V

Waikeria Prison Development - Inspection & Test Plan (ITP)

**Process / Sub - Process:** Combined Services - DCW Tank Farm

**WP Number:** NZ1005-CS-WPK-??

**ITP No.:** AES-NZ1005-STE-ITP-PMT-0028 **Rev: A Date:** 24/05/2023

THIS INSPECTION & TEST PLAN COMPRISES THE FOLLOWING DOCUMENTS AND IS APPROVED FOR USE:

**PART 1** Inspection and Test Plan

**PART 2** Check Sheet

**PART 3** Lot Verification Checklist

**Reference Documentation:**

**Project Specifications:**

**Drawings:**

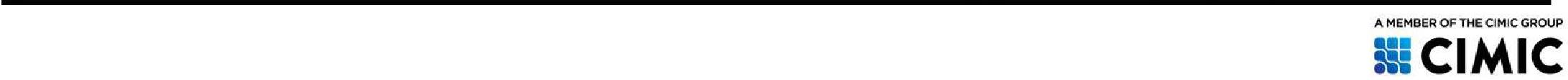
Standard: AS/NZS 3500.1:2018

NZ DRINKING WATER STANDARD 2005 (REVISED 2018)

NZT5007-STE-HSSP-0001

AES-NZ1005-TNK-SHD-MEC-0001- TO 0004 , AES-NZ1005-TNK-SHD-COS-0004

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| --- | --- | --- |
| **Prepared by:** AE Smith QA Assistance | **AE Smith** | **(date)** |
| **Reviewed by:** CPB Engineer | **(signature)** | **(date)** |
| **Reviewed by:** CPB QA Rep | **(signature)** | **(date)** |
| **Reviewed by:** CPB Completions Rep | **(signature)** | **(date)** |
| **Reviewed by:** Consultant  (If applicable. N/A for Architects) | **(signature)** | **(date)** |
| **Approved by:** CPB SPE or higher | **(signature)** | **(date)** |

**Title:** WPD Inspection and Test Plan - Template

**ID:** MSID-298162371-1209 Version: 3.0 **Date Published:** 20/08/2020 Waikeria Prison Development / WPDP - Uncontrolled Document when Printed Project Specific Document

|  |  |
| --- | --- |
| **Contract** | Tank Farm – DCW |
| **Document Title** | Tank Farm- DCW Plant |
| **Document No.** | AES-NZ1005-STE-ITP-PMT-0028 |
| **Process** | Tank Farm Inspection and Testing |

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| --- | --- | --- | --- | --- |
| **Action** | **Position** | **Name** | **Signature** | **Date** |
| **Prepared by** | AE Smith QA Assistance |  |  |  |
| **Reviewed by** | AE Smith Site Manager |  |  |  |
| **Approved by** | AE Smith Registered Plumber |  |  |  |
| **Reviewed by** | CPB Quality Team |  |  |  |
| **Approved by** | CPB Services Manger |  |  |  |
| **Accepted by** | CPB Engineer |  |  |  |

## SCOPE OF WORKS:

This scope of works comprises the provision of the equipment & documentation for the DCW emergency storage and treatment system;

Quality records, test results, reports and measurements

## REFERENCED DOCUMENTATION:

**Specifications:**

|  |  |  |  |
| --- | --- | --- | --- |
|  | NZT5007-STE-HSSP-0001 |  | Hydraulic Services Specification |
|  | AS/NZS 3500.1:2018 |  | Pressure Piping |
|  | DWSNZ-2005:2018 |  | Drinking-water Standards for New Zealand 2005 Revised 2018 |
|  | CPB-NZ1005-STE-SOW-PMT-0023 |  | Execution – Works completion tests |

