**‘Enter Project Name’**

**Consortium Name + Logo**

Testing, Commissioning
and Handover Plan

**Template Revision Schedule**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Issue /Rev** | **Date** | **Description** | **Prepared**  | **Reviewed**  | **Approved**  |
| **A0** | **27/01/17** | **Preliminary Draft – TCCHP Template** | **JH** | **DS, VH, SM** | **MS** |
| **A1** | **04/09/17** | **Checklist Review*** **Updated checklist appendices B, C & D (new items blue italicised)**
* **Reordered appendices**
* **Minor formatting edits**
 | **MC** | **DD** | **MS** |
| **T0\*** | **04/09/17** | **Treatment System Procedure Update (TRIAL)*** **Edits to section 6 in green**
* **Addition of Appendix F for trial with treatment plant projects**
 | **JH** |  |  |

**\* This revision to be used ONLY for P00071 – Mt Martha Flare and Supernatant Flowmeter and P00070 – Somers WRP Outfall Pump Station Reliability Upgrade.**

**Revision Schedule**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Issue /Rev** | **Date** | **Description** | **Prepared** | **Reviewed** | **Approved** |
|  |  |  |  |  |  |

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# Introduction

This Testing, Commissioning, Completion and Handover Plan (TCCHP) details the measures which are to be followed to ensure the appropriate testing, commissioning and completion of ‘enter project name’.

The purpose of the TCCHP is to:

* Provide a standard guide for project team members to perform duties consistently and efficiently in executing the plan.
* Ensure that the type of testing and staging of testing is agreed by ‘insert consortium name’ and South East Water.
* Define procedures, responsibilities and authorities for the commissioning stages
* Accurately define the proposed dates for testing, commissioning & hand over.
* ….
* ….

# Background

Insert very brief background here.

# Project Scope/Objectives

The following specific project objectives have been identified:

* Refer to RFQ

# Distribution

The following persons will be issued a copy of the commissioning plan:

|  |  |  |
| --- | --- | --- |
| **Copy No.** | **Organisation** | **Title/Name** |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |

# Testing, Commissioning, Completion & Handover Scope

In a short list, describe the key testing, commissioning and completion/handover items, including proposed dates.

For example:

1. Testing:
	1. Hydrostatic testing – dd/mm/yyyy
	2. CCTV & ovality - + 2 days
	3. Plug insertion - + 3 days
	4. Chlorination
	5. Water quality sampling
2. Commissioning:
	1. Bypass MH123 (Q Form) + 10 days
	2. Connection to existing asset number xyz
	3. Decommission rising main & SPS
		1. AV & scour pits
		2. Make good discharge MH
		3. Remove generator
	4. Complete commissioning checklist
3. Completion: Completion is deemed to be handover from the Consortia and is to be undertaken by the Consortia to SEW Pipes & Structures
	1. All completion documentation provided to SEW (min. 5 days prior to completion walkover)
	2. Completion Verification Form (Form E) submitted on SWIFT (min. 5 days prior to completion walkover)
	3. Watershed labels are placed on equipment (where required) and Watershed datasheets and a digital copy of O&M manual provided to SEW maintenance team (M&E Asset Management Coordinator min. 2 days prior to completion walkover)
	4. Pre-completion/completion walkover (incl. safety audit for treatment plant works)
	5. …
4. Handover: Handover shall be undertaken by SEW Pipes & Structures to Operations and Maintenance
	1. Ensure all completion documents have been received
	2. Ensure Completion Verification Form is submitted on SWIFT
	3. Ensure maintenance team has received the Watershed datasheets
	4. All as constructed drawings have been uploaded on to the Electronic Plan Room
	5. Newly constructed asset is added to GTViewer

# Testing, Commissioning & Completion/ Handover Stages

This Testing, Commissioning and Completion Plan has been developed according to four stages of review and testing in accordance with the contract dates for operation. (For all Treatment Systems projects nine milestones has also been developed throughout the project cycle; refer to Appendix F) The stages are:

Stage 4 Completion/Handover

Stage 3
Post-construction/

Commissioning

Stage 2 Construction

Stage 1
Pre-construction

**Stage 1** (Pre Construction/Design):

* ensure all required design and construction documents are provided as detailed within Sections 3 & 4 of *P&S Submission and Reviews (28/09/2015)*
* ensure the functional specification is submitted and agreed with SEW operations engineers for all treatment plant project
* Note that these documents include the CSEP, EMP, construction notification letters (for a full list refer to the P&S Submission and Reviews document)
* **Prepare and submit this document (TCCHP) including the relevant commissioning checklists (and any other relevant test plans including but not limited to the Performance Test Plans and Factory Acceptance Test Plans to be included as an appendix to the TCCHP) with Stage 1 documents**
* Documents must be submitted, reviewed by SEW and address SEW comments within the time frames listed
* At the completion of Stage 1 the P&S Program Engineer will certify the TCCHP by obtaining signatures on Appendix Form A

**Stage 2** (Construction):

* ensure required SWIFT forms have been submitted within required timeframes for each activity
* ensure works are in accordance with the IFC design plans, WSA code, other relevant standards and the approved products list and recorded on the appropriate ITPs
* ensure any proposed variation from the approved IFC drawings is to be submitted to SEW for review and acceptance in the form of a design change notice (DCN) or request for information (RFI)
* A register of DCN/RFI’s must be submitted with Red Line mark-ups
* Ensure appropriate SEW representatives are invited to all Factory Acceptance Testing and Site Acceptance Testing

**Stage 3** (Post Construction/Testing & Commissioning):

* Complete commissioning checklist as agreed at Stage 1
* Checklists to be signed off by P&S Program Engineer, SEW Operations and Maintenance team representatives
* Ensure items that require attention are identified and appropriate measures are put in place for issues to be rectified

**Stage 4** (Completion/Handover):

* The Consortia project manager will arrange a `completion meeting’ consisting of a final walkover of the works and any outstanding items identified at Commissioning
* Delivered assets shall conform to the required quality as set out in the relevant specifications, codes and standards
* The O&M manual (including relevant ITP’s and checklists) will be submitted to operations
* Acceptance of the system will be as per the Handover checklist (ref appendix E)

# Commissioning Staff Structure

The core Commissioning and Handover Team structure is shown below. It shall be the responsibility of the Consortium Project Manager to ensure all relevant SEW representatives have been notified with a minimum of 5 days’ notice of the proposed commissioning activities and are available and present on the day of commissioning.

# Testing

1. Describe in detail what you plan to test (asset numbers), and how (e.g. managing air while charging).
2. List the necessary SWIFT Forms and asset entry procedure.
3. Describe the sequencing and if there are any sections of the asset that the consortia are not intending to test (including justification).

# Commissioning

1. Detail the commissioning sequence here, noting asset numbers
2. List necessary SWIFT Forms and asset entry procedure.
3. Including a thorough plan for any bypassing or temporary supply here.
4. Robust contingency planning for shutdowns

# Completion

1. Pre-completion walkover
2. Completion (handover) attempt
3. A roadmap between the start of testing and Completion
4. Tasks to be performed by SEW

# Completion Documentation

At the completion of works the finalised completion documentation will be submitted to South East Water. Project documentation will include extracts from the specifications relevant for commissioning and handover. It is intended that during the pre-commissioning and commissioning stages that any ‘as-built’ changes are marked up on site and incorporated and re-issued on the as-built drawing and project documentation.

The documentation will include the following:

1. All drawings and As-built information in pdf and CAD formats
2. Commissioning Checklists
3. Construction ITP’s
4. Hydrostatic testing results
5. Inspection checklist reports
6. O&M Manual including all manuals relating to civil, electrical and mechanical equipment and tests.
7. A folder of construction photos

# Appendix A – Pre-Construction Sign Off

‘Enter Project Name’

Commissioning Plan and Handover Agreement Enter Rev No.

