Safe Work Method Statement
Bulk Loading via ROTABOX

Issue date: 04/06/2025
Review date: 04/06/2026

Assumptions:

- This SWMS is to be used for the loading of Iron Concentrate, Alumina Hydrate and other Bulk Loading cargo using ship crane or mobile harbour crane and ROTABOX™ operation.
- 24 hour operations (day and night) and is used in conjunction with the Vessel Planning Procedure.
- Workplace Inspection Checklist completed
- All other Health, Safety and Environmental controls are in place and adhered to

Weather conditions, time of day, environmental changes etc., berth position are to be determined and discussed at Toolbox meetings prior to commencement.

A JSA is to be used in conjunction with this SWMS if a new hazard has been identified or tasks are identified outside the scope of this SWMS.

SWMS Team (Name & Position):

Kim Murphy – Port Manager
Mandy Richards HSE Advisor

Plant/Equipment/Tools:

- Fast Frame
- Reach Stacker
- Two-way radios
- Tag lines (ship crane use only)
- Fuel Truck & Fire Extinguisher
- Lifting chains
- ROTABOX™, Rescue and Auto Remote
- Container bins
- 8t Forklift
- 16t Forklift
- 2 person Work cage or platform steps
- WAH safety gear
- Safety barriers
- Holding bin
- Spill kit 240L (fuel & oil)
- Portable lighting tower (as needed)
- Vessel Crane / Mobile Harbour Crane
- Trucks (contractors)
- High pressure cleaner
- Fluoro/ marking paint

Training/Qualifications required:

Internal QUBE:

- Ship's crane operator
- General Hand
- Working at Heights
- SWI ROTABOX™ operation
- SWI Forklift operator
- Reach Stacker

External:

- Dogger
- Crane Driver – C1
- Reach Stacker - CN

Permits/licences required:

- High Risk – Forklift
- High Risk – Dogger
- High Risk – C1 Crane Operator
- Reach Stacker – High Risk CN
- MSIC

Applicable Standards, Codes of Practice and guidance:

Refer QUBE Legislative Register for relevant State Standards, Codes of Practice and guidance.

AMSA

- Marine Orders Part 34
- Marine Orders Part 32
- Marine Orders Part 21

Australian Standards

- AS 4991-2004 Lifting Devices
- AS 1403-2004 Design of Rotating Steel Shafts
- AS 4615.2-2000 Series R Freight Containers Part 2:Platfrom and platform based containers
- AS 2550 Cranes, Hoists and Winches
- AS 2359-1995 Powered Industrial Trucks
- AS 1680-1990 Lighting

PPE required:

- Hard hat, Steel Cap Boots, High Visibility Clothing, Protective glasses

As needed:
- Hearing protection
- Protective gloves or Impact gloves
- Disposable overalls/High visual vest
- P2 Masks
- Fall protection/ working at heights (as required)
- Sun/ UV protection (as required)

Inspection requirements:

- Ships Gear Register as per MO32
- Vessel Logs, manifests, summary sheets, clerical records
- Compliance certificate for lifting gear
- Reach Stacker
- Inspection/Maintenance records for Forklift & ROTABOX™
- SHEMS-14-FM-0223 Ship's Crane Checklist
- SHEMS-14-FM-BU001 Machinery Pre-start checklists
- Inspection/maintenance records for MHC

Records/Reporting:

- SHEMS-06-WI-B006 ROTABOX Operation
- SWI-ROTABOX Gear Attachment
- SWI-Forklift Operation
- SWI-Work cage (to follow)
- Truck Tally Sheets

- Lifting gear register
- Equipment register
- Emergency equipment register
- Traffic Management Plan
- RA-Forklift
- RA- ROTABOX
- Reach Stacker
- MSDS

- AS/NZS 1891.4-2000 Industrial fall arrest systems and devices – selection, use and maintenance
- AS1657-1992-Fixed Platform, Walkways, Stairways & Ladder design and Construction
- Australian Standards for PPE

