Queensland Mining Industry Health & Safety Conference Health Program Award Submission

Submitted by:

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Program:

Rio Tinto Alcan (RTA) Weipa Manual Handling & Ergonomic (MHE) Program

The Problem:

The high incidence of work-related musculoskeletal injuries / illnesses (MSIs) due to high risk manual handling & ergonomic tasks.

The Solution:

To address the high incidence of work-related MSIs resulting from MHE tasks, in 2009 the RTA Bauxite & Alumina (B&A) HSE Council founded the MHE program. Since this time RTA Weipa has been actively striving to address and improve on the site MHE concerns with the assistance and guidance from RTA B&A HSE representatives.

Implementation of the MHE program has included;

1. *Manual Handling & Ergonomic site deployment guidance notes*:
   Issued to all B&A site champions and program leaders

2. *Education and training*:
   Training included providing education to enable the MHE change team to understand the core functions of identification and assessment of risk factors, solution building and follow up assessment. Teams were set up to identify the education, hazard identification, prioritisation, hazard control and follow up tools to be used in the program.

   Education also involved creating MHE education & training packages that was developed in-house. In 2011 an external provider, *ErgoAnalyst* delivered a two day training package in participative ergonomics to RTA Weipa area assessors and site coordinator. Multiple training packages and education has

also been delivered to new department area assessors and refresher training courses over the last 4 years at RTA Weipa.

Over the last two years there has been a strong focus on reducing hand injuries, and as such extensive in-house training and education has been provided to bolster our MHE program to now incorporate the Hand Red Zone (HRZ) program. In addition a strong focus on contractor involvement and knowledge sharing with external stakeholders.

3. *Genesis of the MHE program:*
    - Each site appointed a participative MHE change team (ranging from approximately 5 to 15 people per B&A site).
    - A site MHE coordinator with a HSE background was then appointed
    - Site MHE coordinator was then trained using the in-house MHE training packages
    - Site MHE coordinator then appointed MHE department area assessors
    - *ErgoAnalyst* came to various B&A sites to train MHE coordinator and department area assessors

4. *MHE Hazard Identification:*
    - Department area assessors then discussed with respective crews the significant MHE concerns they faced, in particular the high risk manual handling tasks
    - MSI statistics were analysed to determine high risk manual tasks
    - Each site identifies a “Top 5” list of MHE concerns from each department to address each year
    - RTA Weipa to address at least 30 high risk MHE/HRZ issues per year **Refer to appendix 1**

5. *MHE Hazard risk assessment:*
    - Risk assessments then completed by MHE and or trained department area assessors **Refer to appendix 2 & 3**
    - Data entered in *ErgoAnalyst* software. **Refer to appendix 4**

6. *MHE control implementation:*
    - In close consultation with area MHE assessors and crew, a control is then implemented to address the high risk manual handling concern.
    - Post risk assessment completed
    - Data entered in *ErgoAnalyst* software **Refer to appendix 5**
    - Green banner or MHE/Innovation banner relating to the improvement issued site wide and also to our B&A partners and the wider Rio Tinto groups **Refer to appendix 6**

7. *Tracking & Reporting*
    - Site tracking and recording onto the B&A e-room
    - Site tracking of MHE concerns detailed on the HSE lean board, in addition to specific MHE concerns on each department lean board
    - Monthly MHE stats and KPIs provided to management
    - Once a month each site coordinator dials into a MHE teleconference to update other B&A MHE coordinators and leaders on the progress of their “Top 5”.
    - Monthly MHE statistics relating to each site submitted into the e-room

8. *Knowledge sharing*
    - Monthly teleconferences provide great knowledge sharing by obtaining ideas and information from other B&A sites
    - Sharing of other MHE improvements banners from other B&A sites has given our own employees good ideas to help with manual tasking concerns
    - Quarterly MHE area assessors meetings are also organised at RTA Weipa.

9. *Engagement*
    - Since the implementation of the program more and more workers at RTA Weipa (workforce of approximately 1100 people) have actively engaged and embraced the program. Our site area assessors have also continue to grow. Including the site MHE coordinators, there are 19 trained MHE assessors at RTA Weipa.
    - Leaders and workers actively contact myself as the site coordinator to organise task assessments and discuss better ways to improve high risk manual tasking.
    - Workers regularly engage with area assessors to help improve on high risk MHE/HRZ tasks. The success rate of this program as detailed below is a direct reflection on the fantastic engagement of our workers across all departments.

10. *Measurement of effectiveness*
    - The main measure of effectiveness typically used across the B&A operation is how many of the “Top 5” MHE/HRZ issues that were first identified have controls implemented.
    - In 2011 RTA Weipa implemented 29 controls for the 30 high risk MHE/HRZ tasks that were identified at the start of that year.
    - For the last three years in a row RTA Weipa has achieved a 100% success rate in implementing fantastic controls and improvements for all high risk MHE/HRZ tasks identified. **Refer to appendix 7**

Benefits/Effects:

- While it has been fantastic to achieve a 100% success rate in implementing controls for all our identified high risk manual tasks over the last 3 years, other positive effects have been;
    - Greater leadership buy in
    - Continued increase in worker awareness and involvement
    - Increased change in health and safety culture and perceptions
    - Greater contractor involvement

- Significant reduction in the site all injury frequency rate (AIFR) from 0.92 at the end of 2011, halving to 0.46 by the end of 2014. **(Refer table 1 below)**
- Continued reduction in hand injuries **(Refer table 2)**
- Continued improvement in the rate of musculoskeletal injuries **(Refer table 3)**
- Significant reduction in the number of statutory RTA Weipa workcover claims from 29 in 2011 to 12 in 2014 **(Refer to table 4)**
- Significant reduction in statutory RTA Weipa workcover costs from $159,561 in 2011 to $2,633 in 2015 YTD **(Refer to table 5)**
- Significant reduction in RTA Weipa common law claims from $1,262,978 in 2012 to $670,082 in 2014 **(Refer to table 6)**

- These statistics reinforce our program is in fact addressing the problem statement of reducing work-related musculoskeletal injuries due to high risk manual handling tasks.