**Pre-Construction (IFC) Sign Off**

**Operations**

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_\_\_

**Maintenance**

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_\_\_

**Pipes and Structures**

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_\_\_

# Appendix B – Water Asset Commissioning Checklist

**Sample**

Please note that the sample checklist below is to be reviewed, modified and agreed at IFC stage to include all relevant checks. Rev A1 items are italicised and blue.

|  |
| --- |
| **WATER PROJECT** |
| **Item**  | **Complete****Yes/No/N/A** | **Comments/****Initials** |
| **Management/Documentation** |  |  |
| 1. Verify that all project objectives have been achieved.
 |  |  |
| 1. Verify that all documentation has been provided:
 |
| * 1. As-Constructed Drawings (PDF & CAD, numbered and named as per AM2488) and other design documents.
 |  |  |
| * 1. QA Documents (including ITPs, authority approvals, electrical safety certificate etc.)
 |  |  |
| * 1. Photos (Construction, Final Asset and Defect before/after).
 |  |  |
| 1. Ensure any new water service tappings are captured in GIS.
 |  |  |
| 1. *Verify GTViewer has been updated and is accurate*
 |  |  |
| **Pipes and Fittings** |  |  |
| 1. Verify the appropriate flow meter has been used and are constructed to design specifications.
 |  |  |
| 1. Verify that all anchorages are constructed to design specifications, including puddle flange anchors on PE mains.
 |  |  |
| 1. Verify that the SEW specified coating for all valves has been applied.
 |  |  |
| 1. Verify that all surface fittings are exposed, located at surface level and operational. This includes valve extension spindles and marker posts for fittings as specified.
 |  |  |
| 1. Verify that all pipe work and fittings are coated as specified.
 |  |  |
| 1. *Have approved products and sizes been used?*
 |  |  |
| 1. *Verify that epoxy coated DI pipe work has been provided to correct nominal diameter.*
 |  |  |
| 1. *Verify that all padlocks have been placed on above-ground valves.*
 |  |  |
| 1. *Verify that all valves are in correct position.*
 |  |  |
| 1. *All water valves to be anticlockwise closing.*
 |  |  |
| 1. *Ensure all valves and spindles are accessible and serviceable (i.e. not hindered by covers, other valves, etc.).*
 |  |  |
| 1. *All spindles 100-350 mm below finished surface level.*
 |  |  |
| 1. *Verify spindle extensions are securely fixed to spindles.*
 |  |  |
| 1. *Spindle shrouds to be straight and vertical, with the spindle centred in the shroud.*
 |  |  |
| 1. *Valve covers supported and level with natural surface level.*
 |  |  |
| **Pump Stations / Pressure Reducing Stations** |  |  |
| 1. Verify that all project objectives have been achieved.
 |  |  |
| 1. Verify that the following documentation has been provided:
 |  |  |
| * 1. O&M Manual & Maintenance Schedules.
 |  |  |
| * 1. Watershed Datasheets (photos to be provided separate from Word Document)
 |  |  |
| 1. An underground electrical plan (including power supply to switchboard) is to be supplied with the As Constructed information.
 |  |  |
| 1. Verify that performance testing of pumps has passed.
 |  |  |
| 1. Verify the appropriate training required for Operators to run the asset has been completed.
 |  |  |
| 1. Hardcopy of O&M Manual folder left in switchboard.
 |  |  |
| 1. SCADA checklist complete. SCADA is working correctly.
 |  |  |
| 1. Verify the pump is properly mounted.
 |  |  |
| 1. Verify the pump is operating at the correct electrical current (Amps).
 |  |  |
| 1. Verify the pump is operating at the correct pressure and flow rate.
 |  |  |
| 1. Verify the pump is rotating in the right direction.
 |  |  |
| 1. Verify the flow switch is operating.
 |  |  |
| 1. Verify the electrical cabling is installed correctly.
 |  |  |
| 1. Verify there are safety guards on all rotating pump and motor parts.
 |  |  |
| 1. Verify that the Valves are clockwise closing.
 |  |  |
| 1. Verify that the pipe work has been provided to the correct size.
 |  |  |
| 1. Verify that there is adequate supports for the valves and pipe work.
 |  |  |
| 1. Verify all gate valves operate through the full range and are left in the open position.
 |  |  |
| 1. Verify that the Station Identification plaque has been fitted to the electrical cabinet.
 |  |  |
| 1. Verify that the telemetry aerial has adequate protection in accordance with South East Water specification.
 |  |  |
| 1. Verify that external lighting over the switchboard has been provided.
 |  |  |
| 1. Verify that South East Water locks are fitted to switchboard and operational.
 |  |  |
| 1. Verify that quick link generator connectors provided.
 |  |  |
| 1. Verify that all valves can be removed through the available cover opening.
 |  |  |
| 1. *Placement of covers to be such that direct removal of valves is achievable by SEW crane truck.*
 |  |  |
| 1. All pipe work in pits to be Powder Coated DI or HDPE.
 |  |  |
| 1. Verify that all padlocks have been placed on above ground valves.
 |  |  |
| 1. *Verify that all un-buried pipes are labelled as per AS-1345 and labels are fitted as per SEW specification and Australian standards.*
 |  |  |
| 1. *Verify that no PVC or PE pipework has been used above-ground.*
 |  |  |
| 1. *Verify that all fittings are appropriately secured and free from unwanted movement.*
 |  |  |
| 1. *Are adequate supports provided in accordance with SEW standard drawings?*
 |  |  |
| 1. *Ensure opening of cabinets present no OHS issue*
 |  |  |
| 1. *Protective bollards have been installed where required (removable where access may be required for maintenance purposes).*
 |  |  |
| 1. *Lighting provided on-site.*
 |  |  |
| 1. *Station identification plaques made from stainless steel plate 230mm x 80mm, holes in 4 corners for attachment.*
 |  |  |
| 1. *Access track is as per design and suitable.*
 |  |  |
| 1. *All wet-area cabinets should be self-draining.*
 |  |  |
| 1. *Have traffic risks been considered in the placement of assets?*
 |  |  |
| 1. *Site is free of rust.*
 |  |  |
| 1. *Switchboard door stays strong enough to withstand high winds.*
 |  |  |
| **Pump Station Concrete** |  |  |
| 1. Verify that the concrete slab is flush with the finished surface level.
 |  |  |
| 1. Verify that there is no damage to any exposed concrete surface.
 |  |  |
| 1. Verify that the top slab does not affect the drainage of the site.
 |  |  |
| 1. Verify that the surface dimensions of the top slab are in accordance with the design drawings.
 |  |  |
| 1. Verify that the below ground concrete structures are dimensionally correct and in accordance with the design drawings.
 |  |  |
| 1. Verify no leakage through the concrete structure.
 |  |  |
| 1. *Verify that all chamfers are provided in accordance with the design drawings.*
 |  |  |
| **Pump Station Security** |  |  |
| 1. *Verify that the security fencing has been installed in accordance with the design drawings.*
 |  |  |
| 1. *Verify that South East Water keyed locks installed.*
 |  |  |
| 1. *Ensure correct locks are fitted to all cabinet doors, bollards, gates, cages and grates.*
 |  |  |
| 1. *Verify all cabinets have barrel locks.*
 |  |  |
| 1. *Abloy locks to be used in all network sites*
 |  |  |
| 1. *Ensure sites are keyed alike.*
 |  |  |
| 1. *Check fencing meets SEW standard.*
 |  |  |
| **OH&S** |  |  |
| 1. *Has a site safety audit been undertaken by the Safety & Wellbeing team?*
 |  |  |
| 1. *Verify that no overhead cables restrict access via crane trucks.*
 |  |  |
| 1. *Verify that all ladders are provided with the extension above the FSL.*
 |  |  |
| 1. *Verify that the ladders have non-slip treads.*
 |  |  |
| 1. *Have safety cages been specified?*
 |  |  |
| 1. *Verify that safety cages have been installed in accordance with the design drawings.*
 |  |  |
| 1. *Verify all items that require ongoing maintenance are maintainable and accessible without the use of any mechanical aid.*
 |  |  |
| 1. Verify that adequate set down areas for the covers has been provided in accordance with OH&S requirements.
 |  |  |
| **Products & Materials** |  |  |
| 1. *Verify that all products incorporated on the project are approved by SEW.*
 |  |  |
| 1. Verify that all markings as required by SEW specification are visible on the covers.
 |  |  |
| 1. Verify that the covers and frames are greased in accordance with the manufacturer’s requirements.
 |  |  |
| 1. *Verify that the interchangeable multi-part covers have lifting lugs on the beams for removal and covers have clockwise lifting key holes.*
 |  |  |
| 1. *Lids to be numbered in order of removal sequence.*
 |  |  |
| 1. *Fasteners and other metal products outside (exposed to weather/elements) to be GAL or SS.*
 |  |  |
| 1. *Have critical spares been procured?*
 |  |  |
| **Restoration** |  |  |
| 1. *Verify that all site restorations have been completed (nature strips, tracks, pavements, fences, gates, clearance certificates).*
 |  |  |
| 1. *Have all NCR/Issues items been resolved*
 |  |  |
| 1. *All rubbish and decommissioned materials/assets must be removed offsite.*
 |  |  |
| 1. *Ensure all cabinets and vents are vacuumed and clean.*
 |  |  |
| 1. *Is a laminated 1-page summary required for the site?*
 |  |  |
| **Testing** |  |  |
| 1. Verify that the pipe work has been chlorinated and passed water quality testing.
 |  |  |
| 1. Verify that all pipelines have been swabbed and flushed.
 |  |  |
| 1. Verify that all pipe work has been pressure tested and passed.
 |  |  |
| **If all items are completed, sign off this checklist.** |  |  |
| **Comments** |  |  |

