

## Site Self Audit Tool

### Tyre & Rim Safety Standard and Tyre & Rim Guidance Notes

This document has been developed to allow sites to complete an audit of their own operations against the Rio Tinto Tyre & Rim Safety Standard and the accompanying Tyre & Rim Guidance Notes.

Completion of this document will allow you to identify your compliance to the Standard and Guidance Notes and any gaps that require actions to meet compliance.

#### Score System for Rating each Section

Rating	Comment on Compliance
1	Non Compliant - Improvement Required Immediately
2	Marginal Compliance - Improvement Required to Achieve Full Compliance
3	Compliant - Compliance Achieved Opportunity for Improvement Identified
4	Full Compliance - At or Near the Highest Standard Expected

# Tyre & Rim Safety Standard Site Self Audit Tool

Site:

Date Completed:

Section	Current Status	Rating	Action Required
6.1	Operations must establish a Tyre management plan that is approved by a senior manager at the operation and reviewed every 12 months.		
	Does a Tyre Management Plan exist		
	Does the plan cover Tyre selection, transport & storage, Installation & removal, operations, maintenance & inspection, emergency response & disposal		
	Does the plan meet the areas identified in the Tyre Guidance notes as being a requirement for the operation (see adjacent worksheet)		
	Has a senior manager signed off on the Tyre Management Plan and has it been reviewed within the past 12 months		
<b>Overall Status</b>	General comment on Tyre Management Plan, sign-off and review		
6.2	There shall be demonstrated job and equipment competencies and safe work procedures for all tyre maintenance, servicing activities and tyre fire emergency response. The competencies must specify the frequency for re-certification, which must be no less than 3 years frequency.		
	Have personnel currently conducting tyre service activities been assessed as competent and been authorised to conduct the task being performed.		
	Does the site have a copy of the safe work procedure for conducting a routine tyre change, tyre pressure check process and stripping a tyre from a rim		
	Have all the tyre serviceman and parties involved in tyre maintenance been re-certified in the past 3 years.		
	Does the site have a training package for personnel involved in responding to, managing and resolving Tyre Fire events - is this an authorised competency		
<b>Overall Status</b>	General comment on Training, safe work procedures, re-certification and Tyre Fire management.		

<b>6.3</b>	<b>No person shall approach a vehicle within 24 hours of a lightning strike, contact with high voltage electricity or a tyre fire. An exclusion zone of 300 metres (1000 feet) of a tyre fire must be established and only be accessed by emergency service personnel that are shielded while fighting the fire.</b>		
	Does the site have a detailed tyre fire response procedure, are personnel trained to establish an exclusion zone of 300 metres minimum.		
	How is the exclusion zone distance measured or determined, can the site be confident that the exclusion zone is 300 metres or greater.		
	Are methods for responding and fighting the fire clear and avoid exposing personnel to direct contact with a potential explosion or in the line of fire.		
<b>Overall Status</b>	General comment on responding to, managing and resolved a lightning strike / powerline contact or machine fire.		
<b>6.4</b>	<b>Restricted Work Zones (RWZ's) and Exclusions Zones must be established for the tyre installation, removal and handling processes. No person shall enter a potential tyre fall zone without – fallback prevention, appropriate isolation of equipment and an exclusion zone established.</b>		
	Does the site have a process for establishing a barrier (chain / rope / tape) to prevent unauthorised entry into the tyre change area for both tyre pad and workshop activities.		
	Does the site have a process for establishing a restricted work zone that prevents the tyre serviceman from entering the area between the hands of the forklift or other areas where there is a risk of crush injury during fitment, removal and manipulation processes, unless the necessary protection (fallback arms / isolation / fundamentally stable etc) have been employed		
	Are the processes employed to manage exclusion zones and RWZ's being followed by site personnel		
<b>Overall Status</b>	General comment on establishment or RWZ's and excluision zones.		
<b>6.5</b>	<b>All tyre and rim handling equipment shall have fall back prevention in place prior to anyone entering the RWZ.</b>		
	Does the sites tyre handling equipment have fallback prevention		
	If the fallback arms are rotating / engaging type are these arms engaged wherever anyone is entering the RWZ		
	Are other tyre handling devices fitted with fallback prevention eg Jigs and removal of tyres with slings etc		
<b>Overall Status</b>	General comment on fallback prevention methods		

