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Water Safety Planning: tools for development and implementation

the international water association

WEBINAR

7 April 2022 | 10:30 GMT

iwa-network.org/webinars

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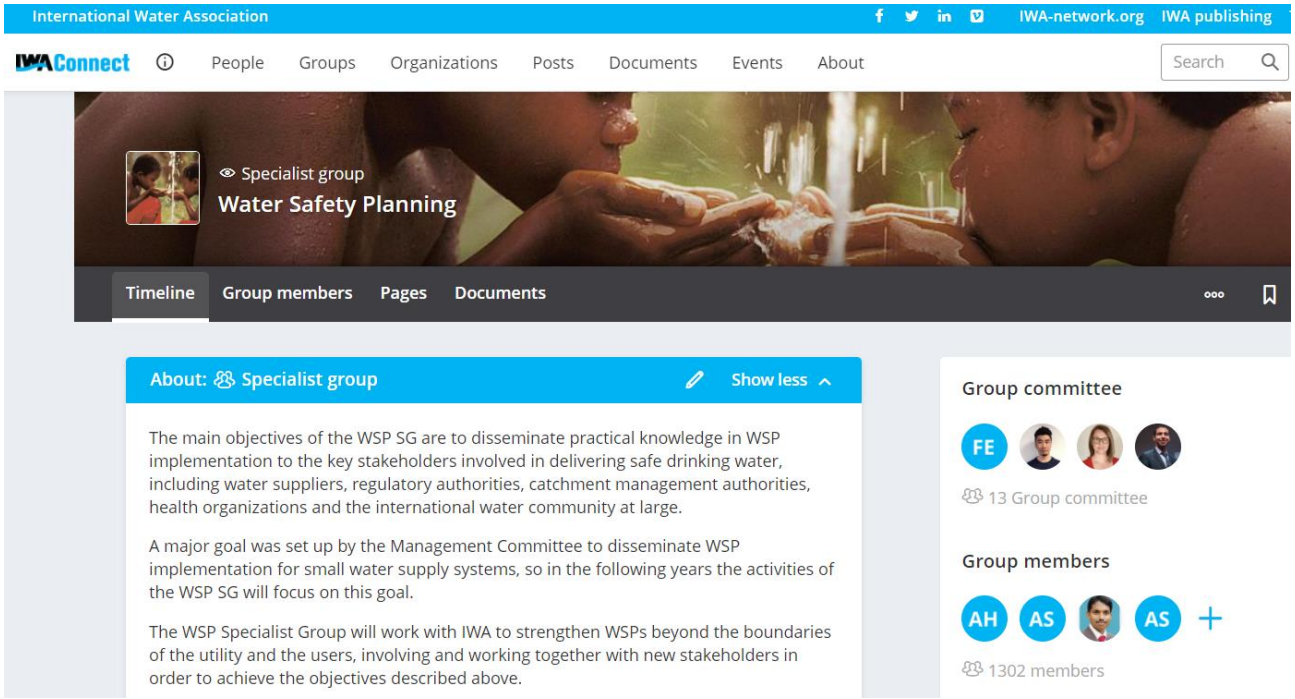
IWA WATER SAFETY PLANNING SG



The **IWA WSP Specialist Group** aims to disseminate practical knowledge in WSP implementation to the key stakeholders involved in delivering safe drinking water, including water suppliers, regulatory authorities, catchment management authorities, health organizations and the international water community at large.

Join the IWA WSP SG on IWA Connect!

https://iwa-connect.org/group/water-safety-planning/timeline?searchFor=all

IWA WSP CONFERENCE

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Organizers

THE ARCTIC UNIVERSITY OF NORWAY • UIT •

CHALMERS
UNIVERSITY OF TECHNOLOGY

CONFERENCE ANNOUNCEMENT AND CALL FOR PAPER

WATER SAFETY CONFERENCE 2022

22 – 24 June 2022

Narvik, Norway

Bring together leading international experts, share the state-of-the-art research, and contribute knowledge to the key stakeholders

IWA WSP CONFERENCE

WEBINAR INFORMATION

- This webinar will be **recorded and made available "on-demand"** on the IWA website, with presentation slides, and other information.
- The **speakers** are responsible for **securing copyright permissions** for any work that they will present of which they are not the legal copyright holder.
- The opinions, hypothesis, conclusions or recommendations contained in the presentations and other materials are the **sole responsibility of the speaker(s)** and do not necessarily reflect IWA opinion.

WEBINAR INFORMATION

- **'Chat' box**: please use this for general requests and for interactive activities.
- **'Q&A' box**: please use this to send questions to the panelists. (We will answer these during the discussions)

Please Note: *Attendees' microphones are muted. We cannot respond to 'Raise Hand'.*

AGENDA

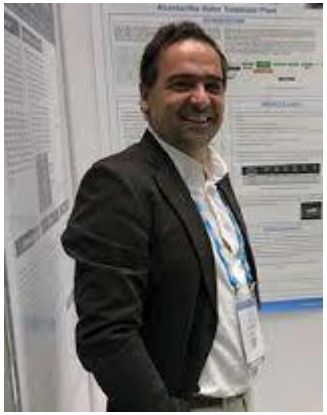
- Welcome, introduction, housekeeping rules
  Philip de Souza
- Overview of typical water safety planning requirements and typical approaches/tools utilised
  Rui Sancho
- TRiM®online – Webservice for Technical Risk Management
  Martin Offermann
- A Novel Management And Monitoring Tool For Seamless Water Safety Plan Implementation
  Agung Putra Kusuma
- Water Safety Planning: Integrated Risk and Incident System
  Matthew Higginbotham
- Water Safety Planning Tools: High Tech or Low Tech
  Asoka Jayaratne
- Poll and Q&A Panel Discussion
- Final remarks and conclusion
  Philip de Souza

MODERATORS & PANELISTS

Philip de Souza
Emanti Management, South Africa

Martin Offermann
IWW Zentrum Wasser, Germany

Matthew Higginbotham
Melbourne Water, Australia



Rui Sancho
IWA WSP SG Chair, Portugal

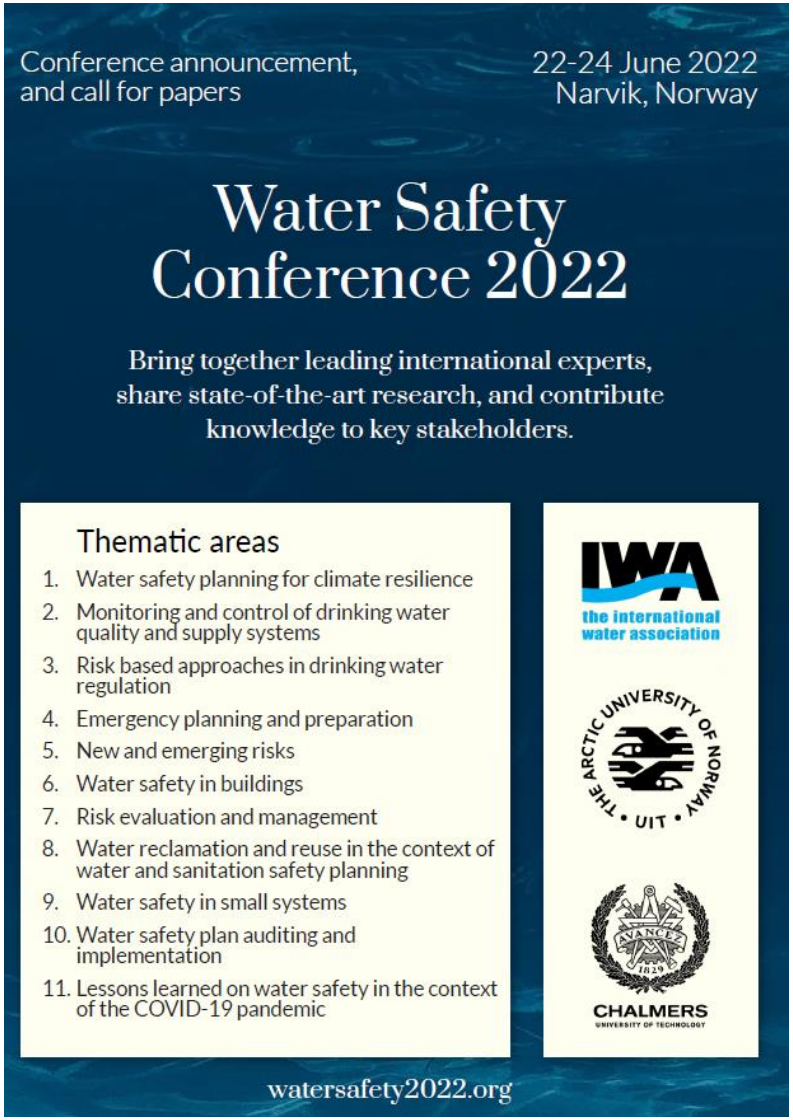
Agung Kusuma
Malang City, Indonesia

Asoka Jayaratne
Yarra Valley Water, Australia

LEARNING OBJECTIVES

1. Learn about best practices utilities are applying to manage development and implementation of Water Safety Plans.
2. Identify needs and requirements for successfully implementing a digital tool to manage water safety planning activities.
3. Draw from the experiences presented to assist to choose the appropriate tool to local settings for the development and implementation of robust and resilient water safety planning that enable utilities to rapidly respond to hazards and risks.

SHARE YOUR THOUGHTS ON SOCIAL MEDIA



Tag @IWAHQ on social media and tell us:

Why WSP is important?

How does it affect your life?

What is the main contribution to the SDG6 and the 2030 Agenda?

Don't forget to include the hashtags #IWA & #WSP.

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TRiM®online – Webservice for Technical Risk Management

MARTIN OFFERMANN
IWW WATER CENTRE, GERMANY

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INTRODUCTION

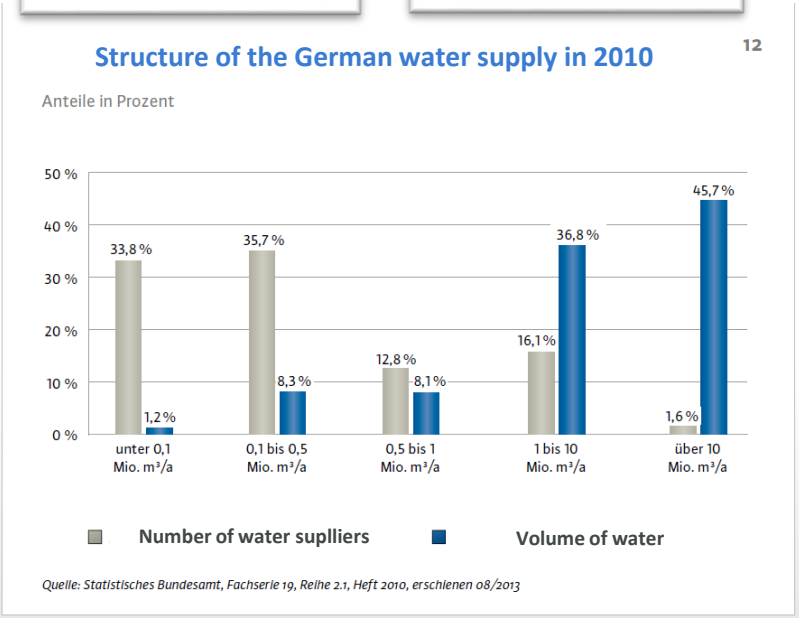
- **About IWW**
  - Research, consulting and training centre for drinking water, bathing water, process water, industrial water and waste water
  - Part of DVGW - German Technical and Scientific Association for Gas and Water
  - 6 departments (Water Resources Management, Water Technology, Water Networks, Water Quality, Applied Microbiology, Water Economics & Management)
  - Over 140 scientists, engineers, economists and technicians
  - 6 software developers

- **About TRiM®online**
  - Commercial webservice (SaaS) for German water (and gas) suppliers
  - Started with a R&D project co-financed by innogy SE and in cooperation with four German water suppliers
  - Output of the project was the development of a self-check for small and medium sized water suppliers for the implementation of a technical risk management

WSP IN GERMANY

- **WSP in Germany:**
  - Water Safety Planning aka Technical Risk Management in Germany
  - Deals with risks related to water safety and security (quality and quantity)
  - Part of the technical standard of DVGW since 2008, DIN EN standard since 2013
  - Will become mandatory as part of the implementation of the EU Drinking Water Directive

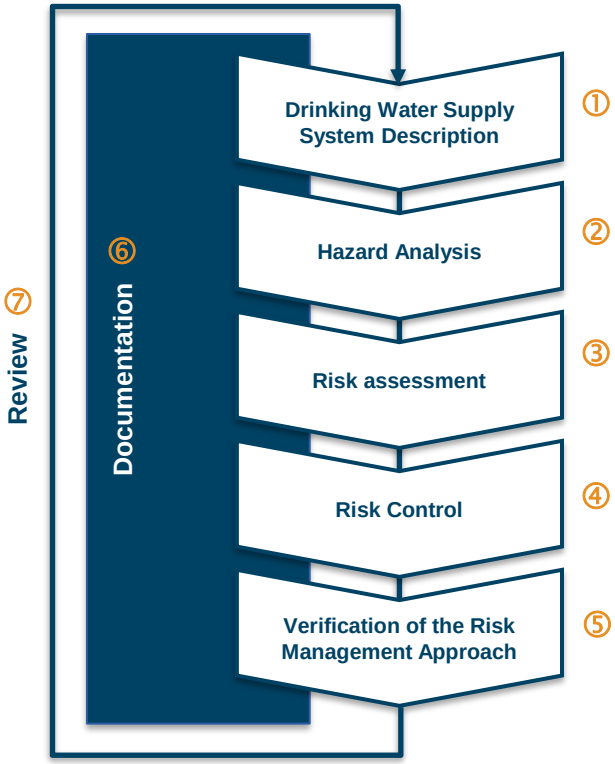
- **Challenges:**
  - Heterogeneous structure of water suppliers; many very small water suppliers; multi-utilities supplying several sectors, as gas, electricity, …
  - Limited human, financial and technical resources
  - Limited methodological knowledge
  - Up to now, risk management is not mandatory



RISK MANAGEMENT APPROACH

1. Where can something happen?
2. What can happen and how?
3. What are the associated risks?
4. How can the risks be better managed?
5. How do you determine whether the measures are effective?
6. Is the risk management well documented?
7. Has anything changed?

- DIN EN 15975-2

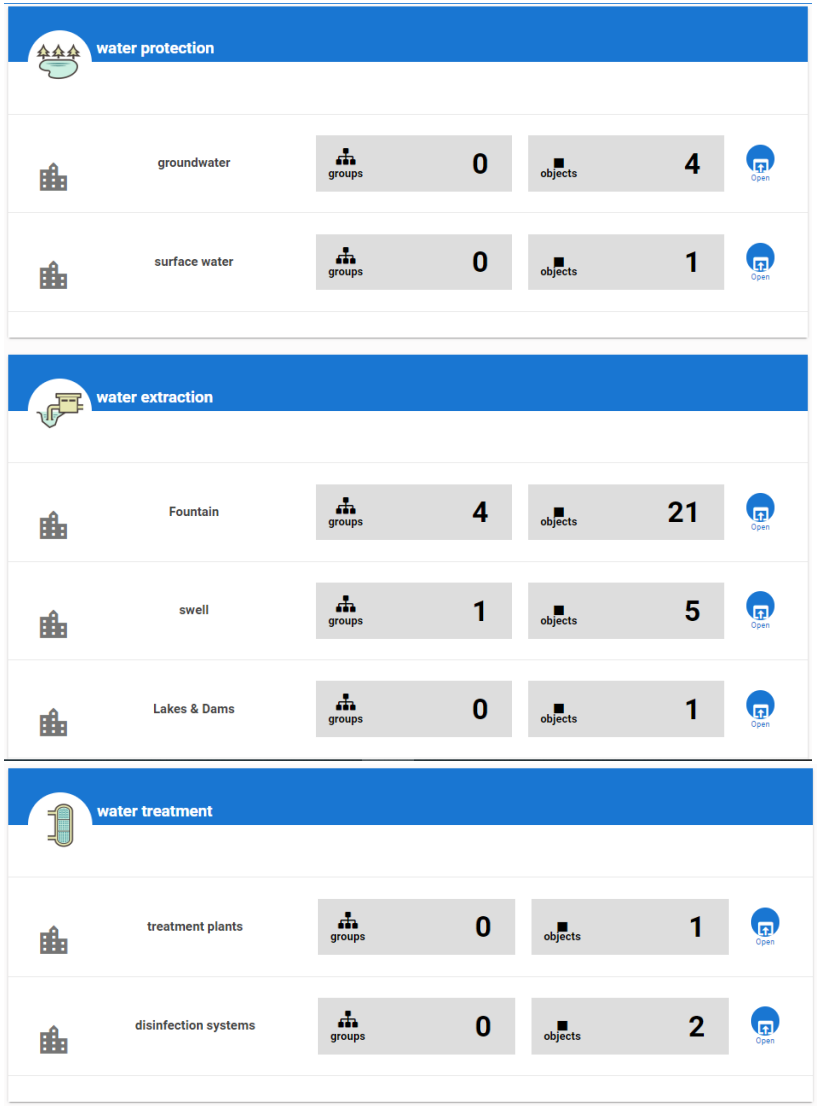


Source: DIN EN 15975-2:2013

DRINKING WATER SUPPLY SYSTEM DESCRIPTION

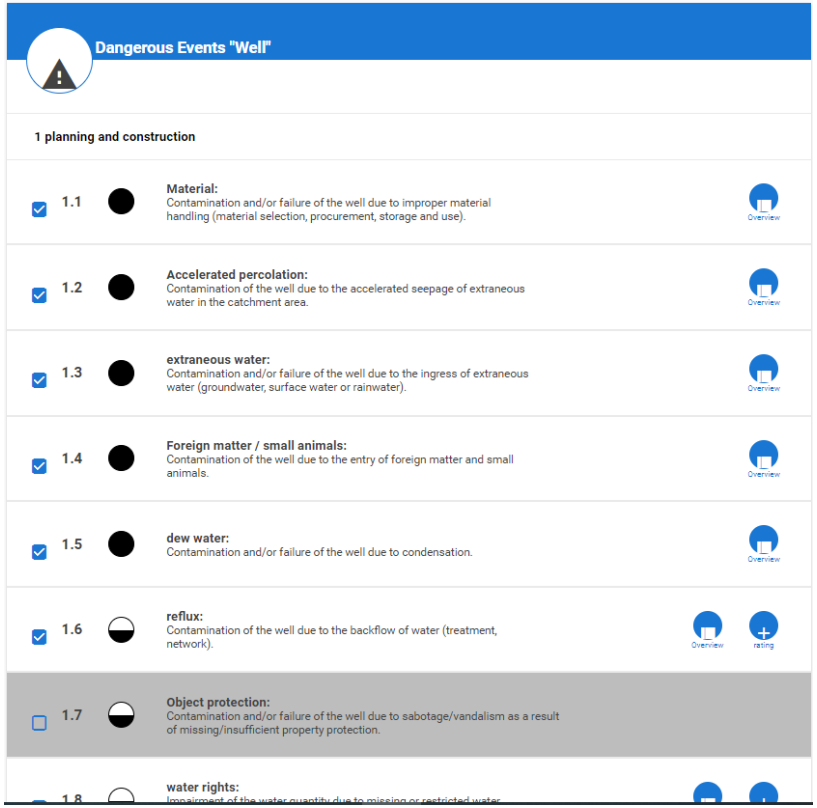
- **Supply chain from source to tap:**
  - organization & management
  - water catchment
  - water extraction
  - water treatment & desinfection
  - water pumping & storage
  - Water transport & distribution

- User has to **add different** assessment **objects** of the supply system , e.g.
  - boreholes,
  - storage tanks,
  - pumping stations,
  - mains
  - …



HAZARD ANALYSIS

- **Hazard analysis based on prepared lists**
- **Lists with hazardous events, which address effects on safety and security**
- **Hazards in form of qualitative (biological, chemical, physical) and quantitative (continuity, volume, pressure) impairments**
- **Numbers:**
  - 6 processes
  - 17 types of infrastructure elements
    273 hazardous events
    (categories: planning, construction, operation, maintenance)
  - 568 measures of risk control



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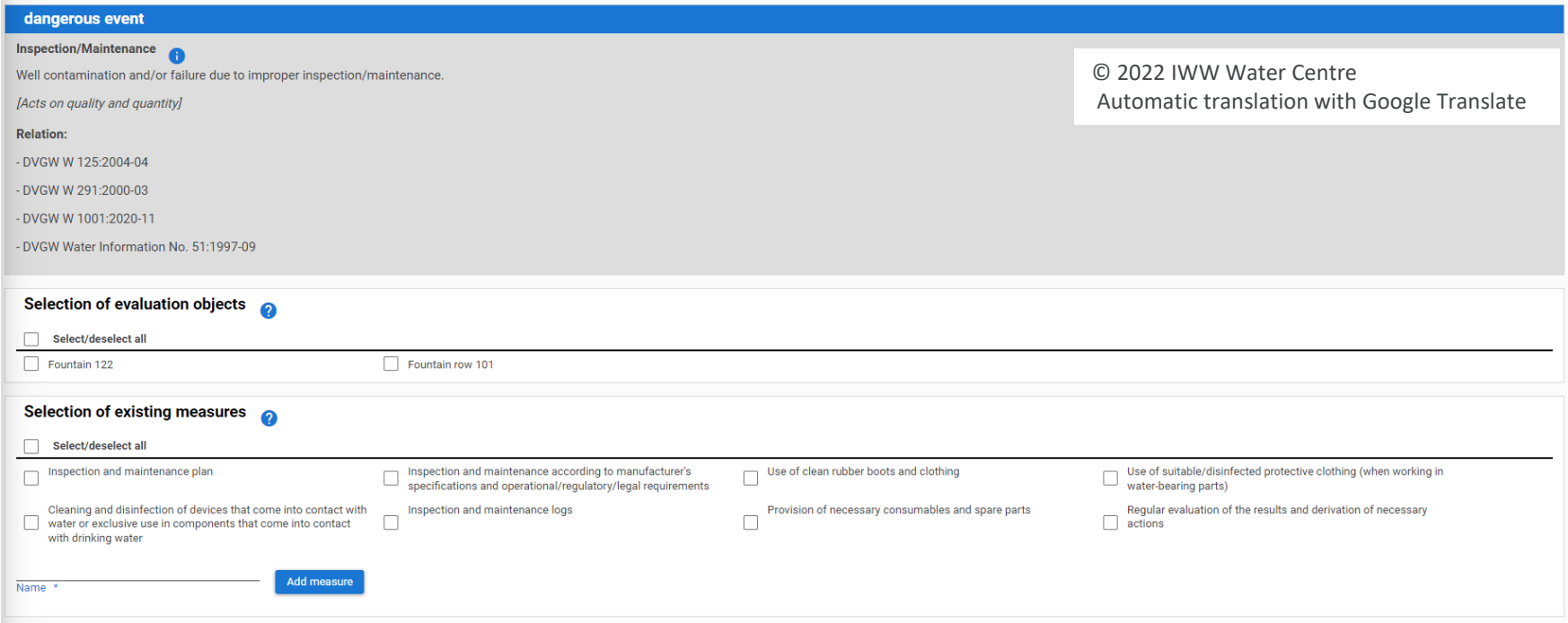
RISK ASSESSMENT



- **Hazards and hazardous events** are assessed with regard to their risks for each supply element using a **3x3 risk matrix**
- Assessment taking into account **existing measures** (for control or mitigation) which have been compiled on the **basis of the DVGW standards** and **further regulations**
- Possibility of using suggested definitions or supplier-specific **definitions** for the **likelihood and severity**

RISK CONTROL

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in total

status	priority	measure	objects	organizational unit	deadline	annotation
☑	medium	Security concept (mechanical, electronic, personal and organizational property protection)	Waterworks Musterhausen	Department A (Mr. XYZ)	03/28/2024	
☐	low	alarm system	Waterworks Musterhausen			
☐	low	lighting of the premises	Waterworks Musterhausen			
☑	low	flow rate adjustment	Disinfection WW Musterhausen; Chlorination HB North	Mr. XY	06/24/2021	
☑	low	sampling plan	fountain row north; fountain1; fountain11; fountain2; fountain12; fountain3; fountain13; fountain4; fountain14; fountain5; fountain15; fountain16; fountain17; fountain18; fountain 19; wells20; West row of fountains; fountain 8; fountain 9; well 10; fountain 6; Brun...	Department A (Mr. XYZ)	12/31/2020	
☑	high	Suitable sampling device on the delivery line near the pump sump	fountain row north; fountain1; fountain11; fountain2; fountain12; fountain3; fountain13; fountain4; fountain14; fountain5; fountain15; fountain16; fountain17; fountain18; fountain 19; wells20; West row of fountains; fountain 8; fountain 9; well 10; fountain 6; Brun...	Department A (Mr. XYZ)	12/31/2020	
☑	high	Sampling by suitably qualified personnel	fountain row north; fountain1; fountain11; fountain2; fountain12; fountain3; fountain13; fountain4; fountain14; fountain5; fountain15; fountain16; fountain17; fountain18; fountain 19; wells20; West row of fountains; fountain 8; fountain 9; well 10; fountain 6; Brun...	Department A (Mr. XYZ)	12/31/2020	
☐			fountain row north; fountain1; fountain11; fountain2; fountain12; fountain3; fountain13; fountain4; fountain14; fountain5; fountain15; fountain16; fountain17; fountain18; fountain 19; wells20; West row of fountains; fountain 8; fountain 9; well 10; fountain 6; Brun...	Department A (Mr. XYZ)		

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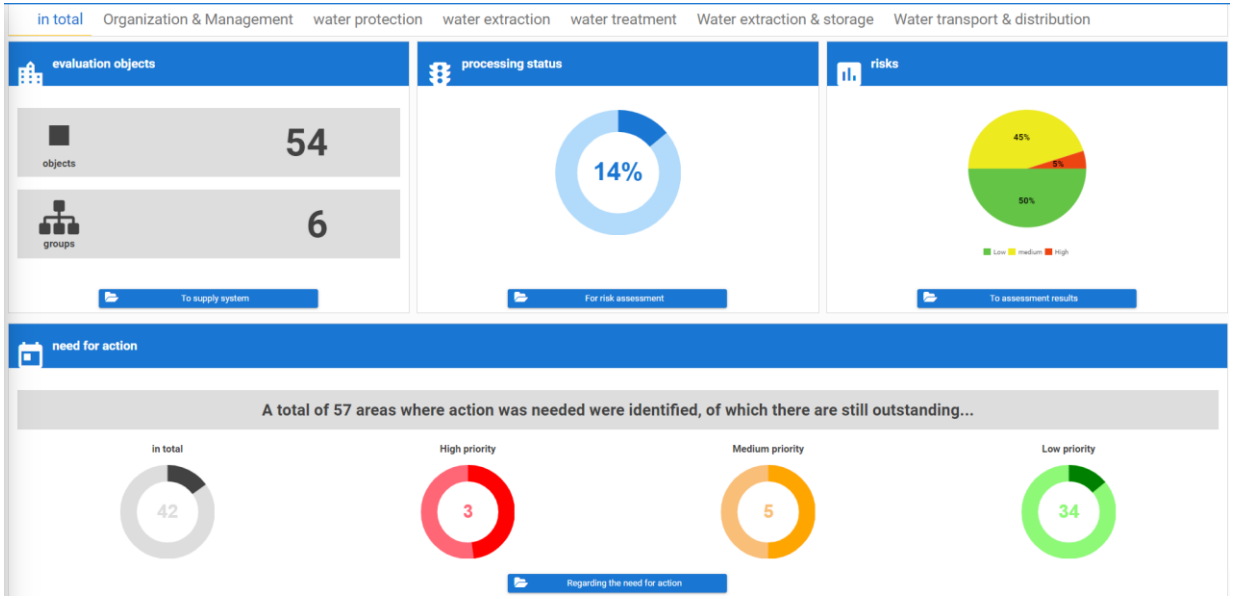
- If the identified risk is too high, further **measures** can be **defined** with corresponding **deadlines** and **responsibilities**
- It ist possible to change the **status** of measures from “**to do**” to “**done**”
- All **tables** can be **filtered** and **exported** in the filtered view

VERIFICATION, DOCUMENTATION, REVIEW



- **Documentation** in form of **tables** and **dashboard**
- **Update** of the lists of hazardous events and mearures of risk control **twice a year by IWW** (especially in the case of changes in the regulations)
- Risk management is to be **used continuously** via TRiM®online. It is possible to compare different years within with regards to a review.

CONTACT DETAILS

- **Address**
  - IWW Zentrum Wasser
  - Moritzstr. 26
  - 45476 Mülheim an der Ruhr
  - Germany

- **Martin Offermann**
  - e-mail: m.offermann@iww-online.de

- **Contact us:**
  - Phone: +49 (0) 208 40303-0
  - e-mail: info@iww-online.de

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A Novel Management And Monitoring Tool For Seamless Water Safety Plan Implementation

AGUNG PUTRA KUSUMA
TUGU TIRTA WATER WORKS, INDONESIA

PERUMDA AIR MINUM TUGU TIRTA KOTA MALANG

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Every era has its technology, and each has its own advantages, it's just humans whether they want to change or not.

- Agung Putra Kusuma

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THE BIG WHY ?

Why are people still using the traditional system :

- People are used to using it
- Lack of desire to learn
- Add another workload for him

Why are people still not using the modern system :

- The system is too complicated
- The system is not yet integrated to his current work

PERUMDA AIR MINUM TUGU TIRTA KOTA MALANG

THE BIG WHY ?

EXCEL SPREADSHEET

we always use it in every documentation

GOOGLE SPREADSHEET

document collaboration

THE BIG WHY ?

We Need a Solution !

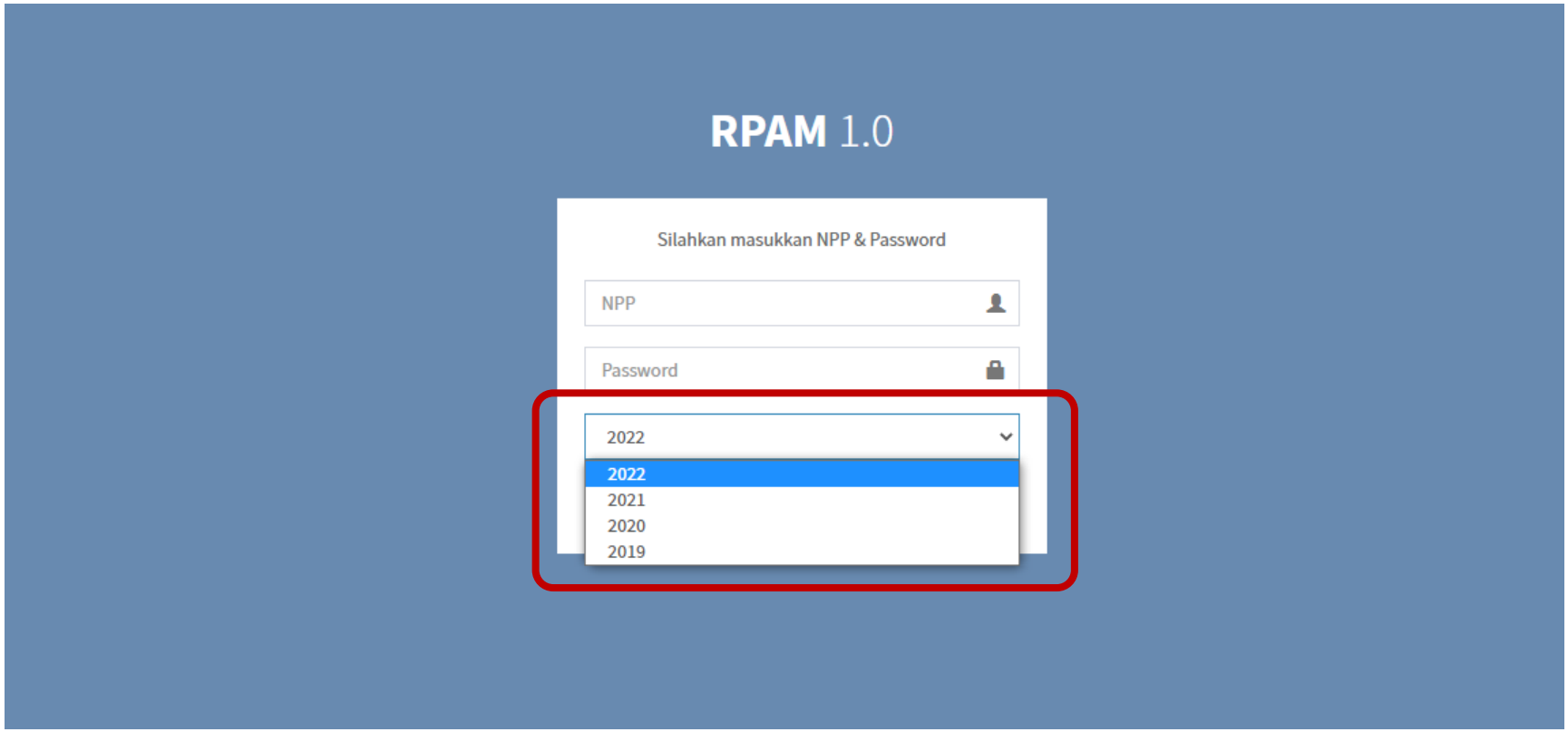
create a tool that is easy to use and can be integrated with the existing system !

PERUMDA AIR MINUM TUGU TIRTA KOTA MALANG

WATER SAFETY INTEGRATED SYSTEM (WISE)

Enable real-time implementation and management of the WSP in accordance with the National WSP Manual.

WATER SAFETY INTEGRATED SYSTEM (WISE)



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WATER SAFETY INTEGRATED SYSTEM (WISE)

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WATER SAFETY INTEGRATED SYSTEM (WISE)

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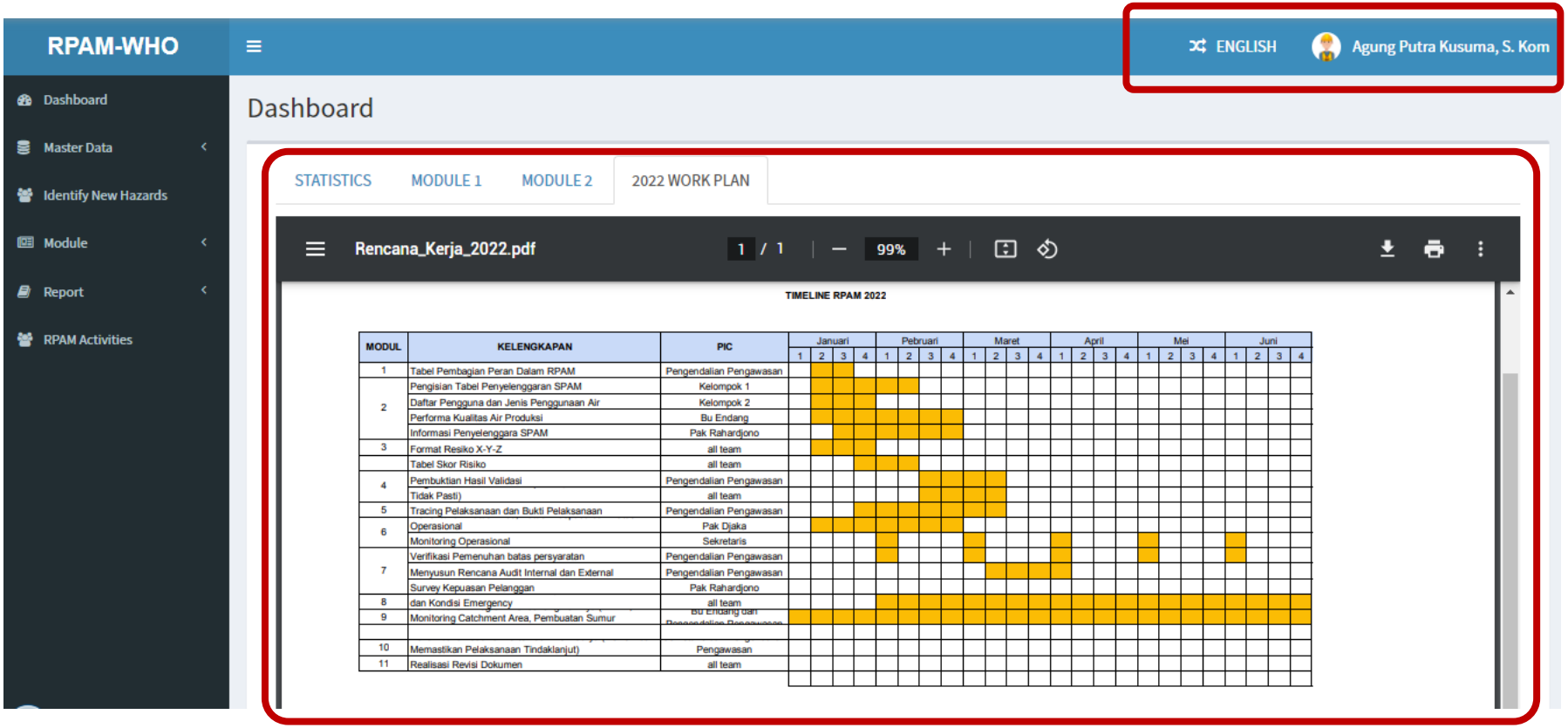

MODUL	KELENGKAPAN	PIC
1	Tabel Pembagian Peran Dalam RPAM	Pengendalian Pengawasan
2	Pengisian Tabel Penyelenggaran SPAM	Kelompok 1
	Daftar Pengguna dan Jenis Penggunaan Air	Kelompok 2
	Performa Kualitas Air Produksi	Bu Endang
	Informasi Penyelenggara SPAM	Pak Rahardjono
3	Format Resiko X-Y-Z	all team
	Tabel Skor Risiko	all team
4	Pembuktian Hasil Validasi	Pengendalian Pengawasan
	Tidak Pasti)	all team
5	Tracing Pelaksanaan dan Bukti Pelaksanaan	Pengendalian Pengawasan
6	Operasional	Pak Djaka
	Monitoring Operasional	Sekretaris
7	Verifikasi Pemenuhan batas persyaratan	Pengendalian Pengawasan
	Menyusun Rencana Audit Internal dan External	Pengendalian Pengawasan
	Survey Kepuasan Pelanggan	Pak Rahardjono
8	dan Kondisi Emergency	all team
9	Monitoring Catchment Area, Pembuatan Sumur	Bu Endang dan
10	Memastikan Pelaksanaan Tindaklanjut)	Pengawasan
11	Realisasi Revisi Dokumen	all team

	Januari				Pebruari				Maret				April				Mei				Juni			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1																								
2																								
3																								
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8																								
9																								
10																								
11																								

PERUMDA AIR MINUM TUGU TIRTA KOTA MALANG

WATER SAFETY INTEGRATED SYSTEM (WISE)

STATISTICS | MODULE 1 | MODULE 2 | 2022 WORK PLAN

SUPPLY CHAIN | SUPPLY CHAIN HISTORY | SINGLE LINE | CHLORINATION | CHLOR DEMAND

SUPPLY CHAIN

The PDAM Malang City SPAM supply chain is a water supply chain that is depicted in a flow chart that depicts SPAM in full from the point of collection at the source to the customer's water faucet. In the SPAM supply chain, PDAM Malang City
receives supplies from 11 sources of raw water. This flow chart is described starting from the Catchment Area to the point of use at the consumer. The detailed description of each supply is clarified in a single line.

CHANGE NARRATIVE

WATER SAFETY INTEGRATED SYSTEM (WISE)

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Module 3

Keywords: Enter Search..

Category: ALL

Sub Categories: ALL

SEARCH | PLUS | EXPORT

cation	Code	Last Update.	Hazardous Event	Hazardous	Likehood	Consequence	Risk Score	Score Rating
etails	438	2021-11-25 15:51:57	MICROBIOLOGICAL CONTAMINATION DUE TO LACK OF SECURITY AT RESERVOIR LOCATIONS	MICROBIOLOGY	3. Maybe	5. Extreme	15	TALL
etails	410	2021-11-18 14:38:39	THE EMERGENCE OF MICROORGANISMS BECAUSE CHLORINATION STOPS DUE TO LEAKAGE OF CHLOR GAS.	MICROBIOLOGY	2. Small chance	5. Extreme	10	MEDIUM
etails	527	2021-11-18 09:57:40	PHYSICAL CONTAMINATION DUE TO SOLAR OVERLOAD IN WENDIT 3 GENZET 3 FUEL TANK	PHYSICS	5. Almost certainly	3. Moderate	15	TALL
etails	529	2021-11-02 09:54:23	MICROBIOLOGICAL CONTAMINATION AT SOURCE WENDIT, DRILL WELL DUE TO SABOTASE DUE TO THE SAFETY FENCE CAN BE CLIMBED BY RESIDENTS	MICROBIOLOGY	4. Most Likely	5. Extreme	20	EXTREME
etails	436	2021-09-20 16:04:37	MICRO-ORGANISMS CONTAMINATION DUE TO THE ENTRY OF ANIMAL WATER INTO THE RESERVOIR DUE TO THE ROOF OF THE RESERVOIR LEAKING DURING RAIN	MICROBIOLOGY	2. Small chance	5. Extreme	10	MEDIUM

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WATER SAFETY INTEGRATED SYSTEM (WISE)

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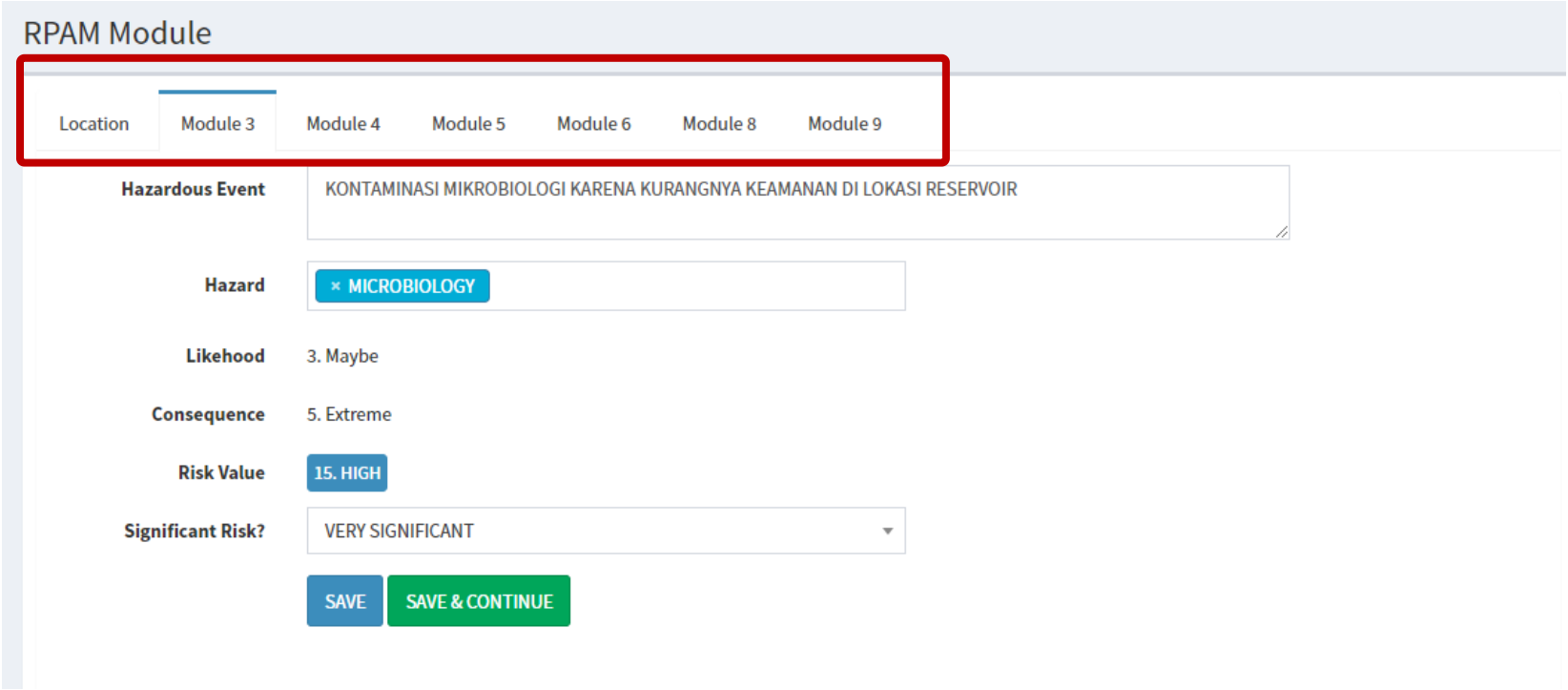

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WATER SAFETY INTEGRATED SYSTEM (WISE)

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RPAM Module

Location | Module 3 | Module 4 | Module 5 | Module 6 | Module 8 | Module 9

Hazardous Event	MICROBIOLOGICAL CONTAMINATION DUE TO LACK OF SECURITY AT RESERVOIR LOCATIONS
Hazard	MICROBIOLOGY

Module 5

Improvement activities	Responsible Person	Cost	Start Date	Expected End Date	Status	#
CCTV INSTALLATION FOR RESERVOIR SECURITY MONITORING	ASMAN NETWORK CONTROL	500,000,000.00	2022-01-01	2022-10-01	IN PROCUREMENT PROCESS	
MAKING A RESERVOIR AREA SAFETY FENCE WHICH DOES NOT HAVE A SAFETY Fence	ASMAN NETWORK CONTROL	300,000,000.00	2022-01-01	2022-08-01	IN PROCUREMENT PROCESS	

Showing 1 to 2 of 2 entries

Integrated with budgeting system

Previous 1 Next

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WATER SAFETY INTEGRATED SYSTEM (WISE)

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RPAM Module

Location | Module 3 | Module 4 | Module 5 | Module 6 | Module 8 | Module 9

Details of Critical Limit Assets P/07/04/32/935

Show 10 entries Search:

Parameter	Min	Max	Unit	Weight
Dosing	.04	.07	Kg/h	2
Installation	60.00	100.00	Percent	70
pH	6.50	8.50	-	2
Chlorine Pump	60.00	100.00	Percent	12
Residual Chlor	.35	.80	mg/l	2
Tube	40.00	100.00	Percent	10
Pressure	2.00	3.50	bar	2

Showing 1 to 7 of 7 entries Previous 1 Next

CE OF THE CHLOR PUMP.

Corrective Action	Validation Of Critical Limit	#
CHLOR PUMP MAINTENANCE EVERY 6 MONTHS	P/07/04/32/935	

Integrated with work order and asset management system for everyday monitoring operational

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WATER SAFETY INTEGRATED SYSTEM (WISE)

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RPAM Module

Location | Module 3 | Module 4 | Module 5 | Module 6 | Module 8 | Module 9

Hazardous Event	MICROORGANISM CONTAMINATION DUE TO CHLORINATION DOESN'T WORK DUE TO DISTURBANCE OF THE CHLOR PUMP.
Hazard	MICROBIOLOGY

Module 8 PLUS

Number	Title	Status	Documents	#
IK-3.04.01-00-026	IK CHLOR PUMP MAINTENANCE	VERIFICATED	View Document	✖
IK-3.04.01-00-017	CHLORINATION CONTROL AND MONITORING	VERIFICATED	View Document	✖

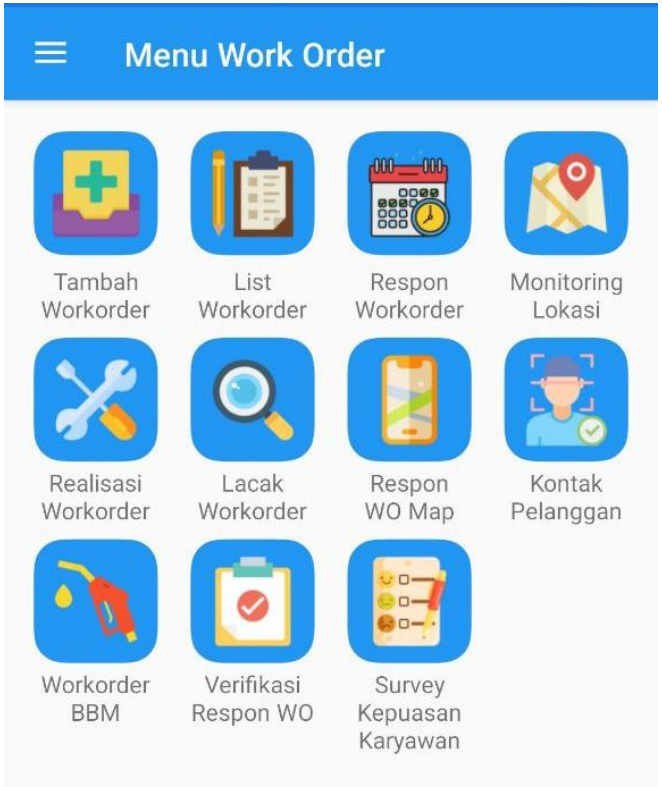
Showing 1 to 2 of 2 entries

Previous | 1 | Next

Integrated with ISO 9001 system

PERUMDA AIR MINUM TUGU TIRTA KOTA MALANG

WATER SAFETY INTEGRATED SYSTEM (WISE)



Mobile App Integrated to Work Order and Asset Management System

BEFORE & AFTER USING ONLINE APPS

- It's Hard for me to using it
- Oh my god, it's another job for me
- There is a new employee coming, I have to explain this document to him
- What must I do for this job ? Where is the document ?
- Where is the new version of the document, its on my laptop ?

- Wow, my work is done faster
- Nice ! It's easy for me to monitoring "the job"
- Hello, all explanation for this document is on the app, just access and learn from that..
- Ah, this app can be accessed everywhere, with just a simple click
- Yup, this app is the new version of document, and the history of that document

KEY FACTOR OF SUCCESS

- Top Level Management Commitment
  - Regulation
  - Lead By Example
- Company Culture
- Continuous Training and Education
- Continous Improvement with the App
- Pandemic ??

PERUMDA AIR MINUM TUGU TIRTA KOTA MALANG

WATER SAFETY CONFERENCE 2022

the international water association

Author notification - Water Safety Conference 2022 Inbox ×

Thomas Pettersson <Thomas.Pettersson@chalmers.se> Fri, Mar 4, 12:50 AM

to me, Kizito, Rui

Dear Agung Kusuma,

Thank you very much for submitting your abstract: "A Novel Management And Monitoring Tool For Seamless Water Safety Plan Implementation" to the IWA-WHO Water Safety Conference in Narvik 2022. Your abstract has been reviewed by three independent reviewers who have evaluated your work based on clarity, structure and relevance for the selected theme session.

After weighing together the reviewers' scores, we are pleased to announce that your abstract has been accepted for a **platform presentation**. This means you will have a 20 min time slot in the conference programme, with 15 min presentation and 5 min for questions.

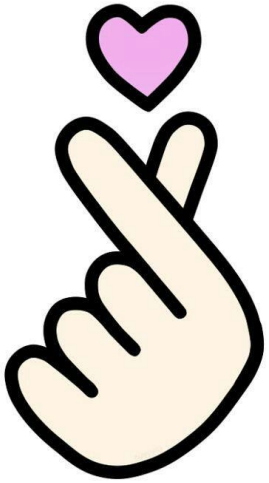
First, we would like to ask you to confirm that you have received this email and that you agree to present your work at the conference.

Before adding you and your presentation into the conference programme, you must make a full conference registration. Please register on the conference website – www.watersafety2022.org/registration/ – on 15 April 2022 at the latest. Please note that the early registration expires on **April 1, 2022**.

We will send out more detailed information after the conference registration is completed.
On behalf of the program committee, we look forward to meeting you at the conference in Narvik in June 2022.

PERUMDA AIR MINUM TUGU TIRTA KOTA MALANG

THANK YOU



PERUMDA AIR MINUM
TUGU TIRTA
KOTA MALANG

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Water Safety Planning: Integrated Risk and Incident System

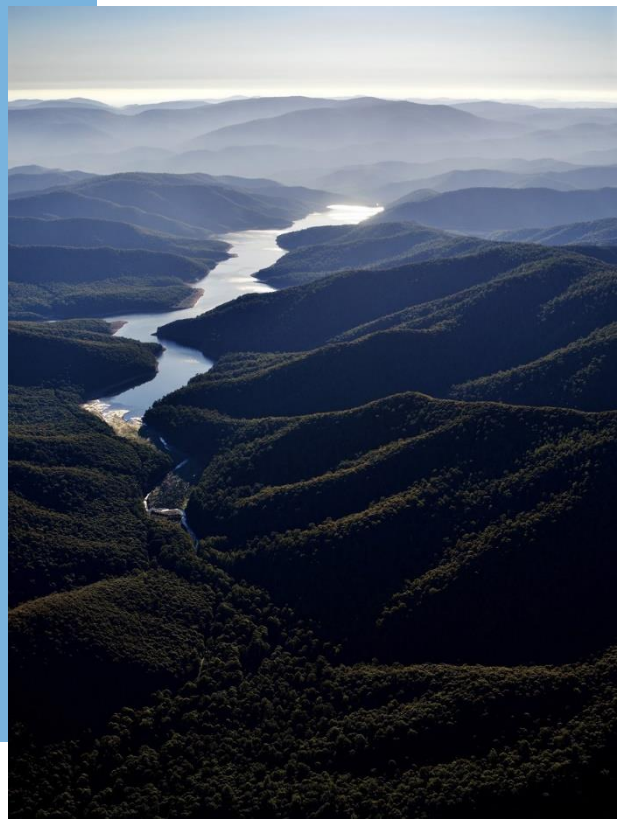
MATTHEW HIGGINBOTHAM
DRINKING WATER QUALITY MANAGEMENT SYSTEMS LEAD

Melbourne Water
Enhancing Life and Liveability

inspiring change

OVERVIEW

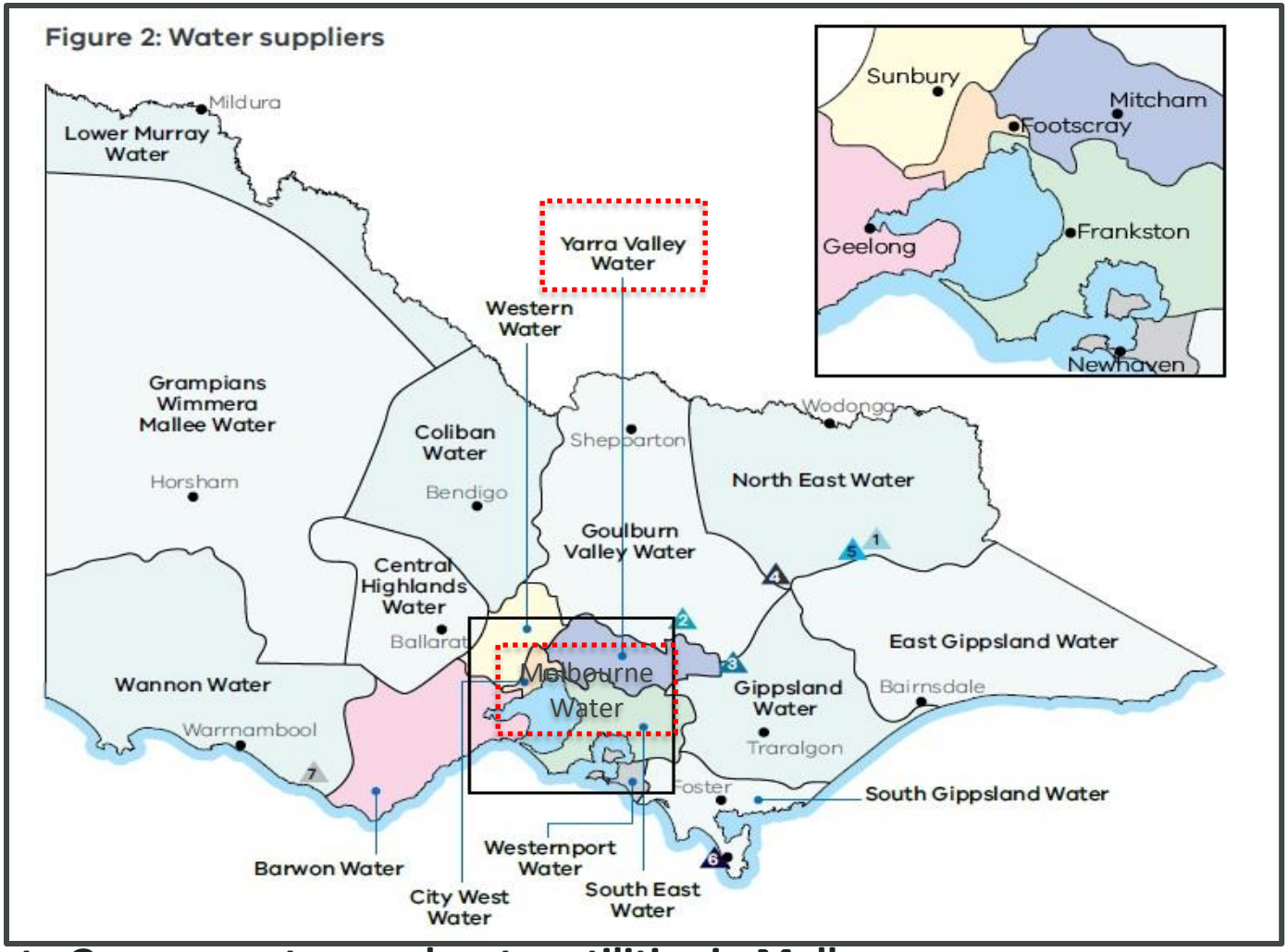
- Water Supply in Melbourne
- Regulatory context and WSP Implementation
- IRIS Demo
- Pros, Cons and key considerations



WATER SUPPLY IN MELBOURNE

Melbourne Water and Yarra Valley Water are located in the Australian state of Victoria

WATER SUPPLY IN MELBOURNE



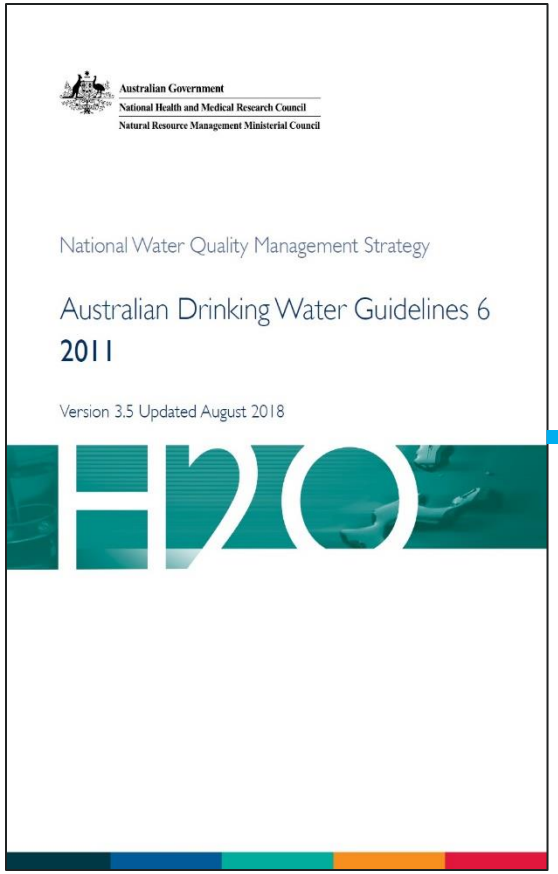
- State Government owned water utilities in Melbourne
- Water, Sewerage and Recycled Water Services

WATER SUPPLY IN MELBOURNE

- Half of our drinking water is supplied from protected catchments with chlorine only disinfection. The other half is split between desalinated water and conventionally treated water.
- 16 primary treatment plants that range in scale from 0.5KLD UV/Chlorine plant to a 600MLD conventional treatment plant.
- MW and the RWCs were early adopters of HACCP for drinking water quality management.
- Our Drinking Water Quality Risk Management plan (water safety plan), quality risk register and HACCP plans manage water quality risks across the system.

DRINKING WATER REGULATIONS IN AUSTRALIA

the international water association

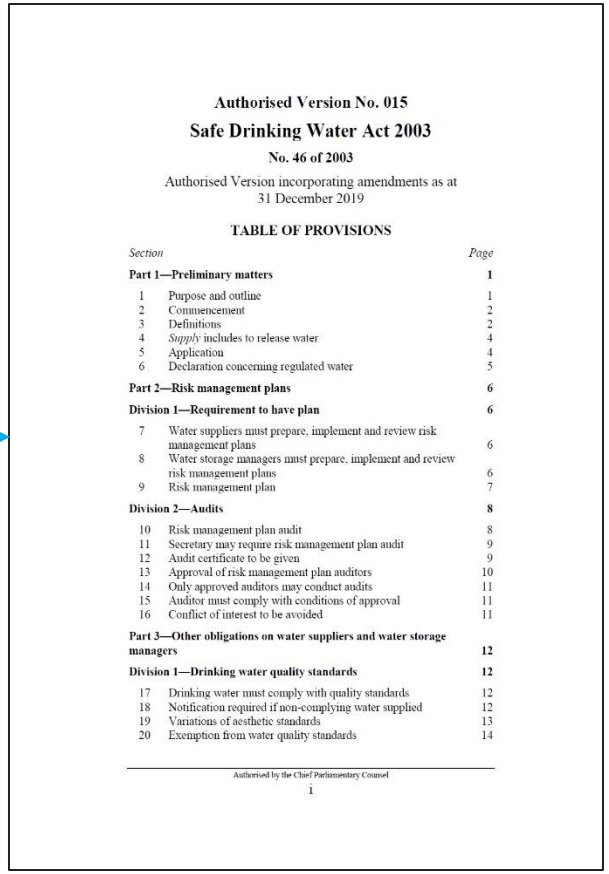


Australian Government
National Health and Medical Research Council
Natural Resource Management Ministerial Council

National Water Quality Management Strategy

Australian Drinking Water Guidelines 6
2011

Version 3.5 Updated August 2018



Authorised Version No. 015

Safe Drinking Water Act 2003

No. 46 of 2003

Authorised Version incorporating amendments as at 31 December 2019

TABLE OF PROVISIONS

Authorised by the Chief Parliamentary Counsel

1

Australia's National guidance document

Drinking water legislation in Victoria → WSP Mandatory

DRINKING WATER QUALITY MANAGEMENT SYSTEM IMPLEMENTATION

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Microsoft office combined with version control/archiving software

Enterprise Asset Management software

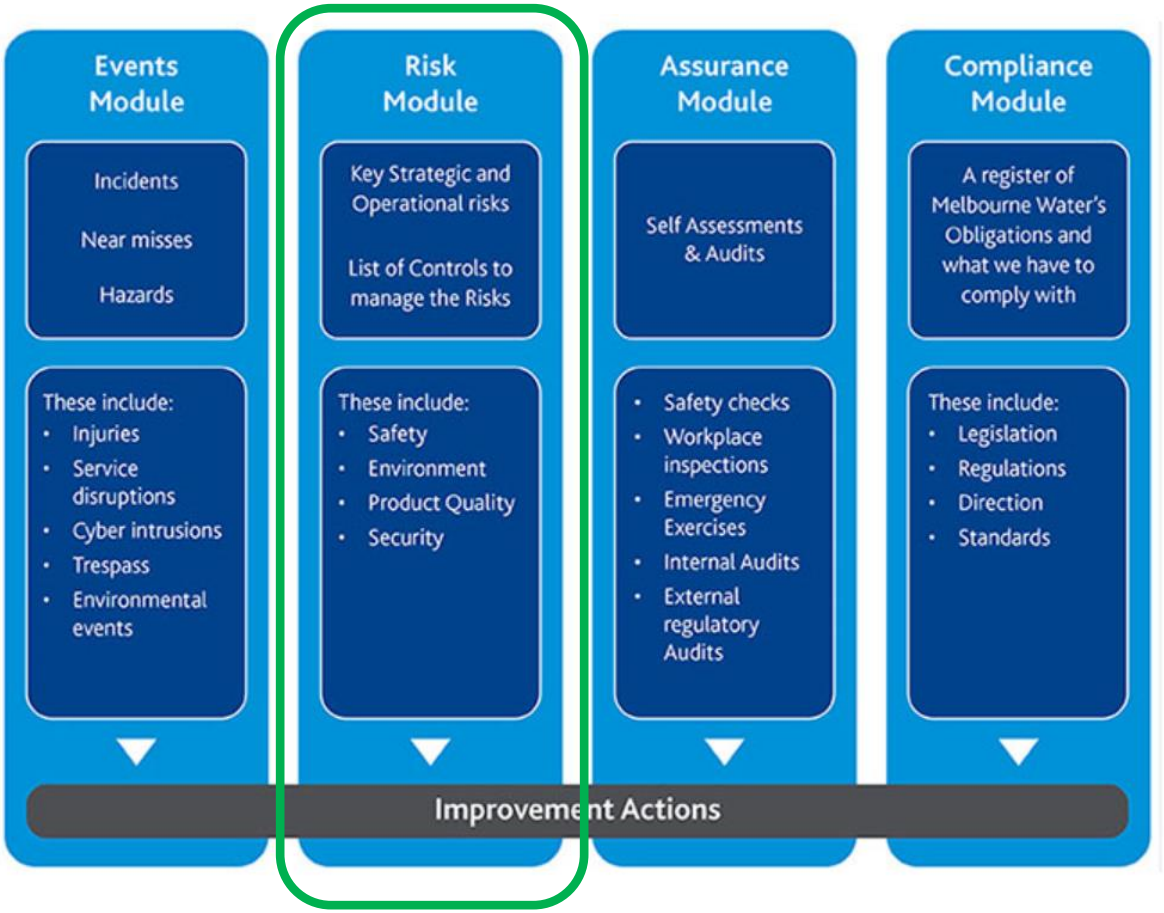
Combined Assurance, Compliance, Risk, Events and Action tracking software. We will look at this today

Lab monitoring and process control software

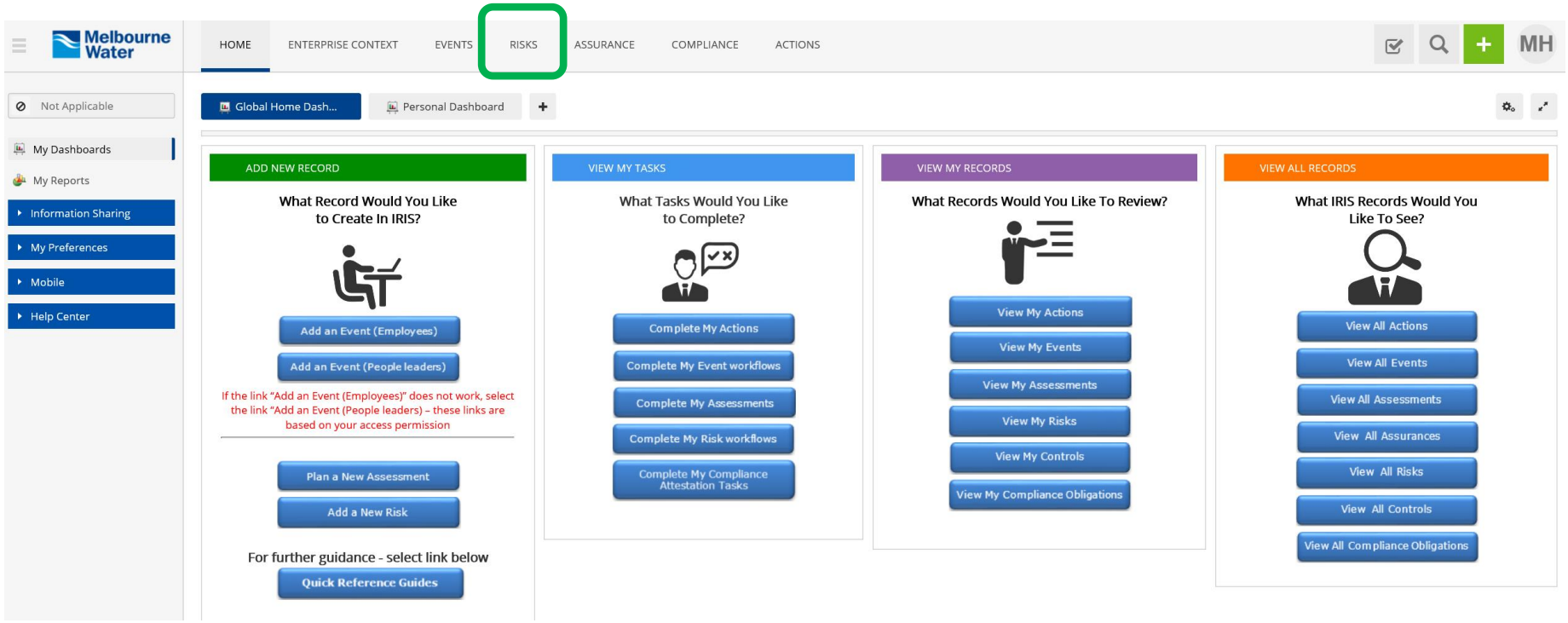
Components of the Drinking Water Quality Management System

IRIS

- One location to track events, risks, assurance, compliance and improvement actions



IRIS


Melbourne Water
HOME
ENTERPRISE CONTEXT
EVENTS
RISKS
ASSURANCE
COMPLIANCE
ACTIONS
MH
Not Applicable
Global Home Dash...
Personal Dashboard
My Dashboards
My Reports
Information Sharing
My Preferences
Mobile
Help Center
ADD NEW RECORD
What Record Would You Like to Create In IRIS?
Add an Event (Employees)
Add an Event (People leaders)
If the link "Add an Event (Employees)" does not work, select the link "Add an Event (People leaders) – these links are based on your access permission
Plan a New Assessment
Add a New Risk
For further guidance - select link below
Quick Reference Guides
VIEW MY TASKS
What Tasks Would You Like to Complete?
Complete My Actions
Complete My Event workflows
Complete My Assessments
Complete My Risk workflows
Complete My Compliance Attestation Tasks
VIEW MY RECORDS
What Records Would You Like To Review?
View My Actions
View My Events
View My Assessments
View My Risks
View My Controls
View My Compliance Obligations
VIEW ALL RECORDS
What IRIS Records Would You Like To See?
View All Actions
View All Events
View All Assessments
View All Assurances
View All Risks
View All Controls
View All Compliance Obligations

PROS

- Linking events, risks, assurance, compliance and improvement actions in one place helps integrate the system and track all the moving parts.
- The ability to search by location or risk type gives a good picture of enterprise risk.
- Clear accountabilities and visibility of those responsible for risks and controls, great breadth and depth of reports.
- Supports standardisation across departments.
- Periodised activities and automated reminders are very useful.

CONS

- It's an external software package we license to use. Can be expensive/difficult to modify and there are ongoing costs in licensing and dedicated internal support roles, a lot of work is required up front to set the system up followed by regular maintenance.
- Can be double handling where systems don't interface well, e.g. with Maximo and still relies on maintaining Word manuals and supporting documentation.
- If risks and controls aren't set up early there can be lots of duplication/issues with categorisation
- The complexity can deter some users.

KEY CONSIDERATIONS

- Most important thing is to get started. Melbourne Water has been working on this for over 20 years, it is continuously improved.
- Build a solid foundation and think about the whole system early. Consider all aspects of running it not just the implementation, consider compatibility with other digital systems (e.g. maintenance software) and if possible use the same back end database (e.g. SQL).
- When transitioning from excel/paper based systems to a software package do the upfront work to clean up/categorise your data before entering it.
- Engage widely during design and roll out, help the people you're asking to use the system solve problems so they're incentivised to use it.

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Water Safety Planning: tools for development and implementation

ASOKA JAYARATNE
WATER QUALITY SPECIALIST

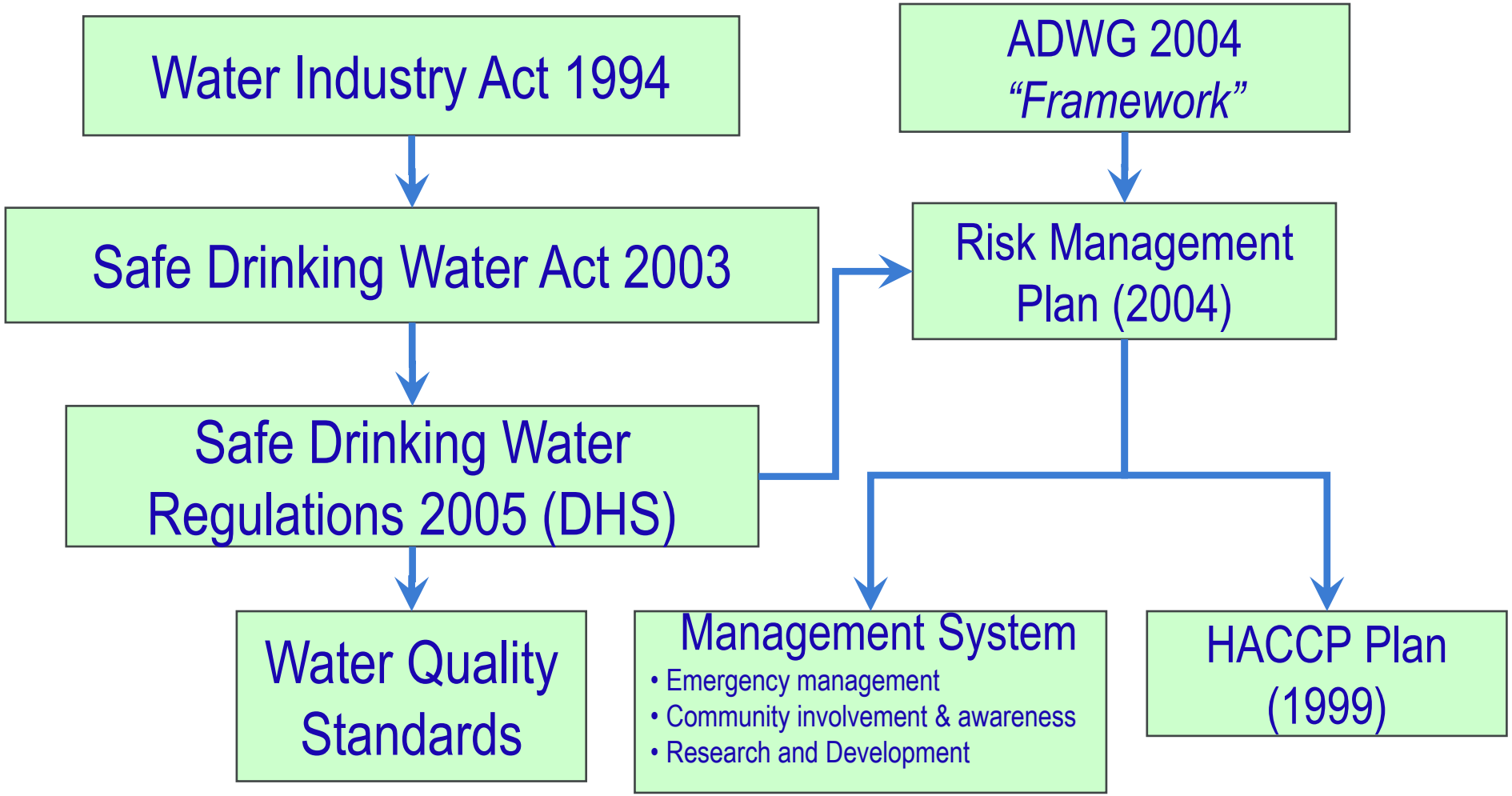
Yarra Valley Water

inspiring change

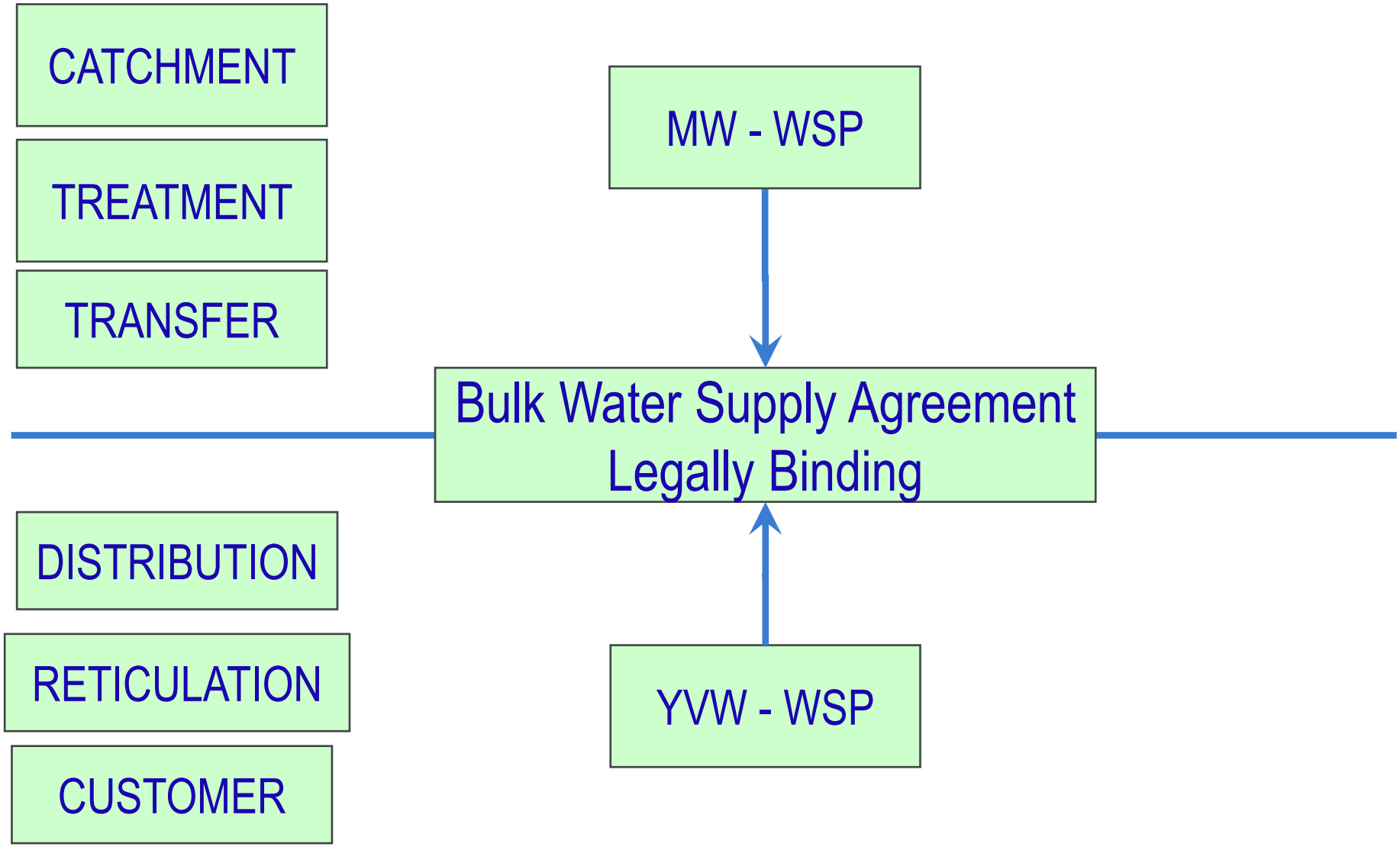
OVERVIEW

- Co-WSP Management – MW/YVW
- Yarra Valley Water WSP Implementation
- Paper / digital version - pros and cons
- What matters – software vs paper/digital
- Next phase of WSP management

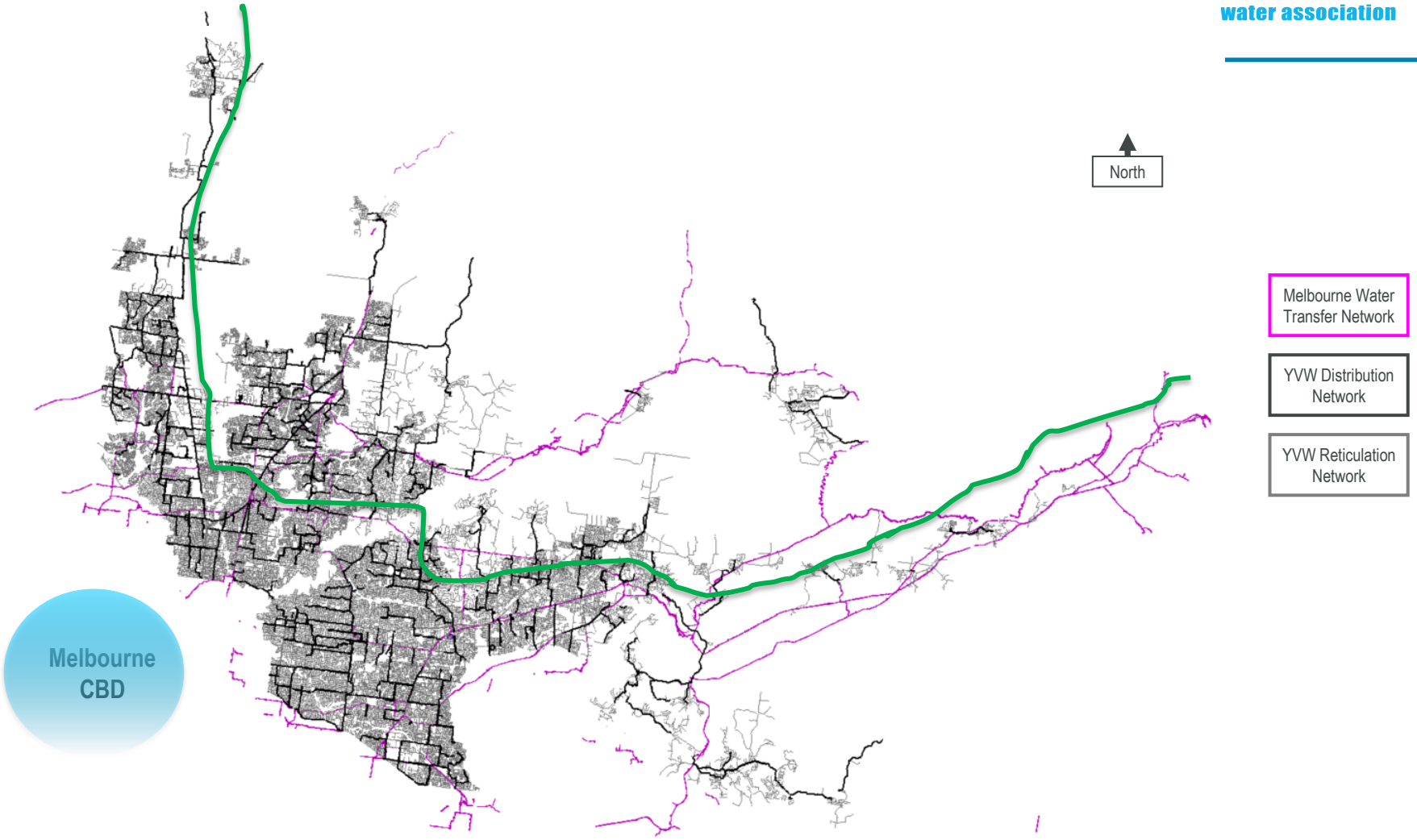
HEAVILY REGULATED



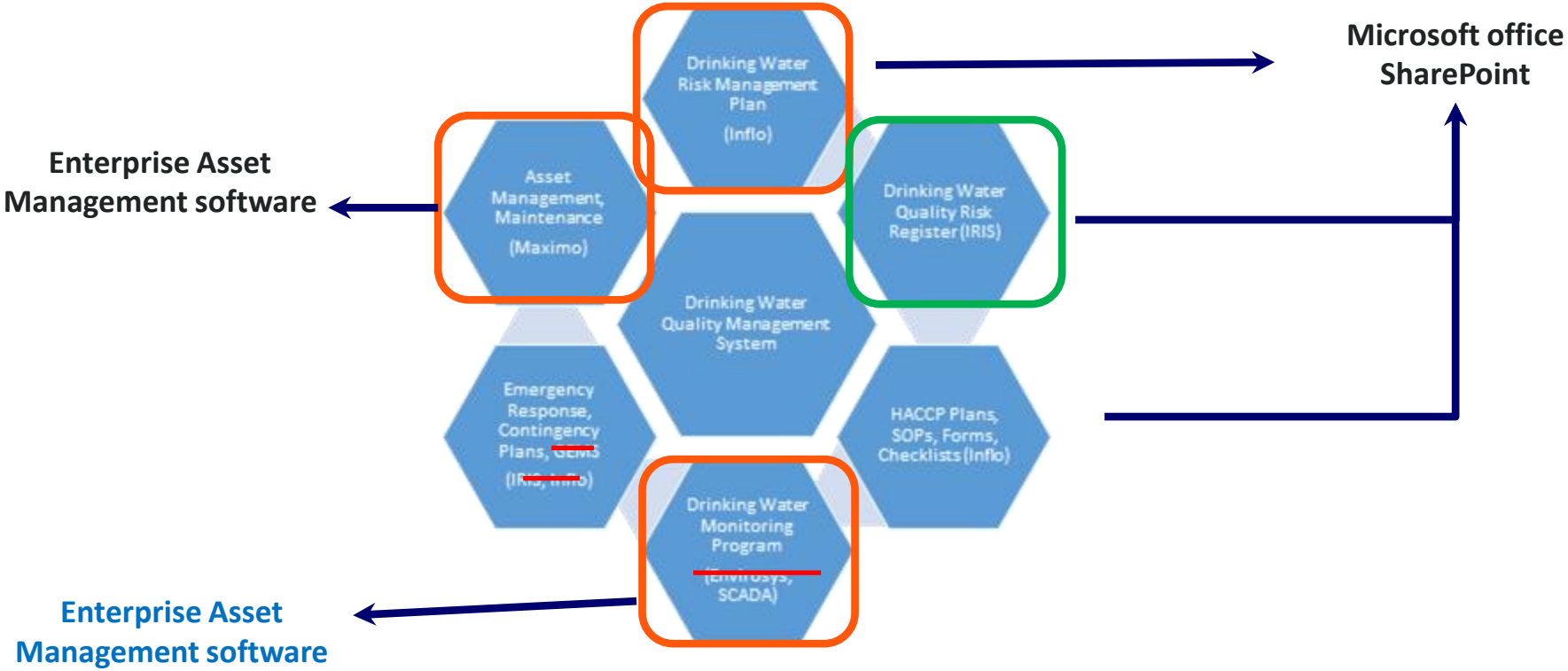
WHOLESALER/RETAILER INTERFACE
WSP INTEGRATION



COMPLEX NETWORK – MULTIPLE SOURCES



DRINKING WATER QUALITY MANAGEMENT SYSTEM IMPLEMENTATION



Components of the Drinking Water Quality Management System

ALL IN A WORD DOCUMENT

YARRA VALLEY FUTURE WATER

DRINKING WATER HACCP PLAN
VERSION 36

MARCH 2022

LIKELIHOOD	SEVERITY
1 = Once every five years or less	1 = no impact or not detectable
2 = Once per year	2 = impact on potential customer complaints
3 = Once per month	3 = impact on customer charter compliance
4 = Once per week	4 = impact on Licence/Statement of Obligation compliance
5 = Once per day or more	5 = impact on public health

Total Assessed Risk	= Likelihood x Severity
Total Assessed Risk ≥ 6*	= Significant Risk = Critical Control Point

*** Note – Hazardous evens related to "Total Assessed Risk" less than 6 where loss of control can pause a significant risk to public health will be considered for a CCP by the HACCP Team.**

The CCP are then determined based on decision trees in the *Codex Alimentarius Guidelines* and Appendix I, Section AI.7of the ADWG.

Inputs	Potential Hazard	Responsible team for Control	Cause (Hazardous Event)	Control Measure	Residual Risk				Validation
					Likelihood	Consequence	Total	Significance	
	Chemical Contamination	WOPS	• Contamination due excessive chlorination (> 5mg/L)	• SCADA Alarms • Contractor Access to SCADA • Contamination Prevention Procedure • Contract specification • Flow meter Asset Management Improvement Pogram	2	5	10	significant	Historic verification of secondary chlorinator failures indicates two overdosing events in 2016 and 2017 • Failure of chlorine standard due to short circuiting in Churn Creek Reservoir in 2016 • PLC failure of Montrose chlorinator in 2017 • Online chlorine analysers at all storage reservoirs included in Water Plan4
	Chemical Contamination	RM	• Unacceptable levels of impurities in sodium hypochlorite	• Contract specification	1	5	5	Not significant	• Contractor Audits • Adequacy of supplier controls were verified by a site visit to sodium hypochlorite manufacturing facilities
	Chemical contamination	WOPS	• Excessive chlorination from spot dosing of reservoirs and tanks	• Spot Chlorination procedure in the Operations Reference Manuals • No manual chlorination, Injection trailer or portable injection unit • Chorine injection points at storage tanks • Contract specification for spot dosing of tanks	1	5	5	Not significant	• Historic verification of covered storages and reticulated water (Yarra Valley Water Monthly Water Quality Report) indicates no increased chlorine levels. Hence chlorination procedures adequately prevent hazard. Weekly monitoring of total and chlorine at customer taps is adequate to verify the effectiveness of control measure
		WP WOPS	• Excessive chlorination from short circuiting from inlet to outlet within reservoirs during spot dosing • Excessive chlorination from overdosing	• Short term control – Project to check as constructed drawings of all tanks completed in February 2017 • Chlorinator contract	2	5	10	Significant	Historic verification of secondary chlorinator failures indicate two overdosing events in 2016 and 2017

38 Drinking Water HACCP Plan

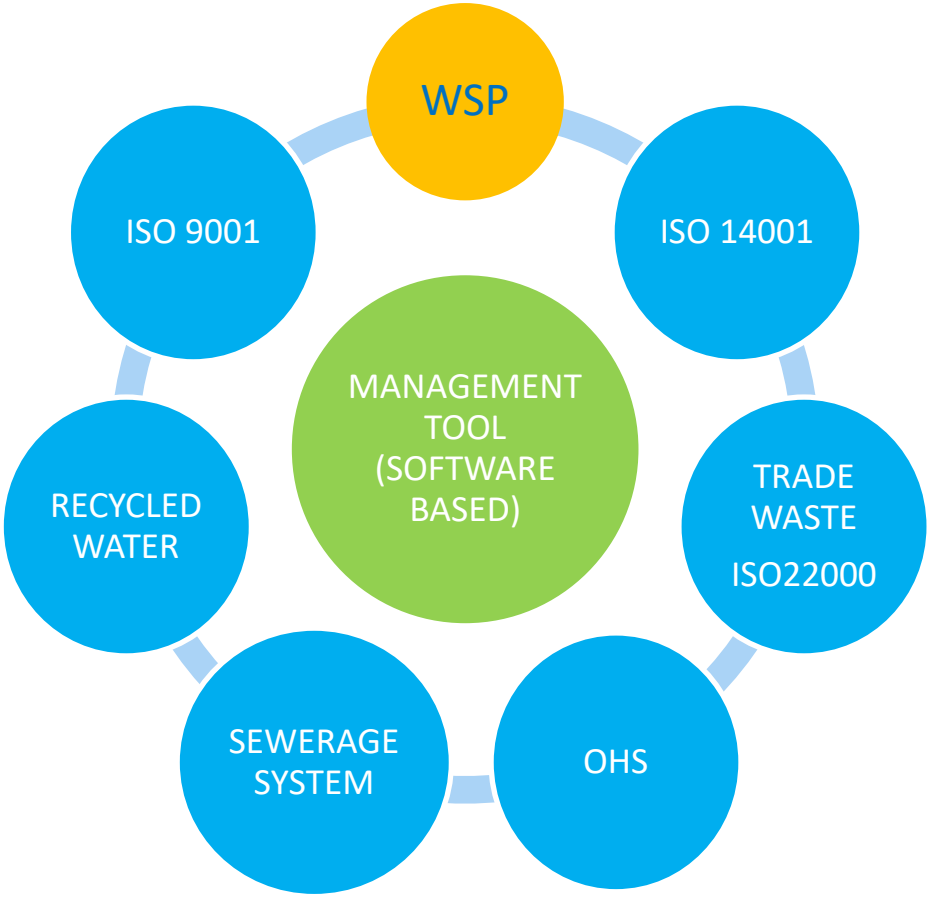
PROS

- Simple and easy to manage all in one place.
- Managed by one WSP Team Leader from 1999 to date.
- Checks and balances to ensure currency and implementation
  - Rolling review
  - Teams and working groups
  - Internal and external audits
  - Senior management review
  - Awareness from the Board to the field crews

CONS

- Reliance of few individual experts
- Efficient tracking of changes → document, risk assessment, audits, audit actions…
- Dependent on human interventions

NEXT PHASE – SOFTWARE BASED MANAGEMENT



KEY MESSAGES

- What works for you → local context
- Know what you are doing → transparent
- No one answer → software vs paper based
- Most important aspect → Implementation or Operationalisation
- Learn from experiences of others
- Try before you buy

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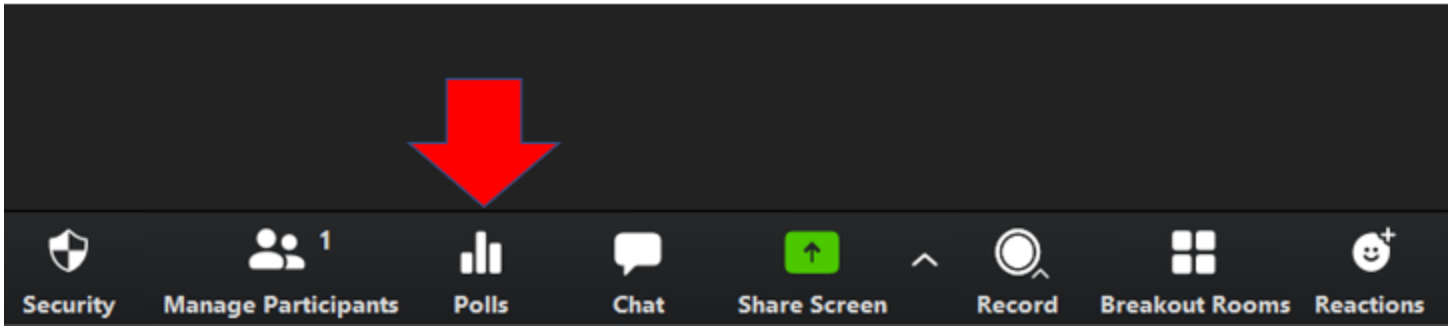
Poll & Q&A Discussion

MODERATOR: RUI SANCHO

inspiring change

POLL

Poll: Which tools do you use for water safety planning activities?



Participate in the poll and share your answer with us!

UPCOMING WEBINARS

Stay tunned for our next webinars:

https://iwa-network.org/learn/process-emissions-masterclass-1/

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