


Customer Requirements for Asset Management Improvement using ISO 55001

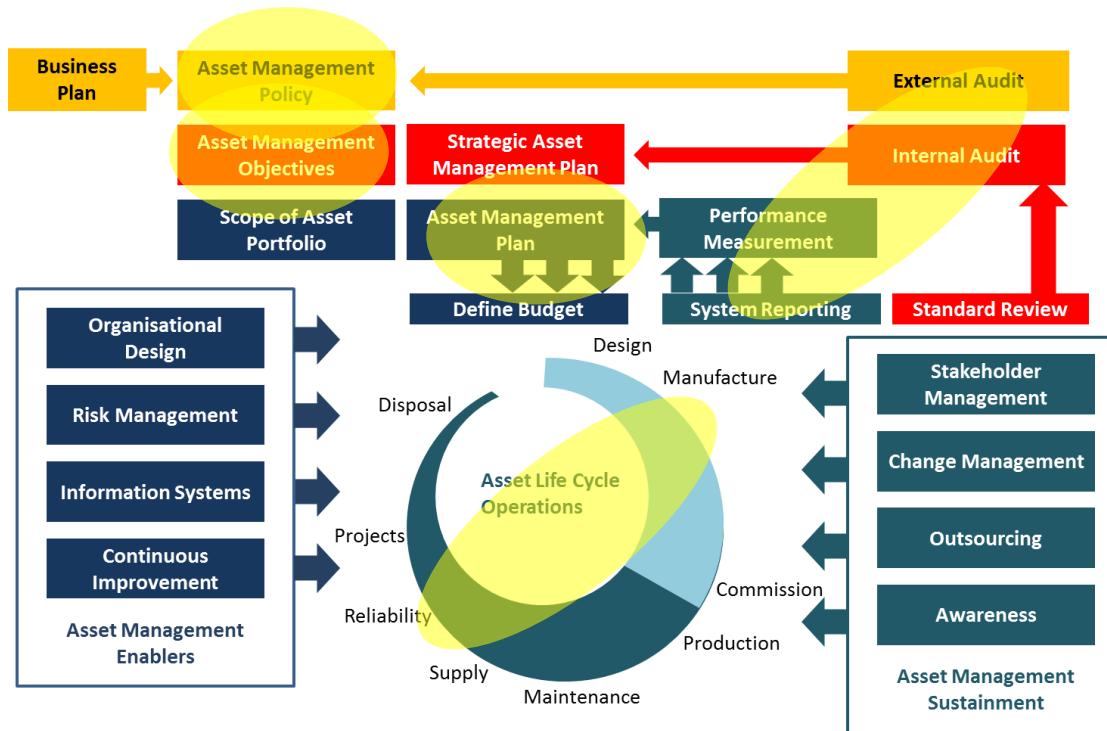
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Asset Management Council – Sydney Chapter Meeting
20 July 2016

ISO 55001 and Asset Management

- Credible basis that the organisation:
 - Assures itself how asset management practices will help deliver corporate objectives and stakeholder requirements;
 - Has specified to its people how it wants all aspects of asset management to be undertaken;
 - Cross check that it has everything in place to cost effectively manage risk; and
 - Provides a basis to hold its team accountable and focused on continuous improvement.
 - Certification is important when external stakeholder requirements demand evidence of credible asset management:
 - Independent report that asset management practices are sound and the organisation will continue to improve (useful for customers, regulators etc); and
 - Management evidence to the Board that asset management practices are credible – cost effective and manage risk.
 - The people of the organisation need to be assured that:
 - The expectations of their role which they need to deliver on;
 - The external context which makes some things important that otherwise they take for granted; and
 - What is present in the organisation to help them do their job including future action for improvement.
- Watch out for this one!
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ISO 55001 Framework



1. Many versions of the same concept
2. Good for people to develop their interpretation and test it
3. Starting point to understand what has to be in place

An **Asset Management Policy** without an **Asset Management Strategy** will not deliver change – a strategy without a plan is a document

A plan is not about assets only – it is also about people

- **Asset Management Plan** – work to be done on the assets
- **Operational Plans** – how people will undertake functions
- **Continuous Improvement Plan** – how the organisation will improve

The key to the Toyota Way and what makes Toyota stand out is not any of the individual elements...But what is important is having all the elements together as a system. It must be practiced every day in a very consistent manner, not in spurts.

Word of Warning

- There can be benefits in developing the first asset management plan(s) as an interim plan as quickly as possible, using existing information. It helps the organisation to understand the strengths and weaknesses of current asset management practices and to identify priorities for the development of future plan(s). It can also help avoid embarking on ambitious data collection exercises before needs are fully understood.
 - For what purpose do we document a Strategic Asset Management Plan?
 - What is the makeup of an Asset Management Plan such that it will be used to drive tasks?
 - Can we use what we have in a better way before embarking on more outlay?

Case Studies

1. Large government organisation based on the joining of two competent organisations with the intent of delivering significant cost down.
2. Power utility who have a captive market at present but believe that future disruption will demand a more agile posture.
3. Large mining company managing the slide in commodity prices.

Public Enterprise – Reset of Strategy

- We are told we need a SAMP for certification where certification means less pressure from the regulator – but how can the SAMP help us?
- We are also told that for certification our people need to demonstrate the processes we have defined.
- We have many processes – some legacy and some new – and many new people in their roles.
- Strategy is the articulation of objectives and requirements with the top level approach as to how they will be achieved.
 - **Governance** – tell the people what is expected of them and how they will be assisted.
 - **Continuous Improvement** – let the people learn and show the organisation how good they are at asset management.

