QUESTION ON NOTICE

No. 640

asked on 25 May 2021

MR C BOYCE ASKED THE MINISTER FOR REGIONAL DEVELOPMENT AND MANUFACTURING AND MINISTER FOR WATER (HON G BUTCHER)—

QUESTION:

Will the Minister (a) advise what are the structural and/or engineering problems that have been identified by SunWater that require the removal of the Callide Dam gates, resulting in the reduction of the storage capability of water by over 80,000 ML and (b) give an undertaking that the gates will be repaired and reinstalled?

ANSWER:

The Member's questions can be answered by reference to the information provided to him by Sunwater during the Member's briefing on this matter on 13 May 2021.

I have attached the Powerpoint presentation used in that presentation for the member's benefit, if he has misplaced the copy given to him in May.

sunwater

Callide Dam Gates Project

May 2021

Agenda

- Spillway gates history and vibration occurrences
- Project and objectives
- Current environment
  - Gate elements and operation
- Project work packages
- Temporary full supply level
  - Possible solution to secure additional supply capacity
- Gate removal process
- Targeted project delivery timeline
  - Key dates
- Spill history
  - Probability of spill occurring during project timeline
- Dam operation and safety during project
- Stakeholder engagement plan summary.

sunwater

Spillway gates history and vibration occurrences

- Callide Dam's six (three pairs) radial spillway gates were installed in 1988 to capture additional storage supply.
- The gates have operated on seven flood event occasions.
- During three of these occasions, Sunwater has observed vibrations of the spillway gates.
- Each of these occasions has occurred during or just after tropical cyclones:
  - January 2013 – ex-TC Oswald
  - February 2015 – TC Marcia
  - March 2017 – TC Debbie
- No pattern in the gates' operating mode or condition is evident as a trigger for the vibration.
- During other operational gate openings, including routine testing, Sunwater has not observed vibrations of the gates.
- Despite ongoing investigations, including engagement with numerous experts, no cause has been identified for the vibration events.
- There is a risk that the vibrations could cause the gates to stop operating or fail.

Centre gates open – March 2017

sunwater

Project and objectives

Project

- As the root cause of the gate vibrations is yet to be identified, further investigations are required.
- A project has commenced to further investigate the cause of the vibration and ensure the gates operate safely.
- This project requires the removal of the gate faces for investigation and, pending a solution, the gates will be reinstated and project completed before the end of 2021.
- While requiring significant effort and resources, the restoration project is considered operational, and will occur in accordance with Sunwater's normal asset management and maintenance guidelines and processes.

Objective

- Conduct maintenance, testing and investigate and address the gate vibration issue
- Ensure ongoing dam safety and long-term water security.
- Sunwater's main priority is the safety of its people and the Biloela community. There is currently no risk to the community as the dam's capacity is well below the bottom of the gates.
- Reinstate gates, and restore full supply volume, with target completion by end of 2021.

