Equipment Description		Model			
Electrical Drawing		Serial number			
			Pass	N/A	Comment
DOL Pre-commissioning: Pre-livening and Installation Checks					
1	Confirm Switchboard ITR check sheet for the DOL's MCC cell has been completed and signed off. Verify the circuit breaker protection against the protection report and record the following: a. Circuit breaker rating: _____ b. Trip unit: _____ c. Protection settings: _____		☐	☐	
2	Confirm the power-restoration delay timer and setting is correct: a. Timer type (i.e. on-delay, one-shot, etc): _____ b. Time setting: _____		☐	☐	
3	Confirm the electric motor test sheet (E-05A and E-05B) has been completed and signed off.		☐	☐	
4	Confirm the motor power and instrument cable check sheets (E-01A) have been completed and signed off.		☐	☐	
5	Confirm the anti-condensation check on E-05B if applicable		☐	☐	
DOL Commissioning: DOL starter and Motor Functional Checks					
5	Ensure the DOL MCC cell selector switch is in the 'OFF' position so that the motor cannot start		☐	☐	
6	Isolate the Motors main isolator at the MCC cell and confirm that: a. Incoming power to the VSD and motor is disconnected b. SCADA graphic shows motor as isolated De-isolate VSD's main isolator once successfully tested		☐	☐	
7	Press the e-stop button at the MCC (and field if applicable) and confirm that: a. Power to the motor is disconnected b. The e-stop indication light at MCC panel is illuminated c. E-stop alarm is active and motor unavailable on SCADA d. E-stop remains active after push-button is unlatched Pressing reset button clears the e-stop conditions		☐	☐	
8	Simulate a motor fault condition and confirm that: a. The fault indication light at MCC panel is illuminated b. Fault alarm is active c. SCADA shows motor as unavailable due to active fault De-activate the fault and confirm that fault remains active until reset button is pressed.		☐	☐	
9	If there is a motor protection unit (i.e. MiniCAS or AMA Control unit), simulate a fault condition and confirm: a. The fault indication light at MCC panel is illuminated b. Fault and/or relevant high temperature/leakage alarms active		☐	☐	

	c. SCADA shows motor as unavailable due to active fault De-activate the fault condition and confirm that fault clears only when the reset button is pressed.			
10	Put MCC selector switch into the manual position and bump the motor via the start and stop buttons to confirm motor rotation is correct. Record direction: _____	☐	☐	
11	Manual Operational Test: if the motor is available for operation, undertake the following steps: a. Put selector switch into manual position b. Confirm that motor is not available for auto-control in SCADA. c. Press the start button at the MCC cell to start the pump Confirm that: d. Pump graphic on SCADA shows motor is running. e. Running light at MCC cell is ON. f. Suitable flow reading is being displayed from outlet flowmeter (if applicable) g. Record the motor current (FLA): _____ h. Record the process variable (i.e. flow rate): _____ i. Stop the motor at the MCC cell Confirm the FLA and process variable (i.e. flow rate) values are suitable.	☐	☐	
12	Automatic Operational Test – Auto mode a. Put the selector switch into the 'Auto' position b. Confirm the Auto Available indication light is illuminated, and SCADA shows motor is in Auto mode c. Open the motor faceplate on SCADA and change the mode to 'Auto' d. Confirm the Mode changes to Auto on the faceplate e. Start the motor via the faceplate 'Start' button f. Confirm the motor starts Stop the motor via the faceplate 'Stop' button and confirm motor stops	☐	☐	
13	Automatic Operational Test – Cascade (CAS) mode a. Put the selector switch into the 'Auto' position b. Confirm the Auto Available indication light is illuminated, and SCADA shows motor is in CAS mode c. Open the motor faceplate on SCADA and change the mode to 'Cascade' Confirm the following: d. Mode changes to Cascade on the faceplate e. The motor starts at the start setpoint The motor stops once the stop setpoint is reached	☐	☐	
14	Record any additional interlock conditions that are present and checked (i.e. low flow, high temperature etc): _____	☐	☐	
15	Confirm anti-condensation heater operates satisfactorily: Record Current _____ A			
16				
17				
18				
19				

Comments:

Sign off Section			
	COMPLETED BY: (Construction)	REVIEWED BY: (Project Engineer)	WITNESSED BY: (Commissioning Engineer) If flagged on ITP
COMPANY			
SIGNATURE			
PRINT NAME			
DATE			

Variable Speed Drive/Soft Starter (VSD/SS)			E-24B		
Asset Description		Project No.			
Location		System			
Tag Number		Manufacturer			
Equipment Description		Model			
Electrical Drawing		Serial number			
			Pass	N/A	Comment
VSD/SS Pre-commissioning: Pre-livening and Installation Checks					
1	Confirm VSD/SS specifications (make and model) match the drawings and record the following rating information: Volts: _____ Amps: _____ kW: _____ Frequency: _____	☐	☐		
2	Confirm and record the details of any associated filters or chokes install: Make and model: _____	☐	☐		
3	Confirm equipment is installed as per design and manufacturer's requirements, including: a) Installation location adheres with the layout drawing b) Mounting is secure and level c) IP rating is suitable for the environment d) Suitable horizontal/vertical clearances for ventilation e) No physical damage f) Unit is free from dirt, swarf, moisture and corrosion g) Equipment is labelled with tag and suitable description h) Wiring is terminated suitably with no loose connections or damaged wires i) Wiring and cables are suitably labelled j) Input and output power cables have been torqued to the correct setting k) VSD/SS cable screens are suitably grounded l) Correct power, control and analogue cable types and sizes used	☐	☐		
4	Confirm Switchboard ITR check sheet for the VSD/SS MCC cell has been completed and signed off. Verify the circuit breaker protection against the protection report and record the following: a. Circuit breaker rating: _____ b. Trip unit: _____ c. Protection settings: _____	☐	☐		
5	Confirm the power-restoration delay timer and setting is correct: a. Timer type (i.e. on-delay, one-shot, etc): _____ b. Time setting: _____	☐	☐		
6	Confirm the electric motor test sheet (E-05A and E-05B) has been completed and signed off.	☐	☐		
7	Confirm the VSD/SS and motor power and instrument cable check sheets (E-01A) have been completed and signed off.	☐	☐		
VSD/SS Pre-commissioning: Post-livening Checks					
8	Confirm VSD/SS configured with motor nameplate data	☐	☐		
9	Confirm date and time has been set and matches site SCADA	☐	☐		
10	Record the following VSD/SS* parameters that have been configured:				

	a. *Acceleration ramp time(s): _____ b. *Deceleration ramp time(s): _____ c. *Initial Current (A): _____ d. *Current Limit (A): _____ e. Minimum frequency limit: _____ f. Maximum frequency limit: _____ g. Output current limit: _____ h. Rotation: _____ i. Speed reference scaling: 4mA: _____ 20mA: _____ j. Current feedback scaling: 4mA: _____ 20mA: _____ k. Speed feedback scaling: 4mA: _____ 20mA: _____ l. Communications (i.e. Modbus TCP, RTU, Ethernet IP) IP address/node information: _____ m. Motor thermistor setting (if applicable): _____	☐	☐	
11	Complete motor auto-tune (if applicable)	☐	☐	
VSD/SS Commissioning: VSD/SS and Motor Functional Checks				
12	Ensure the VSD's MCC cell selector switch is in the 'OFF' position and temporarily activate the VSD safe-torque-off (by disconnecting the STO link at VSD) so that the motor cannot start	☐	☐	
13	Isolate the VSD/SS main isolator at the MCC cell and confirm that: a. Incoming power to the VSD and motor is disconnected b. Isolated alarm activates on SCADA c. SCADA graphic shows motor as isolated De-isolate VSD/SS main isolator once successfully tested	☐	☐	
14	For cabinet-type VSD/SS, isolate VSD/SS at local isolator and confirm that: a. Incoming power to the VSD and motor is disconnected b. Isolated alarm activates on SCADA (if auxiliary contact present) c. SCADA graphic shows motor as isolated (if auxiliary contact present) De-isolate VSD's local isolator once successfully tested	☐	☐	
15	Press the e-stop button at the MCC (and field if applicable) and confirm that: a. Power to the VSD/SS and motor is disconnected b. The e-stop indication light at MCC panel is illuminated c. E-stop alarm is active and motor unavailable on SCADA d. E-stop remains active after push-button is unlatched e. Pressing reset button clears the e-stop conditions	☐	☐	
17	Simulate a fault condition at the VSD/SS and confirm that: a. The fault indication light at MCC panel is illuminated b. Fault alarm is active c. SCADA shows motor as unavailable due to active fault De-activate the VSD fault and confirm that fault remains active until reset button is pressed.	☐	☐	
18	If there is a motor protection unit (i.e. MiniCAS or AMA Control unit), simulate a fault condition and confirm: a. The fault indication light at MCC panel is illuminated b. Fault and/or relevant high temperature/leakage alarms active c. SCADA shows motor as unavailable due to active fault De-activate the fault condition and confirm that fault clears only when the reset button is pressed.	☐	☐	
19	Note - VSD STO can be made healthy to enable motor operation.			
20	Put MCC selector switch into the manual position and bump the motor via the start and stop buttons to confirm motor rotation is correct.	☐	☐	
21	Manual Operational Test: if the motor is available for operation, undertake the following steps:	☐	☐	

	a. Put selector switch into manual position b. Confirm that VSD/SS is not available for auto-control in SCADA. c. Press the start button at the MCC cell to start the pump Confirm that: d. Acceleration ramp time adheres with set value e. Pump graphic on SCADA shows motor is running. f. Running light at MCC cell is ON. g. Suitable flow reading is being displayed from outlet flowmeter (if applicable) h. Adjust the speed potentiometer and confirm the speed setpoint increases/decreases accordingly i. *Note bypass contactor cut in time for Soft Starter j. Record the motor current (FLA) at max frequency: _____ k. Record the process variable (i.e. flow rate) at max frequency: _____ l. Stop the motor at the MCC cell m. While the motor is stopping, confirm the deceleration ramp rate is suitable. n. Confirm the FLA and process variable (i.e. flow rate) values at max frequency are suitable.			
22	Automatic Operational Test – Auto mode a. Put the selector switch into the 'Auto' position b. Confirm the Auto Available indication light is illuminated, and SCADA shows motor is in Auto mode c. Open the motor faceplate on SCADA and change the mode to 'Auto' d. Confirm the Mode changes to Auto on the faceplate e. Start the motor via the faceplate 'Start' button f. Confirm the motor starts and operates at the speed setpoint on the faceplate g. Adjust the speed setpoint and confirm speed changes accordingly h. Stop the motor via the faceplate 'Stop' button	☐	☐	
23	Automatic Operational Test – Cascade (CAS) mode a. Put the selector switch into the 'Auto' position b. Confirm the Auto Available indication light is illuminated, and SCADA shows motor is in CAS mode c. Open the motor faceplate on SCADA and change the mode to 'Cascade' Confirm the following: d. Mode changes to Cascade on the faceplate e. The motor starts at the start setpoint f. The motor operates at the speed setpoint on the faceplate g. The motor stops once the stop setpoint is reached	☐	☐	
24	Record any additional interlock conditions that are present and checked (i.e. low flow, high temperature etc): _____	☐	☐	

