RAM SPREADERS

DUST FREE BULK HANDLING

Case Studies

5TH BLACK SEA PORTS & SHIPPING 2016

SMAG GROUP COMPANY

RAM SPREADERS

5TH BLACK SEA PORTS & SHIPPING 2016

SMAG Salzgitter Maschinenbau

CONTENTS

SOURCES OF DUST

Transfer points

Vehicles - open wagon & wheels

Open stockpiles

Ship loading

Dust *is generated* ***at any point*** *in the logistic cycle* ***when*** *energy is* ***added*** *to materials*

SOURCES OF DUST

TRANSFER POINT

OPEN WAGONS

OPEN STOCK PILES

SHIP LOADING

SOURCES OF DUST

TRANSFER POINT

OPEN WAGONS

OPEN STOCK PILES

SHIP LOADING

SOURCES OF DUST

TRANSFER POINT

OPEN WAGONS

OPEN STOCK PILES

SHIP LOADING

SOURCES OF DUST

TRANSFER POINT

OPEN WAGONS

OPEN STOCK PILES

SHIP LOADING

CONTAINERISED BULK HANDLING

THE 4 STAGES

SMAG
GROUP COMPANY

CONTAINERISED BULK HANDLING

FILL

TRANSPORT

STORE

LOAD

FILL CONTAINER AT THE MINE

- *EXISTING SITE EQUIPMENT USED*
- *NO LOSS OF COMMODITY*
- *NO CLEAN UP*

CONTAINERISED BULK HANDLING

FILL

TRANSPORT

STORE

LOAD

SEAL CONTAINER

- *EXISTING SITE EQUIPMENT USED*
- *SELF LOCKING LID SYSTEM*
- *SEALS COMMODITY UNTIL LOADING*
- *NO CONTAMINATION*

CONTAINERISED BULK HANDLING

FILL

TRANSPORT

STORE

LOAD

SEND CONTAINER BY RAIL

- *SEALED CONTAINERS – NO DUST*
- *NO CONTAMINATION*
- *NO LOSS OF COMMODITY*

CONTAINERISED BULK HANDLING

FILL

TRANSPORT

STORE

LOAD

Or SEND CONTAINER BY ROAD

- *USING EXISTING ROAD NETWORK*

CONTAINERISED BULK HANDLING

STORE CONTAINERS AT PORT

- ***NO*** *STOCK PILE –* ***NO*** *DUST*
- ***NO*** *CONTAMINATION*
- ***FAST*** *& EFFICIENT LOADING*
- *STORE MULTIPLE TYPES OF COMMODITES AT SAME AREA WITH* ***NO*** *CROSS CONTAMINATION*

CONTAINERISED BULK HANDLING

LOAD USING RAM REVOLVER®

- *FOR **ALL** TYPES OF CRANE*
- *LOADS OF UP TO **2,000 TPH****
- *SWL – UP TO **45T***
- ***LID LIFTER** TECHNOLOGY – NO CONTAMINATION – NO DUST*
- ***TWISTLOCK & GRIPPERS** SECURE CONTAINER DURING ROTATION*

