**Northern Operational Region - Register of changes to HACCP plans, procedures or related documents**

| # | Document Ref | WTP/System | HACCP Plan/Procedure | Section/Para | Brief description / justification of change | Additional Comments | Originator | Date |
|---|---|---|---|---|---|---|---|---|
| 144 | REG-00385 | Ewen Maddock WTP | HACCP Risk Register | ALL | Reviewed Unmitigated and Mitigate Risk Assessment with HACCP Team in preparation for restart.<br>Updated all process names to align with HACCP Flow Diagram, HACCP Wall Chart Procedure and HACCP Plan. Included underdosing of fluoride line. | D17/73063 | KM | Jun-17 |
| 145 | GDE-00046 | Ewen Maddock WTP | Verification Sample Point Guide | All | Removed reference to SAWCS and added PASS requirements. | N/A | KM | Jul-17 |
| 146 | PLN-00031 | Ewen Maddock WTP | Operational Monitoring Plan | All | Reviewed and updated testing for all process steps. Aligned process names with other HACCP documentation. | N/A | KM | Jul-17 |
| 147 | PLN-00053 | Ewen Maddock WTP | HACCP Plan | ALL | Streamlined: Increase in Scope of HACCP Plan document to include 'site specific details of each HACCP CCP' and Validation documentation' as part of the removal of duplication from the CCP procedures and integration of remaining information from the CCP procedures into the HACCP plan where appropriate. Updates to HACCP Team member position titles used and expectations rather than name/position/expertise/contact. Flow Diagrams updated.<br>Updated all process names to align with Risk Assessment and Wall Chart Procedure.<br>Reviewed whole of document and updated details as appropriate.<br>Added paragraph on the use of Dynamic C.t. | N/A | KM | Jul-17 |
| 148 | PRO-02184 | Ewen Maddock WTP | HACCP Plan Wall Chart Procedure | All | Removed Hazards and Preventive Measures columns. Split Action Limit and Critical Limit corrective actions into separate columns. Reviewed and updated all operational targets, action limits and critical limits to ensure alignment with SCADA and to incorporate recent internal audit findings. Document number changed from REG to PRO.<br>Added Dynamic C.t. limits. | N/A | KM | Jul-17 |
| 149 | PRO-00736 | Ewen Maddock WTP | Raw Water CCP Procedure | N/A | Procedure to become OBSELETE based on duplication and move to streamlining procedures. Relevant information from this procedure was transferred to the HACCP plan or is already duplicated in the HACCP Operational Monitoring Plan and Wall Chart | Procedure archived in Qpulse | KM | Jul-17 |
| 150 | PRO-00734 | Ewen Maddock WTP | Clarification CCP Procedure | N/A | Procedure to become OBSELETE based on duplication and move to streamlining procedures. Relevant information from this procedure was transferred to the HACCP plan or is already duplicated in the HACCP Operational Monitoring Plan and Wall Chart | Procedure archived in Qpulse | KM | Jul-17 |
| 151 | PRO-00733 | Ewen Maddock WTP | Filtration CCP Procedure | N/A | Procedure to become OBSELETE based on duplication and move to streamlining procedures. Relevant information from this procedure was transferred to the HACCP plan or is already duplicated in the HACCP Operational Monitoring Plan and Wall Chart | Procedure archived in Qpulse | KM | Jul-17 |
| 152 | PRO-00737 | Ewen Maddock WTP | Disinfection CCP Procedure | N/A | Procedure to become OBSELETE based on duplication and move to streamlining procedures. Relevant information from this procedure was transferred to the HACCP plan or is already duplicated in the HACCP Operational Monitoring Plan and Wall Chart | Procedure archived in Qpulse | KM | Jul-17 |
| 153 | PRO-000586 | Ewen Maddock WTP | Fluoridation CCP Procedure | N/A | Procedure to become OBSELETE based on duplication and move to streamlining procedures. Relevant information from this procedure was transferred to the HACCP plan or is already duplicated in the HACCP Operational Monitoring Plan and Wall Chart | Procedure archived in Qpulse | KM | Jul-17 |
| 154 | PRO-00740 | Ewen Maddock WTP | Intermediate Ozone CCP Procedure | N/A | Procedure to become OBSELETE based on duplication and move to streamlining procedures. Relevant information from this procedure was transferred to the HACCP plan or is already duplicated in the HACCP Operational Monitoring Plan and Wall Chart | Procedure archived in Qpulse | KM | Jul-17 |
| 155 | PRO-00739 | Ewen Maddock WTP | BAC QCP Procedure | N/A | Procedure to become OBSELETE based on duplication and move to streamlining procedures. Relevant information from this procedure was transferred to the HACCP plan or is already duplicated in the HACCP Operational Monitoring Plan and Wall Chart | Procedure archived in Qpulse | KM | Jul-17 |
| 156 | PRO-00741 | Ewen Maddock WTP | Manganese QCP Procedure | N/A | Procedure to become OBSELETE based on duplication and move to streamlining procedures. Relevant information from this procedure was transferred to the HACCP plan or is already duplicated in the HACCP Operational Monitoring Plan and Wall Chart | Procedure archived in Qpulse | KM | Jul-17 |

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| # | Document Ref | WTP/System | HACCP Plan/Procedure | Section/Para | Brief description / justification of change | Additional Comments | Originator | Date |
|---|---|---|---|---|---|---|---|---|
| 157 | PRO-01160 | Ewen Maddock WTP | Bulk Supply Monitoring Point Procedure | N/A | Procedure to become OBSELETE based on duplication and move to streamlining procedures. Relevant information from this procedure was transferred to the HACCP plan or is already duplicated in the HACCP Operational Monitoring Plan and Wall Chart | Procedure archived in Qpulse | KM | Jul-17 |
| 158 | PRO-02074 | Noosa WTP | HACCP Plan Wall Chart Procedure | Disinfection | Changes to the critical limits to facilitate real time ct and remove the requirement for ozone as critical limit for virus log reduction. | changed critical limit for ozone to: Ozonated Water Intermediate Ozone not operational for >48 hours introduced real time ct critical limit Real Time Ct <10 mg.min/L for >10 minutes and action limit <10 mgmin/L for > 2 minutes | NE | 5/08/2017 |
| 159 | PRO-00198 | Noosa WTP | HACCP Plan | Disinfection | Introduction of real time Ct into HACCP plan to reflect introduction into PLC. Uses real time Ct in place of worst case estimate as critical limit, as per the validation standard requirements. Ozone was prior to this a CCP ofr virus log reduction.<br><br>Since it is now demonstrated that the plant can achieve the required real time Ct of > 10 mgmin/L, the requirement for ozone to be used as a CCP for virus log reduction has been removed. Ozone has moved to a quality control point and now used soley for organics reduction (i.e. taste and odour) and feeding the biological activated carbon filters (BACs). This change has also been reflected in the wall chart (see #158 - PRO-02074). | Inserted into page 21: To achieve C.t 10 mg.min/L, realtime Ct monitoring and interlocks must be operational. The RealTime Ct monitoring calculates the T10 time and multiplies the free chlorine concentration (from the outlet) to evaluate the free chlorine contact time in real time. This provides assurance that the required 10mg.min/L is met which is required to achieve the log challenge presented by the raw water. Updated HACCP flow diagram on page 22. | NE | 5/08/2017 |
| 160 | REG-00542 | Kilcoy WTP | HACCP Plan Wall Chart Procedure | Disinfection | Updates to facilitate the introduction of rteal time Ct into the HACCP system.<br>Consequently, dosed filtered water flow limits have been removed (unnecassary)<br>critical pH limits on the inlet and outlet have changed to action limits<br>The treated water flow critical limit has changed to an to an action limit<br>The 4 log reduction target was removed (as it was no longer valid under the new methodology) | | NE | 15/01/2018 |
| 161 | REG-00542 | Kilcoy WTP | HACCP Plan Wall Chart Procedure | UV Irradiation | added uv dose of 5.8 mj/cm^2 as a target and action, since this is what the plant was capable of achieving (2 log protozoan under the HBT manual) and 2.5 as a critical (eg 1 log under the HBT). | Given this is a category 4 site, and 3.5 log can be achieved by the processes up to the UV, 2 log is enough to cover the log reduction requirements, and with the DAF running the plant achieves 4.5 lrv without the UV. | NE | 15/01/2018 |

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| # | Document Ref | WTP/System | HACCP Plan/Procedure | Section/Para | Brief description / justification of change | Additional Comments | Originator | Date |
|---|---|---|---|---|---|---|---|---|
| 162 | PLN-00267 | Kilcoy WTP | HACCP Plan | Section 2.1 | Expanded upon the system descriptions in order to facilitate the obsoletion of the CCP procedures. | | NE | 15/01/2018 |
| 163 | PLN-00267 | Kilcoy WTP | HACCP Plan | Section 2.1 | Introduction of real time Ct into HACCP plan to reflect introduction into PLC. Uses real time Ct in place of worst case estimate as critical limit, as per the validation standard requirements | | NE | 15/01/2018 |
| 164 | PLN-00267 | Kilcoy WTP | HACCP Plan | Section 2.1 | Introduced the Health Based Target Assessment | | NE | 15/01/2018 |
| 165 | PLN-00267 | Kilcoy WTP | HACCP Plan | Section 4.1 | removed obsolete references | | NE | 15/01/2018 |
| 166 | PLN-00267 | Kilcoy WTP | HACCP Plan | Section 4.2 (old 4.3) | Listed hydrochloric acid and supplier (used for cleaning) | | NE | 15/01/2018 |
| 167 | PLN-00050 | Kenilworth WTP | HACCP Plan | Associated Documents | Removed reference to obsolete CCP procedures | | NE | 16/01/2018 |
| 168 | PLN-00050 | Kenilworth WTP | HACCP Plan | Section 2.1.3.1 | Updated HBT inference to include current philosophy (i.e. removed reference to tier 2 assessment, inferred HBT Cat 4 to Cat 3 via river bank filtratioin, as per instructions from technical specialists) | | NE | 16/01/2018 |
| 169 | PLN-00050 | Kenilworth WTP | HACCP Plan | Section 2.1.3.4 | Updated Ct calculation to include an actual chlorine concentration<br>Introduction of real time Ct into HACCP plan to reflect introduction into PLC. Uses real time Ct in place of worst case estimate as critical limit, as per the validation standard requirements | | NE | 16/01/2018 |
| 170 | PRO-01930 | Kenilworth WTP | HACCP Plan Wall Chart Procedure | Disinfection | Inclusion of Real Time Ct target, action and critical limits. | | NE | 16/01/2018 |
| 171 | PRO-00084 | Kirkleagh WTP | HACCP Plan | Section 2.1.1 | Updated HACCP team members | | NE | 16/01/2018 |
| 172 | PRO-00084 | Kirkleagh WTP | HACCP Plan | Section 2.1.3 | Added HBT assessment to System Overview<br>Added system information from CCP procedures<br>Added free chlorine Ct calculation for 10mg.min/L<br>Updated operational challenges - removed reference to not having online analysers on certain CCPs | | NE | 16/01/2018 |
| 173 | REG-00158 | Kirkleagh WTP | HACCP Plan Wall Chart | All Steps | Split corrective actions into Action Limit and Critical Limit columns<br>Removed raw water turbidity critical limit<br>Adjusted free chlorine and pH critical limits in order to better accommodate Ct calculation added reservoir level critical limit | | NE | 16/01/2018 |
| 174 | PLN-00045 | Landers Shute WTP | HACCP Plan | Section 2.1.3.4 | Removal of description of old pre-lime system. Addition of description of new pre-lime (saturator) system. | | NE | 27/03/2018 |
| 175 | PLN-00045 | Landers Shute WTP | HACCP Plan | Section 2.1.3.13 | addition: post lime treated water ph adjustment | | NE | 27/03/2018 |
| 176 | PLN-00045 | Landers Shute WTP | HACCP Plan | Section 2.1.3.11 | addition of dynamic ct | | NE | 27/03/2018 |
| 177 | PLN-00045 | Landers Shute WTP | HACCP Plan | Section 2 | Recalculated Ct requirements. | | NE | 5/07/2018 |
| 178 | PRO-00355 | North Pine WTP | HACCP Plan | System Description | Update to include brief functional description of the caustic system. | | NE | 5/07/2018 |
| 179 | PLN-00267 | Kilcoy WTP | HACCP Plan | Throughout | Referenced the new risk assessment, removed reference to old risk assessment. Various typographical corrections | | NE | 10/07/2018 |
| 180 | PLN-00046 | Image Flat WTP | HACCP Plan | Disinfection | Recalculated Ct requirements based upon updated information regarding Reservoir 1 volume. Updated Section 5 to reference REG-000250 | | NE | 30/07/2018 |
| 181 | PLN-00084 | Kirkleagh WTP | HACCP Plan | Throughout | Referenced the new risk assessment, removed reference to old risk assessment. Various typographical corrections. Updated Section 5 to reference REG-000250 | | NE | 25/07/2018 |
| 182 | PLN-00066 | Dayboro WTP | HACCP Plan | Section 5 | Updated Section 5 to reference REG-000250 | | NE | 24/07/2018 |
| 183 | PLN-00051 | North Pine WTP | HACCP Plan | Section 5 | Updated Section 5 to reference REG-000250 | | NE | 24/07/2018 |
| 184 | PLN-00082 | Jimna WTP | HACCP Plan | Throughout | Referenced the new risk assessment, removed reference to old risk assessment. Various typographical corrections. Updated Section 5 to reference REG-000250. Update to process description. Recalculation of Ct based on true instantaneous flow. True instantaneous flow updated to reflect what is achievable. Updated sections to match HACCP templates. | | NE | 30/07/2018 |
| 185 | pln-00198 | Noosa WTP | HACCP Plan | Throughout | Typographical corrections.  Updated Section 5 to reference REG-000250 | | ne | 1/05/2018 |
| 186 | PLN-00050 | Kenilworth WTP | HACCP Plan | Section 5 | Updated Section 5 to reference REG-000250 | | ne | 31/07/2018 |
| 187 | PLN-00053 | Ewen Maddock WTP | haccp plan | Disinfection | Update to include dynamic ct.  Updated Section 5 to reference REG-000250. removed references to old RA. Added references to new RA. | | ne | 3/07/2018 |

