



Document Details

This document is only valid on the day it was printed.

Document Owner	Manager Capital Delivery	
References	SPS Commissioning Worksheet	
	End to End Test Sheet	



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F8943 - SPS Commissioning Check Sheet Template

General

In using this document, due consideration of all other relevant Unitywater Standard Drawings and Unitywater Standard Specifications should be adhered to.



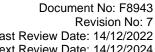


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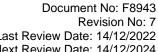
Vendor Verification

PROJE	PROJECT TITLE:			FINANCE NO:
Gene	ral			Result / Init. / Date
Mecha	anical			
1.	Pump test results bee	en reviewed and conform with a	applicable standards	ок 🗆
2.	Flowmeter Calibration	certificate received		ок 🗆
Civil				
3.	Check pressure test on rising main has passed			ок 🗆
4.	4. Check wet-well leakage test (hydrotest) has passed			ок 🗆
CONSTRUCTOR				
Name: Position: Signature:				Date:
UNITYWATER SIGNOFF				
Name:		Position:	Signature:	Date:





PROJECT TITLE:			FINANCE NO:	
Factory Acceptance Testing (FAT)			Result / Init. / Date	
Electr	ical, Instruments ar	nd Control (E, I & C)		
Switc	hboards			
1.	Standard Switchboard	ufacturer has been provided wid Drawings (OR, if "Design and s have been reviewed by Unity turer)	Construct", the 'For	ок 🗆
2.	The switchboard man switchboard wiring	ufacturer has undertaken a full	point-to-point test on all	ОК□
3.		ufacturer has provided evidence wiring drawings (each connec		ОК□
4.	4. Any changes, outcomes or additional detail resulting from FAT testing have been marked on the drawings with the highlighted test connections. Mark-ups include all available circuits, inputs, power supply voltages, labels, wire numbers, terminals etc. These marked-up drawings are labled 'FAT'.			ок 🗆
5.	Cabinet and paintwor	k have been inspected for any	visual damage	ок 🗆
6.	 6. The following is as per current drawings: Incomer arrangements Cable entry provisions Interlocking provisions Incomer protection (Fault current rating) and discrimination 			OK 🗆
7.	7. Switchboard rating nameplate is attached			ок 🗆
8.	8. Switchboard Test Certificate has been checked			ОК □
9. Software used during FAT is available			ОК □	
10	. Any deficiencies have	been recorded to a 'FAT punc	hlist register' and rectified	ОК □
Instrumentation				
11. Calibration certificates have been received for instruments			ments	ОК □
Software				
12. Software for Outstation Type is loaded			ок 🗆	
13. Software blocks have been fat tested (if non standard)			ок 🗆	
CONSTRUCTOR				
Name:		Position:	Signature:	Date:
UNITYWATER SIGNOFF				
Name: Position: Signature:			Date:	





F8943 - SPS Commissioning Check **Sheet Template**

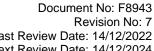
Pre-commissioning

PROJE	CT TITLE:	FINANCE NO:
Prelin	ninaries Checklist	Result / Init. / Date
1.	Check all commissioning personnel have been inducted to site	ок 🗆
2.	Check risk assessments and SWMS have been produced for all Precommissioning and Commissioning activities	ОК 🗆
3.	The site is safe for commissioning works to commence. Safety requirements include: Covers and grills installed and flush Davit mounting points certified Fall arest mounting points certified Handrails, fencing, gates and chains installed correctly Emergency procedures available Safety signage in place (PPE, Elecricity, SWL, Danger etc.)	OK 🗆
4.	Check "danger electric" marker bricks are installed at ground level and painted yellow where applicable	ОК 🗆
5.	Rising Main acceptance testing according to standard and passed	ок 🗆
6.	Gravity Main acceptance testing according to standard and passed	ок 🗆
7.	'As Constructed' survey by licenced surveyor complete	ок 🗆
8.	Changes to any detail as shown on the 'For Construction' drawings noted on a set of 'For Construction' drawings and marked 'As Constructed	ок 🗆
9.	Current Unitywater Standard Drawings are on site (OR, if "Design and Construct", the 'For Construction' drawings have been reviewed by Unitywater)	ок 🗆
10.	All required civil works testing (ITPs) completed by Contracts Inspector	ОК□
11.	Operation and Maintenence Manuals have been received for Vendor supplied components and the Functional Specification is available	ок 🗆
12.	Electical supply and metering available on site	OK 🗆
13.	Pole / pillar termination method meets all requirements	OK 🗆
14.	Check operation of all locks on switchboards	OK 🗆
15.	Check all cable supports and check for obstructions (e.g. cables not obstructing when lifting pump)	ок 🗆
16.	Selected control equipment is suitable for selected pump manufacturer	OK 🗆
17.	Test documentation for Mechanical equipment and Instrumentation has been received. These generally include: • Factory test results • Test compliance cetificates • Instrument calibration certificates • Warranty information	OK 🗆