<b>6.6</b>	<b>Tyres with split rims must be deflated to zero and other tyres to a nominal pressure no greater than 5psi prior to the removal of retaining devices. In a dual assembly both tyres must be deflated.</b>		
	Does the site have a register of machines that are fitted with split rims and do these machines have some form of signage indicating the zero deflation requirement		
	For normal wheel and rim configurations is a policy of 0 psi or nominal pressure no greater than 5 psi employed prior to the removal of any retaining devices		
<b>Overall Status</b>	General comment on deflation prior to removal of retaining devices		
<b>6.7</b>	<b>Tyre Inflation is subjected to the following requirements; a) Remote inflation must be used for all tyre inflations, b) Where the risk of ejections of components exists barricading must be in place, c) a tyre must NOT be left unattended during inflation, d) tyres that have run at less than 80% of the cold inflation pressure must not be re-inflated. Both tyres in a dual assembly must be dismantled and inspected.</b>		
	Is remote inflation equipment available for use and do the tyre servicemen understand the intent and design of the equipment.		
	Is some form of barricading used where the risk of ejection is present eg forklift during inflation processes		
	Do the tyre serviceman maintain visual contact with the tyre during inflation and NOT engage in other tasks well away from the inflation process		
	Are tyres with less than 80% of the Cold inflation pressure removed for inspection and for duals is the dual tyre also removed for inspection.		
<b>Overall Status</b>	General comment on inflation methods and practices, barricades preventing ejection, response to low pressure readings		
<b>6.8</b>	<b>Do not weld, cut or apply heat sources to a rim or wheel while the rim or wheel is fitted with a tyre whether inflated or deflated.</b>		
	Is there training for personnel on the risk of applying heat to the a rim or wheel whilst a tyre is fitted		
	Is there supportive signage on the risks of this issue		
<b>Overall Status</b>	General comment on applying heat to a rim whilst a tyre is fitted		

<b>6.9</b>	<b>A periodic testing and/or inspection regime must be in place for tyres, rims/wheels and assemblies</b>		
	Is there a visual tyre inspection program and pressure check process on a weekly basis		
	Are rims identified for crack testing and removed at appropriate intervals		
	Are rim components inspected and cleaned prior to refitment		
<b>Overall Status</b>	General comment on inspection regimes and testing		
<b>6.10</b>	<b>All tyres, rims/wheels must be made unserviceable when deemed unfit for service or before being sent off site for disposal.</b>		
	Are any products that are deemed scrap released offsite, if so are these products made unserviceable to prevent re-entry to this or another operation		
	Are rims that are sent for crack testing visually inspected and confirmed as being unusable		
<b>Overall Status</b>	General comment on rendering scrap products unserviceable		
<b>6.11</b>	<b>A tracking system must be in place to track the lifecycle of tyres, rims/wheels.</b>		
	Does the site have an up to date system for monitoring tyre lfie, positions, rim life and testing period		
<b>Overall Status</b>	General comment on tracking systems for tyres, rims and their dispositions		

## Guidance Notes - Earthmoving Tyres & Rims Site Self Audit Tool

Site: \_\_\_\_\_ Date Completed: \_\_\_\_\_

Section	Current Status	Rating	Action Required
<b>Section 2 - Training &amp; Competency Assessments</b>			
Section 2	The site shall have in place a program to train/familiarize and/or assess employees involved in the maintenance and operation of OTR tyres & rims		
2.1	A training needs analysis has been conducted to determine the level of training/familiarization required for individuals working on or around tyres		
2.2	Personnel performing tyre fitting or maintenance work have been assessed as competent by a qualified assessor		
2.3	Training has been provided to those responding to hot tyre/tyre fire events. Training includes safety awareness, reponse requirements, tyre fire procedures		
2.4	A record of competency has been kept for each employee/contractor and reassessment periods have been set		

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Section	Current Status	Rating	Action Required
<b>Section 3 - Tyre &amp; Rim Selection</b>			
3	A plan has been developed to ensure tyre & rim purchases are the best selection for the application as highlighted in the Guidance Notes - Tyres & Rims		
3 (a)	Tyre specification has been selected with the input of the OEM and been approved by a person with the appropriate technical knowledge		
3 (b)	Tyre and rim selection considers future mine plan, weight studies, heat studies & TKPH analysis		
3 (f)	Tyres not displaying an original manufacturers serial number shall not be purchased		