Comments:

Sign off Section			
	COMPLETED BY: (Construction)	REVIEWED BY: (Project Engineer)	WITNESSED BY: (Commissioning Engineer) If flagged on ITP
COMPANY			
SIGNATURE			
PRINT NAME			
DATE			

INSTRUMENT LOOP TEST				I-01B		
Asset		Project No.				
System		Description				
Tag / Loop No.		Description				
P&ID Drawing		Loop Drawing				
List Loop Components – Refer to sheet 2 for Loop Test results						
Item	Tag Number	Description:	Range / Setting / Units			
1						
2						
3						
4						
5						
6						
7						
8						
DATA / INSPECTION / PRE-ENERGISATION CHECKS - <i>Applicable for all Loops</i>			OK	N/A	Comments	
Confirm all relevant loop components electrical and instrument Installation Completion check sheets are complete with no outstanding critical snag list items			☐	☐		
Confirm loop details are correct against all Project / Vendor information i.e. P & ID's, I/O schedule, Data sheet / Instrument index / Alarm & Trip schedule (including Rack / Slot / Channel location for all I/O devices)			☐	☐		
Confirm that all Analogue and Digital loop Configuration / Ranges and Alarm / Trip settings are correct on PCS/ESD/UCP graphics to the latest revisions of I/O schedule / Data sheets and alarm and trip schedules			☐	☐		
Confirm all Cabling / Earthing / Pipework conforms to project specifications and is correctly installed as per loop and Hook up diagrams			☐	☐		
Confirm all loop components EX and IP ratings are correct for the hazardous area installed			☐	☐		
Confirm "Cold Loop" check results are acceptable prior to loop energisation			☐	☐		
Confirm air or hydraulic supplies are set at correctly and "live" for all devices in loop. Record supply and type.....			☐	☐		
Confirm Loop Fuse rating is correct and with panel knife edges open and using certified test meter, confirm loop power supply falls within manufacturers accepted tolerances – Energise Loop			☐	☐		
LOOP FUNCTION TESTS. NOTE-Ensure unwanted Executive Actions are inhibited from this point.						
With power applied check configuration of instruments are correct as per Project / Vendor data sheets			☐	☐		
Using certified test equipment confirm the loop supply voltages and currents are stable with no signal 'Drift'. Record loop supply voltage _____			☐	☐		
Using Certified Test Equipment in all cases carry out Loop Test to / from VCS/PCS/ESD/UCP			☐	☐		

Systems in accordance with Project Testing Philosophy's.												
Confirm the local reset function in the field for such signals as panel Inter- trips / Shutdown / Blow down valves operates correctly										☐	☐	
Carry out loop test to/ from PCS/ESD/UCP systems in accordance with manufacturer's instructions and record values below of all analogue and digital loop Input / Output display signals and alarms												
Rising %						Falling %				Trip / Alarm Set point		Comments (record switch contacts)
Item No.	0	25	50	75	100	75	50	25	0	Rising	Falling	
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
Confirm correct controller action and functionality _____										☐	☐	
Record controller action (Direct or Reverse) _____										☐	☐	
Confirm correct ESD or BDV valve fail action and timing.										☐	☐	
Record valves fail action and timing: _____										☐	☐	
Confirm all loop components Indications /Ranges /Alarms/Fault tests are correct on Graphic /Point/ Detail display pages										☐	☐	
Confirm all loop components Alarms/Fault tests are correct to Printer/Data Logger or S.O.E. recorder										☐	☐	
Confirm all loop components remote control room indications, alarms, Inhibit /Overrides functions operates correctly (if any)										☐	☐	
Confirm all loop components remote reset function operates correctly										☐	☐	
Confirm all loop components configuration, response time and Tag / Alarm descriptors are correct – Raise any anomalies on project Snag list										☐	☐	
		COMPLETED BY: (Contractor)				REVIEWED BY: (Project Engineer)				WITNESSED BY: (Commissioning Engineer) if flagged in ITP		
COMPANY												
SIGNATURE												
PRINT NAME												
DATE												

CONTROL VALVE CALIBRATION / INSPECTION				I-02B	
Asset Description		Project No.			
Tag Number		Site			
Manufacturer		Process Area			
Model		Loop Drawing Ref			
Serial Number					
Control Valve - Record Valve details.					
Manufacturer: _____		Data Sheet No.: _____		Service: _____	
Serial No.: _____		Model No.: _____		Rating: _____	
Body Size: _____		Flange Type: _____		Lubrication: _____	
VALVE BODY				OK	N/A
1	Confirm all data correct as per project data sheet.			☐	☐
2	Confirm Instrument configuration data checked against project data sheet and FD			☐	☐
3	Body and Trim material correct to data sheet			☐	☐
4	Leakage class correct to data sheet			☐	☐
5	Valve sizing correct to data sheet			☐	☐
ACTUATOR – Where Applicable					
6	Record Actuator details.		Manufacturer: _____		Model No.: _____
	Serial No.: _____		Voltage: _____		Air / Oil Pressure: _____
7	Failure action as per data sheet (Open, Close or Last)			☐	☐
8	Working pressure correct			☐	☐
9	Motive Fluid type _____ If oil confirm grade:		Volume:	☐	☐
10	Confirm Hydraulic / Pneumatic / Electrical connections correct			☐	☐
11	Confirm Torque switches and travel stops set			☐	☐
12	Confirm Local /wheel (if fitted) operation correct			☐	☐
13	Confirm Remote operation correct			☐	☐
14	Record equipment hazardous area certifying authority and classification: _____				
FILTER / REGULATOR – Where Applicable					
15	Record Filter/Regulator details.		Manufacturer: _____		Model No.: _____
	Serial No.: _____		Air Supply: _____		Setting: _____
POSITIONER – Where Applicable					
16	Record Positioner details.		Tag Number: _____		Manufacturer: _____
	Model No.: _____		Serial No.: _____		Air Supply: _____
17	Record Positioner hazardous area certifying authority and classification: _____				
I/P CONVERTER – Where applicable.					
18	Input signal as per data sheet			☐	☐
19	Output range as per data sheet			☐	☐

20	Record I/P converter details.	Tag Number: _____	Manufacturer: _____
	Model No.: _____	Serial No.: _____	Air Supply: _____
21	Record I/P converter hazardous area certifying authority and classification: _____		
22	Input signal as per data sheet	☐	☐
23	Output range as per data sheet	☐	☐
PILOT VALVE – Where applicable.			
24	Record Pilot valve details.	Tag Number: _____	Manufacturer: _____
	Model No.: _____	Serial No.: _____	
25	Pneumatic connections correct	☐	☐
26	Lock up/stay-put action correct	☐	☐
27	Operation correct as per design	☐	☐
PROXIMITY SWITCHES / Relays – Where applicable.			
28	Record switch details.	Manufacturer: _____	Model No.: _____
29	Record Proximity switch hazardous area certifying authority and classification: _____		
30	Open switch tag number: _____	Record Open switch serial number: _____	
31	Open switch set _____ mm / % before open		
32	Closed switch tag number: _____	Record Closed switch serial number: _____	
33	Closed switch set _____ mm / % before open		
34	Electrical connection correct	☐	☐
35	Open switch mode setting correct. Switch operates as per design. Record mode (NC / NO) _____	☐	☐
36	Closed switch mode setting correct. Switch operates as per design. Record mode (NC / NO) _____	☐	☐
SOLENOID (s) – Where applicable.			
37	Record Solenoid details.	Tag No: _____	Manufacturer: _____
	Serial No.: _____	Model No.: _____	Voltage: _____
38	Equipment hazardous area certifying authority and classification: _____		
39	Operation correct as per design	☐	☐
40	Pneumatic and Hydraulic connections correct	☐	☐
41	Pneumatic and / or Hydraulic pressure range correct	☐	☐
ACCUMULATOR – Where applicable.			
42	N2 charge correct	☐	☐
43	Volume tank & check valve installed correctly	☐	☐
44	PSV installed correctly	☐	☐
45	Record PSV set pressure: _____		
46	Record output pressure setting: _____		
47	Record N2 pre/charge pressure: _____		
VALVE STROKE TEST DATA			
48	Confirm it is safe, then energise supplies and initiate bench set and calibration of valve		
49	Stroke test the valve and confirm the following		
	Input (%)	Input signal	Valve position (Transmitter mA)

	0			
	25			
	50			
	75			
	100			
	75			
	50			
	25			
	0			

50 Record Time Open to Closed (seconds): _____

51 Record Time Closed to Open (seconds): _____

Comments: - (NOTE – list any Test equipment used during Device(s) Loop checks).