Safe Work Australia
- Code of Practice – Manual tasks 2010

Version	Change from previous	Date	Comment
1.0	First release	25/07/2012	Initial release for new operation
1.1	Reviewed	30/11/2012	Issue for use
2.0	Scheduled review & new Plant introduced	18/03/2014	Mobile Harbour Crane added, all other activities changed to incorporate 7 Safety Keys (*in Italics*)
2.1	Naming convention	17/09/2014	Naming convention
3.0	Review by Tony King	01/05/17	Reference to Reach stacker added. Risk ratings updated to suit matrix. Sign on register removed.
4.0	Scheduled review – Dylan T & Kim M	14/09/20	Additions placed in regarding MHC mobilisation
5.0	Review KM & WD	27/05/22	Dust control of cargo when lifting lid and rotating.
5.1	Reference to silicon dross added	06/06/24	Reference to silicon dross added
5.2	Weather conditions added	14/07/24	Weather condition controls added
5.3	Reference to Alumina Hydrate added.	04/06/25	Reference to Alumina Hydrate added in weather (rain sensitive cargo).

Critical steps in the Activity		Potential Hazards or Human Error (Safety/Environmental hazards identified, including physical environment, human errors, plant and equipment)	Risk Ranking before	Safety Controls (to be Implemented to eliminate or reduce the risk to the lowest practicable level)	Risk Ranking after	Responsible Position/Person
1.1	Toolbox	Employees unfamiliar with the task Employee untrained for task Unidentified communication protocols Workplace hazards not identified / communicated	M13	• Refer to Toolbox Talk for controls • Attendance at toolbox talk to ensure clear understanding of how job is to be conducted, communication protocols, site hazards, what vessel loading plan and jobs assigned	L5	Supervisor
1.2	Preparing for Operations	Unidentified hazards Insufficient supplies/stock Unplanned traffic Emergency situations not identified	M15	• Workplace Inspection conducted and hazards eliminated (see form) • Traffic Management plan in place • Emergency equipment ready and available	L5	Supervisor
1.3	Prepare for operations - Traffic Management	Collision with mobile plant, pedestrians and structures Enter/walk under suspended loads Inadequate pedestrian walkways	H20	• Traffic management plan in place to identify site speed limits, traffic signs, restricted work areas, pedestrian walk ways, safe work zone • Observe designated walkways • Do not enter operating work areas • Do not walk under suspended loads • Barricading designated safe areas	L6	PIC

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2.1	*Access workplace – Pedestrians (all those on foot)*	*Persons not visible on site* *Obstructed walkways* *Unidentified walkways or access areas* *Interaction with traffic or machinery* *communication protocols not identified*	*H20*	• *PPE is worn in all operational areas* • *Use the marked (or barricaded) walkways and ensure they remain unobstructed. Physical barriers are in place to identify and separate pedestrians and work areas.* • *Safe procedures for pedestrians and equipment interaction is noted in the TMP* • *Ensure effective communication between pedestrians, operators of mobile equipment and those supervising equipment operations are in place* • *Traffic Management Plans are developed and implemented on site*	*L6*	*Pedestrians* *Supervisor* *All personnel* *(all those on foot)*
2.2	Access workplace – all workplaces	Personal injury-Slip, Trip, Fall Uneven or slippery surfaces Poor housekeeping, inadequate light	M13	• Observe ground surfaces for obstructions • Good housekeeping protocols observed. Report obstructions • Slippery surfaces/oil spills are cleaned up immediately • Ensure adequate lighting available	VL3	All personnel Supervisor