Table 1 – AIFR (MTCI & LTI)

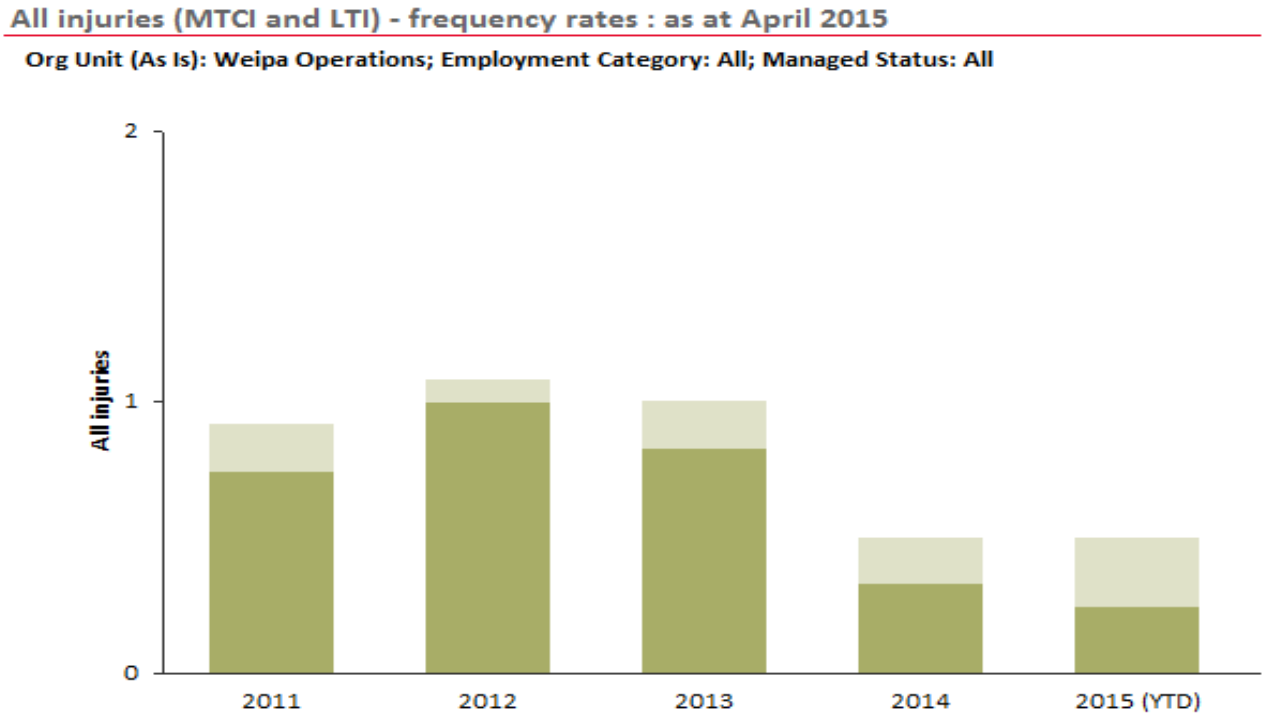


Table 2 – Hand Injuries

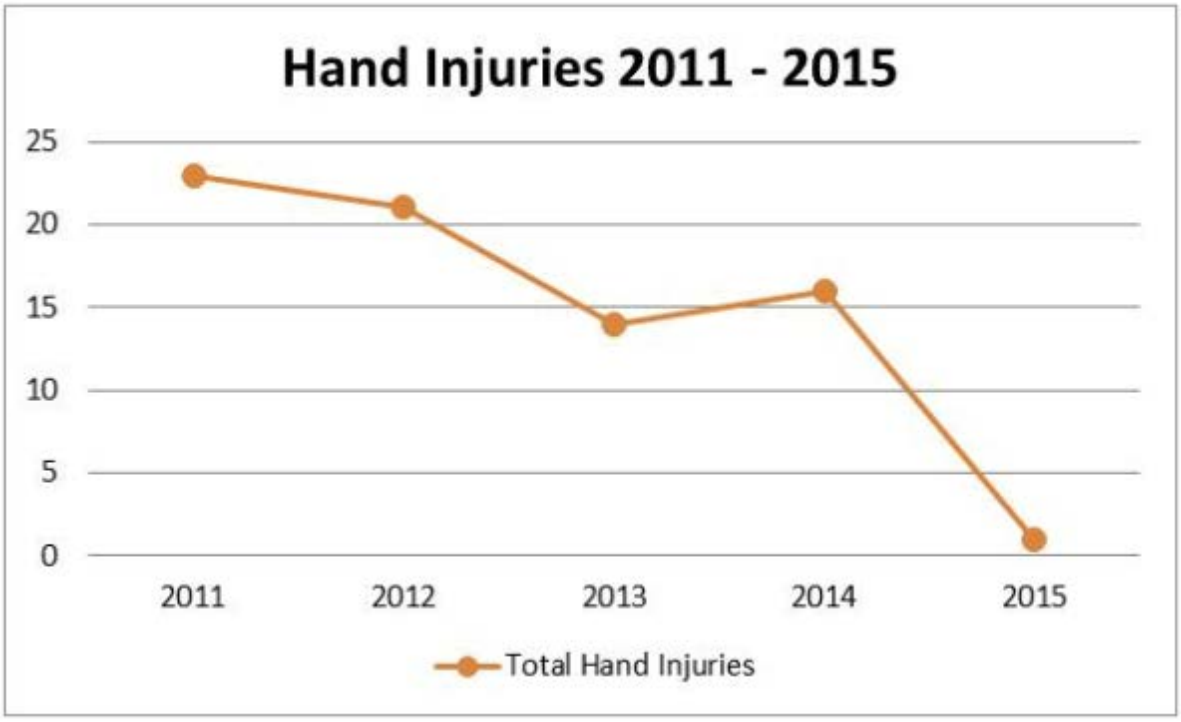