sunwater

Current environment – water level

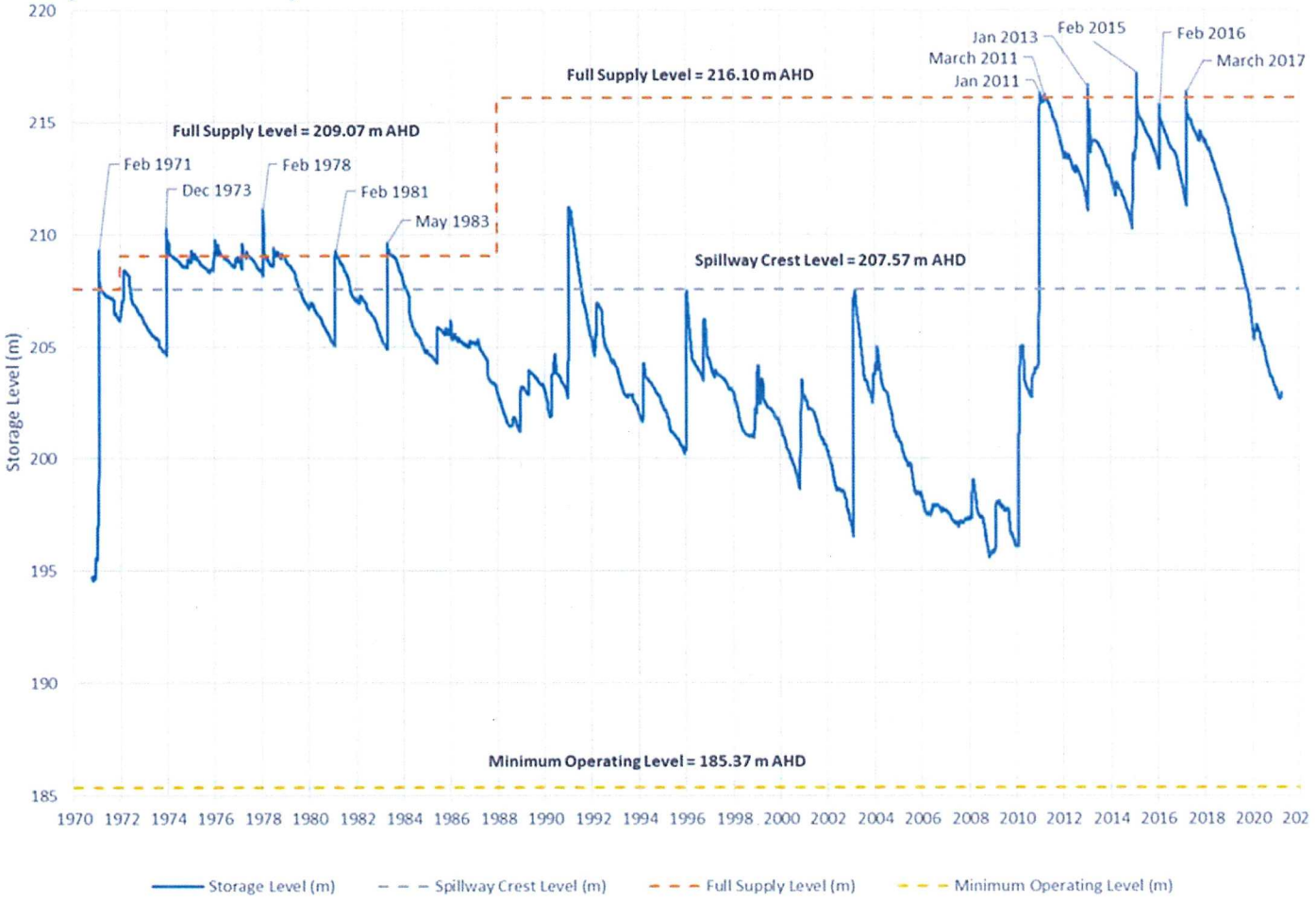
- Current dam level around 21% or 29,000 ML.
- Ongoing low water levels and inflows to Callide Dam together with the upcoming dry season present an opportune time to remove the gate faces for investigation.

Month	Probability of spill at temporary FSL (spillway crest)
April	1%
May	5%
June	5%
July	5%
August	5%
September	5%
October	1%
November	1%
December	5%