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2.3	Access workplace – Vessel & Plant & Equipment: - ladders/stairs/gangway - Hatches - Cranes	Personal Injury- fall from height Interaction with 3rd party activity, such as opening hatch lids-personal injury to ship's crew/agents Slip, trip, falls, obstructions and protrusions	M15	• 3 points contacts on ladders (do not use ladders in excess of 6 metres). • If WAH Hazards are identified then use WAH gear. • Use Crane man cage where inadequate or unsafe access to vessel. • Shift manager/Foreman to ensure crew has provided safe access to ship and hold, and ensure that access covers and lids are secure. • Personnel to follow the identified hold access pathway only • Request additional lighting from crew/PIC • Use Australian Standards hatch entries • Ship's crew only to operate hatch lids and to handle pontoons • Stevedoring operations (work area) controlled by QUBE. • Housekeeping and ship awareness • Find safe area when load is suspended	L6	Hatchman Crane driver Supervisor
3.1	*Working at Heights – General*	*Incompetent personnel* *Equipment failure* *Non-compliant anchor points* *Equipment SWL overload* *Inadequate Shock absorbing* *No emergency rescue plan* *Equipment used not fit for purpose*	*H21*	• *All persons are trained and competent to perform the work including the use of fall prevention and protection equipment.* • *All working at heights equipment is fit for purpose, inspected prior to use and maintained by competent persons.* • *Equipment found to be damaged or defective is removed from service.*	*L11*	*WAH user* *Gearman*

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				• *All tools and equipment must be checked prior to use for compliance:* - *Anchor points are tested to withstand 15kN (kilo Newton) and capable of meeting load requirements* - *Full body harness using double latch self-locking snap hooks at each connection* - *Lanyard which incorporates a shock absorber* - *Rescue plan in place to minimise suspension trauma* • *Fall arrest equipment limits free fall to 2 meters or less.*		
3.2	Work at Heights – Using Work Cage	Inadequate access due to blocked entrances Personal injury-fall from height Untrained personnel Faulty equipment	H23	• Fall protection harness must be worn when working from a work cage • Maintain 3-points of contact inside cage. • Ensure crane controls have a dead-man device; otherwise 2 experienced operator s are required. • Only suitably trained and experienced crane operators used to lift persons in work cages. (slow careful movement) • **SWI – Use of Personnel Cradle with Ships Gear**	L11	Shift Manager / PIC WAH trained personnel Crane operator

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4.1	Mobile Equipment – General	Equipment failure Incompetent operator Speeding, impact with other machinery, structures or pedestrians Inadequate traffic signs / traffic management Fall out of equipment Unsecure load Unattended mobile equipment Distractions – mobile phones, electronic devices	H21	• Pre-operational checks are completed prior to commencement of operation. It is mandatory to ensure all safety devices are in operational working order. • Equipment is only operated by trained and competent personnel. • Mobile machinery is operated in a safe manner by ensuring: - Looking out for pedestrians - Adhering to speed limits - Obeying all signs and traffic plans - Wearing seat belts - Securing loads - Not leaving unattended equipment idling - “no seat, no ride” policy • Drivers do not use mobile phones or unauthorised electronic equipment whilst driving.	L6	Machine Operator

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4.2	Mobile Equipment – Operating machinery	Poor communication Personal Injury – struck by vehicle Equipment damage – truck damage when replacing bin Unsecure load Unsafe Access / Egress	M15	• Ensure traffic plan will allow safe operation. • Ensure there is communication with the intended operators. • Drive in reverse when vision obscured • Good communication and visual contact • Adhere to safety protocols when operating machinery such as wear seatbelts, safe access and egress from plant • Forklift operator only engage the container bin when all personnel are standing clear • Pedestrians to stay on designated walkways • Maintain 3 points of contact at all times when access/ egress plant	L6	Machine Operator

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5.1	Crane operations – Pre-operations	Vessel Instability Noncertified crane, equipment failure, Gear failure Equipment damage Suspended loads	H20	• Crew ensure mooring lines are tight at all times and not slack. • Crane Pre-start Checklist completed • Safe Work Load limits are communicated to crane operator. • Vessel lifting gear inspections are up to date • Crane working radius is suitable for the operation and communicated to all parties. • Barricading for designated safe areas, lifting zone and traffic routes • Take-5 is completed prior to mobilisation of the MHC • If the MHC is required to travel in a restricted travel area for the MHC then a Take-5 must be conducted with the; MHC operator, PIC & Dogman • The MHC's are the first pieces of equipment to be mobilised onto the berth & the last to be de-mobilised off the berth.	L11	Shift Manager/PIC Crane Operator
5.2	Crane Operations - MHC	Non Certified Crane, equipment failure Unstable load Non-compliant emergency exit	H21	• Even ground surface • Outriggers fully extended on MHC • Float the load to ensure good stability, winch brake is functional and rigging is secured to the load. • Crane emergency exit identified	L11	Dogman Crane Operator