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| # | Document Ref | WTP/System | HACCP Plan/Procedure | Section/Para | Brief description / justification of change | Additional Comments | Originator | Date |
|---|---|---|---|---|---|---|---|---|
| 188 | PLN-00045 | Landers Shute WTP | HACCP Plan | Section 5<br>Disinfection<br>Plant Overview | Updated Section 5 to reference REG-000250<br>Updated Ct calculations for when Dynamic Ct is unavailable<br>Update plant aerial photo<br>Updated schematic to include centrifuges | | ne | 24/07/2018 |
| | PLN-00046 | Image Flat WTP | HACCP Plan | Section 5 update | Corrected minor typographical errors | | ne | 31/07/2018 |
| | PLN-00267 | Kilcoy WTP | HACCP Plan | Section 5 update | Corrected minor typographical errors | | ne | 31/07/2018 |
| | PLN-00198 | Noosa WTP | HACCP Plan | Section 5 update | Corrected minor typographical errors | | ne | 31/07/2018 |
| | PLN-00050 | Kenilworth WTP | HACCP Plan | Section 5 update | Corrected minor typographical errors | | ne | 31/07/2018 |
| | PLN-00053 | Ewen Maddock WTP | HACCP Plan | Section 5 update | Corrected minor typographical errors | | ne | 31/07/2018 |
| | PRO-01930 | Kenilworth WTP | HACCP Plan Wall Chart Procedure | | the time for the inlet free chlorine from 15 min to 30 min. This will be fine as long as the outlet chlorine ccp and real time ct ccps are still met. | | ne | 29/10/2018 |
| | PLN-00050 | Kenilworth WTP | HACCP Plan | Throughout | Introduction of aluminium sulphate for seeding the filters in the operational challenges section and aluminium sulphate to the list of approved chemicals<br>Change of validation around filtration (we cant claim log reduction on green sand filters)<br>Introduction of text extending the validation on real time ct, and the indication that if real time ct is met, then the critical limit for outlet free chlorine risk is reduced giving an allowance of 30 minutes under the critical limit at the outlet if the real time ct is still met. | | ne | 29/10/2018 |
| | PRO-01780 | Dayboro and Kenilworth W | Supporting Procedure | Throughout | Added text: Seed the filter with a small quantity of aluminium sulphate to speed up the process | | ne | 1/11/2018 |
| | PLN-00053 | Ewen Maddock WTP | HACCP Plan | Section 2.1.3 | change of two words in section 2.1.3.13 from Sodium hypochlorite to Chlorine gas | | ne | 20/11/2018 |
| | PLN-00045 | Landers Shute WTP | HACCP Plan | Section 3.2 | update to landers HACCP plan addressing the findings from audit RW 12498 (specifically – adding limits directly into validation table). | | ne | 17/12/2018 |
| | PRO-02108 | North Pine WTP | HACCP Plan | Critical Limit for Res Level | The only change is the critical limit for the treated water reservoir level is now given in absolute terms instead of percentage.<br><br>This limit ensures Ct is met even during times when a single cell is online. | | ne | 9/01/2019 |
| | PLN-00031 | Ewen Maddock WTP | Operational Monitoring Plan | Throughout | removed DO from the program | | ne | 14/01/2019 |
| | PRO-02107 | Landers Shute WTP | HACCP Plan Wall Chart Procedure | Disinfection | pH dosed filtered water and treated water target adjusted to 7.3 to better reflect operational capability | | ne | 17/01/2019 |
| | PLN-00066 | Dayboro WTP | HACCP Plan | Schematic update | This change is in response to Risk Wizard Action 8364. Ensure that the HACCP schematic reflects reality. Some questions around location of chlorine monitoring<br><br>There was some discrepancies identified on the schematic diagram (the prefilter chlorine is monitored via grab, not online, and the raw ph grab samples are taken prior to dosing, not after) | | ne | 17/01/2019 |
| | PRO-02108 | North Pine WTP | HACCP Plan Wall Chart Procedure | Disinfection | corrected reservoir level description | | ne | 21/01/2019 |
| | PRO-02225 | Jimna WTP | HACCP Plan Wall Chart Procedure | Disinfection | This update highlights the limit for the treated water reservoir (<30% for >15 min) as per the ct calculations in the HACCP plan | | ne | 19/03/2019 |
| | PLN-00046 | Image Flat WTP | HACCP Plan | Throughout | updated the schematic and the photo to have res1 labelled as 1.14 ML (i.e. ¼ million gallons) which is consistent with the rest of the doc and with what we know about res1 (now) | | ne | 28/03/2019 |
| | GDE-00050 | Noosa WTP | Verification Sample Point Guide | final page | The main change is the final page, that now describes the blended water sample tap (NOO-SP915) | | ne | 3/05/2019 |
| | PLN-00198 | Noosa WTP | HACCP Plan | section 3.2 | updated text in validation table | | ne | 1/05/2019 |
| | PRO-02225 | Jimna WTP | HACCP Plan Wall Chart Procedure | Throughout | Corrected minor typographical errors | | ne | 16/05/2019 |
| | PRO-02184 | Ewen Maddock WTP | HACCP Plan Wall Chart Procedure | Disinfection | increased dosed filtered water free chlorine ccp to 3.3 from 2 due to customer requirements | | ne | 5/06/2019 |

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| # | Document Ref | WTP/System | HACCP Plan/Procedure | Section/Para | Brief description / justification of change | Additional Comments | Originator | Date |
|---|---|---|---|---|---|---|---|---|
| 248 | PRO-01986 | Westbank WTP | HACCP Plan Wall Chart Procedure | Raw Water, Coagulation, Manganese Removal | • Raw turbidity action limit slightly decreased.<br>• Raw water conductivity removed limit and extended into a Summer and Winter limit<br>• Alum deviation alarm time extended from 2 mins to 5 mins for action and critical limit.<br>• Manganese removal free chlorine action limit increased slightly.<br>• Grab samples identified in chart. | Changes made to assist with enhanced coagulation. | KM | 30/06/2017 |
| 249 | PRO-01985 | Eastbank WTP | HACCP Plan Wall Chart Procedure | Kholo Early Warning Station<br>Raw Water, Coagulation, Manganese Removal, Primary Disinfection, Secondary Disinfection, Treated Water. | • Kholo Early Warning Station - Raw turbidity action limit slightly decreased.<br>• Kholo Early Warning Station - Raw water conductivity removed limit and extended into a Summer and Winter limit<br>• Eastbank raw turbidity action limit slightly decreased.<br>• Eastbank raw water conductivity removed limit and extended into a Summer and Winter limit.<br>• Alum deviation alarm time extended from 2 mins to 5 mins for action and critical limit.<br>• Manganese removal free chlorine action limit increased slightly.<br>• New primary disinfection turbidity limit added (inlet to Camerons Hill 1 & 2).<br>• Time frame added to secondary disinfection pH limit.<br>• Treated water turbidity action limit added for Camerons Hill 1 & 2. | Changes made to assist with enhanced coagulation. | KM | 30/06/2017 |
| 250 | REG-00179 | Lowood WTP | HACCP Risk Register | Unmitigated and Mitigated Risk Registers | Risk Assessment Review workshop 28/07/17. This doc now obsolete. Risk Regiser document is now D17/73063 | | KM | 6/10/2017 |
| 251 | REG-00153 | Mt Crosby WTPS | HACCP Risk Register | Unmitigated and Mitigated Risk Registers | Risk Assessment Review workshop for Eastbank 25/09/17 and Westbank 9/10/17. This doc now obsolete. Risk Regiser document is now D17/73063 | | KM | 8/12/2017 |
| 252 | REG-00180 | Esk WTP | HACCP Risk Register | Unmitigated and Mitigated Risk Registers | Risk Assessment Review workshop for Esk 09/11/17. This doc now obsolete. Risk Regiser document is now D17/73063 | | KM | 15/12/2017 |
| 253 | REG-00180 | Somerset Dam (Township) WTP | HACCP Risk Register | Unmitigated and Mitigated Risk Registers | Risk Assessment Review workshop for Somerset Dam (Township) WTP 09/11/17. This doc now obsolete. Risk Regiser document is now D17/73063 | | KM | 19/01/2018 |
| 254 | REG-00169 | Wivenhoe Dam (Recreation) WTP | HACCP Risk Register | Unmitigated and Mitigated Risk Registers | Risk Assessment Review workshop for Wivenhoe Dam (Recreation) WTP 20/11/17. This doc now obsolete. Risk Regiser document is now D17/73063 | | KM | 29/01/2018 |
| 255 | REG-00578 | Supply System | HACCP Risk Register | Unmitigated and Mitigated Risk Registers | Risk Assessment Review workshop for Supply System 21/11/17. This doc now obsolete. Risk Regiser document is now D17/73063 | | KM | 9/02/2018 |
| 256 | PLN-00064 | Lowood WTP | Operational Monitoring Plan | Whole document | Reviewed and updated Sample Location description and Purpose as required. Updated the Introduction paragraph. Changed the process descriptions to align with the Risk Assessment. Changed the frequency of filtered water free chlorine to 'daily' from 'as required'. Changed manganese (soluble) to 'weekly' from 'As Required'. | | KM | 17/07/2018 |

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|---|---|---|---|---|---|---|---|---|
| 257 | PRO-02015 | Lowood WTP | Lowood WTP - HACCP Wall chart Procedure | Whole document | **Raw Water**<br>• Have removed the critical limit for turbidity as it is no longer a critical limit.<br>• Have added a soluble manganese action limit for raw water.<br>• Have added an action limit for raw water Colour as per the Validation Standard.<br>**Coagulation**<br>• Coag pH – Have widened the range of the action limit so it has gone from 6.4 – 7.2 to 6.4– 7.0. Also shortened the timeframe for the critical limit from 30 mins to 15.<br>• Added another line item/critical limit for no coagulant dose >5 mins.<br>• Added settled water colour to coag section and removed from Floc and settling section. Limit is the same.<br>**Pre-Filter Hypo**<br>• Move to separate section before "Media Filtration" section called "Iron and Manganese Removal". Increased target to 0.5 from 0.2 as per the validation plan. Added upper and lower chlorine limits to AL and CL.<br>**Disinfection**<br>• Changed CL res level from 30 to 55%. Previous figure was incorrect. Changed dosed filtered water free chlorine CL timeframe from 15 to 10 mins to align with C.t calc.<br>• Added a treated water turbidity action limit.<br>• Increased dosed filtered water chlorine critical limit upper limit from 4.0 mg/L to 4.5 mg/L. Reduced free chlorine action limit from 4.5 mg/L to 4mg/L. the action and critical limit values were around the wrong way.<br>**Supernatant**<br>• Turbidity critical limit was changed from 50 to 20 NTU to align with validation standard. Changed operational target from <5 to <10.<br>• Added supernatant return flow rate critical limit.<br>**Operating Protocols on back table**<br>Updated operating protocol limits on back table as most of them were incorrect. | | KM | 1/08/2018 |
| 258 | PLN-00063 | Lowood WTP | HACCP Plan | | **2.1.3.8 Disinfection**<br>Updated C.t caclulation as it was incorrect.<br>**Section 3.2 HACCP Limit Validation**<br>Totally re-wrote table and added another 24 rows.<br>**Section 4.3 Materials and Chemicals**<br>Totally re-wrote section. | | | 2/08/2018 |
| 259 | PLN-00048 | Eastbank WTP | HACCP Plan | **Section 3.2 HACCP Limit Validation** | Totally re-wrote table and added additional detail. | | KM | 3/08/2018 |
| 260 | PLN-00048 | Eastbank WTP | HACCP Plan | **Section 4.3 Materials and Chemicals** | Totally re-wrote section. | | KM | 3/08/2018 |
| 261 | PLN-00049 | Westbank WTP | HACCP Plan | **Section 3.2 HACCP Limit Validation** | Totally re-wrote table and added additional detail. | | KM | 3/08/2018 |
| 262 | PLN-00049 | Westbank WTP | HACCP Plan | **Section 4.3 Materials and Chemicals** | Totally re-wrote section. | | KM | 3/08/2018 |
| 263 | PLN-00049 | Esk WTP | HACCP Plan | **Section 3.2 HACCP Limit Validation** | Totally re-wrote table and added additional detail. | | KM | 6/08/2018 |
| 264 | PLN-00049 | Esk WTP | HACCP Plan | **Section 4.3 Materials and Chemicals** | Totally re-wrote section. | | KM | 6/08/2018 |
| 263 | PLN-00104 | Wivenhoe WTP | HACCP Plan | **Section 3.2 HACCP Limit Validation** | Totally re-wrote table and added additional detail. | | KM | 7/08/2018 |
| 264 | PLN-00104 | Wivenhoe WTP | HACCP Plan | **Section 4.3 Materials and Chemicals** | Totally re-wrote section. | | KM | 7/08/2018 |
| 265 | PLN-00086 | Somerset Dam (Township) WTP | HACCP Plan | **Section 3.2 HACCP Limit Validation** | Totally re-wrote table and added additional detail. | | KM | 7/08/2018 |
| 266 | PLN-00086 | Somerset Dam (Township) WTP | HACCP Plan | **Section 4.3 Materials and Chemicals** | Totally re-wrote section. | | KM | 7/08/2018 |