All Complete

|  |  |  |
| --- | --- | --- |
| Consortium Representative Name: | Signature | Date |
| SEW Representative Name: | Signature | Date |

# Appendix C – Gravity Sewer Commissioning Checklist

**Sample**

Please note that the sample checklist below is to be reviewed, modified and agreed at IFC stage to include all relevant checks. Rev A1 items are italicised and blue.

|  |
| --- |
| **GRAVITY SEWER PROJECT** |
| **Item** | **Complete****Yes/No/N/A** | **Comments/****Initials** |
| **Management/Documentation** |  |  |
| 1. *Verify that all project objectives have been achieved.*
 |  |  |
| 1. *Verify that all documentation has been provided:*
 |  |  |
| * 1. *As-Constructed Drawings (PDF & CAD, numbered and named as per AM2488) and other design documents*
 |  |  |
| * 1. *QA Documents (including ITPs, authority approvals, electrical safety certificate etc.)*
 |  |  |
| * 1. *Photos (Construction, Final Asset and Defect before/after)*
 |  |  |
| 1. *Verify GTViewer has been updated and is accurate*
 |  |  |
| **Pipes and Fittings** |  |  |
| 1. Verify that the pipe work for the sewer is in accordance with the design drawings.
 |  |  |
| **Concrete** |  |  |
| 1. Verify that the manhole covers are flush with the finished road/reserve surface.
 |  |  |
| 1. Verify that there is no damage to any exposed concrete surface.
 |  |  |
| 1. Verify that the manholes are dimensionally correct and in accordance with the design drawings.
 |  |  |
| 1. Verify no leakage through the concrete structure.
 |  |  |
| 1. Verify that all chamfers are provided in accordance with the design drawings.
 |  |  |
| 1. Verify that the channels/chase has been provided in accordance with design drawings.
 |  |  |
| 1. Verify that the specified coating to the walls has been applied in accordance with the design drawings (extent/coverage).
 |  |  |
| **OH&S** |  |  |
| 1. Verify that step iron/ladder access to manholes meets OH&S requirements.
 |  |  |
| 1. Verify that the ladders have non-slip treads.
 |  |  |
| 1. Verify that adequate set down areas for the covers has been provided in accordance with OH&S requirements.
 |  |  |
| 1. *Has a site safety audit been undertaken by the SEW Safety & Wellbeing team?*
 |  |  |
| **Products & Materials** |  |  |
| 1. Verify that all products incorporated on the project are approved by SEW.
 |  |  |
| 1. Verify that all markings as required by SEW specification are visible on the covers.
 |  |  |
| 1. Verify that the covers and frames are greased in accordance with the manufacturer’s requirements.
 |  |  |
| **Restoration** |  |  |
| 1. Verify that the site restoration has been completed.
 |  |  |
| 1. Have all NCR items been resolved
 |  |  |
| 1. *All rubbish and decommissioned materials/assets must be removed offsite.*
 |  |  |
| **Testing** |  |  |
| 1. Pressure test/air test complete?
 |  |  |
| 1. Have manholes been vacuum tested?
 |  |  |
| 1. CCTV inspection complete and reviewed?
 |  |  |
| 1. *Ovality testing complete and reviewed?*
 |  |  |
| **If all items are completed, sign off this checklist.** |  |  |
| **Comments** |  |  |

All Complete

|  |  |  |
| --- | --- | --- |
| Consortium Representative Name: | Signature | Date |
| SEW Representative Name: | Signature | Date |

# Appendix D – Sewer Rising Main & Pump Station Commissioning Checklist

**Sample**

Please note that the sample checklist below is to be reviewed, modified and agreed at IFC stage to include all relevant checks. Rev A1 items are italicised and blue.

