

Australian Watertowers

Procedures for Handling a Quickfill tower



QUICKFILL
Patented TM 

General Notes For all Towers

- Individual towers may vary slightly due to our product improvement program.
- Contact your supplier if unsure of any aspects of the tower.
- This document aims to inform the operator, of the recommended procedures for the safe handling of a Quickfill water tower.

General Notes For all Towers

- **Please note:** a free training package to gain a certificate of competency in the recommended procedures for the safe handling of Quickfill water towers is available via our website: www.australianwatertowers.com.au
- We urge you to protect yourself and/or your staff by gaining accreditation.

General Notes For all Towers

- **Do not climb tower under any circumstances**
- Regularly check the tower platform has not subsided, and the tower remains level
- If a storm capable of destructive or cyclonic winds threaten, ensure the tank remains full, or lay tower down
- The tower must be emptied and laid down before being relocated

Before Standing The Tower

- It is essential to be fully prepared, prior to the tower being stood.
- Following these guide lines, should ensure safe operation of the fully engineered and patented water tower.

The Pad

Provide an earth pad or a suitable alternative as a working platform, to support the tower



The Pad

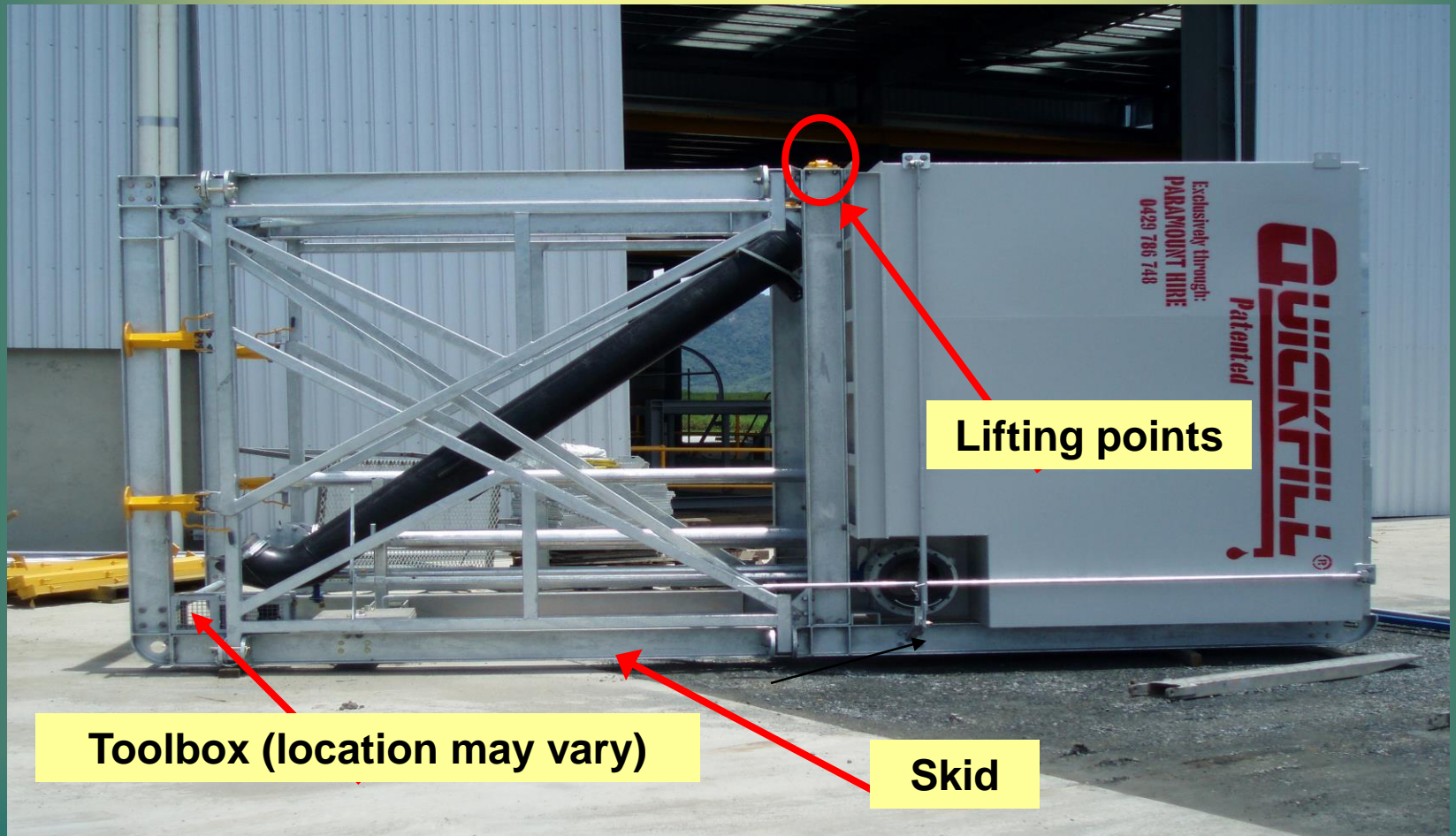
- Needs to be a minimum of 7mtrs x 7mtrs
- Must be capable of supporting the tower's approximate weight of 27 tonnes when full
- Should be flat, dry, free draining with allowable bearing pressure of 100kPa and a minimum 100mm step to the truck filling area, to avoid water damage to the pad.

The Tower Arrives

- The tower will be delivered laying down on it's skids
- There are two lifting points located in the middle of the tower
- Note: the tower weighs approx 6.5tonnes empty.



Skids & Lifting Points



Lifting points

Toolbox (location may vary)

Skid

Unloading and Positioning

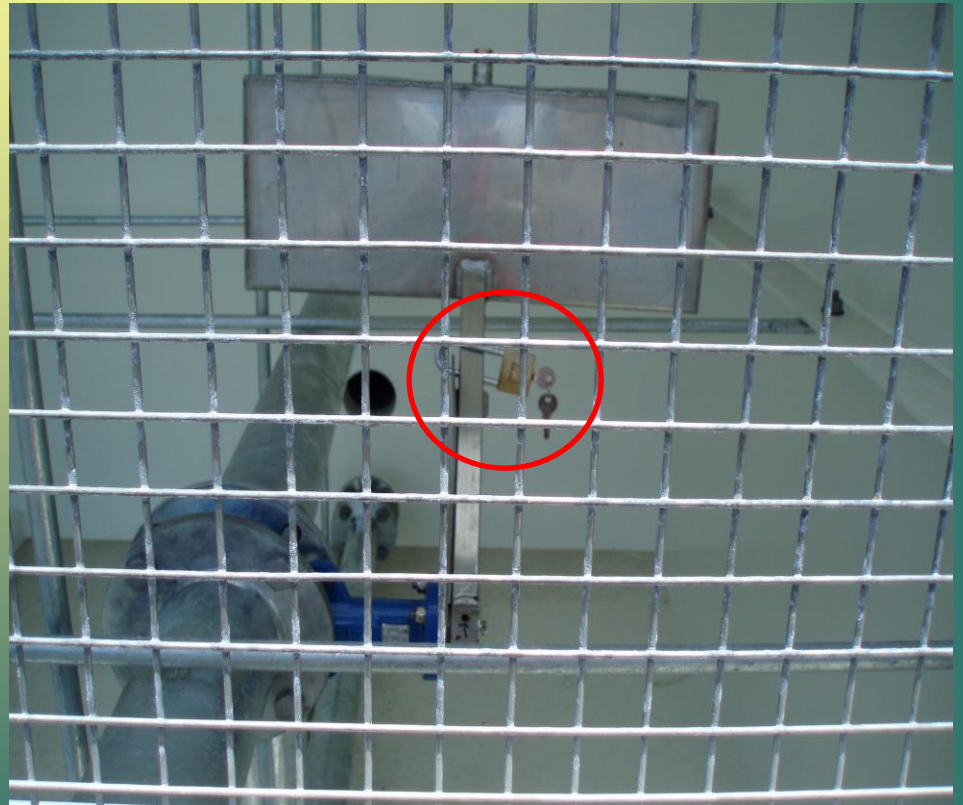
- Engineered lifting points attached, to be used for loading and unloading.
- Ensure only accredited machinery & lifting equipment is used.
- Ensure only competent operators are used for lifting
- Position the tower so when stood, it will be at the centre of the pad



