

TUAS WRP

DTSS 2



Programme		Speakers
3.00pm	Registration	
3.35pm	Welcome Address Part A: Overview of Tuas Water Reclamation Plant (TWRP)	Yong Wei Hin DTSS 2 Director, PUB
3.45pm	Part B: TWRP Implementation Updates	Scott Trusler TWRP Project Director, Jacobs
4.45pm	Q&As	
5.00pm	Networking Session	

TUAS WRP

DTSS 2



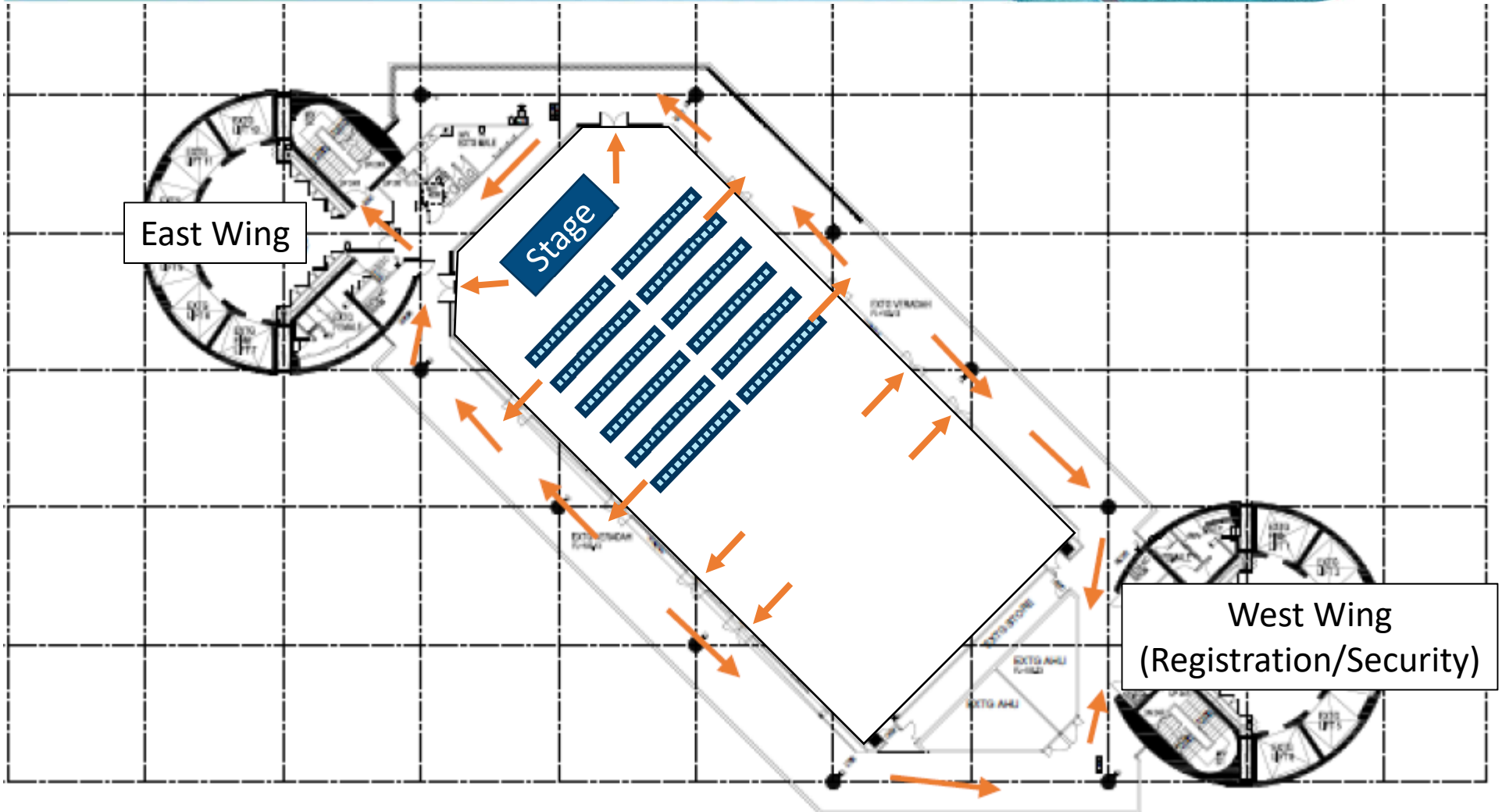
Industry Briefing

28 November 2018



SAFETY • SCHEDULE • BUDGET • QUALITY

In case of an Emergency



TUAS WRP

DTSS 2



Overview of Tuas Water Reclamation Plant (part of DTSS Phase 2)

Yong Wei Hin

DTSS 2 Director, PUB



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Agenda



- 🌀 Safety Commitment
- 🌀 Overview of Tuas Water Reclamation Plant (TWRP)
- 🌀 Update on Project Progress



Tunnel Section of DTSS Phase 1



Concept Rendering of Tuas WRP



Safety Commitment

DTSS Phase 2 Safety Mission



Eye Protection

Hand Gloves

Long Sleeve Shirt

Reflective Vest

Long Pants

Safety Boots

Helmet with Chin Strap

We aim for **ZERO HARM** and promote the well-being of everyone.

We will not be limited by past practices, and are committed to surpass current industry norms.

No injury is too small and one injury is one too many.

Every person on the DTSS Phase 2 project has the responsibility and is empowered to take action on issues of **SAFETY**.