|  |
| --- |
| **SEWER PUMP STATION AND RISING MAIN PROJECT** |
| **Item** | **Complete****Yes/No/N/A** | **Comments/****Initials** |
| **Management/Documentation** |  |  |
| 1. Verify that all project objectives have been achieved.
 |  |  |
| 1. Verify that all documentation has been provided:
 |
| * 1. O&M Manual & Maintenance Schedules
 |  |  |
| * 1. As-Constructed Drawings (PDF & CAD, numbered and named as per AM2488) and other design documents
 |  |  |
| * 1. QA Documents (including ITPs, authority approvals, electrical safety certificate etc.)
 |  |  |
| * 1. Watershed Datasheets (photos to be provided separate from Word Document)
 |  |  |
| * 1. Photos (Construction, Final Asset and Defect before/after)
 |  |  |
| 1. *Verify GTViewer has been updated and is accurate*
 |  |  |
| 1. An underground electrical plan (including power supply to switchboard) is to be supplied with the As Constructed information.
 |  |  |
| 1. Verify that Pre-Commissioning Checklist for New Asset – Waste Water Sites (Appendix F of SEW Pump Station Supplementary Manual) has been completed and submitted.
 |  |  |
| 1. Verify that performance testing of pumps has passed.
 |  |  |
| 1. Verify the appropriate training required for Operators to run the asset has been completed.
 |  |  |
| 1. Ensure any new water service tappings are captured in GIS.
 |  |  |
| 1. *Hardcopy of O&M Manual folder left in switchboard.*
 |  |  |
| 1. *SCADA checklist complete. SCADA is working correctly.*
 |  |  |
| **Rising Main – General** |  |  |
| 1. Verify that all pipe work has been pressure tested and passed.
 |  |  |
| 1. Have approved products and sizes been used?
 |  |  |
| 1. Have air and scour valves been installed as per the design?
 |  |  |
| 1. Rising mains have reflux valve and sluice valve, scour line to have sluice valve.
 |  |  |
| 1. Verify that all anchorages are constructed to design specifications, including puddle flange anchors on PE mains.
 |  |  |
| 1. Verify that all valves installed in pits can be removed through the available cover opening.
 |  |  |
| 1. Placement of covers to be such that direct removal of valves is achievable by SEW crane truck.
 |  |  |
| 1. Are adequate supports provided in accordance with SEW standard drawings?
 |  |  |
| 1. Verify that epoxy coated DI pipe work has been provided to correct nominal diameter.
 |  |  |
| 1. Verify that the SEW specified coating for all valves has been applied.
 |  |  |
| 1. Verify that the SEW specified coating for the pipe work has been applied.
 |  |  |
| 1. Verify that all padlocks have been placed on above-ground valves.
 |  |  |
| 1. Verify that all valves are in correct position.
 |  |  |
| 1. All pipe work in pits to be DIEL or HDPE.
 |  |  |
| 1. Marker posts installed along line of rising main as per standards:
* Change of direction of pipeline
* At fittings along line
* Minimum every 500 metres
* Fitted with correct plaque (provided by SEW)
 |  |  |
| 1. *All sewer valves to be clockwise closing.*
 |  |  |
| 1. *Ensure all valves and spindles are accessible and serviceable (i.e. not hindered by covers, other valves, etc.).*
 |  |  |
| 1. *Are all sewer valve spindles fitted with a yellow star picket cap and appropriate Sewer Valve Tag?*
 |  |  |
| 1. *All spindles 100-350 mm below finished surface level.*
 |  |  |
| 1. *Verify spindle extensions are securely fixed to spindles.*
 |  |  |
| 1. *Spindle shrouds to be straight and vertical, with the spindle centred in the shroud.*
 |  |  |
| 1. *Valve covers supported and level with natural surface level.*
 |  |  |
| **Air Valve Installations** |  |  |
| 1. *Location of installations to be agreed in advance with stakeholders. Consideration to be given to working safely in the road reserve and to local customers.*
 |  |  |
| 1. *Verify SS ball valves are installed on AVs to enable bleeding.*
 |  |  |
| 1. *Minimum size to be used DN80.*
 |  |  |
| 1. *Below ground pits:*
	* *All AVs to be isolatable from surface (Isolation valve spindle terminate just under cover).*
	* *750mm working space in pit.*
	* *Minimum 300mm clearance between flanges and walls.*
	* *Evidence of engineered design for pre-cast pits (e.g. certificate from pit builder).*
	* *Precast joints to be watertight.*
 |  |  |
| 1. *Above-ground cabinets:*
	* *Air valve orifice to be piped to the floor of the cabinet (e.g. DN50 PVC)*
	* *Plinth to extend to door swing zone.*
	* *Door-stays included.*
	* *Isolation valves to be accessible*
 |  |  |
| **Scour Valve Installations** |  |  |
| 1. *Scour-tees used.*
 |  |  |
| 1. *Offtake valves to be on scour-tee.*
 |  |  |
| 1. *Access for eduction trucks to be considered.*
 |  |  |
| 1. *Camlock-type arrangement to be used for depths less than 3m.*
 |  |  |
| 1. *Camlock arrangement:*
	* *Female DN80mm Camlocks installed.*
	* *Lever-pins and Camlock caps fitted.*
	* *Levers to be well-clear of walls when open (e.g. >100mm).*
 |  |  |
| **Pump Station – Mechanical** |  |  |
| 1. Verify that the pipe work for the incoming sewer is in accordance with the design drawings.
 |  |  |
| 1. Verify that the valves are clockwise closing.
 |  |  |
| 1. Verify that adequate supports have been provided for the valves in accordance with South East Water standard drawings.
 |  |  |
| 1. Verify that adequate supports for vertical pipe work has been provided (i.e. vibration not noticeable when pumps operating).
 |  |  |
| 1. Verify the appropriate flow meter has been used and are constructed to design specifications.
 |  |  |
| 1. Verify that a flap valve has been installed on the valve chamber drain.
 |  |  |
| 1. Verify that all gate valves operate through the full range and are left in the open position.
 |  |  |
| 1. Verify that bleeders have been installed on the NRVs.
 |  |  |
| 1. Are valve extension spindles required (includes penstock)?
 |  |  |
| 1. Verify that epoxy coated DI pipe work has been provided to correct DN.
 |  |  |
| 1. Verify that the specified pressure gauges have been installed in the valve chamber.
 |  |  |
| 1. Verify that the South East Water specified coating for pipes and valves has been applied.
 |  |  |
| 1. Verify that the specified bolting system on the flanges has been used.
 |  |  |
| 1. Verify that all valves can be removed through the available cover opening.
 |  |  |
| 1. Verify that uni-flanges have been provided to allow ease of removal of valves in accordance with standard drawings.
 |  |  |
| 1. Verify penstock installed as standard drawings.
 |  |  |
| 1. Verify that the guide rails comply with the standard drawings.
 |  |  |
| 1. Verify that the lifting chain complies with South East Water specification.
 |  |  |
| 1. Verify that the Pump footstool has been secured to wet well floor with appropriate chemical anchors.
 |  |  |
| 1. Are wet well washers specified on design drawings? Wet well washers to be provided with Gate valve and regulator.
 |  |  |
| 1. Verify the wet well washers provided meet the South East Water specified requirement.
 |  |  |
| 1. *Verify eyelets/bullrings on pumps meet SEW needs for routine lifting.*
 |  |  |
| 1. *Verify that all above-ground pipes are labelled as per AS-1345 and labels are fitted as per SEW specification and Australian standards.*
 |  |  |
| 1. *Verify that no PVC or PE pipework has been used above-ground.*
 |  |  |
| 1. *Verify that all fittings are appropriately secured and free from unwanted movement.*
 |  |  |
| **Pump Station – Civil** |  |  |
| 1. ERS arrangement and levels as per design. Flaps gates installed, seal and in working order. ERS outlet free.
 |  |  |
| 1. Ensure opening of cabinets present no OHS issue, i.e. not too close to an open MH.
 |  |  |
| 1. Unencumbered accessibility available for crane trucks and tankers to wet well, valve pit and detention tanks for cleaning and maintenance purposes.
 |  |  |
| 1. Concrete slab all one level and incorporating well covers, removable storage area for covers, electrical cabinet and valve pit.
 |  |  |
| 1. Protective bollards have been installed where required (removable where access may be required for maintenance purposes).
 |  |  |
| 1. Lighting provided at SPS site.
 |  |  |
| 1. Station identification plaques made from stainless steel plate 230mm x 80mm, holes in 4 corners for attachment.
 |  |  |
| 1. *Access track is as per design and suitable.*
 |  |  |
| 1. *Lighting pole should be positioned to sufficiently illuminate the wet well and be unobstructed when folded.*
 |  |  |
| 1. *All wet-area cabinets should be self-draining.*
 |  |  |
| 1. *Drain points from solenoids should not go through cabinets, they should run to the bottom of the plinth for discharge.*
 |  |  |
| 1. *Have traffic risks been considered in the placement of assets?*
 |  |  |
| 1. *Site is free of rust.*
 |  |  |
| 1. *Switchboard door stays strong enough to withstand high winds.*
 |  |  |
| 1. *Catenaries installed as per standard drawing (SEW\_STD\_030).*
 |  |  |
| **Wet Well, Valve Pit, Detention Tank Common Items** |  |  |
| 1. Is pump-out point installed as per drawings (e.g. 80mm Camlock).
 |  |  |
| 1. Covers installed as per design. 1m clear space (concrete path) around all access points, when lids/covers open.
 |  |  |
| 1. Wet Well, Valve Pit & Detention Tank to be epoxy coated.
 |  |  |
| 1. *Gratings designed with consideration for access to instruments, spindles, valves, etc. Consideration for eduction hose access.*
 |  |  |
| 1. *Davit arm bases are stainless steel and cast into the slab.*
 |  |  |
| **Wet Well Specific Items** |  |  |
| 1. Is the drop pipe on the inlet pipework with inspection opening at top and 45 degree directional bend at exit?
 |  |  |
| 1. Sufficient depth to inlet line for non-drowned inlets. Cut in level to inlet >0.8m.
 |  |  |
| 1. Covers placed to be such that direct removal of pumps is achievable by crane truck.
 |  |  |
| 1. *Ensure wet well functionally seals.*
 |  |  |
| **Valve Pit Specific Items** |  |  |
| 1. Placement of covers to be such that direct removal of valves is achievable by crane truck.
 |  |  |
| 1. Valve pit to be self-draining with flap gate.
 |  |  |
| **Detention Tank Specific Items** |  |  |
| 1. Detention tank isolation valves checked.
 |  |  |
| 1. Detention Tank flap gates functional.
 |  |  |
| 1. Verify that the level sensor is working on SCADA.
 |  |  |
| 1. Verify that the hose/ hydrant connection point is long enough for washing down the detention tank.
 |  |  |
| 1. Verify that there is adequate access to the detention tanks for cleaning purposes.
 |  |  |
| 1. Verify that there is an approved coating on the wall of the tank.
 |  |  |
| **Other Services**  |  |  |
| 1. Verify that the water service has been fitted with an approved back flow prevention device and hose reel in cabinet. Backflow device must be tested and tagged.
 |  |  |
| 1. Verify that all conduits through the top slab have been sealed to prevent odour escaping.
 |  |  |
| 1. Verify that electricity is below ground, not above.
 |  |  |
| 1. Verify that the access track is in accordance with the design drawings.
 |  |  |
| 1. Verify that adequate site drainage has been provided.
 |  |  |
| 1. *All disused conduits must be grouted.*
 |  |  |
| 1. *Verify that all recycled water hoses and lines are purple.*
 |  |  |
| 1. *Verify hose reel is not painted red.*
 |  |  |
| **Electrical Equipment** |  |  |
| 1. Verify that the Electrical equipment are designed and constructed per the SEW Waste Water Pump Station Electrical Design and Construction Specification 02-163.1.
 |  |  |
| 1. Verify that the Electrical equipment installed are per the South East Water Electrical Performance Specification AM2714.
 |  |  |
| 1. Verify all Electrical equipment has been tested as per Appendix C – Commissioning Inspection Test Sheet of AM2714.
 |  |  |
| 1. Verify that the Station Identification plaque has been fitted to the electrical cabinet.
 |  |  |
| 1. Verify that the telemetry aerial has adequate protection in accordance with South East Water specification.
 |  |  |
| 1. Verify that external lighting over the switchboard has been provided.
 |  |  |
| 1. Verify that the South East Water locks fitted to switchboard and operational.
 |  |  |
| 1. Verify that quick link generator connectors provided.
 |  |  |
| 1. All conduits must be foam filled.
 |  |  |
| 1. Plastic fasteners not to be used in areas exposed to UV-light.
 |  |  |
| 1. Cables must not be exposed to UV-light (e.g. within conduit).
 |  |  |
| 1. Cable glands are properly installed and tightened.
 |  |  |
| 1. Cable socks to be fitted to all cables/pump cables.
 |  |  |
| **Concrete** |  |  |
| 1. Verify no leakage through the concrete structure.
 |  |  |
| 1. Verify that all chamfers are provided in accordance with the design drawings.
 |  |  |
| 1. Verify that the below ground concrete structures are dimensionally correct and in accordance with the design drawings.
 |  |  |
| 1. Verify the verticality of the structure is within tolerance in accordance with SEW specifications.
 |  |  |
| 1. Verify that the benching has been provided in accordance with design drawings.
 |  |  |
| 1. Verify that there is no damage to any exposed concrete surface.
 |  |  |
| 1. Verify that the top slab does not affect the drainage of the site.
 |  |  |
| 1. Verify that the concrete slab is flush with the finished surface level.
 |  |  |
| 1. Verify that the surface dimensions of the top slab are in accordance with the design drawings.
 |  |  |
| 1. Verify that the specified coating to the walls has been applied in accordance with the design drawings (extent/coverage).
 |  |  |
| **OH&S** |  |  |
| 1. Has a site safety audit been undertaken by the Safety & Wellbeing team?
 |  |  |
| 1. Verify that no overhead cables restrict access via crane trucks.
 |  |  |
| 1. Verify that ladder access to wet well, valve pit & detention tank meets OH&S requirements.
 |  |  |
| 1. Verify that all ladders are provided with the extension above the FSL.
 |  |  |
| 1. Verify that the ladders have non-slip treads.
 |  |  |
| 1. Have safety cages been specified? Verify that safety cages have been installed in accordance with the design drawings.
 |  |  |
| 1. Verify that adequate distance between wet well opening and switchboard is in accordance with OH&S requirements.
 |  |  |
| 1. Verify all items require ongoing maintenance are maintainable and accessible without the use of any mechanical aid.
 |  |  |
| 1. Verify that adequate set down areas for the covers has been provided in accordance with OH&S requirements.
 |  |  |
| 1. *Ensure all ground-mounted objects have appropriate trip protection (e.g. chains, high visibility markers, etc.).*
 |  |  |
| **Products & Materials** |  |  |
| 1. Verify that all products incorporated on the project are approved by SEW.
 |  |  |
| 1. Verify that all markings as required by SEW specification are visible on the covers.
 |  |  |
| 1. Verify that the covers and frames are greased in accordance with the manufacturer’s requirements.
 |  |  |
| 1. Verify that the interchangeable multi-part covers have lifting lugs on the beams for removal and covers have clockwise lifting key holes.
 |  |  |
| 1. Lids to be numbered in order of removal sequence.
 |  |  |
| 1. *All metals exposed to sewer gases are to be stainless steel 316 or DIEL.*
 |  |  |
| 1. *Fasteners and other metal products outside (exposed to weather/elements) to be GAL or SS.*
 |  |  |
| 1. *Have critical spares been procured?*
 |  |  |
| 1. *Fasteners inside sewer environment to be SS or appropriate inert material (e.g. plastic).*
 |  |  |
| 1. *Verify that grating clamps are Hilti X-FCM type.*
 |  |  |
| **Security** |  |  |
| 1. Verify that the security fencing has been installed in accordance with the design drawings.
 |  |  |
| 1. Verify that South East Water keyed locks installed.
 |  |  |
| 1. *Ensure correct locks are fitted to all cabinet doors, turrets, valve pits, bollards, gates, cages and grates.*
 |  |  |
| 1. *Verify all cabinets have barrel locks.*
 |  |  |
| 1. *Abloy locks to be used in all network sites.*
 |  |  |
| 1. *Ensure sites are keyed alike.*
 |  |  |
| 1. *Check fencing meets SEW standard.*
 |  |  |
| **Restoration** |  |  |
| 1. Verify that all site restorations have been completed (nature strips, tracks, pavements, fences, gates, clearance certificates).
 |  |  |
| 1. Have all NCR/Issues items been resolved (including any raised as a result of ***this*** audit)?
 |  |  |
| 1. *All rubbish and decommissioned materials/assets must be removed offsite.*
 |  |  |
| 1. *Ensure all cabinets and vents are vacuumed and clean.*
 |  |  |
| 1. *Verify that level listing is in O&M Manual and a laminated copy is attached to switchboard door.*
 |  |  |
| 1. *Is a laminated 1-page summary required for the site?*
 |  |  |
| **If all items are completed, sign off this checklist.** |  |  |
| **Comments** |  |  |