Engineered lifting points

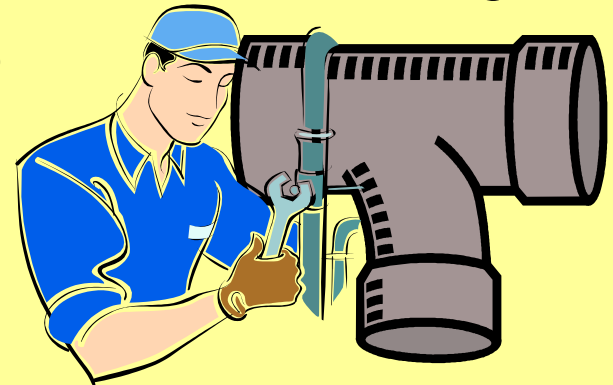
The Float Valve Lock

Remove the internal valve float arm travel lock, before the tower is stood

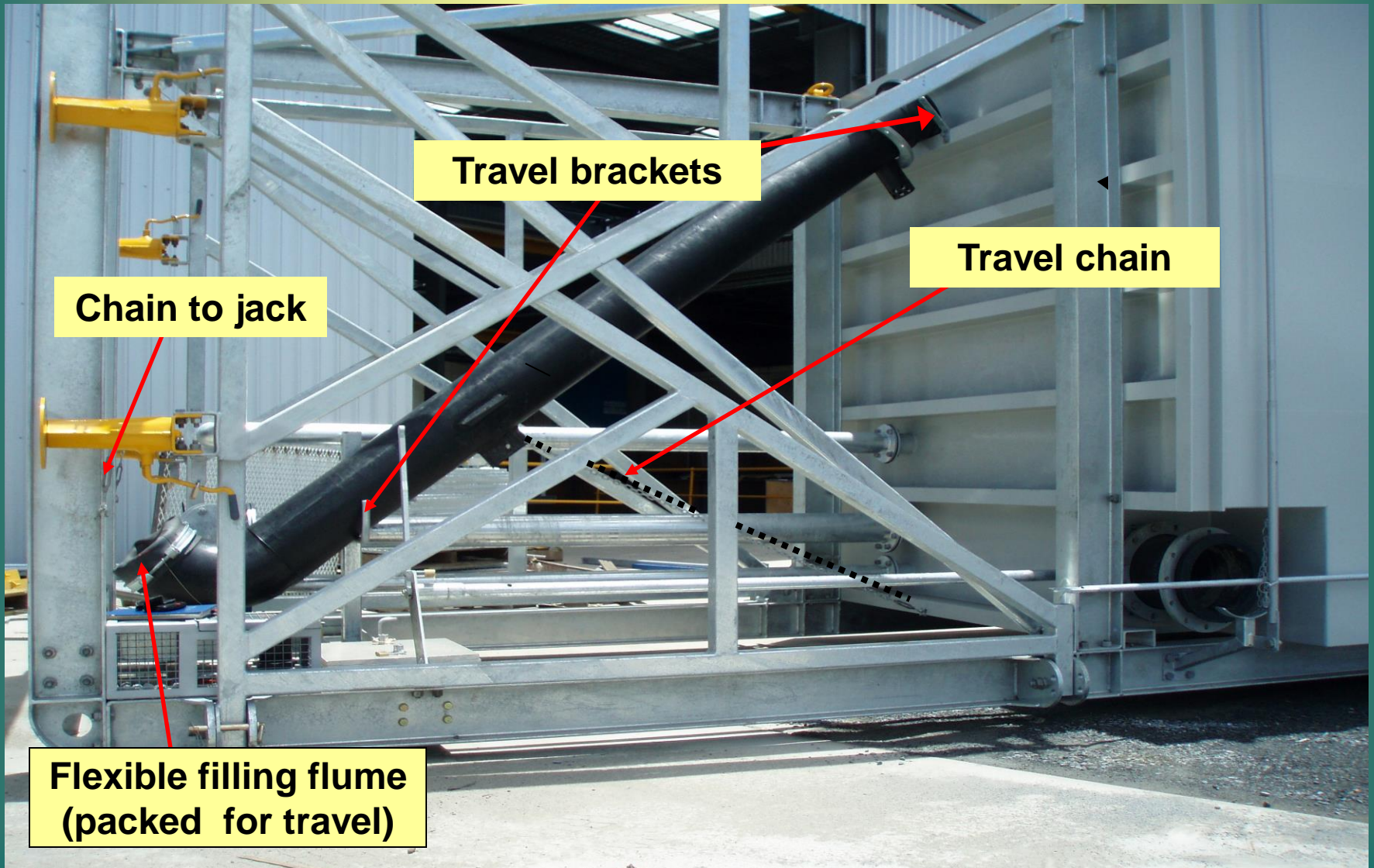


Attaching the Truck Fill Pipe

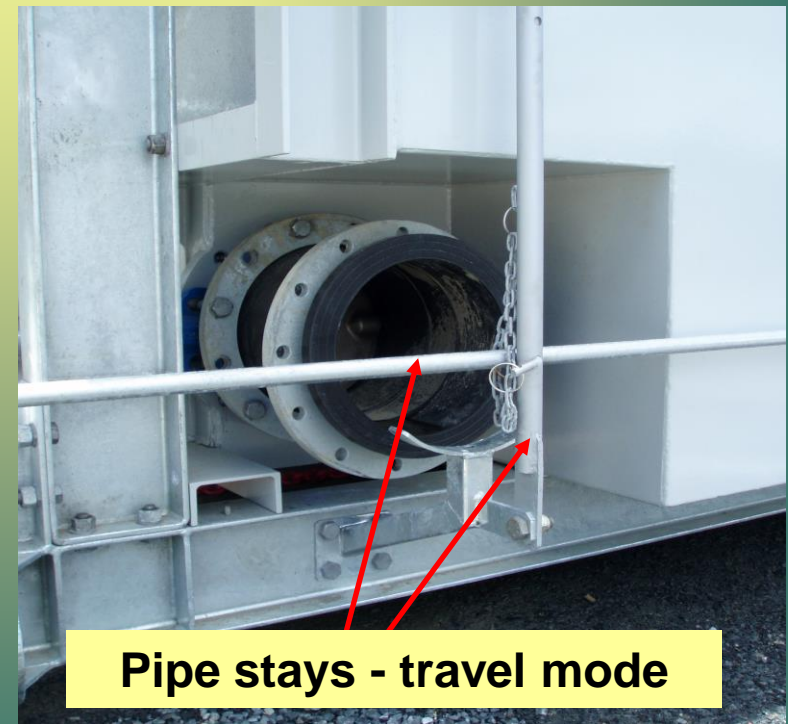
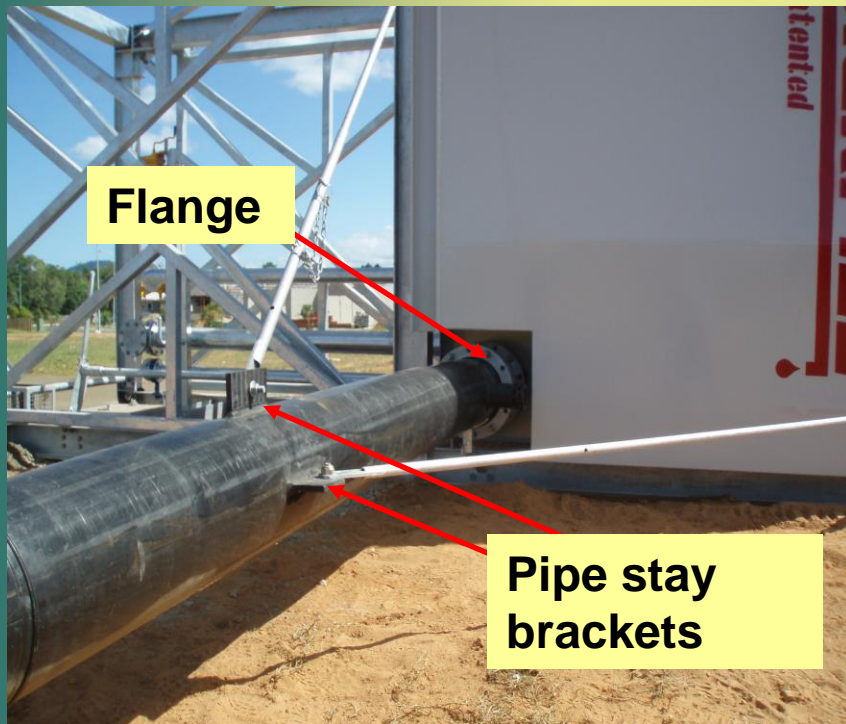
- Before the tower is stood, the black 300mm outlet water pipe requires attachment
- Remove black pipe & pipe stays from travel brackets
- Bolt pipe to valve adaptor flange – a fixed cradle is provided to assist location.
Find 6 x M20 bolts required in toolbox, or on flange
- Attach the pipe support stays to complete the above process