**subject to commodity & loading conditions*

CONTAINERISED BULK HANDLING

MISTING SYSTEM

LOADING PROCESS

Misting System
OFF

Misting System
ON

NO contamination
NO material loss

RAM SPREADERS

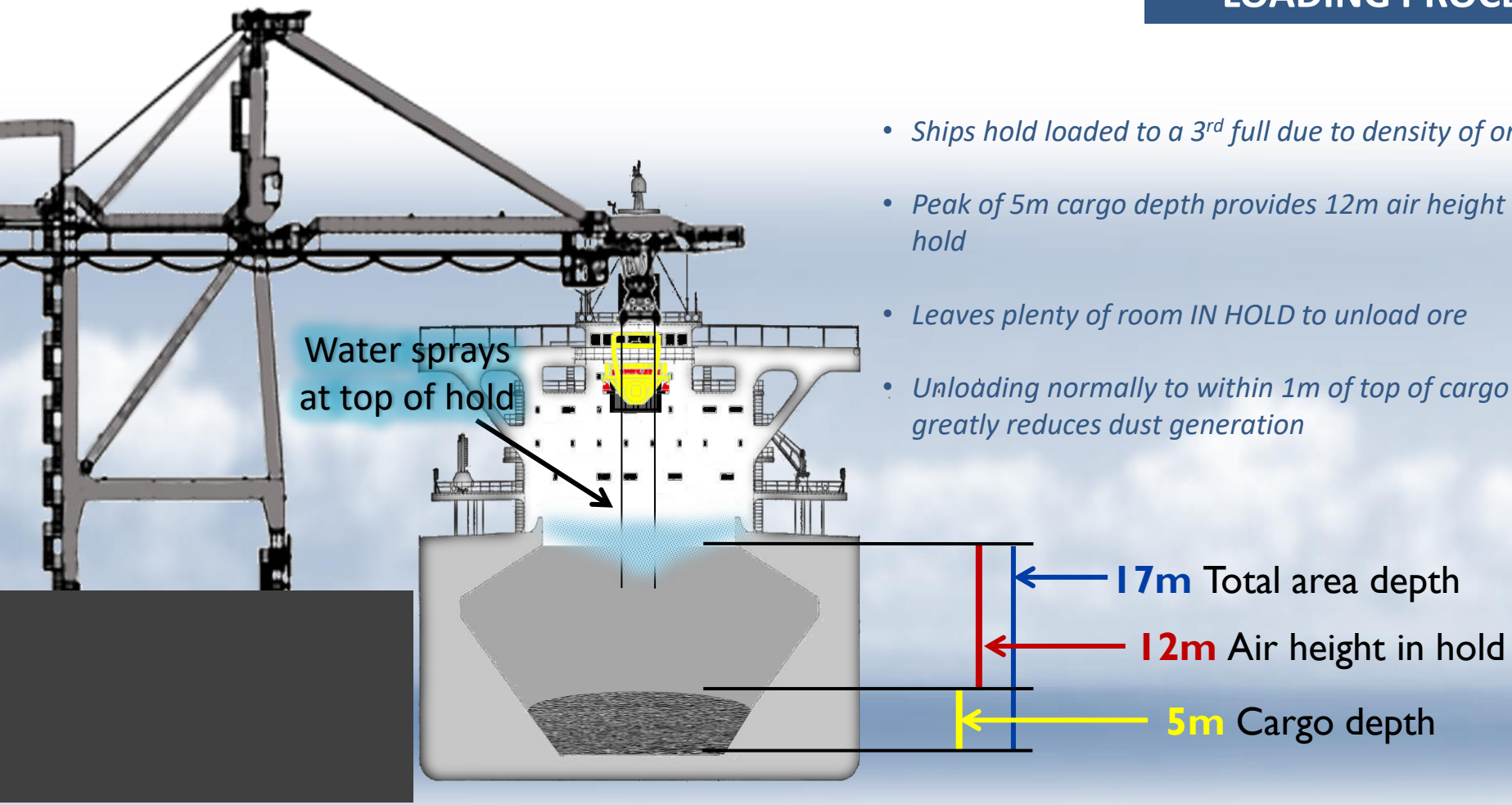
CONTAINERISED BULK HANDLING

ROTARY LOADING WITH VIRTUALLY NO DUST GENERATED

CLEANEST ORE LOADING SYSTEM AVAILABLE

MISTING SYSTEM

LOADING PROCESS



- *Ships hold loaded to a 3rd full due to density of ore*
- *Peak of 5m cargo depth provides 12m air height in hold*
- *Leaves plenty of room IN HOLD to unload ore*
- *Unloading normally to within 1m of top of cargo – greatly reduces dust generation*