All Complete

|  |  |  |
| --- | --- | --- |
| Consortium Representative Name: | Signature | Date |
| SEW Representative Name: | Signature | Date |

# Appendix E – Treatment Plant Projects Commissioning Checklist

**Sample**

Please note that the sample checklist below is to be reviewed, modified and agreed at IFC stage to include all relevant checks.

|  |  |  |
| --- | --- | --- |
| **TREATMENT PLANT PROJECT** |  |  |
| **Item** | **Complete****Yes/No/N/A** | **Comments/****Initials** |
| **Management** |  |  |
| 1. Verify that all project objectives have been achieved.
 |  |  |
| 1. Verify that all documentation has been provided (as constructed drawings, operating manuals, test results, Watershed list, completed construction ITP’s and associated supporting Documents).
 |  |  |
| 1. Verify the appropriate training required for Operators to run the asset has been completed.
 |  |  |
| 1. *Verify GTViewer has been updated and is accurate*
 |  |  |
| 1. Verify the drawings are drawn and numbered as per AM2588 Treatment Plant Drawing Standard.
 |  |  |
| 1. 3D drawing provided and are done per “Treatment Plan Cad File Data Structure”.
 |  |  |
| **General** |  |  |
| 1. Verify all water treatment plant processes, incl. civil, mechanical and electrical components have been completed and commissioned.
 |  |  |
| 1. Verify the new telemetry points established/database updated.
 |  |  |
| 1. Verify all SCADA & Telemetry works has been completed and commissioned.
 |  |  |
| 1. Callout Book alarm instruction for new alarms provided.
 |  |  |
| 1. Control System Functional Description provided.
 |  |  |
| 1. Completed Asset Register/list issued.
 |  |  |
| 1. Training of Operation and Maintenance Personnel completed.
 |  |  |
| 1. Equipment Labels (including Watershed labels) supplied and attached to all items.
 |  |  |
| 1. Critical Spares Listing and suggested maintenance regime provided.
 |  |  |
| 1. Warranty List and any on-going service arrangement listed.
 |  |  |
| 1. All site and access road drainage completed.
 |  |  |
| 1. All roads are trafficable for access.
 |  |  |
| **Pipes and Fittings and Pump Stations** |  |  |
| Refer to Appendix A – Water Reticulation Commissioning Checklist for Water pipes and structures. |  |  |
| Refer to Appendix B – Gravity Sewer Commissioning Checklist for gravity sewer pipes and structures. |  |  |
| Refer to Appendix C – Sewer Rising Main and Pump Station Commissioning Checklist for Sewer rising mains and pump stations. |  |  |
| **Restoration** |  |  |
| 1. Verify that the site restoration has been completed.
 |  |  |
| 1. Have all NCR items been resolved (including any raised as a result of ***this*** audit).
 |  |  |
| **If all items are completed, sign off this checklist.** |  |  |
| **Comments** |  |  |