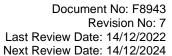
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18. FAT completed and critical punchlist items rectified			ОК □
CONSTRUCTOR			
Name:	Date:		
UNITYWATER SIGNOFF			
Name:	Date:		



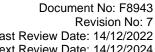


PROJECT TITLE:			FINANCE NO:
Pre-c	ommissioning Checklist		Result / Init. / Date
Gener	al		
1.	Check Preliminaries Checklist completed and signed off		ок 🗆
Netwo	rk		
1.	Check Commissioning Plan has been approved by Unitywater		ок □
2.	Advise Network Operations and Control Room of commencement of precommissioning acivities and proposed timing of performance and SAT to		ок 🗆
3.	Check Network Operations and Control Room are ready for performance testing and appropriate resources are availbale to assist	e and SAT	ок 🗆
4.	Confirm Network Operations are aware of impact on downstream infrast	tructure	ок 🗆
5.	Advise treatment plant operators of proposed timing of performance and testing (fluctuating load)	SAT	ок 🗆
6.	Check sufficient water / recycled water is available for testing		ок 🗆
7.	7. Ensure impacts on upstream infrastructure from changes to overflow level have been assessed		ОК□
Electr	ical, Instruments and Control (E, I & C)		
Gener	ators		
1.	Check generator mains and earth cables are installed and connected		ок 🗆
2.	Record the cable insulation resistance of the 3 phases	L1 L2 L3	ΜΩ ΜΩ ΜΩ
3.	Record earth loop impedance		Ω
4.	Check point-to-point phase continuity	R to L1 W to L2 B to L3	OK □ OK □ OK □
Switchboards			
5.	ENSURE SWITCHBOARD IS <u>NOT</u> ENERGISED		ок□
6.	Check mains and earth cables are installed and connected		ок 🗆
7.	Record the cable insulation resistance of the 3 phases	L1 L2 L3	ΜΩ ΜΩ



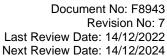


8.	Record earth loop impedance	Ω
9.	Check point-to-point phase continuity R to L1 W to L2 B to L3	ОК 🗆 ОК 🗆 ОК 🗆
10.	Check Incomer protection set as per design	ок□
11.	Check all CT and other links are in place	ок 🗆
12.	Check correct glands have been utilised for cable entries	ок 🗆
13.	Cable screens and earthing is as per design	ок 🗆
14.	Ensure switchboard main Incomer is turned OFF and tagged	ОК □
15.	Check MEN connection	ОК □
16.	Turn on mains switch	ОК 🗆
17.	ACKNOWLEDGE SWITCHBOARD IS NOW ENERGISED	ОК 🗆
18.	Check 3 phase voltages AB BC CA	V v
Lighti	ng and GPOs	
19.	Check light circuit breaker conforms to electrical drawings	ОК 🗆
20.	GPO circuit breaker(s) conform to electrical drawings	ОК □
21.	Check earth leakage circuit breaker has been tested and results are available	ОК 🗆
22.	Internal and external lights are connected and working	ОК □
23.	ОК □	
Level	Transducers	
24.	Check surge protection barriers are installed (control panel and field). Pay particular attention to earth screen terminators.	ОК 🗆
25.	Check connection from hydrostatic level probe No.1 to the transmitter and confirm correct operation	ОК 🗆
26.	Check connection from hydrostatic level probe No.2 to the transmitter and confirm correct operation	ОК 🗆
27.	Check scaling conforms to wet well design requirements	ОК 🗆
Flown	neters	
28.	Check calibration certificate has been received	ОК□
29.	Check mag flow head is connected to flowmeter converter	ОК □
30.	Check correct supply voltage available at converter	ОК 🗆



