



Establishing the Productivity Capability: A worked example.

Start with the big rocks first –
becoming more productive with a structured approach.

By Peter Laumets and John Mullany

Improving Australia's management capability is critical to realising greater levels of operational productivity and competitiveness; yet many companies and managers just don't seem to know where to start or what a path to improvement might look like. Others adopt and copy what has led to success elsewhere without enough context or localisation. The default position of many organisations hoping to realise productivity gains or drive cost out is to implement programs to drive operational excellence, such as Lean/Six Sigma projects, continuous improvement programs, process simplification, operating model redesign, automation or outsourcing projects.

Yet – despite the best of intentions and sometimes huge investments – these programs often fall short. This can be because they are focussed at the wrong level or on the wrong things. If the intent is to lift operational productivity, then the focus **MUST** be on that which contributes to or inhibits productivity. Not on the slavish misuse of a respected methodology.

'Productivity principles' guide an organisation's focus; understand the process, define what 'good' looks like and then manage it to intervals that allow you to identify and action variances.

Improving productivity requires managers and staff to understand work in **hours required to do the work** (not just the volume and type of tasks). This may involve a significant shift in management operating practices to provide this clear view of organisational efficiency. Organisations that both provide the management tools AND invest in developing the skills and competencies of their people to better understand and manage productivity drivers will typically improve productivity by at least 10 to 15%.

Our experienced consultants spend each day or shift working with leaders of the

organisation to embed these 'productivity principles'. Together, we ensure that the use of the appropriate management tools, practices and behaviours become the new way of working or business-as-usual and that the benefits are sustainable. This targeted coaching across all management levels drives capability uplift and behavioural change in a far more efficient and effective way than any single program focused on either work processes, systems, behaviours or structure.

Worked Example

Over a twelve-week period Coxswain Alliance conducted a productivity improvement program with the Maintenance function of an Australian contract miner. The organisation owns, maintains and operates mining equipment, including fleets of trucks, excavators, and ancillary equipment, which they operate under contract for the tier one mining houses. They needed to be productive to make the contract viable and continuously improve to meet their clients' expectations.

Driving Operational Productivity

Productivity is the **relationship** between **inputs** (labour, raw materials, parts) and **outputs** (finished goods, completed work). In many instances, productivity focuses solely on the relationship between labour and a finished product; raw materials are measured via yield, scrap etc.

How to improve productivity? Change the relationship between **inputs** and **outputs**.

| | Inputs | Outputs |
|------------|------------|-------------|
| Scenario 1 | ↓ Decrease | ▬ Constant |
| Scenario 2 | ▬ Constant | ↑ Increase |
| Scenario 3 | ↑ Increase | ↑↑ Increase |

Productivity increases if:

- > You get the same outputs for FEWER inputs.
- > You get MORE outputs for the same inputs.
- > You get exponentially MORE outputs for a smaller increase in inputs.

It's that simple – conceptually.

Understanding your inputs – and then working out which levers you use to control them – gives you the power to lift productivity.

A critical initial aspect of all improvement programs is to re-orient the view of the leaders to what is occurring at the workplace and how they can extract more output from the physical assets in use.



The Challenge

To maintain the equipment so that mining operations had the fleet available for the contracted operational hours. It is essential that performance meets contractual commitments to the client **and** is profitable. Improving both current performance and the accurate documentation of jobs completed and associated effort are integral to more focussed tendering for future contracts.

Productivity improvement requires robust maintenance operations' processes; clarity of maintenance roles and responsibilities; and a management framework (Management Operating System) to manage the execution of the work and control maintenance performance. In addition, the overall intent is to use the same processes and management framework across other sites to drive an enterprise-wide consistent approach.

A critical initial aspect of all improvement programs is to re-orient the view of the leaders to what is occurring at the workplace and how they can extract more output from the physical assets in use, such as equipment and personnel. **Productivity improvement is about making the leaders and employees more aware of the levers that drive productivity, to maximise the outputs during their time at work.**

The current operations were analysed and broken down into three key areas, following the lifecycle of the maintenance work. *How do we plan the work? How do we do the work? How do we report on our completion of work?* The project then stepped through a process of analysing, developing and implementing new ways of managing and reporting on our performance in a manner that highlighted true performance.