April 2021

sunwater

Callide Dam spill history



sunwater

Current environment – gates

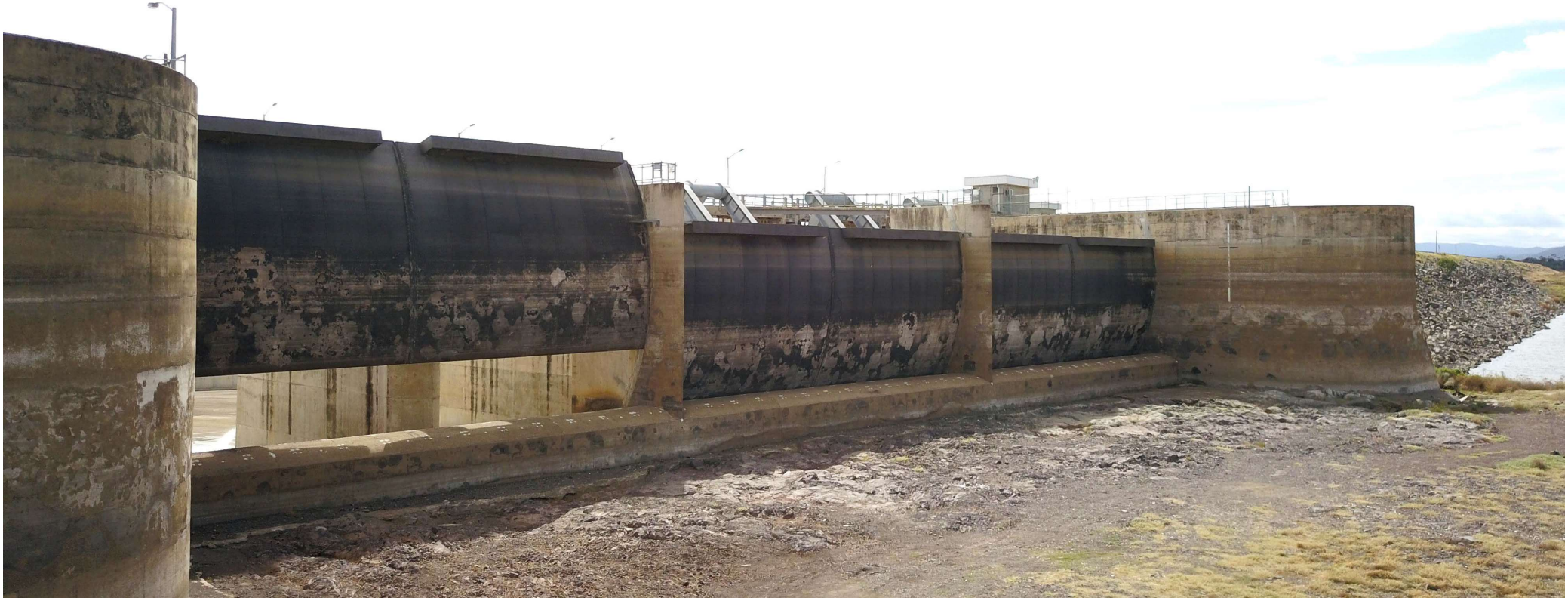
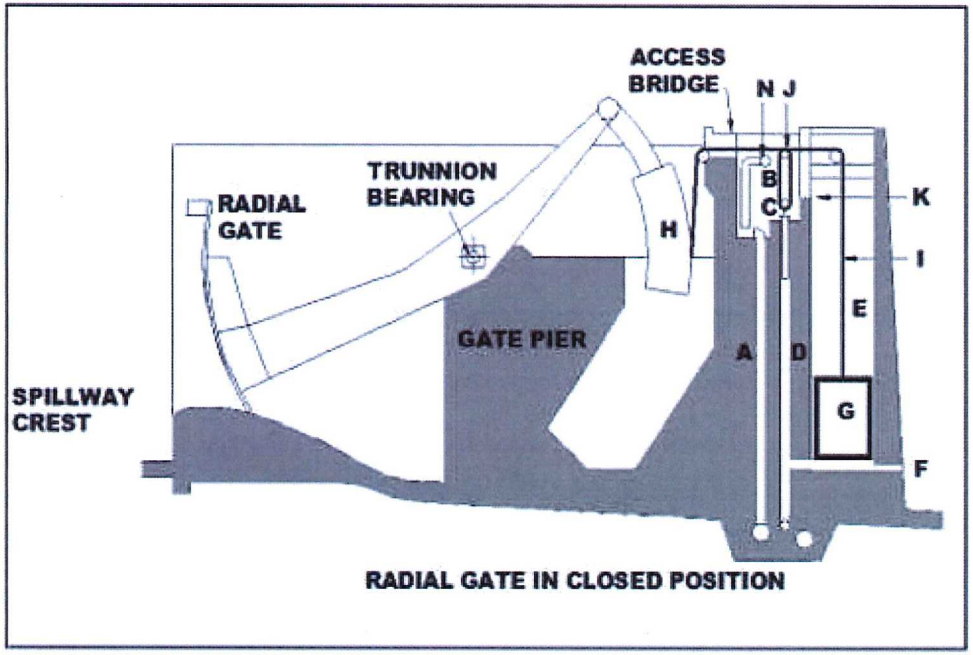
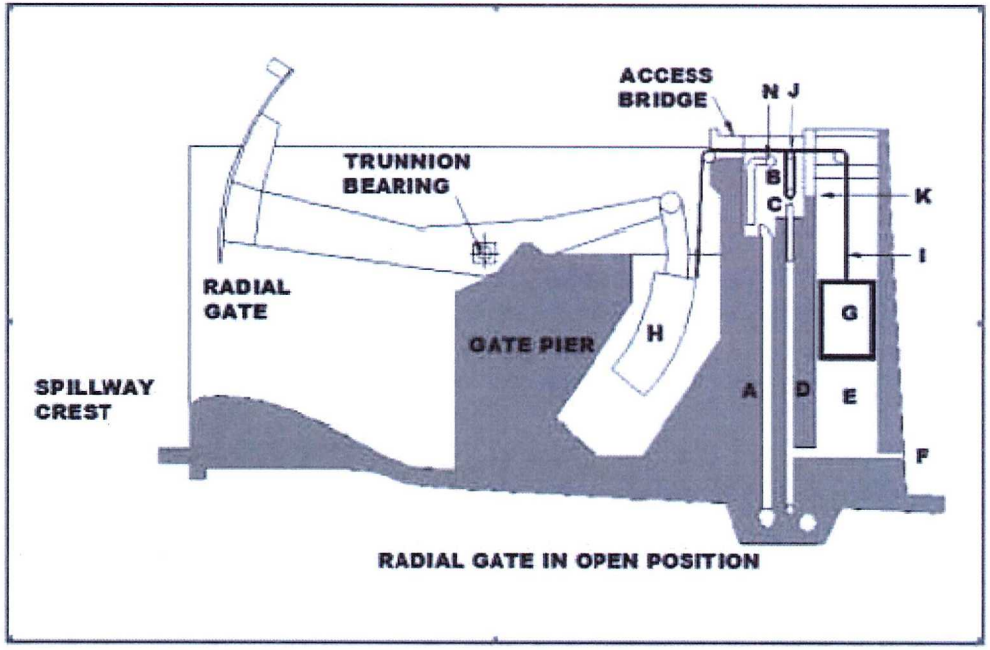