Test Equipment

Make:	Model:	Serial No:	Cal Expiry Date:

	COMPLETED BY: (Contractor)	REVIEWED BY: (Project Engineer)	WITNESSED BY: (Commissioning Engineer) If flagged in ITP
COMPANY			
SIGNATURE			
PRINT NAME			
DATE			

INSTRUMENT SETUP & CALIBRATION					I-05B	
Asset Description			Project No.			
Tag Number			Site			
Manufacturer			Loop Drawing			
Model			Serial Number			
Record details.						
CALIBRATION RANGE: _____		BLUETOOTH CODE: _____		CALIBRATION DATE: _____		
Measured Variable (ie Temperature, Pressure etc): _____						
				OK	N/A	Comments
1	Confirm all Instrument data correct as per project data sheet			☐	☐	
2	Instrument Checked for Damage			☐	☐	
3	Instrument Tag Number Attached to Instrument			☐	☐	
4	Confirm all Electrical and Process connections correct,			☐	☐	
5	Air supply Pressure (if Applicable): _____					
6	Onsite Calibration completed and recorded in the Compliance Log			☐	☐	
7	Confirm Calibration kit/buffers/standards are available onsite and within expiry date			☐	☐	
Analogue Calibration						
OUTPUT		4mA		12mA		20mA
Device Output	DCS					
Reading on:	Analyser/ indicator					
	Panel Screen					
Digital Inputs						
Switch / Relay		Settings		Switch contact	OK	N/A
Fault				NO / NC	☐	☐
Flow				NO / NC	☐	☐
				NO / NC	☐	☐

Comments: - (NOTE – List any test equipment used and record Calibration results in the space below)

setup

	COMPLETED BY: (Construction)	ACCEPTED BY: (Project Engineer)	REVIEWED BY: (Commissioning Engineer) If flagged in ITP
COMPANY			
SIGNATURE			
PRINT NAME			
DATE			

PCS/ESD/UCP SYSTEM LOGIC & INTERFACE TEST			I-06B	
Asset Description		Project No.		
System		Description		
Functional Description Title		SAT Number		
Functional Description Revision		Cause and Effect No.		
DATA / INSPECTION / PRE-TEST CHECKS			OK	N/A
Confirm all Process Control System (PCS)/ Emergency Shutdown (ESD) / Unit Control Panel (UCP) loops associated with this test have been commissioned and are fully operational with no outstanding critical snaglist items			☐	☐
Confirm all other systems associated with this test and that interface with the PCS/ESD/UCP system are commissioned and are fully operational with no outstanding critical snaglist items			☐	☐
Confirm all Cause and Effect and logic drawings and Functional Design (FD) are the latest revision.			☐	☐
Confirm all equipment to be Energised / De-Energised is fully commissioned and available to be tested			☐	☐
Confirm type, origin and destination of data interface links corresponds to Project /Vendor data			☐	☐
Confirm all necessary overrides and inhibits are in place and logged accordingly			☐	☐
TEST RESULTS				
Confirm all Data interface links are Operating /Indicating correctly to the VCS/PCS/ESD/ F&G/UCP Systems			☐	☐
As per Cause and Effect / Logic diagrams I/O lists initiate field device and observe correct operation of all executive Actions / Signals through to end users			☐	☐
Confirm all Input / Output actions and logic operates as per Cause and Effect / Logic diagrams			☐	☐
Confirm all resultant Input / Output indicate on all VCS/PCS/ESD/ F&G/UCP display pages correctly			☐	☐
Confirm all resultant Input / Output signals indicate correctly at Printer/Data Logger or S.O.E. recorder			☐	☐
Record and Hi-light all Input / Output actions and logic as tested as per Cause and Effect / Logic diagrams			☐	☐
Confirm all logic and I/O loop configuration, PI&D controller functions, response time and tag /alarm descriptors etc are correct – Raise any anomalies on project Snaglist			☐	☐
TEST RESULTS: Hi-light all Input / Output actions tested as per Cause and Effect / Logic diagrams. Red-line any agreed changes and attach a marked up copy with this test certificate. Sign up all relevant sections of the System Commissioning Procedure and place this test cert. in the relevant completions dossier				
	COMPLETED BY: (Construction)	ACCEPTED BY: (Project Engineer)	REVIEWED BY: (Commissioning Engineer) if flagged in ITP	
COMPANY				
SIGNATURE				
PRINT NAME				
DATE				

MISC. PROCESS ANALYSERS			I-07B	
Asset Description		Project No.		
System		Description		
Tag Number		Analyser Type		
Loop Drawing		P&ID Drawing		
List Analyser Loop Components				
Item No.	Tag Number	Description:	Range/ Setting/Units	
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
Data and Inspection:			PASS	N/A
Analyser checked and all data correct against project /vendor data sheet.			☐	☐
Analyser installation satisfactory, complete and free from any mechanical damage.			☐	☐
Analyser cabling / electrical / earthing connections are complete and installed correctly			☐	☐
Analyser EX and IP ratings are correct / maintained for installed area classification			☐	☐
Analyser pipe work complete and installed correctly as per Hook up drawings.			☐	☐
System drains and vents discharge termination point correct as per Hook up drawings.			☐	☐
Confirm all electrical and process supplies are available, correct type and rating.			☐	☐
Confirm all relevant analyser loop components electrical and instrument MCR "A" check sheets are complete with no outstanding "A" punchlist items.			☐	☐
Confirm "Cold Loop" check results are acceptable prior to energisation of analyser loop supplies.			☐	☐
Energise				
Sampling system filters, strainers, coalesces and contaminant traps.			☐	☐
External sample dryers and sample probe and system			☐	☐
Sample conditioning carrier gas / co2 system			☐	☐
Sample line electric heat tracing			☐	☐
Sample line pump(s).			☐	☐
Instrument air and Portable water supply			☐	☐
Analyser Enclosure Cooling / circulation / HVAC fans			☐	☐

Analyser Enclosure anti-condensation heater system and Analyser oven										☐	☐	
Using Certified Test Equipment and Test Medium perform Analyser Calibration Test or attach Vendor Calibration certificate to this FTC prior to Loop check.										☐	☐	
Using Certified Test Equipment in all cases - carry out Analyser Components Loop Test to/ from VCS/PCS/ESD/UCP Systems in accordance with Project Testing Philosophy's. Record Values below:										☐	☐	
<i>Rising %</i>						<i>Falling %</i>				<i>Trip / Alarm Set point</i>		<i>Comments (Record switch contacts)</i>
<i>Item No.</i>	<i>0</i>	<i>25</i>	<i>50</i>	<i>75</i>	<i>100</i>	<i>75</i>	<i>50</i>	<i>25</i>	<i>0</i>	<i>Rising</i>	<i>Falling</i>	
1												
2												
3												
4												
5												
6												
7												
Confirm correct Controller action and functionality. Record Controller Action (Direct or Reverse) -----										☐	☐	
Confirm correct Control Valve Fail Action and timing. Record Valve Fail Action and Timing: -----										☐	☐	
Confirm all Analyser Loop Components Indications /Ranges /Alarms/Fault tests are Correct on Graphic / Point / Detail Display Pages										☐	☐	
Confirm all Analyser Loop Components Alarms/Fault tests are Correct to Printer/Data Logger or S.O.E. Recorder										☐	☐	
Confirm all Analyser Loop Components Remote Inhibit /Overrides Functions Operates Correctly.										☐	☐	
Confirm all Analyser Loop Components Remote Reset Function Operates Correctly.										☐	☐	
Confirm all Analyser Loop Components Configuration, Response Time and Tag and Alarm Descriptors are correct – Raise any Anomalies on the project Snag List										☐	☐	
Defects reason and action:												
		COMPLETED BY: (Construction)				REVIEWED BY: (Commissioning)				WITNESSED BY: (Operations)		
COMPANY												
SIGNATURE												
PRINT NAME												
DATE												

FIRE DETECTION AND MAC DEVICE LOOP TEST			I-09B		
Asset		Project No.			
Location		System			
Tag Number		Manufacturer			
Layout Drawing		Loop Drawing			
Cause and Effect Drawing		Fire Zone No			
DATA / INSPECTION / PRE-ENERGISATION CHECKS - Applicable for all Device(s) types			OK	N/A	Comments
Confirm all relevant loop components' Electrical and Instrument Installation Completion ITR's are complete with no outstanding "A" Punchlist items			☐	☐	
Verify Device(s) / Loop details against I/O Schedule, Project data sheet and Vendor data sheet			☐	☐	
Verify Device(s) location and elevation is correct as per Fire zone Layout drawing and Device(s) installation is secure and free from excess movement and vibration.			☐	☐	
Confirm area of vision / Sensing / Actuation is suitable for correct protection of Area / Equipment			☐	☐	
Also (where applicable) confirm any "dirty" Lenses / Optics are cleaned correctly by following the manufacturers instruction			☐	☐	
Verify all Cabling /Termination / Earthing is correct as per Loop diagram and conforms to project specifications.			☐	☐	
Confirm all Loop components and Termination / Earthing is suitable to correct Hazardous area classification.			☐	☐	
Confirm Loop diodes / Load and EOL Resistor values are correct for loop type – Record Values: Load resistor value (Ohms)..... EOL Resistor Value (Ohms)			☐	☐	
Confirm device(s) Addressing (if Applicable) and Loop Rack / Slot / Channel location are correct for all Device(s) in Loop.			☐	☐	
Confirm that any Device(s) Dip switch's settings etc are correct as per Manufacturer's instructions. Record settings:			☐	☐	
Verify "Cold Loop" check results are acceptable prior to loop energisation.			☐	☐	
Confirm Loop Fuse rating is correct and with panel knife edges open and using certified test meter, confirm loop power supply falls within manufacturers accepted tolerances – Energise Loop			☐	☐	
DEVICE(S) CALIBRATION AND LOOP FUNCTION TESTS					
MAC / Smoke / Heat Type Devices					
Apply power to Device(s) / Loop and wait for detector to stabilise in accordance with manufacturer's instructions.			☐	☐	
Where applicable check configuration of Device(s) (Smart Units Only) is correct as per data sheet			☐	☐	
Carry out Device(s) / Loop check in accordance with manufacturers' instructions and confirm the operation of all alarms at VCS/PCS/UCP.			☐	☐	
Where applicable Confirm / Record settings of any Field devices tested. (Use certified test equipment). _____			☐	☐	