**Drawings:**

|  |  |  |  |
| --- | --- | --- | --- |
|  | AES-NZ1005-TNK-SHD-COS-0004  AES-NZ1005-TNK-SHD-MEC-0001  AES-NZ1005-TNK-SHD-MEC-0002  AES-NZ1005-TNK-SHD-MEC-0003  AES-NZ1005-TNK-SHD-MEC-0004  AES-NZ1005-TNK-SHD-ELE-0002 |  | TANK FARM - HDPE MECHANICAL PLANTROOM EQUIPMENT LAYOUT  TANK FARM - HDPE MECHANICAL PLANTROOM LAYOUT SHEET 1 OF 4  TANK FARM - HDPE MECHANICAL PLANTROOM LAYOUT SHEET 2 OF 4  TANK FARM - HDPE MECHANICAL PLANTROOM LAYOUT SHEET 3 OF 4  TANK FARM - HDPE MECHANICAL PLANTROOM LAYOUT SHEET 4 OF 4  TANK FARM – HYDRAULIC SERVICES SWITCHBOARD |

**Associated documentation:**

|  |  |  |  |
| --- | --- | --- | --- |
|  | AES-NZ1005-STE-CMP-HYD-0001  AES-NZ1005-STE-CMP-HYD-0004  AES-NZ1005-TNK-DSH-SEI-0001  AES-NZ1005-STE-DSH-SEI-0002  AES-NZ1005-STE-ITP-PMT-0004  AES-NZ1005-STE-ITP-PMT-0024  AEC-NZT5007-TNKHSDG-1006 |  | In-Ground DWC & Storage Tank Flushing & Disinfecting Plan  Tank Farm Commissioning Plan  250MM ABOVE GROUND SIESMIC TANK FARM  MODFRAME support system  HDPE installation  Hydrostatic pressure testing  TANK FARM – Potable CW schematic |

## DEFINITION OF TERMS:

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| --- | --- |
| Conformance Record | Record submitted by AE Smith to CPB of the evidence pertaining to each lot which demonstrates that the specified requirements for that lot have been met |
| Hold Point | An identified point in a process past which AE Smith shall not proceed without a direction from CPB |
| Lot | A portion of material or a section of the Works which has been constructed and/or supplied under essentially uniform conditions and contains material of essentially uniform quality, or  A single finished item of work which includes several materials and/or work types (e.g. a pit in place) |
| Witness Point | An identified point in a construction process at which an activity is observed |

## INSPECTION AND TEST PLAN:

Responsible: SE-AE Smith / Downer Site Engineer, SUP-AE Smith / Downer Supervisor, SRV-Surveyor Method: DR-Document review, FM-Field measure, FT-Field test, M-Monitoring, S-Survey, V-Visual

Record: FTR-Field test report, LTR-Laboratory test report, TDS-Technical data sheet, QCC-Quality control checklist

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| **#** | **Inspection and Test Control Point** | **Resp.** | **Referenced Documentation** | **Conformance Criteria** | **Method** | **Frequency** | **Ctrl Point** | | **Records** |
| **WP** | **HP** |
| 1.0 MATERIAL COMPLIANCE | | | | | | | | | |
| 1.1 | RDM & Consent Approval | CPB | RDM Tracker Consent Tracker | RDM approval tracker Consent approval tracker | Document Review | By Building/ Site Wide |  | CPB | Receipt of Approval by Client |
| 1.2 | General | SE | NZT5007-STE-HSSP-0001 | For all materials, a certificate of compliance shall be provided to the Client Rep. before the materials are incorporated into the works.   * Specifications & QA Documents Approved * Drawings are confirmed * Equipment fit for purpose | DR | Each material |  | CPB | Aconex approval  Incoming Inspection Checklists  Drawing Register |