Black Pipe in Transport Mode



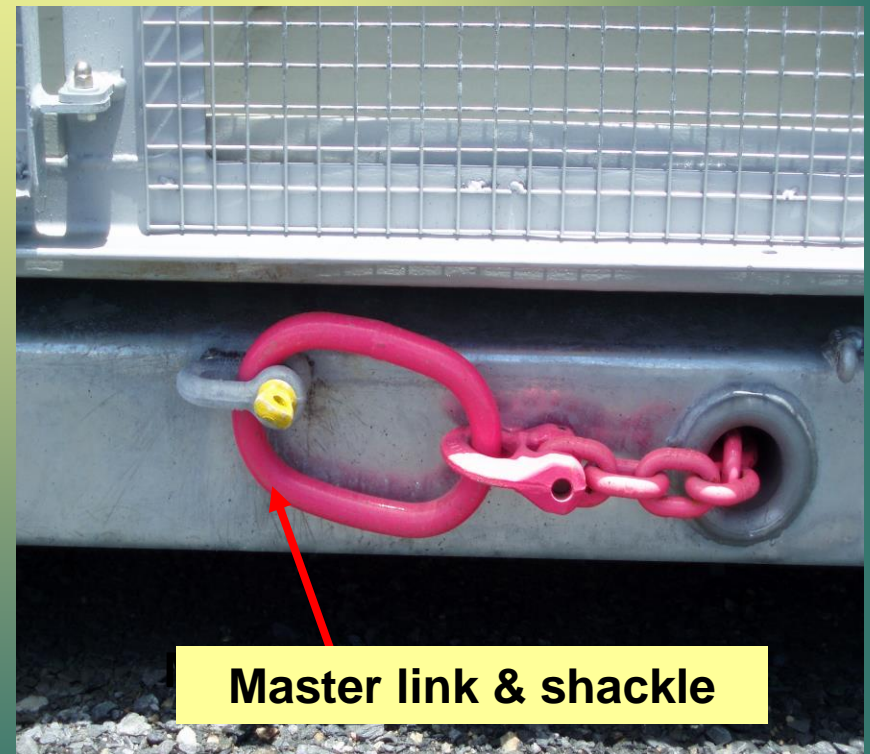
Attaching the Truck Fill Pipe



Pipe stays – Some models have pipe stays and others steel cable.

Standing The Tower

- Ensure the tower is positioned so when stood, it will be at the centre of the pad
- Detach master link from the travel shackle
- Attach the lifting machinery directly to the link – do not add extra chain/sling.



Standing the Tower



The tower must be raised slowly & smoothly



Boom must remain as close as possible to top of tank

Standing the Tower

- Once tower is upright and in correct position, release the lifting chain by unhooking from the lifting ring at the bottom of the tower
- Use machine attached to the master link to draw the chain thru the top beam, so disconnection is within easy reach of ground staff
- Disconnect master link. Lock to lifting ring using the recovery chain, to prevent tampering