Do not exceed the speed limit (15km/h)

Do not work without fall prevention / protection in place

Do not set off unauthorized naked lights within Designated Hazardous Areas

Do not work without Lock-out-tag when isolation of energy is required

Do not work without a valid Permit to Work when required by Law (PTW)

Do not work whilst under the influence of alcohol

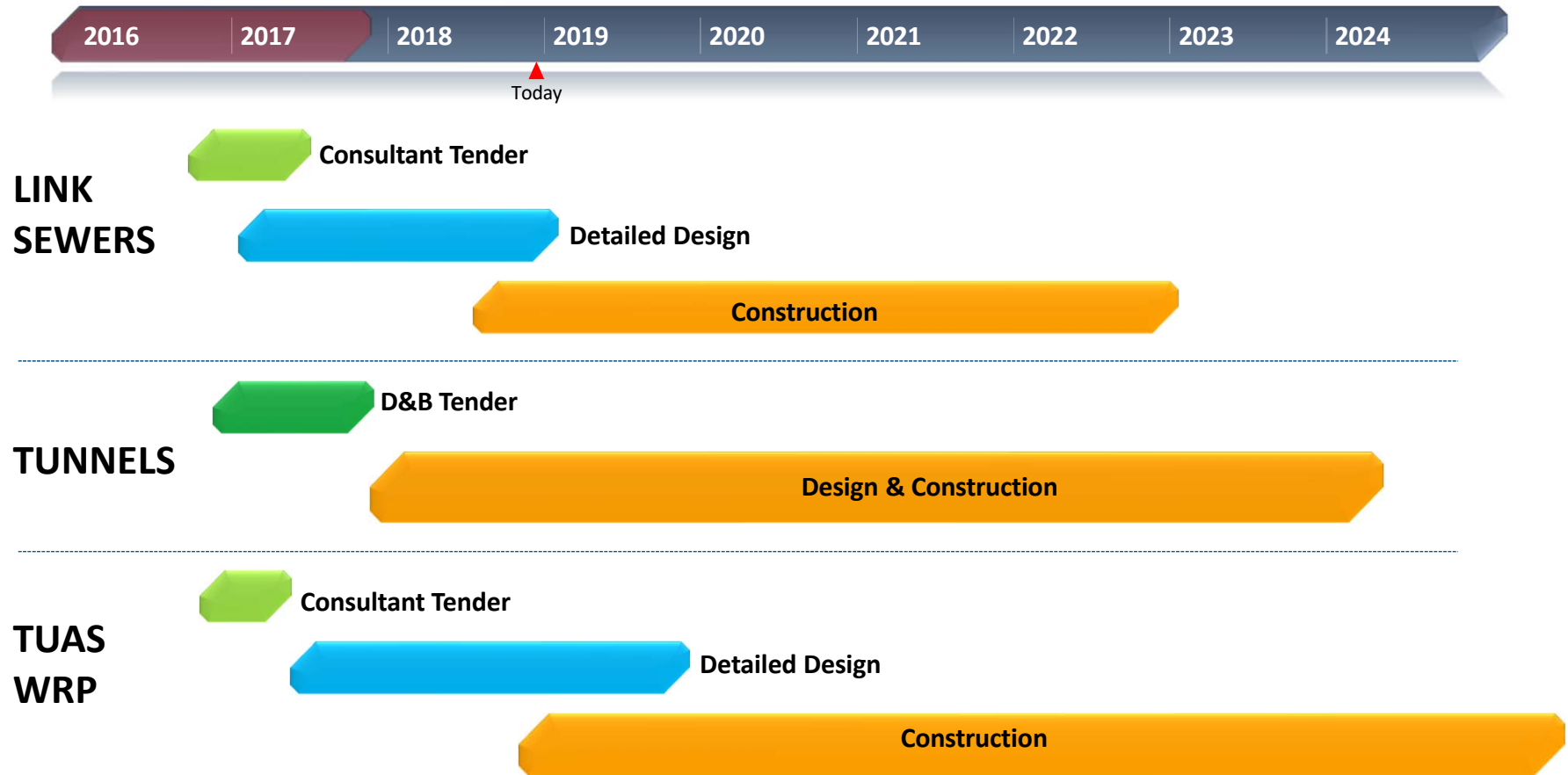
Do not smoke within Designated Hazardous Areas