All Complete

|  |  |  |
| --- | --- | --- |
| Consortium Representative Name: | Signature | Date |
| SEW Representative Name: | Signature | Date |

# Appendix F – Treatment System Handover Procedure & Milestones

| **#** | **Description** | **Deliverable** | **Milestone** | **Timing** | **Description** | **Objective** | **Signoff** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| A/C | Infra | M&E | WRP Ops | SCADA | OHS |
|  | Asset Information (IFC drawings/asset information) | Asset Register | 1 | Pre-construction | Details of the assets that will delivered as part of this project and how they will be configured. | Ensuring that all proposed assets comply with the specification.  |  |  |  |  |  |  |
|  | Commissioning Plan | Commissioning plan | 1 | Pre-construction | Methodology for how the assets will be brought online, cut into the existing process, and optimised for performance. Also details what information will be captured during the commissioning phase.  | To understand the management arrangement, controls and sequencing for individual asset commissioning and ensure that there is an appropriate plan to tie in the new assets to overall plant operation. |  |  |  |  |  |  |
|  | Static SCADA Screens and Sample PLC Code | Screenshots and sample code project | 1 | Pre-construction | A few screenshots of SCADA HMI that is being designed and a small sample of PLC code developed. | This is to ensure that the contractors are on the right path with respect to UI design and use of function blocks and aligned with SEW's SCADA development standards |  |  |  |  |  |  |
|  | Project Objectives | Performance Plan  | 1 | Pre-construction | Proposal on how the objectives of this project will be meet including how any specific performance testing would be carried out. | Ensure project objectives are meet and any specified performance is appropriately tested. |  |  |  |  |  |  |
|  | Factory Acceptance Testing | FAT plan  | 2 | Pre-commissioning | FAT plan is developed based on the FDS document and lists a test plan for each scenario described in the FDS. The test cases are validated in a simulated SCADA environment with the SCADA server and the PLCs not connected to any instruments or devices. | FAT plan developed by contractor and reviewed and signed off by SEW, before actual FAT. FAT is signed off once all scenarios in the FAT plan is tested in simulation mode on SCADA. Important aspects that are evaluated are layout, navigation and general UI design styles, presence of all necessary screens (not only for processes but SCADA diagnostics as defined by the standards document), failure modes and sequencing.  |  |  |  |  |  |  |
|  | FAT signoff | 3 | Pre-commissioning |  |  |  |  |  |  |
|  | Asset Delivery | Verification certificate register | 4 | Pre-commissioning | Details of all assets that have been constructed/installed with all appropriate Watershed information. Verification certificates detailing that this has been done in accordance with appropriate standards/specifications. | Ensure all installed assets match proposed assets. Quality control of construction. |  |  |  |  |  |  |
|  | I/O configuration/test certificates | Verification certificate register | 4 | Pre-commissioning | The intention of this deliverable is to ensure that all devices in the field are working as they should.  | An ITP is used to validate configuration of instruments and devices, basic functionality and safety configuration. The configuration of devices and instruments are influenced by set points and evidence of a management plan for set points needs to be demonstrated. |  |  |  |  |  |  |
|  | Safety Audit | Safety audit report | 4 | Pre-commissioning | Audit of installed works against expected safety standards | No new hazard introduction. |  |  |  |  |  |  |
|  | Site Acceptance Testing | SAT plan | 5 | Pre-commissioning | The SAT plan is based on the FAT plan and incorporates all the feedback that was provided during FAT. The main difference is that now the test cases are being evaluated in a live environment with the SCADA server and PLCs connected to instruments, pumps, motors and all other devices. | Same as FAT - SAT plan developed by contractor and reviewed and signed off by SEW, before actual SAT. SAT is signed off once all scenarios in the SAT plan is tested in simulation mode on SCADA. Important aspects that are evaluated are layout, navigation and general UI design styles, presence of all necessary screens (not only for processes but SCADA diagnostics as defined by the standards document), failure modes and sequencing.  |  |  |  |  |  |  |
|  | SAT Signoff | 6 | Pre-commissioning |  |  |  |  |  |  |
|  | Critical Spares | Proposed Critical Spares List | 7 | Pre-commissioning | Report detailing the methodology used to identify how critical spares had been assessed and what critical spares have been identified.  | Ensure all critical spares are available. |  |  |  |  |  |  |
|  | Onsite Process Commissioning | Draft commissioning report | 8 | Commissioning | Details all the information captured during commissioning as outlined in the commissioning plan. Details any divergence from the commissioning plan. Details optimisation process. | Capture information and knowledge generated during the commissioning process that may assist future operations. |  |  |  |  |  |  |
|  | Final Walkthrough | Walkthrough signoff | 8 | Commissioning | Final inspection of all assets. | Ensure all defects are noted and minor. |  |  |  |  |  |  |
|  | Performance Testing | Draft performance test report  | 8 | Commissioning | Report detailing the results of any testing proposed in the performance plan. | Ensure specified performance is meet. |  |  |  |  |  |  |
|  | Defects | Schedule of Defects | 8 | Commissioning | List of all minor defects. | Ensure all defects are identified and deemed as non-critical to operation. |  |  |  |  |  |  |
|  | Set point Management | Setpoint Register | 9 | Asset Completion/ Handover | Documentation of all new set points, there typical operating range, and their values at the time of handover. | Ensure that set points can be recovered in advent of control failure.  |  |  |  |  |  |  |
|  | Telemetry Points  | Telemetry Point Register  |  | Asset Completion/ Handover | SEW needs to submit a list of all data and alarms that needs to be sent back to SEW's corporate SCADA system at Frankston and the contractor will work according to defined standards to transfer the require data. | Data coming back from treatment plants to SEW's corporate SCADA system is important because it is used for analysis and page out alarms. |  |  |  |  |  |  |
|  | PLC code provided | Confirmation signoff | 9 | Asset Completion/ Handover | From SAT onwards, SEW requires contractors to work on site - including deploying code from FAT and then troubleshooting and upgrading code according to tests and feedback. If this is successfully carried out, the PLC code is automatically capture in necessary SEW systems. | Final version of PLC code stored on server. |  |  |  |  |  |  |
|  | Roads Trafficable | Inspection signoff  | 9 | Asset Completion/ Handover | All roads are returned to normal service with no ongoing requirement for ongoing traffic management or controls. | Ensure that all roads are returned to their pre-construction condition. |  |  |  |  |  |  |
|  | Drainage | Inspection signoff | 9 | Asset Completion/ Handover | All drainage systems are functional with no requirement for temporary/bypass systems or new uncontrolled runoff potential.  | To ensure all site drainage systems have not been compromised by works. |  |  |  |  |  |  |
|  | Callout books alarms draft | Call out book draft  | 9 | Asset Completion/ Handover | A proposed response for any new callout alarm that has been introduced by the works.  | Ensure operators have direction to manage new unfamiliar alarms. |  |  |  |  |  |  |
|  | Control Philosophy and FDS update | Control Philosophy and FDS  | 9 | Asset Completion/ Handover | These 2 documents are very key and live documents that should constantly evolve for the duration of the project as requirements and design of the project changes. Changes made in them will subsequently impact the FAT/SAT plans and the development of the SCADA system and automation. | The control philosophy document, the FDS, the FAT/SAT plan and the PLC code should all have their versions synchronized, especially before final submission. |  |  |  |  |  |  |
|  | Maintenance manuals draft | O&M Manual  | 9 | Asset Completion/ Handover | Manual outlining maintenance requirements and procedures for any new equipment installed as part of the works.  | Ensure SEW can appropriately maintain equipment. |  |  |  |  |  |  |
|  | Operating manuals draft | O&M Manual  | 9 | Asset Completion/ Handover | Manual outlining operational requirements and procedures for any new equipment installed as part of the works.  | Ensure SEW can appropriately operate equipment. |  |  |  |  |  |  |
|  | SOPs draft | O&M Manual  | 9 | Asset Completion/ Handover | Procedures for standard operation and isolation. | Ensure SEW can appropriately operate equipment. |  |  |  |  |  |  |
|  | Operator Training | Attendance Register  | 9 | Asset Completion/ Handover | Training for operation of all new equipment and SCADA installed as part of the works. | Ensure SEW can appropriately operate equipment. |  |  |  |  |  |  |
|  | Maintenance Training | Attendance Register | 9 | Asset Completion/ Handover | Training for maintenance of all new equipment installed as part of the works. | Ensure SEW can appropriately maintain equipment. |  |  |  |  |  |  |
|  | Equipment Labels | Inspection Signoff  | 9 | Asset Completion/ Handover | All equipment is appropriately labelled. | Ensure SEW can identify all new assets. |  |  |  |  |  |  |
|  | Warranty/Ongoing Service agreements | O&M Manual  | 9 | Asset Completion/ Handover | Detail of all warranty and ongoing service conditions has been documented. | Ensure SEW can appropriately maintain equipment. |  |  |  |  |  |  |
|  | Critical Spares | Stocktake Register | 9 | Asset Completion/ Handover | All proposed critical spares have been acquired and can be accounted for. | Ensure SEW can appropriately maintain equipment. |  |  |  |  |  |  |
|  | Drawings | Drawing Set | 9 | Asset Completion/ Handover | Redline of all as constructed drawings. | Ensure SEW has appropriate asset information available at all times. |  |  |  |  |  |  |
|  | Asset Information | Asset Register | 10 | Asset Information Handover | Final register for all new assets.  | Ensure SEW has all asset information. |  |  |  |  |  |  |
|  | As constructed drawings | Drawing Register | 10 | Asset Information Handover | All drawings in their native and PDF format. | Ensure SEW has all asset information. |  |  |  |  |  |  |
|  | Engineering documentation | Design Reports | 10 | Asset Information Handover | All relevant design and engineering information that may impact future works. | Ensure SEW has all asset information. |  |  |  |  |  |  |
|  | Maintenance manuals | O&M Manual | 10 | Asset Information Handover | Finalisation of the maintenance manual. | Ensure SEW has all asset information. |  |  |  |  |  |  |
|  | Operating manuals | O&M Manual | 10 | Asset Information Handover | Finalisation of the operation manual. | Ensure SEW has all asset information. |  |  |  |  |  |  |
|  | SOPs  | O&M Manual | 10 | Asset Information Handover | Finalisation of all required SOPs and isolation procedures. | Ensure SEW has all asset information. |  |  |  |  |  |  |
|  | Defects  | Schedule signoff | 11 | Final Project Completion | Detail on the closeout of all defects. | Ensure no defects remain on completion of the project. |  |  |  |  |  |  |