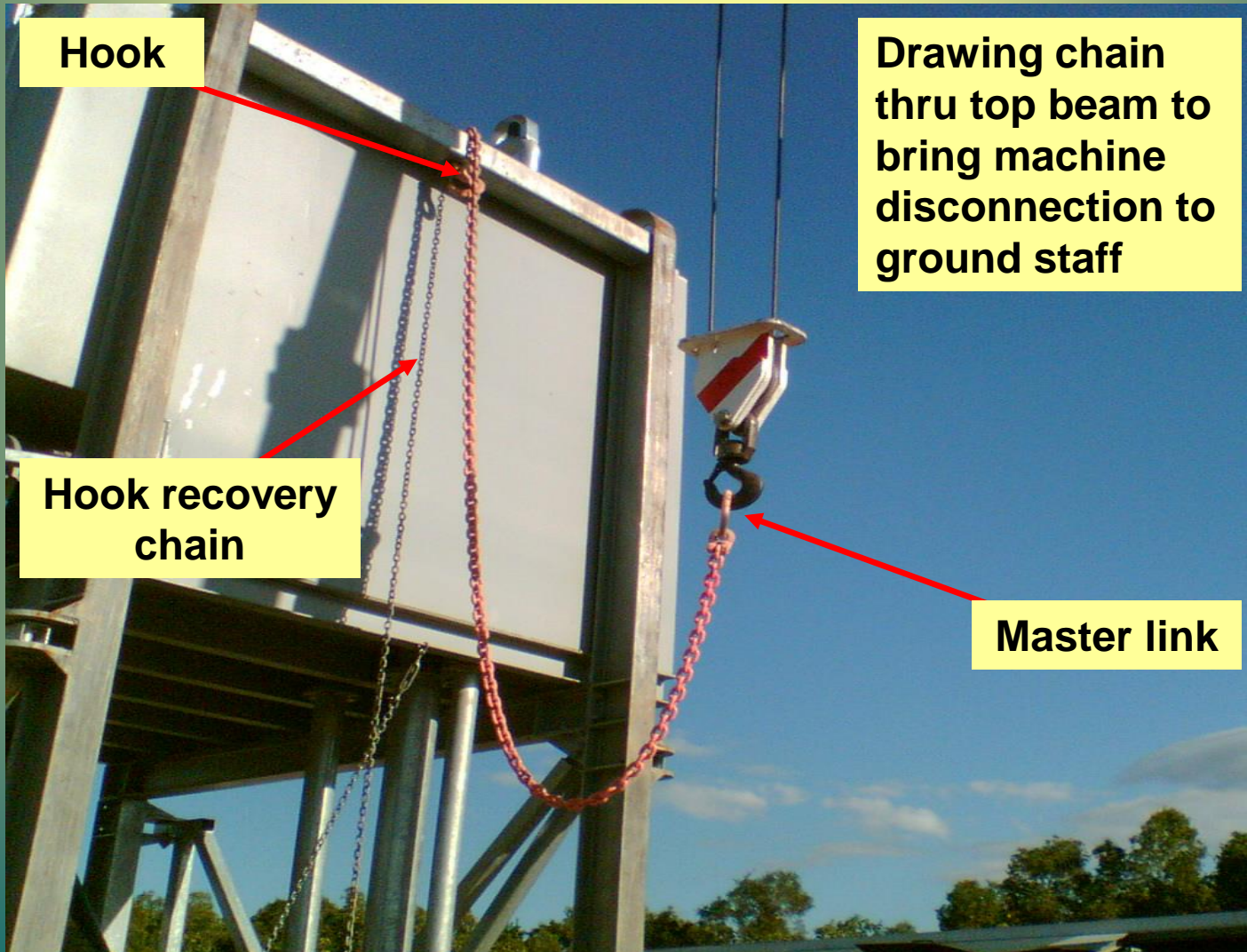
Standing the Tower



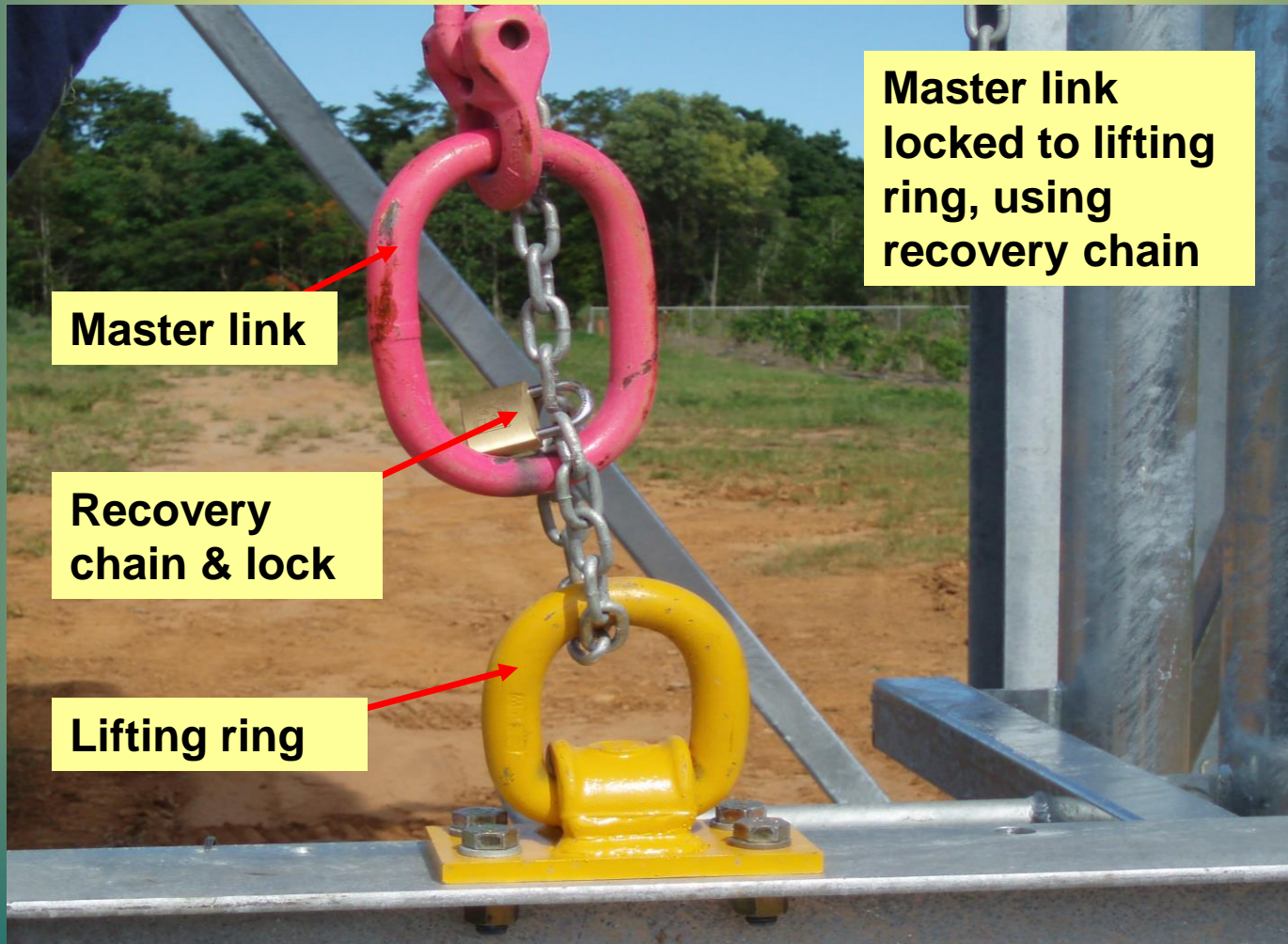
Master link attached to crane hook

Release hook from lifting ring

Standing the Tower



Securing the Lifting Chain



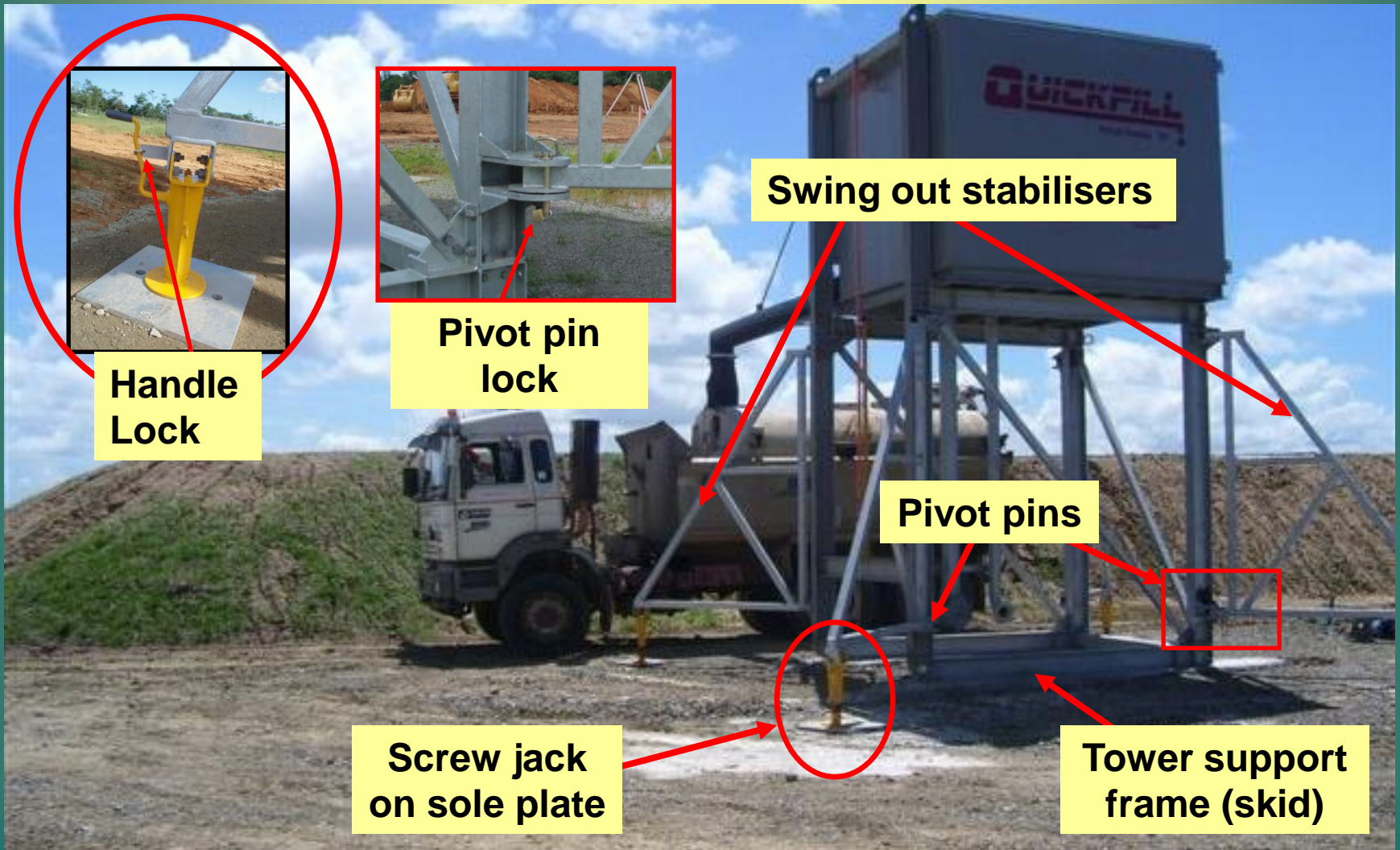
Securing the Standing Tower

- **Swing all stabiliser legs out to approx 45 degrees, & secure in position with the pivot pins provided – replace locks.**
- **Remove sole plates from storage. Place on level ground, centrally under the screw jacks**
- **Wind the jacks down, and use to raise the tower support frame to the level position**
- **Pack under the tower support frame (if levelling required), and lower onto packers. The levelling jacks must maintain a light support to act as stabilisers, and to secure the sole plates**
- **Lock the jack handles to avoid unauthorised adjustments, or sole plate theft.**

Caution:

- * **Only adjust the screw jacks while the tank is empty**
- * **Ensure jacks do not carry the weight of a fully laden tower**

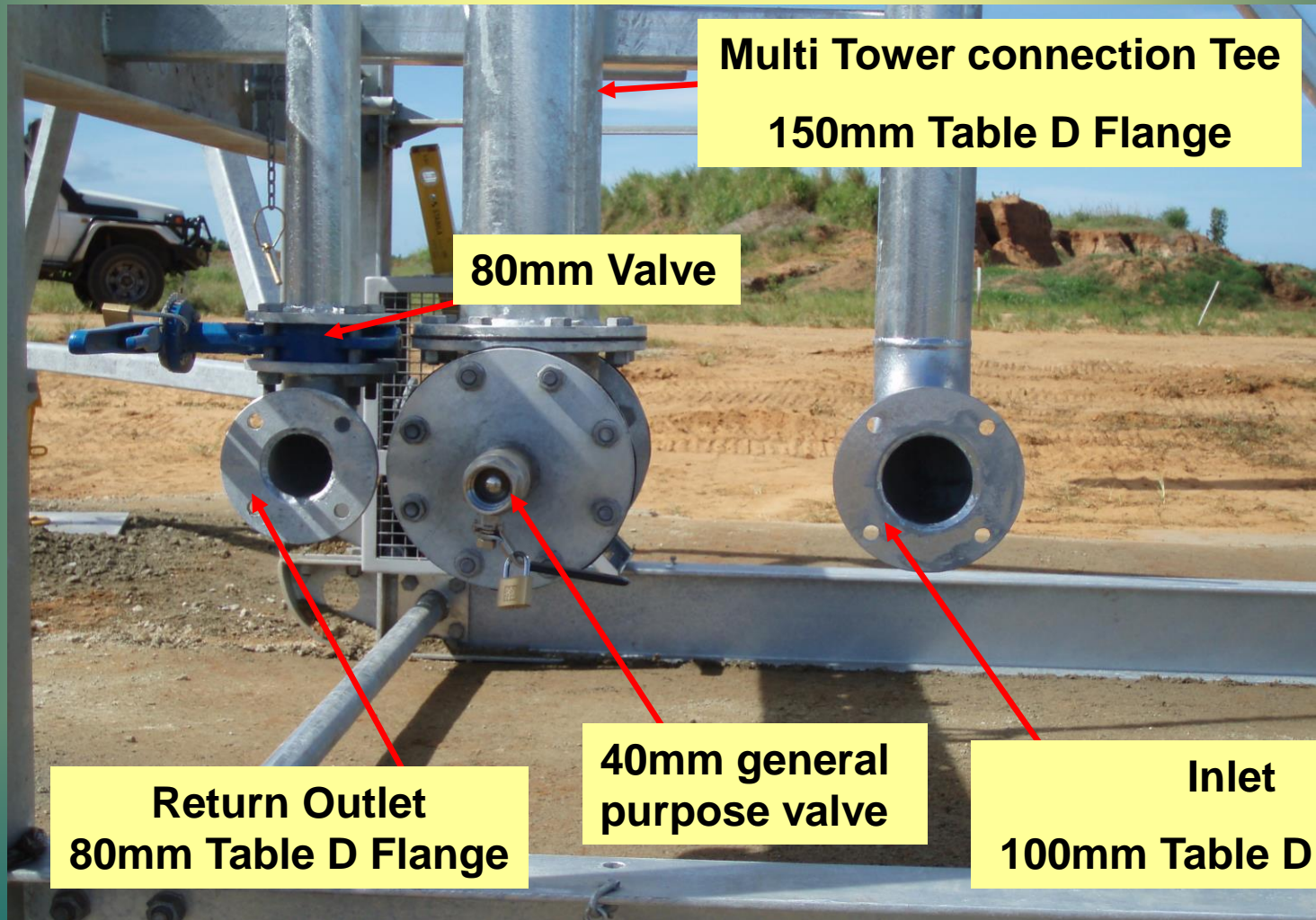
Securing the Standing Tower



Plumbing Connections

- Connect 100mm inlet piping to allow filling by either a standpipe, or a pump.
- If using a pump, you may need to connect the 80mm bypass return line. Check the 80mm bypass valve is open before pumping
- If two or more towers are to be linked, connect them using the 150mm pipe work to allow water levels to equalize

Plumbing Connections



Ready To Operate !!

