AfriSam
Aggregate

MOSH TMLP ADOPTION

Vernon Brown

2025/10/27

TMP Journey

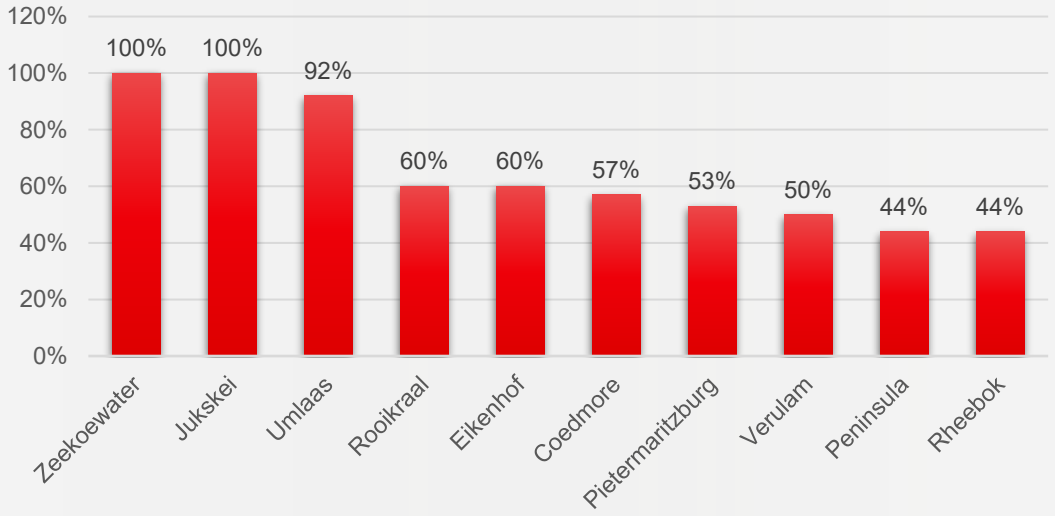
- AfriSam Quarries , registered to adopt the MOSH Leading Practice on Traffic Management.

- **Key Focus**
  - Safe movement of vehicles and people.

- **Key Actions**
  - Vehicle Separation – One way traffic, berms and Traffic Circles
  - Dedicated Pedestrian walkways
  - Moved Office out of Operations to Entrance gates
  - Move Employee vehicles parking out of the operations
  - Limited the number of light vehicles in the operations
  - Restrict the number of Trucks in operational areas

Adoption Tracker

- Each Site appointed an adoption team – Mine Manager as Project Lead
- Implement MOSH Leading Practise Steps
- Review TM risk analysis and procedures
- Communicate changes to the operations
- Engage with the MOSH Team for assistance and reviews
- Update progress and submit evidence to MOSH Team



Traffic Flow Analysis

Focus areas

- Divided the site into zones
- Understand for each zone:
  - The amount of traffic in the area
  - The peak times
  - Type and size of TMM travelling in the area
  - The reason for this movement
  - Pedestrians in the area
  - The interaction between TMM and Pedestrians
  - Objects or structures in close proximity
  - Opportunities to improve

Risk Analysis

HAZARD & RISK IDENTIFICATION														
AREA / DIVISION / SECTION	(Site / Interaction Location) FACILITIES / ACTIVITIES / PROCESSES / TASKS / PRODUCTS / SERVICES (Traffic Flow Analysis)	HAZARD ID	HAZARD: Potential Unwanted Event (PUE) (PUE1, PUE2, PUE3, PUE4)	TMM's Involved	Potential Interaction Scenarios	Environment / Driver Blind Spots Environment / Driver Blind Spots / Poor Visibilty	Hazardous Conditions on Roads and Routes	Hazardous Objects / Voids in or on Roads and Routes	Maximum Speed	SHE	Pure Risk			Significant Risk (YES/NO)
											Likelihood	Consequences	Risk Rating	

BARRIER ANALYSIS											ADDITIONAL CONTROL BARRIER ANALYSIS										
CURRENT CONTROLS	Control Type	Location	Effective	Competence	Comply	Effective Rating Total	Critical Control: (YES/NO)	Residual Risk			Risk Decision	ADDITIONAL CONTROLS (If Required)	Control Type	Location	Effective	Competence	Comply	Effective Rating Total	Critical Control: (YES/NO)	Residual Risk			Risk Decision
								Likelihood	Consequences	Risk Rating	(Treat/Tolerate/ Terminate/Transfer)									Likelihood	Consequences	Risk Rating	(Treat/Tolerate/ Terminate/Transfer)

Example of completed risk analysis

AfriSam

Operation: CMN Rooikraal Agg

ISSUE BASED RISK ASSESSMENT:

Traffic Management Plan
Rooikraal Aggregates Quarry)

Participants:

1. Robin Rhys (2.10.1 GCC Engineer)
2. Selo Farland (Safety Practitioner)
3. Raymond Ledwaba
4. Themba Baloyi
5. Nelly Mhlanga
6. Kingsley Ngubeni
7. Portia Manavhela
8. Rihahi