# Appendix G – Outstanding Items (to be rectified prior to *Completion*)

Outstanding items identified at commissioning to be rectified prior to Completion

PROJECT: OUTSTANDING ITEMS REGISTER Update: \_\_\_ / \_\_\_ / \_\_\_\_\_\_

|  |  |  |
| --- | --- | --- |
| **Issue:** | **Action Required:** | **By Whom:** |
| *Meeting Attendees (if applicable):* |
|  |  |  |
|  |  |  |
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|  |
| --- |
| *Comments:* |
| *Distribution:* |

**Outstanding Item List:** Works have been inspected and all outstanding items and actions are identified and listed above Yes / No

**Closeout:** All identified outstanding items have been rectified and no further outstanding items exist. Yes / No

Updated \_\_\_/\_\_\_/\_\_\_\_\_\_

SEW Operations SEW Maintenance

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_\_\_\_ Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_\_\_\_

Pipes & Structures Consortia

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_\_\_\_ Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_\_\_\_

# Appendix H – Outstanding Items (Additional Scope)

Additional items agreed at commissioning outside of scope

PROJECT: OUTSTANDING ITEMS REGISTER Update: \_\_\_ / \_\_\_ / \_\_\_\_\_\_

|  |  |  |  |
| --- | --- | --- | --- |
| **Issue:** | **Action Required:** | **By Whom:** | **By When:** |
| *Meeting Attendees (if applicable):* |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
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|  |
| --- |
| *Comments:* |
| *Distribution:* |

**Outstanding Item List:** Works have been inspected and all outstanding items and actions are identified and listed above Yes / No

**Closeout:** All identified outstanding items have been rectified and no further outstanding items exist. Yes / No

Updated \_\_\_/\_\_\_/\_\_\_\_\_\_

SEW Operations SEW Maintenance

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_\_\_\_ Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_\_\_\_

Pipes & Structures Consortia

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_\_\_\_ Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_\_\_\_

# Appendix I – Completion Certificate

|  |  |  |
| --- | --- | --- |
| **COMPLETION CERTIFICATE** | **Date:** | **[DATE]** |
|  |  |  |
| **Project:** | **[P NO.]** | **Project Name: [PROJECT NAME]** |
| **Program Engineer: [NAME]** |  |

I authorise that all works for the aforementioned project have been completed on [DATE] to the satisfaction of South East Water. This includes rectification of all items requiring attention and supply of all required documentation.

Completion has been agreed to from receipt of this document. Defects liability will commence as of this date and will run for a period of 12 months. South East Water will also authorise the release of retention money collected during the delivery of these works.

Signed for and on behalf of **South East Water** by its authorised representative:

|  |  |  |  |
| --- | --- | --- | --- |
| **Name:** | [NAME] | **Signature:** |  |
| **Date:**  | [DATE] |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
| Signed for and on behalf of **FHDB/ZJW** by its authorised representative: |
| **Name:** | **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **Signature:** | **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| **Date:**  | **\_\_\_ / \_\_\_ / \_\_\_\_\_\_** |  |

# Appendix J – SEW Handover to Operations Group

**Sample**

**INTRODUCTION**

This handover document sets out the requirements to be met for the project to be handed over to operations following installation and/or construction. The Handover to Operations Checklist will be used internally at completion to verify that the delivered asset conforms to the intent of the design and is operationally complete.

**ACCEPTANCE CRITERIA**

**DOCUMENTATION**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Item** | **Description** | **Completable after Commissioning?** | **Checked**  | **Comments** |
|  |  | Yes | No |  |  |
|  | All Project Objectives Met | [ ]  |[x]   |  |
|  | 1 X hard copy (in folder) of all drawings, manuals relating to equipment and tests to be left at site | [ ]  |[x]   |  |
|  | A Structured electronic package containing all as constructed information including drawing (PDF & CAD), manuals and information relating to equipment and testing | [ ]  |[x]   |  |
|  | Electronic Plan Room Updated (as per above) | [ ]  |[x]   |  |
|  | An electronic copy of the O&M manual and a copy of Completion Certificate has been supplied to Maintenance team’s M&E Asset Management Co-ordinator | [ ]  |[x]   |  |
|  | As-built information in SWIFT Including all old plans has been archived and all superseded plans has been removed from site | [ ]  |[x]   |  |
|  | All commissioning check lists complete | [ ]  |[x]   |  |
|  | ITP’s Provided | [ ]  |[x]   |  |
|  | Hydrostatic testing results provided  | [ ]  |[x]   |  |
|  | Inspection checklist reports provided | [ ]  |[x]   |  |
|  | Certificate of electrical safety/Calibration sheet for all instruments provided |  |  |  |  |
|  | Data in GIS | [ ]  |[x]   |  |
|  | Information on Watershed (Photos to be provided separated from Word Document) | [ ]  |[x]   |  |
|  | SCADA page operational | [ ]  |[x]   |  |
|  | Verify completion of Outstanding Item Register identified during Commissioning | [ ]  |[x]   |  |