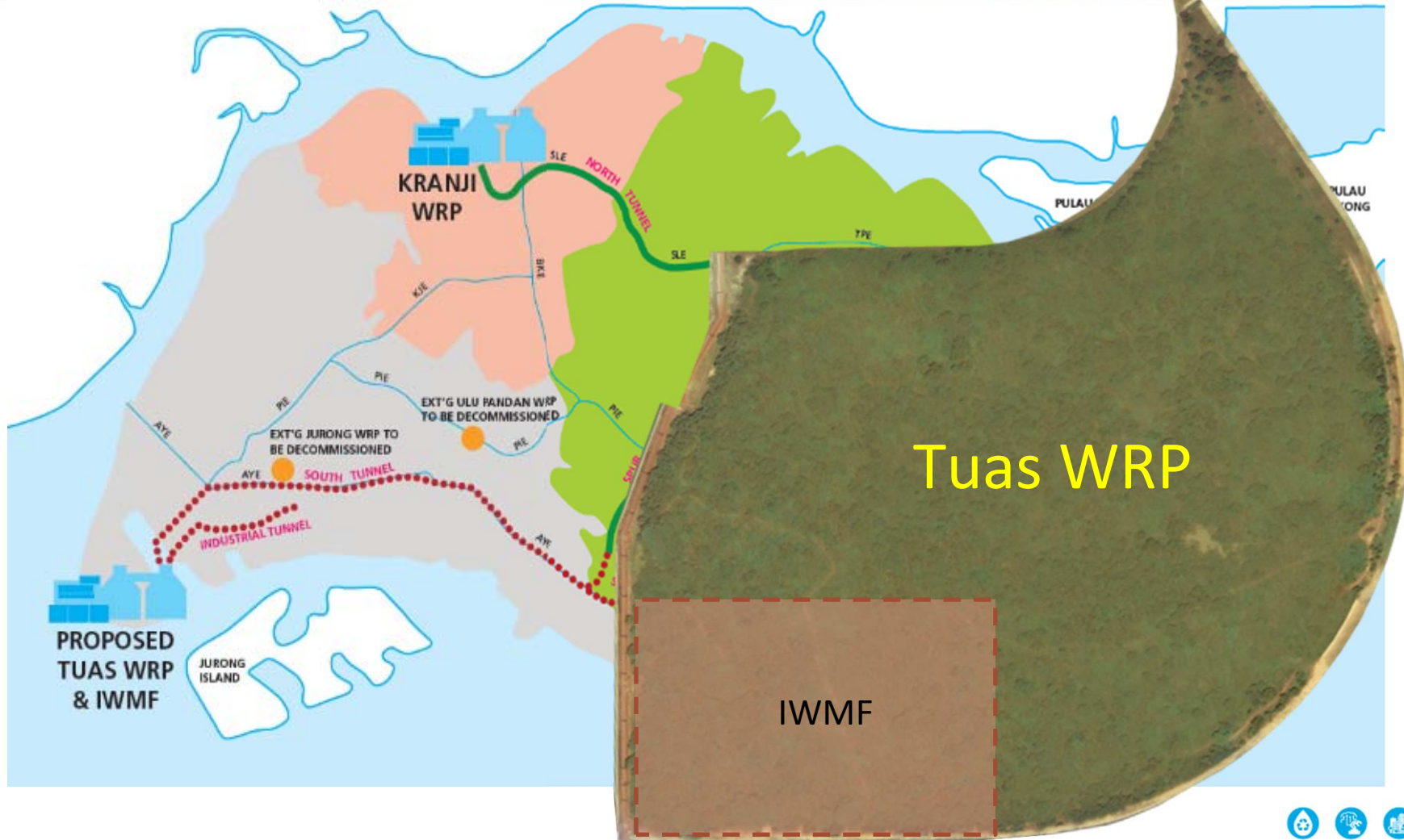


Tuas WRP Overview

DTSS Phase 2 Project Timeline



Overview of Tuas WRP



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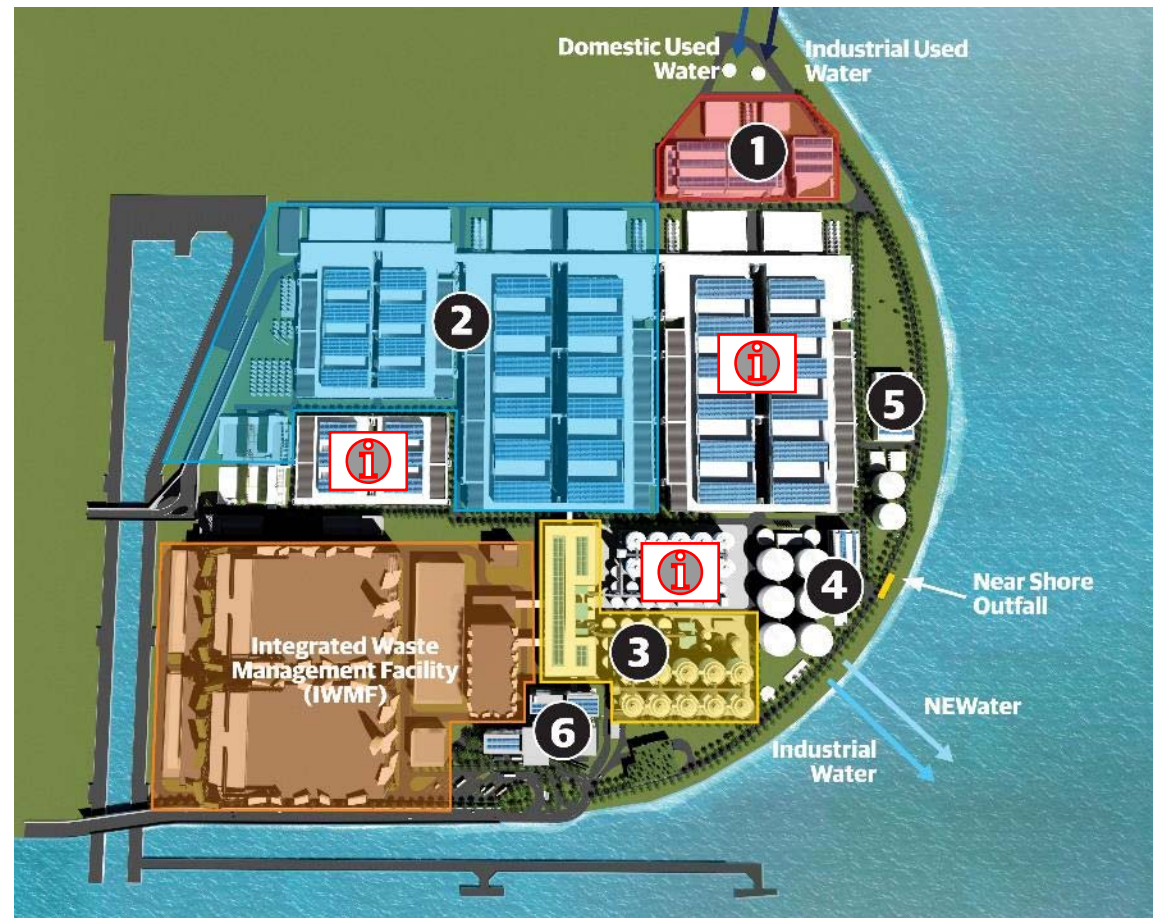