Without standards there can be no improvement

SAMP

ALIGNMENT



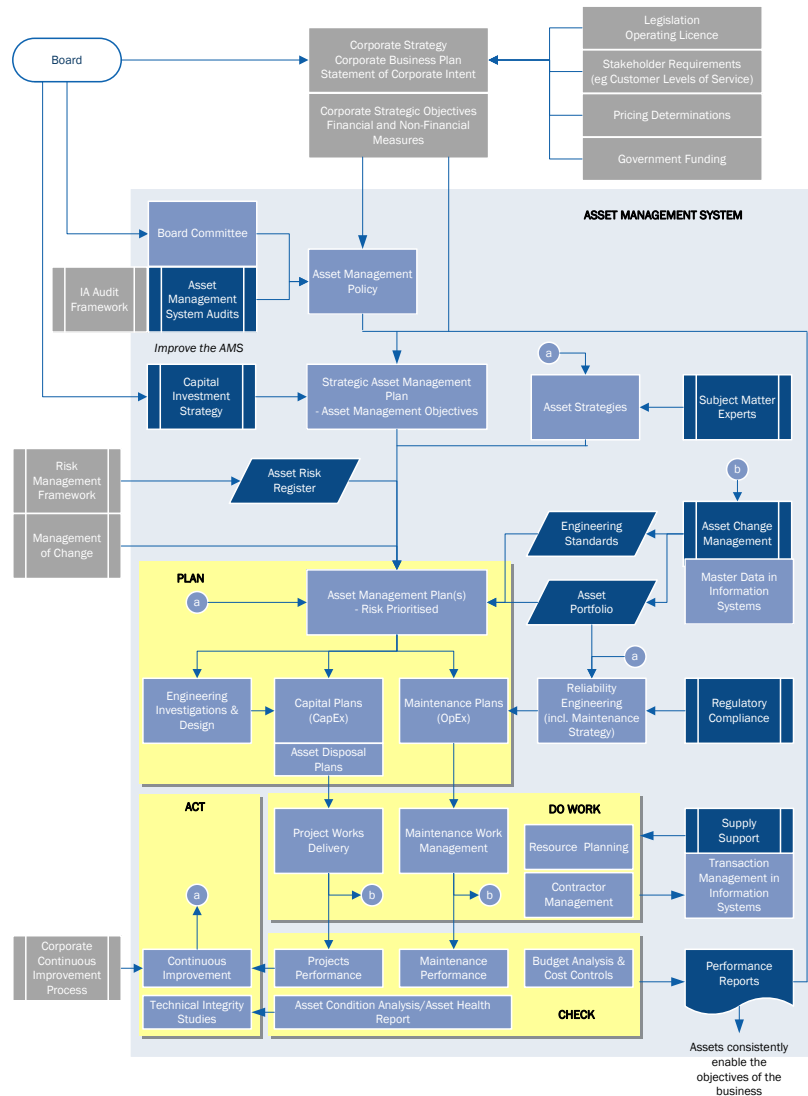
1. Stakeholders – particularly the operational context determined by external requirements but also note essential requirements to be met by asset services delivery
2. Asset management framework – a top level view which places the processes undertaken by the stakeholders in context with each other – define the planning, operational and improvement processes
3. Asset management objectives – function of the Asset Management Policy, corporate objectives and stakeholder requirements
 - a) What are the principles of measurement to assure these are being met
 - b) How do these influence the delivery of the processes
4. Planning processes – how risk is managed in asset planning covering routine and non-routine tasks
 - a) What is the planning work flow so that the right tasks are done at the right time by the right people
5. Operational processes – what processes need to be defined in order to provide governance
 - a) What is the document framework
 - b) What is the stakeholder alignment
6. Improvement processes – how is continuous improvement continually delivered based on measurement and audit plus improvement projects
 - a) How do we demonstrate that the people are competent in asset management

Asset Management Objectives

Asset Management Policy Area (and Policy Principles)	Corporate Goals defined per Corporate Strategic Initiatives (Strategic Action Plan)	Asset Management Objectives – SMART ¹ and supporting the Asset Management Policy
<p>Asset Management System sets out how people work with assets</p> <ul style="list-style-type: none"> ▪ Develop and maintain an Asset Management System (AMS) ▪ Asset management objectives are aligned with organisational objectives ▪ AMS consistent and supports corporate policies, strategies, etc 	<ul style="list-style-type: none"> ▪ XXX demonstrates excellence in all aspects of its safety performance – processes, training, leadership and behaviours ▪ Efficient and effective management systems in key areas to improve organisational performance – asset management ▪ Business processes are re-engineered to achieve a step-change in efficiency ▪ Continuous Improvement thinking is the universal approach to problem solving in XXX <p><i>Delivered by Business Transformation</i></p>	<ul style="list-style-type: none"> • Safety specifications are clear • Operational targets are defined • Cost control processes are defined • Appropriate work practices and design standards to assure water quality and minimise contamination risk • Capital planning processes defined • Asset requirements to achieve the Operating License are clear and incorporated into the project, operating and maintenance processes • Asset management-relevant environmental safeguards and obligations are clear
<p>Skilled and competent people work on assets</p> <ul style="list-style-type: none"> ▪ Develop recognised Centres of Excellence ▪ Roles and responsibilities for asset lifecycle phases ▪ Invest in the work force to ensure it is resourced and suitably skilled 	<ul style="list-style-type: none"> • Safety Excellence is a component of XXX culture • All employees actively demonstrate the corporate values and behaviours that include ... facilitates the delivery of business outcomes • XXX has leaders that are capable of leading and empowering their people and teams to achieve the mission and the Corporate Plan • XXX has a three year forward view of the skills (level and quantity) that are needed in the workforce and contractors and is taking action now to be positioned in that timeframe <p><i>Delivered by Growing the Capabilities of our People</i></p>	<ul style="list-style-type: none"> • People are trained and competent in safety practices • People are trained and competent to assess operational and cost performance and act on measurements • People are trained to link good work practices with protection of water quality and contamination risk • People are trained and disciplined to work with capital planning processes • People are trained in the implications of the Operating License on asset operation, projects and maintenance work • People are trained and competent in understanding environmental safeguards and obligations