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Site: \_\_\_\_\_ Date Completed: \_\_\_\_\_

Section	Current Status	Rating	Action Required
<b>Section 4 - Tyre &amp; Rim/Wheel Handling Tools &amp; Equipment</b>			
4	Tyre handling tools and equipment comply to details setout in Guidance Notes - Tyres & Rims		
4.1 a	Tyre handler should be capable of handling the largest tyre & rim assembly in the fleet and capable of handling associated components		
4.1 b	All tyre handling equipment shall have fallback arrestors fitted/in place for tyre handling activities when any person is to enter the RWZ. Where fallback arrestors pivot in and out of position they shall only pivot forward and not backward		
4.1 c	The tyre handler shall be fitted with a load weight indicator or display a load weight chart in the cabin including maximum SWL of the machine		
4.1 d	All tyre handling equipment shall have an annual certification/inspection and documents held for reference. Forklift tyre handlers shall have an inspection program that meets the intent and requirements of ISO5057:1993		
4.2	Any Jig used for tyre handling shall be certified, display a safe working load, have fallback prevention in place, and secure the load to prevent unplanned movement		
4.3	All lifting slings used for tyre handling purposes shall be specifically designed for the task, be of a cradle configuration, be certified and display the SWL,		
4.4	Hydraulic tooling shall be designed and suited to the application, and have a periodic testing program in place. Tooling details shall be kept in a hydraulic tooling register		



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<b>Section 4 - Tyre &amp; Rim/Wheel Handling Tools &amp; Equipment</b>			
4.5	Rim stands should be used during tyre and rim assembly, rim stands are to be designed for the application		
4.6	Tyre inspection stands should be used for all tyre preparation and inspection, if used tyre inspection stands shall be certified display the SWL and largest tyre for use and be periodically tested		
4.7	The site shall have in place tooling to allow remote inflation. The tooling shall be designed to remove the operator from the line of fire during inflation, it shall remove the operator to a distance no less than 5 metres from the nearest point of the tyre. The tooling shall have an on off tap, dump valve pressure check point outside the line of fire. Gauges should only display one unit of measure either PSI or		
4.8	Sites operating a tyre press shall have in place a training and competency program for the machine with safe work procedures for each task. Tooling for the press shall be fit for purpose to the application		
4.9	The site shall have in place a method of handling rims and wheels that will prevent damage during handling		

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Section	Current Status	Rating	Action Required
<b>Section 5 - Handling &amp; Storage</b>			
5.1	The site shall have in place a trained process for the receipt & dispatch of tyres and rims to and from site. The process shall include as a minimum an inspection for damage, foreign materials, contaminants, ensure all parts are correct and serial numbers are recorded		
5.2	All tyres shall be handled in accordance to the manufacturers recommendations. A tyre & rim assembly weight chart shall be posted in the transport loading areas for estimated transport weights, the chart shall display separate and combined weights for tyres and rims/wheels		
5.3 a)	Tyres and rims shall be stored on level ground and supported in such a way that they cannot fall or roll. Tyres and rims shall be stored by size, specification & disposition. New tyres and rims/wheels shall be stored by delivery date and rotated to ensure older stock is consumed first.		
5.3 b)	Tyres stored horizontally shall be stacked no more than 3 metres high or 3 times the width of the tyre, Loader tyres 45" and larger shall only be stacked 2 high		
5.3 e)	OTR tyre & rim/wheel assemblies shall be stored at a maximum pressure of 20psi		
5.3 f)	Rims/Wheels and components shall be stored so that different sizes and styles are not mixed together. Rim/Wheels & components shall be cleaned and inspected prior to storage		