The



patented and fully engineered water tower
is now ready for use!

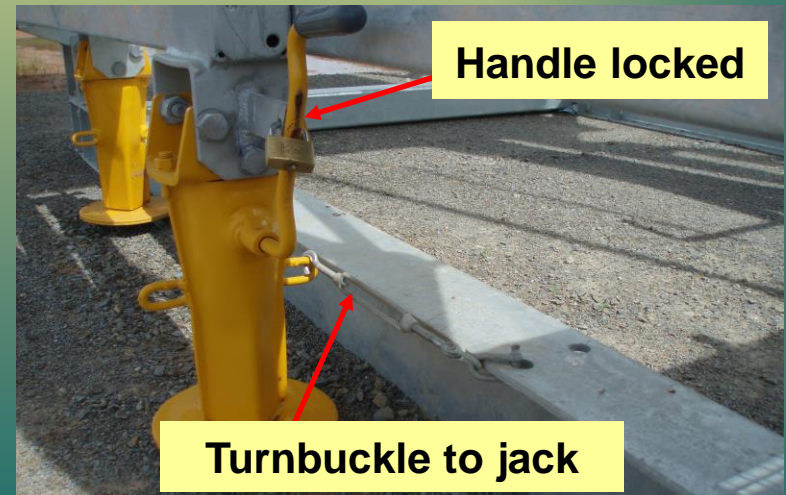
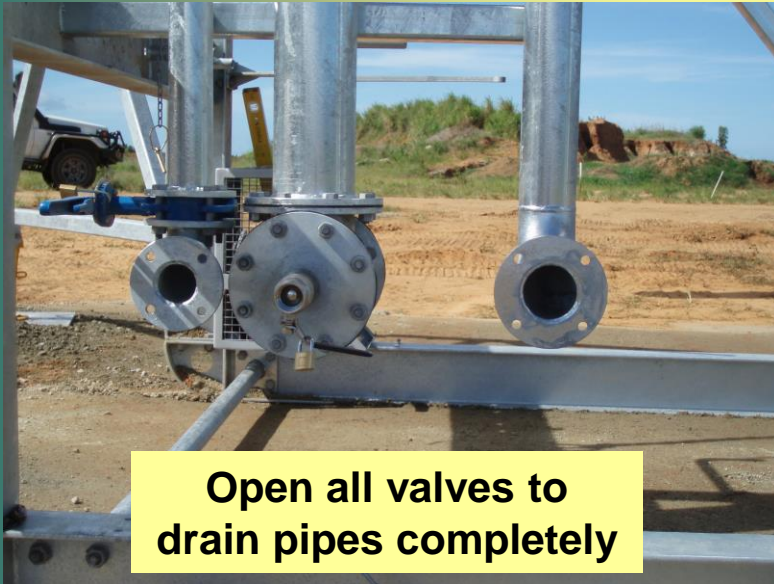
A Quickfill In Operation



Lowering The Tower

- Disconnect all plumbing connections
- Before lowering the tower ensure the tank is fully drained – this includes all plumbing pipes, remember to open the 40mm valve to drain the 150mm linking pipe
- Jacks must be fully raised and the pivot pins removed, before the stabiliser legs are folded in to meet the tower. One stabiliser will fold flush to the Quickfill fold in this stabiliser first.
- Replace & lock the pivot pins. Lock the jack handles.
- Secure the stabilisers using the turnbuckle which connects the screw jack to the tower support frame (skid).
- Store the sole plates using the pin & lock provided.

Lowering The Tower



Lowering The Tower

- Unlock master link from the lifting ring, and attach to the lifting device.
- Have machine raise the chain, while pulling the lifting hook down, using the 6mm recovery chain attached
- Attach the lifting hook to the lifting ring & arrange hook recovery chain in the travel position. Lock chain.
- Move the machine backwards to allow it to gently lay tower down
- Unhook machine from the master link and attach link to the travel shackle

Lowering The Tower



Unlock master link from lifting ring



Attach hook to ring



Raising master link to recover hook and attach to lifting ring

Lowering the Tower



Boom must remain as close as possible to top of tank



Caution re lid damage with hook

The tower must be lowered slowly & smoothly

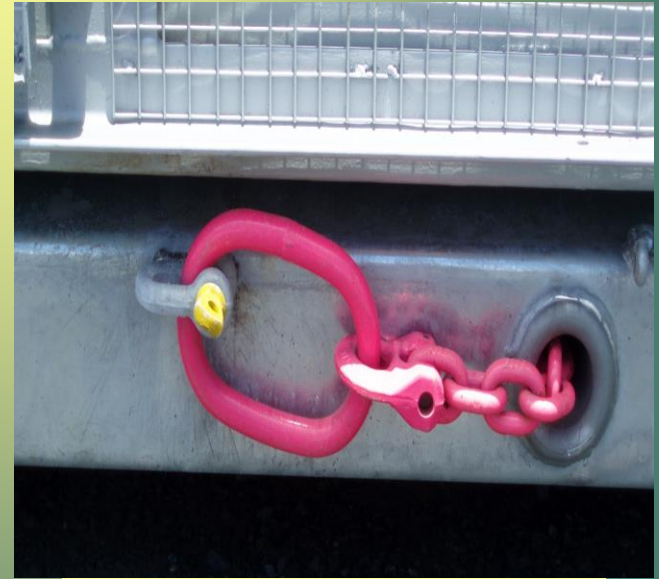
Preparing the Tower for Travel

- Lock the internal float arm & tank lid
- Secure the master link to the travel shackle
- Remove the 300mm outlet pipe
- Store outlet pipe and pipe stays in travel brackets supplied, and secure for travel
- Place bolts, flanges, gaskets etc in toolbox
- Ensure 17 locks (13 std & 4 long shank) are in place

Preparing the Tower for Travel

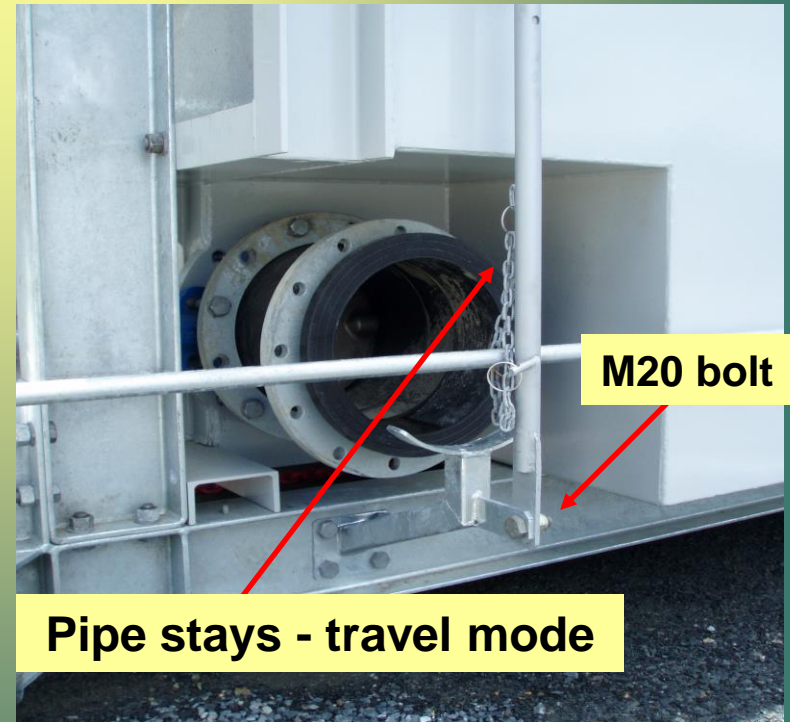
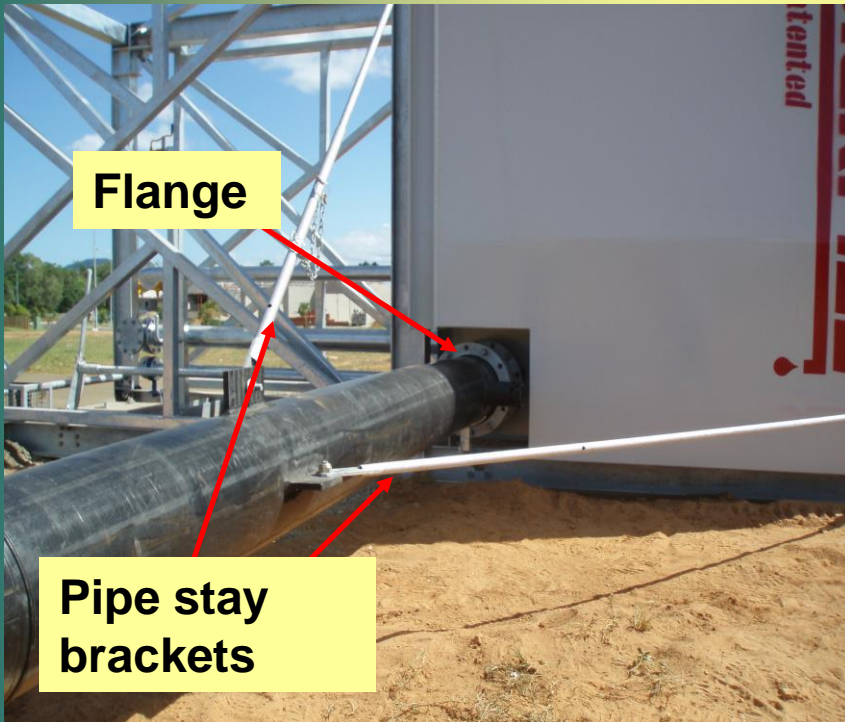