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| **WP** | **HP** |
| 2.0 Installation | | | | | | | | | |
| 2.1 | HDPE Support system & seismic Loops | SUP | AES-NZ1005-TNK-DSH-SEI-0001  AES-NZ1005-STE-DSH-SEI-0002 | Check the piping support system has been installed as per the Modframe design | V | Once |  |  | Check Sheet |
| 2.2 | HDPE installation and testing | SUP | AES-NZ1005-STE-ITP-PMT-004 | Refer to AES-NZ1005-STE-ITP-PMT-004 for the installation and testing of HDPE pipework | V | Once | AE Smith | CPB | FRT  +weld test reports  +QCC (refer site wide testing check lists) |
| 2.3 | Confirm DCW flushing and disinfection complete | SUP | AES-NZ1005-STE-CMP-HYD-0001  NZT5007-STE-HSSP-0001 | Completed with the flushing and disinfection of the site wide ring main  Refer to the Flushing and Disinfection commissioning plan | V + DR | Once | AE Smith | CPB | CMP  +  Check Sheet |
| 2.4 | Confirm Hydrostatic pressure testing complete |  | AES-NZ1005-STE-ITP-PMT-0024 | Refer to AES-NZ1005-STE-ITP-PMT-0024 for Hydrostatic pressure testing | V+M | Once | AE  Smith | AE  Smith / CPB / IR | Check Sheet  +  Photos |
| 2.5 | Electrical Installation Complete | SUP | AEC-NZ1005-STE-SPC-ELE-  0002  AS/NZS 3000:2007  AES-NZ1005-TNK-SHD-ELE-0002 | HSSB installed.  Mains terminated  Feeds run to filter controls  Feeds run to pump drive board  Feeds run to chlorine dosing units  Labelled & Tested | V + FTR | Once | Ae  Smith | CPB | Check Sheet  +  COC |
| 2.6 | Chlorine dosing Install & commissioning (Include PRVs) | SUP | AES-NZ1005-STE-CMP-HYD-0004 Tank Farm Commissioning Plan  NZT5007-STE-HSSP-0001  AS/NZS 3000:2007 | 1. Access is suitable to service dosing equipment 2. All electrical checks are complete and permanent power is on 3. BMS connection is complete by others 4. Pipe work checks are complete 5. Isolation is provided to enable either system to be maintained seperately without affecting the operation of the other 6. Equipment mountings are complete 7. Pressure reducing valves are installed in the correct flow direction and set to desired pressure 8. Dosing control sensors are installed. 9. Non return valves are installed in the correct flow direction 10. Dosing specalist to commission and provide report 11. BMS monitoring is commissioned 12. Confirm treated water meets the requirements of the NZ drinking water standard. | V | Once | AE Smith |  | Check Sheet +  FTR  +  LTR  +  CMP Report |
| 2.7 | Domestic Cold water Pumps & Drives | SUP | AES-NZ1005-STE-CMP-HYD-0004 Tank Farm Commissioning Plan  NZT5007-STE-HSSP-0001  AS/NZS 3000:2007 | 1. Confirm pumps & drives are as approved submission. 2. Installation is as per shop drawings. 3. Motor drive board installed & wiring to pumps complete. 4. All electrical checks are complete and permanent power is on 5. Pipe work checks are complete 6. Pump mounting and vibration pads and seismic restraints are complete 7. Non return valves are installed in the correct flow direction 8. Isolation is provided to allow maintenance of any individual pump 9. Grundfos to commission and provide report 10. BMS monitoring is commissioned | V  +  FT | Once | AE Smith |  | Check Sheet +  FTR  +  CMP Report |