Project Overview



1. Influent Pumping Stations
2. Liquids (Domestic and Industrial Used Water) Treatment Facilities
3. Biosolids Treatment Facility
4. NW and IW Storage & Pumping
5. Wet Weather Treatment
6. Admin/O&M with Visitor Gallery

 Future Expansions



Preparation Works Status



Soil investigation
COMPLETED



Route 2 bridge
COMPLETED;
Route 3 bridge
TO BE COMPLETED
by year end



Sitewide instrumentation &
monitoring contract **AWARDED**



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TUAS WRP

DTSS 2



TWRP Implementation



Scott Trusler

TWRP Project Director, Jacobs



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Agenda



Key Takeaways

- Upcoming Tenders
- Resources

Project Overview

- Major TWRP Components
- Key Project Challenges

Project Delivery Updates

- Contract Packages (Revised)
- Overall Programme Timeline Changes
- Scope & Tendering Requirements (Revised)
- Pre-Tender Qualification for Domestic Liquids

Raising the Bar – Safety

- Safety Update



Ground Rules



INFORMATION SHARED

in this briefing / presentation is only meant for your guidance and planning purposes.

First

Second

Third

NO QUESTIONS

or information related to ongoing TWRP tenders.

ACTUAL TENDER INFORMATION

for respective contracts shall be issued by the Board.





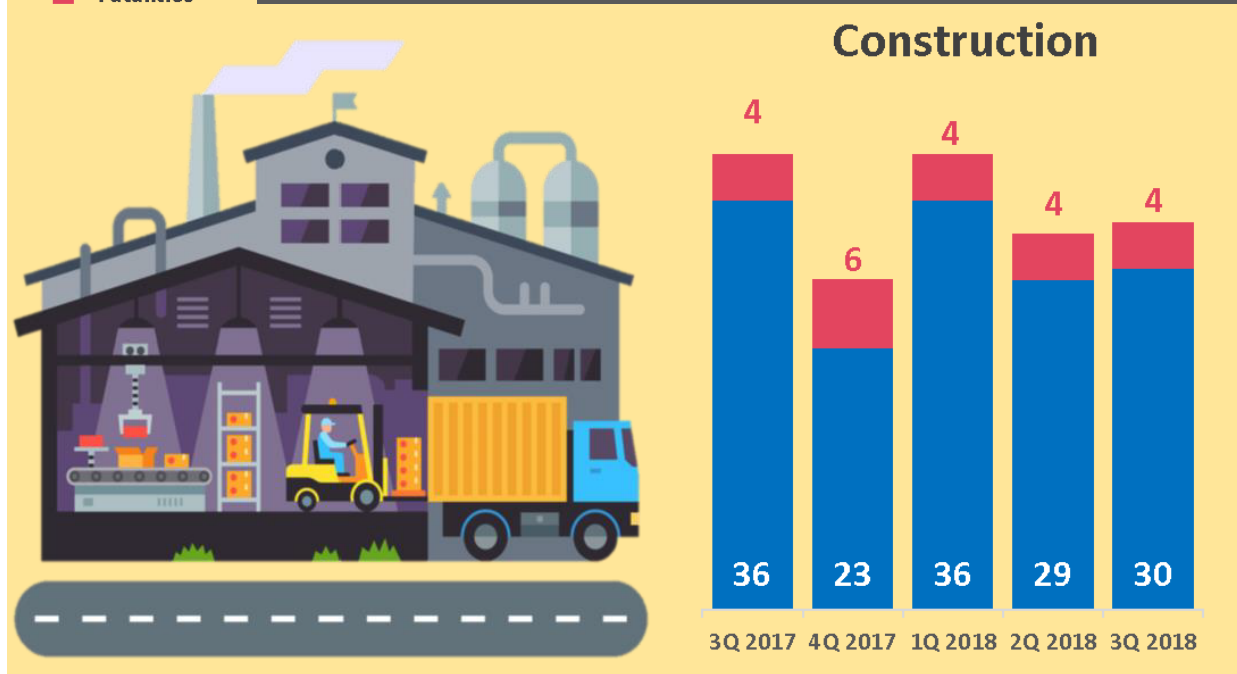
Raising the Bar – Safety

Workplace Safety and Health Report: Jul to Sep 2018



- Major Injuries
- Fatalities

Fewer fatal and major injuries in priority industries of Construction, Manufacturing and Transport & Storage Sectors in 3Q 2018 compared to 3Q 2017



Note: 12-Month Rolling Rate = $\frac{\text{Total No. of Workplace Injuries/ Occupational Diseases for Past 12 months}}{\text{No. of Employed Persons}} \times 100,000$

Note: 2018 figures are preliminary



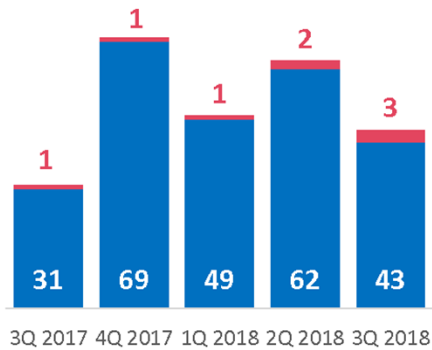
Workplace Safety and Health Report: Jul to Sep 2018