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Section	Current Status	Rating	Action Required
<b>Section 6 - Tyre &amp; Rim/Wheel Mount &amp; Dismount</b>			
6.1 a)	Sites mounting and dismounting tyres, rims/wheels shall demarcate the work area as an exclusion zone to prevent unauthorized access		
6.1 c)	Procedures for mounting and dismounting tyres, rims/wheels should include controls for potential pinch points during mounting and dismounting		
6.1 d)	Procedures for mounting and dismounting tyres, rims/wheels should include the use of an inhibitor such as tyre life, rimexcel etc. Where this process exists details of the amount required and process to install shall be noted on the product container.		
6.1 e)	Prior to mounting rims/wheels and components are cleaned and inspected for cracks, defects, abnormal wear and scheduled testing period is within site standard. All components are checked for compatibility. This inspection is detailed in safe work procedures		
6.1 e)	Prior to mounting al tyres are inspected for defects, abnormalities and foreign objects in the chamber. This inspection is detailed in safe work procedures		
6.1 e)	During assembly, tyre inflation does not exceed 5psi until the lock ring has been correctly seated. This detail exists in safe work procedures for tyre mounting		
6.2 a)	For vertical mount and dismounts RWZ & exclusion zones shall be established and managed. Detailed procedures for RWZ & exclusion zones shall exist on site		

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Section	Current Status	Rating	Action Required
<b>Section 7 - Installation &amp; Removal of Rim/Wheel Assemblies</b>			
7.1 a)	The area for installation & removal of tyre & rim/wheel assemblies shall be of hard level ground and demarcated from other activities		
7.1 b)	For installation & removal of rim/wheel assemblies restricted work zones & exclusions zones shall be established and managed throughout the task. The site shall have in place safe work procedures detailing the requirements of the RWZ and the exclusion zone		
7.1 f)	For the removal or installation of rim/wheel assemblies on articulating equipment the articulation pin shall be locked into place prior to jacking machine		
7.1 f)	For the removal of rim/wheel assemblies tyres including both in a dual assembly shall be deflated to zero psi/Kpa or a nominal pressure no greater than 5 psi/35Kpa. Tyres that have suffered structural damage shall be deflated to zero pressure		
7.1 f)	If a tyre is to be reinflated for handling purposes procedures shall exist to ensure that the locking is correctly seated, all retaining devices have been removed and the tyre is inflated remotely. Before refitting the assembly the oring shall be changed.		
7.1 g)	Procedures shall exist to ensure that prior to rim/wheel installation checks are performed including the rim/wheel and hub for cleanliness and damage, wheels studs and cleats for serviceability, assembly is at the correct pressure of 20psi and the tyre is of the correct specification and tread depth,		

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Section	Current Status	Rating	Action Required
<b>Section 8 - Inflation/Deflation of Tyres &amp; Pressure Maintenance</b>			
8.1 a) b)	The site should have in place a process to ensure pressure maintenance is completed weekly for haul truck, water truck & giant loader fleets and monthly for ancilliary equipment.		
8.1 c)	The site should have in place a process to ensure that cold presure checks are obtained at ever possible opportunity		
8.1 e) f)	The site shall have clear guidelines in place for inflation pressures including adjusting hot pressures		
8.1 g)	The site shall have in place a procedure to ensure that if an underinflated OTR tyre on an operating vehicle is found to have less than 80% of the specified cold inflation pressure, the tyre should not be inflated but deflated and removed for inspection. In a dual assembly the mating tyre shall also be removed and inspected fro damage		
8.1 h)	The site shall have in place procedures to ensure that if an over inflated tyre on an operating vehicle is found to have 40% or more above the specified cold inflation pressure the machine will be parked and an investigation into the cause of the heating shall be initiated		
8.1 i)	A process shall exist to ensure Bias ply tyres have the pressure rechecked 24 hours after original fitment		
8.1 j)	The site has a calibrated master pressure gauge (calibrated annually) and tyre gauges are checked prior to pressure maintenance for accuracy		

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Section	Current Status	Rating	Action Required
<b>Section 8 - Inflation/Deflation of Tyres &amp; Pressure Maintenance</b>			
8.2 a)	The site shall have in place a remote inflation system that removes all persons from the line of fire during tyre inflation, air flow must be controlled from outside the line of fire		
8.2 b)	The site shall have in place a process to ensure that barricading is used in front of the tyre during the tyre inflation process where the risk of ejection of components exists during inflation		
8.2 c)	The site should have in place a process to ensure tyres, rims/wheels & components are compatible & free of damage prior to fitment		
8.2 d)	Tyre inflation procedures shall include detail to ensure all tyre inflations are conducted in one stage, i.e. do not leave the area with the tyre still inflating		
8.3 a)	During tyre deflation noise muffling devices should be used where possible		
8.3 d)	A process shall be in place that confirms actual deflation of tyres prior to commencing tyre change work		