AREA 1- MAIN GATE & VISITOR'S PARKING

Risk analysis Area 1 sign off

Date completed : May 2023

Name	Surname	Designation	Signature	Date

Approval

Name	Surname	Designation	Signature	Date

HAZARD & RISK IDENTIFICATION | BARRIER ANALYSIS | ADDITIONAL CONTROL BARRIER ANALYSIS

AREA / DIVISION / SECTION	(Site / Intersection Location) FACILITIES / ACTIVITIES / PROCESSES / TASKS / PRODUCTS / SERVICES (Traffic Flow Analysis)	HAZARD ID	HAZARD: Potential Unwanted Event (PUE) (PUE1, PUE2, PUE3, PUE4)	TMM's Involved	Potential Interaction Scenarios	Environment / Driver Blind Spots Environment / Driver Blind Spots / Poor Visibility	Hazardous Conditions on Roads and Routes	Hazardous Objects / Voids in or on Roads and Routes	Maximum Speed	SHE	Pure Risk: Likelihood	Pure Risk: Consequence	Pure Risk: Risk Rating	Significant Risk (YES/NO)	CURRENT CONTROLS	Control Type	Location	Effective	Competence	Capacity	Effective Rating Total	Critical Control (YES/NO)	Residual Risk: Likelihood	Residual Risk: Consequence	Residual Risk: Risk Rating	Risk Decision (Treat/Transfer/Terminate/Tolerate/Exit)	ADDITIONAL CONTROLS (If Required)	Control Type	Location	Effective	Competence	Capacity	Effective Rating Total	Critical Control (YES/NO)	Residual Risk: Likelihood	Residual Risk: Consequence	Residual Risk: Risk Rating	Risk Decision (Treat/Transfer/Terminate/Tolerate/Exit)
AREA - 1 Main Gate & Visitors Parking area	Area 1 - Visitors Entry Security guards moving around(V-P) Employees & visitors going for alcohol tests (V-P) Staff & visitors vehicles interactions on entry (V-V) Boom gate being collided to (V-O)	1- RKTMP -001	• PUE-1 (V-P) • PUE-2 (V-V) • PUE-3 (V-O)	• LDV • Private vehicles • Mini Bus • Motocycle	• P2-Person (Indirect) • L3-Backup • L4-Dovetailing	• Sun Glare (morning)	• No Safety Waiting Area • Lighting	• Livestock • Drop-off Near Road / Haulage • Loading In or on the Side of a Road / Haulage	0 -10Km/h	S	3	2	6		L1 Controls: TMM specification - Small vehicles only	1	4	2	2	3	12						L1 Controls: N/A	0	0	0	0	0	0					
															L2 Controls: Access control procedure, Island separating visitors vehicles and LOD. Boom gate.	4	4	3	4	3	18						L2 Controls: N/A	0	0	0	0	0	0					
															L3 Controls: Traffic rules, and pedestrian walkways, road maintenance	1	3	3	4	3	14						L3 Controls: N/A	0	0	0	0	0	0					
															L4 Controls: Drivers, vehicle licences, new driver/visitor Induction	1	4	3	3	3	14		1	3	3		L4 Controls: N/A	0	0	0	0	0	0		0	0	0	
															L5 Controls: Alcohol screening	1	4	4	4	4	17						L5 Controls: N/A	0	0	0	0	0	0					
															L6 Controls: Presteart checks conducted for own pick-up trucks.	1	4	0	0	0	5						L6 Controls: Special permit/ derrangement for contractors or TMM that would access the mining area - Presteart for own pick-up- review to compare with AfriSam std	1	4	4	4	4	17					
															L7 Controls: Mirrors and lights.	2	4	3	4	4	18						L7 Controls: N/A	0	0	0	0	0	0					
	Area 1 - Main entry Security guards moving around(V-P) Employees & visitors going for alcohol tests (V-P) LODs and delivery vehicles interactions on entry (V-V) Boom gate being collided to (V-O) Guard house being collided with (V-O)	1- RKTMP -002	• PUE-1 (V-P) • PUE-2 (V-V) • PUE-3 (V-O) • PUE-4 (LOC)	• Delivery Vehicles • FEL • Fuel Bowser • LDV • LOD • Low Bed • Mini Bus • Mixer • Rigid Truck • TLB • Crane • Motocycles • Honey sucker truck • Water Truck	• P1-Person (direct) • P2-Person (Indirect) • P4-Access and Egress • L3-Backup • L4-Dovetailing	• Sun Glare (morning)	• Fog • Substandard Road Markings / Signage	• Building • Livestock	0 - 10Km/h	S	3	2	6		L1 Controls: Road design, TMM as per the cop	4	4	3	3	3	17						L1 Controls: N/A	0	0	0	0	0	0					
															L2 Controls: Segregation, access control,	2	4	2	2	3	14						L2 Controls: N/A	0	0	0	0	0	0					
															L3 Controls: Operating procedures	1	4	3	4	3	15						L3 Controls: N/A	0	0	0	0	0	0					
															L4 Controls: Induction, licences,	1	4	3	3	1	12		2	2	4		L4 Controls: Enforce checking of licences	1	4	4	4	4	17		1	2	3	
															L5 Controls: Alcohol screening,	1	4	4	4	3	16						L5 Controls: N/A	0	0	0	0	0	0					
															L6 Controls: Presteart checks,	1	4	2	3	2	12						L6 Controls: All TMM going into the mining area - Pre-start. Safedel access for review	1	4	4	3	3	15					
															L7 Controls: Mirrors, lights, scene with reverse cameras	3	4	3	3	2	15						L7 Controls: N/A	0	0	0	0	0	0					
	Area 1- Visitors Parking area & Parking Exit Security guards moving around(V-P) Visitors walking to their vehicles in the parking area(V-P) Visitors vehicles crossing over main entry route interactions (V-V) Boom gate being collided to (V-O) Guard house being collided with (V-O) due to (LOC)	1- RKTMP -003	• PUE-1 (V-P) • PUE-2 (V-V) • PUE-4 (LOC)	• LDV • Diesel truck • Private vehicle	• P1-Person (direct) • L2-Reverse-on • P4-Access and Egress • L4-Dovetailing	• Non Identified	• Crossover Intersections • Water Accumulation / No Runoff	• Livestock	0 - 10Km/h	S	2	1	2		L1 Controls:	2	4	3	3	3	15						L1 Controls:	0	0	0	0	0	0					
															L2 Controls:	2	4	3	3	3	15						L2 Controls: Poles and chain on walkway, enforcement of the rules.	3	4	4	4	4	19					
															L3 Controls:	0	0	0	0	0	0						L3 Controls: Improve on the signage.	0	0	0	0	0	0					
															L4 Controls: -??-	0	0	0	0	0	0		1	1	1		L4 Controls: N/A	0	0	0	0	0	0		0	0	0	
															L5 Controls: -??-	0	0	0	0	0	0						L5 Controls: N/A	0	0	0	0	0	0					
															L6 Controls: -??-	0	0	0	0	0	0						L6 Controls: -??-	0	0	0	0	0	0					
															L7 Controls: -??-	0	0	0	0	0	0						L7 Controls: -??-	0	0	0	0	0	0					
	Area 1 - All TMM Exit Security guards moving around(V-P) Employees & visitors going for alcohol tests (V-P) [illegible]	[illegible]	• PUE-1 (V-P) • PUE-2 (V-V)	• ADT • Delivery Vehicles • Excavator • FEL • Fuel Bowser • LDV • Private vehicle • LOD • Low Bed	• P1-Person (direct) • P2-Person (Indirect)			• Building • Livestock							L1 Controls: Road design is appropriate	4	4	3	3	3	17						L1 Controls: -??-	0	0	0	0	0	0					
															L2 Controls: Access control,	2	4	2	3	3	14						L2 Controls: -??-	0	0	0	0	0	0					
															L3 Controls: Operating procedures	1	4	3	4	3	15						L3 Controls: -??-	0	0	0	0	0	0					
															L4 Controls:						0						L4 Controls: -??-	0	0	0	0	0	0					
															L5 Controls: Alcohol screening, on exit	1	4	4	4	3	16						L5 Controls: -??-	0	0	0	0	0	0					