SMAG
GROUP COMPANY

CASE STUDIES

CASE STUDY 1

COMPANY: TRANSNET PORT ELIZABETH

COMMODITY: MANGANESE

EQUIPMENT: SHIP TO SHORE CRANE

Video

DP WORLD Australia

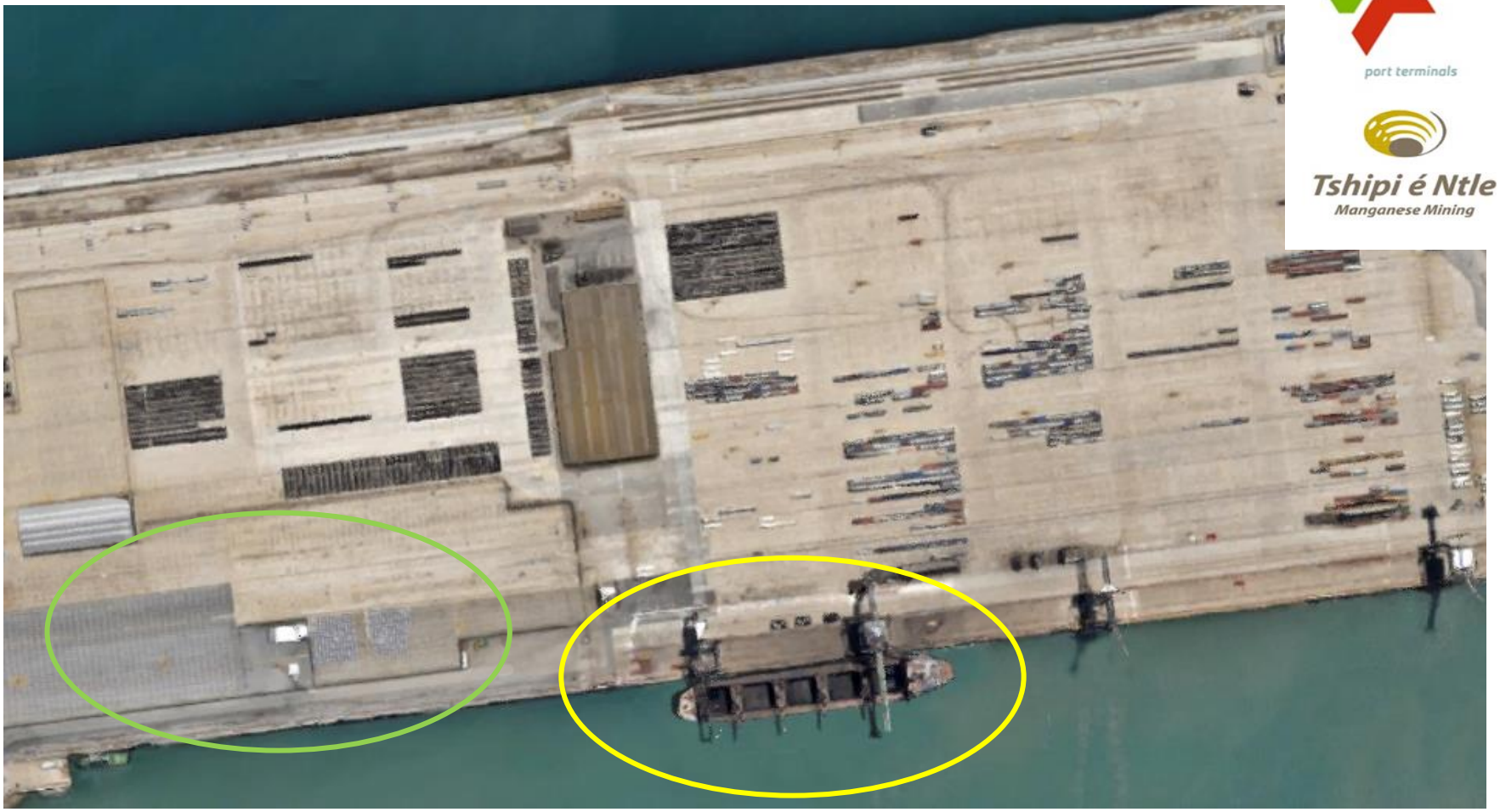
CASE STUDIES

CASE STUDY 1

PORT ELIZABETH

TRANSNET port terminals

Tshipi é Ntle Manganese Mining



CASE STUDIES

CASE STUDY 1

PORT ELIZABETH

CASE STUDIES

CASE STUDY 1

PORT ELIZABETH

TRANSNET port terminals

Tshipi é Ntle Manganese Mining

CASE STUDIES

CASE STUDY 1

PORT ELIZABETH

TRANSNET port terminals

Tshipi é Ntle Manganese Mining

SMAG GROUP COMPANY

CASE STUDIES

CASE STUDY 2

COMPANY: ***TPR ROSARIO***

COMMODITY: ***GRAIN***

EQUIPMENT: ***SHIP CRANE***

CASE STUDIES

CASE STUDY 2

TPR – ROSARIO ARGENTINA

Overview

- First terminal in the world to utilize Containerized Bulk Handling (CBH) to export grain
- The terminal is a key gateway hub for Argentina, handling all types of import and export cargo

Challenges

Growing business of exporting grain required TPR to find a method to improve productivity whilst also simplifying the operation

Limited investment capacity – existing equipment has to be used or modified

Traditional contamination of commodity from open stockpiles

CASE STUDIES

CASE STUDY 2

TPR – ROSARIO ARGENTINA

Fill at Farm

- Agri-bulk loaded into specially designed high cube 20’ containers

Container as Transport and Silo

- Multipurpose use:
  Fill - Transport - Store - Empty - Re-use

CASE STUDIES

CASE STUDY 2

TPR – ROSARIO ARGENTINA

The Problem

Contamination of commodity

Open stockpiles at risk of 'spoil' due to:

- Contamination from vermin & birds
- Moisture

The Solution

Contamination free

CBH contamination free process is down to:

- Commodity being stored in <u>sealed</u> containers
- Commodity kept secure and dry throughout the process

No stockpiles = No contamination!