Lock the float valve arm & the tank lid before transportation



Master link to shackle

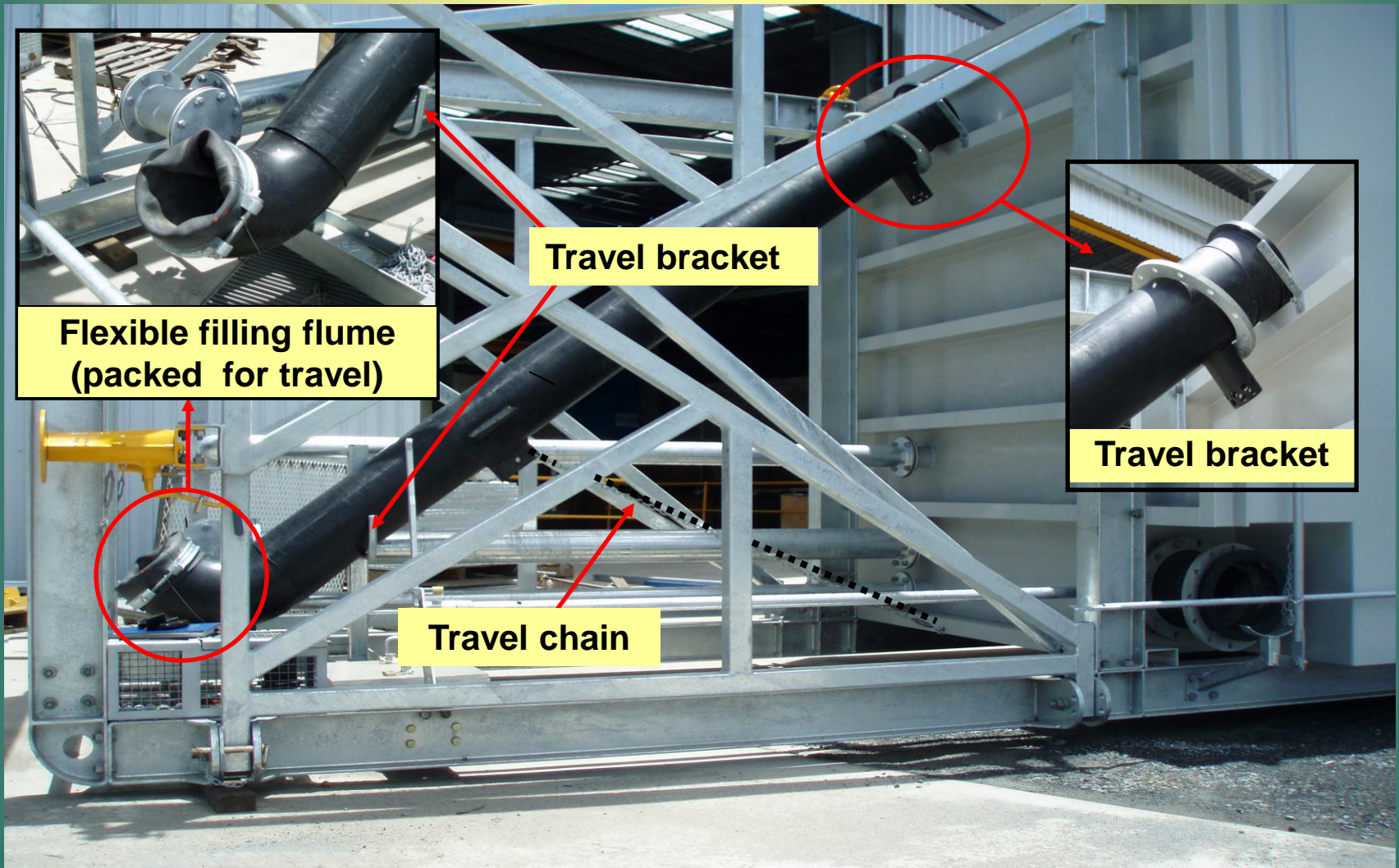
Preparing the Tower for Travel



Note: One M20 pipe stay bolt to be used to secure pipe stays in travel mode. Nip up bolts remaining on large black discharge pipe.

Note: Some Quickfills have steel cable stays

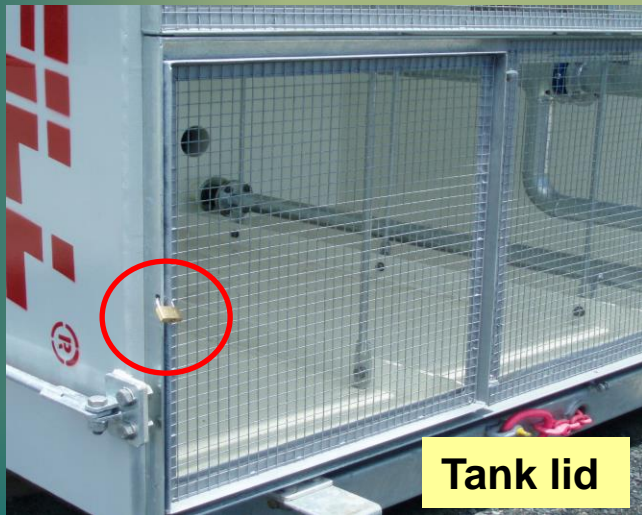
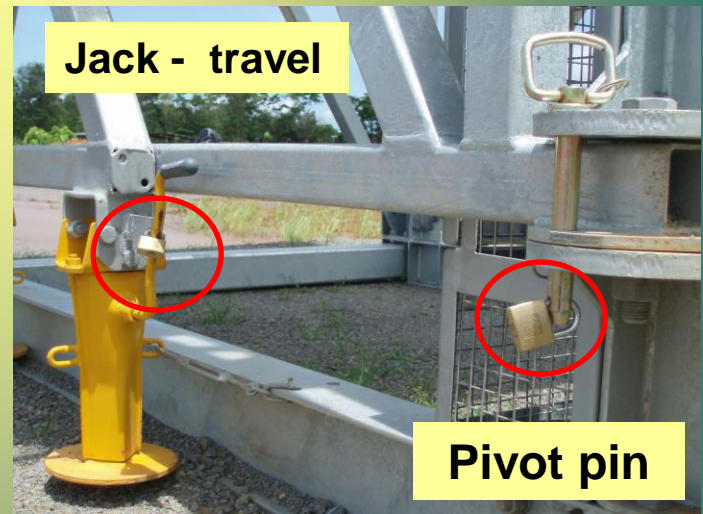
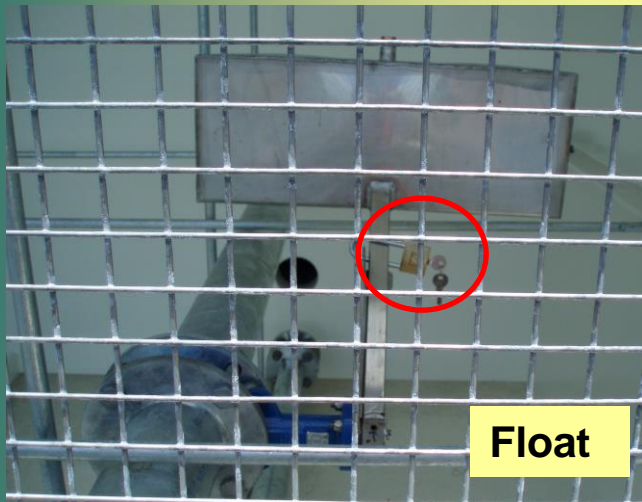
Preparing the Tower for Travel