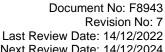


31. Check analogue output is correctly connected to RTU and operating correctly	ок □
32. Check totaliser output is correctly connected to RTU and operating correctly	ок 🗆
33. Check mechanical (vandal) and UV protection installed on external cable	ок 🗆
Field Devices	
34. Check installation of high / overflow level switch	ок□
35. Check calibration of all analogue signals (including flow and pressure transmitters)	ок□
36. Check setting of pressure switches	ок□
37. Verify level controller (hydrostatic probe) calibration	ок 🗆
Pump Motors	
38. Check pump motor name plate details have been received and applied to asset management form and electrical drawings and a second plate is mounted on the switchboard pump control door	OK □
39. Check pump motor name plate has been applied to MCC or disconnection box	ок□
40. Record pump motor winding insulation resistance R - W @ 1000V R - B @ 1000V W - B @ 1000V W - E @ 1000V B - E @ 1000V	MΩMΩMΩMΩMΩ
41. Record pump motor winding resistance U - U1 V - V1 W - W1	Ω Ω
42. Check all motor protection equipment operates as specified (e.g. water in oil sensor, thermistors, vibration sensors, bearing temperatures etc.)	OK 🗆
43. For variable frequiency drive (VFD), check drive settings are setup and settings recorded	OK 🗆
44. For soft starter, confirm Soft Starter settings are setup and settings recorded	ок □
45. For direct on-line (DOL) starter, check overload settings correct and recorded on drawing	ок□
46. Perform bump test to confirm correct rotation direction	ок □
47. Tag pump motor "out of service" to indicate readiness for testing	ок 🗆
Overflow and Emergency Start Circuits	
48. Confirm overflow level RL	m RL





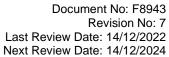
49.	Ensure overflow level switch is set up to the correct overflow level (sufficient distance below overflow to allow for switch activation) and confirm correct operation	OK □
50.	Check installation and correct operation of emergency start circuit	ок 🗆
Pump	Disconnection Boxes	
51.	Check incoming and outgoing cables have been secured correctly	ок □
52.	Check all conduits have been sealed to prevent gassing through conduits	ок □
Radio		
53.	Check radio feeder & antenna installation and cable testing (antenna to radio) have been performed, and results certificate received	ок□
54.	Check surge protection and fly lead is connected between antenna and radio	ОК□
55.	Check Communications earthing kits and earthing are installed on feeder and Surge Diverter respectively	OK 🗆
56.	Record radio system information Check & Verify Make & Model are correct Record Serial #	OK 🗆
57.	Check unit is powered with correct polarity and voltage 12V DC Supply	ОК□
58.	Check radio is programmed to the correct channel Record frequency	ок □ MHz
59.	Check radio configuration including stream id serial paramaters are set correctly for the Outstation and record	ОК П
60.	Check data radio diagnostics communication working correctly	ок 🗆
Remo	te Telemetry Units (RTU)	
61.	Check unit is powered with correct polarity and voltage DC Supply(ies)	ОК□
62.	Check the UPS battery is connected and charging	ОК□
63.	Check communication is working	ок□
64.	Check I/O is operational and conforms with current drawings	ок□
Contr	ol System	
65.	Record type of control system installed (i.e. SCADAPack, MultiSmart, MT2-PC)	