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5.3	Crane operation – Vessel	Non Certified Crane, equipment failure Non-certified lifting equipment Ship movement	H21	• Ensure lifting equipment checks are completed and block numbers on cranes are verified with ship certification. • Crew are responsible for tightening of mooring lines (instability) • Emergency escape equipment is available where crane does not have safe exit in emergency	L11	Supervisor Crane Operator

5.4	Crane operation – discharge load	Environment – creating dust Equipment damage – contact with ship Equipment damage – lift truck Inhalation of Alumina Hydrate dust Eye irritation from contact with Alumina Hydrate	M13	• Housekeeping and ship awareness • Hatch man wear P2 mask, Saftey Glasses and stand down wind • Alumina Hydrate moisture content maintained above DEM of 1.2% by the way of visual inspection and moisture certification prior to loading. • Discharge load at lowest possible height • Hatch man liaison with crane driver • Maintain required distance (min 2m) from all ship structures • While loading Alumina Hydrate the lid is only allowed to be lifted just off the bin to verify that the lifter is connected. Lid is only allowed to be lifted to its full height once bin is below hatch height. Container must be fully rotated to the home position below the hatch combing before the container can be slewed back to the berth. • While loading Iron Cons the lid is only allowed to be lifted just off the bin to verify that the lifter is connected. Lid is only allowed to be lifted to its full height once bin is below hatch height. Container must be fully rotated to the home position below the hatch combing before the container can be slewed back to the berth. • When loading Silicon Dross rotator must be lower to with in 2 meters of the hatch floor and spread evenly around the hold to ensure no damage is sustain to vessel by falling cargo. Once a base of dross is distributed across the hold all care is to be taken to empty cargo as low as possible to the cargo • All other cargos are to be monitored for dust escaping. Weather conditions need to be	VL3	Hatch man Crane driver

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				monitored and if wind is generating dust from container then the lid must be kept down as per iron cons loading. Container must be fully rotated to the home position over the hatch before the container can be slewed back to the berth. Weather conditions need to be monitored and if wind is generating dust from container then the container must be kept down below the combing as per iron cons loading.		
5.5	Crane operations – MHC/Fast Frame	High noise levels Equipment damage Machinery or personnel in swing zone	H20	• Good steady movements when landing Rotabox onto Fast Frame. • Good communication between all employees. • Barricading, safe zones.	L11	Hatchman Crane Driver Forklift operator Reach Stacker Operator
5.6	Crane operations – move MHC	Damage to equipment Personal injury Damage to berth or structures on Berth. Incorrect levelling procedure of MHC. Spotter not used or not qualified.	H21	• Qualified spotter used (minimum Dogman) • Take 5's completed for every movement. • Clear plan and good communication. • Use auto levelling when levelling MHC.	L11	Dogman (Spotter) Crane Driver

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6.1	Handling Loads - General	Lifting Equipment failure Lifting equipment overloading Incompetent Personnel Unknown communication protocols Access under suspended loads	H21	• Assessment of lift has been completed and the lift method and equipment has been checked by competent person, and has : - Checked all safety devices operational; - Visually inspected the lifting gear; - Rigged the load; - Secured the load prior to the lift. • SWL is known and is less than the lifting device. • Operators of lifting devices are trained and competent for the equipment. • Clear communications are established and maintained between all persons involved in the lift. • No one is positioned under a suspended load or between suspended / lifted load and fixed objects.	L11	Hatch man Crane driver Ground Crew Contractors Pedestrians Reach Stacker
6.2	Handling Loads – Suspending loads Rotabox operation	Equipment damage Overhead cranes Equipment damage – Unauthorised truck moving Personal injury – crush zone between truck and bin or ground	H21	• Ensure all locking devices (twist locks) are released prior to the lift being taken • No one is positioned under a suspended load or between suspended / lifted load and fixed objects. Maintain 10 m clearance when load is suspended. • Golden Rules are communicated to all	L11	Crane Operator
6.3	Handling Loads – Lifting gear	Personal Injury – Crush, nip, pinch fingers Rig Lifting equipment, nip/pinch points	M13	• Ensure all persons handling lifting gear are equipped with gloves. • Lifting gear inspections are up to date	VL3	Crane operator Supervisor