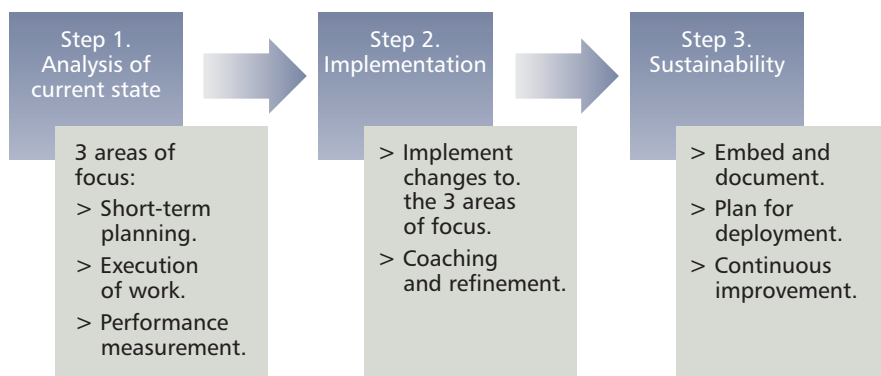
Step 1: Analysis of Current State

First area of focus: Set-up short-term planning – improved productivity as a consequence of defining a new optimal plan.

The practice of developing a short-term plan based on standards was established that could be executed with confidence and rigour, and committed to by all parties. On a weekly basis, the scheduled service jobs, inspections and associated tasks over the next seven days were examined. This enabled the site to form a view of the resources needed to complete the work. The critical information required to form this view included:

- a. The work that needed to be done over the next period;
- b. The skills, trades and parts required to do this work; and
- c. An estimate of the hours of effort required to complete the work safely.

This resulted in **the workload being converted into hours of effort required by skill set.**



An example of the re-balancing....

Personnel: (Surplus) or Deficit

| | Day shift B & D | | | | | | Night shift A & C | | | | | | 24 hour | | | | | | | | | | | |
|-----------------|-----------------|----------|----------|-------------|-----------|---------------------|-------------------|-------------------------------------|--------|----------|----------|-------------|-----------|---------------------|---------|-------------------------------------|--------|----------|----------|-------------|-----------|---------------------|---------|-------------------------------------|
| | Fitter | Boiler M | Elect HV | Electrician | Tyre Fit. | Total Direct People | Support | Total People Available / (Required) | Fitter | Boiler M | Elect HV | Electrician | Tyre Fit. | Total Direct People | Support | Total People Available / (Required) | Fitter | Boiler M | Elect HV | Electrician | Tyre Fit. | Total Direct People | Support | Total People Available / (Required) |
| Sat | | | -1 | | | -1 | | -1 | | | | | | | -1 | -1 | | | | | | -1 | -1 | -2 |
| Sun | | | -1 | | | -1 | | -1 | | | | | | | -1 | -1 | | | | | | -1 | -1 | -2 |
| Mon | | | -1 | | | -1 | | -1 | | | | | | | -1 | -1 | | | | | | -1 | -1 | -2 |
| Tue | | | | | | | | | -1 | | | | | -1 | -1 | -2 | -1 | | | | | -1 | -1 | -2 |
| Wed | -1 | -1 | | | | -2 | | -2 | | 2 | -1 | -1 | 1 | 1 | -1 | -2 | -1 | 2 | -1 | -1 | 1 | -1 | -1 | -1 |
| Thu | | | | | | | | | | | | -1 | | -1 | -1 | -1 | | | | | | -1 | -1 | -1 |
| Fri | | | | | | -1 | | -1 | | | | -1 | | -1 | -1 | -1 | -1 | | | | | -2 | -2 | -2 |
| Required hours | | | | | | 518 | 150 | 668 | | | | | | | 384 | 75 | 459 | | | | | | | |
| Available hours | | | | | | 572 | 150 | 722 | | | | | | | 423 | 118 | 540 | | | | | | | |
| Utilisation % | | | | | | 91% | 100% | 93% | | | | | | | 91% | 64% | 85% | | | | | | | |

Skill sets

Daily workload hours converted to FTE, where -1 indicates the crew for that shift can be reduced by 1 FTE.