| 2.8 | Primary and secondary Filtration systems | SUP | AES-NZ1005-STE-CMP-HYD-0004 Tank Farm Commissioning Plan  NZT5007-STE-HSSP-0001 | 1. Confirm filters are as approved submission 2. Installation is as per approved drawings 3. Pipe work connection checks are complete and without leaks 4. Mountings are complete 5. Non return valves are installed in the correct flow direction 6. Isolation is provided to allow maintenance of any filter 7. Backflow drains provided 8. Southland Filters to test and commission filters and provide report 9. BMS monitoring is commissioned | V  +  FT | Once | AE Smith |  | Check Sheet +  M  +  FTR  +  CMP Report |
| 2.9 | Motorised control valves | SUP | NZT5007-STE-HSSP-0001 | 1. Confirm valves are as approved submission 2. Installation is as per approved drawings 3. All electrical checks are complete and permanent power is on 4. Pipe work connection checks are complete and without leak 5. BMS control is opertional- check motorised valve positions in normal and emergency operating modes 6. Plantroom bypass Button is operational – check motorised valve positions in activated and deactivated modes. 7. Check button is clearly labelled. | V | Once | AE Smith |  | Check Sheet |
| 2.10 | Potable Water Tank Level Control valves | SUP | NZT5007-STE-HSSP-0001 | 1. Confirm control valves are as approved submission 2. Installation is as per design 3. Float valves are adjusted to to ensure overflow state does not occur | V | Once | AE Smith |  | Check  Sheet |
| 2.11 | Alarm indication on and tank level montoring on BMS | SUP | NZT5007-STE-HSSP-0001 | 1. Tank level monitors are installed as specified 2. Tank level monitors are connected to the BMS by others 3. Verify BMS level output | V | Once | AE Smith |  | Check Sheet |
| 2.12 | Back flow preventors | SUP | AS/NZS 3500.1:2018 | 1. Confirm backflow preventors are as approved submission 2. Installed as per design 3. Pipe work connections are complete and without leak 4. Check flow direction 5. Check strainers are clear 6. IQP test | V  +  DR  +  FTR | Once | AE Smith |  | Check Sheet  +  IQP - FTR |
| 2.13 | Wash bay supply & RPZ | SUP | AES-NZ1005-STE-ITP-PMT-004 AES-NZ1005-STE-ITP-PMT-027  AS/NZS 3500.1:2018 | 1. Confirm pipe work has been installed, tested, flushed and disinfected as per items 2.2, 2.3 and 2.4 2. Confirm RPZ Back flow preventor has been installed tested as per item 2.11 | V  +  DR | Once | AE Smith |  | Check Sheet |
| 2.14 | “As built” drawings | SUP | NZT5007-STE-HSSP-0001 | 1. Mark up construction drawings with as constructed changes. | V | Once | AE Smith |  | Check sheet |