Confirm correct operation of any Area visual and Audible device(s).	☐	☐	
Confirm the Loop Voltage / Current are stable with no Fault or Alarm indication and no Signal 'Drift'.	☐	☐	
UV/IR Flame Type Device(s)			
Where required Align device units in accordance with manufacturers instruction	☐	☐	
Apply power to device(s) / Loop and carry out optimisation / Verification checks in accordance with manufacturer's instructions.	☐	☐	
Where applicable check configuration of device(s) (Smart Units Only) is correct as per data sheet.	☐	☐	
Where applicable set "Head "current in accordance with manufacturer's instructions.	☐	☐	
Carry out Device(s) / Loop check in accordance with manufacturer's instructions and confirm the operation of alarms at VCS / PCS / UCP	☐	☐	
Where applicable verify "Optical Integrity" Alarm function in accordance with manufacturer's instructions.	☐	☐	
Confirm correct operation of any Area visual and Audible device(s)	☐	☐	
Confirm the Loop voltage / Current is stable with no Fault or Alarm indication and no Signal 'Drift'.	☐	☐	
VCS /PCS /UCP INDICATION CHECK applicable for all Device(s) / Loop types			
Confirm all device(s) / Loop operates correctly to Local panel or UCP. (Where applicable)	☐	☐	
Confirm all device(s) / Loop alarm and Fault tests are correct on Fire zone Overview page.	☐	☐	
Confirm all device(s) / Loop alarm and Fault tests are correct on Device(s) Point Fire zone Display page.	☐	☐	
Confirm all device(s) / Loop alarm and Fault tests are correct on Device(s) Point detail display page	☐	☐	
Confirm all device(s) / Loop alarm and Fault tests are correct on Alarm display page	☐	☐	
Confirm all device(s) / Loop alarm and Fault tests are correct to Printer / Data logger or S.O.E. recorder.	☐	☐	
Confirm all device(s) / Loop alarm correctly to Fire and Gas matrix / Mimic panel	☐	☐	
Confirm all device(s) / Loop remote inhibit function operates correctly	☐	☐	
Confirm all device(s) / Loop remote reset function operates correctly	☐	☐	
Confirm all device(s) / Loop remote lamps operate correctly.	☐	☐	
Confirm all device(s) / Loop alarm settings are Correct as per Cause and Effects Record alarm set point (A)..... Record alarm set point (B).....	☐	☐	
Confirm all device(s) / Loop configuration, Response time and Tag and alarm descriptors are correct – Raise any anomalies on snag list	☐	☐	☐
Comments: -			
	COMPLETED BY: (Construction)	ACCEPTED BY: (Commissioning)	REVIEWED BY: (Operations)
COMPANY			
SIGNATURE			
PRINT NAME			
DATE			

HVAC FAN & MOTOR TEST SHEET

H-04B

Asset		Site		Project/ Project No.		Manufacturer	
Tag Number		Process Area		Type & Model		Serial No.	
Reference Drawings							

Fan No.	Operation	Service	Fan Location	Special access requirements	Local stop / start	Fan curve reference

Fan performance		Units	Design	Actual	Measurement Details	Fan data
Volume Rate		m ³ /s				Unique No:
Fan Speed		Rpm				Manufacturer:
Static Pressure	Inlet	Pa				Type:
	Outlet	Pa				Fan dia./size:
	Total	Pa				Model ref:
Motor Speed		Rpm				Duty (m ³ /s @ Pa):
Running current		Amps				Serial No:

Motor Data		Starter Data		Drive Data	
Unique No:		Starter location:		No. of belts	
Manufacturer:		Manufacturer:		Manufacturer:	
Type:		Type:		Type:	
Serial No:		Overload setting:		Fan dia./size (mm):	

Frame No:		Overload No. range:		Fan shaft dia. (mm):	
Insulation class:		Timer setting		Motor pulley dia.:	
Power (kW)		Fuse rating:		Motor shaft dia.:	
Motor full load current	Amps	Bearing temperature:	°C	Noise level:	dBa
Motor starting current	Amps	Inlet guide vane setting:			
Observations/Comments/Defects:					
Test Equipment					
Make:	Model:	Serial No:	Cal Expiry Date:		
	COMPLETED BY: (Contractor)	REVIEWED BY: (Project Engineer)	REVIEWED BY: (Commissioning Engineer) Optional		
COMPANY					
SIGNATURE					
PRINT NAME					
DATE					

REVERSE CYCLE HEAT PUMP TESTING			H-05B		
Asset Description		Tag Number			
Site		Process area			
Project/Project No.		Type and Model			
Manufacturer		Serial number			
Reference Drawings		Coupling Type			
			OK	N/A	Comments
Pre-Testing Checks					
1	Vendor Test Documentation and ITR-H-05A complete and in Completion Dossier		☐	☐	
2	Exterior unit level, mounted on solid surface, clear from debris and obstructions.		☐	☐	
3	Filters are installed and clean		☐	☐	
4	All packing and transit materials removed		☐	☐	
5	Feed MCB / RCD suitable rating for unit; feed source commissioned		☐	☐	
Functional Testing					
6	Unit energised; correct operation of controls and remote-control unit		☐	☐	
7	WiFi configured (if applicable); remote signals to / from SCADA (if applicable)		☐	☐	
8	Confirmed tests for at least 10 minutes each				
Heating			☐	☐	
Cooling			☐	☐	
Dry (humidity)			☐	☐	
Fan			☐	☐	
Auto			☐	☐	
Fan Speed Control			☐	☐	
Louvre position control and swing function			☐	☐	
9	Remote control y wall mounted and set the unit on Auto (function, fan speed and louvre control) with a set point of 21 °C or as per design.		☐	☐	
Observations/Comments/Defects:					
COMPLETED BY: (Contractor)		REVIEWED BY: (Project Engineer)		REVIEWED BY: (Commissioning Engineer) Optional	
COMPANY					
SIGNATURE					
PRINT NAME					
DATE					

HVAC SYSTEM			H-06B	
Asset Description		Tag Number		
Site		Process area		
Project/Project No.		Type and Model		
Manufacturer		Serial number		
Reference Drawings				
1	System cleanliness and condition of the following working correctly: -	OK	N/A	Comments
	a) Intake louvers	☐	☐	
	b) Fan and other equipment chambers	☐	☐	
	c) Floor fully and all drainage traps	☐	☐	
	d) Fan internals	☐	☐	
	e) Cooling coils	☐	☐	
	f) Drainage trays	☐	☐	
	g) Humidifiers	☐	☐	
	h) Eliminators	☐	☐	
	i) Dampers	☐	☐	
	j) Ducting and other airways	☐	☐	
	k) Sensing elements	☐	☐	
	l) Terminal units	☐	☐	
	m) Attenuators	☐	☐	
	n) Filter coalescers	☐	☐	
	o) Heater coils	☐	☐	
2	Test holes (with sealing covers in ducting for air flow measurements provided)	☐	☐	
3	All duct grilles and access covers in place	☐	☐	
4	All dampers sealed and have freedom of movement	☐	☐	
5	Earth straps fitted	☐	☐	
6	All associated electrical equipment has been fully commissioned	☐	☐	
7	Drainage facilities provided for 1- e, f, g, h and; drain water seals filled	☐	☐	
8	All control and instrumentation systems complete and fully operational	☐	☐	

9	F & G system shutdown done	☐	☐	
10	Smoke/gas heads at intake activated (where applicable)	☐	☐	

Observations/Comments/Defects:

	COMPLETED BY: (Contractor)	REVIEWED BY: (Project Engineer)	REVIEWED BY: (Commissioning Engineer) Optional
COMPANY			
SIGNATURE			
PRINT NAME			
DATE			

HVAC BUILDING / ROOM PRESSURISATION TEST				H-07B	
Asset Description		Tag Number			
Site		Process area			
Project/Project No.		Type and Model			
Manufacturer		Serial number			
Reference Drawings					
Duty Supply Fan No:		Duty Extract Fan No:			
Pressure Relief Damper setpoint:		Pressure Differential Controller setpoint:			
Pressure Switch High Setting:		Pressure Switch Low Setting:			
Minimum Pressurisation Design:					
System Balanced:		OK ☐	N/A ☐	P/L ☐	
Test Preparation			OK	N/A	Comments
1	Confirm all associated instrumentation has been commissioned		☐	☐	
2	Pressure relief damper checklist complete		☐	☐	
3	Confirm that doors open and close easily and are adequately sealed		☐	☐	
4	Confirm adjacent areas are pressurised		☐	☐	
5	Deploy warning notices and clear the area of non-essential persons		☐	☐	
Note: - Maximum wind speed not to exceed 24m/s during test. - All reading taken with respect to atmosphere					
Part 1 Pressurisation Results					
Wind Speed (m/s):			Wind Direction:		
Reading No.	1	2	3	4	5
Time					
Pressure					
Maximum pressure attained (Pa):			Minimum pressure attained (Pa):		
Part 2 Loss of Room Pressure Test Results					
Record initial room pressure (Pa)		Stand-by start @ (Pa)			
Time delay before alarm (Secs)		Pressure failure alarm (Pa)			
Set time delay (Secs)		Pressure relief damper closes fully (secs)			
Test completed satisfactory				Y	N

Observations/Comments/Defects:			
Test Equipment			
Make:	Model:	Serial No:	Cal Expiry Date:
	COMPLETED BY: (Contractor)	REVIEWED BY: (Project Engineer)	REVIEWED BY: (Commissioning Engineer) Optional
COMPANY			
SIGNATURE			
PRINT NAME			
DATE			