Workload hours for the week.

Rebalancing or flexing of personnel numbers & skill shortfalls or surpluses ensured planned Maintenance activities were completed over the week – and crewing budgets were maintained.

Above is an extract from the tool developed and used to determine capacity that existed (based on the forecasted workload and resourcing available on site), and where and what form it took. A labour utilisation metric was used to help management make decisions about how to effectively use this capacity to deliver the plan. This measures the effectiveness of labour scheduling and allows for re-balancing and optimisation.

Second and third areas of focus: Develop the management framework to support the execution of the work schedule and productivity uplift, and measure and report on performance.

The productivity uplift would manifest itself by doing the same tasks with less hours. While this allows the organisation to reduce the scheduled labour, before

‘The productivity uplift occurs when the required tasks are done with fewer hours than used previously.’

reducing the crew sizes, the site has to ensure that there will be no negative impact on maintenance performance. To ensure this, and to put control into the hands of area management, a management framework, i.e. Management Operating System (MOS), was developed for the Maintenance function. The Maintenance MOS is comprised of a standard set of tools and practices to manage the Maintenance function, supported by disciplined and proactive management behaviours. They are developed in conjunction with area management to ensure that they are ‘fit for purpose’ for the organisation and structured around what it is seeking to achieve.

Maintenance MOS

The aim of the Maintenance MOS is to have the correct amount and the right type (skill mix) of labour to deliver the maintenance work in a timely and efficient manner, meeting the commitments of the contract. This is done with both the equipment and required parts ready and available.

The tools and practices that were developed to support this and led to a smooth reduction in labour hours (crew), included:

- Weekly planning process delivering a weekly schedule of work and crew roster;
- Shift maintenance handover and pre-start practices that focused on work that was required to be done. This was supported by a visual management board, that ensured that all crew were assigned tasks for the shift and were fully utilised;
- Routine check-ins at set intervals (start, middle and end of shift) with each crew member to ensure that the jobs are on track; and if not on track, agreement reached on corrective actions;
- Daily review meetings focusing on reviewing and evaluating maintenance performance against key performance metrics; and
- Parts staging program that brought attention to job preparation – no job would be scheduled without parts being available and staged for use.

What drives successful implementation?

- > Having a clear plan on what is intended to be installed.
- > Breaking it down into a logical sequence of implementation steps: *what should come first?*
- > Installing in stages; allow for people to absorb and then take on more.
- > Solutions will need to be flexible and timeframes adjustable.
- > Involve those affected in the development of solutions and planning for implementation.



Step 2: Implementing the changes

For change to be successful in organisations it needs to be introduced in a controlled and managed way. A structured weekly planning meeting involving all key stakeholders from the Maintenance and Production functions was introduced to support the changes to the planning process. A four week rolling plan was implemented that gave enough visibility to ensure resources, tools, equipment and materials were booked, ordered and delivered to site. A new practice of updating work estimates was introduced to establish real work standards, from actual hours of effort. This revision of standards for equipment servicing and defect related work lead to far more robust labour forecasting model of surplus or deficit capacity for the next fourteen shifts.

Integrated in the plan is a staging program. This requires all parts to be ordered, on-site and 'staged' in job specific holding cages, in advance of the job commencing. Previously, work was scheduled prior to establishing parts availability. This led to rework and increased machine downtime as well as frustration for the maintenance crew.

The execution process was supported by a structured Maintenance Supervisor handover, a structured and visible crew start of shift meeting and a Short Interval Control practice that ensures Supervisor and Maintainer interaction at least three times per shift. The Maintenance performance was supported by the introduction of labour utilisation and efficiency metrics along with job completion KPIs – such as *planned work % done* and *% of work done that was unplanned*.

The introduction of this now structured approach to Maintenance management supported the incremental reduction of crew sizes. The Management Operating System enabled the Site Management to continue to optimise crew sizes, in conjunction with the changing needs of the business.

What was done

Implementation of the Maintenance MOS was across the full Maintenance function and involved:

Superintendents

- > Daily/weekly review meetings, ensuring that management is better informed and is making decisions based on data.

- > Establishing a structured weekly pattern that set an operating rhythm for the business. It provided certainty to everyone (Maintenance and Production) about the planning process and the prioritisation and execution of work.