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|---|---|---|---|---|---|---|---|---|
| 267 | PLN-00086 | Somerset Dam (Township) WTP | HACCP Plan | **Section 1.2 Conditions of Operation** | Updated flow rates in the maximum and minimum sections of the table | | KM | 7/08/2018 |
| **Submission to Regulator - Amendment Application August 2016** | | | | | | | | |
| 268 | PLN-00263 | Supply System | HACCP Plan | **Front Page** | Changed photo. | | KM | 8/11/2018 |
| 269 | PLN-00263 | Supply System | HACCP Plan | **Associated Documents Page 2** | Below added to Associated Documents section:<br>Added all sample point guides.<br>Added Chemical Panel List Register.<br>Added Register of Prerequisite Programs (PRPs). | | KM | 8/11/2018 |
| 270 | PLN-00263 | Supply System | HACCP Plan | Whole Document | Changed Risk Register reference to Water Quality Risk Dashboard 2017 throughout document. | | KM | 8/11/2018 |
| 270 | PLN-00263 | Supply System | HACCP Plan | Figure 9. Schematic Drawing of Molendinar 3, 4, 5, 6 and 7 Reservoirs p32 | Added schematic of Molendinar Reservoirs to show piping and valving configuration. | | KM | 9/05/2019 |
| | | | | | | | | |
| | | | | | | | | |
| | PLN-00263 | Supply System | HACCP Plan | Figure 3 Brisbane Zone NorthProcess Flow Diagram p13 | Updated Figure 3 Brisbane Zone North Process Flow Diagram to include new doing infrastructure at Aspley WQMF | | BH | 28/05/2019 |
| | PLN-00263 | Supply System | HACCP Plan | Table 2 Brisbane Zone Process Flow Summary p15 | Created Aspley WQMF line in table. | | BH | 28/05/2019 |
| | PLN-00263 | Supply System | HACCP Plan | Section 4.4 Materials and Chemicals | Added 2 line items for chemicals to be used at Aspley. | | BH | 28/05/2019 |
| | PRO-02089 | Supply System | HACCP Wall Chart Procedure | Wall Chart Tab | Added Sections for Aspley WQMF South West and North East Panels including targets action and critical limits. | | BH | 28/05/2019 |
| | PRO-02089 | Supply System | HACCP Wall Chart Procedure | Corrective Actions Tab | Updated sections to incorporate Aspley corrective actions. | | BH | 28/05/2019 |
| | PRO-02089 | Supply System | HACCP Wall Chart Procedure | Cheat Sheet Corrective Actions Tab | Updated information to incorporate Aspley corrective actions in dosing facility section. Added information for Security Breeches Alarmed Hatches and Pipe Depressurisation sections. | | BH | 28/05/2019 |
| | | | Water Quality Risk Dashboard | Supply System Nov 17 Disinfection (Secondary) Risk Assessment rows 38 to 48 | Added Reference to Aspley WQMF in comments section | | KM | 24/05/2019 |

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| # | Document Ref | WTP/System | CCP Plan/Proced | Section/Para | Brief description / justification of change | Additional Comments | Originator | Date |
|---|---|---|---|---|---|---|---|---|
| 232 | PLN-00138 | Kalbar WTP | HACCP Plan | Flow diagrams<br>Operational challenges | HACCP flow diagram process schematic updated to included 'normally closed'. Raw water to QUU network bypass/cross connection also removed under recent project so has been removed from diagrams. Raw water to dosed filtered water tank currently still in placed but due for removal within weeks. Clarifier bypass will remain.<br>Delete filter bypass (is already removed)<br>Operational challenges updated to include lack of onsite storage due to UV being after storage tank. Operational challenge also added for supernatant return lagoons receiving storm flow runoff and return pump being fixed speed and oversized. | Refer markups TRIM D16/134296 | TF | 16/09/2016 |
| 233 | PLN-00119 | Kalbar WTP | Operational Mon | Coagulation CCP | Addition of dosed water pH grab/ validation of online instrument result<br>Accidental omission from MP. Operators were performing daily grab sample despite it not being documented in the plan. Plan has been updated. | Refer markups TRIM D16/134299 | TF | 16/09/2016 |
| 234 | GDE-00063 | Kalbar WTP | Verification Samp | Raw water sample point | Raw water sample point relocated. New photo, ID and coordinates. | Refer markups TRIM D16/134300 | TF | 16/09/2016 |
| 235 | REG-00342 | Kalbar WTP | HACCP Risk Regis | Whole of system | IMS audit July 2016 findings:<br>1. According to the RA the UV must be operating if WTP is operating. There is a UV bypass in place that should be removed and this should be documented in the RA. – Now documented in Whole of System. Also documented in Improvement Plan.<br>2. There is a large swallow colony (nests) below the clarifier. Consider any hazard that may cause hazards to the process and in particular to the clear water storage nearby (not vermin proof). – Swallow colony does not pose risk to water quality in clarifier. Risk exists with insufficient vermin proofing on dosed filtered water reservoir. Refer NC/1 in audit report. As a result REG-00342 Kalbar WTP HACCP Risk Register hazardous event 'Animals contaminating chlorinated water storage' has been updated and increased from Medium 5 (Rare-major) to Medium 8 (Unlikely-Major) making this a significant risk. An improvement item ALL24 already existed for this hazardous event and this has been updated based on the audit findings. The Improvement Plan (D15/200) has been updated accordingly for ALL24 for Kalbar WTP.<br>3. Add mode when clarifier bypass is opened and address hazards - As this is not considered normal operation this would be considered a change of operating conditions and an increase in risk which would also trigger regulator notification. If short term direct filtration mode was being considered to allow for maintenance or project works a risk assessment would need to be undertaken at the time to assess the current risk taking | Refer markups TRIM D16/134301 | TF | 16/09/2016 |
| 236 | PLN-00040 | North Stradbroke Islar | HACCP Plan | Flow diagrams<br>Section 2.1.3 overview for Supernatant return | Flow diagram updated documenting Supernatant return process step as a PRP not a CCP. Explanation provided in Section 2.1.3.3. | Refer markups TRIM D16/135199 | TF | 19/09/2016 |
| 237 | PLN-00076 | North Stradbroke Islar | Operational Mon | Raw water abstraction | Change nomenclature 'Raw Water Intake' to 'Raw Water Abstraction' to align with standardised naming of process steps | Refer markups TRIM D16/135200 | TF | 19/09/2016 |
| 238 | PRO-02058 | North Stradbroke Islar | HACCP Plan Wall | Dosed water<br>DAF | Dose water pH critical limit incorrectly stated as '>5.3' when should be '<5.3'<br>A critical limit is in place for the DAF for outlet colour however there was 'N/A' in the Critical Limit Corrective Actions guidance column. Column has been updated and guidance is as per critical limit exceedance for the Coagulation CCP. | Refer markups TRIM D16/135203 | TF | 19/09/2016 |
| 239 | REG-00085 | North Stradbroke Islar | HACCP Risk Regis | Supernatant Return<br>Raw water Abstraction | Change nomenclature 'Raw Water Intake' to 'Raw Water Abstraction' to align with consistent naming of process steps<br>Supernatant return CCP assessment outcome changed from 'QCP' to 'PRP' and commentary added to CCP comment column. | Refer markups TRIM D16/135205 | TF | 19/09/2016 |
| 240 | GDE-00055 | Maroon Dam WTP | Verification Samp | Treated water sample tap and distributions system sample tap | Treated water sample tap relocated to after treated water sample pumps. Previously located on 1 of 3 treated water tanks which can be operated in various arrangements.<br>Distribution system sample tap relocated due to vacation of houses on supply line to tap resulting in unrepresentative sample of system | Refer markups TRIM D16/142492 | TF | 30/09/2016 |
| 241 | GDE-00057 | Kooralbyn WTP | Verification Samp | Raw water sample point | Raw water sample tap relocated following project works | Refer markups TRIM D16/142671 | TF | 30/09/2016 |
| 242 | PLN-00071 | Mudgeeraba WTP | HACCP Plan | 1.2 Conditions of Operation<br>2.1.2 Flow diagram<br>2.1.3 Process description<br>2.1.4 Opreational challenge<br>3.2 HACCP limit validation | • 1.2 Conditions of Operation updated to describe the improvements to WTP interlock functionality<br>• 2.1.2 Updates to HACCP flow diagram and schematic diagram to include clarifier bypass, poly type, stormwater and chem bund flows as intermittent input to supernatant return tank, reversal of order of hypo (now first) then caustic (now second) at Disinfection CCP, delineation of key interface point between CoGC and Supply System, optional lime dosing into inlet channel,<br>• 2.1.3 Oder of process steps to be re-ordered to align with Risk Assessment and HACCP Process Flow diagram. Description of lime venture dosing arrangement in Coagulation section. Inclusion of detail of which polymers are used where. Description around existence of clarifier bypass. Updates to description of summer v. winter free chlorine targets now remaining at summer target, supernatant return system description updated to describe upgrades.<br>• 2.1.4 Operational challenge regarding high levels in supernatant return tank and washwater recovery tank preventing filters being able to backwash following rainfall due to stormwater runoff.<br>• 3.2 HACCP Limit validation - further detail added on HACCP limits and supporting validation. | Refer markups TRIM D17/54447 | TF | 21/04/2017 |
| 243 | PLN-00072 | Mudgeeraba WTP | Operational Mon | order of process steps | • Order of process steps to be re-ordered to align with Risk Assessment and HACCP Process Flow diagram. No changes to frequencies or parameters | Refer markups TRIM D17/54449 | TF | 21/04/2017 |

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| # | Document Ref | WTP/System | CCP Plan/Proced | Section/Para | Brief description / justification of change | Additional Comments | Originator | Date |
|---|---|---|---|---|---|---|---|---|
| 244 | PRO-02028 | Mudgeeraba WTP | HACCP Plan Wall | Raw water<br>Supernatant Return<br>Coagulation<br>Disinfection<br>Fluoride | • Raw water Abstraction raw water turbidity HACCP limit changed from >10 NTU to change ±10 NTU, timeframe reduced from 2 hours to 30 mins as per standard, Critical limit for turbidity removed,<br>• Supernatant return CCP Action Limit increased from >10 NTU to >15 NTU, Critical Limit new % return >10% of raw water flow for 15mins, Critical Limit for pH timeframe reduced from 15 mins to 5 mins to prevent unnecessary additional alum being returned to inlet channel, critical limit corrective action guidance updated to include bottleneck scenario<br>• Coagulation CCP dosed water pH lower critical limit increased from 5.7 to 5.8 to align with Validation Standard, new dosed water pH critical limit when dosing pot perm to align with Validation Standard, Critical Limit correction action guidance updated with regard to recovering from loss of alum dose<br>• Disinfection CCP targets now consistently at 'summer' levels rather than 'summer' or 'winter', reservoir level new target and critical limit based on C.t inputs, critical limit corrective action guidance updated to include option to recover low chlorine<br>• Fluoride CCP pre reservoir critical limit timeframe reduced from 15mins to 2mins<br>• Removal of Treated Water as a process step<br>• Nomenclature for 'clear water' and 'Res 2' changed to 'treated water'<br>• All CCPs where a WTP shutdowns is the consequence of CL exceedance - corrective action guidance updated to include notification to Seqwater Control room within 30 mins of shutdown | Refer markups TRIM D17/54448 | TF | 21/04/2017 |
| 245 | PRO-02057 | Capalaba WTP | HACCP Plan Wall | Manganese<br>UV Disinfection<br>Free Chlorine Disinfection<br>Fluoridation | • Manganese Removal QCP – new raw water manganese soluble Action Limit of >0.1 mg/L. Refer data attached. A raw water soluble result of 0.1 mg/L would indicate higher than typically seen levels of manganese in the raw water.<br>• UV Disinfection CCP – UVT target reduced from >85% to >80% which is consistent with WTP targets and the UV validation (i.e not <80%)<br>• Free Chlorine Disinfection CCP – C.t volumes reviewed resulting in change to treated water critical limit from <1.0 mg/L to <0.8 mg/L and the treated water action limit from 1.2 mg/L to 1.0 mg/L.<br>• Treated water pH target now the same as dosed water pH target. C.t action limit and critical limit removed for now.<br>• Fluoridation CCP – volumes reviewed resulting in timeframe for pre reservoir fluoride critical limit reducing from 15 mins to 12 mins. | Refer markups TRIM D17/56855 | TF | 28/04/2017 |
| 246 | PLN-00120 | Capalaba WTP | Operational Mon | Various minor | • No change to frequency or parameters<br>• Updates to some terminology<br>• Removal of total iron<br>• Removal of references to CO2 due to delays in delivery | Refer markups TRIM D17/56853 | TF | 28/04/2017 |
| 247 | PLN-00037 | Capalaba WTP | HACCP Plan | Flow diagram<br>Section 2.1.3<br>Section 3.2 | • HACCP Flow Diagram and Process schematic updated to show CO2 and caustic (into sludge equalisation tank) as dashed lines (future provision) instead of solid lines. HACCP flow diagram needs to be signed and JJ is away so can you please sign scan and email it back to me.<br>• Various minor updates to wording throughout.<br>• Section 2.1.3 Updates to UV system description and Updates to the values in the disinfection C.t calculation.<br>• Section 3.2 HACCP limit validation updated to include more detail on HACCP limits and updates to limits as per wall chart. | Refer markups TRIM D17/56851 | TF | 28/04/2017 |
| 248 | PRO-01986 | Westbank WTP | HACCP Plan Wall | Raw Water,<br>Coagulation,<br>Manganese Removal | • Raw turbidity action limit slightly decreased.<br>• Raw water conductivity removed limit and extended into a Summer and Winter limit<br>• Alum deviation alarm time extended from 2 mins to 5 mins for action and critical limit.<br>• Manganese removal free chlorine action limit increased slightly.<br>• Grab samples identified in chart. | Changes made to assist with enhanced coagulation. | KM | 30/06/2017 |
| 249 | PRO-01985 | Eastbank WTP | HACCP Plan Wall | Kholo Early Warning Station<br>Raw Water,<br>Coagulation,<br>Manganese Removal,<br>Primary Disinfection,<br>Secondary Disinfection,<br>Treated Water. | • Kholo Early Warning Station - Raw turbidity action limit slightly decreased.<br>• Kholo Early Warning Station - Raw water conductivity removed limit and extended into a Summer and Winter limit<br>• Eastbank raw turbidity action limit slightly decreased.<br>• Eastbank raw water conductivity removed limit and extended into a Summer and Winter limit.<br>• Alum deviation alarm time extended from 2 mins to 5 mins for action and critical limit.<br>• Manganese removal free chlorine action limit increased slightly.<br>• New primary disinfection turbidity limit added (inlet to Camerons Hill 1 & 2).<br>• Time frame added to secondary disinfection pH limit.<br>• Treated water turbidity action limit added for Camerons Hill 1 & 2. | Changes made to assist with enhanced coagulation. | KM | 30/06/2017 |
| 250 | GDE-00054 | Boonah-Kalbar WTP | Verification Samp | Process | • Document was reviewed and updated<br>• All ALS contract protocols were removed and sampling procedure references were updated | | AS | 4/12/2017 |
| 251 | GDE-00055 | Maroon Dam WTP | Verification Samp | Process | • Document was reviewed and updated<br>• All ALS contract protocols were removed and sampling procedure references were updated | | AS | 4/12/2017 |
| 252 | GDE-00056 | Moogerah Dam WTP | Verification Samp | Process | • Document was reviewed and updated<br>• All ALS contract protocols were removed and sampling procedure references were updated | | AS | 4/12/2017 |
| 253 | GDE-00057 | Kooralbyn WTP | Verification Samp | Process | • Document was reviewed and updated<br>• All ALS contract protocols were removed and sampling procedure references were updated | | AS | 4/12/2017 |
| 254 | GDE-00058 | Rathdowney WTP | Verification Samp | Process, Sample Point Details | • Document was reviewed and updated<br>• All ALS contract protocols were removed and sampling procedure references were updated<br>• The picture for sample point RAT-SP120 was edited to make the sample tap more visable | | AS | 4/12/2017 |
| 255 | GDE-00059 | Beaudesert WTP | Verification Samp | Process | • Document was reviewed and updated<br>• All ALS contract protocols were removed and sampling procedure references were updated | | AS | 4/12/2017 |