HVAC SYSTEM PERFORMANCE TEST RECORD						H-08B									
Asset Description				Tag Number				Project/Project No.				Serial No.			
Site				Process area				Manufacturer				Ref Drawings			
		Supply Air System				Extract Air System				Module / area volume		Air change rate		Module press. With Reference to Atmos	
Area Module	Class	Fan No.	Design air m ³ /s	Actual air m ³ /s	% of Design	Fan No.	Design air m ³ /s	Actual air m ³ /s	% of Design	Gross m ³	Nett m ³	Design	Actual	Req. Pa	Actual Pa
Defects reason and actions:															
		COMPLETED BY: (Contractor)				REVIEWED BY: (Project Engineer)				REVIEWED BY: (Commissioning Engineer) If flagged on ITP					
COMPANY															
SIGNATURE															
PRINT NAME															
DATE															

HVAC DUCTWORK SYSTEM LEAKAGE TEST			H-09B	
Asset Description		Tag Number		
Site		Process area		
Project/Project No.		Type and Model		
Manufacturer		Serial number		
Reference Drawings				
Section under test:				
Surface area of ductwork under test				
Test static pressure				
Leakage factor				
Max Permitted leakage:				
TEST DETAILS				
Manufacturer/Type of test device:			Serial No:	
Calibration Certificate No:			Date:	
Range of test device:				
Duct static pressure reading:				
Flow test reading:				
Actual air flow leakage rate l/s:				
Duration of test (min of 15 mins):			Date of test:	
Defects reason and actions:				
	COMPLETED BY: (Contractor)	REVIEWED BY: (Project Engineer)	WITNESSED BY: (Commissioning Engineer) If flagged in ITP	
COMPANY				
SIGNATURE				
PRINT NAME				
DATE				

IN-LINE STRAINER / FILTER						M-02B		
Asset Description			Tag Number					
Site			Process area					
Project/Project No.			Type and Model					
Manufacturer			Serial number					
Reference Drawings								
					Pass	N/A	Comments	
1	Preservation removed				☐	☐		
2	All drains and vents operational				☐	☐		
3	Changeover valves on duplex system operational				☐	☐		
4	'Red Line' mark-up complete				☐	☐		
Defects reason and action:								
		COMPLETED BY: (Contractor)	REVIEWED BY: (Project Engineer)		WITNESSED BY: (Commissioning Engineer) If flagged in ITP			
COMPANY								
SIGNATURE								
PRINT NAME								
DATE								

MISCELLANEOUS EQUIPMENT			M-03B		
Asset Description		Tag Number			
Site		Process area			
Project/Project No.		Type and Model			
Manufacturer		Serial number			
Reference Drawings					
Description					
			OK	N/A	Comments
	Documentation and Preservation				
1	ITR M-18A complete and in Completion Dossier		☐	☐	
2	Preservation removed		☐	☐	
	Equipment Condition and Inventory				
3	Equipment correct to design data specification and electrical/instrument checks complete		☐	☐	
5	Manufacturers pre-commissioning checks carried out		☐	☐	
6	Ancillary equipment correct, certifications in completions dossier		☐	☐	
7	Lubrication requirements attended to: Grade: _____ Quantity: _____		☐	☐	
8	Ensure all moving / rotating equipment is correctly guarded		☐	☐	
	Final Checks				
9	System left operational		☐	☐	
10	'Red Line' mark-up complete		☐	☐	
Defects reason and action:					
	COMPLETED BY: (Contractor)	REVIEWED BY: (Project Engineer)	WITNESSED BY: (Commissioning Engineer) If flagged in ITP		
COMPANY					
SIGNATURE					
PRINT NAME					
DATE					

CENTRIFUGAL PUMP				M-041B		
Asset Description			Tag Number			
Site			Process area			
Project/Project No.			Type and Model			
Manufacturer			Serial number			
Reference Drawings						
				Pass	N/A	Comments
	Mechanical & Electrical Checks					
1	Lubrication & Cooling auxiliaries connected and checked			☐	☐	
2	Packing and seals in operable condition			☐	☐	
3	Earthing resistance checks completed			☐	☐	
4	Rotational direction checked (bump test)			☐	☐	
	Pre-run Checks					
5	Pump suction valve open for pump run			☐	☐	
6	Pump is primed and pump casing is bled			☐	☐	
7	Pump discharge valve open or the pump recycle is lined out, in preparation for pump run			☐	☐	
8	'Red Line' mark-up complete			☐	☐	
Defects reason and action:						
		COMPLETED BY: (Contractor)	REVIEWED BY: (Project Engineer)		WITNESSED BY: (Commissioning Engineer) If flagged in ITP	
COMPANY						
SIGNATURE						
PRINT NAME						
DATE						



CENTRIFUGAL PUMP

M-05B

Sheet 3

Tag number:

Description:

Full-load test recordings. Record Pressures, Temperatures and Vibrations

[illegible]Drive End
Vibration

POSITIVE DISPLACEMENT PUMP				M-042B	
Asset Description		Tag Number			
Site		Process area			
Project/Project No.		Type and Model			
Manufacturer		Serial number			
Reference Drawings					
			Pass	N/A	Comments
Documentation and Specifications					
1	Vendor Test Documentation complete (FAT, SAT, or ITR M-04A) in Completion Dossier		☐	☐	
Condition and Installation					
2	Pump casing vent and drain lines installed correctly, valves operational		☐	☐	
3	Pulsation damper inspected and details recorded (if fitted)			Type: _____	
	Pressure rating: _____	Pre-charge medium: _____	Pre-charge pressure: _____		
4	Lubrication system leak-free, flushed, filled, and type/quantity recorded		☐	☐	
	Grade/type _____ and quantity _____ of lubricant used				
5	Cooling system flushed and filled as per manufacturers' instructions.		☐	☐	
6	Cooling system heat exchanger checks completed (if fitted)		☐	☐	
Accessibility and Functionality					
7	Pump rotates freely		☐	☐	
8	Alignments checked and recorded (M-06B attached)		☐	☐	
9	Coupling and associated safety guards Reassembled		☐	☐	
10	Pump interlocks tested operational		☐	☐	
11	Pump discharge valve open or pump recycle is lined out for pump run		☐	☐	
12	Pump suction valve open for pump run		☐	☐	
13	Pump casing bled to prime pump for pump run		☐	☐	
14	Commissioning load run completed, data recorded on attached running log		☐	☐	
15	Pump performance verified as per manufacturers data and test record		☐	☐	
16	'Red Line' mark-up complete		☐	☐	
Defects reason and action:					
	COMPLETED BY: (Contractor)	REVIEWED BY: (Project Engineer)	WITNESSED BY: (Commissioning Engineer) If flagged in ITP		
COMPANY					
SIGNATURE					
PRINT NAME					
DATE					

[illegible]

PERISTALTIC PUMP			M-043B	
Asset Description		Tag Number		
Site		Process area		
Project/Project No.		Type and Model		
Manufacturer		Serial number		
Reference Drawings				
			Pass	N/A
			Comments	
Documentation and Specifications				
1	Vendor Test Documentation is complete and in Completion Dossier		☐	☐
Condition and Installation				
2	Pump casing vent and drain lines installed correctly and valves operational		☐	☐
3	Lubrication system is leak free		☐	☐
4	Lubricant system flushed and filled as per manufacturers' instructions.		☐	☐
Accessibility and Functionality				
6	Pump rotates freely		☐	☐
7	Direction of rotation confirmed		☐	☐
8	Pump interlocks tested and operational		☐	☐
9	Discharge valve open or the pump recycle is lined out, in preparation for pump run		☐	☐
10	Pump suction valve open in preparation for pump run		☐	☐
Verification and Testing				
11	Commissioning load run & data recorded on attached running log		☐	☐
12	Pump performance verified against manufacturers data and test record		☐	☐
13	Flow meter installed and calibrated		☐	☐
14	Flow meter signal tested and integrated		☐	☐
15	Sampling point installed and operational		☐	☐
16	Pump control signal tested		☐	☐
17	Alarm and interlock signals verified		☐	☐
18	'Red Line' mark-up complete		☐	☐
Defects reason and action:				
	COMPLETED BY: (Contractor)	REVIEWED BY: (Project Engineer)	WITNESSED BY: (Commissioning Engineer) If flagged in ITP	
COMPANY				
SIGNATURE				
PRINT NAME				
DATE				

[illegible]

SUBMERSIBLE PUMP				M-05B	
Asset Description			Tag Number		
Site			Process area		
Project/Project No.			Type and Model		
Manufacturer			Serial number		
Reference Drawings					
			Pass	N/A	Comment
	Preservation and Installation				
1	Preservation/protective cap is removed		☐	☐	
2	Commissioning strainers/filters fitted recorded in temporaries register		☐	☐	
3	Pump casing vent and drain lines installed correctly and valves operational		☐	☐	
	Mechanical Checks				
4	Pump rotates freely		☐	☐	
5	Coupling and safety guards reassembled		☐	☐	
6	Line shaft lubrication and water supply system checked (if applicable)		☐	☐	
7	Pump rotor correctly aligned to pump casing (if applicable)		☐	☐	
8	Pump submerged to operating level		☐	☐	
	Operational Checks				
9	Auto-venting facilities, non-return valves tested and verified		☐	☐	
10	Operation of pump driven cooling supplies confirmed		☐	☐	
11	Pump performance per manufacturer's data and test recorded		☐	☐	
	Final Checks				
12	'Red Line' mark-up complete		☐	☐	
Defects reason and action:					
COMPLETED BY: (Contractor)		REVIEWED BY: (Project Engineer)		WITNESSED BY: (Commissioning Engineer) If flagged in ITP	
COMPANY					
SIGNATURE					
PRINT NAME					
DATE					