Table 3 – Musculoskeletal Injuries

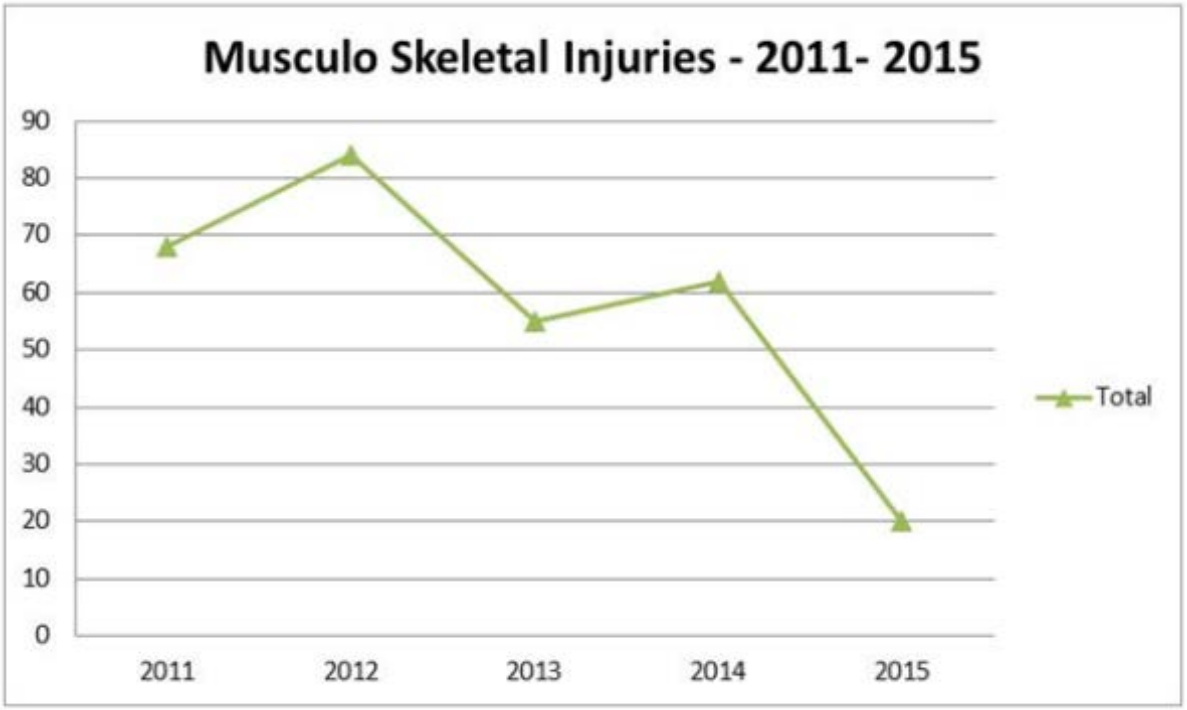


Table 4 – Number of Statutory Workcover Claims