Toolbox with Spares & Bolts



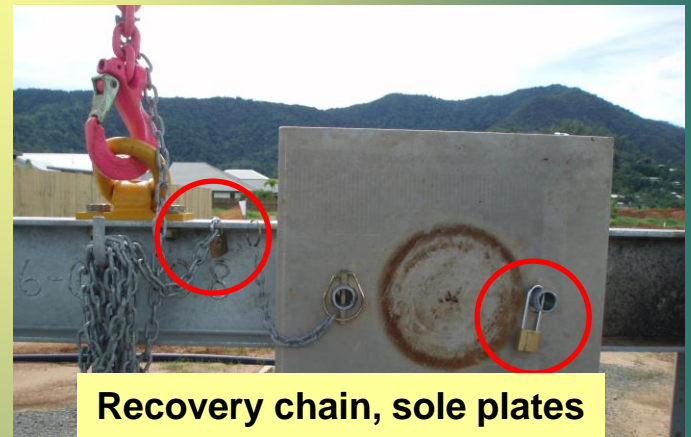
Lock Location Photos – 17 total



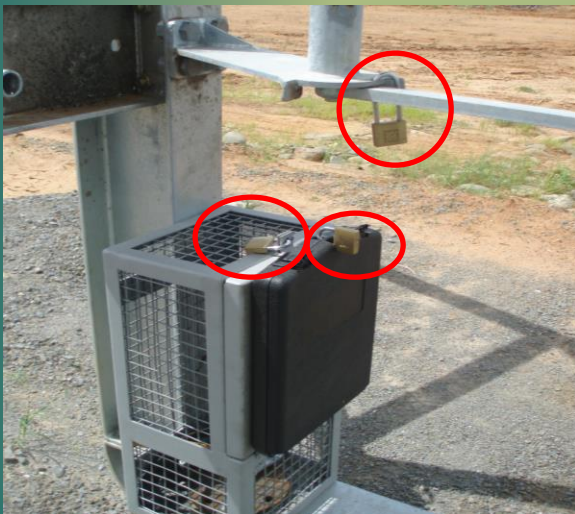
Lock Location Photos – 17 total



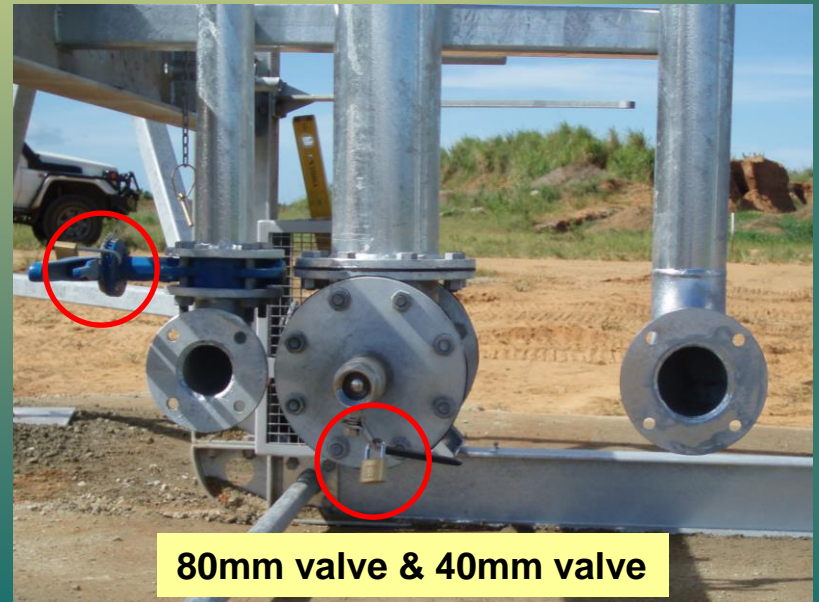
Recovery chain securing master link when tower erected



Recovery chain, sole plates

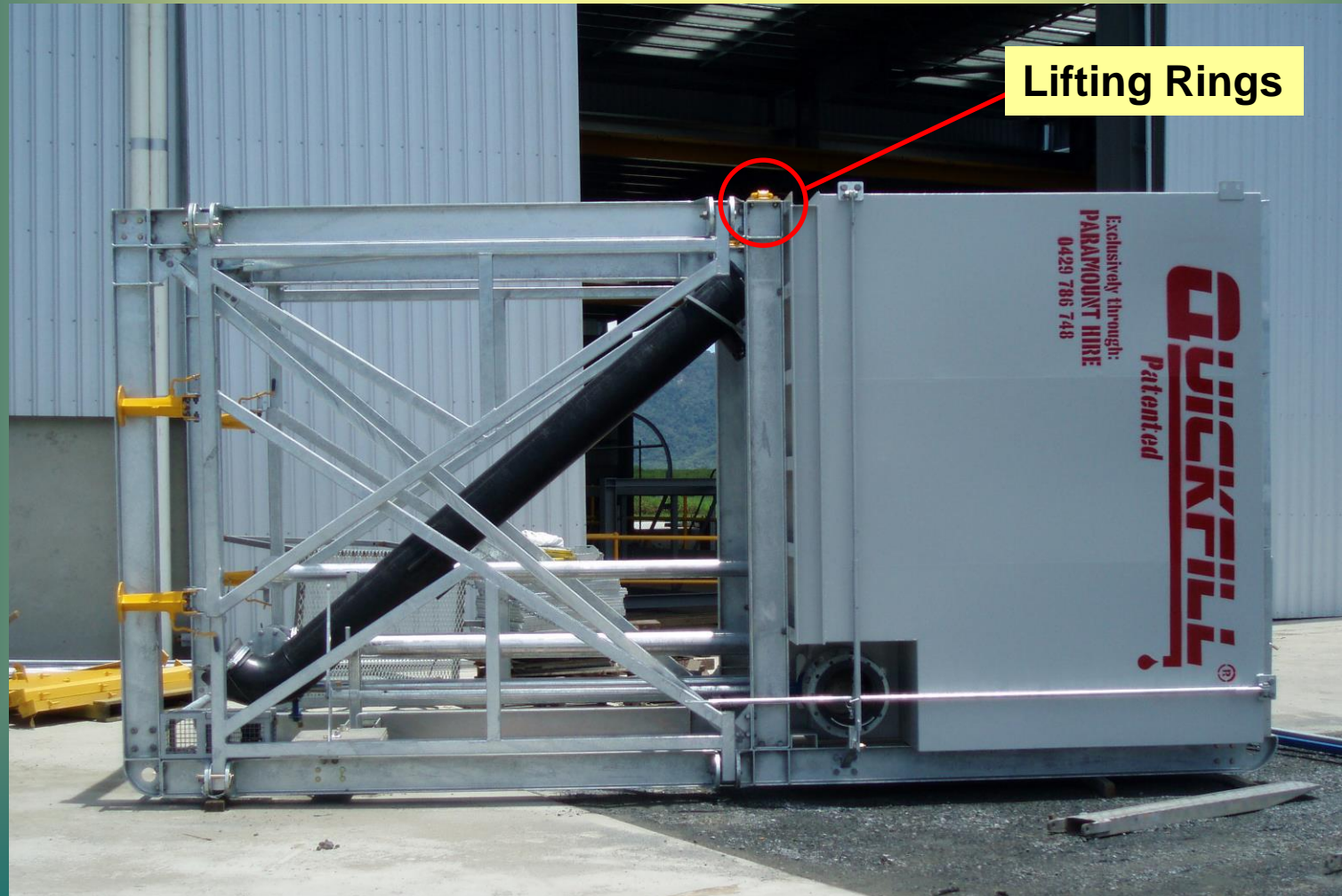


Toolbox, documents, valve handle



80mm valve & 40mm valve

Ready for Transport



Thank you

from Australian Watertowers P/L for considering our patented and fully engineered system,



and trust you experience the economies and convenience, intended in the product design

Load Rating

Johnstone Engineers
Consulting Structural Engineers
ABN 93 932 158 378

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PO Box 2668
CAIRNS, QLD 4870

8 February, 2018

Load Rating to Elevated Pre-Fabricated Water Tank

I, Christopher Johnstone hereby certify the following:

The structural design of the building work described as:

Description:	Elevated Pre-Fabricated Water Tank Structure is steel framed and houses a 20kL tank, supplied with unit.
Base:	Flat, dry, free draining with allowable bearing pressure of 100kPa.
Location:	Varies – Australian territory
Supporting Documentation:	Drawings by Australian Watertowers Pty. Ltd. FINAL ASSEMBLY 17-0110-004 Sheets 1 to 13 Revision 0 Signed and dated by Johnstone Engineers

1) The structural elements identified in the above referenced documentation have been checked in accordance with the principles of structural mechanics and current engineering practice. The structural elements, when constructed in accordance with the referenced documentation will be capable of resisting the stated loadings on this Structural Design Certificate to the degree of protection afforded by the Australian Standards.