**WATER MAIN**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Item** | **Description** | **Completable after Commissioning?** | **Checked** | **Comments** |
|  |  | Yes | No |  |  |
|  | Pressure Pipe Is Pressure Tested |[ ] [x]   |  |
|  | Marker Posts are in place |[ ] [x]   |  |
|  | All Isolation Valves are Closed |[ ] [x]   |  |
|  | All Hydrant & Air Valves are Operational |[ ] [x]   |  |
|  | Correct / approved fittings used |[ ] [x]   |  |
|  | Final Walk Through Completed |[ ] [x]   |  |
|  | Pre-Handover Safety Audit undertaken |[ ] [x]   |  |

**GRAVITY MAIN**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Item** | **Description** | **Completable after Commissioning?** | **Checked** | **Comments** |
|  |  | Yes | No |  |  |
|  | Gravity Pipes and Manholes is Vacuum Tested | [ ]  |[x]   |  |
|  | Correct / approved fittings used | [ ]  |[x]   |  |
|  | Concrete Structures in contact with Sewage are Epoxy Coated | [ ]  |[x]   |  |
|  | Final Walk Through Completed | [ ]  |[x]   |  |
|  | Pre-Handover Safety Audit undertaken | [ ]  |[x]   |  |

**RISING MAIN**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Item** | **Description** | **Completable after Commissioning?** | **Checked** | **Comments** |
|  |  | Yes | No |  |  |
|  | Pressure Pipe is Pressure Tested | [ ]  |[x]   |  |
|  | Marker Posts are in Place | [ ]  |[x]   |  |
|  | All Isolation Valves are Closed | [ ]  |[x]   |  |
|  | All Air Valves are Operational | [ ]  |[x]   |  |
|  | Valve Spindle fitted with yellow cap and Sewer Valve Tag | [ ]  |[x]   |  |
|  | Correct / approved fittings used | [ ]  |[x]   |  |
|  | Concrete Structures in Contact with Sewage are Epoxy Coated | [ ]  |[x]   |  |
|  | Scour Points Available | [ ]  |[x]   |  |
|  | Final Walk Through Completed | [ ]  |[x]   |  |
|  | Pre-Handover Safety Audit undertaken | [ ]  |[x]   |  |

**PUMP STATION**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Item** | **Description** | **Completable after Commissioning?** | **Checked** | **Comments** |
|  |  | Yes | No |  |  |
|  | All Project Objectives Met | [ ]  |[x]   |  |
|  | Sewer Pump Station Constructed | [ ]  |[x]   |  |
|  | Mixer Required | [ ]  |[x]   |  |
|  | Gantry Crane | [ ]  |[x]   |  |
|  | Mono Rail | [ ]  |[x]   |  |
|  | Site Lighting Provided | [ ]  |[x]   |  |
|  | Inlet Manhole Epoxy Lined | [ ]  |[x]   |  |
|  | Station Water Supply Required | [ ]  |[x]   |  |
|  | Split Well | [ ]  |[x]   |  |
|  | Circular Well | [ ]  |[x]   |  |
|  | Concrete Slab All One Level and Incorporating Well Covers | [ ]  |[x]   |  |
|  | Emergency Relief Structure (ERS) | [ ]  |[x]   |  |
|  | Static Test Completed - Passed | [ ]  |[x]   |  |
|  | Wet Well Washer Required | [ ]  |[x]   |  |
|  | Rising Main Scour | [ ]  |[x]   |  |
|  | Wet Well - Epoxy Lined | [ ]  |[x]   |  |
|  | Wet Well Eduction/Tankering connection | [ ]  |[x]   |  |
|  | Davit Arm Mounting Points For Retrieval Installed  | [ ]  |[x]   |  |
|  | Outdoor Switchboard | [ ]  |[x]   |  |
|  | Station Mains Power Connected | [ ]  |[x]   |  |
|  | Temporary Power – Generator Auto Operation | [ ]  |[x]   |  |
|  | Pump starting - VSD - Soft Start - DOL - Insert Other | [ ]  |[x]   |  |
|  | Pump operation - Duty Standby - Duty Assist - Insert Other | [ ]  |[x]   |  |
|  | Rising Main And Inlet Sewer To Not Be Under Cabinet | [ ]  |[x]   |  |
|  | Inlet Penstock – In Wet Well Main PS Connection | [ ]  |[x]   |  |
|  | Pump Valves - Isolation | [ ]  |[x]   |  |
|  | Non-Return Valve (Swing/ball Check) | [ ]  |[x]   |  |
|  | Generator Connection Point | [ ]  |[x]   |  |
|  | Standby Generator Installed – Auto Start | [ ]  |[x]   |  |
|  | Generator Paralleling Into Grid | [ ]  |[x]   |  |
|  | Wet Well Covers - Gatic/Turret with Slide Off Area - Aluminium - Insert Other | [ ]  |[x]   |  |
|  | SS Access Ladders In Wet Well | [ ]  |[x]   |  |
|  | Valve Pit - Gatic with Slide Off Area - Aluminium - Insert Other | [ ]  |[x]   |  |
|  | SS Access Ladders between Valves in Valve Pit | [ ]  |[x]   |  |
|  | Safety Grate under Gatic Cover in Wet Well | [ ]  |[x]   |  |
|  | Minimum 4m Wide Access Road | [ ]  |[x]   |  |
|  | Temporary Access Track | [ ]  |[x]   |  |
|  | Hard Stand Area for Tanker And Turning Circle | [ ]  |[x]   |  |
|  | Area Fenced - Chain Mesh - Brush box  -Insert Other | [ ]  |[x]   |  |
|  | Bollards - Wet Well -Valve Pit -Contingency Tank | [ ]  |[x]   |  |
|  | Ventilation (Mechanical / Natural) | [ ]  |[x]   |  |
|  | Odour Control | [ ]  |[x]   |  |
|  | Vent Stack [Insert height] SS/Gal/Painted | [ ]  |[x]   |  |
|  | Station on SCADA &Telemetry | [ ]  |[x]   |  |
|  | Alarms Operational | [ ]  |[x]   |  |
|  | Manual Operation – Operational | [ ]  |[x]   |  |
|  | Auto Operation – Operational  | [ ]  |[x]   |  |

**Treatment Plants**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Item** | **Description** | **Completable after Commissioning?** | **Checked** | **Comments** |
|  |  | Yes | No |  |  |
|  | All 2D and 3D drawing provided and numbered per spec | [ ]  |[x]   |  |
|  | All Pipes and Structures tested | [ ]  |[x]   |  |
|  | All Valves Operational | [ ]  |[x]   |  |
|  | All SCADA & Telemetry operational | [ ]  |[x]   |  |
|  | Training completed for Operation and Maintenance Personnel | [ ]  |[x]   |  |
|  | Concrete Structures In Contact With Sewage Are Epoxy Coated | [ ]  |[x]   |  |
|  | Callout Book Alarm provide | [ ]  |[x]   |  |
|  | Critical Spares Listing and maintenance regime provided | [ ]  |[x]   |  |
|  | Final Walk Through Completed | [ ]  |[x]   |  |
|  | Pre-Handover Safety Audit undertaken | [ ]  |[x]   |  |

# Appendix K – Transfer to Operations Certificate

|  |  |  |
| --- | --- | --- |
| **TRANSFER OF ASSET TO OPERATIONAL PHASE** | **Date:** | **[DATE]** |
|  |  |  |
| **Project:** | **[P NO.]** | **Project Name: [PROJECT NAME]** |
| **Program Engineer: [NAME]** |  |

|  |
| --- |
| **Operating Team:** |
| Choose an item. |

South East Water Asset Creation have accepted the aforementioned asset following an assessment of completed works against documented RFQ requirements, and the requirements of subsequent South East Water generated project instructions. Issuing of the Certificate of Completion initiated a defects liability period as a warranty for completed works. Any defects during this period should be directed to the Program Engineer for rectification.

Details of the defects period are as follows:

**Details of Defects Period:**

|  |  |  |
| --- | --- | --- |
|  **Date of Certificate of Completion:** |  | **End Defects Period:** |
| Click here to enter a date. |  | Click here to enter a date. |

This document represents the transfer of this project from the design and construction phase to the operational phase; incorporating all business as usual asset servicing.

|  |  |  |
| --- | --- | --- |
| **Asset Creation:** | **Maintenance:** | **Operations:** |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| [Name] | [Name] | [Name] |
| [Title] | [Title] | [Title] |
| [Date] | [Date] | [Date] |