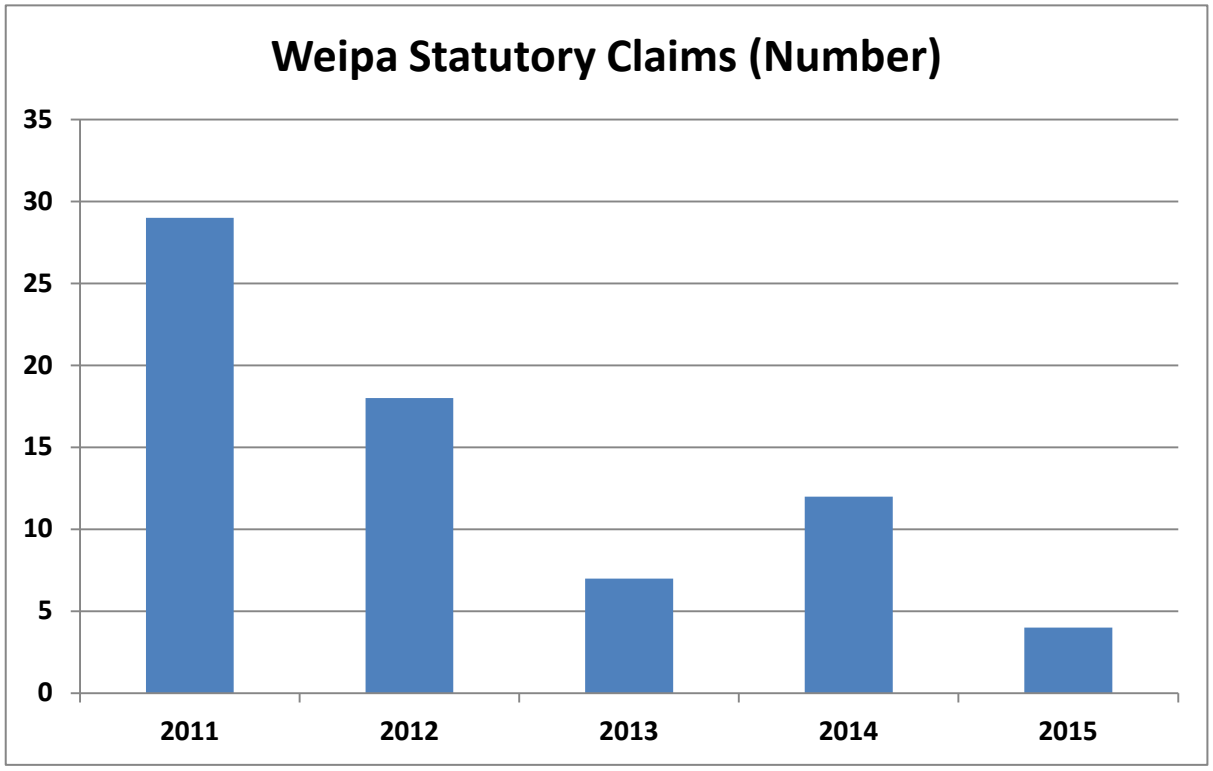


Table 5 – Cost of Statutory Claims

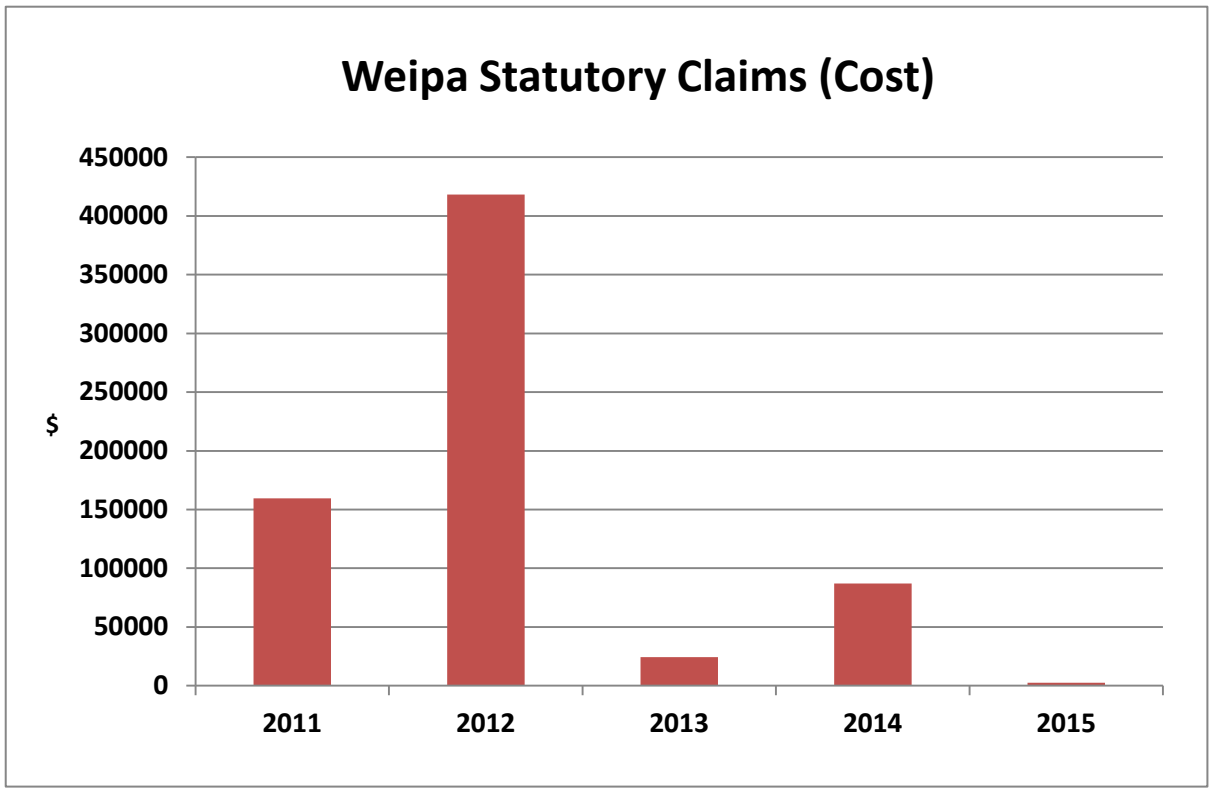
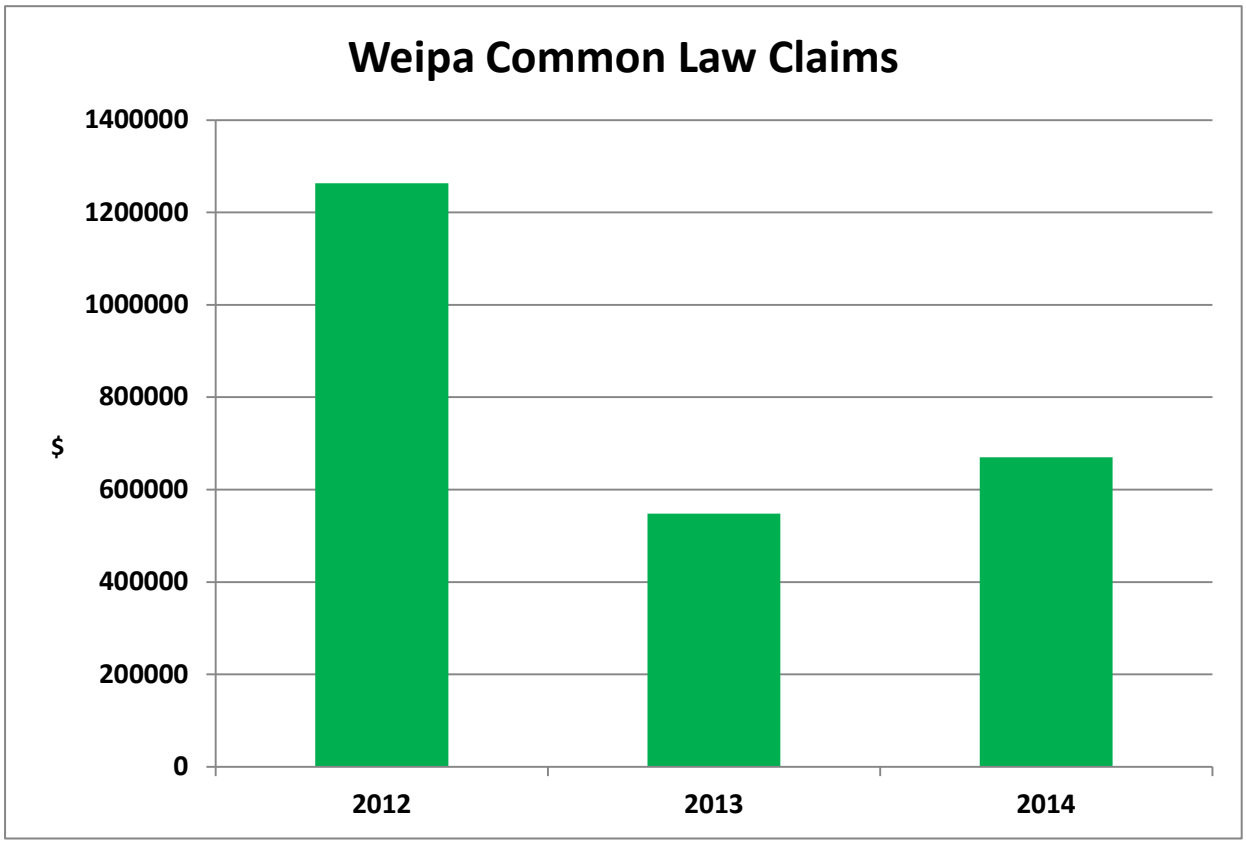


