





Implementing a Drinking Water Management System


AWA PRESENTATION October 2015

Adhering to a quality assurance program

25 Quality assurance programs (of 1991 Act, s 10M)

(1) A supplier of drinking water must establish, and adhere to, a quality assurance program that complies with the requirements prescribed by the regulations.



2

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SWOT Analysis

“a study undertaken by an organization to identify its internal **strengths** and **weaknesses**, as well as its **external opportunities** and **threats**.”
(google)



3

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Adherence framework

Element	Establishment	How Achieved
Compliance	Not required	Monitoring
Relevance	A point in time	Review
Improvement	Only within scope	Evaluation
Synergy	Not required	Recycled Water Management System Pollution Incident Response Management Plans Business Continuity Incident Management



4

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ADWG Framework (1)

Figure 2.1 Framework for management of drinking water quality

Commitment to Drinking Water Quality Management

System Analysis and Management


- Assessment of the drinking water supply system
- Preventive measures for drinking water quality management
- Operational procedures and process control
- Verification of drinking water quality
- Management of incidents and emergencies


Supporting Requirements

- Employee awareness and training
- Community involvement and awareness
- Research and development
- Documentation and reporting

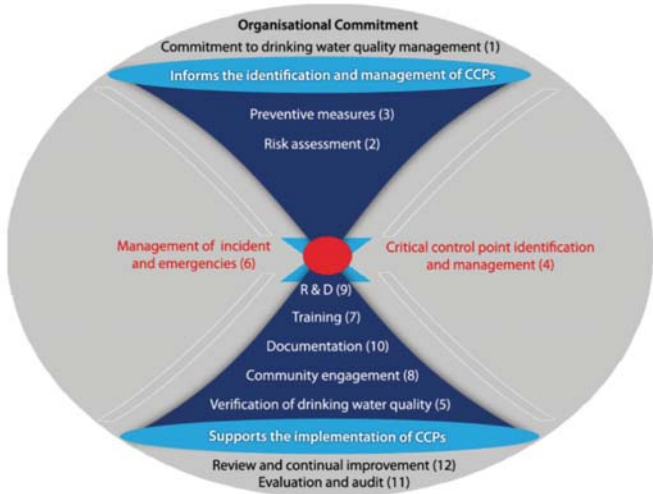
Review

- Evaluation and audit
- Review and continual improvement


5
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ADWG Framework (2)



NSW Guidelines for Drinking Water Management Systems NSW HEALTH PAGE 5

6
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Options

- Distributed v. Centralised
- Automated v. Manual
- Dedicated v. Team approach
- Multi-disciplinary approach?



7 Implementing a Drinking Water Management System



Ballina Shire Council Approach

Item	Monitoring	Evaluation	Synergy	
1	Commitment to Drinking Water	IPR / SBP	IPR / SBP	Urban Water
2	Assessment of the Drinking Water Supply System, including Risk Register	Control Measures	Incidents	Format (look/feel) Definitions (Risk)