SUBMERSIBLE PUMP

M-05B

Tag number:		Description:													
Full-load test recordings. Record Pressures, Temperatures and Vibrations															
		10min	20 min	30 min	45 min	60min	1hr 20 min	1hr 40 min	2hr	2hr 20 min	2hr 40 min	3hr	3hr 20 min	3hr 40 min	4hr
Suction Pressure															
Discharge pressure															
DE bearing temp															
NDE bearing temp.															
Atmospheric temp.															
Coolant temp.	In														
	Out														
Coolant Pressure (System)															
Comments: -															
		COMPLETED BY					ACCEPTED BY				REVIEWED BY				
COMPANY															
SIGNATURE															
PRINT NAME															
DATE															

MECHANICAL ALIGNMENT DATA SHEET			M-06B	
Asset		Project No.		
Location		System		
Tag Number		Manufacturer		
Layout Drawing		Type and Model		
P&ID Drawing				
			Pass	N/A
			Comments	
Equipment and Alignment				
1	Pipe Support: Associated pipework and supports complete.		☐	☐
2	<u>Flange Alignment</u> : Flange/flange or flange /nozzle alignment to specification with gasket in place.		☐	☐
3	<u>Coupling Alignment</u> : Manufacturer figures for coupling alignment recorded (specified cold offsets below)		☐	☐
4	<u>Pipework Loosening</u> : Pipework to driven equipment loosened		☐	☐
5	<u>Coupling Removed</u> : Coupling split, spacer (if fitted), bolts, and guard removed and stored securely		☐	☐
Alignment Checks				
6	Flange/nozzle alignment checked		☐	☐
7	Soft foot check carried out		☐	☐
8	Radial concentricity, axial alignments, and radial concentricity checks (recorded on sheet 3)		☐	☐
9	Pipework tightened and re-checks completed (record on sheet 4)		☐	☐
10	Record: - Coupling spacer free length _____mm - Distance between Shaft ends (DBSE) _____ mm		☐	☐

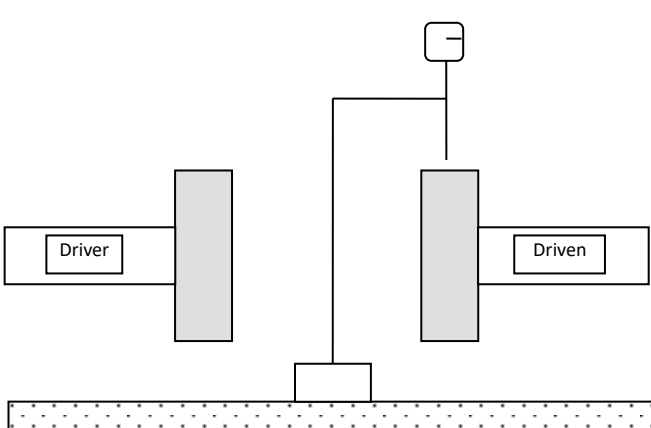


Fig. 1

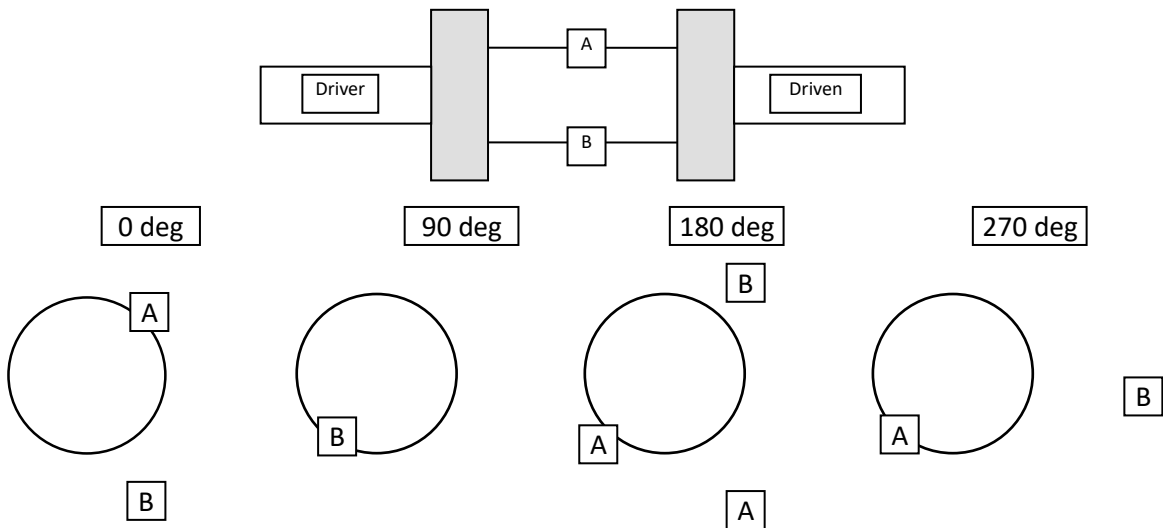


Fig. 2

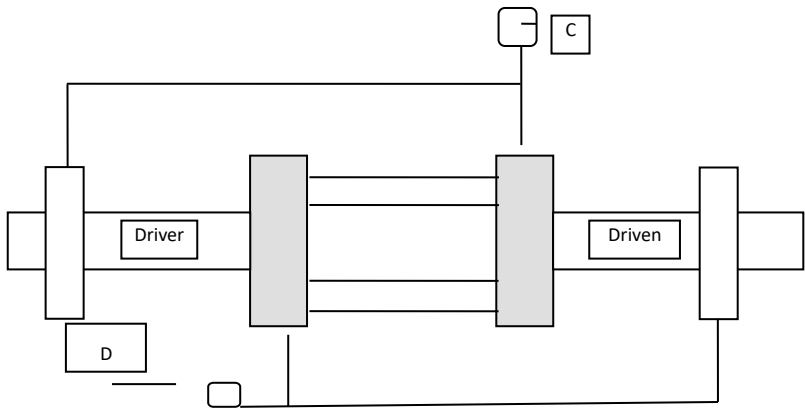
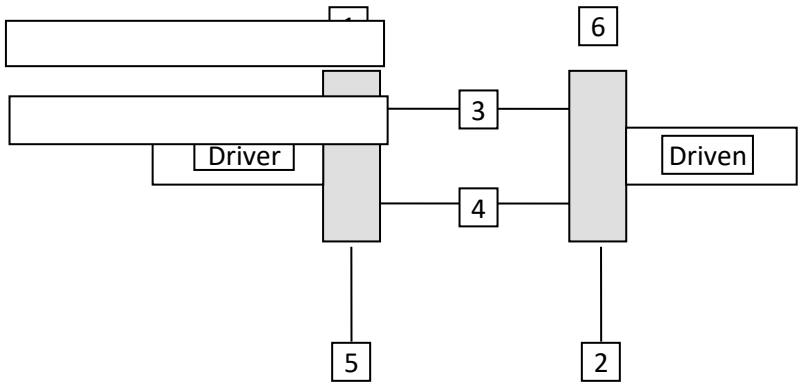


Fig. 3

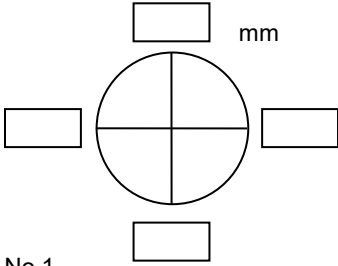
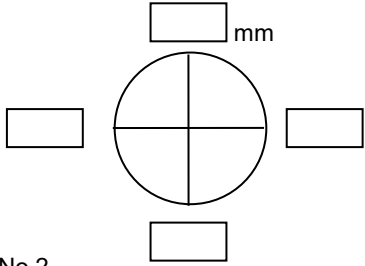
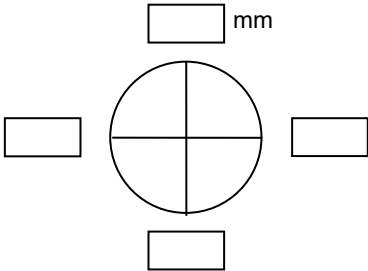
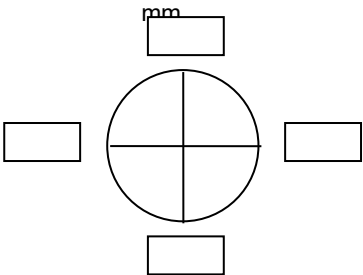
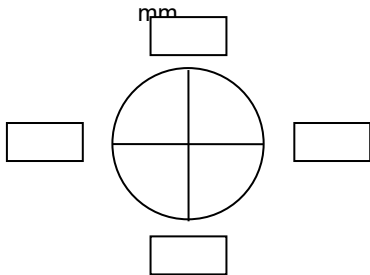


Method of alignment used:

Looking in the direction of:

ALIGNMENT DATA SHEET - PIPEWORK LOOSE	
1	Radial concentricity of each half coupling to its own shaft (face/periphery and reverse alignment). mm Driver Gauge No 1 mm Driven Gauge No 2
2	Coupling gap (face to face [axial] (face/periphery method) mm Clock gauges 3 & 4

ALIGNMENT DATA SHEET - PIPEWORK TIGHT

1	Radial concentricity of each half coupling to its own shaft (use for face/periphery and reverse alignment).  Driver Gauge No 1  Driven Gauge No 2		
2	Coupling gap. Face to Face [axial] (use only for face/periphery method)  Clock gauges 3 & 4		
3	Radial concentricity of coupling hubs to its own shaft (face/periphery and reverse alignment).  Driver Gauge No 5  Driven Gauge No 6		
Defects reason and action:			
Test Equipment			
Make:	Model:	Serial No:	Cal Expiry Date:
	COMPLETED BY: (Contractor)	REVIEWED BY: (Project Engineer)	WITNESSED BY: (Commissioning Engineer) If flagged in ITP
COMPANY			
SIGNATURE			
PRINT NAME			
DATE			

