



**THYSSENKRUPP  
MATERIALS HANDLING  
Pty Ltd  
Services Department**

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# Overview



ThyssenKrupp Materials Handling (TKMH) Services department is based in Perth, Western Australia and has a service workshop located in Mackay, QLD.

With support and backing from TKMH engineers and designers we are able to provide our customers with an extensive range of quality services and products.



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# Overview

## **The range of services include:**

- Fabrication workshop located in Mackay
- Engineering and Service Support
- Supervisory support for onsite works
- Preventative maintenance strategies for process plant and equipment
- Shutdown and refurbishment support
- Periodical machine inspections and audit reports for structural, mechanical and controls
- Product service and standardization of existing spare parts for all plant or equipment, consult OEMs with regards to providing alternative parts and consult engineers for fit for purpose
- Audit drawings of plant and equipment to compare to the present As-built status of the plant or equipment
- Identify the need for and develop and compile machine handbooks
- Review and make recommendations on the machine performance and functionality
- Provide operations and maintenance training for customers
- Review or provide detailed work procedures including JSA's to complete the task
- Review and update manuals for the operation, maintenance and functionality requirements of the plant or equipment

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# Overview

## Unique Features

- TKMH Services Department have a management team that has many years of machine based experience with Coal, Iron Ore and other base minerals.
- The services offered by TKMH Services Department are a direct result of the experience and know how of its personnel based in Perth and Mackay.
- TKMH Services Department consult directly with our Perth design and engineering team for all machine related requirements.
- TKMH Services Department can offer clients total integrated solutions to their engineering and maintenance issues.

**TKMH is a “ONE STOP” engineering service in regards to material handling equipment and machines.**

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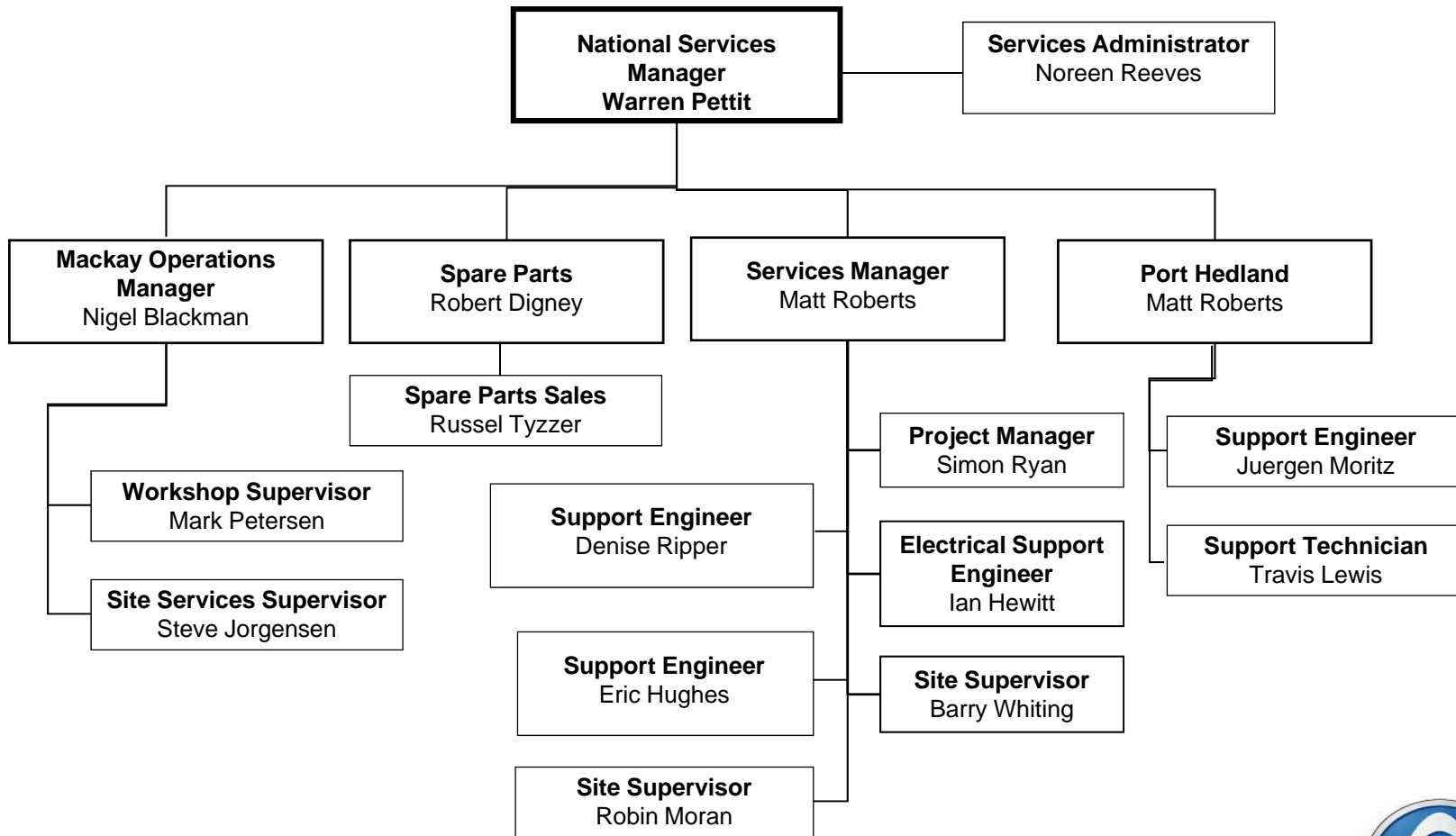
## **TKMH Services have the following works currently scheduled for 2010/ 2011**