8 Implementing a Drinking Water Management System



Risk Register

Treatment - Maximum & Residual Risk


Ref	Component	Hazardous Event	Potential Hazard	Leading Hazards	Maximum Consequence	Maximum Likelihood	Maximum Risk	Preventive Measures	Monitoring	Residual Consequence	Residual Likelihood	Residual Risk	Comments	Level of Uncertainty	Risk Treatment
Risk T-1	Source Water	Algal bloom in Maroon Creek	Environmental conditions lead to algal bloom (e.g. low flows, high nutrients). Discharge from upstream dams	Contaminant	Insignificant	Rare	Low	Selective abstraction. Continuous flow at Maroon Creek. In low flow conditions water is pumped over weir to maintain flows. Alternate sources (bore once operational). Biofloculation.	Catchment monitoring. Monthly monitoring at Maroon Creek.	Insignificant	Rare	Low	- Requirements to maintain flows for environment and downstream users. - If conditions change in future, measurement of risk required.	Confident	N/A
Risk T-2	Source Water	Out of Specification Source Water	Source water exceeds treatment capacity due to storm event, dam discharge, other	Turbidity Bacteria Viruses Protozoa pH Iron Cyanobacteria	Catastrophic	Possible	High	Selective abstraction. Alternate source. Up to 7 days storage in system.	Daily visual inspection. Daily turbidity at Maroon Creek. Review of weather.	Major	Unlikely	Medium (H)	- One incidence where nursery dam with DGA overflowed in the catchment, was monitored at the time but no issues eventuated. - 2 days' water in flocculation pond allowing for selective distribution. - Dam does not display a rapid response to extreme rainfall (turbidity changes over a period of 1-2 days). - Potential for adjacent sites (exclusion zones) around bores.	Confident	Investigate installation of online raw water turbidity to alarm and trigger plant shut down.
Risk T-3	Source Water Bore	Infiltration of surface water	Source water exceeds treatment capacity due to infiltration.	TLO Turbidity Bacteria Viruses Protozoa Iron	Catastrophic	Unlikely	High	Ellis Road bore covered. Linderdale Flood bore covered and locked. Freeword Regular maintenance.	Daily pH and O ₂ testing of treated water when operational. Weekly back testing. Weekly visual inspection.	Major	Rare	Medium (H)	- Bore sites are not known to flood. - Approvals for onsite sewage treatment have been issued adjacent to Linderdale Flood Bore, with conditions for a high level of treatment. - Potential for adjacent sites (exclusion zones) around bores.	Reliable	- Investigate data collection options to allow for review water quality results (turbidity vs rainfall) to determine impacts. - Investigate implementing policy for land use adjacent to bore sites.
Risk T-4	Coagulation or overdosing alum	Failure of coagulation (due to pump failure or failure of backflow)	Turbidity Bacteria Viruses Protozoa DGP Colour Iron Aluminium	Protocols	Catastrophic	Unlikely	High	Dose pumps linked to raw water pumps. Alarm if pumps fail. Spare pumps available onsite. Monthly maintenance. Spare pumps tested per week. Spare pumps linked to raw water.	Drip test fortnightly. Visual inspection daily. Daily clear water turbidity testing. Monthly maintenance testing.	Major	Rare	Medium (H)	- Dose pumps linked to raw water pumps. - Flood rate dosing. - No previous issues or failures with pumps or lines. - Gradual changes in raw water quality.	Confident	Investigate operator testing of aluminium in flocculation pond.



Ballina Shire Council Approach


Item		Monitoring	Evaluation	Synergy
3	Preventive Measures for Drinking Water Quality Management	Hazards / Control Measures	Incidents / Committee	Format / Definitions
4	Operational Procedures and Process Control	?	?	Format / Definitions





Critical Control Points

CCP 2	Monitoring	
Step: Coagulation Hazard/s controlled: Protozoa, bacteria, turbidity Preventive measures: Filtration, suspend water treatment: WTP Operator	What: pH Purpose: To ensure that the water is suitable for disinfection Where: Flocculation pond (dose water)	How: Grab When: Twice Daily Who: Operator
Alert Limits		
Alert: <6.5 and >7.2	Alert Correctional Measures What: Immediately resample flocc pond dose water. Undertake appropriate action to achieve pH to 6.5-7.2 Who: Operator Reporting: Sample results and action taken - Operator to record details on daily log sheet, SWM Local Exceedance Register	
Critical Limits		
Critical: <6 and >7.5	Critical Correctional Measures What: Suspend water transfer immediately. Then resample flocc pond dose water. Determine the cause of non complaint pH, take appropriate action and recommence pumping with the approval of the TPPE. Who: Operator Reporting: <i>Sample results and action taken</i> - Operator to the Foreman for Treatment Plants. Foreman for Treatment Plants to Team Leader Water and Wastewater <i>Exceedance of CCP Critical Limit</i> – Team Leader Water and Waster to elevate to TPPE / Manager/ Group Manager when appropriate. SWM Local Exceedance Register	