DIESEL ENGINE			M-08B	
Asset Description		Tag Number		
Site		Process area		
Project/Project No.		Type and Model		
Manufacturer		Serial number		
Reference Drawings				
			Pass	N/A
			Comments	
	Documentation and Preparation			
1	Vendor Test Docs complete (FAT/SAT or ITR M-08A), in the Completion Dossier		☐	☐
2	Preservation and transport chocks are removed		☐	☐
3	Commissioning strainers/filters fitted recorded in temporaries register		☐	☐
4	Manufacturer's pre-start checks carried out		☐	☐
	Electrical and Fuel Systems			
5	Electrical and instrument checks complete		☐	☐
6	Fuel system primed and sufficient fuel available		☐	☐
	Engine Operation (duration advised by Mechanical Engineer)			
7	Start engine, run up to speed, record information as per commissioning log.		☐	☐
8	Engine overspeed trip confirmed by overriding governor		☐	☐
9	Auto start facilities operational		☐	☐
	Final Assembly and Testing (duration (advised by Mechanical Engineer)			
10	Coupling and safety guards reassembled		☐	☐
11	Associated driven unit check sheets complete		☐	☐
12	Engine started, run-up and full load completed, data recorded per Sheet 2.		☐	☐
13	'Red Line' mark-up complete		☐	☐
Defects reason and action:				
	COMPLETED BY: (Contractor)	REVIEWED BY: (Project Engineer)	WITNESSED BY: (Commissioning Engineer) If flagged in ITP	
COMPANY				
SIGNATURE				
PRINT NAME				
DATE				

DIESEL ENGINE

M-08B

Sheet 2 of 2

Tag number:

Description:

Commissioning Log

		10min	20 min	30 min	45 min	60min	1hr 20 min	1hr 40 min	2hr	2hr 20 min	2hr 40 min	3hr	3hr 20 min	3hr 40 min	4hr
Engine Speed															
Engine jacket water temp															
Air inlet temp.															
Exhaust temp.	Left														
	Right														
Engine oil temp.															
Engine oil pressure															
Oil filter diff. pressure															
Air cleaner diff. pressure															
Fuel Pressure															
Fuel filter diff. pressure															

	COMPLETED BY	REVIEWED BY	WITNESSED BY
COMPANY			
SIGNATURE			
PRINT NAME			
DATE			

AIR COMPRESSOR			M-09B		
Asset Description		Tag Number			
Site		Process area			
Project/Project No.		Type and Model			
Manufacturer		Serial number			
Reference Drawings					
			Pass	N/A	Comment
	Documentation and Specifications				
1	Vendor Test Documentation complete (FAT, SAT, or ITR M-09A) in Completion Dossier		☐	☐	
	Physical Inspection and Preparation				
2	Preservation and transport chocks removed		☐	☐	
3	Lubrication System: leak-free, flushed, filled, and lubricant type/quantity confirmed		☐	☐	
4	Cooling System: Flushed and filled with recommended medium		☐	☐	
5	Air intake filter installed and clean		☐	☐	
6	Dryer towers are filled to correct level with recommended medium		☐	☐	
7	Compressor rotates freely		☐	☐	
	Electrical and Instrumentation				
8	Electrical and instrument checks complete		☐	☐	
	Mechanical Checks				
9	Driver / gearbox checks complete		☐	☐	
10	Coupling, spacer hub (if fitted), and associated safety guards reassembled		☐	☐	
11	Manufacturer's pre-start checks carried out		☐	☐	
12	Compressor run as per Commissioning procedure and sheet 2 completed		☐	☐	
13	Hot alignment checked and record (M-06A)		☐	☐	
14	Compressor performance confirmed with design data and test record		☐	☐	
	Inspection and Mark Up				
15	Borescope inspection carried out		☐	☐	
16	'Red Line' mark-up complete		☐	☐	
Defects reason and action:					

AIR COMPRESSOR

M-09B

Tag number:		Description:												
Commissioning log														
	1 st Stage In	1 st Stage Out	2 nd Stage In	2 nd Stage Out										
Speed														
Air Pressure														
Air Temperature														
Cooling water temp in														
Cooling water temp out														
Load pressure														
Unload pressure														
	COMPLETED BY: (Contractor)				REVIEWED BY: (Project Engineer)				WITNESSED BY: (Commissioning Engineer) If flagged in ITP					
COMPANY														
SIGNATURE														
PRINT NAME														
DATE														

LIFTING EQUIPMENT-GENERAL			M-10B		
Asset Description		Tag Number			
Site		Process area			
Project/Project No.		Type and Model			
Manufacturer		Serial number			
Reference Drawings					
			PASS	N/A	Comments
	Preparation				
1	Travel and operation of equipment is unrestricted		☐	☐	
2	Personnel protection and safety devices are in place		☐	☐	
	Testing				
3	Load testing and inspection carried out by a relevant body / company, certificates issued for all lifting beams, hoists, running gear, hook, and fittings, and copies in completion dossier.		☐	☐	
4	Equipment ratings recorded: SWL _____ Certifying Body _____ Proof Load _____ Proof Load Certificate Number _____		☐	☐	
	Colour Coding, Labelling & Tagging				
5	Equipment colour coded, SWL labelled and tagged to WSL Standards (includes isolators, emergency stop button, operation/control panels)		☐	☐	
Defects reason and action:					
	COMPLETED BY: (Contractor)	REVIEWED BY: (Project Engineer)	WITNESSED BY: (Commissioning Engineer) If flagged in ITP		
COMPANY					
SIGNATURE					
PRINT NAME					
DATE					

RELIEF / SAFETY VALVE INSTALLATION			M-11B	
Asset Description		Tag Number		
Site		Process area		
Project/Project No.		Type and Model		
Manufacturer		Serial number		
Reference Drawings				
			Pass	N/A
			Comments	
	Physical Inspection			
1	Visual inspection done		☐	☐
2	Seal intact and correctly installed		☐	☐
	Functional Settings			
3	Operation pressures set		☐	☐
4	Operating temperatures within specified range		☐	☐
5	No leaks and obstructions		☐	☐
Defects reason and action:				
	COMPLETED BY: (Contractor)	REVIEWED BY: (Project Engineer)	WITNESSED BY: (Commissioning Engineer) If flagged in ITP	
COMPANY				
SIGNATURE				
PRINT NAME				
DATE				

TANKS AND VESSELS			M-12B		
Asset Description		Tag Number			
Site		Process area			
Project/Project No.		Type and Model			
Manufacturer		Serial number			
Reference Drawings					
			PASS	N/A	Comments
	Documentation and Specifications		☐	☐	
1	Equipment correct to design data specification		☐	☐	
	Equipment Installation				
2	Tank vents and drains complete to P&ID, spectacle blinds and spades in correct orientation, flanges torqued, P&ID red-lined.		☐	☐	
3	Sterilisation carried out as per Watercare COP-04		☐	☐	
4	Tank installed per HNSO Act, signage, spacing, bund sizing, etc., meet requirements, Location Compliance Certificate issued (if required)		☐	☐	
5	Dosing or transfer pumps installed, pre-commissioned, and meet HNSO Act requirements (if applicable)		☐	☐	
6	Safety equipment and showers installed and commissioned, spill kits in vicinity, MSDS current and located at tank, pump, and control room		☐	☐	
	Equipment Condition				
7	Tank / vessel clear of debris, tools etc		☐	☐	
8	Tank / vessel internal and external wall coatings intact as per specification		☐	☐	
9	Tank / vessel flushed, filled, and drained as per manufacturers commissioning procedures.		☐	☐	
	Final Checks				
10	Leak or pressure test completed as per Watercare standards		☐	☐	
11	Electrical and instrument checks complete.		☐	☐	
Defects reason and action:					
	COMPLETED BY: (Contractor)	REVIEWED BY: (Project Engineer)	WITNESSED BY: (Commissioning Engineer) If flagged in ITP		
COMPANY					
SIGNATURE					
PRINT NAME					
DATE					

AUTOMATIC SPRINKLER / DELUGE SYSTEMS			M-13B	
Asset Description		Tag Number		
Site		Process area		
Project/Project No.		Type and Model		
Manufacturer		Serial number		
Reference Drawings				
			Pass	N/A
			Comments	
	Documentation and Preparation			
1	ITR M-13A is complete and in Completion Dossier		☐	☐
2	Preservation removed		☐	☐
	Equipment and Installation			
3	Equipment correct to design data specification and electrical/instrument checks complete		☐	☐
4	Manufacturers pre-commissioning checks carried out		☐	☐
5	Exposed items in and around area covered to protect from deluge water		☐	☐
	Testing and Operation			
6	Operational test of system carried out, spray patterns as per design and not obstructed		☐	☐
7	No leaks observed at unexpected locations		☐	☐
8	System low point and winterisation drain holes clear and adequate to remove standing water post test		☐	☐
9	System left operational		☐	☐
10	'Red Line' mark-up complete		☐	☐
Defects reason and action:				
	COMPLETED BY: (Contractor)	REVIEWED BY: (Project Engineer)	WITNESSED BY: (Commissioning Engineer) If flagged in ITP	
COMPANY				
SIGNATURE				
PRINT NAME				
DATE				

PORTABLE FIRE FIGHTING / SAFETY EQUIPMENT				M-15B	
Asset Description			Tag Number		
Site			Process area		
Project/Project No.			Type and Model		
Manufacturer			Serial number		
Reference Drawings		Location Drawing			
			Pass	N/A	Comments
	Documentation and Preservation				
1	Vendor Test Documentation complete and in Completion Dossier		☐	☐	
2	Preservation removed		☐	☐	
3	Equipment location and quantities as per layout drawing and site safety plan		☐	☐	
	Equipment Condition and Inventory				
4	Equipment is in good condition, undamaged, and cabinet contents as per inventory list		☐	☐	
	Installation and Accessibility				
5	Equipment installed as per regulations, easily accessible, and not obstructed.		☐	☐	
6	Extinguishers fully charged, inspection less than 6 months old, control signature valid		☐	☐	
	Signage and Instructions				
7	Safety signage and equipment operating instructions clearly displayed and legible		☐	☐	
8	'Red Line' mark-up complete		☐	☐	
Defects reason and action:					
COMPLETED BY:		REVIEWED BY:		WITNESSED BY:	
(Contractor)		(Project Engineer)		(Commissioning Engineer)	
COMPANY				If flagged in ITP	
SIGNATURE					
PRINT NAME					
DATE					