Image taken on recent operational test of gates

sunwater

Gate elements and operation





sunwater

Project work packages

Remove gates from service

- Physically remove the gate faces from the arms as soon as possible.
- This will provide access to gate faces, arms and other infrastructure that would otherwise not be possible.
- Once gate faces are removed, a temporary full supply level (FSL) will be implemented, and the dam will operate as a fixed concrete crest dam.

Carry out maintenance work

- Detailed expert investigations to address vibration issue, with aim of reinstating the gates.
- On-site equipment and resources being fast-tracked

Explore securing additional supply capacity

- Temporarily increase dam storage level to capture additional recharge supply capacity.
- Increase fixed crest level – investigating installation of weir boards.
- Capture and store any unexpected rain inflows during the dry season.

Restore to full supply

- Investigate, repair and reinstate gates with engineering solution to address gate vibration.
- Institute systems to improve manual gate operations.

Temporary full supply level

- The temporarily reduced FSL will allow for safe access to complete maintenance works.
- A ‘399B notification’ will be provided to stakeholders.

Full supply level before project commencement	Current as of May 2021	Temporary full supply level once project commenced and gates removed
Capacity: 100% (top of the gates)	Capacity: 21%	Capacity: 100% at top of spillway crest (was 41% with gates in place)
Volume: 136,300ML	Volume: 28,665ML	Volume: 55,380ML

- Throughout the project, the dam will be operated at 69% of this incoming temporary full supply level to enable the works.
- Should a serious weather event be predicted, any machinery will be dismantled enabling the dam to fill to the top of the ungated concrete spillway crest, reflecting the dam being at 100% capacity.

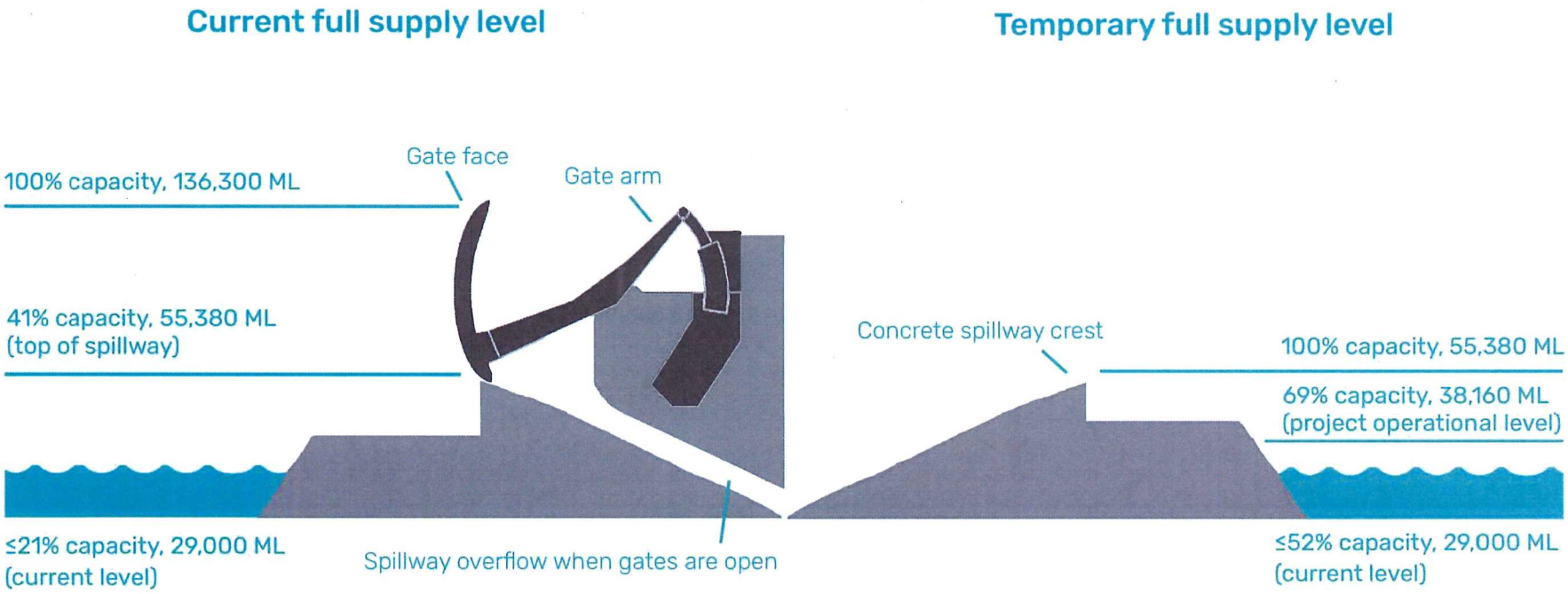
What this means for customers

- The project will have no impact on current announced allocations.
- Water allocations are set for the year and cannot decrease as dam capacity levels reduce.
- Should unexpected dry season inflows occur, and the storage is above 20,000 ML, Sunwater will be able to make releases for groundwater recharge.
- We will not release water unless there is a large and unexpected inflow. Water will not be wasted.
- Allocations for the 2021/22 water year will be announced in July 2021.

sunwater

Temporary full supply level cont...