- Upgrade of 2 x Stackers, including Boom change.
- Several Chute design and installations for upgraded works
- Machine Inspections for 12 machines.
- Ongoing Site Support
- 2 off Bucket wheel supply and installations - Oct 09 and 1<sup>st</sup> Quarter 2010
- Major upgrade and design changes to Circular Stacker Reclaimer - NSW
- Engineering Brake Audit - June 2009.
- Various other Upgrades.
- Various Engineering Design Projects.
- Provision of Supervisors, Engineers, Surveyors and Planners for on-site shutdowns

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# Organisation Structure



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# Why have Services?

Quite simply the need for services and  
inspection is:

*"the need to avoid failure"*

&

**"Monitor and Improve Reliability"**

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# Why have Services?

## Services assist the Owner with finding and rectifying Hazards.

Common hazards on rail mounted materials handling equipment includes:

- Overload,
- Structural failure (incl. corrosion, wear),
- Mechanical failure (fatigue, wear, lack of maintenance),
- Collision (Other machines, stockpile, ships etc.)
- Control system failure

**Three techniques are commonly used to detect these hazards:**

- Inspections
- Protective Device Tests – also known as Functional or Safety Device testing
- Integrity Audits

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# Machine Inspections

## Introduction:

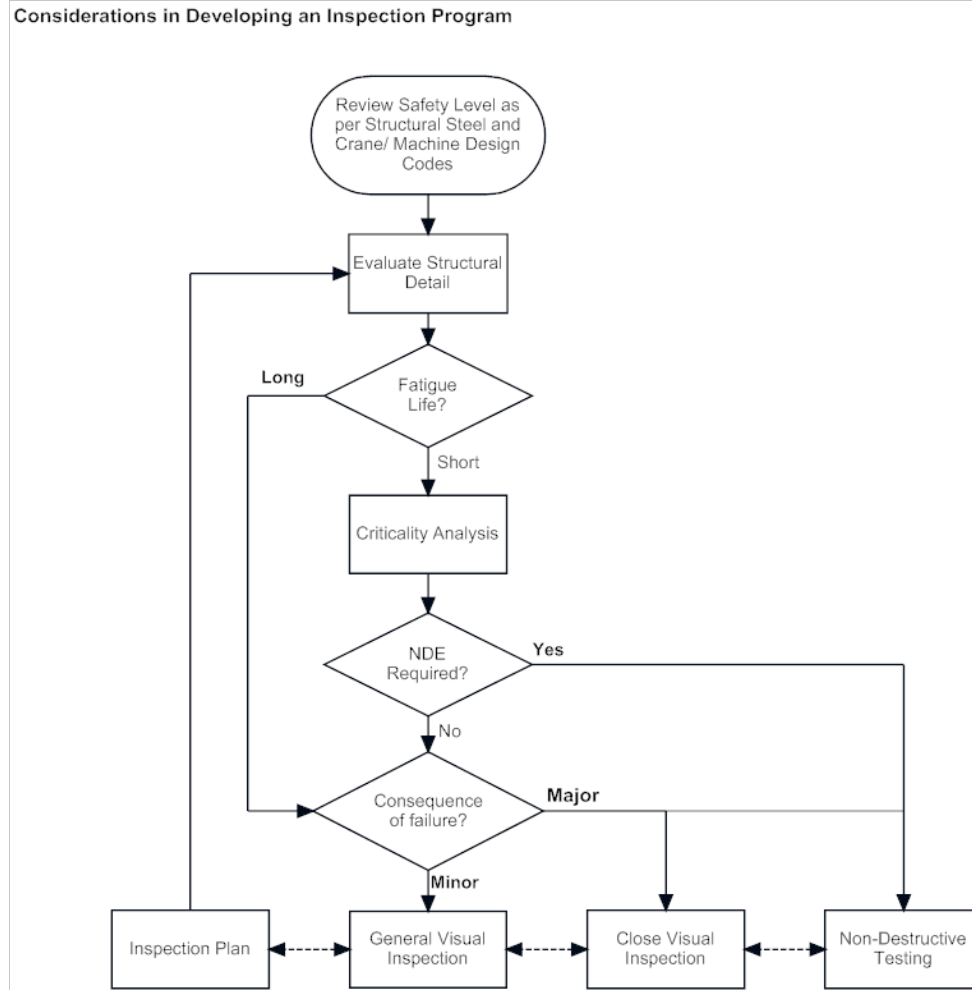
### Why inspect machines?

- Machine inspections are carried out to compliment the owners maintenance and inspection regimes. Regular inspections provide additional feedback and are not in any way expected to replace the owners ongoing maintenance routines.
- To ensure the long term mechanical and structural integrity of the machines - the process identifies and records visible defects and is the basis for implementing repair and maintenance regimes.