Planners

- > Four-week rolling plan, providing visibility of potential labour/parts, tooling and equipment issues.
- > The Weekly Planning Meeting formalising the process of informing stakeholders of the weekly plan and gaining commitment to it.
- > Seven day crewing resource schedule identifying potential surplus/deficit capacity; this allowed the planner and Superintendent to make more informed decisions around the use of labour.
- > Estimation of effort hours required on jobs which drives the right sizing of the resource mix.
- > Work being scheduled if the required parts are available and pre-staged.

Supervisors

- > A 'refresh' of Handover and Pre-start communications meetings enabled a streamlined, relevant process that ensured the crews are set up for a successful shift. Better informed decisions could be made and therefore better outcomes achieved providing the team with a sense of accomplishment.

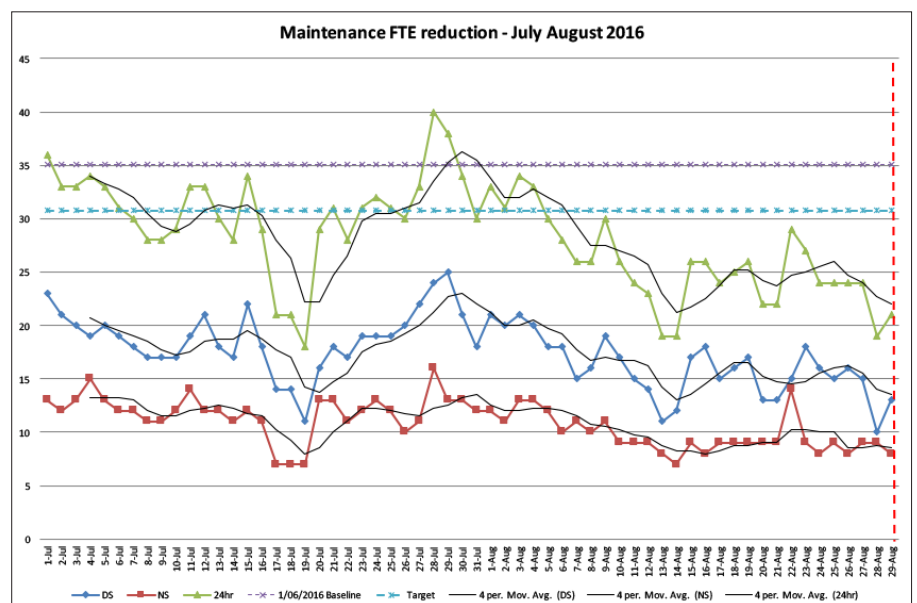
- > Visual Management Boards providing transparency of critical and relevant information needed for the shift, including work allocations. Crews were clear on performance expectations.
- > Short Interval Control (SIC) driving attainment to the plan by ensuring Supervisors had a structured approach to checking-in on the status of planned/unplanned work, identifying issues at a point that they could provide mitigation and taking corrective action.
- > Shift performance reported on a standard set of key maintenance metrics (equipment and labour availability and utilisation), ensuring that ongoing measurement should be standardised across all required locations.

The 'future way' a Maintenance MOS provides a means for all to contribute on a shiftly basis through better communication of requirements, priorities and results from the Pre-start meetings and throughout the shift through the SIC tours.

What was achieved – the result

Productivity improvement >25% without negatively impacting customer experience, expectations and outcomes.

Labour Use 37% less: July to August 2016.



The four period rolling average indicates a 'month to date' performance as being better than target, with a rolling four period average improvement of 37% against an average of 35 FTE on the June base.