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66. Record controller information	
Manufacturer	
Model type Serial no	
Firmware rev	
Software rev	
End to End Testing	
67. Notify control room of impending end-to-end test (minimum 5 days notice)	ок 🗆
68. Check end-to-end test sheet has been reviewed and approved by control room	ОК 🗆
69. Complete End-to-End Test Sheet to verify communication to SCADA	OK 🗆
Mechanical	
General	
70. Check layout conforms with 'For Construction' piping drawings	ОК 🗆
71. Undertake visual examination of installation and finish of all pipework, mechanica devices, valves, fittings and pump units	I OK 🗆
72. Check accuracy of tagging and labelling	ок 🗆
73. Check RPZD has been installed by appropriately licenced plumber	ок 🗆
74. Check functionality and accessibility of mobile crane (franna)	ок 🗆
75. Check for any debris capable of causing damage to mechanical equipment when pumps are started	ОК 🗆
Check accessibility of access covers and equipment for operational and maintenence purposes	ОК 🗆
77. Check equipment is guarded appropriately	ок 🗆
78. Check stairways, landings and access ladders comply with design requirements	ок 🗆
79. Check that all Device O&M Manuals are available	ок 🗆
 Check that manufacturers' requirements have been met (i.e. alignment, lubrication, preparation, priming etc.) 	ОК 🗆
 Check instrumentation nozzles are provided in accordance with design (correct side of equipment e.g. US/DS) 	ОК 🗆
82. Check installation and operation of instrument isolation valves	ок 🗆
83. Check directional requirements (i.e. pump rotation, check valve direction etc.)	ок 🗆
84. Check commissioning pressure transmitters or gauges on either side of pump are operational	e OK □
Flowmeter	
85. Flowmeter calibration certificate received	ок 🗆



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86. Check earthing straps are installed accross both flowmeter flanges, earthing rings and to earth as specified by the equipment manufacturer			ок□	
Pumps				
87. Check impeller has a	free shaft		ОК□	
88. Prime pumps with wa	ter		ок □	
89. Check correct pump of	curves are on site		ок □	
Rising Main				
90. Check pressure test h passed	ок□			
91. Check pipework connections to UW network have been successfully completed			ок □	
92. Charge the rising main and ensure air is purged			ОК □	
CONSTRUCTOR				
Name:	Date:			
UNITYWATER SIGNOFF				
Name:	Date:			

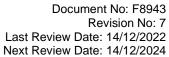


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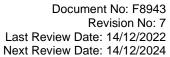
Wet Testing

-			
PROJECT TITLE:		FINANCE NO:	
Comr	missioning Schedule	Result / Init. / Date	UW Witness / Initials
Gener	ral		
1.	Check Pre-commissioning Checklist completed and signed off	ок 🗆	
Level	Sensor Checks		YES 🗆
2.	Record Top of Slab RL (m) and distance from Top of Slab to each level sensor in Commissioning Worksheet	ок 🗆	
3.	Record well diameter and total depth for volume calculations in Commissioning Worksheet	ОК□	
4.	Confirm wet well level indicated by the level probe is reflective of the actual wet well level and record readings in Commissioning Worksheet	ОК□	
5.	Confirm functioning of high and high high (overflow) level alarms	ок 🗆	
	Note that the overflow structure may only be brought on-line once 'As Constructed' overflow level has been confirmed (to remain bunged off until level confirmed)		
Pump	Checks		
Motor	Checks		YES 🗆
6.	Ensure correct parameters are set in the VFD or Soft Starter if applicable	ок 🗆	
7.	Start pump with discharge valve closed and ensure the pump is running without undue noise, vibration and temperature	ОК□	
8.	To ensure motor load balancing, record:		
	Pump running amps L1	A	
	Pump running amps L2 Pump running amps L3	A	
9.	Stop pump	ОК 🗆	
10.	. Complete Low Power Tuning (Danfoss VFD) and record values into Commissioning Worksheet	ок 🗆	
11.	. Repeat steps 7 to 10 for second pump/drive	ок 🗆	
Fill and Bleed Rising Main			YES 🗆
12.	. Calculate volume of water required to fill rising main	ОК 🗆	
13.	. Ensure sufficient water in wet well to fill rising main and perform pump operation test	ОК□	