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|---|---|---|---|---|---|---|---|---|
| 256 | GDE-00061 | Canungra WTP | Verification Samp | Process, Sample Point Details | • Document was reviewed and updated<br>• All ALS contract protocols were removed and sampling procedure references were updated<br>• The picture for sample point CAN-SP120 was edited to make the sample tap more visable<br>• The picture for sample point CAN-SP910 was edited to make the sample tap more visable | | AS | 5/12/2017 |
| 257 | GDE-00062 | Capalaba WTp | Verification Samp | Process, Sample Point Details | • Document was reviewed and updated<br>• All ALS contract protocols were removed and sampling procedure references were updated<br>• The picture for sample point CAP-SP920 was edited to make the sample tap more visable | | AS | 5/12/2017 |
| 258 | GDE-00063 | North Stradbroke islar | Verification Samp | Process, Sample Point Details | • Document was reviewed and updated<br>• All ALS contract protocols were removed and sampling procedure references were updated<br>• The GPS location for raw sample point NSI-SP121 was updated<br>• The GPS location for raw sample point NSI-SP122 was updated<br>• The picture for sample point NSI-SP122 was edited to make the sample tap more visable<br>• The picture for sample point NSI-SP913 was edited to make the sample tap more visable | | AS | 5/12/2017 |
| 259 | GDE-00064 | Dunwich WTP | Verification Samp | Process | • Document was reviewed and updated<br>• All ALS contract protocols were removed and sampling procedure references were updated | | AS | 5/12/2017 |
| 260 | GDE-00065 | Amity Point WTP | Verification Samp | Process, Sample Point Details | • Document was reviewed and updated<br>• All ALS contract protocols were removed and sampling procedure references were updated<br>• The picture for sample point AMI-SP910 was edited to make the sample tap more visable | | AS | 5/12/2017 |
| 261 | GDE-00066 | Point Lookout WTP | Verification Samp | Process, Sample Point Details | • Document was reviewed and updated<br>• All ALS contract protocols were removed and sampling procedure references were updated<br>• The picture for sample point PLO-SP910 was edited to make the sample tap more visable | | AS | 5/12/2017 |
| 262 | GDE-00067 | Molendinar WTP | Verification Samp | Process, Sample Point Details | • Document was reviewed and updated<br>• All ALS contract protocols were removed and sampling procedure references were updated<br>• The picture for sample point MOL-SP933 was edited to make the sample tap more visable | | AS | 5/12/2017 |
| 263 | GDE-00068 | Mudgeeraba WTP | Verification Samp | Process, Sample Point Details | • Document was reviewed and updated<br>• All ALS contract protocols were removed and sampling procedure references were updated<br>• The GPS location for treated sample point MUD-SP923 was updated<br>• The picture for sample point MUD-SP121 was edited to make the sample tap more visable<br>• The picture for sample point MUD-SP122 was edited to make the sample tap more visable | | AS | 5/12/2017 |
| 264 | GDE-00069 | Hinze Dam WTP | Verification Samp | Process, Sample Point Details | • Document was reviewed and updated<br>• All ALS contract protocols were removed and sampling procedure references were updated<br>• The GPS location for treated sample point HIN-SP920 was updated<br>• The picture for sample point HIN-SP12 was edited to make the sample tap more visable<br>• The picture for sample point HIN-SP980 was edited to make the sample tap more visable | | AS | 5/12/2017 |
| 265 | PLN-00069 | Molendinar WTP | HACCP Plan | 1.2 Conditions of Operation<br>2.1.2 HACCP Process Flow Diagram and Schematic<br>2.1.3 System overview<br>3.2 HACCP Limit validation<br>Section 6 Materials and Chemicals | removed PID02077 TMO: Install Blank Plate on Bypass Penstock at Inlet Works complete Aug 2016; Fluoride dosing point changed to inlet of CCT. Monitoring changed to inlet of CCT.<br>- PAC, pot perm and backwash recovery alum dosing lines changed from solid line to dashed line on HACCP diagram as they are dosed 'as needed'.<br>- Future: improve schematic detail on reservoir flow direction and arrangement<br>- gravity main added<br>2.1.3 System overview<br>– Alignment of numbering of all process steps in accordance with HACCP process steps.<br>- Catchment raw water sources - Updates to wording on source water category.<br>Various minor updates to all Process Steps.<br>2.1.3.8 Updates to the C.t calculation based on meeting C.t 8 mg.min/L under various pumping scenarios.<br>2.1.4 Updates to operational challenges to reflect WTP interlocks with treated water interlocks yet to be enabled.<br>3.2 HACCP Limit validation and PRO-01984 Molendinar WTP HACCP Plan Wall Chart Procedure:<br>- Raw Water Abstraction: Change of target from '<5 NTU' to 'Turbidity at last coagulant dose change'.<br>- Taste and Odour Control: Change in name of Process step from 'PAC dosing' to 'Taste and Odour control' as per R.A. Critical Limit values are now Action Limit Values. Presence of T&O in treated water does not make water unsafe rather it is aesthetically displeasing. T&O is managed<br>- Manganese and Iron Removal: Timeframe of critical limit extended to > Action limit timeframe to allow Operator to be aware of an issue and intervene before the Critical Limit is reached as the oxidative state of the filter is not immediately at risk.<br>- Changes to various process steps to update Process names CCP/QCP/oPRP terminology as per outcome of 2017 R.A.<br>- Disinfection (primary): a pH target of >7.1 has been set which will allow the WTP to reliably meet the BWSA of pH 7.0 or greater. The WTP does not typically dose more sodium hydroxide than required hence there is little risk that pH will be dosed much above pH 7.1 therefore no upper target range has been set. The Action Limit has been aligned to reflect the BWSA of pH <7.0.<br>- CCT target and minimum level have been adjusted from 55% to 62% based on recalculation to achieve minimum C.t 8 mg.min/L. CL Corrective action guidance added to instruct Ops to contact DWQ Coord if CCT level or treated water chlorine limits are triggered to prompt a check against actual C.t.<br>- Addition of a treated water turbidity target of <0.2 NTU and an Action Limit of >0.5 NTU for 30 mins following Petrie Incident and to increase awareness and corrective action relating to impact of turbidity on primary disinfection. | Refer markups D17/163000 | TF | 5/12/2017 |
| 266 | PRO-01984 | Molendinar WTP | HACCP Plan Wall | Raw water abstraction<br>Taste and Odour control<br>Manganese and Iron Removal<br>Disinfection (primary)<br>Removal of Treated Water Process Step | Refer HACCP Plan 3.2 HACCP Limit validation notes above. | Refer markups D17/162997 | TF | 5/12/2017 |

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|---|---|---|---|---|---|---|---|---|
| 267 | PLN-00070 | Molendinar WTP | Operational Mon | Terminology<br>Fluoride monitoring<br>Disinfection | - Changes in terminology of Process Steps to align with 2017 R.A review<br>- Removal of Treated water and Sludge monitoring. Turbidity monitoring moved to Disinfection Primary Process Step. Sludge monitoring is part of Envir system, not DWQ.<br>- Changes to Fluoride monitoring as per changes at WTP. | Refer markups D17/162999 | TF | 5/12/2017 |
| 268 | PRO-02105 | Beaudesert WTP | HACCP Plan Wall | All process steps except Fluoridation | Raw Water Abstraction - change of terminology, change from CCP to oPRP as per Validation guideline. Removal of CL for turbidity as per Validation guideline. Ammonia HACCP limits adjusted as per Ammonia treatment design capacity.<br>Coagulation: Alum loss of dose changed from 'no flow' to <50% to detect flow deviations which may not be detected by low flow of 0 L/s. New coagulated water pH limits as per validation standard for organics removal but slightly lower to allow for dirty water events where high alum dose required for increased raw water turbidity/colour without the need for caustic dosing. Settled water colour as per validation standard for alum sites.<br>Floc and Settling separated from Coag. Settled water turbidity as per validation standard for alum sites.<br>Media Filtration - New dosed water pH limits following introduction of settled water caustic dosign to maintain biological properties in filter.<br>UV disinfection - Dose rate as per validation standard and UV system validation. Removal of system unhealthy/unavailable as this relates to asset failure and loss of redundancy and not water quality.<br>Disinfection (primary) broken up into NORMAL MODE and AMMONIA MODE follwoing delivery of breakpoint ammonia treatment.<br>Disinfection (primary) NORMAL MODE - Change in terminology to 'dosed irradiated water' slight reduction in dosed irradiated water limits as improved chlorine decay expected with alum. New limits for dosed irradiated water as disinfection caustic dosing now in place. Treated water pH limits adjusted to reflect C.t 10 mg.min/L target down from C.t 15 mg.min/L target. New treated water turbidity limits introduced following Petrie incident to alert Operators to issue that requires investigation that could impact disinfection.<br>Disinfection (primary) AMMONIA MODE - new limits to reflect operation of primary disinfection during ammonia mode. Refer HACCP plan validation.<br>Further guidance added to Corrective Action guidance columns. | | TF | 26/02/2018 |
| 269 | PLN-00092 | Beaudesert WTP | Operational Mon | All process steps except Fluoridation | Introduction of new analysers following delivery of alum dosing and break point ammonia treatment | | TF | 26/02/2018 |
| 270 | PLN-00091 | Beaudesert WTP | HACCP Plan | Glossary<br>Intro<br>Conditions of operation<br>Flow diagrams<br>System overview 2.1.3<br>Assessment of WQ data<br>Validation<br>Materials and Chemicals | Refer markups.<br>Glossary, Intro, Assessment of WQ data updated as per other HACCP plans to reflect changes made to all HACCP Plans in streamlining process. Conditions of Operation, Flow Diagram, System overiew, Validation and Materials and Chemicals updated to reflect delivery of alum dosing and breakpoint ammonia treatment assets. | Refer markups D18/26201<br><br>Update: On awaiting final sign off of HACCP diagram on the day of commissioning the alum dosing it was found that the clarifier had poor settleablity. As such poly was introduced into the process on 1/03/18 as a settling aid. Refer incident. This was not reflected in the HACCP Plan. A risk assessment was undertaken to reflect this change D18/34774. The HACCP plan thus remained in draft until the success, or otherwise, of the changes led to a semi permanent solution which could include reverting back to magnasol 589. As such the HACCP Plan remains in final draft in REX.<br><br>26/04/18: LT-20 and LT-25 have now been incorporated into the HACCP Plan and Risk Register with an improvement item relating to delivery of permanent assets captured in the Risk Assessment. | TF | 26/04/2018 |
| 271 | PRO-02057 | Capalaba WTP | HACCP Plan Wall | All process steps except Fluoridation | Refer summary of updates doc attached to email D18/68485. Numerous changes. | Refer markups D18/68433 | TF | 27/04/2018 |
| 272 | PLN-00037 | Capalaba WTP | HACCP Plan | 1.2 Cond of operation<br>2.1.3 system overview<br>3.2 HACCP Limit Validation<br>4.1 Operational procedures | • General updates to terminology throughout doc.<br>• Section 1.2 Conditions of operation: Inclusion of alarm masking on start up in conditions of operation. Item captured in Risk Dashboard as alarm masking on start up requires an individual approach.<br>• Flow diagrams: inclusion of CO2 as permanent.<br>• Section 2.1.3 System Overview: Addition of use of hydrochloric acid in coagulation section for cleaning of lime hosed. Also added to Section 8 Materials and Chemicals.<br>• Section 3.2 HACCP Limit Validation: Updated as per Wall Chart.<br>• Section 4.1 Operational Procedures updated to include Ops Manual and FD. Addition of supporting docs. | Refer markups D18/68435 | TF | 27/04/2018 |
| 273 | PLN-00120 | Capalaba WTP | Operational Mon | Coagulation CCP and terminology | Minor update to reflect UVT monitoring at Coagulation CCP but on the ground there are no changes to location and frequency of parameters. Just terminology updates | Refer markups D18/68432 | TF | 27/04/2018 |
| 274 | REG-00377 | Rathdowney WTP | HACCP Risk Regis | Unmitigated and Mitigated Risk Registers | Risk Assessment Review workshop 1/03/17. This doc now obsolete. Risk Regiser document is now D17/73063 | | TF/SR | 8/05/2018 |
| 275 | REG-00353 | Beaudesert WTP | HACCP Risk Regis | Unmitigated and Mitigated Risk Registers | Risk Assessment Review workshop 7/06/17. This doc now obsolete. Risk Regiser document is now D17/73063 | Refer markups D18/26201 | TF/SR | 8/05/2018 |
| 276 | REG-00441 | Hinze Dam WTP | HACCP Risk Regis | Unmitigated and Mitigated Risk Registers | Risk Assessment Review workshop 22/06/17. This doc now obsolete. Risk Regiser document is now D17/73063 | | TF/SR | 8/05/2018 |
| 277 | REG-00368 | Canungra WTP | HACCP Risk Regis | Unmitigated and Mitigated Risk Registers | Risk Assessment Review workshop 17/07/17. This doc now obsolete. Risk Regiser document is now D17/73063 | | TF/SR | 8/05/2018 |