2) Operational limitations:

Cyclonic Region B & C

On advice that cyclone is expected to impact within 100km of the tanks location, tank is to be

- Filled and retained with water until cyclonic activity is greater than 100km distant, or
- Drained, laid flat and loose elements fixed to frame

Non-cyclonic Regions A (all)

No special operating conditions are advised as no advance warning for earthquake loadings and minimal advance warning for thunderstorm down drafts

Johnstone Engineers
Consulting Structural Engineers
ABN 93 932 158 378

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Email johnstonec1959@gmail.com
PO Box 2668
CAIRNS, QLD 4870

3) The maximum design loading for the mezzanine floor

Wind loads to AS1170.2	
Region	A,B,C
Building Class	1
Structure Importance Level (as per BCA) equivalent to	2
Region B & C	
V ₀ Ultimate wind speed	63.5 m/s
Wind Classification	C2
Region A	
V ₀ Ultimate wind speed	53.0 m/s
Wind Classification	N3
Earthquake loads to AS1170.4	
Design Category	A
Site Factor	1.5
Acceleration Co-efficient	0.05
Site Soil Classification – S/M assumed	
Base has been designed for an allowable bearing capacity of 100 kPa on a flat site with local drainage away from the base if site conditions are different to this please contact this office for instruction.	

The below listed works are excluded from this certification:

- * Soil classification and testing
- * Local/State Authority Requirements not relating to Structural adequacy (minimum head heights, required floor levels, siting, etc.)
- * Temporary bracing or propping of structure during erection
- * Conformance with elements of the BCA not related to structural adequacy



Christopher Johnstone B.Eng. (Civil)
Registered Professional Engineer, Queensland No. 6394

Risk Assessment



QUICKFILL
AUSTRALIAN WATER TOWERS
TASK HAZARD ANALYSIS

DATE: **PLANT :** **Quickfill Water Tower** **ACN 113 861 457**
JOB DESCRIPTION: Installation and Set-up of Quickfill water tower

STEP NO	JOB STEP List the steps required to perform the task in the sequence they are carried out.	POTENTIAL HAZARD Against each step list the potential hazards that could cause injury/damage when the task step is performed.	RISK RANK before	REQUIRED HAZARD CONTROL For each hazard identified list the control measures required to eliminate or minimise the risk of injury.	RISK RANK after	RESPONSIBLE PERSON
1.	Training and competency.	Serious Injury can occur if procedure for handling and use of Quickfill water towers is not followed.	H	Complete training package and online competency assessment.	L	All Personnel installing Quickfill Water Tower.
2.	Pad for mobilisation of Quickfill water tower.	Tip or fall over. Water damage to pad. Contact with trucks.	H	Follow Quickfill water tower procedure for earth pad.	L	All Personnel installing Quickfill Water Tower.
3.	Unloading and Positioning.	Correct lifting points not used. Lifting equipment not accredited and out of date. Operators not competent.	H	Follow Quickfill water tower procedure. Correct lifting points must be used for loading and unloading. Inspect all machinery and lifting equipment prior to use. Ensure operators are competent.	L	All Personnel installing Quickfill Water Tower.

Risk Assessment



QUICKFILL
AUSTRALIAN WATER TOWERS
TASK HAZARD ANALYSIS

STEP NO	JOB STEP List the steps required to perform the task in the sequence they are carried out.	POTENTIAL HAZARD Against each step list the potential hazards that could cause injury/damage when the task step is performed.	RISK RANK before	REQUIRED HAZARD CONTROL For each hazard identified list the control measures required to eliminate or minimise the risk of injury.	RISK RANK after	RESPONSIBLE PERSON
4	Preparing Quickfill water tower (Attaching Truck Fill Pipe and support stays.)	Nip and pinch points. Tool slippage. Heavy lift.	M	Follow Quickfill water tower procedure. Wear gloves. Use correct tools for the task. Use correct manual lifting techniques.	L	All Personnel installing Quickfill Water Tower.
5	Standing Quickfill water tower into position.	Correct lifting points not used. Lifting equipment not accredited and out of date. Operators not competent.	H	Follow Quickfill water tower procedure. Correct lifting points must be used for loading and unloading. Inspect all machinery and lifting equipment prior to use. Ensure operators are competent.	L	All Personnel installing Quickfill Water Tower.
6	Securing Quickfill water tower with stabiliser arms and jacks.	Nip and pinch points. Tip or fall over. Filling of water tower. Locking pins not used	H	Follow Quickfill water tower procedure. Wear gloves. Ensure all locking pins are used and secure. <u>DO NOT LEAVE QUICKFILL TOWER UNATTENDED AT THIS STAGE.</u>	L	All Personnel installing Quickfill Water Tower.

Risk Assessment



QUICKFILL
AUSTRALIAN WATER TOWERS
TASK HAZARD ANALYSIS

STEP NO	JOB STEP List the steps required to perform the task in the sequence they are carried out.	POTENTIAL HAZARD Against each step list the potential hazards that could cause injury/damage when the task step is performed.	RISK RANK before	REQUIRED HAZARD CONTROL For each hazard identified list the control measures required to eliminate or minimise the risk of injury.	RISK RANK after	RESPONSIBLE PERSON
7	Plumbing Quickfill Water Tower.	Nip and pinch points. Tool slippage. Heavy lift.	M	Follow Quickfill water tower procedure. Wear gloves. Use correct tools for the task. Use correct manual lifting techniques.	L	All Personnel installing Quickfill Water Tower.
8	Quickfill Water Tower Ready for use.	Mobile Plant contacting Quickfill water tower Ground surfaces and erosion	H	Ensure Quickfill water tower access is kept clear Daily inspections of pad area	L	All Personnel using Quickfill Water Tower.
9	Preparing and Lowering Quickfill Water Tower for Transport	Plumbing still connected Water tower still full	M	Follow Quickfill water tower procedure. Ensure Feed water is isolated before disconnecting Empty Quickfill water tower		All Personnel installing Quickfill Water Tower.
10	Raise Jacks and secure arms back to Quickfill water tower.	Nip and pinch points. Tip or fall over. Filling of water tower. Locking pins not used	M	Follow Quickfill water tower procedure. Wear gloves. Ensure all locking pins are used and secure.	L	All Personnel installing Quickfill Water Tower.

Risk Assessment



QUICKFILL
AUSTRALIAN WATER TOWERS
TASK HAZARD ANALYSIS

STEP NO	JOB STEP List the steps required to perform the task in the sequence they are carried out.	POTENTIAL HAZARD Against each step list the potential hazards that could cause injury/damage when the task step is performed.	RISK RANK before	REQUIRED HAZARD CONTROL For each hazard identified list the control measures required to eliminate or minimise the risk of injury.	RISK RANK after	RESPONSIBLE PERSON
11	Lowering Quickfill water tower.	Correct lifting points not used. Lifting equipment not accredited and out of date. Operators not competent.	H	Follow Quickfill water tower procedure. Correct lifting points must be used for loading and unloading. Inspect all machinery and lifting equipment prior to use. Ensure operators are competent.	L	All Personnel installing Quickfill Water Tower.
12	Ready for Transport	Arms and travel chains not secured correctly lifting equipment not secured locks not fitted	M	Ensure all locks chains, locking pins and tools are in correct position before transport.	L	All Personnel installing Quickfill Water Tower.

Risk Assessment



QUICKFILL
AUSTRALIAN WATER TOWERS
TASK HAZARD ANALYSIS

APPENDIX A:

RISK ANALYSIS REFERENCE TABLES

TABLE 1

Likelihood	Probability	Description
Almost Certain	Common or repeating occurrence	More than once per month
Likely to occur	Known to occur (it has happened)	Less than once per month but more than once per year
Moderate	Could occur	Less than once per year but more than once per five years
Unlikely	Not likely to occur	Less than once per five years
Rare	Practically impossible	Unlikely ever to occur

TABLE 2

Consequence	Examples		
	Injury	Environmental	Financial
Very Low	Minor injury	Zero impact to environment	No effect on work schedule (<\$1000)
Minor	Medically treated injury	Minor impact (containment)	Minimal effect (\$1000 to \$10,000)
Moderate	Lost time injury (<2 weeks)	Impact localised	Significant effect (\$10,000 to \$50,000)
Major	Lost time injury (>2 weeks)	Off-site impact	Major effect (\$50,000 to \$100,000)
Catastrophic	Fatality or permanent disability	Major impact (long term)	Project halted (>\$100,000)

TABLE 3

LIKELIHOOD	CONSEQUENCE					RISK RANKING
	Very Low	Minor	Moderate	Major	Catastrophic	
Almost Certain	L	S	S	H	H	H = High S = Significant M = Moderate L = Low
Likely to occur	L	M	S	H	H	
Moderate	L	M	S	S	H	
Unlikely	L	L	M	S	H	
Rare	L	L	M	S	H	