Table 6 – Weipa Common Law Claims



Transferability:

- The MHE/HRZ program is easily transferable and reproducible and may be used across all resource sectors.
- Research has shown that high risk manual handling practices are key contributors to work-related musculoskeletal injuries / illnesses. They are not unique to Rio Tinto operations, but across all resource industries. As such a MHE/HRZ program like ours, that has really good leader and worker buy in, is essential to improving the health and safety of the workforce.
- Our MHE/HRZ program, including basic training packages are regularly shared with other contractors and stakeholders, because at the end of the day we want everyone to go home safely, not just our immediate workforce.

- In addition there are external providers such as *ErgoAnalyst* that also provide excellent resources and training to develop and run a successful MHE/HRZ program.

Approximate Costs:

- Basic funding includes but is not limited to;
  - *ErgoAnalyst* licence fee of $199 per month to access the injury risk management software (including searchable manual task risk register database, unique acute and cumulative risk assessment tools, reports, etc.) and training packages
  - *ErgoAnalyst*, free on-line injury risk management training and 1- 3 day in-depth face-to-face training courses that range from $3,600 to $10,000.
  - Allocation of resources to have a dedicated MHE/HRZ site coordinator. Note this is not a full time position and should be incorporated into a person's role that ideally has a HSE background, such as the site physiotherapist and or health and safety advisor

- Should you require any further information pertaining to this submission please do not hesitate to contact Christian Wakeling (RTA Weipa Physiotherapist).