RUNNING LOG

M-16B

Sheet 1 of 1

Tag number:				Description:										
Record Pressures and Temperatures (Barg / Degrees C.)														
	10min	20 min	30 min	45 min	60min	1hr 20 min	1hr 40 min	2hr	2hr 20 min	2hr 40 min	3hr	3hr 20 min	3hr 40 min	4hr
Suction Pressure														
Discharge pressure														
DE bearing temp.														
NDE bearing temp.														
Casing temp.														
Atmospheric temp.														
Record Vibrations (mm/Sec)														
Drive End	X													
	Y													
	Z													
Non-Drive End	X													
	Y													
	Z													
Base Frame	X													
	Y													
	Z													
		COMPLETED BY: (Contractor)					REVIEWED BY: (Project Engineer)				WITNESSED BY: (Commissioning Engineer) If flagged in ITP			
COMPANY														
SIGNATURE														
PRINT NAME														
DATE														

SAFETY SHOWER AND EYEBATH			M-17B	
Asset Description		Tag Number		
Site		Process area		
Project/Project No.		Type and Model		
Manufacturer		Serial number		
Reference Drawings				
			Pass	N/A
Documentation and Preservation				
1	ITR M-17A complete and in Completion Dossier		☐	☐
2	Preservation removed		☐	☐
Equipment Condition and Inventory				
3	Equipment correct to design specification, electrical/instrument checks complete		☐	☐
Installation and Accessibility				
4	Equipment in good condition, undamaged, and location/quantities as per layout drawing		☐	☐
5	Safety signage and operating instructions clearly displayed and legible		☐	☐
Functional Tests				
6	Shower/eye bath test carried out, spray pattern and coverage correct, control mechanism operates correctly		☐	☐
7	Drains suitable and flow regulators operable		☐	☐
9	Indicator lights and remote signals (i.e. SCADA alarms) functional		☐	☐
Final Check				
10	System left operational		☐	☐
11	'Red Line' mark-up complete		☐	☐
Defects reason and action:				
	COMPLETED BY: (Contractor)	REVIEWED BY: (Project Engineer)	WITNESSED BY: (Commissioning Engineer) If flagged in ITP	
COMPANY				
SIGNATURE				
PRINT NAME				
DATE				

[illegible]

PRESSURISED SYSTEMS LEAK TEST CHECKLIST			P-03B	
Asset Description		Tag Number		
Site		Process area		
Project/Project No.		Type and Model		
Manufacturer		Serial number		
Reference Drawings				
			Pass	N/A
Documentation and Specification				
1	Test boundary marked P&ID / isometric drawings		☐	☐
Condition and Installation				
2	Pipe anchors/blocks are complete and cured		☐	☐
3	Temporary supports and blocks on pipe breaks adequate to withstand pressure.		☐	☐
5	Test equipment certified, test gauges / recorders calibrated and validated		☐	☐
Accessibility and Functionality				
6	Area cleared, safety signs and cordon-off barrier in place		☐	☐
7	Testing performed as per WSL General Civil Construction Standard, section 10;		☐	☐
8	Systems rained of test fluids and the fluids are disposed of safely		☐	☐
9	Spades, blinds etc installed for testing removed, system ready for service		☐	☐
10	Test equipment removed, drains and vents replaced		☐	☐
11	Temporary supports, blocks, safety barriers etc removed		☐	☐
12	Pipelines, tanks, and reservoirs for potable water disinfected in accordance with Watercare's Code of Practice		☐	☐
13	'Red Line' mark-up P&ID's and isometrics		☐	☐
Defects reason and action:				
	COMPLETED BY: (Contractor)	REVIEWED BY: (Project Engineer)	WITNESSED BY: (Commissioning Engineer) If flagged in ITP	
COMPANY				
SIGNATURE				
PRINT NAME				
DATE				

WITNESS JOINT CHECKLIST			P-04B	
Asset Description		Tag Number		
Site		Process area		
Project/Project No.		Type and Model		
Manufacturer		Serial number		
Reference Drawings				
			Pass	N/A
Documentation and Preservation				
1	Vendor Test Documentation complete and in Completion Dossier		☐	☐
2	Preservation removed		☐	☐
Flange and Gasket Checks				
3	Flange faces clean, damage free		☐	☐
4	Gasket clean, damage free & of correct type/size		☐	☐
5	Flange faces parallel		☐	☐
Joint Assembly				
6	Joints pulled up evenly on opposing studs		☐	☐
7	Nuts and bolts are of correct material, and tightened correctly		☐	☐
8	No visible gasket damage when joint completed		☐	☐
Bolt and Stud Checks				
9	Minimum of two threads showing through each assembly		☐	☐
10	No excessive stud/bolt length protruding		☐	☐
11	Stud/bolt torque correct, certificates attached		☐	☐
Final Checks				
12	'Red Line' mark-up complete		☐	☐
Defects reason and action:				
	COMPLETED BY: (Contractor)	REVIEWED BY: (Project Engineer)	WITNESSED BY: (Commissioning Engineer) If flagged in ITP	
COMPANY				
SIGNATURE				
PRINT NAME				
DATE				

PIPING / EQUIPMENT INSULATION						P-06B			
Asset				Project No.					
Location				System					
P&ID									
Sub System No.		Description		Equipment No.					
Insulation Designator: -									
AT	Heat Conservation with tracing		A	Heat Conservation		B	Personnel Protection		
C	Acoustic Insulation		D	Frost Protection		DT	Frost Protection with heat tracing		
O	No Protection								
Line No.	Isometric Drg No.	Rev	Final Paint Acceptance Certificate Complete		Insulation Designator	Insulation Thickness mm	Insulation installed in accordance with Spec.		
			Yes	No			Yes	No	
			☐	☐			☐	☐	
			☐	☐			☐	☐	
			☐	☐			☐	☐	
			☐	☐			☐	☐	
			☐	☐			☐	☐	
			☐	☐			☐	☐	
			☐	☐			☐	☐	
			☐	☐			☐	☐	
			☐	☐			☐	☐	
			☐	☐			☐	☐	
Defects reason and action:									
		COMPLETED BY: (Contractor)		REVIEWED BY: (Project Engineer)		WITNESSED BY: (Commissioning Engineer) If flagged in ITP			
COMPANY									
SIGNATURE									
PRINT NAME									
DATE									

FINAL COATING ACCEPTANCE CERTIFICATE						P-07B							
Asset				Project No.									
Location				System									
P&ID													
Sub System No.		Description		Equipment No.									
Line No.		Isometric Drg No.		Rev	Surface coating to design and WSL Standards		Line No.		Isometric Drg No.		Rev	Surface coating to design and WSL Standards	
					Yes	No						Yes	No
					☐	☐						☐	☐
					☐	☐						☐	☐
					☐	☐						☐	☐
					☐	☐						☐	☐
					☐	☐						☐	☐
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					☐	☐						☐	☐
					☐	☐						☐	☐
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					☐	☐						☐	☐
					☐	☐						☐	☐
					☐	☐						☐	☐
					☐	☐						☐	☐
Defects reason and action:													
		COMPLETED BY: (Contractor)		REVIEWED BY: (Project Engineer)				WITNESSED BY: (Commissioning Engineer) If flagged in ITP					
COMPANY													
SIGNATURE													
PRINT NAME													
DATE													

NON-PRESSURISED SERVICE LEAK TEST CHECKLIST					P-08B		
Asset Description				Project No.			
Location				System			
P&ID				Isometric			
Note: This Checklist / Procedure is aligned to WSL General Civil Construction Standard. If any doubt the standard takes precedent. Refer to "section 10 – Testing" of the standard. This Procedure is intended only for non-pressurised systems or as a pre-test prior to testing pressurised systems if required. Leakage testing is used to reveal locations of potential infiltration and exfiltration due to the inclusion of damaged pipes, seals, or incorrectly made joints in the pipeline or vessels at the completion of installation. - Leakage testing for acceptance of non-pressure pipelines: - A-1) Low pressure air testing; or - A-2) Hydrostatic testing - Leakage testing for Fluid retaining structures (process tanks, reservoirs, etc.): - The test is to demonstrate fluid loss of less than 0.05% of the tank volume per 24 hours period. - Manholes and Chambers: - Hydrostatic testing of concrete manholes - Vacuum test - Infiltration test - Visual Smoke Test							
					PASS	N/A	COMMENTS
1	Record the following:				☐	☐	
	Flow Medium		Operating Pressure				
	Design Pressure		Design Temperature				
	Test Pressure		Test Temperature				
	Test Medium		Duration of Test				
2	Test boundary P&ID / isometric drawings attached				☐	☐	
3	Pressurised system under test isolated				☐	☐	
4	Tested works on system complete				☐	☐	
5	Area cleared of non-essential persons, restrict access safety signs, barriers in place				☐	☐	
6	Toolbox talk completed with all persons involved in the test				☐	☐	
7	Testing completed as per WSL General Civil Construction Standard, section 10, procedures used, and test results attached				☐	☐	
	Test Type used		Test Result				
8	Spades, blinds removed, and system is ready for service				☐	☐	
9	Portable water pipelines, tanks, and reservoirs disinfected as per Watercare's Code of Practice COP-04.				☐	☐	
10	'Red Line' mark-up complete				☐	☐	
		COMPLETED BY: (Construction)	REVIEWED BY: (Project Engineer)	ACCEPTED BY: (Commissioning Engineer) If flagged in ItP			
COMPANY							
SIGNATURE							
PRINT NAME							
DATE							