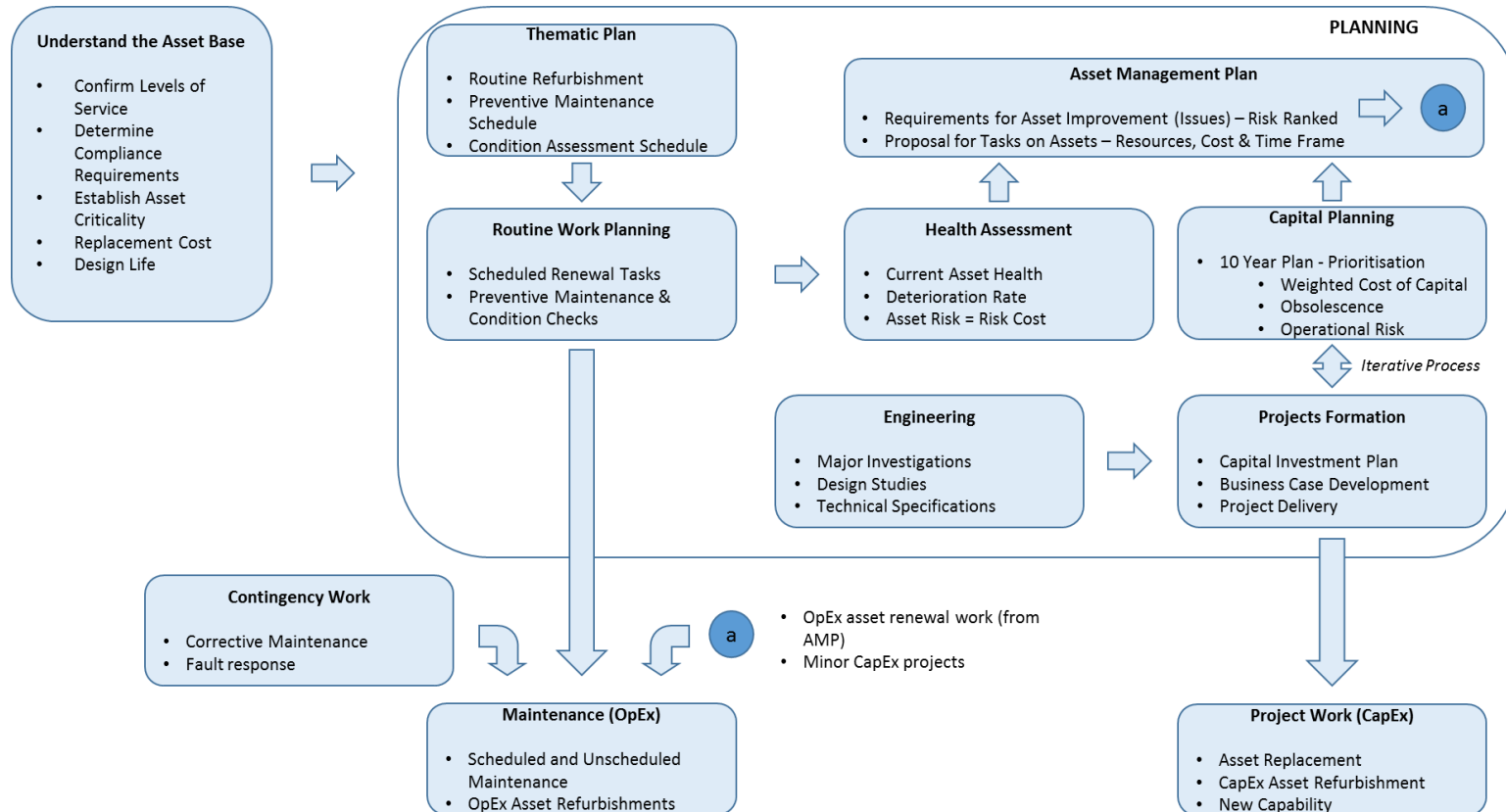
Example set of objectives

Artefacts



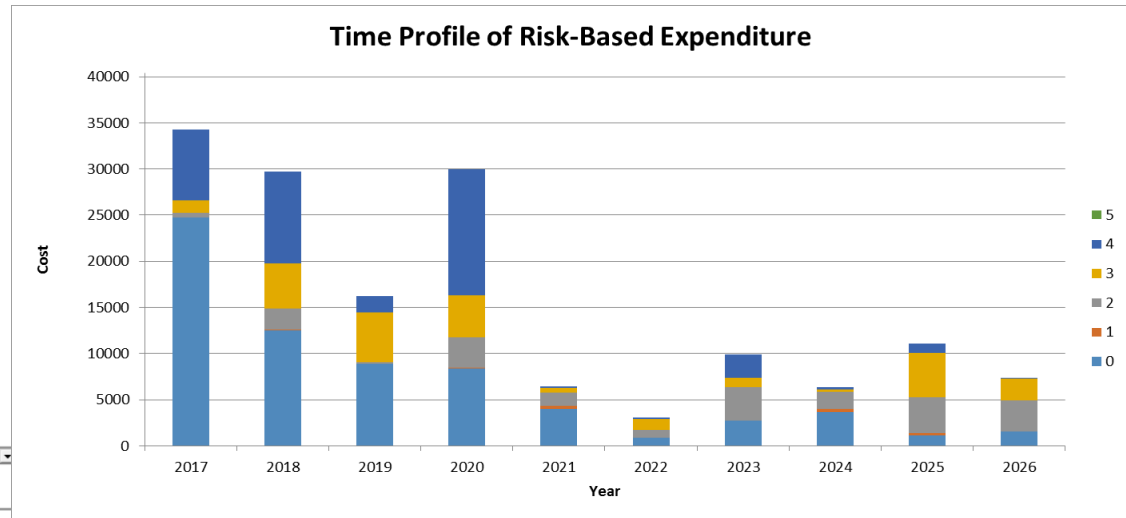
- Need a succinct way to communicate all of the processes in asset management
- Experienced practitioners caught up in the detail may not value this communication
- People who want to align processes and manage out corporate waste will value the summary
- When used to organise elements of the strategy – this is essential

Planning Process



AMP Data

Collated any data to be found into a central repository
Added risk/cost functionality for standard AMP reporting



1 of 217 records Regions

Project: MAC-BUG-001 -- Burrendong Renewals
 Facility: Burrendong Dam
 Location: North Macquarie
 Asset Types: PTC, BDG, ACT, VLV, FCV, VEN, PMP, CHN, SSM, ROP, FEN
 No. of Tasks: 20

Tasks:

- Intake Tower - Access Bridge - Decking Concrete
- Intake Tower - Gate - Emergency Closure - Fixed Wheel - Actuation - Primary
- Outlet Works - Valve, Ring Follower Gate Bypass 750mm
- Outlet Works - Valve, Ring Follower Gate Upstream 750mm
- Outlet Works - Valve, Ring Follower Gate Downstream 750mm
- Outlet Works - Valve, Hollow Jet 750mm
- Penstock Pipe - Tunnel Section - Ventilation and Lightings
- Penstock Pipe - Tunnel Section - Sump Pump
- Penstock Pipe - 3000mm - Protective Coating - Internal

Min Risk: 1
Max Risk: 4

Budget:

FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	Total
350000	13333.43	365451.10745	0	200122.6	200000	0	0	536502.382	250000	44470.4099995	1959880

Tasks | AM Objectives | Resource Management

13 of 20 tasks

Task: Intake Tower - Access Bridge - Decking Concrete
 Notes: 52 decking slabs to be replace - Included in current det.