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|---|---|---|---|---|---|---|---|---|
| 278 | REG-00375 | Kooralbyn WTP | HACCP Risk Regis | Unmitigated and Mitigated Risk Registers | Risk Assessment Review workshop 19/07/17. This doc now obsolete. Risk Regiser document is now D17/73063 | | TF/SR | 8/05/2018 |
| 279 | REG-00342 | Kalbar WTP | HACCP Risk Regis | Unmitigated and Mitigated Risk Registers | Risk Assessment Review workshop 23/08/17. This doc now obsolete. Risk Regiser document is now D17/73063 | | TF/SR | 8/05/2018 |
| 280 | REG-00171 | Moogerah Dam WTP | HACCP Risk Regis | Unmitigated and Mitigated Risk Registers | Risk Assessment Review workshop 6/09/17. This doc now obsolete. Risk Regiser document is now D17/73063 | | TF/SR | 8/05/2018 |
| 281 | REG-00166 | Maroon Dam WTP | HACCP Risk Regis | Unmitigated and Mitigated Risk Registers | Risk Assessment Review workshop 6/09/17. This doc now obsolete. Risk Regiser document is now D17/73063 | | TF/SR | 8/05/2018 |
| 282 | REG-00344 | Capalaba WTP | HACCP Risk Regis | Unmitigated and Mitigated Risk Registers | Risk Assessment Review workshop 15/09/17. This doc now obsolete. Risk Regiser document is now D17/73063 | | TF/SR | 8/05/2018 |
| 283 | REG-00426 | Mudgeeraba WTP | HACCP Risk Regis | Unmitigated and Mitigated Risk Registers | Risk Assessment Review workshop 27/10/17. This doc now obsolete. Risk Regiser document is now D17/73063 | | TF/SR | 8/05/2018 |
| 284 | REG-00424 | Molendinar WTP | HACCP Risk Regis | Unmitigated and Mitigated Risk Registers | Risk Assessment Review workshop 3/11/17. This doc now obsolete. Risk Regiser document is now D17/73063 | | TF/SR | 8/05/2018 |
| 285 | REG-00085 | North Stradbroke Islar | HACCP Risk Regis | Unmitigated and Mitigated Risk Registers | Risk Assessment Review workshop 20/11/17. This doc now obsolete. Risk Regiser document is now D17/73063 | | TF/SR | 8/05/2018 |
| 286 | REG-00449 | North Stradbroke Island Town WTPs (Amity, Dunwich & Point Lookout) | HACCP Risk Regis | Unmitigated and Mitigated Risk Registers | Risk Assessment Review workshop 21/11/17. This doc now obsolete. Risk Regiser document is now D17/73063 | | TF/SR | 8/05/2018 |
| 287 | PRO-02003 | Kalbar WTP | HACCP Plan Wall | All process steps except Fluoridation | - Raw water abstraction: raw water turbidity timeframe reduced f rom 1 hour to 30 mins as per SPE-00320.NEW Raw water colour target and action limits as per SPE-00320. NEW Raw water UV254 target and action limits-<br>'- Supernatant Return: Supernatant return turbidity action limit value increased from 10 NTU to 15 NTU and timeframe reduced from 1 hour to 30 mins as per SPE-00320. NEW Sludge Thickener pH limits. Not previously determined.<br>- Coagulation: Dosed water pH limits – adjusted downward to improve organics reduction. NEW Settled water organics target and action limit changed from true colour to UV254. Inclusion of lookup table and compass app for coag dose rate as per SPE-00320. Settled water colour target reduced from 5 HU to 2 HU as per SPE-00320<br>- Manganese and Iron Removal: Timeframes added for filtered water chlorine and filtered water pH following introduction of new analysers. NEW action limit for filtered water pH to detect overdose or under dose of settled water caustic for removal of Mn prior to critical limits being reached. New CL low limit for filtered water pH prevent shedding of Mn from filter.<br>- Media Filtration: HACCP limits now based on individual filters following installation of new analysers<br>- Disinfection (primary): NEW Upper operating target range added to free chlorine target to set an upper boundary for free chlorine target. NEW dosed filtered water pH limits added to detect potential impacts to Disinfection CCP on inlet to dosed filtered water reservoir. NEW treated water pH Action Limit to detect potential impacts to Disinfection CCP before Critical Limit is reached. Timeframe of CL reduced as per SPE-00320. NEW treated water turbidity Action Limit following Petrie incident to detect event in dosed filtered water reservoir that requires investigation.<br>Reservoir level increased from 45% to 50% as per C.t calc. Timeframe of 5 mins added to reservoir level critical limit. Previously 'any time'. NEW Max treated water flow rate for purposes of C.t and UV disinfection.<br>- UV Disinfection: NEW UV Dose HACCP target and critical limit added as per SPE-00320. Removal of previous asset available/unavailable target and limit. These represent asset redundancy and water quantity risk rather than water quality. NEW UVT action limit of <80% introduced as a lead indicator of requirement to review processes to avoid impacts to UV Disinfection before Critical Limit is reached. UVT target also introduced. NEW UV reactor target and critical limits added as per SPE-00320. | Refer markups D18/76696 | TF | 17/05/2018 |
| 288 | PLN-00138 | Kalbar WTP | HACCP Plan | Flow diagrams, conditions of operation, terminology throughout, Operational challenges, Validation | • Flow diagram and flow schematic updated. Raw water to dosed filtered water tank inlet bypass removed. Caustic dose labelled 'as required' indicating intermittent use. Individual filter outlet turbidity monitoring added to each filter. Combined filtered water pH and chlorine online monitoring added. UV bypass removed. Descriptive detail added to sludge lagoons and removal of sludge. Addition of raw water screen<br>• Conditions of operation flow rates updated based on recent audit. Refer RW 7671.<br>• Disinfection C.t updated to reflect updates to treated water flow based on recent audit. Refer RW 7671.<br>• Minor changes to process terminology.<br>• 2.1.4 Operational challenges updated to reflect improvement filter monitoring and automation. Addition of challenges of treating fluctuating raw water organics and colour in Reynolds Creek and floc stir up on start up in clarifier.<br>• 3.2 HACCP Limit Validation. Refer as per changes to PRO-02003 Kalbar WTP – HACCP Plan Wall Chart Procedure | Refer markups D18/76695 | TF | 17/05/2018 |
| 289 | PLN-00119 | Kalbar WTP | Operational Mon | Media Filtration, Manganese removal, terminologgy throughout | • Inclusion of new online combined filtered water chlorine and pH analysers<br>• Alignment with PRO-02003 updates<br>• Minor updates to terminology | Refer markups D18/76698 | TF | 17/05/2018 |

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| # | Document Ref | WTP/System | CCP Plan/Proced | Section/Para | Brief description / justification of change | Additional Comments | Originator | Date |
|---|---|---|---|---|---|---|---|---|
| 290 | PLN-00107 | Moogerah Dam WTP | HACCP Plan | flow diagrams<br>2.1.3<br>2.1.4<br>3.2<br>4.2<br>6<br>Appendix | • HACCP process step terminology updated to reflect risk assessment process steps.<br>• HACCP flow diagram – 'process step' symbols added to flow diagram for Raw Water Abstraction and Distribution Pipeline process steps.<br>• HACCP schematic diagram updated to show BW waste tank 1 and 2 running in series with outlet at BW tank 2.<br>• Section 2.1.3 Disinfection C.t calculation updated based on update to treated water tank volume figure.<br>• Section 2.1.4 distribution system dirty water events updated based on current knowledge of aged galvanized pipes.<br>• Section 3.2 Validation update to reflect updated HACCP limits. Timeframe validation added where previously omitted.<br>• Section 1.2 pre-requisite programs updated to reflect overarching PRP procedure and listed oPRPs.<br>• Section 6 updated to reflect chemical supplier details captured in overarching REG-00250.<br>• Appendix A updated with marked up drawing of distribution system. | Refer REX D18/117271 for markups | TF | 7/08/2018 |
| 291 | PRO-01929 | Moogerah Dam WTP | HACCP Plan Wall | Raw water abstraction<br>Coagulation<br>Disinfection (primary)<br>Distibution pipeline<br>Treated water | • Raw water abstraction turbidity action limit changed from absolute values to change in turbidity as per approach to responding to change in raw water quality (decline or improvement)<br>• Removal of raw water turbidity Critical limit. Decision to run WTP or shutdown and tanker to be made by Operations. Subsequent CCP CLs sufficient to ensure safety of drinking water.<br>• Coagulation CCP upper pH limit timeframe reduced from 15 mins to 5 mins as this limit is proxy monitoring of loss of coag dose and timeframe is consistent with SPE-00320.<br>• Disinfection (primary) CCP low chlorine values increased based on reduction in min reservoir level due to regular instances where CCT drops to <60% but not <50% and updated treated water reservoir volume figure. Treated water action limit timeframe reduced from 2 hours to 30 mins in line with SPE-00320. Low pH critical limits added to capture unforeseen events.<br>• Distribution Pipeline chlorine target reduced from >0.5 mg/L to >0.2 mg/L in line with ADWG. Turbidity and pH targets and action limits added to detect water age issues or dirty water events that should initiate corrective actions.<br>• Corrective Actions separated into responses based on specific HACCP limit exceedance. | Refer REX D18/117273 for markups | TF | 7/08/2018 |
| 292 | PLN-00108 | Moogerah Dam WTP | Operational Mon | Terminology<br>Distribution pipeline | • HACCP process step terminology updated to reflect risk assessment process steps.<br>• Treated water colour monitoring changed from apparent to true<br>• Weekly pH monitoring added to distribution pipeline process step | Refer REX D18/117272 for markups | TF | 7/08/2018 |
| 293 | PLN-00100 | Maroon Dam WTP | HACCP Plan | flow diagrams<br>2.1.3<br>2.1.4<br>3.2<br>4.2<br>6<br>Appendix | • HACCP process step terminology updated throughout to reflect risk assessment process steps.<br>• HACCP flow diagram – 'process step' symbols (red circles) added to flow diagram for Raw Water Abstraction and Distribution Pipeline process steps. Terminology updated to reflect R.A. Coag and Clarifier bypass removed as pipework removed creating air gap and this bypass is not considered operationally available due to unacceptable water quality risk.<br>• HACCP schematic diagram updated to show BW waste tank 1 and 2 running in series with outlet at BW tank 2. Change of location of treated water verification sample tap and update of sample tap IDs<br>• Section 2.1.3 Disinfection C.t calculation updated based on update to treated water tank volume figures. As above bypass removed.<br>• Paragraph added to floc and settling describing removal of bypass and describing it is not considered operationally available due to unacceptable water quality risk.<br>• Section 2.1.4 distribution system dirty water events updated based on current knowledge of water age issues and aged galvanized pipes. Manual clarifier desludging added, turbidity monitoring after balance tank added with ref to late detection of clarifier issue.. Cross connection and lack of raw water turbidity analyser items removed. Distribution system issues updated.<br>• Section 3.2 Validation update to reflect updated HACCP limits. Timeframe validation added where previously omitted.<br>• Section 1.2 pre-requisite programs updated to reflect overarching PRP procedure and listed oPRPs.<br>• Section 6 updated to reflect chemical supplier details captured in overarching REG-00250.<br>• Appendix added to include drawing of distribution system diagram as per Maroon HACCP plan. | Refer REX D18/117321 for markups | TF | 7/08/2018 |
| 294 | PLN-00101 | Maroon Dam WTP | Operational Mon | terminology<br>treated water | • HACCP process step terminology updated to reflect risk assessment process steps.<br>• Treated water colour monitoring changed from apparent to true and moved from 'treated water' to disinfection (primary). | Refer REX D18/117323 for markups | TF | 7/08/2018 |
| 295 | PRO-02054 | Maroon Dam WTP | HACCP Plan Wall | Raw water abstraction<br>Coagulation<br>Disinfection (primary)<br>Distribution Pipeline | • Raw water abstraction turbidity action limit changed from absolute values to change in turbidity as per approach to responding to change in raw water quality (decline or improvement)<br>• Removal of raw water turbidity Critical limit. Decision to run WTP or shutdown and tanker to be made by Operations. Subsequent CCP CLs sufficient to ensure safety of drinking water.<br>• Coagulation CCP upper pH limit timeframe reduced from 15 mins to 5 mins as this limit is proxy monitoring of loss of coag dose and timeframe is consistent with SPE-00320.<br>• Disinfection (primary) CCP treated water low chlorine value decreased based on obtaining reservoir volumes from as con drawings. Dosed filtered water pH target range, critical limits and treated water lower pH critical limit added to capture unforeseen events. Treated water tanks min level target decreased from 50% to >30% in line with C.t calc.<br>• Distribution Pipeline chlorine target reduced from >0.5 mg/L to >0.2 mg/L in line with ADWG. Turbidity and pH targets and action limits added to detect water age issues or dirty water events that should initiate corrective actions.<br>• Corrective Actions separated into responses based on specific parameters rather than grouped together. | Refer REX D18/117324 for markups | TF | 7/08/2018 |
| 296 | PLN-00073 | Hinze Dam WTP | HACCP Plan | flow diagrams<br>2.1.3<br>3.2<br>4.2<br>6<br>Appendix | • HACCP process step terminology updated throughout to reflect risk assessment process steps.<br>• Section 2.1.2<br>• HACCP schematic diagram updated to show raw water pumps in BoHT. RPZ added to rainwater into mains connection point. Sludge holding tank added.<br>• HACCP Flow diagram and schematic diagram updated to show sludge holding tank and turbidity monitoring (not part of HACCP monitoring). Terminology updated to reflect risk assessment process steps.<br>• Section 2.1.3 system overview Distribution Pipeline section updated to include description of rainwater system and Cedar lakes raw water pipeline.<br>• Section 3.2 HACCP limit validation minor updates as per wall chart changes.<br>• Section 4.2 pre-requisite programs updated to reflect overarching PRP procedure and listed oPRPs.<br>• Section 6 updated to reflect chemical supplier details captured in overarching REG-00250.<br>• Appendix added to include drawing of distribution system diagram as per Maroon HACCP plan. | Refer REX D18/117407 markups | TF | 7/08/2018 |
| 297 | PLN-00074 | Hinze Dam WTP | Operational Mon | Terminology<br>Distribution pipeline | • HACCP process step terminology updated to reflect risk assessment process steps.<br>• Weekly turbidity added to hinze visitor centre park tap. | Refer REX D18/117409 markups | TF | 7/08/2018 |