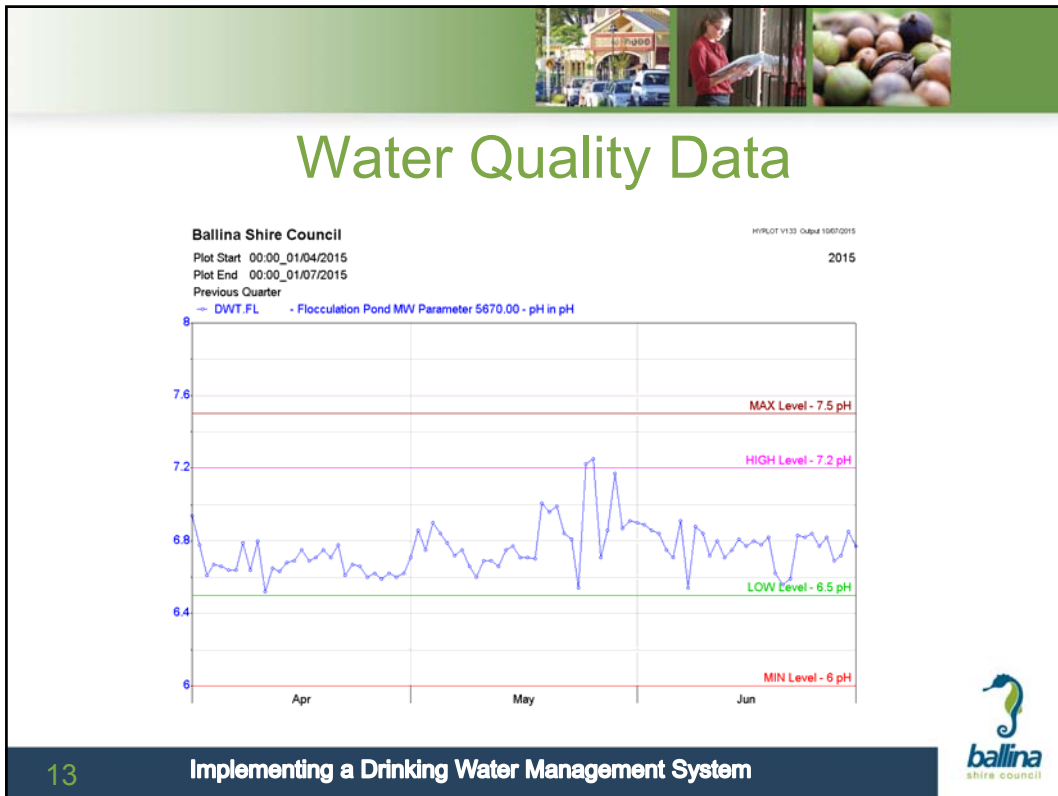
11
Implementing a Drinking Water Management System


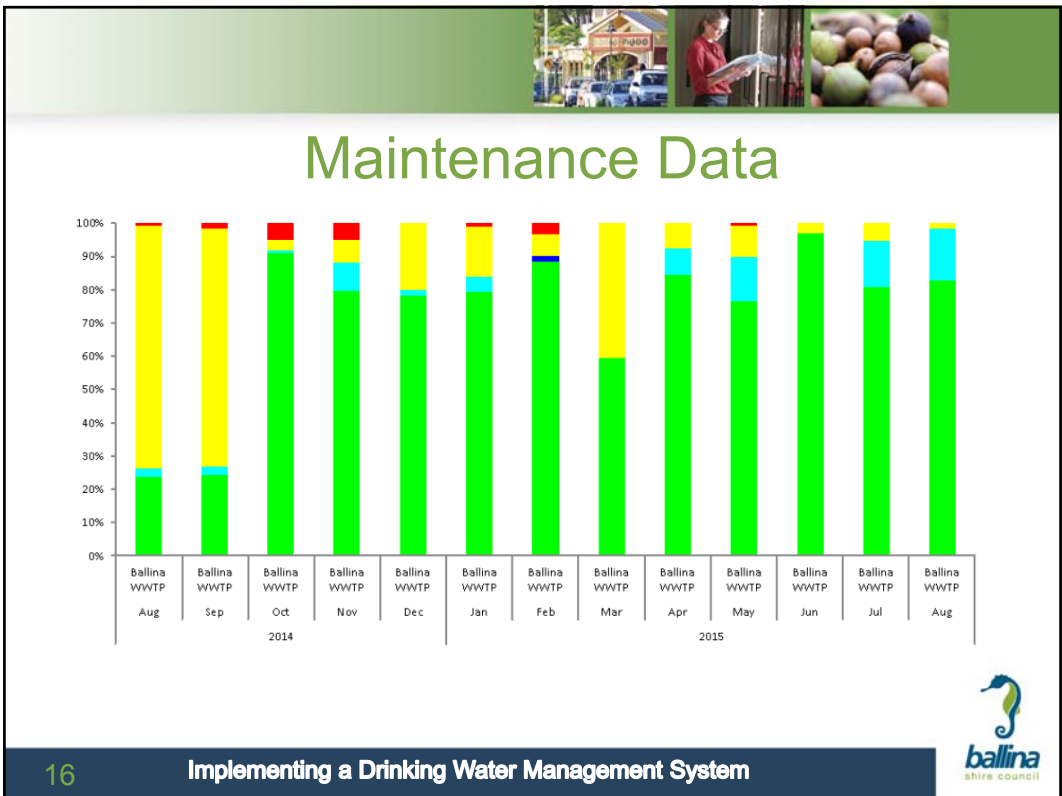



Ballina Shire Council Approach

Item	Monitoring	Evaluation	Synergy	
5	Verification of Drinking Water Quality	Online / Quarterly	Committee	Format
6	Management of Incidents and Emergencies	Online / Quarterly	Debriefing / Committee	Urban Water

12
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Incident Management

Ballina Shire Council – Incident Management System

Incident Response Procedure Drinking Water	5/01/2015	DW - Fluoride
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LEGEND