CASE STUDIES

CASE STUDY 2

TPR – ROSARIO ARGENTINA

Loading

- Fast loading rates with CBH
- Minimal material loss
- **Low capital investment**

CASE STUDIES

CASE STUDY 2

TPR – ROSARIO ARGENTINA

The Solution

Any container terminal

- CBH system allows exporters to take grain to any container terminal

Storage - Sealed Container

- Grain stored in high cube 20’ or 40’ containers with lids
- No Material Loss

Portable

- Containers can be re-located to other operation port (with rotating spreader)

CASE STUDIES

CASE STUDY 2

TPR – ROSARIO ARGENTINA

CASE STUDIES

TERMINAL GROWTH

"DPW Adelaide was an under utilized terminal with low berth occupancy and little growth prospects"

"....to grow the terminal we needed to think outside traditional income sources"

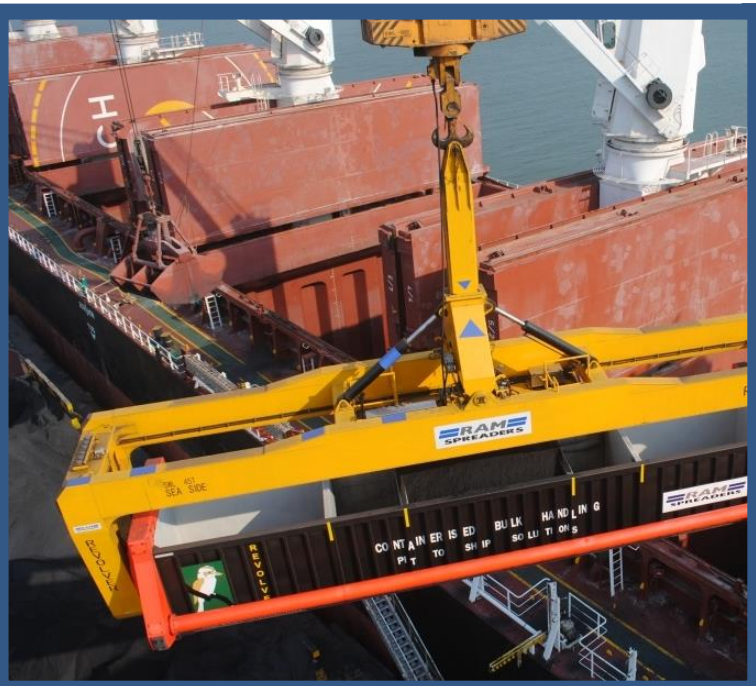
Ray Lee
Regional Director
DPW Australia
2009-2011

DP WORLD Australia

CASE STUDIES

FURTHER EXAMPLES

MAPUTO



COAL

IRON ORE

MANGANESE

COPPER

GRAIN

MHC CRANE

SHIPS CRANE

STS CRANE

CASE STUDIES

FURTHER EXAMPLES

EAST LONDON

COAL

IRON ORE

MANGANESE

COPPER

GRAIN

MHC CRANE

SHIPS CRANE

STS CRANE

CASE STUDIES

FURTHER EXAMPLES

ADELAIDE

COAL

IRON ORE

MANGANESE

COPPER

GRAIN

MHC CRANE

SHIPS CRANE

STS CRANE

CASE STUDIES

FURTHER EXAMPLES

CONGO

COAL

IRON ORE

MANGANESE

COPPER

GRAIN

MHC CRANE

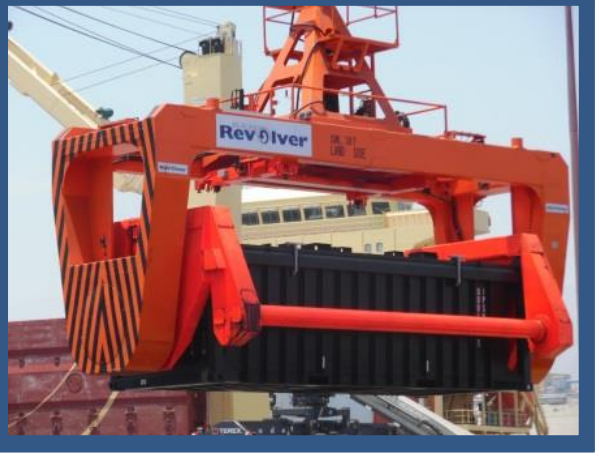
SHIPS CRANE

STS CRANE

CASE STUDIES

FURTHER EXAMPLES

CHILE



COAL

IRON ORE

MANGANESE

COPPER

GRAIN

MHC CRANE

SHIPS CRANE

STS CRANE

CASE STUDIES

FURTHER EXAMPLES

MAURITANIA

FIRST QUANTUM MINERALS LTD.

