

## 7 Recommended Actions

There needs to be an increased focus within Council to actively implement the DWMS including; CCP limits, data alerts and trends, notification protocols, as well as process and performance awareness within the W&S operations team.

This approach also needs to be supported with an increased focus upon the DWMS by the senior executive team together with regular compliance reporting to Council.

The recommendations from the incident debrief and review have been summarised in the table below. The table includes a description of the recommended action, with the opportunity for Council to allocate priority, responsibility and timeline for undertaking the action.

*Table 10 – Mendooran Incident Debrief Review Action and Recommendation List*

Incident Debrief Recommendations	WSC Priority (low, medium, or high)	WSC Responsibility and Timeline
<b>Recommendation 1:</b>		
<i>That online turbidity and chlorine residual monitoring is installed at Mendooran WTP.</i>		
<b>Recommendation 2:</b>		
<i>The water supply system diagram (Figure 2.1.9 Mendooran System Flow Diagram) from the WSC DWMS (17<sup>th</sup> Oct 2014) be corrected and updated to accurately reflect the operational arrangement of the Mendooran Water Supply System.</i>		
<b>Recommendation 3:</b>		
<i>That WSC investigates the operational control arrangements with a view to including the Standpipe reservoir level as part of the start/stop control of the clear water pumps, so that either the Coolabah reservoirs or Standpipe reservoirs can start/stop the clear water pumps.</i>		
<b>Recommendation 4:</b>		
<i>That WSC investigates the installation of an inline booster pumping station on the outlet of the Standpipe reservoir to provide sufficient water pressure for a regular watermain flushing program to be implemented, to improve the water supply system’s firefighting capacity and reduce overall water age by only storing water volumes sufficient to meet peak day demands.</i>		
<b>Recommendation 5:</b>		
<i>That WSC investigates options to reduce water age in the Coolabah rural residential estate water supply zone. This could include isolation of individual reservoirs i.e. Reservoirs No. 1, No. 2 and/or No. 3, on a seasonal basis to only store water volumes sufficient to meet peak day demands.</i>		
<b>Recommendation 6:</b>		
<i>That WSC review and regularly revise these water supply reticulation plans (Figures 4 &amp; 5) as required to maintain an up to date records.</i>		

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<b>Recommendation 7:</b>		
<p><i>That WSC review its current organisational structure with a view to ensure that the management of WTP Operators and reporting lines of communication actively support the ongoing implementation of its DWMS and CCPs.</i></p> <p><i>WSC should then formally document the adopted organisational structure, clearly communicating roles and responsibilities of all staff relating to the management of drinking water quality.</i></p>		
<b>Recommendation 8:</b>		
<p><i>That the EHO provides a copy of water quality results to WTP Operators at the time of onsite sampling and testing and/or leaves these results at the WTP. Any CCP exceedances or un-usual results recorded by the EHO are to be immediately reported to WTP Operators and W&amp;S Manager.</i></p>		
<b>Recommendation 9:</b>		
<p><i>That WSC staff with NSW Health staff undertake regular, at least annually, familiarisation and/or training in the implementation of NSW Health’s drinking water quality incident response protocols.</i></p>		
<b>Recommendation 10:</b>		
<p><i>That WSC prepare and formally adopts a “Drinking Water Quality Policy” and this policy is then “highly visible, continually communicated, understood and implemented by employees and contractors of the organisation”.</i></p>		
<b>Recommendation 11:</b>		
<p><i>That WSC undertake an annual internal review of its DWMS, using the HH2O revised NSW Health’s annual report template and consult their local PHU to develop an appropriate external review/audit frequency.</i></p>		
<b>Recommendation 12:</b>		
<p><i>That WSC develop and implement a DWMS review and continual improvement program which is regularly reviewed by the Senior Executive Team and reported to Council.</i></p>		
<b>Recommendation 13:</b>		
<p><i>That notices received from DPI-Water should be regularly reported to senior management together with an Action Plan, Works Budget and Timeline for the rectification of issues raised during DPI-Water Inspections. This Action Plan information should also be regularly reported back to DPI-Water and NSW Health.</i></p>		