Task Year: 2018 Cost: 300000. Archived

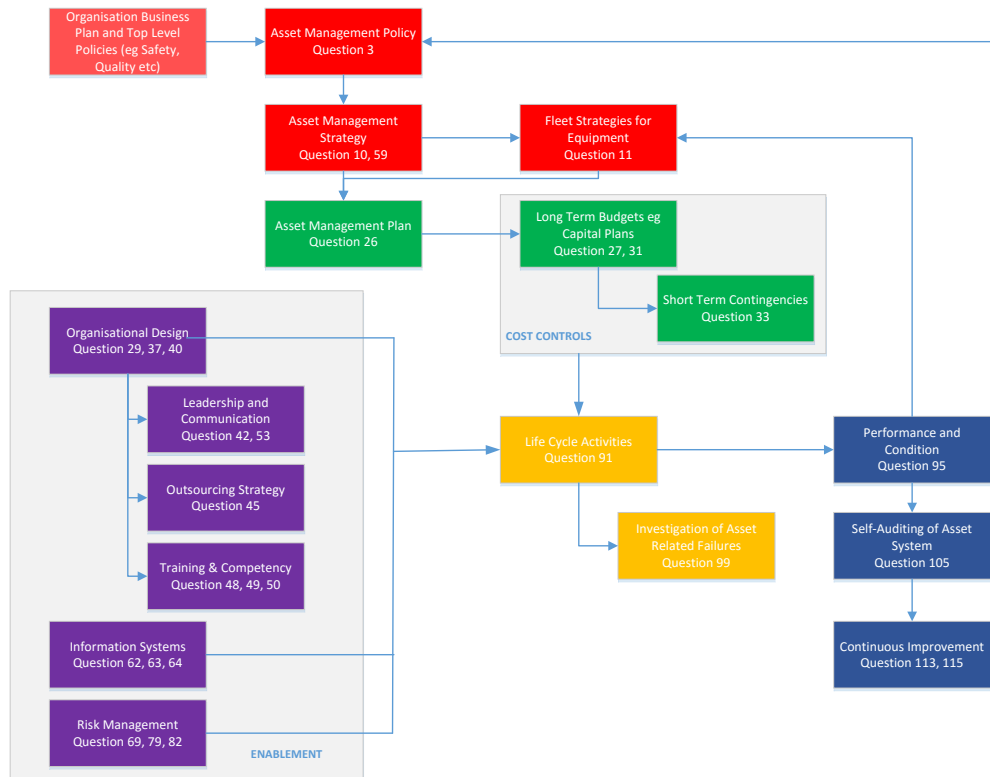
Now have a starting point for the long term AMP solution

Work with people to use what we have, and as they mature then the system can develop

Distribution Company – Future State

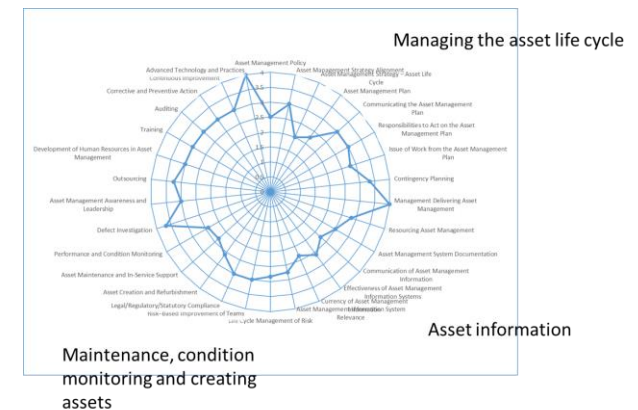
- Asset management improvement is a means to:
 - Reducing cost of business by removing waste and using information to defer expenditure
 - Improving the resilience of the organisation against external shocks – weather, earthquakes, government ...
 - Readyng the organisation for a changing external landscape
 - Identifying internal opportunities which may be realised as future revenue sources – typically leveraging IP in methods and systems
 - Improving the capability of the teams through both development of their skills, plus the tools and information provided to them

Asset Management Performance



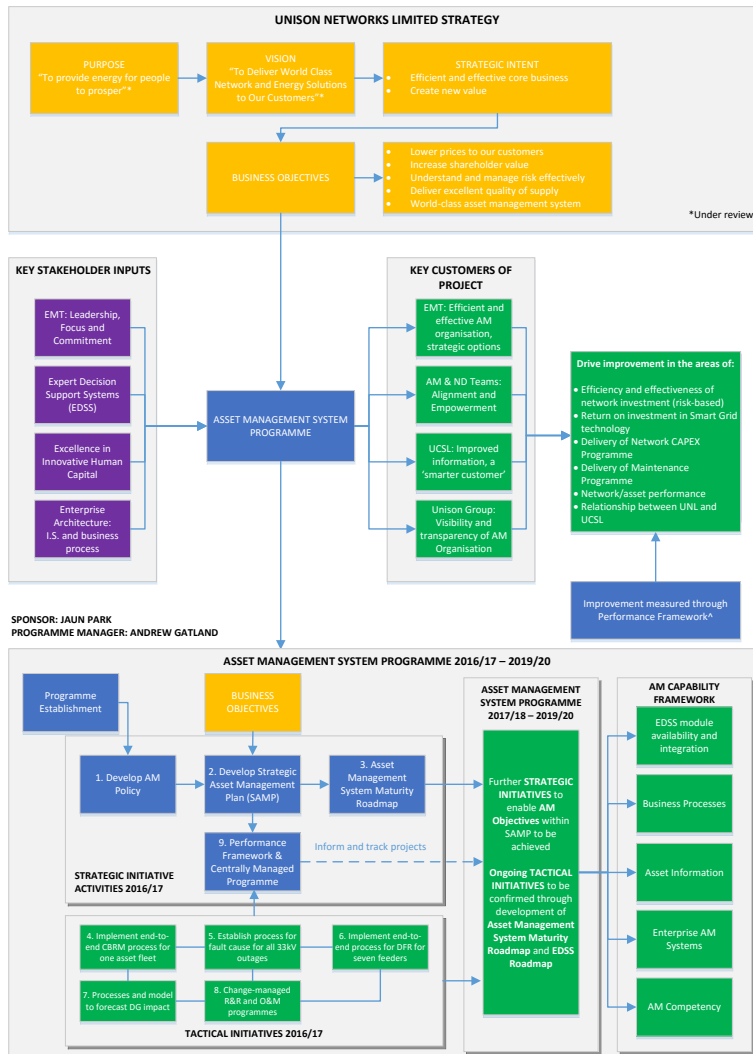
First we understood our strengths
Then we recognised our strategic areas of deficiency
Then we thought ...

- Incremental projects without a strategy will fix a few things but not set us up for the future
- Our improvement strategy had to be based on our people working from their strengths