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| # | Document Ref | WTP/System | CCP Plan/Proced | Section/Para | Brief description / justification of change | Additional Comments | Originator | Date |
|---|---|---|---|---|---|---|---|---|
| 298 | PRO-02103 | Hinze Dam WTP | HACCP Plan Wall | terminology<br>Raw water abstraction<br>Disinfection (primary)<br>Distribution pipeline | • HACCP process step terminology updated throughout to reflect risk assessment process steps.<br>• Raw water abstraction - removal of raw water turbidity Critical limit. Decision to run WTP or shutdown and tanker to be made by Operations. Subsequent CCP CLs sufficient to ensure safety of drinking water.<br>• Removal of T&O target and actions. Management of T&O control is driven by Molendinar HACCP Plan. Note in Critical Limit Corrective Actions guidance that tankering is an option.<br>• 'Treated water' process step removed.<br>• Disinfection (primary) low pH CL considered but removed based on likelihood of low pH in WTP process not occurring.<br>• Distribution Pipeline Hinze visitor Centre tap turbidity added. Should be <1 NTU. Operator to assist in performing basic checks of system integrity if turbidity high. | Refer REX D18/117410 markups | TF | 7/08/2018 |
| 299 | PLN-00075 | North Stradbroke Island Town WTPs (Amity, Dunwich & Point Lookout) | HACCP Plan | flow diagrams<br>2.1.3<br>2.1.4<br>3.2<br>4.2<br>6 | • HACCP process step terminology and updated throughout to reflect risk assessment process steps and GDE-00235 WTP Equipment Field Labeling Guideline. Process step symbol (red circle) added to flow diagrams where previously omitted for Process Steps.<br>• Section 2.1.2 HACCP Flow diagram process step terminology updated to reflect risk assessment process steps. Addition of Raw Water Abstraction grab sample monitoring requirement.<br>• All: Redland reservoir assets that control treated water pump start/stop remain. All other Redland network assets removed.<br>• Dunwich flow diagram and schematic – online filtered water turbidity added.<br>• Section 2.1.3 1. Point Lookout WTP: bore 1 casing damage and operating philosophy added.<br>• Section 2.1.3 3 Dunwich WTP: description of online turbidity added.<br>• Fluoridation and Disinfection (primary) order of appearance switched.<br>• Section 2.1.4 operational challenges updated to remove reference to raw water iron for Amity Point as this is captured in unmitigated R.A process. Point Lookout in summer 17-22 hours supply challenges during peak demand period added.<br>• Section 3.2 HACCP limit validation minor updates as per wall chart changes.<br>• Section 4.2 pre-requisite programs updated to reflect overarching PRP procedure and listed oPRPs.<br>• Section 6 updated to reflect chemical supplier details captured in overarching REG-00250. | Refer REX D18/117478 markups | TF | 8/08/2018 |
| 300 | PLN-00144 | North Stradbroke Island Town WTPs (Amity, Dunwich & Point Lookout) | Operational Mon | terminology<br>Raw water abstraction<br>Media filtration | • HACCP process step terminology updated to reflect risk assessment process steps.<br>• All Raw and treated water – colour – removed. Risk doesn't warrant operational monitoring and treatment for colour does not exist at WTP.<br>• Dunwich WTP NEW – Media Filtration – online filtered water turbidity added and grab sample (crosscheck) daily from weekly. | Refer REX D18/117478 markups | TF | 8/08/2018 |
| 301 | PRO-02099 | North Stradbroke Island Town WTPs (Amity, Dunwich & Point Lookout) | HACCP Plan Wall | Corrective actions<br>Raw Water Abstraction<br>Media Filtration<br>Disinfection (primary) | • All HACCP process step terminology and process water updated throughout to reflect risk assessment process steps and standard naming conventions (GDE-00235 WTP – Equipment Field Labelling).<br>• All removal of 'treated water' process step line item from<br>• All shutdown/interlocks requirements separated for Stablised water (pre) and treated water (post) in Critical Limits corrective actions column. To be reviewed/actioned by SCADA change request form.<br>• All NEW - Raw water abstraction – raw water turbidity target and action limit from daily grab sample to detect change or disturbance in bore water quality.<br>• Dunwich WTP: NEW – Media Filtration – filtered water target and action limit to integrate online filtered water turbidity meter<br>• Amity Point WTP: reduction of treated water free chlorine action limit timeframe from 2 hours to 30 mins in line with SPE-00320 and other WTP Disinfection (primary) CCP timeframes.<br>• All treated water turbidity action limit timeframe reduced from 4 hours to 30 mins and critical limit increased from 0.8 NTU to 1.0 NTU and timeframe reduced from 1 hour to 15 mins. | Refer REX D18/117484 markups | TF | 8/08/2018 |
| 302 | PNL-00138 | Rathdowney WTP | HACCP Plan | terminology<br>flow diagrams<br>2.1.3<br>2.1.4<br>3.2<br>4.2<br>6 | • HACCP process step terminology and updated throughout to reflect risk assessment process steps and GDE-00235 WTP Equipment Field Labeling Guideline. Process step symbol (red circle) added to flow diagrams where previously omitted for Process Steps.<br>• Section 2.1.2 HACCP Flow diagram process step terminology updated to reflect risk assessment process steps. Removal of Manganese removal process step.<br>• Section 2.1.3: Coagulation section updated to describe 589 dosing as neat and max 589 dose rate as 80 mg/L. Manganese and Iron removal section removed and description of historical process captured under media filtration. Distribution system updated to reflect QUU new reservoir.<br>• Section 2.1.4 operational challenges updated describe stormwater flows into solids handling system.<br>• Section 3.2 HACCP limit validation minor updates as per wall chart changes.<br>• Section 4.2 pre-requisite programs updated to reflect overarching PRP procedure and listed oPRPs.<br>• Section 6 updated to reflect chemical supplier details captured in overarching REG-00250. | Refer D18/117800 markups | TF | 7/08/2018 |
| 303 | PRO-02003 | Rathdowney WTP | HACCP Plan Wall | terminology<br>manganese and iron control<br>supernatant return<br>coagulation<br>Disinfection (primary) | • All HACCP process step terminology and process water updated throughout to reflect risk assessment process steps and standard naming conventions (GDE-00235 WTP – Equipment Field Labelling).<br>• Manganes and Iron removal removed. As per R.A 2017: pre filter chlorine assets still in place. If pre-filter chlorine were to be re-initiated refer to previous HACCP Risk Assessment and review and update for this process. Not assessed in 2017.<br>• Removal of 'treated water' process step line item.<br>• Raw Water Abstraction HACCP limits changed from absolute values to change over specified timeframe which is representative of this WTP and in line with SPE-00320.<br>• Supernatant return Action limit value increased and timeframe decreased in line with SPE-00320.<br>• Coagulation: action limit colour decreased from 15 HU to 10 HU which should be readily achievable at this site.<br>• Disinfection: dosed filtered water upper free chlorine action limit increased from 3.5 mg/L to 3.8 mg/L based on feedback from Ops regarding chlorine decay in summer months<br>• Disinfection: treated water turbidity action limit added following Petrie incident.<br>• All shutdown/interlocks requirements separated for individual parameters. | Refer D18/117801 markups | TF | 7/08/2018 |
| 304 | PLN-00093 | Rathdowney WTP | Operational Mon | terminology | • HACCP process step terminology updated to reflect risk assessment process steps and HACCP reportable parameters. | Refer D18/117798 markups | TF | 7/08/2018 |

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| # | Document Ref | WTP/System | CCP Plan/Proced | Section/Para | Brief description / justification of change | Additional Comments | Originator | Date |
|---|---|---|---|---|---|---|---|---|
| 305 | PLN-00095 | Kooralbyn WTP | HACCP Plan | flow diagrams<br>2.1.3<br>2.1.4<br>3.2<br>4.2<br>6 | • HACCP process step terminology and updated throughout to reflect risk assessment process steps and GDE-00235 WTP Equipment Field Labeling Guideline. Process step symbol (red circle) added to flow diagrams where previously omitted for Process Steps.<br>• Section 2.1.2 HACCP Flow diagram process step terminology updated to reflect risk assessment process steps. Addition of Raw Water Abstraction grab sample monitoring requirement. Caustic dosing changed to 'as required' (dashed line) to reflect requirements. Bigfoot Lagoon clearly identified as optional source.<br>• Section 2.1.3 description of Bigfoot lagoon as alternate source added.<br>• Section 2.1.3 C.t changed from 15 to 10 and updated as per C.t calculator. Min level reduced to 20%.<br>• Section 2.1.4 operational challenges updated to include insufficient alum storage, high pH during dry periods, regular Operator intervention to optimize coagulation during raw water changes in Logan River.<br>• Section 3.2 HACCP limit validation updates as per wall chart changes.<br>• Section 4.2 pre-requisite programs updated to reflect overarching PRP procedure and listed oPRPs.<br>• Section 6 updated to reflect chemical supplier details captured in overarching REG-00250. | Refer D18/117965 markups | TF | 7/08/2018 |
| 306 | PLN-00096 | Kooralbyn WTP | Operational Mon | terminology | • HACCP process step terminology updated to reflect risk assessment process steps and alignment of 'HACCP reportable parameters' with Wall Chart.<br>• 'Treated Water' process step monitoring for treated water turbidity and colour moved into Disinfection (primary) process step. | Refer D18/117966 markups | TF | 7/08/2018 |
| 307 | PRO-02110 | Kooralbyn WTP | HACCP Plan Wall | Raw water abstraction<br>Coagulation<br>Disinfection (primary) | • All HACCP process step terminology and process water updated throughout to reflect risk assessment process steps and standard naming conventions (GDE-00235 WTP – Equipment Field Labelling).<br>• Raw Water Abstraction: removal of turbidity critical limit.<br>• Raw Water Abstraction: addition of raw water colour target and action limit similar to Kalbar WTP.<br>• Raw Water Abstraction: note added regarding impact of PAC dosing when using Bigfoot Lagoon on raw water turbidity.<br>• Coagulation: settled water UV 254 Action limit added as more sensitive measure of organics removal performance through the coagulation process similar to Kalbar WTP.<br>• Disinfection (primary): Dosed Filtered Water Action limit pH reduced from pH 8.0 to 7.6 as WTP targets C.t 10 mg.min/L which requires pH to be ≤8.0. Therefore critical pH limit reduced from 8.5 to 8.0.<br>• Disinfection (primary): Treated water pH Action limits and critical limits as per Dosed filtered water to prevent out of spec water leaving CCT.<br>• Disinfection (primary): Reservoir level target and critical limit reduced from 45% to 20%. No impact to min chlorine for C.t 10 mg.min/L. Previous error/oversight<br>• Disinfection (primary): treated water turbidity action limit added following Petrie incident.<br>• Removal of 'treated water' process step line item. | Refer D18/117967 markups | TF | 7/08/2018 |
| 308 | REF-00306<br>(PL-GDC-20-1680) | Gold Coast Desalinatio | HACCP Plan | Refer Veolia doc manageme | Refer Veolia doc management system | Refer Veolia doc management system | Veolia | 9/01/2018 |
| 309 | REF-00308 (obsolete)<br>REF - new<br>(CRA-GCD-13-9635) | Gold Coast Desalinatio | HACCP Risk Regis | reveiwed and updated | REF-00308 and REF-00310 merged together become (CRA-GCD-13-9635) single doc. REF-NEW | Refer Veolia doc management system | Veolia | 10/01/2018 |
| 310 | REF-00310 (obsolete)<br>REF - new<br>(CRA-GCD-13-9635) | Gold Coast Desalinatio | HACCP Risk Regis | reveiwed and updated | REF-00308 and REF-00310 merged together become (CRA-GCD-13-9635) single doc. REF-NEW | Refer Veolia doc management system | Veolia | 10/01/2018 |
| 311 | REF-00309<br>(PL-GCD-20-1682 | Gold Coast Desalinatio | HACCP Validation | Refer Veolia doc manageme | Refer Veolia doc management system | Refer Veolia doc management system | Veolia | 16/11/2017 |
| 312 | REF<br>(REF-DCG-4-1664) | Gold Coast Desalinatio | Operational Mon | Refer Veolia doc manageme | Refer Veolia doc management system | Refer Veolia doc management system | Veolia | 5/07/2018 |
| | | | | | **Submission to Regulator - Amendment Application August 2018** | | | |
| 313 | PLN-00357 | Canungra WTP | HACCP Plan | All | New Canungra MF WTP | New procedure | TF | 7/09/2018 |
| 314 | PLN-00358 | Canungra WTP | Operational Mon | All | New Canungra MF WTP | New procedure | TF | 7/09/2018 |
| 315 | PRO-02267 | Canungra WTP | HACCP Plan Wall | All | New Canungra MF WTP | New procedure | TF | 7/09/2018 |
| 316 | GDE-00255 | Canungra WTP | Verification Samp | All | New Canungra MF WTP | New procedure | TF | 12/09/2018 |
| 317 | PLN-00357 | Canungra WTP | HACCP Plan | Validation | • Section 1.1 scope: updated to include date of commissioning of new Canungra WTP.<br>• Schematic diagram – removal of KIP reference as this only relates to Supply System sites.<br>• Sample point codes update from CAN to CNG, Membrane Pressure Decay changed to Protozoa LRV<br>• Risk Register / Risk Dashboard terminology made consistent throughout doc<br>• Section 2.1.3 Distribution System: removal of inaccurate daily system demand figure<br>• Section 3.2 HACCP limit validation: Disinfection CCP: Update of validation to reflect removal of dosed filtered water and treated water pH action limits of >8.0 for >30 mins based on the control system automatically shifting the minimum C.t alarm/interlock between 10 mg.min/L and 15 mg.min/L based on online pH. The raw water can be approx. pH 8.0 and there is no pH correction (reduction) through the process hence there can only be an increase through the process. The upper pH Operating Protocol Notification trigger is pH 8.0 therefore a Notification to QUU would occur if/when the weekly treated water verification sample is pH >8.0. | Refer mark ups D18/138336 | TF | 18/09/2018 |
| 318 | PRO-02267 | Canungra WTP | HACCP Plan Wall | All | • Disinfection CCP Dosed Filtered Water and Treated Water upper pH Action Limits >8.0 for >30 mins removed.<br>• Corrective actions for high pH moved from 'Action Limit Corrective Action Guidance' to 'Critical Limit Corrective Action Guidance'. | Refer mark ups D18/138337 | TF | 18/09/2018 |
| 319 | PLN-00040 | North Stradbroke Islan | HACCP Plan | Flow diagrams<br>Section 2.1.3 overview for Supernatant return | Updates to flow diagrams and Section 2.1.3.3 to include return of TISAB to filter backwash tank and supernatant return process. | Refer markups D18/142223 | TF | 25/09/2018 |
| 320 | PLN-00357 | Canungra WTP | HACCP Plan | Validation | Increase in Membrane Filtration CCP limit from 230 µS/cm to 300 µS/cm based on current (normal) raw water conductivity levels. | Refer markups D18/148247 | TF | 26/09/2018 |
| 321 | PRO-02267 | Canungra WTP | HACCP Plan Wall | Membrane Filtration CCP | Increase in Membrane Filtration CCP limit from 230 µS/cm to 300 µS/cm based on current (normal) raw water conductivity levels. | Refer markups D18/148245 | TF | 26/09/2018 |

