WASTEWATER PUMP STATION CONTROL PROGRAMMING CHECKLIST

PUMP STATION IDENTITY/ LOCATION:

COUNCIL REPRESENTATIVE:

WORKS CONTRACTOR:

SUBCONTRACTOR(S) (*if applicable*):

DATE:

Station Design Information	Design Measurements	As-Built Measurements
Levels recorded as mRL *(Moturiki Datum)*		
Lid mRL as measured at the top of the Lid Cross Brace		
Design mRL for base of Level Transducer		
Design mRL for Wetwell Base		
Analogue Control Levels to be stated in mm from base of wetwell:		
• Common Stop Level		
• Duty A Start Level		
• Standby Start Level		
• High Level		
• Critical Alarm Level		
• Storage Empty Level		
• Storage Full Level		
• Overflow Invert Level		
Design Flow Rate:		
1 pump running *(L/s)*		
2 pumps running *(L/s)*		
Pump designed start up current *(Amps)*		
Catchment Plan Information		
Downstream Pump Station		
Upstream Pump Stations		

1.1.2 PLC Programme

PLC PROGRAMME INSTALLED:

COUNCIL REPRESENTATIVE:

DEVELOPER:

	P1		P2	
	YES	NO	YES	NO
All core labels on and correct				
All trunk lids in place and cut burs removed				
Cable ties trimmed				
Box labelling present and correct:				
• Meter				
• Distribution				
• Controls				
• Change Over Switch				
• PLC				
• Instrumentation				
Pump labelling present and correct *(for each pump)*:				
• Pump No				
• Temp				
• Leakage				
• Reset				
Analog ammeters scaled for design pumps				
Switch labelling present and correct:				
• Level Control, Light On=Float, Light Off=US, Push Change				
• Duty Change				
Cabinet clear of construction debris				
External cabinet door close and locks				
Internal door close and seal				
Locks operate on specific and master keys				

1.1.3 Wiring Trace:

COUNCIL REPRESENTATIVE:

DEVELOPER:

			CH	Term Block	PASS
SITE	Phase Fail	I:	0/0		Select
	Critical Level Alarm	I:	0/5		Select
	Duty A	I:	0/7		Select
	Duty B	I:	0/6		Select
	Common Stop	I:	0/8		Select
	Fault Reset / Duty Change	I:	0/9		Select
	Door Tamper	I:	1/0		Select
	Flow - Pulse	I:	1/13		Select
	Flow – Instantaneous	IN	3-		Select
		IN	3+		Select
	Ultra Sonic Level	IN	0-		Select
		IN	0+		Select
	Level Control Change	I:	1/7		Select
	Battery Low	I:	1/15		Select
	Level Control Indicator	O:	0/2		Select
	Wash Solenoid	O:	0/3		Select
Pump 1	Run	I:	0/1		Select
	Fault	I:	0/2		Select
	MiniCas	I:	1/1		Select
	Auto	I:	1/3		Select
	Manual	I:	1/5		Select
	Start	O:	0/0		Select
	CT	IN	1+		Select
Pump 2	Run	I:	0/3		Select
	Fault	I:	0/4		Select
	MiniCas	I:	1/2		Select
	Auto	I:	1/4		Select
	Manual	I:	1/6		Select
	Start	O:	0/1		Select
	CT	IN	2+		Select

This form is intended to ensure that the station meets design requirements for the successful ongoing operation of the Wastewater Pumping Station.

Council Representative: .....

Works Contractor: .....

Subcontractor(s) (*if applicable*): .....

.....

.....

.....

1.1.4 Level Monitoring Systems

COUNCIL REPRESENTATIVE:

DEVELOPER:

Installation Level Confirmation

Parameter	Survey Levels as mRL *(Moturiki Datum)*
Lid as measured at the top of the Lid Cross Brace	
Base of Level Transducer	
Storage Invert	
Storage Obvert	
Critical Level Invert	

Where installed levels differ from the design set-up and cannot be rectified then changes in the station's programmed level controls system need to occur.