Project Strategy

PROGRAMME OUTLINE & STRATEGIC CONTEXT: ASSET MANAGEMENT SYSTEM



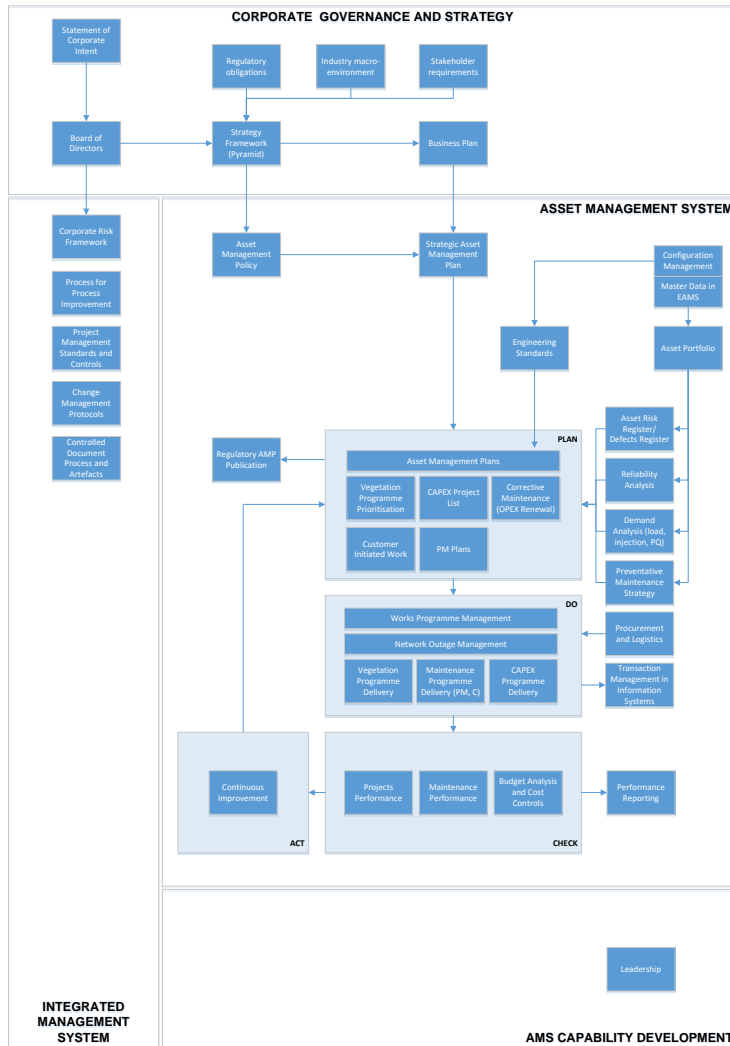
- Project was designed to be light on governance and focused on improvement projects that would deliver sustainable change
- Improvement projects were very conscious of stakeholders and service delivery
- Projects are defined, led, mentored and audited with a one year timetable
- Focus on cross disciplinary teams and the enthusiasm of professional people
- Projects are based on good work already completed and have an obvious rationale and context
- Projects are to lead to company transformation by incremental and internally driven improvement
- Projects fit within the ISO 55001 framework and observe sound asset management principles

Projects

- Better management of 33 kV faults – detection and rectification
- Impact of distributed generation on the 400V network – anticipating greater take-up with battery technology in the future
- Dynamic rating of feeders – allow more load at specified times and reduce demand for capital network expansion
- Risk based AMPs for ring main units – condition based risk management (EA Technology tool)
- Works programme management – placing work on the major contractor

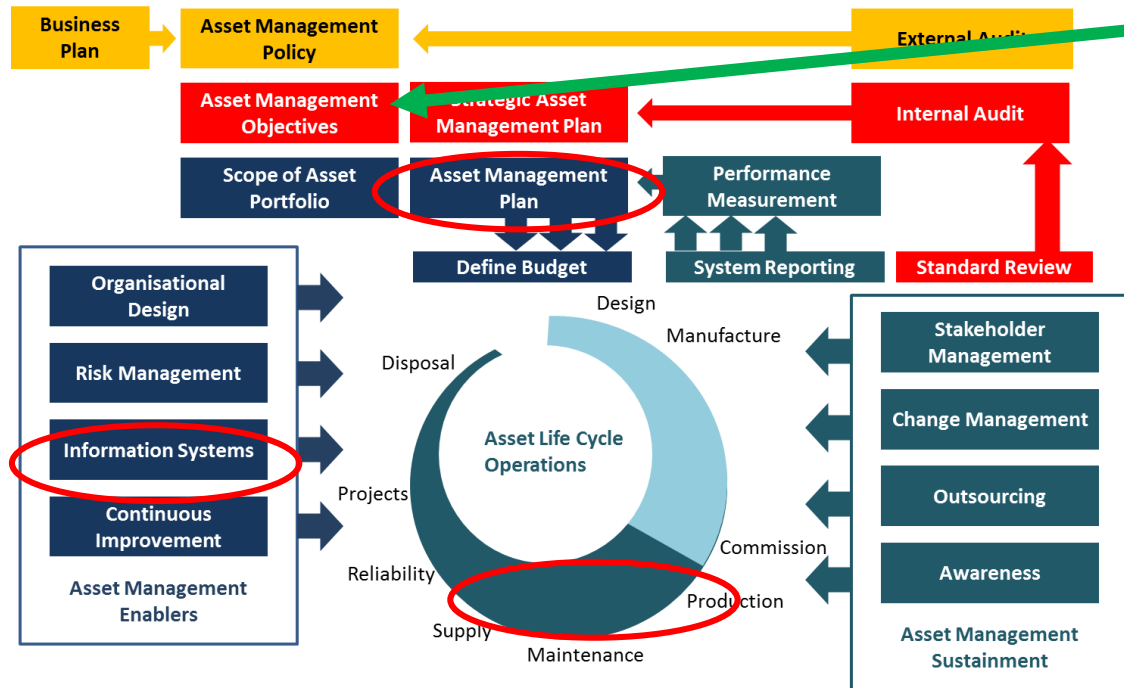
Standards should not be forced down from above but rather set by the production workers themselves

Tying these Back



- The AMS Framework was not particularly valued by experienced engineers working on specific tasks
- It will become essential as we tie the various projects back into an integrated transformation of how the organisation undertakes asset management
- People will need to grow in their understanding of how all the component parts fit together
- The messages from the project leadership need to be clear, common sense and based on sound practice