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Site: \_\_\_\_\_ Date Completed: \_\_\_\_\_

Section	Current Status	Rating	Action Required
<b>Section 9 - Operations &amp; Maintenance of Tyres</b>			
9.1	The site shall have in place a tyre management plan to prevent premature or catastrophic failures		
9.1 b)	The site shall have in place a weekly tyre inspection program that assess tyre condition, damage & compliance to the site standard		
9.1 c)	The site shall have in place a means of identifying and tracking all OTR tyres and rims/wheels from purchase to disposal		
9.1 d)	The site shall have in place a process for determining when a tyre is no longer safe to operate, this process must be communicated across site		
9.1 e,f)	All tyre repairs shall be carried out by a recognized organisation, operating to industry standards and all repairs shall be identified by a marking scheme		
9.2	The site shall have in place an operational control system to ensure the safety of operators, maintainers and equipment		
9.2 a)	The site should have in place a means of managing running TKPH/TMPH levels that intervenes prior to limits being exceeded		
9.2 b)	The site should have in place a means for review of operating parameters including weight studies, heat studies and TKPH studies. These should be conducted by a competent person		



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Section	Current Status	Rating	Action Required
<b>Section 9 - Operations &amp; Maintenance of Tyres</b>			
9.2 c)	The site shall have in place a detailed tyre awareness program targeted at mining operators, maintenance personnel and others working around tyres. The program should include items identified in the Tyre Guidance Notes section 9.2 c).		
9.4	If the site is operating tyre protection chains they shall have in place a management program ensuring the chain is correct for the application, any damage or retension is identified and rectified, and training program exists for chain maintenance that identifies the risks		

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Site: \_\_\_\_\_ Date Completed: \_\_\_\_\_

Section	Current Status	Rating	Action Required
<b>Section 10 - Operations &amp; Maintenance of Rims/Wheels</b>			
10.1	The shall have in place a rim/wheel and component management plan		
10.1 c)	As part of the rim/wheel and component management plan the site shall have in place a means of identifying and tracking all rims/wheels and components from purchase to disposal		
10.1 e)	As part of the rim/wheel and component management plan the site shall in place procedures to ensure all rims/wheels and components are visually inspected by a competent person at every tyre change and and items found to be cracled, damaged, worn or sprung are scrapped or sent for repair		
10.1 f)	As part of the rim/wheel and component management plan the site should have in place a process to check rims/wheels and components are within sepcification prior to fitment (eg go no go gauges as used at RTIO)		
10.1 g)	As part of the rim/wheel and component management plan the site shall have in place a non-destructive testing programme with established testing hours for each application		
10.1	As part of the rim/wheel and component management plan the site shall have in place a means of identifying what application each rim/wheel is used on (i.e. numbering) and a means of identifying what rim/wheels base and components match together (i.e. colour coding system)		

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Site:

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Section	Current Status	Rating	Action Required
<b>Section 11 - Tyre Fires &amp; Potential Tyre Explosions</b>			
11	The site shall have in place processes and procedures to prevent, manage and respond to suspect or actual tyre fire events. These procedures and process shall be comply or exceed that which is set out in section 11 of the tyre & rim safety standard		
11.1	Personnel required to manage a suspected or actual tyre fire shall be trained and authorised to do so by a competent person. The shall have in place a training program for this		

## Guidance Notes - Earthmoving Tyres & Rims Site Self Audit Tool

Site:

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Section	Current Status	Rating	Action Required
<b>Section 12 - Storage &amp; Disposal of Scrap Tyres</b>			
12	The site shall have in place a process for reviewing scrap tyres for recycling option i.e. retread, repair, recycle, use in pit for deliniation etc.		
12.1	Methods for disposal of scrap tyres in pit shall comply with the applicable environmental regulations		
12.2 & 12.3	A risk assessment should be conducted for scrap tyre storage areas and should take into consideration the risk of fire, tyre falling or rolling, water retention, breeding of mosquitos		