Appendix 1

RTA Weipa 2015 Manual Handling & Hand Red Zone concerns

			Initial Assessment	Controls Identified	Controls Assessed	Controls Implemented	Risk Reduction Verified	Green Banner Released	Innovation submitted
EWO	Plant	Sample bucket trolley	●	●	●	●	●	●	●
		Using lifting rams on light poles	●	●	●	✕	✕	✕	✕
	Mine	Access to Graders	●	●	●	●	●	✕	✕
	HEQ	Auxillary drive yoke removal tool	●	✕	✕	✕	✕	✕	✕
		Timing tool jig	●	✕	✕	✕	✕	✕	✕
		Bead seat cleat tool	●	✕	✕	✕	✕	✕	✕
Andoom	Plant	Electric Motor removal	●	●	●	●	✕	✕	✕
	Plant	Replacing lower conicals and spigots (at cyclone)	✕	✕	✕	✕	✕	✕	✕
	HEQ	Removing/maintaing oil coolers – 992G loaders	✕	✕	✕	✕	✕	✕	✕
		500hr change out of oil filters – 777F trucks	✕	✕	✕	✕	✕	✕	✕
	Mine	Handling shackles & tow slings	✕	✕	✕	✕	✕	✕	✕
	Rail	Drilling / tapping door pin houses	✕	✕	✕	✕	✕	✕	✕
RTP	RTP	Motorised or automatice Chain Cutter	●	✕	✕	✕	✕	✕	✕
		Turntable Wrapper for securing palletised loads	●	✕	✕	✕	✕	✕	✕
Site Services	Crane Workshop	Rigging gear soft slings	✕	✕	✕	✕	✕	✕	✕
	Main Workshop	Hose wheel winding handle	●	●	●	●	●	●	●
		Stamp holder	●	●	●	●	●	●	●
		Horizontal borer non-slip platforms	●	●	●	●	●	✕	✕
	Light Vehicle Workshop	Rear axle press tool	●	✕	✕	✕	✕	✕	✕
		Hilux bash plate hinge	●	●	●	●	●	●	●
		Landruiser ball joint remover	●	✕	✕	✕	✕	✕	✕
	EWS	EWS – Retrieval and storage of platform ladders on vehicle roof racks	✕	✕	✕	✕	✕	✕	✕
		Distribution Team – Removal of steel cable pit lids in Substations (eg SUB3, SUB16	✕	✕	✕	✕	✕	✕	✕
	Powerstation	Cable trench lids	●	●	✕	✕	✕	✕	✕
		Cat head remover	●	●	✕	✕	✕	✕	✕
	Civil - Construction	Driving pins for FSP – Steve Lugsdin	✕	✕	✕	✕	✕	✕	✕
	Civil - Workshop / Roadcrew	Star Picket Driver	●	●	✕	✕	✕	✕	✕
	Civil - Sewerage	Lifting pumps/monorail at Awonga	●	●	✕	✕	✕	✕	✕
P&L	Laboratory	Ponds jar openers	●	●	✕	✕	✕	✕	✕
	Development	Loader Jig	✕	✕	✕	✕	✕	✕	✕
	Mine Services LPMC	Despatch operators - Ergonomic workstation	●	●	●	●	●	✕	✕
Sup	HSE	Environment backpack - refer to notes in pocket book	●	●	●	●	●	●	●
	Cape Kids Childcare	Floor seat rests	●	●	●	●	●	●	●
Contractors	Sodexo	Door hook locks	✕	✕	✕	✕	✕	✕	✕
	Goodline	Rail de-clipper	✕	✕	✕	✕	✕	✕	✕
	NHDS	Mobile lighting plant	●	●	●	●	●	●	●
	Hasting Deering	ISO Container Lid Removal Tool	●	●	●	●	●	●	●
	Sea Swift	Freight handling	✕	✕	✕	✕	✕	✕	✕
	Smit Lamnalco	Securing lines	●	●	●	●	●	●	●
	NQCEC	Forklift Jib	●	●	●	●	●	●	●

Red = Hand Red Zone Issues

Appendix 2

ErgoAnalyst MHE Risk Assessment A

Appendix 3

ErgoAnalyst MHE Risk Assessment B

Rio Tinto Alcan

Weipa	CLASSIC HSE Management System

ErgoAnalyst Risk Assessment Form

Manual Task Risk Assessment Tool

ERGO ENTERPRISES

Environmental Hazards :

		Whole-body vibration	Localised vibration
☐ Stress	☐ Cold/Heat	☐ Low	☐ Low
☐ Time pressures	☐ Cognitive overload	☐ Moderate	☐ Moderate
☐ Lack of control	☐ Cognitive underload	☐ High	☐ High

