

# Mesa J Tower Demolition



# Core Services Accountabilities

There are approximately 200 masts and towers across the Pilbara that exceed 20m in height, Core Services are accountable for the maintenance and structural integrity of these structures

- Structural loading assessments
- Structural integrity inspections (3 yearly masts and 5 yearly towers)
- Quarterly planned maintenance visual inspections
- 22kN temporary anchor point assessments
- Maintenance of general arrangement drawings
- Radiation assessments (RADHAZ)
- LADSAFE climbing system inspections and certification
- Capital for tower strengthening
- Capital for additional and replacement towers
- Demolition of towers no longer required or meeting AS1170 standards

# Mesa J Tower – Structel Report

- 31.5m Hills 305mm mast mounted on HEW building roof
- Building roof height is approximately 15m
- Last structurally assessed in 2006 by Structel Engineering against AS1170 for 1/500 year event
  - (Region C, terrain category 2 and topographical multiplier of 1)
- North guy located at incorrect angle to other guys
- Legs and bracing loaded to 110%
- Assumption total cable width area 140mm if more then loading on tower is greater
- 85kN mast load on base structure, no assessment on roof capacity for this load

*Note: This is a desktop analysis based on general arrangement drawings and tower design drawings*

# Reason for Demolition

- No planned maintenance has been conducted on this tower since 2006 (13 years)
- No structural integrity inspections completed since 2006
- LADSAF system not assessed since 2006
- There is a risk of the tower failing during a cyclone
- Corroded antenna and brackets can be a source of generating interference with other working systems
- Planned demolition vs unplanned failure, potential damage to other infrastructure
- Assets no longer in service should be decommissioned/recovered

*Note: The last time the tower was accessed was by man cage for paging installs and Telstra microwave dish removal*

# Mesa J Tower – Roam Report

This is a climb ability report not a full blown structural assessment for a 1/500 year event

- Roam assessed the tower for climbing in August 2019
- Assessment was based on a maximum wind speed of 20m/s (72km/h)
- Mast weight assessed as 370kg with an additional 390kg attributed to antenna, brackets and feeder cable
- 55kN mast load on base structure, no assessment on roof capacity for this load

## Recommendations

Climbing the mast at wind speeds of 10m/s (36km/h) or less using 22kn temporary anchor attachment points

*Note: This is a desktop analysis based on general arrangement drawings and tower design drawings*

# Core Services Tower Demolition History

Core services have undertaken the demolition of a number of towers across the Pilbara in the last 10 years, always using the same demolition contractor (CCR).

- 7 Mile tower located on the train control tower roof – 33m (complexity 7/10)
- Dampier main admin mast – 30m (complexity 3/10)
- Western Creek HF mast – 20m (complexity 4/10)
- Dampier Bowls club HF backup masts x 2 – 18m each (complexity 3/10)
- Southern Fortescue collector mast – 18.5m (complexity 3/10)
- Southern Ridge mast – 28m (complexity 4/10)
- KP5 mast – 70m (complexity 8/10)



# Towers Demolished



# Catalyst Communications Rigging (CCR)

CCR have been selected to complete the demolition works for the Mesa J tower

- Working relationship with RTIO ~20 years
- No serious incidents with RTIO reported
- Carried out the demolition of all our towers in the past
- Have a demolition licence WAD292, expiry March 2021
- Passed a recent audit by Worksafe, July 2019
- They complete most of our 3 & 5 yearly structural integrity inspections
- They build most of our new towers on site
- Level 2 risk assessment completed with CCR for this job
- Purchase order is in place for the work



# Method of Procedure

It is proposed to climb the mast attach the straps to the crane, basic steps below

1. Pre view top stay connections from drone footage to ensure no obvious defects
2. Review risk assessment on the day, ensure ground stay attachments are in order
3. Wind is at 10m/s or less
4. Climb the mast attach 3 straps 1m from the top around each leg
5. Attach straps to crane hook
6. Crane has load cell fitted, take up ~70% of tower load
7. Loosen base plate nuts leaving bolts in situ
8. Loosen stays systematically and secure to the mast
9. Clear the roof area and surrounding drop zone of all personnel
10. Lift mast off base and slew to laydown area
11. Laydown mast and disassemble for removal

# Base Plate Bolts



# Summary

- Plan to complete this work in November pre cyclone season
- Schedule for over a weekend to reduce impact to site operations
- Clear all surrounding area of personnel for the duration of the high risk work
- Estimated demolition to take approximately 3 hours
- CCR have rated this a complexity 4/10 task
- Core services will manage the CMS for this work
- Core services seek approval from mine leadership to proceed with the work
- Mine leadership to provide support to clear the area for the high risk work period

*Alternatives: Leave tower in situ and mine to take over full responsibility for the asset, section 44 to be completed in this instance*