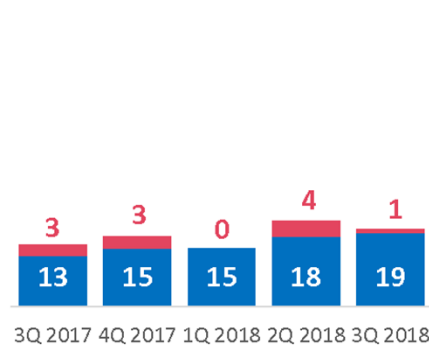
Falls remain as highest contributor to fatal and major injuries in 3Q 2018

■ Major Injuries
■ Fatalities

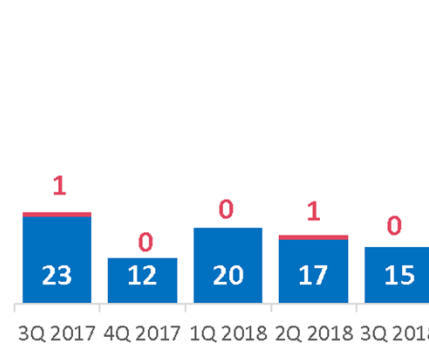
Falls - Slips, Trips & Falls



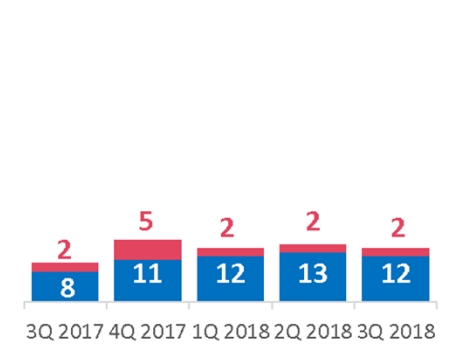
Falls – Fall from Height



Machinery Incidents



Vehicular Incidents



Note: 12-Month Rolling Rate = $\frac{\text{Total No. of Workplace Injuries/ Occupational Diseases for Past 12 months}}{\text{No. of Employed Persons}} \times 100,000$