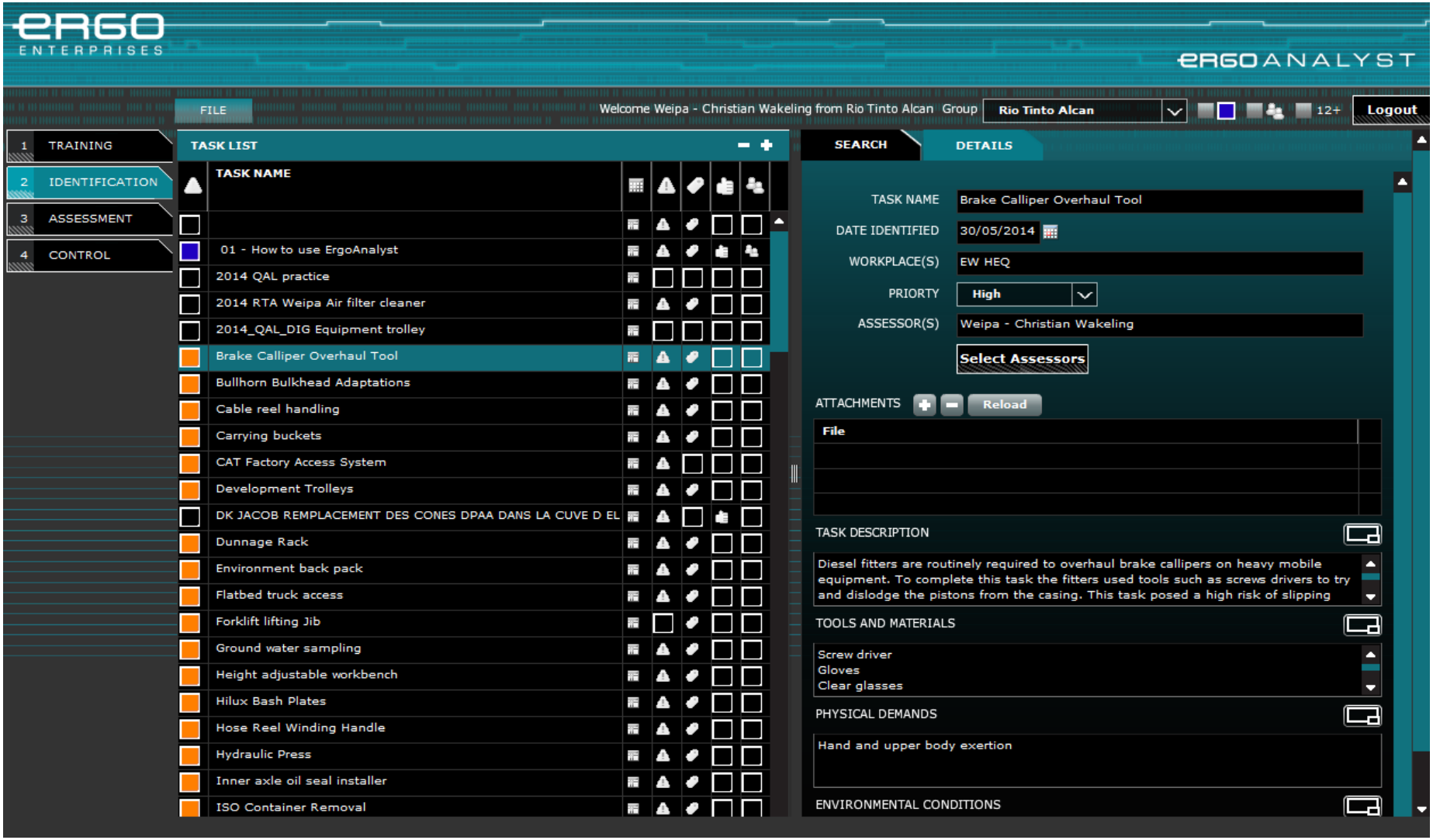
Physical Hazards :

Risk Level	Exertion	Exposure	Posture	Movement
Green	Low force and speed	Task performed infrequently for short periods	Comfortable postures within a normal range about neutral	Varied movement patterns
Yellow	Moderate force or speed, but well within capability	Task performed regularly, but with many breaks or changes of task	Uncomfortable postures, but not approaching an extreme range of motion	Little of no movement, or repeated similar movement patterns
Orange	High force or speed, but no close to maximum	Task performed regularly, but without many breaks or changes of task	Postures approaching an extreme range of motion	Repeated identical movement patterns
Red	Force or speed close to maximum	Task performed continuously for the majority of the shift	NA	NA

Body Part	L Exertion	R	L Exposure	R	L Posture	R	L Movement	R
Shoulders								
Arms								
Legs								
Back								

Appendix 4

ErgoAnalyst Software



Appendix 5

ErgoAnalyst Software Risk Assessment

Appendix 6

MHE Green Banner

Rio Tinto Alcan

Bauxite & Alumina
***Weipa* Green Banner**
(HSEC or General Ideas & Information)

Distribution List: RTA Weipa All Contractors and RTA Weipa All Personnel

Date: 01/01/2015
Relevance: Manual Handling Risk Assessment

Project Title:	Stamp holder
Project Completion Date:	01/01/2015
Area/Department:	Site Services – Main Workshop

Before - Risk Assessment

Main Workshop personnel are routinely required to use metal stamps in order to help identify parts, weights and numbers. The task previously involved personnel selecting the appropriate metal stamp then hitting it squarely with a hammer (as pictured).
The MHE issue related to the potential of line of fire and hand red zone (HRZ) impact injuries. The acute HRZ risk was assessed as high.

After – Risk Assessment

To address this significant HRZ issue a purpose built stamp holder has been fabricated (as pictured). The holder has been fitted with a locking pin to hold the stamp in place and an extended handle. This improvement has eliminated the risk of line of fire injuries and hands being placed in the red zone.

For more information on this banner please contact the MHE Area Assessor on Tel: 07 4069 8529