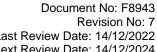


14. Open pump discharge valve	ОК□	
15. Run pump and bleed air from rising main	OK 🗆	
 Operate pump from 35 to 50 Hz in 5 Hz increments (if VFD type), check for abnormal movement or vibration 	ок□	
 Perform visual inspection of pump, all piping, fittings and flanged joints for leakage 	ОК□	
Pump Performance and Flowmeter Accuracy		YES 🗆
18. Complete Draw Down test and verify flowmeter accuracy	ок 🗆	
19. Complete Pump Performance test including shutoff head	ок 🗆	
20. Use Commissioning Worksheet to record and assess results	ок 🗆	
Pump Control Checks		
Duty Pump Fault Test (2 pumps)		YES 🗆
21. Select both pumps to "off" position	ок 🗆	
22. Ensure assist start level > wet well level > duty start level	ок 🗆	
23. Ensure pump discharge valves are open	ОК 🗆	
24. Confirm both drives have no faults present	ок 🗆	
25. Select Pump 1 (Duty Pump) to "automatic" position	ОК 🗆	
26. Confirm Duty Pump running	ОК 🗆	
27. Select Pump 2 (Duty Assist) to "automatic" position	ок 🗆	
28. Fault Duty Pump – i.e. open one c/b feeder for phase failure relay	OK 🗆	
29. Confirm Duty Assist pump starts	ок 🗆	
30. Stop system – both pumps to "off" position	ок 🗆	
31. Select Pump 2 as Duty Pump	ОК□	
32. Select Pump 1 as Duty Assist	ок 🗆	
33. Repeat Steps 22 to 30	ОК □	
Duty / Assist Test (2 pumps)		YES 🗆
34. Select both pumps to "off" position	ок 🗆	
35. Ensure assist start level > wet well level > duty start level	ОК □	
36. Ensure pump discharge valves are open	ОК □	
37. Confirm both drives have no faults present	OK 🗆	
38. Select both pumps to "automatic" position	OK 🗆	
39. Confirm Pump 2 (Duty Pump) running	OK 🗆	





40. Manually override wet well level > than assist start level	ок 🗆	
41. Confirm Assist Pump started	ок 🗆	
42. Manually override wet well level < assist stop level	ок 🗆	
43. Confirm Duty Assist stopped	ок 🗆	
44. Manually override wet well level < duty stop level	ок 🗆	
45. Confirm Duty Pump stopped	ок 🗆	
46. Select Pump 1 as Duty Pump	ок 🗆	
47. Select Pump 2 as Duty Assist	ок 🗆	
48. Repeat Steps 35 to 45	ок 🗆	
49. Select both pumps to "off" position	ок 🗆	
Pump Cycling		YES 🗆
50. Manually override wet well level < duty stop level (pumps are stopped)	ОК 🗆	
51. Ensure wet well level > duty start level	ок 🗆	
52. Confirm both drives have no faults present	ок 🗆	
53. Ensure pump discharge valves are open	ок 🗆	
54. Select both pumps to "automatic" position	ок 🗆	
55. Record which pump is selected as Duty Pump by controller		
56. Manually override wet well level > duty start level	ОК□	
57. Confirm Duty Pump running	ок 🗆	
58. Manually override wet well level < duty stop level	ОК□	
59. Confirm Duty Pump stopped	ок 🗆	
60. Record which pump is selected as Duty Pump by controller		
61. Select both pumps to "off" position	ок 🗆	
Emergency Start Circuit		YES 🗆
62. Ensure sufficient water in wet well for test	ок 🗆	
63. Turn off the RTU	ок 🗆	
64. Select both pumps to "automatic" position	ОК 🗆	
65. Simulate a wet well high high level (manually lowering the probe is the preferred method)	ОК 🗆	
66. Confirm Pump 1 starts	ОК 🗆	
67. Confirm Pump 2 starts (after pump 2 start delay)	ок 🗆	
68. Confirm both pumps stop when water level reaches the lowest probe (stop) on the start/stop three point probe	ОК 🗆	