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| # | Document Ref | WTP/System | CCP Plan/Proced | Section/Para | Brief description / justification of change | Additional Comments | Originator | Date |
|---|---|---|---|---|---|---|---|---|
| 322 | PLN-00069 | Molendinar WTP | HACCP Plan | Section 2.1<br>2.1.3 System overview<br>3.2 validation<br>4.2 PRPs<br>6 Materials & Chemicals | • 2.1.1 CWQ Coord added to HACCP team. Previous omission.<br>• 2.1.2 Verification sample point ID's added to HACCP Schematic diagram<br>• 2.1.2 Dashed lines added to HACCP Process Flow Diagram and HACCP Schematic Diagram showing clear delineation between Molendinar WTP HACCP Plan and Supply System HACCP Plan and CRE.<br>• Aerial photograph updated to more recent photo<br>• Site layout of reservoirs removed as this is supply system asset.<br>• 2.1.3 Catchment & storage description updated by CWQ Coord to reflect Sanitary survey<br>• Process step nomenclature updated as per Risk Assessment<br>• C.t calc details updated<br>• Section 3.2 Validation: updates to validation section to align with updates to changes to HACCP limits and more detail added in line with SPE-00320.<br>• 4.2 pre-requisite programs updates to align with REG-00775.<br>• 6 Material & chemicals updated to align with REG-00250 process. | Refer markups D18/158124 | TF | 29/10/2018 |
| 323 | PRO-01984 | Molendinar WTP | HACCP Plan Wall | Supernatant Return<br>Coagulation<br>Floc & Settling<br>Disinfection (primary) | • Supernatant return turbidity AL increased from 10NTU to 15NTU in line with SPE-00320<br>• Coagulated water pH target values, action limit values and critical limit values aligned with SPE-00320 for site where organics removal is not the primary driver.<br>• Settled water colour target value aligned with SPE-00320. Was ≤2 HU now <2 HU.<br>• Settled water turbidity limit aligned with SPE-00320 from >3 NTU for 2 hours to > 5 NTU for 60 mins to accommodate clarifier boil up events which occur regularly (nightly) but does not impact filter.<br>• Disinfection (primary) C.t and free chlorine target, lower action limit value and lower critical limit value increased based on worst case scenario running 5 treated water pumps. Previously action to contact DWQ Coord to recalc C.t if >3 TW pumps running however no engineering controls in place to stop >3 TW pumps running so HACCP limit adjusted to accommodate this scenario.<br>• Various wording updates to Corrective action guidance. Refer markups. | Refer markups D18/158122 | TF | 29/10/2018 |
| 324 | PLN-00070 | Molendinar WTP | Operational Mon | Manganese & Iron removal | • Removal of daily manganese testing on supernatant return and settled water. Not required as per validation standard. PRO HACCP Plan Wall Chart Procedure includes corrective action to Check raw, settled and supernatant return soluble manganese if high treated water Mn detected > action limit. | Refer markups D18/158123 | TF | 29/10/2018 |
| 325 | PLN-00095 | Kooralbyn WTP | HACCP Plan | 2.1.2<br>2.1.3<br>2.1.4<br>3.2 | • 2.1.2 aerial photograph text updated indicating temporary tanks in use and the treated water reservoir offline.<br>• 2.1.3.2 – coagulation – alum storage volume increased from 1700L to 10000L. Legacy info relating to magnasol 589 removed.<br>• 2.1.3.5 disinfection – treated water tank description added. C.t calculation updated.<br>• 2.1.4: Operations challenge: Alum storage upgraded mid-2018. Operational challenge relating to undersized alum storage removed.<br>• 3.2 Validation: values updated to reflect changes to C.t when operating with four temporary tanks. | Refer D18/186076 markups | TF | 7/11/2018 |
| 326 | PRO-02110 | Kooralbyn WTP | HACCP Plan Wall | Disinfection (primary) | • Disinfection (primary) HACCP limits adjusted<br>• Treated water free chlorine Action Limit increased from 1.0 mg/L to 1.5 mg/L<br>• Treated water free chlorine Critical Limit increased from 0.8 mg/L to 1.2 mg/L<br>• Treated water reservoir minimum level increased from 20% to 32 % | Refer D18/186072 markups | TF | 7/11/2018 |
| 327 | PLN-00357 | Canungra WTP | HACCP Plan | Validation | Validation to support changes to individual filter turbidity HACCP limits. | Refer markups D18/166986 | TF | 20/11/2018 |
| 328 | PRO-02267 | Canungra WTP | HACCP Plan Wall | Membrane Filtration CCP | Increase HACCP Operational Target from <0.05 NTU to <0.10 NTU<br>Removal of HACCP Action limit value >0.05 NTU for >15 mins<br>Adjustment of HACCP Critical limit value from >0.5 NTU for 1 min / >0.1 NTU for 5mins TO >0.15 NTU for 5 mins<br>Following continuos spikes in online turbidity reading following start up from shutdown on backwash which has been found to be related to air or possibly manganese build up in sample lines and not membrane integrity based on direct integrity testing. Limits adjusted to account for process issues that are not representative of membrane integrity issues AND turbidity verificaiton not possible to <0.1 NTU. Refer notes to validation section 3.2. | Refer markups D18/166984 | TF | 20/11/2018 |
| 329 | PLN-00357 | Canungra WTP | HACCP Plan | Flow diagram<br>Section 2.1.3<br>Section 3.2 | Updates relating to introduction of potassium permanganate:<br>• 2.1.2 Flow Diagram & schematic diagram updated: potassium permanganate added under Mn and Fe Control QCP. Treated water caustic dosing line changed to 'dashed' as is only dosed as required on HACCP Flow diagram.<br>• 2.1.3 Manganese and Iron Control QCP updated to include potassium permanganate system description.<br>• 3.2 Validation Manganese and Iron control updated to include potassium permanganate dosing as specific dosing to reduce Mn control. Previously stated specific Mn control not available. | Refer markups D18/168614 | TF | 26/11/2018 |
| 330 | PRO-02267 | Canungra WTP | HACCP Plan Wall | Mn and Fe Control | Updates relating to introduction of potassium permanganate:<br>• No changes to HACCP limits.<br>• Manganese and Iron control QCP updated to include corrective action for high manganese to check and adjust potassium permanganate dose rate. Corrective action if treated water Mn high updated to include verifying that a potassium permanganate overdose has/hasn't occurred. | Refer markups D18/168612 | TF | 26/11/2018 |
| 331 | PLN-00358 | Canungra WTP | Operational Mon | Mn and Fe Control | Updates relating to introduction of potassium permanganate:<br>• Manganese and Iron control QCP: Daily visual inspection and recording of potassium permanganate batching tank level (usage). | Refer markups D18/168613 | TF | 26/11/2018 |
| 332 | PLN-00070 | Molendinar WTP | Operational Mon | Disinfection (primary) | Removal of WTP Operator 3 x weekly sampling from Reservoirs 3, 4, 5, 6 outlets. This sampling will be performed under the Supply System verification monitoring program as of Monday 3rd Dec in line with these Reservoirs being part of the Supply System HACCP system and not the Molendinar WTP HACCP system. | Refer markups D18/170645 | TF | 29/11/2018 |
| 333 | PLN-00072 | Mudgeeraba WTP | Operational Monitoring Plan | Mn and Fe Control | Removal of daily manganese testing on supernatant return and settled water. Not required as per validation standard. PRO HACCP Plan Wall Chart Procedure includes corrective action to Check raw, settled and supernatant return soluble manganese if high treated water Mn detected > action limit. | Refer markups D18/173376 | TF | 5/12/2018 |
| 334 | PRO-02003 | Rathdowney WTP | HACCP Plan Wall | Disinfection (primary) | • Disinfection primary target and action limits expanded to include winter (May-Oct) and summer (Nov-Apr) free chlorine dosed filtered water targets and action limits based on chlorine decay experienced in warmer months and chlorine required to reliably achieve treated water free chlorine target.<br>• Note added that it is the responsibility of the Operations Supervisor to make changes to the free chlorine HACCP Action Limits in SCADA in summer/winter as per the HACCP Plan. | Refer D18/181982 markups | TF | 17/12/2018 |