Doc No. RK - TMP
Compile by: RK MOSHATM
Revision No 00 Date: Jan 2023
Revised by:
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Issue Based Risk Assessment Form

Pedestrian separation

Traffic Flow – One way traffic

CPS Trials

- Trials @ 7 different Afrisam sites (Few machines per site)
  - Coedmore
  - Verulam
  - Pietermaritzburg
  - Peninsula
  - Rheebok
  - Jukskei
  - Rooikraal

- To familiarize ourselves with technology and built relationships with OEM's
  - Schauenburg
  - Booyco
  - Netstar
  - Dotnetix
  - PAISA Technology
- Hardware & Software compared to determine capabilities
- Determine the best suitable technology for the quarries

Operational CPS System

- Installed at Verulam Quarry (KZN) 2024-Q1
- 8 x Fixed installations
- 30 of Visitors units
- 10 of Pedestrian units
- 2 off testing stations for Visitor / Pedestrians
- Level 9 capable for fixed installations

Learnings – All trials

- OEM Availability of spares required locally, Johannesburg is too far,
- Need commitment and buy in from the on site team,
- Pedestrian unit availability. You will need more than you think,
- Trial before you implement to ensure hardware suitability for your operation.
- Camera AI systems works well in confined and congested plants to limit unnecessary warnings.
- No charging and management of pedestrian or visitor tags required.
- Moving load & haul machines between sites are problematic.
- Sales / collection trucks in the quarrying industry most difficult to cover
- Share trial with local DMPR Inspectors on site visits – Receive some valuable input

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Thank You!