IRON ORE

CASE STUDIES

FURTHER EXAMPLES

LAS BAMBAS - PERU

COSTINGS

COMPARISONS

MHC Model

- *Cranes x 2 = USD$ 8,000,000.00*
- *Containers x 30 = USD$ 300,000.00*
- *CHE = USD$ 500,000.00*
- *Revolver's = USD$ 1,500,000.00*

= 10 MILLION

Ships Crane Model

- *Revolver's x 2 = USD$ 800,000.00*
- *Misting System = USD$ 200,000.00*
- *Container = USD$ Leased*
- *Fork Truck = USD$ Leased*

= 1 MILLION

BENEFITS

CBH BENEFITS

- Flexible Berths – No fixed bulk berths
- Fast to start
- No dust
- Low cost

BENEFITS

CBH BENEFITS

Cost

- Lower set up costs (No conveyor, ship loaders, storage sheds)

Environmental

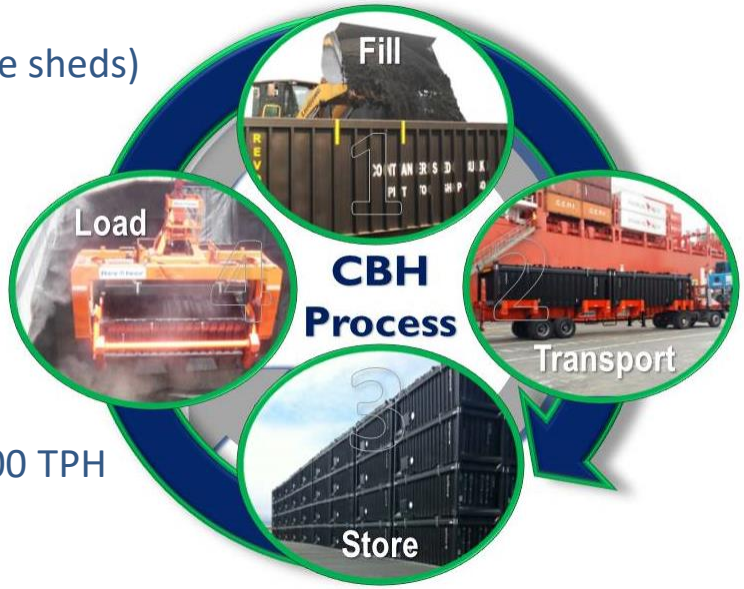
- Zero dust, no clean up
- Best practice by EPA with fast approval

Safe & Fast

- Virtually man less operation with loading rates of 1700 TPH per crane

Proven & Reproducible

- Providing a simple proven turnkey solution to exporters



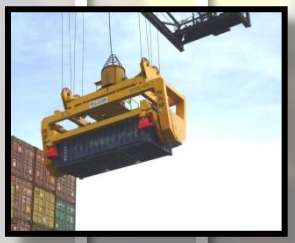
EQUIPMENT

INTEGRATED APPROACH

EQUIPMENT

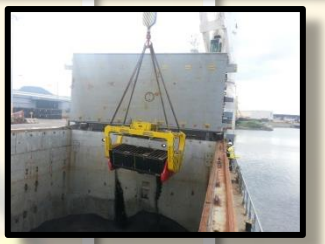
RAM RevOlver™

Ship to Shore



Mobile Harbour

Ship Crane



Reach Stacker

COMMODITIES HANDLED

LOAD & DISCHARGE

- Grains
- Wood Chip
- Coal
- Iron Ore
- Mineral Sands
- Copper Concentrates
- Scrap Metal
- Bagged Material
- Soya








CBH COMPANIES

JOIN THE REVOLUTION!

- *Exxaro*
- *Grinrod*
- *DP World*
- *Eletheni/ SNR*
- *BHP B*
- *Oz Minerals*
- *Hillgrove Copper*
- *Transnet*
- *FQML*
- *TPR Argentina*
- *Ironclad*
- *Patrick*

RAM SPREADERS

JOIN THE REVOLUTION!

"not often do you get a solution that is the lowest cost but also the best practice environmentally"

SMAG
GROUP COMPANY

RAM SPREADERS

AWARD WINNERS

RAM Spreaders & Patrick Ports & Stevedoring winners of the IBJ Environmental Protection Award 2014

GREEN
Environmental Best Practice
Zero Dust ✓
Low Capital ✓
Fast to Market ✓

SMAG
GROUP COMPANY