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Evacuation & Rescue from a Deep tank

Watercare

water NEW ZEALAND
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Evacuation/Rescue Plan from a Deep Tank

When reviewing the effectiveness and cost efficiency of Evac & Rescue plans from a Reactor Clarifier (RC) it highlighted a few areas of discussion & improvement…

- Gain consistency across contractors (internal & external).
- Identify cost effective way of ensuring evac/rescue plan is in place.
- The need to practice the rescue plan to check it works.
- Participation of everyone to experience & be comfortable that it is the right option.
- Having professionals in the rescue space, (FENZ & St Johns), involved & familiar with our site, their associated hazards & proposed evac/rescue methods.

Current Evacuation/Rescue Methods

Current methods listed on RC rescue plans include…

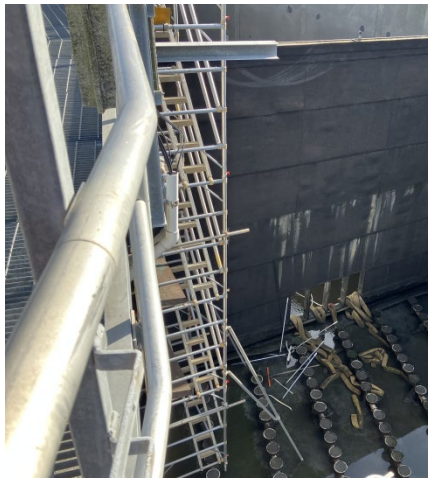
- Self rescue using tower scaffold with egress via ladders & platform hatches.
- Tripod or davit arm to winch person in harness out.
- Crane on standby using man cage lift to remove person.

Practicality and Cost of Existing Plans

- **Winch person in harness via tripod or davit arm**
  - Only if injury/medical event allowed.
  - Winch/Davit Cost for 6 weeks = $1,200.

- **Self or assisted rescue by tower scaffold with egress via ladders**
  - Only if injury/medical event allowed.
  - Scaffold Cost for 6 weeks = $7,000.

- **Crane on standby & use man cage to lift person out**
  - Limited space in single man cage.
  - Crane Cost per week = $15,000.
  - Total cost 30-40K for 6 weeks.



Aim of the Rescue Exercise

After a series of workshops, to engage with staff and other emergency professionals, a preferred solution was identified.

The exercise was to trial the proposed option to practice a safe and effective rescue of an injured person, or someone who has had a medical event, from a deep tank (RC) on the Mangere WWTP facility.

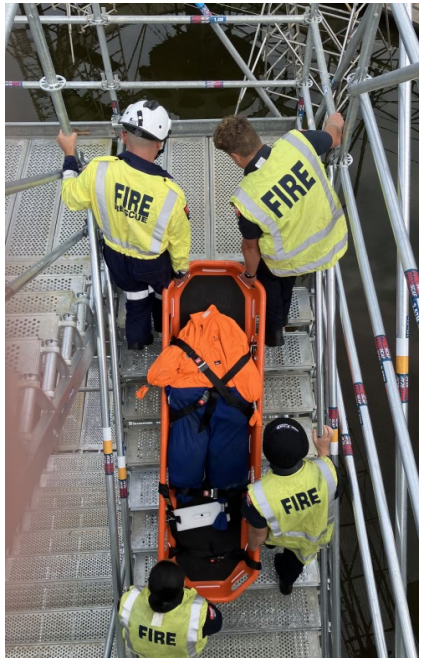
- Perform a rescue using a stretcher with 80kg dummy (Sandy Deadweight) using the scaffold tower stairway.
- One trial from both the Clarifier & Reactor.
- Then have open discussion with staff & professionals to get feedback on the experience.
- Gain consensus from all on mutual approach for evacuation & rescues from an RC.

Reactor & Clarifier (6.5+m deep)
New scaffold tower with 4 flights of 1.4m wide stairs

Lessons Learnt

Overall, it was a great exercise with positive feedback, great learnings and experiences.

- Multiple FENZ stations now have familiarisation of our Mangere WWTP site.
- FENZ & St Johns have endorsed our approach and method.
- Staff have openly discussed the options and feel included.
- Everyone was surprised at effort required to carry a stretcher with just 80kgs and realised the previous options were lacking.
- Cost for new approach is 20k for six weeks.
- Next step is investigating cost to fabricate a stairwell structure that can be used in all RCs at Mangere.

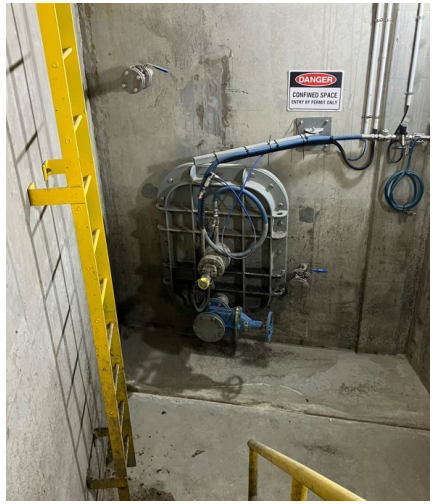


- 51 staff, 10 x 4-person FENZ crews, 8 St John medics & 10 contractors participated

Incorporating Lessons Learnt

To take advantage of the lessons learnt the following actions are recommended…

- Share the exercise approach and learnings with other Facilities and Infrastructure Managers.
- During design consider, where possible, engineering appropriate access/egress into deep tanks.
- Work with HS&W team to set a standard for minimum access/egress from certain deep tanks.



Designing access into tanks

- BNR tank lower access (6.5m deep)
- Digester 8 lower access (8m deep)

Open Discussion

Any Questions?