- Provide long term machine replacement forecasts.
- To reduce the risk of unplanned failures.
- To help plan upgrades and refurbishments.
- To assist with the recommendation of Spare Parts.

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# Machine Inspections



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# Machine Inspections

## Key elements of inspections:

- Inspect mechanical components for wear or damage
- Identify and inspect key structural stress areas and main members for corrosion, cracks, buckling etc.
- Inspect lubrication system
- Assessment of wheels for wear – TKMH Mackay refurbish wheels
- Operational function checks
- Recommend machine operational improvement
- Post-Inspection Report which details the inspection findings and assigns a priority level with regard to priority of each finding.

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# Machine Inspections

## Inspection Requirements:

- Machine washed down
- Machine positioned as per inspection type
- Correct Isolations
- Applicable access to machine
- Experienced personnel

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# Findings



**Example:** Dry labyrinths are often noted - due to either inadequate lubrication or the grease has escaped via an alternative route risking the dry side seizing up.



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# Findings



**Example:** Damage from spillage – due to either worn bucket liners or over digging. The spillage wears out the bucket wheel and ring chute internals rapidly.



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# Findings



**Example:** Corrosion – a combination of sea air and wet build up of product over time causes corrosion to the steel structure.



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# Findings



**Example:** Normal wear – the rate of wear of all working components is different and a machine can often be operating for extended times without personnel on the machine.