Note: 2018 figures are preliminary



TWRP Safety Requirements



02 ELECTRONIC PERMIT TO WORK

- On site
- Overlapping / conflicting
- Trends

03 FALL REDUCTION

- Drones and laser scans
- Pre fabrication
- Machine platform railings

04 SAFETY TRAINING FACILITY

- Enhanced training
- Simulators

01 ACCESS CONTROLS

- Who
- Where
- Qualifications

05 SELECTION OF PPE

- Reduced lanyard length
- Cut-resistant gloves





Project Overview

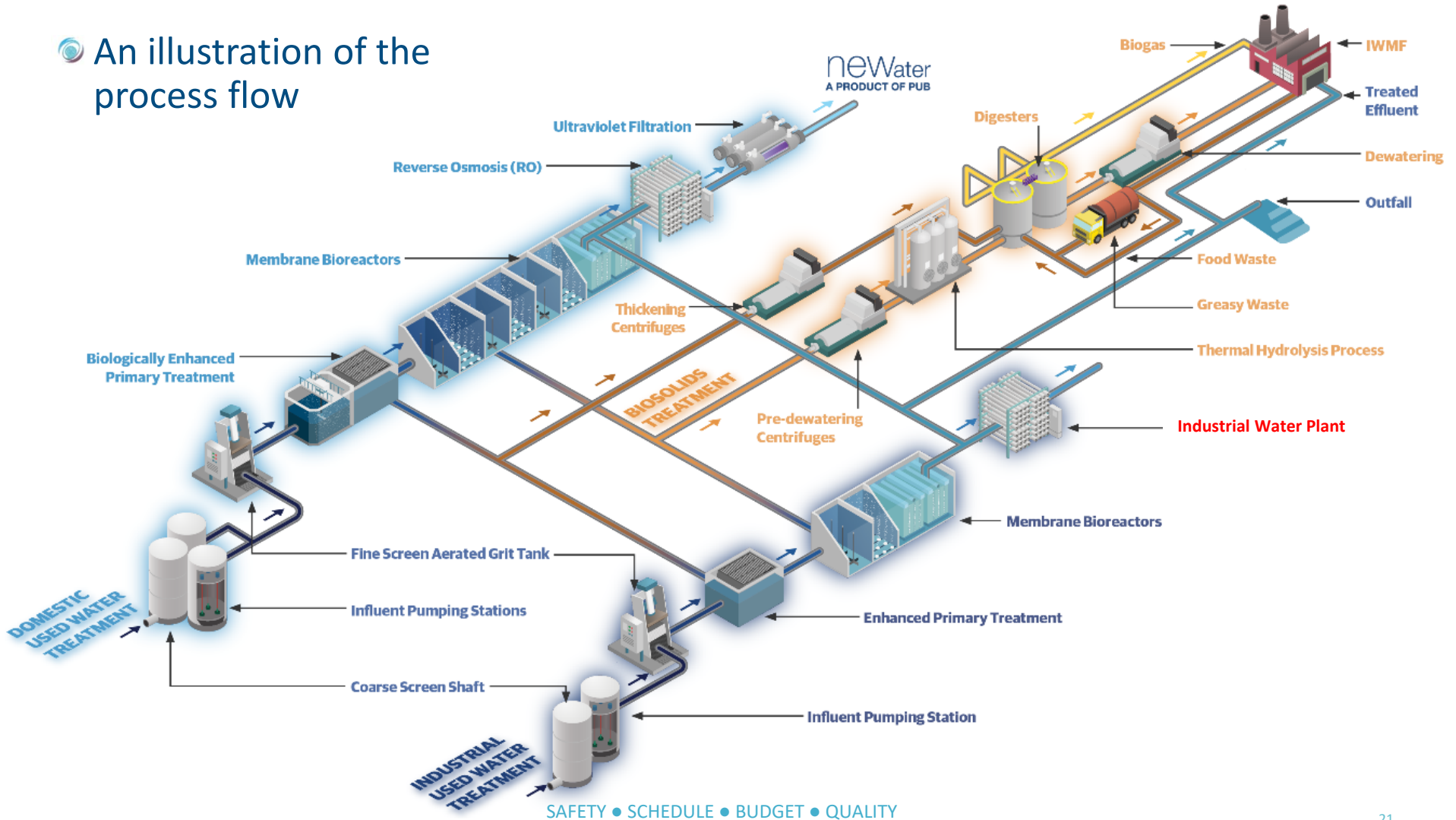
SAFETY • SCHEDULE • BUDGET • QUALITY



Major TWRP Components



An illustration of the process flow



Key Project Challenges



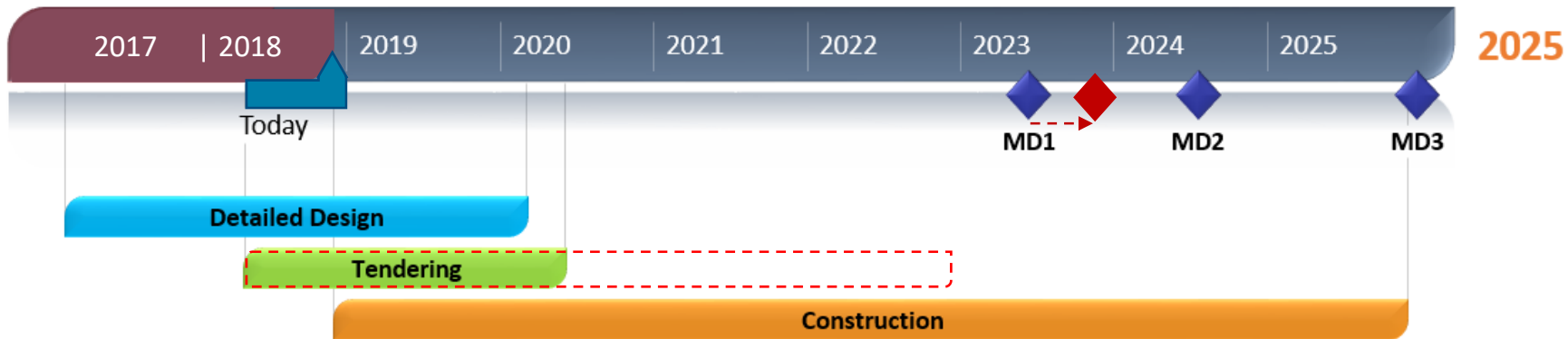


Project Delivery Updates

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Overall Programme Changes



🌀 Milestone 1 – September 2023

» Industrial used water influent pumping station and **only industrial liquids modules** commissioned and operational

🌀 Milestone 2 – August 2024

» Domestic used water influent pumping station and one-half of liquids treatment stream commissioned and into production
» NEWater plant commissioned and into production

🌀 Milestone 3 – December 2025

» Completion and commissioning of whole of Tuas WRP (Phase 1)

Contract Packages (11 nos.)