Callide Dam's current Full Supply Level (FSL) is the top of the gates. With gates removed, the top of the concrete spillway crest is the dam's maximum height and the temporary FSL (100%). In order for works to take place, the dam will be operated at 69% of this temporary FSL.

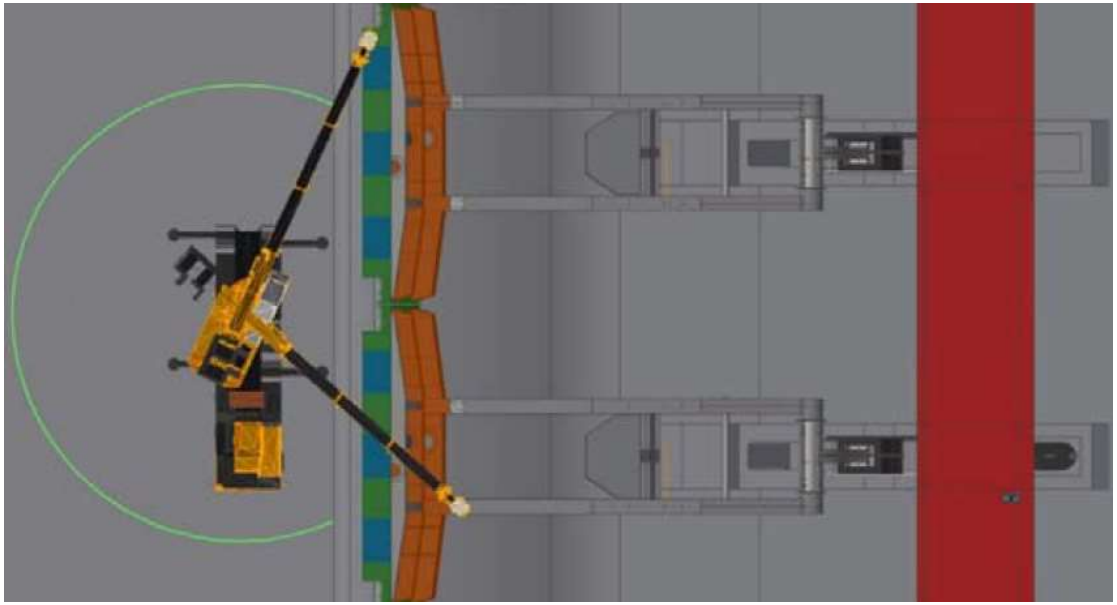


sunwater

Gate removal process

Birds-eye view

Crane hardstand and truck turning loop

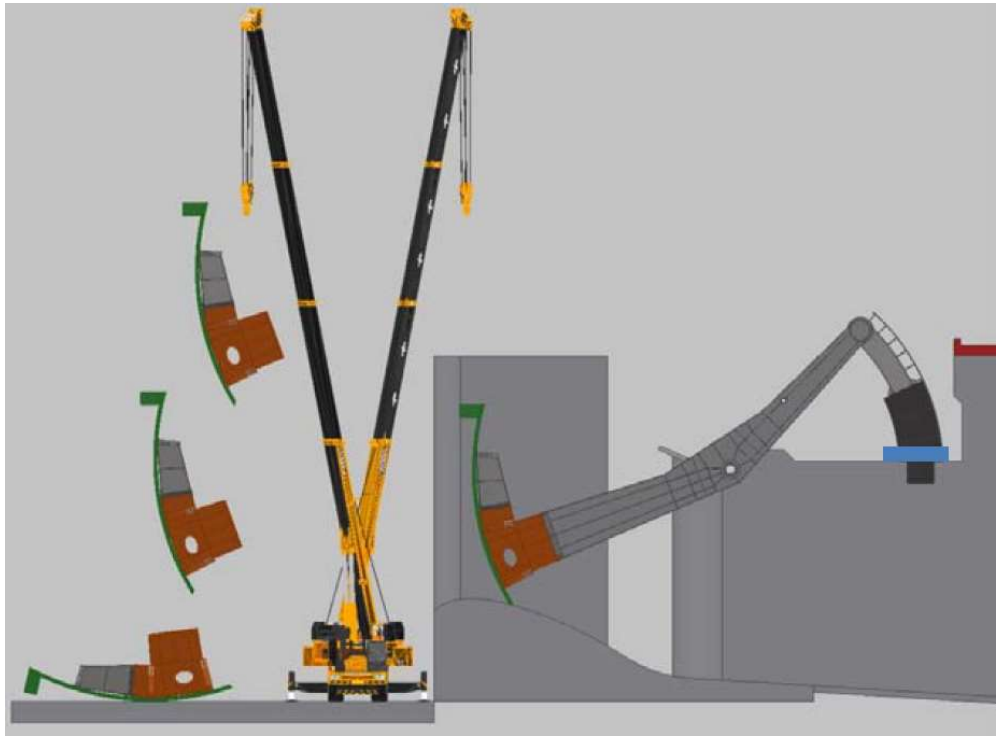


Birds-eye view

Position of 300t crane for gate removal

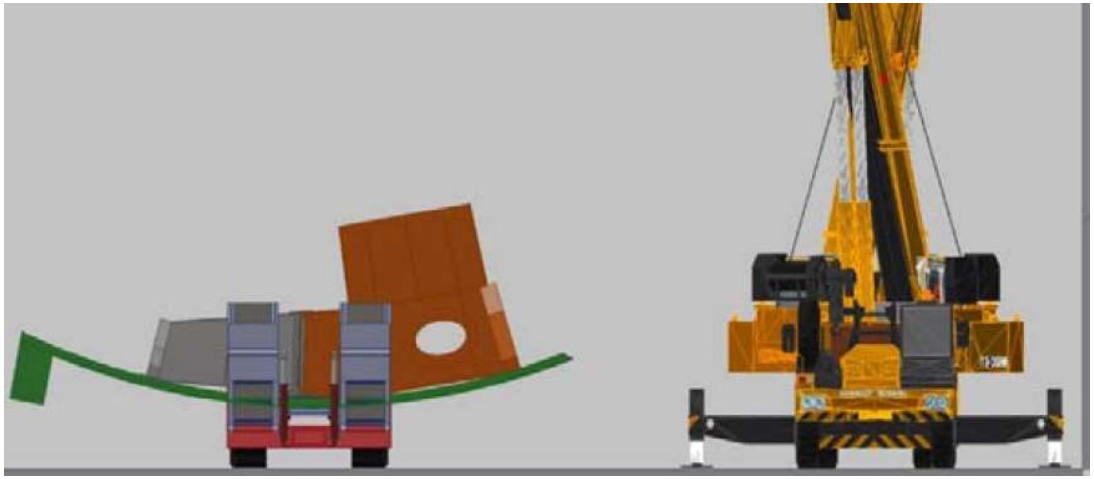
sunwater

Gate removal process



Side-on view

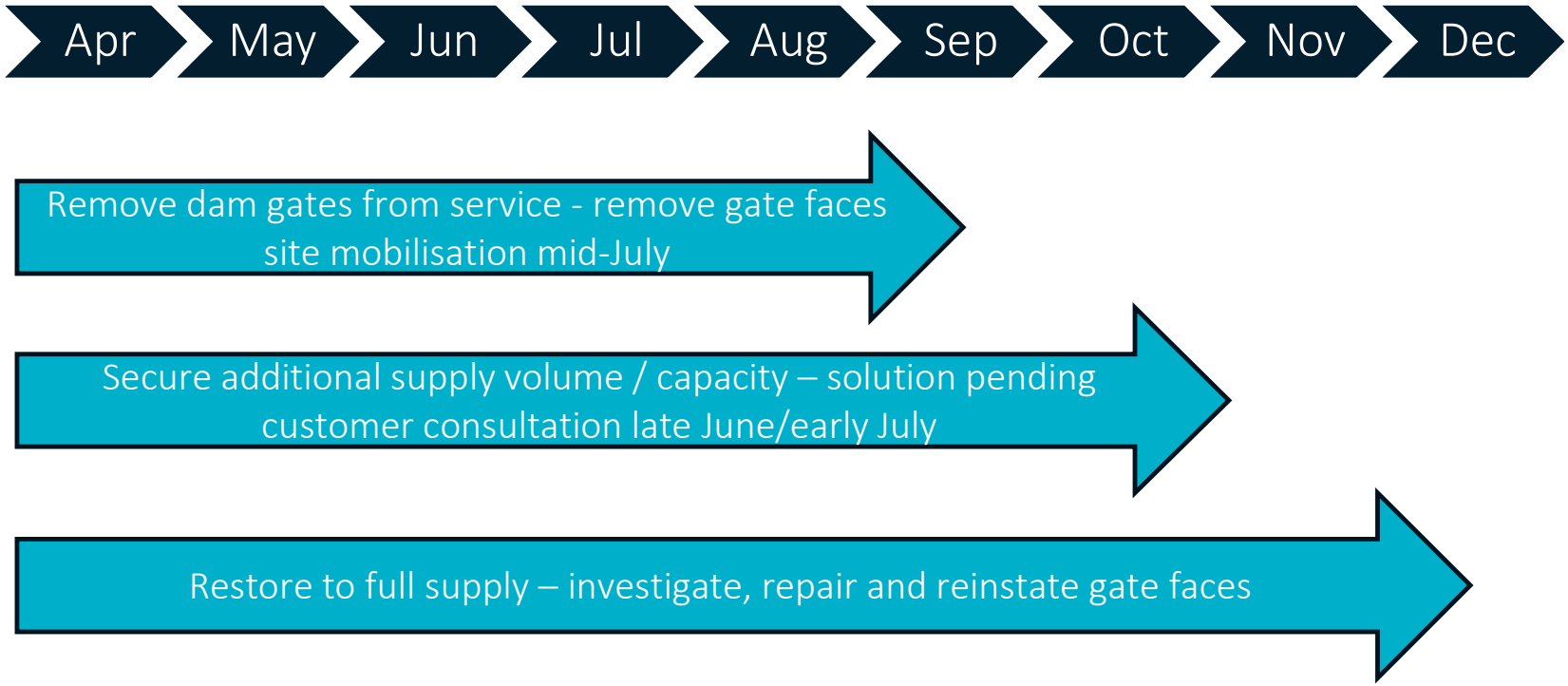
Typical crane life sequence for gate removal



Placement of radial gates on truck for transport

sunwater

Targeted project delivery timeline



sunwater

Dam operation and safety during project

Sunwater's main priority is the safety of its people and the Biloela community

- There is currently no risk to the community as the dam's capacity is well below the bottom of the gates and gate failure is immediately eliminated on removal of the gate faces.

Managing weather events

- In the highly unlikely event of a dam spill event prior to the removal of gate faces, current protocols will be followed according to the dam's existing Emergency Action Plan (EAP) and Operations and Maintenance Manual (OM).
- An addenda to the EAP will be implemented prior to the project commencement to ensure the highest level of safety for our people and the community.
- Sunwater continues with ongoing community education about its Emergency Action Plan and general emergency preparedness.
- Recent audible sirens testing was conducted on the two sirens located on Linkes Road and the end of Earlsfield Street in Biloela.

sunwater

Stakeholder engagement plan summary

Dates	Stakeholder
10-11 May	**Local Government briefings:**
	Mayor
	Council CEO
	LDMG
	Irrigator Advisory Committee / major industrial customers
W/C 10 May	Local stakeholder group briefings
	Customer communications
	MP briefing
Ongoing	Community letter box drop, display/drop in sessions
	Customer information sessions and consultation
	Industry/business group letters/briefings

sunwater

Delivering water for prosperity

sunwater