69. Select both pumps to "off" position			ОК □		
70. Turn on the RTU			ОК □		
Generator Checks					YES 🗆
71. Ensure sufficient water	er in wet well for test		OK □		
72. Ensure generator mai	n switch is off		OK □		
73. Select both pumps to	"off" position		ОК □		
74. Connect generator an	d check all connections		ОК □		
75. Start generator and ch	neck phase direction and voltag	ges	ОК □		
76. Select changeover sw	ritch to generator supply		ОК □		
77. Close main switch and check all voltages					
78. Select Pump 1 to "automatic" and confirm correct operation NOTE: If sufficient water available for testing allow system to cycle confirming complete functionality. Otherwise override wet well level to confirm pump operation. OK □					
79. Select Pump 2 to "automatic" and confirm correct operation Note due to portable generator size potentially both pumps may not be able to run and shall be decided on an individual site basis.					
80. Select both pumps to "off" position			ОК □		
81. Restore mains power and disconnect generator			ОК □		
Wet Testing Signoff					
CONSTRUCTOR					
Name: Position: Signature:				Date:	
UNITYWATER WITNESS					
Name: Position: Signature:			Date:		
Name: Position: Signature:			Date:		
Name: Position: Signature:			Date:		



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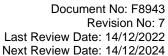
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SAT / Performance Testing

PROJECT TITLE:		FINANCE NO:	
SAT S	Schedule	Result / Init. / Date	
SAT P	Pre-start Checks		
1.	Check Wet Testing Checklist completed and signed off	ок 🗆	
2.	Check SAT attendees are inducted to site	ОК □	
Level	Sensor Checks		
3.	Record Top of Slab RL (m) and distance from Top of Slab to each level sensor in Commissioning Worksheet	ОК□	
4.	Record well diameter and total depth for volume calculations in Commissioning Worksheet	ОК 🗆	
5.	Confirm wet well level indicated by the level probe is reflective of the actual wet well level and record readings in Commissioning Worksheet	ОК□	
6.	Confirm functioning of high and high high (overflow) level alarms	ок 🗆	
	Note that the overflow structure may only be brought on-line once 'As Constructed' overflow level has been confirmed (to remain bunged off until level confirmed)		
Pump	Checks		
Pump Performance and Flowmeter Accuracy			
7.	Complete Draw Down test and verify flowmeter accuracy	ок 🗆	
8.	Complete Pump Performance test including shutoff head	ОК □	
9.	Transfer readings into Commissioning Worksheet and assess results	ок 🗆	
Pump Control Checks			
Duty Pump Fault Test (2 pumps)			
10.	. Select both pumps to "off" position	ок 🗆	
11.	. Ensure assist start level > wet well level > duty start level	ок 🗆	
12.	. Ensure pump discharge valves are open	ок 🗆	
13.	. Confirm both drives have no faults present	ок 🗆	
14.	. Select Pump 1 (Duty Pump) to "automatic" position	ОК □	
15.	. Confirm Duty Pump running	ок 🗆	