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| 3.0 Completion Testing |

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| **WP** | **HP** |
| 3.1 | Works Completion Test  WCT 54 | SUP | Schedule 11  WCT 54 (e)(f) | The EIS for the New Waikeria Facility have been installed in accordance with the FDD. This includes EIS testing and satisfactory commissioning (including interfaces with other services) has been completed, recorded and compliance results presented to the Independent Reviewer for the following systems:   1. general power; 2. earthing system; | FTR  +  V  +  DR | Once | AE Smith  /  LJE | AE Smith /  CPB  /  IR | Check  Sheet  +  QA documents  +  COC |
| 3.2 | Works Completion Test  WCT 68 | SUP | Schedule 11  WCT 68 (a) | PDS testing and satisfactory commissioning (including interfaces with other services) has been completed, recorded and compliance results presented to the Independent Reviewer for the –pressure test all cold and domestic hot water pipe lines,operation of all valves, backflow devices, pressure devices;BMS connections to building management systems;tank control systems testing; andwater metering testing. *Independant reviewer to:*  *(i) Attend and witness a selection of PDS commissioning at the Independent Reviewer’s discretion (Contractor to invite Independent Reviewer to all); and*  *(ii) Receive and review* | DR  +  V | Each lot | AE Smith | AE Smith / CPB /  IR | Check  Sheet  QA Documents  IQP certificates |
| 3.3 | Works Completion Test  WCT 80  Potable Water storage tank and Pump | SUP | Schedule 11  WCT 80 | *Demonstrate operation of potable water storage tanks and pumps, providing onsite potable water for a minimum of 72 hours at normal demand in the event that mains water supply to the site is compromised.*  *Activate emergency supply remotely with the BMS*  ***Independent Reviewer to***   1. *Attend and witness verification testing.* 2. *Receive and review documentary evidence of quantity.* | V+M+FT | Once | AE  Smith | AE  Smith / CPB / IR | Check  Sheet  QA Documents |
| 3.4 | Works Completion Test  WCT 81  Tanker connection point | SUP | Schedule 11  WCT 81 | *Verify the tanker connection points to the potable water storage tanks are provided.*  ***Independent reviewer to visually verify*** | V+M | Once | AE  Smith | AE  Smith / CPB / IR | Check  Sheet |
| 3.5 | Works Completion Test  WCT 82  Loss of mains. | SUP | Schedule 11  WCT 82 | *Simulate loss of mains supply by isolating the incoming mains supply.*  *Verify The potable water pump operates to supply water in the event of loss of water supply from the site system. The test will evidence that the valve from the storage tank opens, the potable water pump starts up on generator power, and the pumps ramps up and down to maintain a pressurised potable water main to the New Waikeria Facility Site. Outlets within the New Waikeria Facility Site will be opened to simulate water consumption on the New Waikeria Facility Site.*  ***Independent reviewer to attend and witness*** | V+M+FT | Once | AE  Smith | AE  Smith / CPB / IR | Check Sheet |
| 4.0 COMPLETION RECORDS | | | | | | | | | |
| 4.1 | Testing Results | SUP | NZT5007-STE-HSSP-0001 AS/NZS 3500.1:2018 | All pipework pressure test reports shall be provided | DR | Each lot | AE  Smith |  | Check Sheet |
| 4.2 | Dosing system | SUP | NZT5007-STE-HSSP-0001  DWSNZ-2005:2018 | Dosing testing and commissioning report shall be provided.  Water testing results shall be provided | DR | Once | AE Smith | AE  Smith / CPB / IR | Check Sheet,  + FTR  +LTR |
| 4.3 | DCW Pressure Pump set | SUP | NZT5007-STE-HSSP-0001 | DCW Pressure pumpset testing and commissioning results shall be provided | DR | Once | AE Smith |  | Check Sheet +FTR |
| 4.4 | Emergency water supply activation | SUP | NZT5007-STE-HSSP-0001 | Verification of emegency water supply activation | DR | Once | AE Smith  /  HWL | CPB | Check Sheet |
| 4.5 | Manual Bypass Button | SUP | AEC-NZT5007-TNKHSDG-1006 | Verification of mains supply by passing treatment system by manual activation of plantroom Bypass button | DR | Once | AE Smith |  | Check Sheet |
| 4.6 | Backflow Preventors | SUP | AS/NZS 3500.1:2018 | Backflow testing | FT | Once | AE Smith |  | Check Sheet  +  IQP Test report / Certificate |

Inspection and Test Plan Lot Verification Checklist

PART 3 OF INSPECTION & TEST PLAN

|  |  |
| --- | --- |
| **Lot Number:** |  |
| **Lot Description:** | Tank Farm |

*Note: Item / # records to be filled out by CPB Engineer - minimum is to match ITP, extra documents can be added*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No. Item**  **ITP / Quality Control Checklists** | | **Number of Records Required** | **LOT Subfolder No:** | **Remarks (initial / date)** |
| 1.0 |  |  |  |  |
| 1.1 |  |  |  |  |
| **Survey Results** | | | | |
| 2.0 |  |  |  |  |
| 2.1 |  |  |  |  |
| **Test Results** | | | | |
| 3.0 |  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Conformance of Work Statement *(if required ie if some docs not signed*):**  The works for this construction lot conforms in respects to the ITP. | | | |
| **Name:** | **Signed:** | ***Subcontractor:*** | **Date:** |
| **Conformance of Work Statement:**  The works for this construction lot conforms in respects to the ITP. | | | |
| **Name:** | **Signed:** | ***Foreman/Supervisor*** | **Date:** |
| **Conformance / Verification of Construction Lot Statement:**  This closed lot conforms in all respects with the standards and requirements specified in the Contract Documents. The lot verification records are complete and attached. Any non-conformances have been dispositioned in accordance with the contract requirements. | | | |
| **Name:** | **Signed:** | ***Project Engineer/Senior Project Engineer*** | **Date:** |
| **Quality Review:** | | | |
| **Name:** | **Signed:** | ***Quality Manager / Rep.*** | Date: |



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