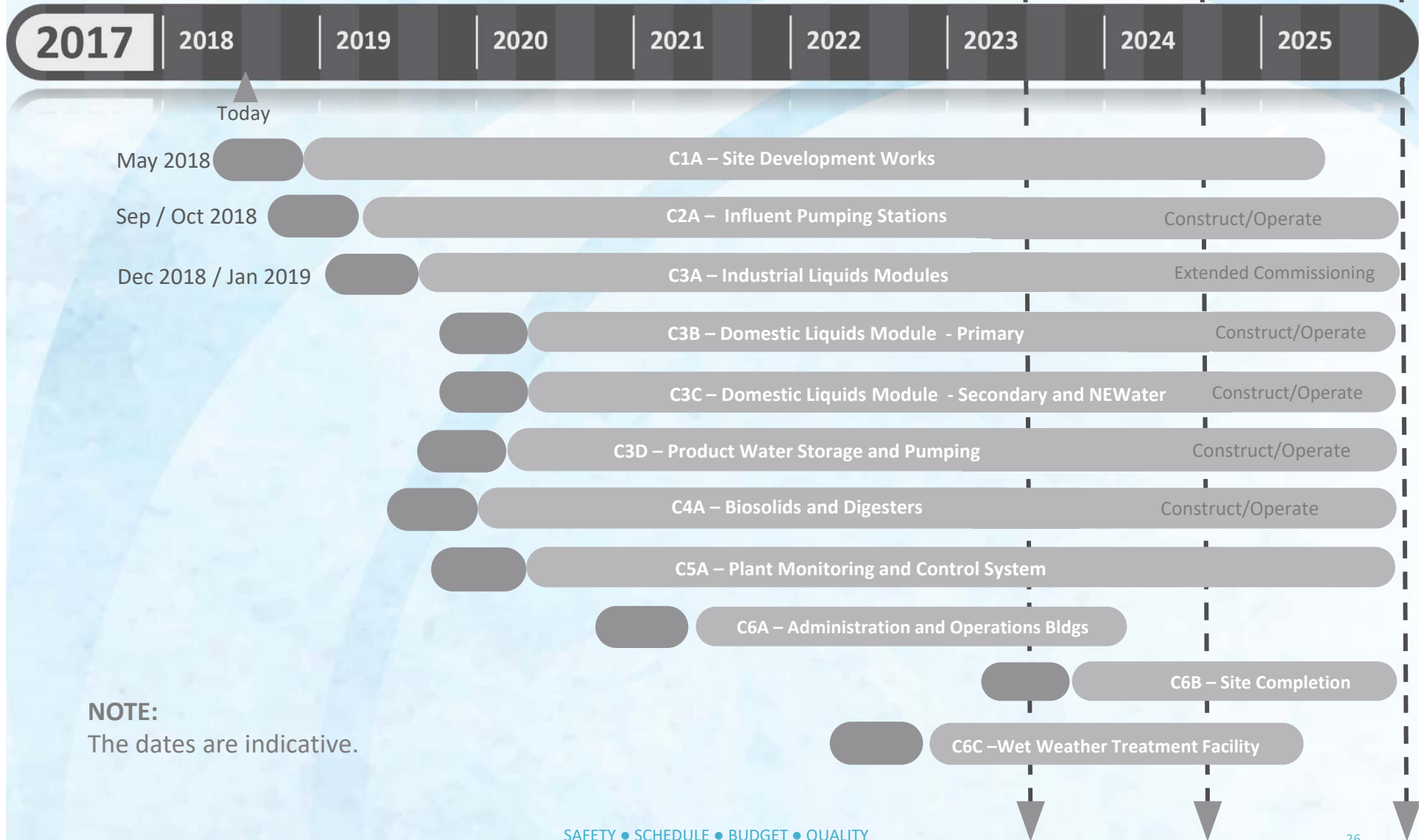
No.	Name	Description	Remarks
C1A	Site Development Works	<ul style="list-style-type: none"> Temporary site wide support infrastructures and services Permanent yard piping, utilities, 22 kV, port sewer, near-shore outfall 	<ul style="list-style-type: none"> Award pending
C2A	Influent Pumping Stations	<ul style="list-style-type: none"> Two coarse screen shafts, three pumping stations, rising mains Two 66 kV substations 	<ul style="list-style-type: none"> Tendering
C3A	Industrial Liquids Modules	<ul style="list-style-type: none"> Headworks, primary treatment and secondary treatment including MBR 	<ul style="list-style-type: none"> Scope reduced
C3B	Industrial Water Treatment	<ul style="list-style-type: none"> Tertiary treatment to produce Industrial Water 	<ul style="list-style-type: none"> New contract
C3C	Domestic Liquids Modules and NEWater	<ul style="list-style-type: none"> Primary and secondary treatment including MBR, and NEWater production 	<ul style="list-style-type: none"> Prior C3B added to C3C Pre-tender qualification added No scope change
C3D	Product Water Storage and Pumping	<ul style="list-style-type: none"> Storage and pumping of NEWater and Industrial Water 	<ul style="list-style-type: none"> Schedule shifted
C4A	Biosolids and Digesters	<ul style="list-style-type: none"> THP, digestion, thickening, dewatering, solids conveyance 	<ul style="list-style-type: none"> OCFs added
C5A	Plant Monitoring and Control System	<ul style="list-style-type: none"> SCADA/PLC system with progressive buildout 	
C6A	Administration and Operations Buildings	<ul style="list-style-type: none"> Two separate buildings 	
C6B	Site Completion	<ul style="list-style-type: none"> Scope to be defined, includes roads, CCTV, main entrance and etc. 	
C6C	Wet Weather Treatment Facility	<ul style="list-style-type: none"> Domestic used water overflow treatment and discharge 	