**Southern Opeational Region - Register of changes to HACCP plans, procedures or related documents**

| # | Document Ref | WTP/System | CCP Plan/Proced | Section/Para | Brief description / justification of change | Additional Comments | Originator | Date |
|---|---|---|---|---|---|---|---|---|
| 335 | PNL-00138 | Rathdowney WTP | HACCP Plan | 2.1.1<br>2.1.2<br>2.1.3<br>3.2 | •2.1.1 HACCP team: Addition of CWQ Coord to HACCP team table<br>•2.1.2 aerial photo updated<br>•2.1.3.6 Disinfection primary description updated to include impact of warmer and cooler months on chlorine residual. Updated C.t calc.<br>•3.2 Validation section updated as per updates to Wall Chart HACCP limits for Disinfection (primary) free chlorine. | Refer D18/181983 markups | TF | 17/12/2018 |
| 336 | PLN-00095 | Kooralbyn WTP | HACCP Plan | 2.1.1<br>2.1.3<br>2.1.4<br>3.2 | •2.1.1 CWQ Coord added to HACCP team. Previous omission.<br>•2.1.3 aerial photograph notes updated indication 1.5 ML res in use<br>•2.1.3.5 Disinfection primary section updated to reflect 1.5 ML res. C.t calc updated based on changes back to 1.5 ML reservoir.<br>•Distribution system section updated to reflect 1.5 ML res.<br>•2.1.4 updated to remove reference to use of Bigfoot and need for baffle.<br>•Section 3.2 Validation: updates to validation section to align with updates to changes to HACCP limits back to 1.5 ML reservoir<br>•4.1 operational procedures. Removal of remaining references to magnasol procedures. | Refer D18/181979 markups | TF | 17/12/2018 |
| 337 | PRO-02110 | Kooralbyn WTP | HACCP Plan Wall | Disinfection (primary) | •Treated water free chlorine Action Limit decreased from 1.5 mg/L back to 1.0 mg/L<br>•Treated water free chlorine Critical Limit decreased from 1.2 mg/L to 0.8 mg/L<br>•Treated water reservoir minimum level decreased from 32% to 20% | Refer D18/181979 markups | TF | 17/12/2018 |
| 338 | PRO-02105 | Beaudesert WTP | HACCP Plan Wall | Raw Water Abstraction<br>Coagulation<br>PAC (new)<br>Media Filtration<br>Disinfection (primary) | Raw water abstraction – raw water turbidity action limit reduced from ±20 NTU to ±10 NTU as interim limits 25/06/18 have become permanent.<br>Raw water turbidity colour action limit >30 HU changed to >± 20 HU to capture dynamic approach to responding to raw water change to trigger review of coag dose rate change. Target changed to colour at last coag dose rate change<br>Coagulation – coagulated water upper pH action limit increased from pH 7.0 to pH 7.3 and timeframe reduced from 30 mins to 15 mins. Refer section 3.2 validation.<br>PAC – new process step<br>Media Filtration – new target and action limit for settled water chlorine dosing.<br>Disinfection(primary) (normal mode) – free chlorine critical limit timeframe reduced to 2 mins for consistency with timeframe when running through buffer tank. Typo of res tank level > symbol corrected.<br>Disinfection (primary) (ammonia mode) – breakpoint chlorine target and action limit reduced based on only needing to achieve primary disinfection and not extra chlorine for network as it all gets consumed in GAC. Discrepancy action limit and critical limit values and timeframes increased based on operational experience.<br>Disinfection (primary) (ammonia mode) - Nomenclature updated. | Refer markups D18/184929 | TF | 18/12/2018 |
| 339 | PLN-00092 | Beaudesert WTP | Operational Mon | PAC dosing<br>Floc and Settling<br>Media Filtration | PAC dosing – daily dose rate check added (when in use)<br>Flocculation and Settling – daily dose rate check added<br>Media filtration – daily filtered water free chlorine grab sample added | Refer markups D18/184930 | TF | 18/12/2018 |
| 340 | PLN-00091 | Beaudesert WTP | HACCP Plan | 1.2<br>2.1.1<br>2.1.2<br>2.1.3<br>2.1.4<br>3.2<br>4.2<br>6 | 1.2 Notes added to Conditions of Application table based on Seqwater Asset Capability Statement – Treatment and Transport – 2015 (D14/38264)<br>2.1.1 CWQ Coord added to HACCP team<br>2.1.2 HACCP flow diagram and schematic updated to include PAC, settled water chlorine. Both as required. Changed settled water caustic to 'as required'.<br>Aerial photographs updated.<br>2.1.3.3 PAC new section<br>2.1.3.5 Media Filtration description of change of filter from biological to non-biological and description of settled water chlorine dosing added.<br>2.1.3.7 Disinfection (primary) reformatted with headings 'normal mode' and 'ammonia mode'. C.t calc updated.<br>2.1.4 challenges regarding temporary nature of poly and settled water chlorine dosing systems, high raw water pH and clarifier performance added.<br>3.2 Validation updated to reflect updates to Wall Chart. Detail added where limits previously not specifically detailed.<br>6 Material and chemical updated to reflect new REG-00250 commercial services process.<br>4.2 Pre-requisite programs updated to reflect new REG-00775 corporate HACCP RPRs process. | Refer markups D18/184931 | TF | 18/12/2018 |
| 341 | PLN-00102 | Canungra WTP | HACCP Plan | obsolete | Old WTP demolished 14/12/18 | Refer email Paul F 14/12/18 | TF | 20/12/2018 |
| 342 | PLN-00007 | Canungra WTP | Operational Mon | obsolete | Old WTP demolished 14/12/18 | Refer email Paul F 14/12/18 | TF | 20/12/2018 |
| 343 | PRO-02109 | Canungra WTP | HACCP Plan Wall | obsolete | Old WTP demolished 14/12/18 | Refer email Paul F 14/12/18 | TF | 20/12/2018 |
| 344 | PLN-00357 | Canungra WTP | HACCP Plan | 2.1.3<br>3.2 | •2.1.3.2 Mn and Fe Control: description added to include scales for monitoring chemical usage.<br>•3.2 HACCP Limit Validation: updated to reflect changes to Wall Chart | Refer markups D19/1112 | TF | 4/01/2019 |
| 345 | PRO-02267 | Canungra WTP | HACCP Plan Wall | Membrane Filtration CCP<br>Disinfection (primary) CCP<br>Fluoridiation CCP | •Membrane Filtration CCP<br>Filtered water conductivity target and critical limits changed from absolute <200 and >330 µS/cm values to calculated values of <20% (target) and >+20% (critical limit).<br>•Disinfection (Primary) CCP<br>Dosed filtered water free chlorine upper critical limit timeframe extended from >5 mins to >15 mins to allow for short term increases on start up with insignificant consequence to the treated water chlorine.<br>•Fluoridation CCP<br>Dosed filtered water fluoride timeframe reduces from >15 mins to >5 mins to allow for earlier detection of an overdose and interlocking of the fluoride plant. | Refer markups D19/1113 | TF | 4/01/2019 |
| 346 | PLN-00073 | Hinze Dam WTP | HACCP Plan | 1.1<br>2.1.2<br>2.1.3 | DWQMP Amendment Application 2018 - Additional Information Request:<br>•Section 1.1 Scope updated to include brief description of Cedar Lakes raw water supply assets and management of Cedar Lakes supply is not covered under the Hinze Dam WTP HACCP Plan.<br>•Section 2.1.2 Hinze Dam WTP Plan HACCP flow diagram and schematic diagram updated to show Cedar Lakes raw water supply off raw water main and separation from Hinze Dam WTP HACCP system assets. Refer HACCP Plan Appendix 1 drawing 'Cedar Lakes Line'<br>•Aerial photograph updated to show location of cedar lakes supply from below dam wall off raw water main.<br>•Section 2.1.3.6 further updated to state that the Cedar Lakes raw water supply system assets are physically separate from the potable water assets and management of the Cedar Lakes raw water supply system is not covered under PLN-00073 Hinze Dam WTP HACCP Plan. | Refer REX D19/10720 | TF | 31/01/2019 |

**Southern Opeational Region - Register of changes to HACCP plans, procedures or related documents**

| # | Document Ref | WTP/System | CCP Plan/Proced | Section/Para | Brief description / justification of change | Additional Comments | Originator | Date |
|---|---|---|---|---|---|---|---|---|
| 347 | PLN-00071 | Mudgeeraba WTP | HACCP Plan | 1.2<br>2.1.1.<br>2.1.2<br>2.1.3<br>3.2<br>4.2<br>6.0 | All process step terminology and CCP/QCP/oPRP alignment with WQ Risk Dashboard<br>Associated docs list updated<br>1.2 Conditions of operation table – further detail added. Values unchanged.<br>2.1.1 HACCP team – CWQ Coord added. Previous omission.<br>2.1.2 HACCP flow diagram updated to include interconnecting Res1/Res2 pipeline which is C.t and fluoride bypass.<br>HACCP schematic diagram minor updates for location of raw water flow meters and include interconnecting Res1/Res2 pipeline<br>2.1.3 aerial photograph updated<br>Catchment and Storages description updated by CWQ Coord<br>Disinfection primary description updated to include more detail on virus and bacteria log inactivation. C.t calc also updated. Min chlorine value unchanged.<br>3.2 Validation table updated based on changed to PRO-02028 – Mudgeeraba WTP – HACCP Plan Wall Chart Procedure and further detail added for some limits.<br>4.2 oPRP section now PRP section. Section paragraph updated and table updated.<br>6 Materials and chemical Section paragraph updated and table updated based on REG-00250 now overarching panel list register. | Refer markups D19/36056 | TF | 26/03/2019 |
| 348 | PLN-00072 | Mudgeeraba WTP | Operational Mon | Disinfection (primary) | All process step terminology and CCP/QCP/oPRP alignment with WQ Risk Dashboard<br>Disinfection (primary) – treated water turbidity listed as HACCP reportable parameter in line with new HACCP limit. | Refer markups D19/36062 | TF | 26/03/2019 |
| 349 | PRO-02028 | Mudgeeraba WTP | HACCP Plan Wall | Raw Water Abstraction<br>Taste and Odour control<br>Floc and Settling<br>Mn and Fe removal<br>Disinfection (primary) | All process step terminology and CCP/QCP/oPRP alignment with WQ Risk Dashboard<br>Raw water abstraction target turbidity changed from <5 NTU to turbidity at last coag dose change as per SPE-00320. Action limits separated for HUI and LND supplies. Note added re shutdown based on operations team assessment.<br>Taste and odour control critical limit for T&O results/complaints now action limit.<br>Flocculation and Settling – settled water turbidity target changed '≤2' to '<' in line with SPE-00320. Action limit increased from >3 NTU to >5 NTU as per SPE-00320 and WTP expected performance.<br>Manganese and Iron control – upper free chlorine action limit reduced from 0.8 mg/L to 0.7 mg/L in line with SPE-00320. Critical limit for upper free chlorine timeframe reduced to 15 mins and lower limit timeframe reduced to 2 hours. Refer HACCP plan section 3.2 validation.<br>Disinfection (primary) pH targets and limits updated and aligned for dosed filtered water pH and treated water pH to better align with CRE protocols/supply agreement. Refer HACCP plan section 3.2 validation.<br>Disinfection (primary) new target and action limit added for treated water turbidity to detect any disturbance or other issue that has the potential to impact free chlorine disinfection. | Refer markups D19/36058 | TF | 26/03/2019 |
| 350 | GDE-00061 | Canungra WTP | Verification Samp | obsolete | Old WTP demolished 14/12/18 | Refer email Paul F 14/12/18<br>Inadvertently omitted from list of docs sent through to be obsolete 20/12/18 | TF | 29/03/2019 |
| 351 | PLN-00040 | North Stradbroke Islar | HACCP Plan | 1.2<br>2.1.1<br>2.1.2<br>2.1.3<br>2.1.4<br>3.2<br>4.2<br>6 | List of Associated docs updated<br>1.2 conditions of application updated based on figures from other authoritative docs<br>2.1.1 CWQ Coord added to HACCP team – previous omission<br>2.1.2 Flow diagram updated to include new geotube installation and poly dosing into sludge collection pit (supernatant return CCP) and new CCT outlet Cl, pH monitoring (Disinfection (primary) CCP. WTP aerial photograph updated to more recent image.<br>2.1.3 Catchment & Storage description updated based on feedback from CWQ Coord. Supernatant Return CCP description updated based on upgrades. Coagulation CCP updated to describe change in poly from AN905 to LT-20 and change in poly dosing pump configuration. Media Filtration CCP updated to describe backwash limitation based on BWRT level. Disinfection (primary) CCP to describe interlock process and further detail of HBT, C.t calc updated to reflect lower reservoir level value.<br>2.1.4 operational challenges updated<br>3.2 Validation: all sections updated to include values and validation details. New Supernatant return and Disinfection (primary) CCP limits added in line with upgrades and new analysers.<br>4.2 Operational Pre-requisite Programs (oPRPs) entire section updated to reference overarching Register and site based oPRPs.<br>6 Materials and chemicals updated to reflect overarching panel register and changes to poly on site.<br>Documents references and terminology updated throughout doc. | Refer markups D19/46529 | TF | 15/04/2019 |
| 352 | PRO-02058 | North Stradbroke Islar | HACCP Plan Wall | All | Raw Water Abstraction QCP raw water colour target changed from absolute values to moving values. Removal of Critical Limit. Refer HACCP plan validation and wall chart.<br>Supernatant Return CCP new HACCP limits following upgrades and new online analysers<br>Coagulation CCP limits aligned with SPE-00320.<br>DAF CCP action limit aligned with SPE-00320<br>Disinfection (primary) CCP new CCT outlet pH and free chlorine targets and limits following installation of new analysers. Treated water reservoir level limits adjusted to reflect current operation.<br>Fluoridation CCP lower fluoride action limits (pre and post) timeframes extended from 60 mins to 4 hours. No increase in WQ risk.<br>Treated water CCP removed as per R.A. Not a process step. | Refer markups D19/46532 | TF | 15/04/2019 |
| 353 | PLN-00076 | North Stradbroke Islar | Operational Mon | Supernatant return<br>Disinfection (primary) | NEW Supernatant return CCP monitoring added<br>NEW CCT outlet pH and Cl online/verification monitoring added<br>Removal of note at end of table for combined filtered water sample monitoring. Individual filtered water analyser verification well embedded. Combined filtered water sampling redundant.<br>Updates to Process step to align with R.A. Updates to terminology of Process Steps and monitoring location throughout. | Refer markups D19/46530 | TF | 15/04/2019 |
| 354 | PLN-00040 | North Stradbroke Islar | HACCP Plan | 1.2<br>2.1.4<br>3.2 | 1.2 Conditions of operation & 2.1.3.2 Supernatant Return: updates to supernatant return flow rate figures.<br>2.1.4 Operation challenges: issue relation to location of CCT analysers causing delay time and CCT process fluctuations<br>3.2 Validation: Disinfection (primary) validation for HACCP limit timeframes amended as per wall chart. | Refer markups D19/54343 | TF | 8/05/2019 |
| 355 | PRO-02058 | North Stradbroke Islar | HACCP Plan Wall | Disinfection (primary) | CCT upper and lower free chlorine & upper pH action limit timeframes extended from 30 mins to 75 mins<br>CCT upper and lower free chlorine & upper pH critical limit timeframes extended from 15 mins to 60 mins<br>Changes due to:<br>1. The location of the analysers in relation to the sample point causing a delay in measuring a process change<br>2. Current process fluctuations in CCT for pH and chlorine | Refer markups D19/54342 | TF | 8/05/2019 |

**DWQMP and supporting programs change register**

| # | Document Ref | Plan/Procedure | Section/Para | Brief description / justification of change | Additional Comments | Originator | Date |
|---|---|---|---|---|---|---|---|
| 17 | PLN-00004 | Drinking Water Quality Management Plan (DWQMP) | N/A | Removal of Borumba WTP from scope of the DWQMP. | This WTP has been deregistered/decommissioned. | D Healy | 13/09/2017 |
| 18 | REG-00775 | Corporate HACCP - Register Prerequisite Programs (PRPs) | all sections | Description of PRPs and associated hazard analysis | | A Clement | 2/08/2018 |