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# Findings



**Example:** Cracking – both mechanical and structural. Caused by localised once off over-loading of the component or long term cyclic loading

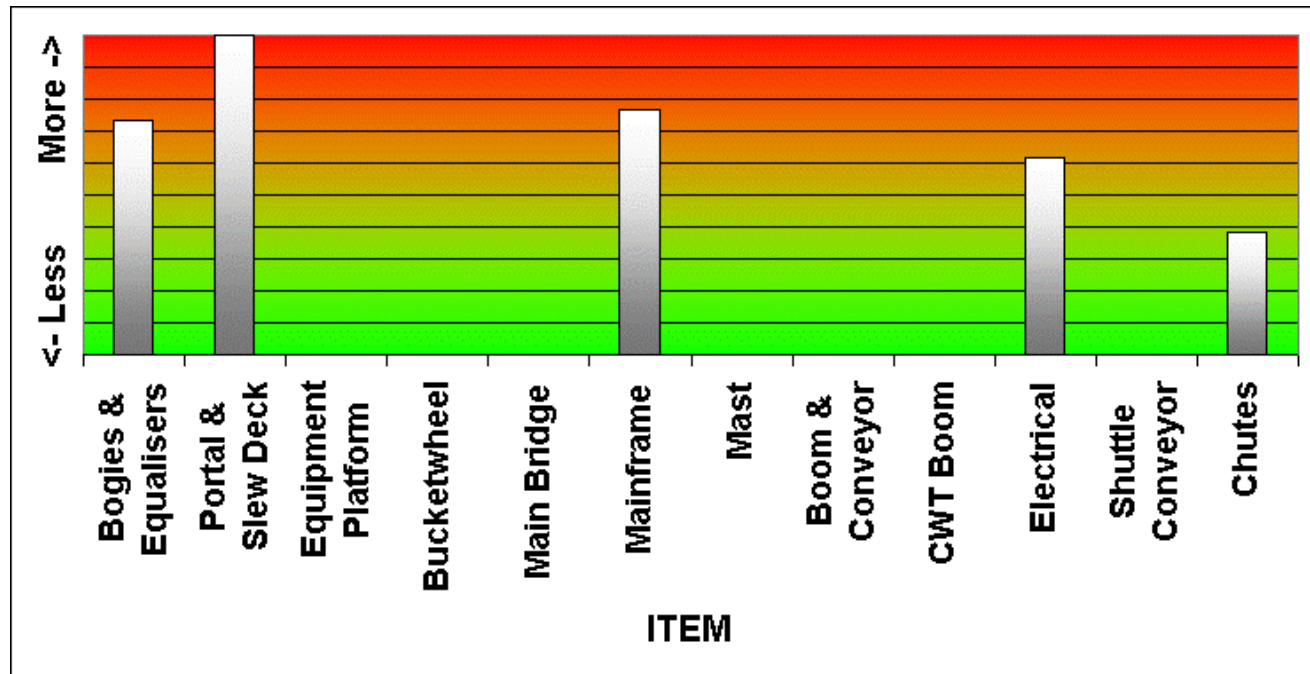


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# Condition Report

- Inspection Findings and Engineering Analysis form a key part of Machine Risk Management



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# Mackay - North East Services



TKMH NES conduct on site repair work, maintenance and installation of plant, lubrication systems, fluid piping and mechanically engineered products. Our services provide technical management and directly related services that develop, maintain, engineer, build and commission installations for customers.

TKMH NES have a management team that has several years of fabrication, maintenance and field service based experience within the minerals (mining and materials handling), primary industry, marine and structural building industries.

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# Mackay - North East Services

## Plant & Equipment

- 20 Tonne Franna Crane;
- Diesel welders;
- Fully equipped tooling containers for site work;
- 100 tonne press;
- Electric welders
- Sub Arc Welding equipment
- Radial drill;
- Metal punching machines – portable and fixed.
- Hydraulic jacking equipment;
- Equipped Vehicles for on site work



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# Mackay - North East Services

## Contracts and Projects Delivered

- Dryer Area Ductwork - Fan Duct to Stack Connection
- General Steelwork Fabrications
- Materials Handling (Coal) Chutes and Structures
- Management of fabrication and erection of Stacker/Reclaimer
- Pipework for Water and Lubrication
- Structural Steel Fabrications
- Demolition of Machines



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# Summary

## TKMH Services Offer

- Improved machine reliability
- Develop and provide a machine inspection program
- Regular inspections and written reports with recommendations
- Onsite supervision for shut downs
- Engineering solutions
- Experienced maintenance planner for shut down scheduling
- Geographical reach (Perth, WA & Mackay, QLD)
- Expertise in fabrication works

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