Key Areas for Improvement



Top level project oversight will address improvement of the strategy

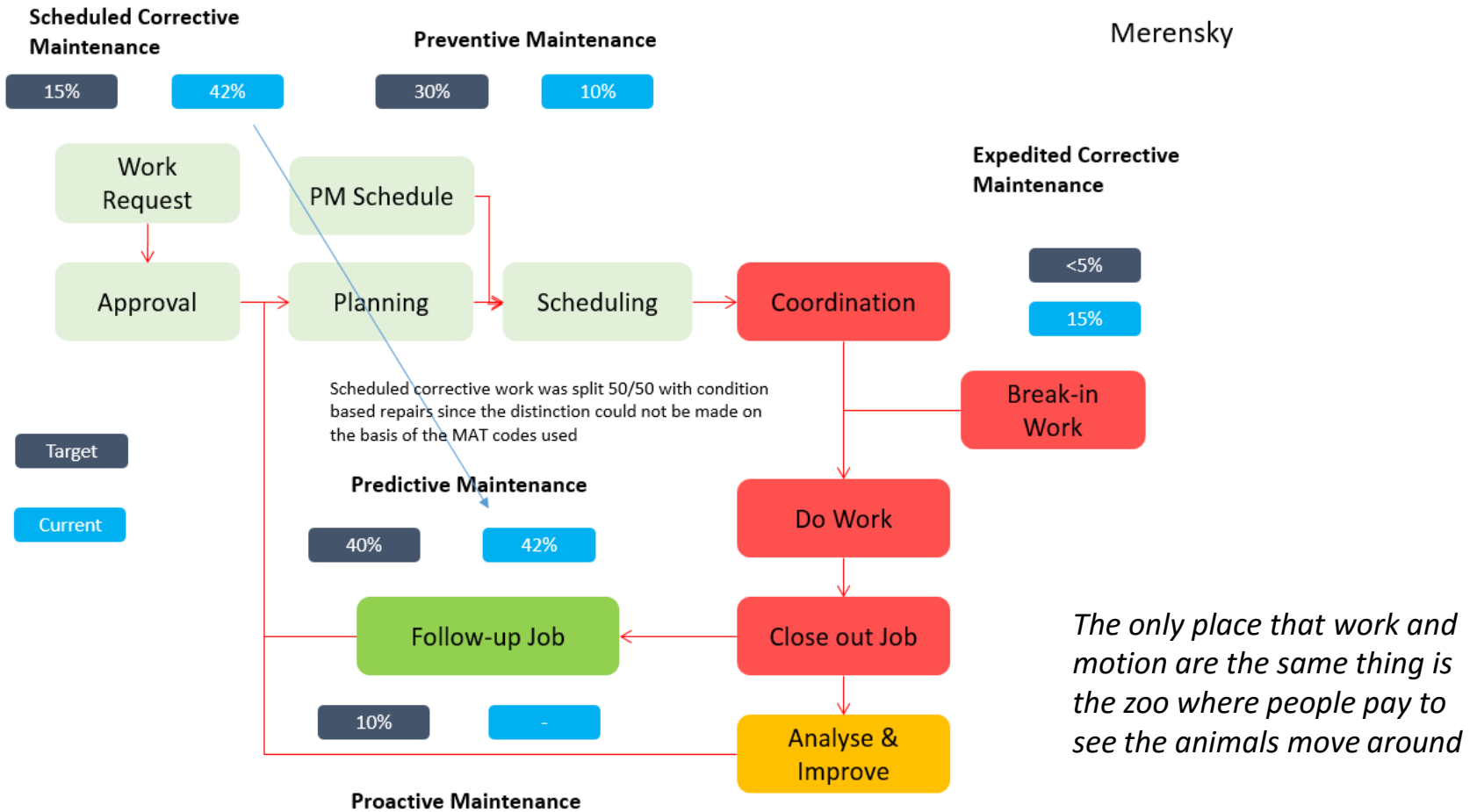
- Putting it all together
- Company transformation

- Asset information systems – everything has to be based on facts
- Asset management plans for significant equipment
- Operational processes – maintenance and project initiation
- These address the issues determined as problems in the original review

Asset Improvement

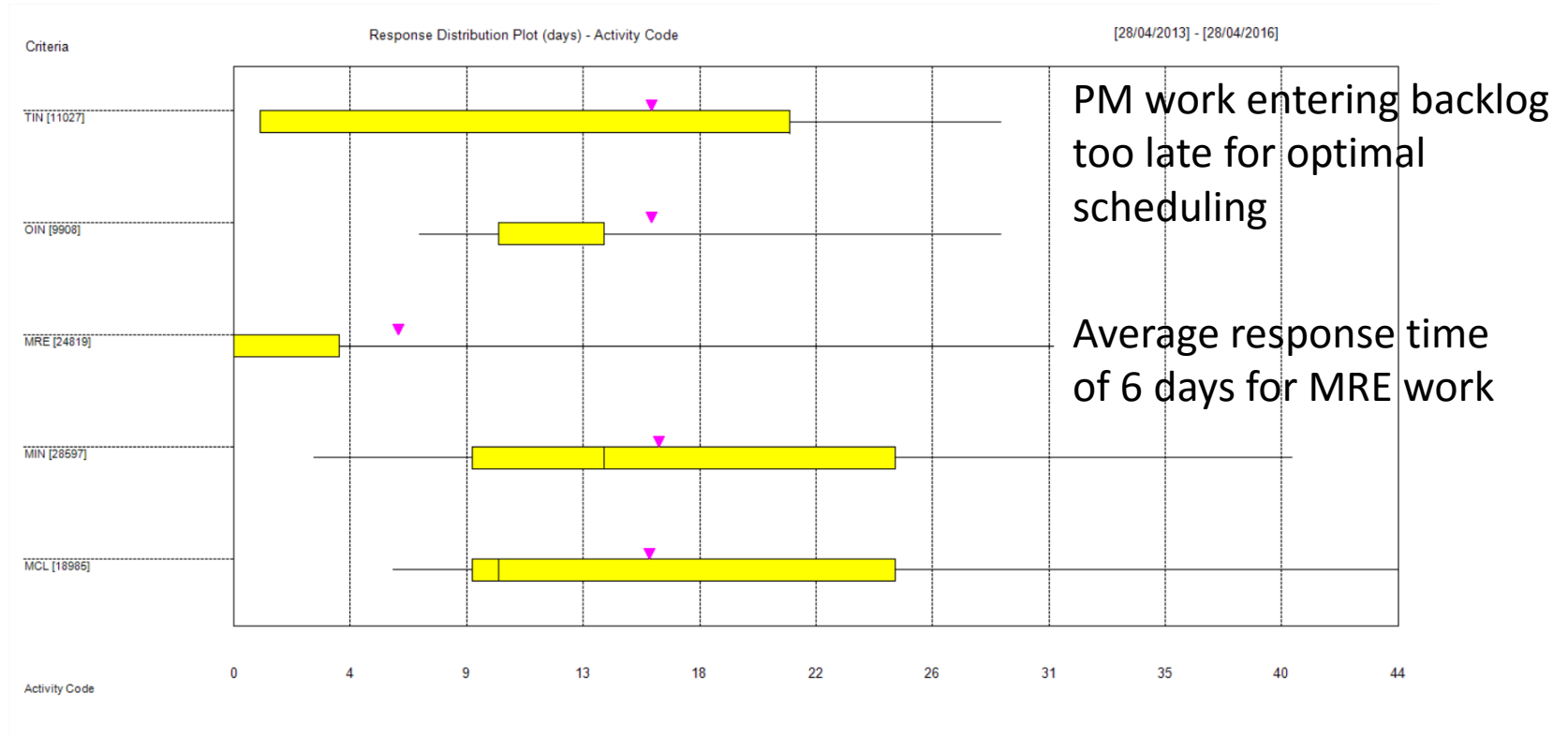
- Large mining companies have extensive systems, expert asset management knowledge and strong improvement processes
- Corporate support personnel operate at a level of sophistication equal to or better than advisory firms
 - PM strategies have largely been reviewed using RCM techniques
 - Extensive use of condition monitoring and lubrication strategies
 - In-house expert engineering knowledge with excellent links to equipment providers
- For all of this expert knowledge, on the ground equipment continues to have preventable losses which represent waste
- Cost consciousness means reduction in operational losses, downward pressure on maintenance budgets and deferment of capital outlay except for growth

Work Management – Platinum Mine



The only place that work and motion are the same thing is the zoo where people pay to see the animals move around

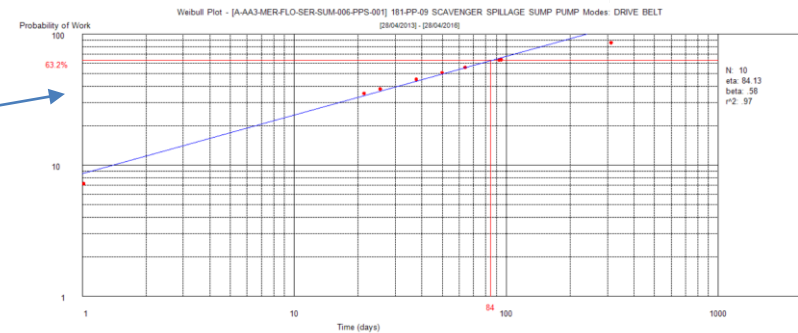
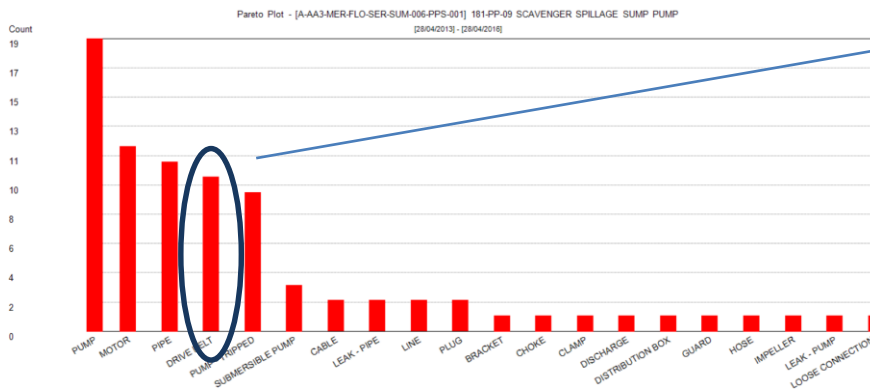
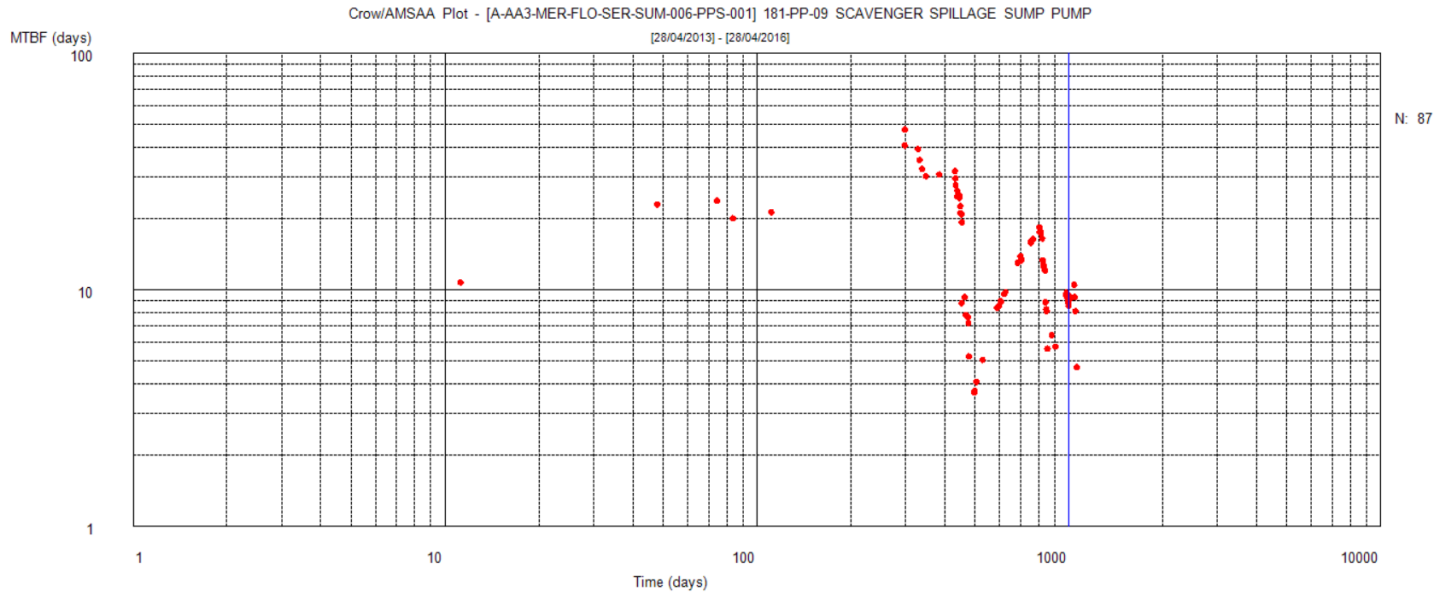
Reactive Approach



Without senior level support and desire in the work force to improve how they manage their work, work management improvement is unlikely irrespective of these results

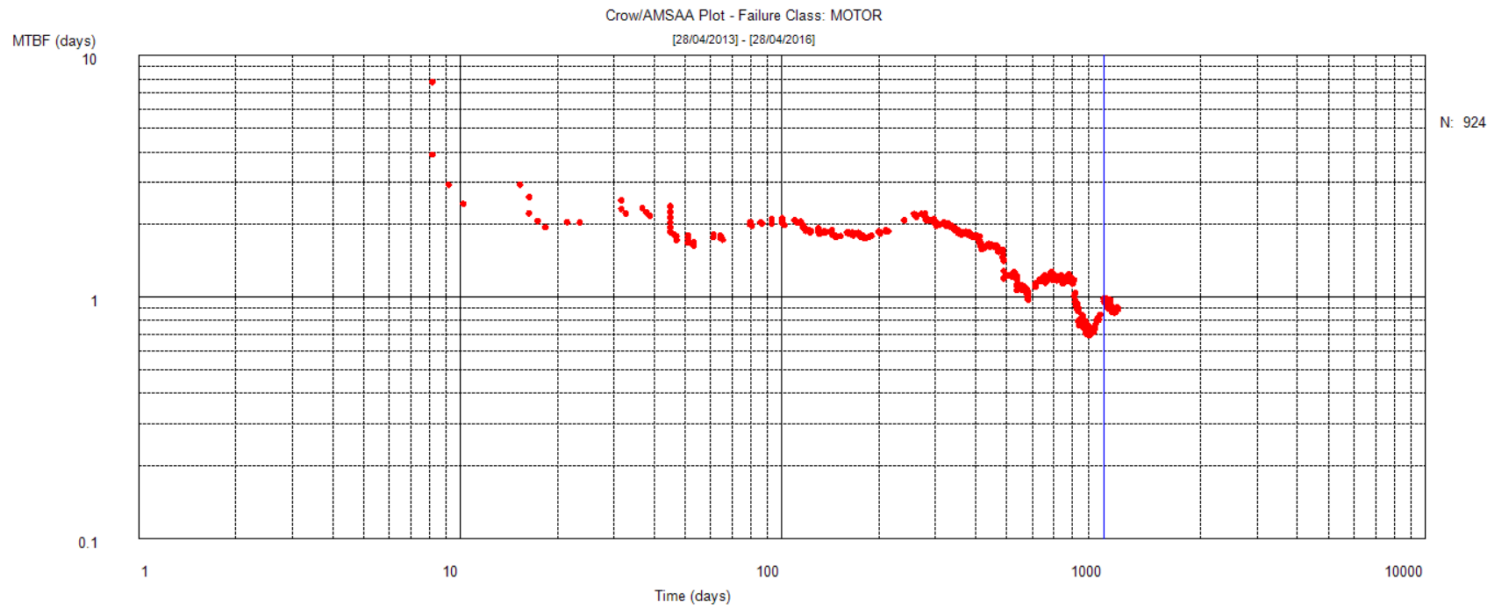
The slower but consistent tortoise causes less waste and is more desirable than the speedy hare that races ahead and then stops occasionally to doze. The Toyota Production System can be realized only when all the workers become tortoises.