Step 3: Sustaining the changed operating practices

Compliance to and effective use of the business's 'future way' Maintenance MOS was driven at both a corporate and local level. Senior management is accountable for what has been installed; this was translated to a local level so that business owners are clear that compliance and effective use of their MOS was mandatory. Some required elements of sustainability which included:

- > **Communication** of updates on progress and proposed rollouts to other sites; driven by local process owners, this built ownership of the changes and kept broader stakeholder groups involved.
- > **Documentation** of each Maintenance MOS element, supported by methods and requirements documentation, standard task procedures, context and purpose of each element, defined roles and responsibilities, and version control.
- > **On boarding** documentation used to facilitate any new starters (management or crew).
- > **Performance contracting** modifications built into individual performance contracts for line management and crew members setting out the expectations regarding the use of and continued development of the Maintenance MOS.
- > Completion of the **MOS Scorecard**, which was a schedule of 'audits' conducted by area management to assess the current use of the Maintenance MOS, and coaching for compliance and effectiveness. This process transitioned from a daily-weekly review to a periodic one going forward.
- > **Peer review**, which included a review of the Maintenance MOS compliance and effectiveness by line managers from other facilities and Production.
- > **External review**, which allows for external members to conduct a review using existing Maintenance MOS Scorecards (typically at four, eight and twelve weeks past project finish date).

Capitalising on the maintenance project

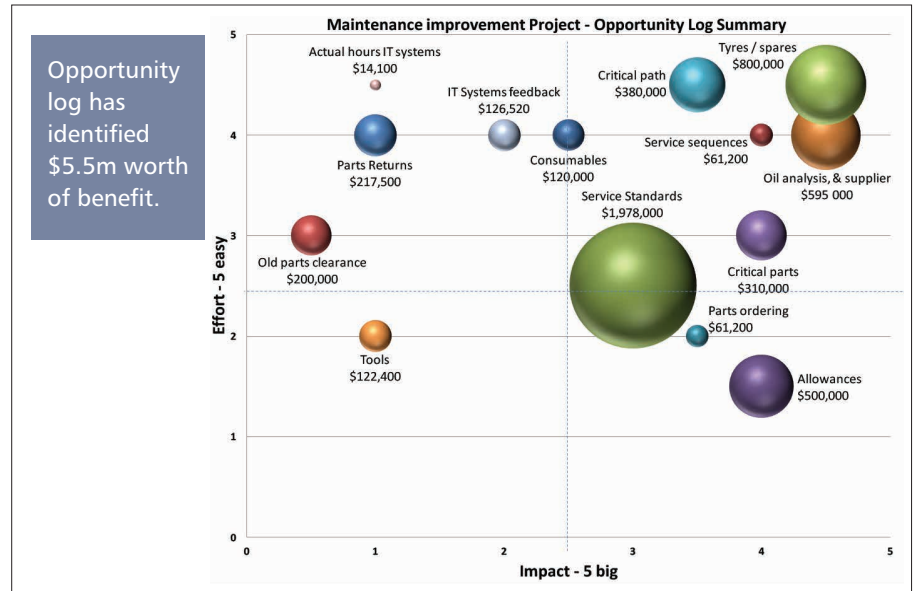
1. The 'future way' Maintenance MOS was included as a differentiator when tendering for work as a means to drive consistency in process and execution.

2. Rollout of the program to next maintenance location, using a combination of local and external expertise to deliver outcomes in a reduced timeframe.

Continued improvement – building on what was achieved

During the project a repository of issues

that were identified during the twelve week project were prioritised by ease and value to the business. This formed the basis of future improvement initiatives to continue the improvement drive, and realise tangible benefits.



End statement

Successful productivity improvement programs are dependent on embedding core operational management elements in Frontline Leaders' capabilities. Coxswain Alliance does this with tools, practices and leaders' behaviours; they are incrementally

introduced through weekly learning cycles of development, design, implementation, training and coaching, and sustainability. Each of the elements reinforces and connects with the other elements in a robust and integrated approach.

Feedback

"The Maintenance Improvement program has identified efficiency improvements due to our focus on how we use labour in the Maintenance area. Timesheet recording is also significantly improved, with indication that 96% of time was recorded last week..."

"...service and defect work on E017 was completed with a 32% reduction in effort hours and 45% reduction in job duration. This time improvement was achieved because the three Fitters, with the support of their Supervisor, identified a more efficient way to complete the task..."

"The outcomes of the maintenance improvement project are now becoming embedded in the day to day activities on site. A continued commitment by everyone, will ensure it's ongoing success..."

Continuous Improvement Manager as stated in internal communications

Learn more about how the business improvement services offered by Coxswain Alliance can help you improve the performance of your team and your business.

www.coxswainalliance.com

CoxswainAlliance
Navigate change®