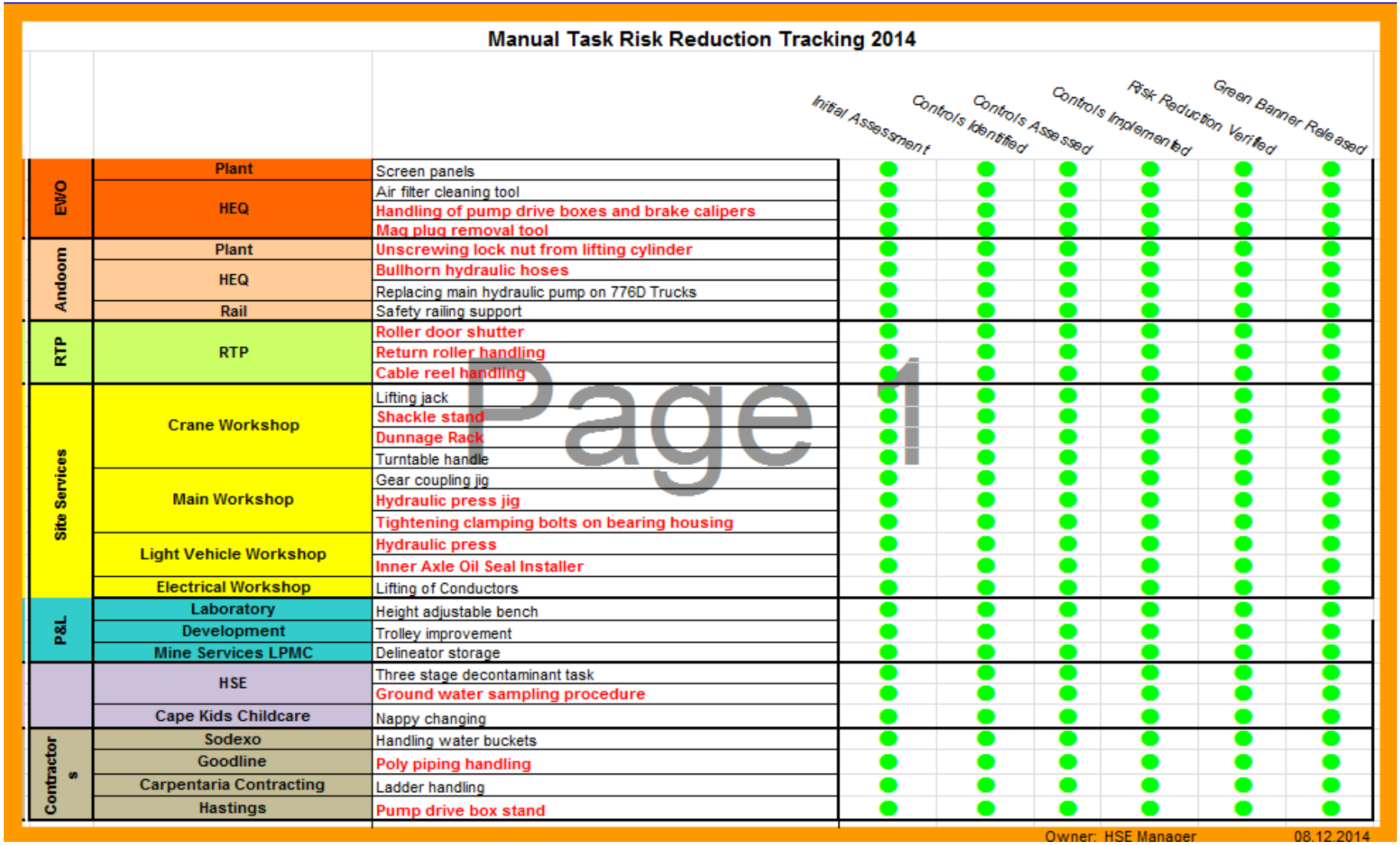
LEADERS - Ask your teams these questions:

1. How will our team apply the learning's from this banner in our work area?
2. What specific actions are we going to take?

Documentation File Name:	HSE-Green Banners- Main Workshop – Stamp Holder		
Document Type:	Green Banner	Effective Date:	01/01/2015
Status:	APPROVED	Printed Date:	30/01/2015
Approved By:	C Wakeling	Page:	Page 1 of 1

Appendix 7

Example of controls implemented for all manual handling issues identified across site in 2014



Manual Task Risk Reduction Tracking 2014

			Initial Assessment	Controls Identified	Controls Assessed	Controls Implemented	Risk Reduction Verified	Green Banner Released
EWO	Plant	Screen panels	●	●	●	●	●	●
	HEQ	Air filter cleaning tool	●	●	●	●	●	●
		Handling of pump drive boxes and brake calipers	●	●	●	●	●	●
		Mag plug removal tool	●	●	●	●	●	●
Andoom	Plant	Unscrewing lock nut from lifting cylinder	●	●	●	●	●	●
	HEQ	Bullhorn hydraulic hoses	●	●	●	●	●	●
		Replacing main hydraulic pump on 776D Trucks	●	●	●	●	●	●
	Rail	Safety railing support	●	●	●	●	●	●
RTP	RTP	Roller door shutter	●	●	●	●	●	●
		Return roller handling	●	●	●	●	●	●
		Cable reel handling	●	●	●	●	●	●
Site Services	Crane Workshop	Lifting jack	●	●	●	●	●	●
		Shackle stand	●	●	●	●	●	●
		Dunnage Rack	●	●	●	●	●	●
		Turntable handle	●	●	●	●	●	●
	Main Workshop	Gear coupling jig	●	●	●	●	●	●
		Hydraulic press jig	●	●	●	●	●	●
		Tightening clamping bolts on bearing housing	●	●	●	●	●	●
	Light Vehicle Workshop	Hydraulic press	●	●	●	●	●	●
		Inner Axle Oil Seal Installer	●	●	●	●	●	●
	Electrical Workshop	Lifting of Conductors	●	●	●	●	●	●
P&L	Laboratory	Height adjustable bench	●	●	●	●	●	●
	Development	Trolley improvement	●	●	●	●	●	●
	Mine Services LPMC	Delineator storage	●	●	●	●	●	●
	HSE	Three stage decontaminant task	●	●	●	●	●	●
		Ground water sampling procedure	●	●	●	●	●	●
	Cape Kids Childcare	Nappy changing	●	●	●	●	●	●
Contractors	Sodexo	Handling water buckets	●	●	●	●	●	●
	Goodline	Poly piping handling	●	●	●	●	●	●
	Carpentaria Contracting	Ladder handling	●	●	●	●	●	●
	Hastings	Pump drive box stand	●	●	●	●	●	●

Owner: HSE Manager 08.12.2014