16. Select Pump 2 (Duty Assist) to "automatic" position	ок 🗆		
17. Fault Duty Pump – i.e. open one c/b feeder for phase failure relay	OK □		
18. Confirm Duty Assist pump starts	ок 🗆		
19. Stop system – both pumps to "off" position	ок 🗆		
20. Select Pump 2 as Duty Pump	ок 🗆		
21. Select Pump 1 as Duty Assist	ок 🗆		
22. Repeat Steps 11 to 19	ок 🗆		
Duty / Assist Test (2 pumps)			
23. Select both pumps to "off" position	ок □		
24. Ensure assist start level > wet well level > duty start level	ок □		
25. Ensure pump discharge valves are open	ок □		
26. Confirm both drives have no faults present	ок □		
27. Select both pumps to "automatic" position	ок 🗆		
28. Confirm Pump 2 (Duty Pump) running	ок 🗆		
29. Manually override wet well level > than assist start level	ок 🗆		
30. Confirm Assist Pump started	ок 🗆		
31. Manually override wet well level < assist stop level	ок 🗆		
32. Confirm Duty Assist stopped	ок 🗆		
33. Manually override wet well level < duty stop level	ок □		
34. Confirm Duty Pump stopped	ок □		
35. Select Pump 1 as Duty Pump	ок □		
36. Select Pump 2 as Duty Assist	ок 🗆		
37. Repeat Steps 24 and 34	ок 🗆		
38. Select both pumps to "off" position	ок 🗆		
Pump Cycling			
39. Manually override wet well level < duty stop level (pumps are stopped)	ок □		
40. Ensure wet well level > duty start level	ок □		
41. Confirm both drives have no faults present	ок 🗆		
42. Ensure pump discharge valves are open	ок □		
43. Select both pumps to "automatic" position	ок 🗆		
44. Record which pump is selected as Duty Pump by controller			
45. Manually override wet well level > duty start level	ок □		





46.	Confirm Duty Pump running	ОК□	
47.	Manually override wet well level < duty stop level	ОК□	
48.	Confirm Duty Pump stopped	ОК □	
49.	Record which pump is selected as Duty Pump by controller		
50.	Select both pumps to "off" position	ОК□	
Emerg	gency Start Circuit		
51.	Ensure sufficient water in wet well for test	ок□	
52.	Turn off the RTU	ок□	
53.	Select both pumps to "automatic" position	ок□	
54.	Simulate a wet well high high level (manually lowering the probe is the preferred method)	ок 🗆	
55.	Confirm Pump 1 starts	ОК□	
56.	Wait for several seconds (Pump 2 start delay)	ОК □	
57.	Confirm Pump 2 starts	ОК□	
58.	Confirm both pumps stop when water level reaches the lowest probe (stop) on the start/stop three point probe	ок□	
59.	Select both pumps to "off" position	ОК□	
60.	Turn on the RTU	ОК □	
Generator Checks			
61.	Ensure sufficient water in wet well for test	ок□	
62.	Ensure generator main switch is off	ок□	
63.	Select both pumps to "off" position	ок□	
64.	Connect generator and check all connections	ОК□	
65.	Start generator and check phase direction and voltages	ОК□	
66.	Select changeover switch to generator supply	ок□	
67.	Close main switch and check all voltages	ок□	
68.	Select Pump 1 to "automatic" and confirm correct operation NOTE: If sufficient water available for testing allow system to cycle confirming complete functionality. Otherwise override wet well level to confirm pump operation.	ОК □	
69.	Select Pump 2 to "automatic" and confirm correct operation Note due to portable generator size potentially both pumps may not be able to run and shall be decided on an individual site basis	ОК 🗆	
70.	Select both pumps to "off" position	ОК□	
71.	Restore mains power and disconnect generator	ок 🗆	



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SAT Signoff			
To verify completion of all SAT items to the satisfaction of Stakeholders.			
CONSTRUCTOR			
Name:	Position:	Signature:	Date:
UNITYWATER WITNESS (C	ommissioning)		
Name:	Position:	Signature:	Date:
UNITYWATER WITNESS (Operations)			
Name:	Position:	Signature:	Date:
UNITYWATER WITNESS (Electrical)			
Name:	Position:	Signature:	Date:
UNITYWATER WITNESS (SCADA)			
Name:	Position:	Signature:	Date:
UNITYWATER WITNESS (Mechanical)			
Name:	Position:	Signature:	Date: