

# LESSONS FROM WANNON WATER'S MAXIMO (WORKS MANAGEMENT SYSTEM) JOURNEY

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## ABSTRACT

In 2017, Wannon Water set about achieving excellence in our maintenance services and set Maintenance Excellence Performance targets for the Maintenance Branch. To help measure and achieve these targets a simpler Works Management System (WMS) was required to replace the existing three systems in place (Focus, Fulcrum, Conquest Works Management).

An external consultancy was engaged to help assess the tools available in the works management market and Wannon Water's internal readiness for a new WMS. Expressions of interest indicated that a project implementation phase of 6 months should be adequate. Two years later, Wannon Water implemented Maximo in December 2019.

Since then, we have applied a number of incremental system improvements. This presentation will look back at Wannon Water's Works Management journey: what we learned along the way, what we did well and what improvements will be adopted as we roll out to other areas of the business.

We established a system improvement process: (1) ESTABLISH – Make it work (what we think we need); (2) GROW – Make it right (what we actually need), and (3) REFINE – Make it better (Better understanding of end user and improved visualisation of data).

## 1.0 INTRODUCTION

### 1.1 Where have we come from?

In 2005, Glenelg, Portland Coast and South West Water merged to form Wannon Water. With the merger came the need to review and adopt the best systems and processes. To enable this, a number of steps were taken over the next decade, as summarised in Table 1.

**Table 1:** *Working towards an Authority-wide Approach*

Year	Incremental Improvements
2009 - 2013	<ul style="list-style-type: none"><li>• Creation of a complete Asset Register stored in <b>Conquest AMS</b></li><li>• Mapping of All network &amp; facility assets in one <b>GIS</b> (matched with Conquest Assets)</li></ul>
2012	<ul style="list-style-type: none"><li>• Implementation of <b>Focus WMS</b> for Civil Reactive Maintenance Work Orders (ESC Reporting)</li></ul>
2013 - 2017	<ul style="list-style-type: none"><li>• Development of <b>Preventative Maintenance Programs</b></li><li>• PM &amp; CM Work Orders for Maintenance Teams through <b>Conquest</b></li></ul>
2014 - 2017	<ul style="list-style-type: none"><li>• <b>Benchmarking</b> process and subsequent Maintenance <b>Excellence Program</b></li></ul>
2017	<ul style="list-style-type: none"><li>• Implement <b>Fulcrum</b> to manage PM &amp; CM Work Orders from Conquest AMS on Mobile Device</li></ul>

## **1.2 Working towards an Authority-wide approach to Planned Maintenance and Asset Management**

In 2016/017, Wannon Water identified a number of gaps within the management and utilisation of our Asset and Maintenance systems, including: too many systems; poor time estimates on Planned and Corrective Maintenance activities; travel time was not considered; capturing materials and equipment were not captured on work orders; and we did not clearly understand where we were spending time - which assets, which systems and what the failure modes were.

We identified that we wanted an Authority-wide approach to planned maintenance and asset management; improved reporting of total and overdue backlog; improved view of available resourcing Wannon Water identified that we were committed to achieving excellence in our maintenance services. This included aspirations to know what we do, why, when and how we do it; to equip people with the right skills, tools and technology; to be recognized for value by our customers, community and industry; and to be a catalyst for realising further benefits within and beyond the business.

To help deliver these aspirations the implementation of a single WMS supporting centralised dispatch of work, increasing excellence in the mobility of our field workforce, and enabling the generation of improved business knowledge delivering greater efficiency and effectiveness of field-based tasks was considered essential.

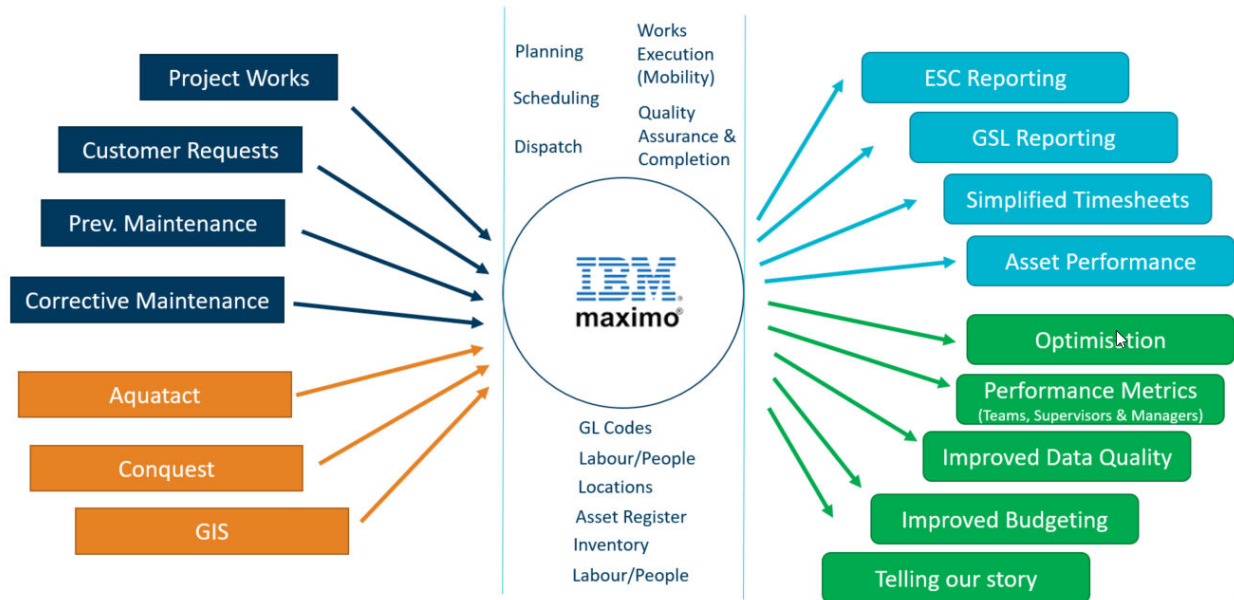
At its core, the project would replace and improve works management functionality offered by the three existing systems underpinning Wannon Water's current WMSs:

- Focus - Field works management application used to manage works on network assets. The application supports reporting of performance measures for reporting ESC targets.
- Fulcrum – A cloud based Mobile App platform used to extend Conquest Works Management functionality to field users.
- Conquest Works Management - Asset management application which includes Asset Register and Works Management functionality. The works management functionality generates work activities on network and facility assets.

Ideally, Wannon Water's requirements for a WMS would comprise of the following business applications; a Work Order System; a Scheduling System; a Field Mobility System; real time reporting & dashboards; and integrate with existing corporate systems.

## **1.3 Maximo - Works Management System**

Wannon Water selected IBM Maximo as it's dedicated WMS. In 2019, we went GO LIVE for our Maintenance Branch – incorporating Electrical, Mechanical and Civil Teams. Figure 1 indicates all the ways we are currently using Maximo.



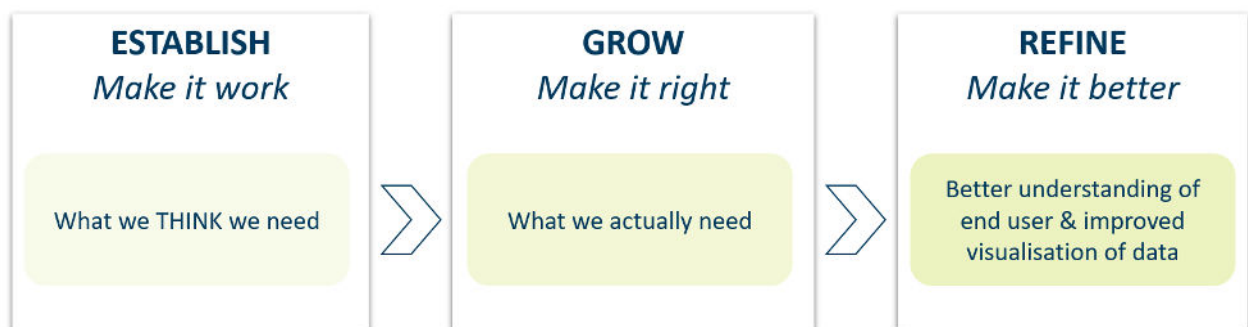
**Figure 1:** *What are we utilising our Works Management System For?*

## 2.0 DISCUSSION

### 2.1 Incremental Improvements made to Maximo during COVID

Three months post rollout, Victorian workplaces were disrupted as we plunged into a series of COVID-19 lockdowns over the following two years. Interaction with field-based employees was limited as workplace bubbles were introduced limiting contact between corporate-based and field-based employees.

Whilst interaction was limited, this provided an opportunity to review what we had initially established – to make it work and consider what we needed to make the system grow and what was it we actually needed. Through this, we identified a three-part process (Figure 2).



**Figure 2:** *Works Management System Improvement Process*

A brief summary of some of the improvements we have made is provided in Table 2 below. Whilst individually some of these enhancements are very minor, as a collective they have ensured we have come leaps and bounds in our Works Management journey.

**Table 2: Incremental improvements made to Maximo during 2020 - 2022**

<b>Establish</b>	<b>Grow</b>	<b>Refine</b>
Single Planning & Scheduling Liaison Officer covering 6 teams (Civil, Mech & Elec)	Employ dedicated 'Planning & Scheduling Liaison Officer – Mech & Elec'	Provided SME to assist Mechanical & Electrical teams. Eased workload & provided support/backup to P&SLO-Civil.
Onboard internal employees only.	Onboarding of Electrical Contractors & Mechanical Contractors.	Ability to plan, schedule and assign work to external Contractors. Ease administration on Team Leaders regarding details of job completed.
Provide drop down menus for capturing some data points, which involved 'clicking' through multiple areas/pages on field device.	Where possible, replace drop down menus with tick boxes on Maximo Anywhere Field device	Quicker and easier to enter data, improved visualisation and accuracy of data captured in the field. Happier field technicians.
Team Leaders unable to see whole team's work for the week based on geographical separation of team	Removal of Electrical & Mechanical Team divisions (east, west, central)	Team Leader has improved visibility of full team and their workload across week.
Large quality assurance effort to review & complete work orders to maintain data accuracy. Job duration estimate was not aligned to actual time taken to complete job, which in turn meant forecast reporting was unreliable.	Creation of Team Leader Audit Start Centre, which flags common errors to be rectified.	Improved visibility of work orders with errors. Improved data quality. Reduction in time taken to complete Quality Assurance. Team Leader is aware of who within team needs additional support/training. Job plan duration aligns closer to actual job time.
Visual display of data limited to start centres within Maximo. Difficult to visually demonstrate / analyse data being captured in WMS.	Employ dedicated Works Management System Data Analyst	Creation of PowerBi dashboards to present digestible maintenance-related data to users and the wider business. Improved opportunity to tell our story, support field Teams.
Field technicians may be pulled from planned works to reactive works. Significant phone calls / interruption to works when assigning additional reactive jobs based on proximity to job.	Creation of saved query 'Current Work Orders my Team are working on'	Improved visibility and understanding for Team Leaders. Ability for Team Leaders to self-serve information. Reduction in phone calls to field-based employees and interruption in work.
Difficult to follow job details where information was retained between individuals on emails or phone calls.	Creation of 'Planning & Scheduling Liaison Officer (PSLO) Log Note	Ability for field-based employees to log information pertaining to job directly on work order. Reduction in follow up phone calls / emails. All work history retained on work order.
Difficult to	Utilisation of "On Hold" & "Waiting on Materials" work order status. New search functionality on field devices.	Reduced work orders on field tablets. Field technicians less overwhelmed with job list. Greater awareness of delivery delays with materials. Improved visibility of backlog.
Start Centres based on consultant suggestions, very	Review of Maximo Start Centres (landing pages) to	Improved engagement, visibility and understanding from end users.

basic. As end users become more familiar with system want more information/access readily available/visible.	ensure meet needs of end users.	Improved data quality. Reduction in follow-up phone calls/emails.
Difficult to track maintenance work undertaken as part of Capex and Opex Projects	Inclusion of Project Codes to ensure costs captured in Finance against project.	Improved understanding of how much maintenance employees assist with Projects. Improved planning and scheduling (utilisation) of maintenance employees with projects.
Transferred ~1200 work orders into WMS. Significant planning, scheduling assigning efforts required.	Utilised 'Routes' functionality in Maximo.	Reduction of Work Orders for Valve inspections from ~1200 to 76. Reduced data capture and administration of work order process.
	Creation of Forecast Report, adjustable via series of options.	Improved visibility of upcoming workload. Ability to adjust based on major projects, resource changes, improved quality of data capture due to using correct coding.
Train field employees in only what they need to know, don't overwhelm with new WMS.	Significant turn over of employees during 2020-2022, with new cohort not understanding why the WMS was needed/utilised. Run series of workshops. Create additional training documentation & improved training sessions.	Create Maximo Anywhere User Group, where nominated field technicians provide feedback regarding enhancement requests and test proposed solutions. Improved field employee engagement.

## 2.2 Tracking the Customer Request and After Hours Process via Start Centre - Incremental Improvements

The 'Customer Relations' start centre (Figure 3, 4, 5), is utilised by our internal Customer Relations team, our external after hours call centre and our Dispatch team. Here, we are able to track and monitor all customer faults and requests raised to SCADA Alarms (after hours). Below we discuss the pros and cons of each improvement process.

### 2.2.1 Make it work - Tracking the Customer Request and After Hours Process via Start Centre

Figure 3 demonstrates what we initially implemented. Noting minimal information that met basic needs: Pros included ability to see request last seven days. Cons included difficulty identifying what job was for; Service address often missing – made it difficult for field technician to know location they needed to respond to; Unable to decipher if from BH or AH; Unable to identify who created request.

SR	Summary	Service Address	Status	Reported Date	Reported Priority
5119	ALARM x 2		WOCREATED	1/06/20 6:12 AM	2
5118	Alarms		WOCREATED	1/06/20 3:35 AM	3
5117	Sewer Leak	Lot 23 18 McPherson Crescent	WOCREATED	31/05/20 6:57 PM	2
5116	ALARMS	Sewer Pump Station Frank Street	WOCREATED	31/05/20 1:38 PM	2
5114		4740 Princes Highway	WOSTARTED	31/05/20 12:36 PM	3
5113	Alarm		WOCREATED	31/05/20 10:42 AM	2
5112	Stop tap	22 Ziegler Parade	WOSTARTED	31/05/20 10:25 AM	3
5111	ALARMS x 2		WOCREATED	31/05/20 10:08 AM	2
5110		20 Pertobe Road	WOSTARTED	31/05/20 6:36 AM	3
5109	LEAK	7 Moodie Avenue	RESOLVED	30/05/20 4:15 PM	2

**Figure 3:** *Make it Work – what we thought we needed.*

### 2.2.2 Make it Right - Tracking the Customer Request and After Hours Process via Start Centre

Figure 4 demonstrates how we made it right. Pros now included the ability to see all requests last 31 days; ability to see what job was for; ability to see service address; ability to see who created request. However, as the ends users became more familiar with the process, we had more frequently asked questions that were difficult to confirm at a glance including: difficult to easily identify what types of jobs we respond to AH; difficult to easily identify what percentage of reactive jobs are generated during BH versus AH; difficult for our Customer Relations team to review each morning jobs that need to be entered into Aquatact against properties as customer requests and alarms are all in the mix; gaps in information coming from our AH Call Centre causing frustration for our field technicians; difficult to identify requests that had an error and had not converted into a work order available for assigning to a field technician.

SR	Summary	Service Address	Status	Reported Date	Reported Priority	Reported By
9698	Water   Connection   Water Connection Application	Lot 2 23 Ocean Road	ONROUTE	18/12/20 2:26 PM	4	JORDAN SCOTT
9697	Water   Leak/Break	31 Lavers Hill-Cobden Road	RESOLVED	18/12/20 2:14 PM	1	MARYLOU STORER
9696	Assets (System Operations)   Onsite Location Request	139 McKeberly Street	WOCREATED	18/12/20 1:58 PM	1	KELLY JAMESHANSFORD
9694	Water   Faulty Stop Tap   Leak	19 Rands Road	WOCREATED	18/12/20 1:18 PM	2	LAURINDA WILSON
9693	Assets (System Operations)   Onsite Location Request	39 Church Street	WOSTARTED	18/12/20 12:47 PM	1	KELLY JAMESHANSFORD
9692	Water   Meter Issue   Leak	19 Kakoda Avenue	RESOLVED	18/12/20 12:20 PM	2	KELLY JAMESHANSFORD
9691	Water   Faulty Stop Tap   Unable to Turn Off	18 Bell Street	RESOLVED	18/12/20 11:43 AM	1	KELLY JAMESHANSFORD
9689	Water   Leak/Break	aka BA Martin Place Unit 1 B Martin Place	WOCREATED	18/12/20 10:56 AM	1	JULIE DINNING
9683	Water   Meter Issue   Leak		RESOLVED	18/12/20 9:44 AM	2	TANIA HILL
9676	Alarm	82 Scott Street	RESOLVED	17/12/20 9:09 PM	1	JOHN MOSER

**Figure 4:** *Make it Right – what we actually needed.*

## 2.2.3 Make it Better - Tracking the Customer Request and After Hours Process via Start Centre

To improve the gaps of information missing from our AH Call Centre, we simplified their customer request page, removing non-compulsory fields. Provided training documentation and sessions to the team. We also created a new request type, to distinguish and enable quick filtering of jobs from BH and AH.

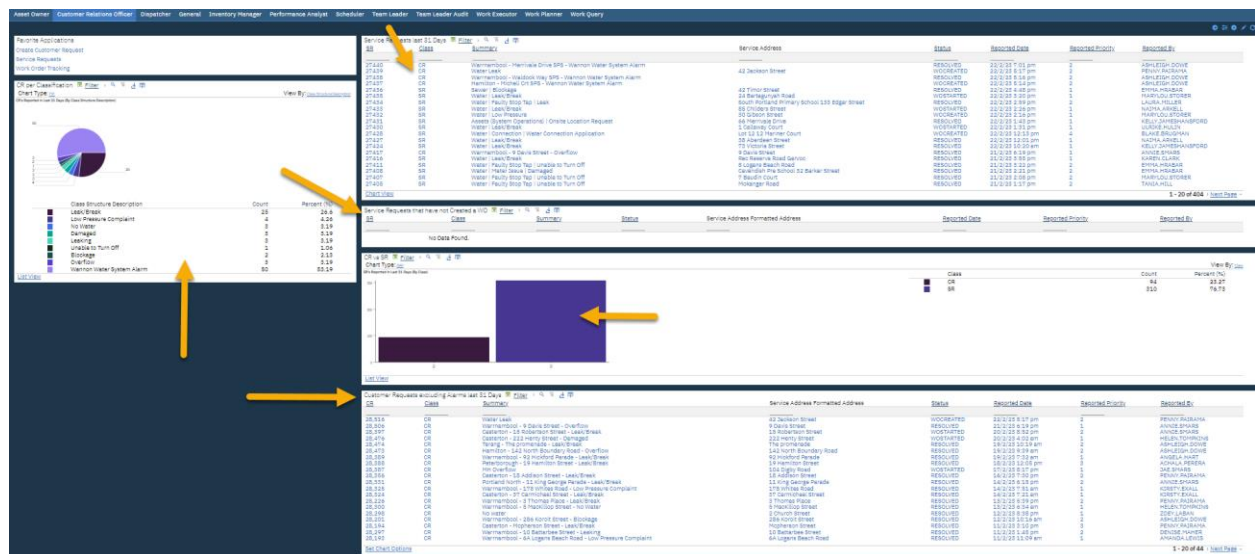
We incorporated a pie chart into the start centre which quickly and visually identifies the types of jobs our field technicians attend AH in the last 31 days. When visually displayed this enabled us to question the criticality of our AH SCADA Alarms.

We incorporated a new widget (section) that identifies any requests that have errors that need to be fixed before they can be converted into a work order and be assigned to the field team. This has reduced the number of duplicate work orders created in error, and also ensures we can respond to customer queries in a timely manner.

We incorporated a bar chart into the start centre which quickly and visually identifies the percentage of jobs created during BH versus AH.

We incorporated a new widget (section) that excludes all requests created from SCADA Alarms and only includes those that need to be inputted into Aquatact. This has significantly reduced the administration time every morning for our Customer Relations team.

The start centre demonstrated in Figure 5 below, has now remained the same for approximately 18 months, and meets the needs of all end users.



**Figure 5:** *Make it Better – better understanding of end user and improved visualisation of data.*

The presentation will provide more visual examples and greater context to these improvements.

### **3.0 CONCLUSION**

Since implementing Maximo in December 2019, we have undertaken a significant number of small, incremental improvements in an attempt to ensure (where possible) the needs of all end users, whether they be sitting behind a desk or working in the field, are met.

We cannot say it enough, communication, communication, communication is key. It is important that you communicate and understand the ‘why’ of your works management system:

- why it is important to establish good processes,
- why it is important to capture accurate data,
- why it is important to seek feedback from field technicians,
- why it is important to look for smarter ways to do things,
- why the end user experience matters,
- why it is important to understand what the data is used for (and if it is no longer required, stop asking field technicians to capture it!).

In 2023/24 we are transitioning a number of other parts of the business into Maximo, including Operational Support & Projects, Treatment Operations and Network Operations. We hope to take on board the improvements and lessons we have learned along the way, acknowledging that there will always be opportunities to ESTABLISH *to make it work.....GROW to make it right.....REFINE to make it better.*

### **4.0 ACKNOWLEDGEMENTS**

I would like to take the opportunity to thank the Maintenance field-based technicians who spend all day everyday capturing data in our Works Management System. To the Maintenance Centre team who plan, schedule, dispatch, quality assure and analyse our work orders. To my fellow Maintenance Managers who have been on the Maximo journey – the highs and the lows. To Chris Crossland and Koos Kunneke (Clarita) who continue to smile when we ask for another enhancement and provide valuable solutions.

### **5.0 REFERENCES**

Wannon Water. *Work Management System - Contract 803 - Business Plan for Price Submission 2018-2023* (18 September 2017)