Issues with the Plant

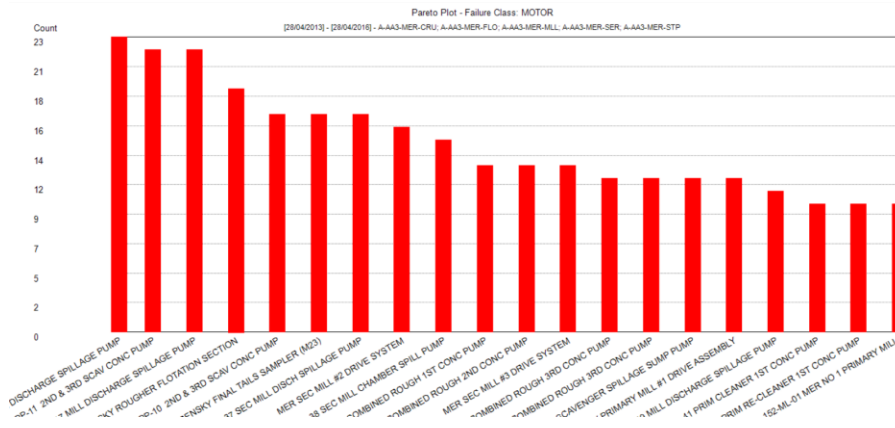


Drive belt replacement every 3 months – infant mortality – monthly 1 hour PM on this pump

Strategic Issues



A-AA3-MER-CRU, A-AA3-MER-FLO, A-AA3-MER-MLL, A-AA3-MER-SER, A-AA3-MER-STP



Increasing rate of corrective work on motors reasonably evenly distributed across pumps – start up issues, alignment, working environment, brand of motors ... but now the work on site has to begin using these results

Wasteful PMs

Asset	Description	Count	Tot Act \$	Tot Hours	MTBW PM (M)	Count CM	PM/CM
A-AA3-MER-MLL-SER-COT-002	151-CZ-02 PRI MILL COOLING TOWER NO.2	379	24370.49	385	0.16	2	189.5
A-AA3-MER-STP-SER-SUM-002-SUM	110-CV-02 DRIVE HOUSE SPILLAGE SUMP	340	20541.98	351	0.18	2	170
A-AA3-MER-MLL-SER-SAP-00C	427 SEC MILLING FEED SAMPLERS	168	13062.7	180	0.36	1	168
A-AA3-MER-CRU-SER-SUM-003-SUM	120-SU-01 FLOOR SPILLAGE SUMP	322	15828.42	326	0.19	2	161
A-AA3-MER-FLO-ROU-TKS-003-TKS	181-TK-03 COMBINED ROUGHER 3RD CONC TANK	150	9865.2	157	0.4	0	151
A-AA3-MER-STP-STO-00A-FEE-004	MER A-FRAME EAST FEED SYST 140-FE-04	134	5025.99	134	0.45	0	135
A-AA3-MER-STP-STO-00A-FEE-008	MER A-FRAME EAST FEED SYST 140-FE-08	134	4565.59	135	0.45	1	134

If we are looking to pull back some labour for reassignment to permanent fixes, training etc then can we review these PMs and even halve their frequency?

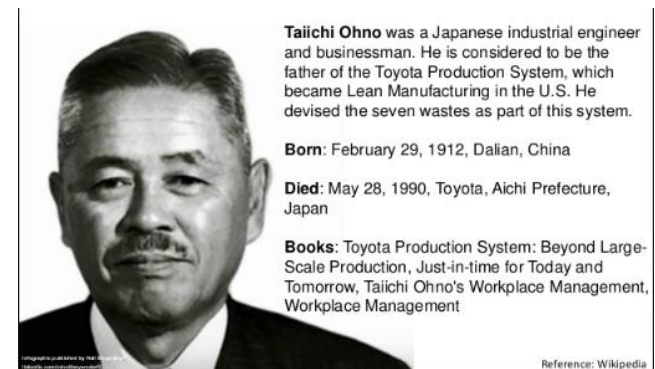
Too many people just assume that things are all right the way they are. Aren't you guys convinced that the way you're doing things is the right way? That's no way to get anything done.

Asset Management Improvement

- ISO 55001 is a change management process so there will always be resistance when it starts to impact someone's job.
- Writing up procedures and plans which no one reads will not make waves – but it will not improve the place either.
- The people have to do projects – we know they are very busy but it is after all their organisation.
- You cannot persuade people to change without a compelling, over arching and detailed case – which then has to be explained as if you are speaking to a grandchild.
- It is not only about senior management but senior management are important.
- When the people stop listening, then let the plant speak to them through analytics.
- I agree certification is important, but long term company transformation is essential.
- Experienced people will block improvement which impacts their jobs
 - *No one has more trouble than the person who claims to have no trouble*

Thank you

Further details on this presentation can be obtained from Bob,
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Taiichi Ohno was a Japanese industrial engineer and businessman. He is considered to be the father of the Toyota Production System, which became Lean Manufacturing in the U.S. He devised the seven wastes as part of this system.

Born: February 29, 1912, Dalian, China

Died: May 28, 1990, Toyota, Aichi Prefecture, Japan

Books: Toyota Production System: Beyond Large-Scale Production, Just-in-time for Today and Tomorrow, Taiichi Ohno's Workplace Management, Workplace Management

Reference: Wikipedia