1.1.5 Level Control Checks

COUNCIL REPRESENTATIVE:

DEVELOPER:

Near Blanking Distance Clearance Check

Ensure that the differential between base of Ultrasonic Level Transducer and obvert of the Overflow pipe is >0.35m.

NOTE: The near blanking distance above is valid only for the standard Pulsar DB6. Where the wetwell depth requires alternative types then the near blanking distance will differ and needs to be catered for in the design of the station level monitoring system.

Ultrasonic Near Blanking Clearance Confirmation

Item	Parameter	Measure	Reading *(e.g. 30.56)*
A.	Base of Level Transducer	mRL	
B.	Critical Alarm Level	mRL	
C.	Overflow Pipe Diameter	m	
D.	Overflow/Transducer differential *(D = A – B – C)*	m	
E.	Pass *(> 0.35m)*		Select

1.1.6 Analogue Monitoring Performance Checks

COUNCIL REPRESENTATIVE:

DEVELOPER:

Analogue level accuracy check is to occur throughout the operational level span for the station.

The station's level monitoring must meet validated measurements with the greater of +/- 10mm or 1% of operational span. Therefore station monitoring error = (validated measurement – station measurement).

Approximate Position	Validation Measurement *(mm)*	Station Level Measurement *(mm)*	Measurement Differential *(mm)*	Measurement Error *(% of Span)*	Pass
Common Stop Level					Select
High Level					Select
Overflow					Select

NOTE: Due to Analogue display dampening the well must be maintained at a static level for 120 seconds before readings are taken.

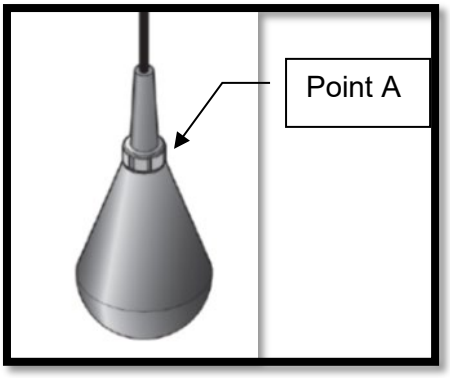
1.1.7 Float Installation Check.

COUNCIL REPRESENTATIVE:

DEVELOPER:

The Flygt ENM-10 operates about the tipping point at the top of the float, all measurements for setting and validation of installation are made from point A as shown below to the top of the lid cross brace.

Flygt ENM Float and Level Setting



Float	Distance to Lid *(m)*	Distance to Base *(m)*	U/S reading at activation *(m)*	Flat State Confirmation *(NC = Normally Closed) (NO = Normally Open)*
Critical Alarm				NC ☐
Duty A Start				NO ☐
Duty B Start				NO ☐
Common Stop				NO ☐

1.1.8 MiniCas Supervision Relay Check

COUNCIL REPRESENTATIVE:

DEVELOPER:

Confirm that the sensors within the pumps are connected correctly to the appropriate MiniCas unit.

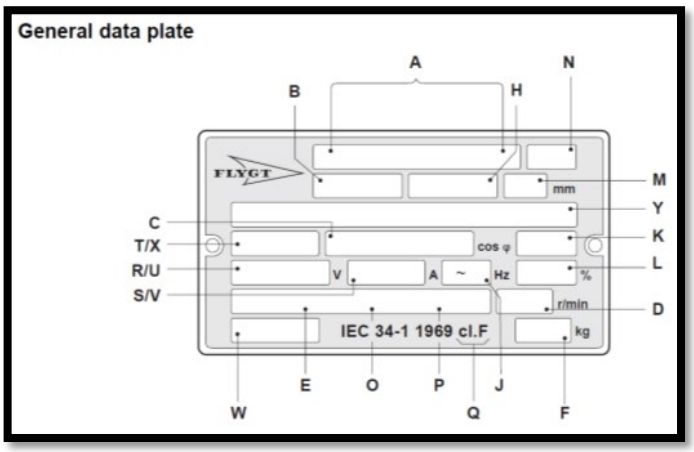
	Leakage	Temperature	Supply
P1			
P2			

1.1.9 Pump Information Sheet

COUNCIL REPRESENTATIVE:

DEVELOPER:

Nameplate Data Collection for each pump record the following information for each pump as shown on the right:



Parameter	P1	P2
A Product No.		
B Serial No.		
C Shaft power		
D Rated speed		
E	N/A	N/A
F Weight		
H Curve code		
J Hz		
K Power factor		
L Operating duty, cont./int.		
M Impeller.		
N Factory code		
O	N/A	N/A
P	N/A	N/A
Q Temperature class		
R/U Rated voltage		
S/V Rated current		
T/X Stator connection		
W Special order No.		
Y Motor No.		

1.1.10 Pump Performance Checks

COUNCIL REPRESENTATIVE:

DEVELOPER:

Before starting Pump Pre-commission Inspection

— Make sure that the pump is isolated from the power supply and cannot be energized.

— Make sure that the pump cannot roll or fall over and injure people or damage property.

- ☐ Pump is isolated from electrical supply
- ☐ Check that the visible parts on the pump and installation are undamaged and in good condition, including cables.
- ☐ Check the oil level in the oil housing.
- ☐ Open the circuit breaker and check that the impeller can be rotated freely.

This is an important step to free mechanical seals prior to electrically starting the pumps to avoid potential damage to the pump.

Check that the Impellor clearance is within tolerance (<1.5mm):

- ☐ P1
- ☐ P2

On completion and passing of pump static tests the pumps can now be temporarily livened to test direction rotation.

1.1.11 Pump Rotation Test

COUNCIL REPRESENTATIVE:

DEVELOPER:

Check the direction of rotation. The impeller shall rotate clockwise, as viewed from above. When started, the pump will jerk in the opposite direction to the direction in which the impeller rotates.

Mains Power

- [ ] P1
- [ ] P2

Generator Power

- [ ] P1
- [ ] P2

On successful completion of rotation tests, re-isolate pumps and inspect guide rail system prior to installing pumps onto their respective pedestals in preparation for pump performance test.

- [ ] Pump is isolated from electrical supply
- [ ] Check upper guide rail brackets are secured to well structure
- [ ] Check that guide rails align vertically between discharge bend and upper guide brackets
- [ ] Check that the pump lifting handle is secured to pump.
- [ ] Check that a lifting chain is secured to the pump lifting handle with sufficient length and that the D-shackle pin is secured with stainless wire to prevent damage to the pump.
- [ ] Check that the lifting chains are secured at the lids and are free of slack to prevent damage to pumps.
- [ ] Check that the pump cables are secured and free of slack to prevent damage from pump operation

1.1.12 Pump Current Draw

COUNCIL REPRESENTATIVE:

DEVELOPER:

	Start-up reading	10 seconds post Start	@ 10 seconds post Snore
Clamp on Meter			
Stations CT			
Station's Analogue Meter			

1.1.13 Pump Riser Tests

COUNCIL REPRESENTATIVE:

DEVELOPER:

- [ ] Fill the wet well with water to the invert level of the incoming sewer.
- [ ] With the relevant gate valve open, start one pump in manual mode and check for leaks, pump/motor vibration or noise, and that the well level drops.
- [ ] Shut gate valve and restart pump and check for any leaks in pipework or at the discharge bend connection.

1.1.14 Pump Overload(s) Set?

COUNCIL REPRESENTATIVE:

DEVELOPER:

The pump overload is to be set by an Electrician at the time of the commissioning of the cabinet onsite. This should be set as per the overload settings specified for the pump by the pump manufacturer and as recorded on the pump name plate.

Pump 1 ☐

Pump 2 ☐

1.1.15 Pump Pressure Head Measurement

COUNCIL REPRESENTATIVE:

DEVELOPER:

P1 _____

P2 _____

P1 & P2 _____