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6.4	Handling loads Perform hatch change Move fast frame	Personal injury – hit by forklift Personal injury – crush from positioning fast frame Equipment damage Poor communication	H19	• Competent/Qualified operators • Good clear communications Clear plan and path	L5	Reach Stacker Forklift Other Ground crew
6.5	Handling loads Element exposure – Weather/rain ingress	Product composition and integrity compromised Slippery surfaces Contamination (including environmental)	M15	• Product is delivered from client site to Picton and held in enclosed sheds at both ends • Rotabox™ containers are loaded in Picton by removing the lid, FEL fills the container and then the lid is replaced • Rotabox™ containers are then transported to the vessel from Picton as a sealed container • Rotabox™ containers are lifted off the truck and placed on the wharf apron with the lids in-place • The crane then lifts the Rotabox™ containers into the ship. The Rotabox™ container is lowered below the coaming of the hold • Once the Rotabox™ container is below the coaming, the Rotabox™ lid lifter lifts the lid and the Rotabox™ container is emptied. • The product will be trimmed across the hold to achieve as flat as possible loading from tipping the product. Heaping is specifically avoided. • The Rotabox™ container is returned to the home position and the Rotabox™ then lowers the lid before coming to shore.	L10	

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6.6	Handling loads Element exposure – Rain	Product composition and integrity compromised Slippery surfaces Contamination (including environmental)	M15	• Specific instructions for the cargo must be discussed and agreed at the Ship to Shore checklist with the Master or CO as per MO P34. • A safe loading plan must be agreed and executed by Qube under the Masters direction. • Concentrate cargos or cargo with TML • Weather sensitive cargos (e.g. Alumina hydrate) are monitored by the PIC. Radar and conditions are monitored for Rain events to close the ships hatch lids to minimise water ingress to the cargo. As Alumina hydrate cargo is sensitive to rain, loading activity must be stopped during rain events and all hatches must be closed. Loading can only resume when the rain is cleared. • For cargos other than Alumina hydrate, hatch lids may be operated ½ closed, however a risk assessment must be conducted factoring in operation distance tolerances. Under no circumstances must the hatch lids be “tented” during the loading of the vessel. All locks must be in during the loading. • Crew may be asked to standby on the chance that the holds need to be closed, however operators must ensure that all lifting appliances and the crane are clear before giving the instruction to close. • After rain has cleared, best practice is the look at the radar and wait to have 15min of clear conditions before opening.	L10	

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7.1	Receiving trucks	Personal injury – hit by vehicles Personal injury – crush zone between truck and bin on ground Poor communication	H18	• Truck drivers received Toolbox and signed JSA • TMP identifies truck wait areas and safe zones • Trucks to wait until signalled into position by ground crew	L6	Ground crew All Truck drivers
7.2	Receiving trucks	Lift trucks – equipment damage Personal injury – hit by trucks Personal injury – hit by reach stacker Damage to berth when landing bins	H18	• Truck drivers to ensure all twist locks are unlocked. • Truck drivers to remain in cab of truck. • Adhere to traffic management plan. • Reach stacker operator to land bin on berth nice and steady. • Good communication with other personnel.	L10	Reach stacker Truck drivers
8.1	Clean empty ROTABOX™ bins	Personal injury – crushed by machine/bin, foreign object in eye, slip over in wet, Manual handling injury	M13	• PPE - eye protection • Awareness of ground conditions, toolbox • Correct ergonomics – manual handling induction • Refer to SHEMS-06-WI-BU004 High pressure cleaner • Damaged equipment (bins/lids) are tagged out for service.	VL2	All personnel