START
THINK
DO
COMMUNICATE


Notes


This procedure replaces Form 6th from the NSW Fluoridation Code of Practice

DW003 Fluoride Levels Exceed a Guideline Value

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graph TD
    Start([Fluoride > 1.5 mg/L]) --> Stop[Stop Fluoride Plant Immediately]
    Stop --> Notify[Internal Council Notification - "Water Leaders" / Management / EHOs  
Notify NSW Health (Local PHU, Water Unit) and NOW  
Send "Form 5" from Fluoride Code of Practice to all external contacts]
    Notify --> Concurrent[CONCURRENT PROCESSES]
    Concurrent --> FluoridePlant[Fluoride Plant]
    Concurrent --> Distribution[Distribution System]
    
    FluoridePlant --> Identify[Identify and Rectify problem  
Consult with NSW Office of Water to identify problem]
    Identify --> NO((NO))
    NO --> Start
    
    Distribution --> Sampling[Additional Sampling (Distribution System) at 6 to 12 hour intervals as required (for min 2 days)]
    Sampling --> End([End])
    
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17
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Ballina Shire Council Approach

Item	Monitoring	Evaluation	Synergy
7	Employee Awareness and Training	HR	Committee Urban Water
8	Community Involvement and Awareness	IPR	IPR Council

18
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Ballina Shire Council Approach

Item		Monitoring	Evaluation	Synergy
9	Research and Development	?	?	Urban Water
10	Documentation and Reporting	?	?	Council




19 **Implementing a Drinking Water Management System**




Ballina Shire Council Approach

Item		Monitoring	Evaluation	Synergy
11	Evaluation and Audit	Compliance Statement	?	Council
12	Review and Continuous Improvement	Authority	Committee	Council



20 **Implementing a Drinking Water Management System**



Improvement Plan

AUTHORITY

Dashboard | SiteMap | Home | Online Help | Helpdesk | Open in PDF

Tasks | Staff Transactions

Tasks for Mr A J Swan

My Details / My Tasks

Update Task [Show all tasks](#)

Task: Submit Committee Report: New Procedure for operator testing of aluminium in flocculation pond. (task number: 586593) [3/2015](#)

Customer: Mr T R Mackney


Previous Comments: developed 50% (Mr A J Swan - 20/10/2015)

Add Comment: [more information](#)

[Check Spelling](#)

Opened: 12:31 20/10/2015 | Due: 17/04/2016

Outcome: --None Selected-- | Closed: []


21
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Document Update - BSC Demo 20151020 - 5340

2 rows selected

Tracking Items		
Action: CREC Committee to Recommend Officer: AJS Mr A J Swan Opened: 20/10/2015 12:50 Due Date: 16/02/2016	Workflow: IPLN Completed: 20/10/2015 12:51	1 Total Elapsed Calendar Days
Please consider the attached (Mr A J Swan - 20/10/2015) endorsed. Refer to manager (Mr A J Swan - 20/10/2015) Result: ENDO Endorsed by Manager / MANEX /		
Action: OREP Submit Committee Report Officer: AJS Mr A J Swan Opened: 20/10/2015 12:26 Due Date: 16/04/2016	Workflow: IPLN Role: 0 Public Access Completed: 20/10/2015 12:50	1 Total Elapsed Calendar Days
Notes about the development of the task (Mr A J Swan - 20/10/2015) Result: COMP Complete		


2 rows selected OVR

22
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Quarterly Meeting Agenda (1)

1	Introduction / Meeting Purpose
2	Verification Reports <u>Quarterly</u> (based on 12 months data) <ul style="list-style-type: none"> - The Event Register - System Flows and Connections - Water Quality Objectives (WQOs) - Critical Control Points (CCPs) - Quality Control Points (QCPs) - Process Control Points (PCPs) - Maintenance Report (includes calibration report) - Customer Complaints <u>Annually</u> <ul style="list-style-type: none"> - Review procedures for review date and allocate review teams for next 12 months - Training Plan - Education and Communications Report




23 Implementing a Drinking Water Management System



Quarterly Meeting Agenda (2)

3	Water Quality Incidents <ul style="list-style-type: none"> - Attach and distribute debriefing reports - Committee to endorse / discuss recommendations
4	The Improvement Plan <ul style="list-style-type: none"> - Report on progress of the Improvement Plan
5	New / Reviewed Procedures <ul style="list-style-type: none"> - List any procedures coming up for review
6	Audit Reports (where applicable) <ul style="list-style-type: none"> - Committee to endorse / discuss recommendations
7	Resourcing <ul style="list-style-type: none"> - Any resources issues to be identified here



24 Implementing a Drinking Water Management System



THANK YOU