Incident Debrief Recommendations	WSC Priority (low, medium, or high)	WSC Responsibility and Timeline
<b>Recommendation 14:</b>		
<i>That WSC urgently develop and implement a regular (weekly/monthly/annual) reservoir integrity inspection and reporting program for the Mendooran water supply system. This inspection and reporting program should be used to develop an Action Plan in order to urgently address all the existing integrity issues at the Mendooran water supply system. Annual reservoir integrity reports to be submitted to DPI-Water in accordance with LWU Circular No. 18.</i>		
<b>Recommendation 15:</b>		
<i>That WSC liaises with DPI-Water to prepare a program of capital works required to address current water treatment plant and water supply issues identified in this report, with the aim of obtaining funding under the “Safe &amp; Secure Water Program” to complete these works.</i>		
<b>Recommendation 16:</b>		
<i>That WSC review the LMWUA Water Treatment Plant Audit Report for the Mendooran WTP (September 2014), develop an Action Plan and urgently implement any outstanding recommendations. This Action Plan information should also be regularly reported back to DPI-Water.</i>		
<b>Recommendation 17:</b>		
<i>That WSC review all reservoir inspection reports (2014 and 2017) to develop an Action Plan and urgently implement any outstanding recommendations. This Action Plan information should also be regularly reported back to DPI-Water.</i>		
<b>Recommendation 18:</b>		
<p><i>That WSC review and update the DWMS and the “DWMS Improvement Plan” is then kept up-to-date, recommended improvements are implemented in the order of identified urgency and progress of the “DWMS Improvement Plan” is reported regularly to the Senior Executive Team and Council.</i></p> <p><i>This information should also be passed onto NSW Health and DPI-Water for advice, review and comment.</i></p> <p><i>(Noting that actions from many of the other Recommendations in this report would need to be included in this DWMS Improvement Plan)</i></p>		
<b>Recommendation 19:</b>		
<p><i>That WSC review and finalise the DWMS Implementation Report (2016), so that the recommended “Emergency Response Plan” can be utilised for any future incidents and emergencies.</i></p> <p><i>It is recommended that an exercise of the incident response plan be organised with the PHU (mid-2018).</i></p>		

Incident Debrief Recommendations	WSC Priority (low, medium, or high)	WSC Responsibility and Timeline
<b>Recommendation 20:</b>		
<i>That WSC develop and implement a “Drinking Water Quality Monitoring Plan” which formalise staff/role responsibilities, authorities reporting and communication protocols and review existing procedures for sampling and testing. The monitoring plan should be built based on the NSW Health Drinking Monitoring Plan (available on the NSW Health website).</i>		
<b>Recommendation 21:</b>		
<i>A new sampling site be created for the correct monitoring locations in Bandulla street. Sample site 123 (57 Bandulla Street) can then be archived.</i>		
<b>Recommendation 22:</b>		
<i>That WSC develop and implement procedures for all staff involved in sampling and monitoring which clearly reflect responsibilities in accordance with the DWMS, CCP limits and NSW Health protocols for monitoring water quality incidents. This would include investigations and appropriate remedial actions of any Total Coliform detections and to also follow CCP corrective actions for any free chlorine level exceedances.</i>		
<b>Recommendation 23:</b>		
<i>That the onsite sampling and testing conducted by the EHO includes turbidity and these field results are provided to the WTP operators on the same day that FASS samples are collected.</i>		
<b>Recommendation 24:</b>		
<i>That WSC finalise draft CCPs provided the DWMS Implementation Report (Bligh Tanner, 2016) and include an additional WTP Final pH CCP</i>		
<b>Recommendation 25:</b>		
<i>The DWMS CCP summary tables are reviewed, finalised and posted on the noticeboards at the WTP, kept in work vehicles and included in regular training sessions/toolbox talks, incident response protocol/training and included in the water quality monitoring procedures and log sheets.</i>		
<b>Recommendation 26:</b>		
<i>That WSC update the daily water quality log sheets to include turbidity and temperature, and CCP limits and actions to be taken if the CCP limits are exceeded. This will prompt the WTP operator to take appropriate actions and notifications if results are above the alert or critical limits.  That the WTP operators use a simple system, where they colour in the results (using highlighter pens) to identify where the results lie within the CCP ranges.</i>		

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<b>Recommendation 27:</b>		
<i>That WSC implement a simple “Water Quality Monitoring Incident Report” sheet for WTP operators to complete if any field results fall outside of the ranges set out on the field monitoring log sheets.</i>		
<b>Recommendation 28:</b>		
<i>That the WSC include WTP operators and other staff involved in water supply activities to attend the Drinking Water Quality Meetings.</i>		
<b>Recommendation 29:</b>		
<i>That the Human Resources records for relevant staff are reviewed, and that training is undertaken for all water supply operational staff, WTP operators and relief staff to upskill and to be appropriately trained in WTP processes (i.e. DPI-Water Part 1 and 2 as a minimum). It is also recommended that all staff involved with water quality sampling, testing and monitoring, undergo training and are involved in developing procedures for their work tasks.</i>		
<b>Recommendation 30:</b>		
<i>That WSC investigate and implements a process of its WTP operators to be certified under the National Certification Framework.</i>		
<b>Recommendation 31:</b>		
<i>That WSC investigate and implement a formalised preventative maintenance program for all the WTP, reticulation and reservoir assets.</i>		