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9.1	Environmental – General, Waste Disposal, Faulty equipment, Contamination land and water, plans	Incorrect waste disposal Uncontrolled environmental spill Spill on landfill or waterways Contaminated cargo	H18	• Small alumina hydrate cargo spill will be stored in skip bins until the vessel has completed loading and will be stored on the berth 5 wash pad. Sweeper truck or skid steer with sweeper broom to contain small quantities of cargo • Large alumina hydrate cargo spills cargo will be stored in rota box containers and will be stored on the berth 5 wash pad. Sweeper truck, Vac truck or skid steer to contain large quantities of cargo • All spills are cleaned up immediately and disposed at CWISE – Nambellup. • All machinery is maintained in accordance with manufactures guidelines • Any contamination to the land or water is reported immediately to your supervisor and the appropriate authorities. • Environmental plans are documented and implemented at all locations, and monitored for change.	L6	All personnel

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9.2	Environmental – Emission to air Cargo Spill, Dust	Release of contaminant Handling DG/HZ cargo Alumina Hydrate dust emissions Inhalation of Alumina Hydrate dust Eye irritation from contact with Alumina Hydrate	M13	• Alumina Hydrate moisture content maintained above DEM of 1.2% by the way of visual inspection and moisture certification prior to loading. • PPE- Safety glasses and dust masks • Vacuum/sweep visible spillage on berth after- or if excessive, during operation. • MSDS sheets available for all DG/HZ cargo stored and handled on site • Sweeper truck or Vac truck to contain large quantities of cargo • Cargo Spill deflector plates are used if risk of DG/HZ cargo to enter water • Reduce dust and spills by lowering loading equipment into hatch/ hopper; and/or closing/covering open panels on grabs • Use dust suppression equipment	VL2	All
9.3	Element Exposure – Noise	Rotator start up Landing bin on ground Truck engine	M13	• Regular maintenance and service of engines, motors and other noisy equipment • Reduced speed limits reduce noise • Hearing protection to be worn during noisy activities	VL2	All employees

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9.4	Element Exposure – Dust	Personal Injury - Dust inhalation Personal injury – Alumina hydrate inhalation or eye contact	M13	• Personnel protective clothing to worn • PPE- Safety glasses and dust masks • Dust mask to be worn where MSDS requires or where cargo is dusty or nuisance • Minimise exposure to cargo by restricting access to hold space	VL2	All personnel

NOTE: Please go and sign the sign-on sheet in the SWI/SWMS register.

Risk Matrix		First aid, near miss, hazard identified, low environmental impact	Medical treatment injury, return to work injuries, some environmental nuisance	Lost time injury, partial impairment, on-site environmental harm substantial environment nuisance	Permanent disability, single fatality, off-site environmental harm, on-site major contamination	Multiple fatalities and/or likely environmental protection agency prosecution
		Insignificant	Minor	Moderate	Major	Critical
Expected to occur in most circumstances	Almost Certain	L 8	M 14	H 19	E 24	E 25
Probably occur in most circumstances	Likely	L 7	M 13	H 18	H 21	E 23
Should occur sometime (occurs 1 to 10 times a year)	Possible	L 4	L 9	M 15	H 20	H 22
Could occur at some time (occurs once every 2 to 10 yrs.)	Unlikely	VL 3	L 5	L 10	M 16	M 17
May occur only in exceptional circumstances (occurs once every 11 to 100 yrs,)	Rare	VL 1	VL 2	L 6	L 11	L 12

(VL) Very Low - the risk should be managed as far as reasonably practicable, work may commence and no escalation necessary
(L) Low Risk- Acceptable region, should be managed routine procedures
(M) Moderate Risk- Risk considerable enough for work not to commence without consideration and use of control measures (such as preparing SWMS)
(H) High Risk- Risk is unacceptable, work must not commence, risk must be treated, if reasonably practicable further consideration given to whether additional control measures are required
(E) Extreme Risk- Unacceptable level of risk, controls must be immediately implemented to reduce risk or the risk eliminated (i.e. cease activity).