Tendering and Construction Timelines

Milestone 1
Industrial Used Water
Commissioned

Milestone 2
Domestic Used Water &
NEWater
Commissioned

Milestone 3
Completion of
Testing and
Commissioning of
TWRP

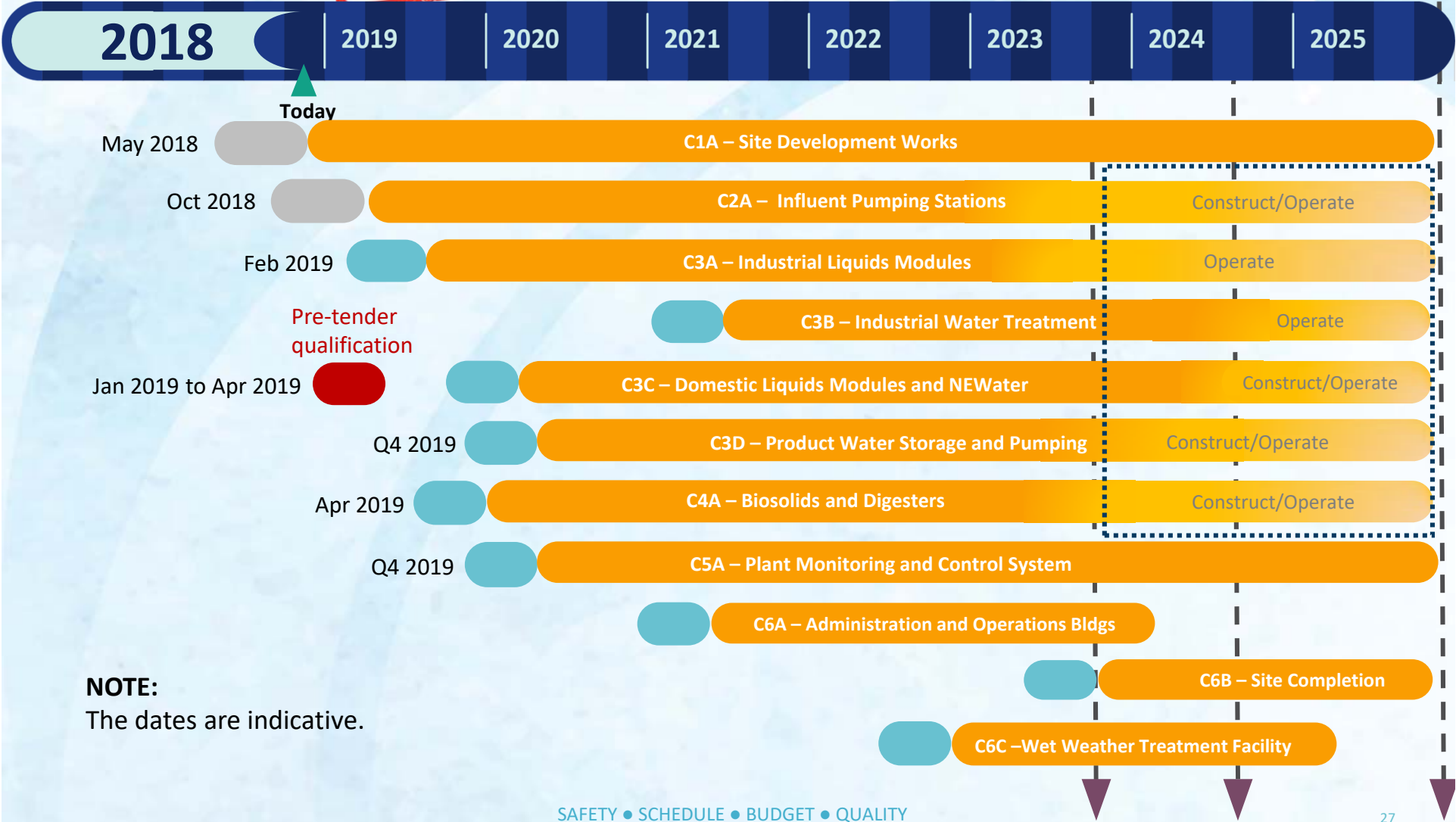


NOTE:
The dates are indicative.

Tendering and Construction Timeline

REVISIONS

- Milestone 1**
Industrial Used Water Commissioned
- Milestone 2**
Domestic Used Water & NEWater Commissioned
- Milestone 3**
Completion of Testing and Commissioning of TWRP

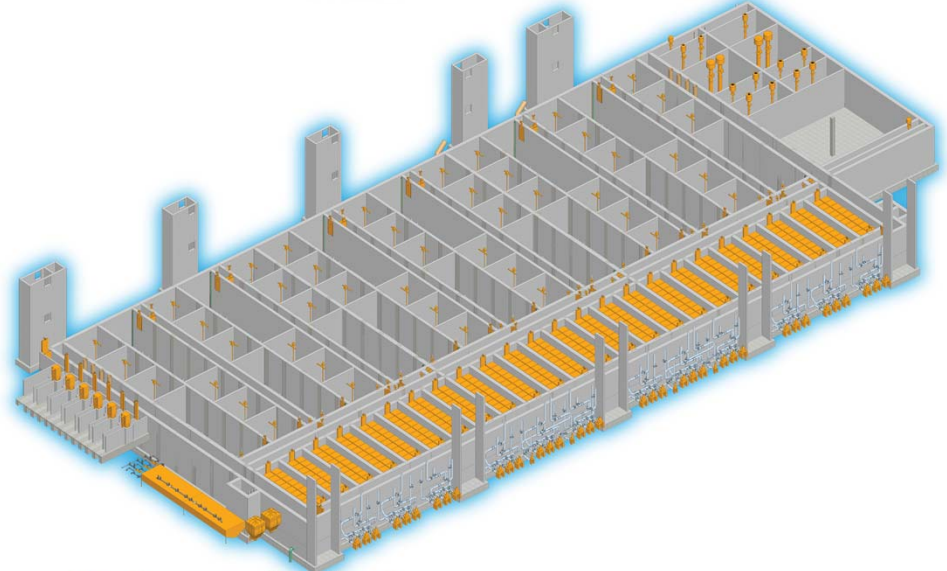
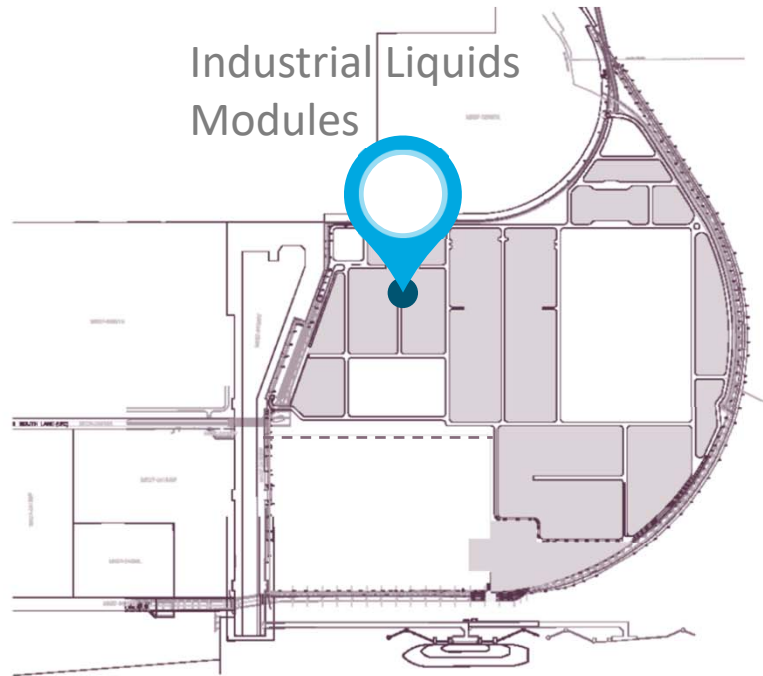


NOTE:
The dates are indicative.

Contract 3A: Industrial Liquids Modules



REVISIONS



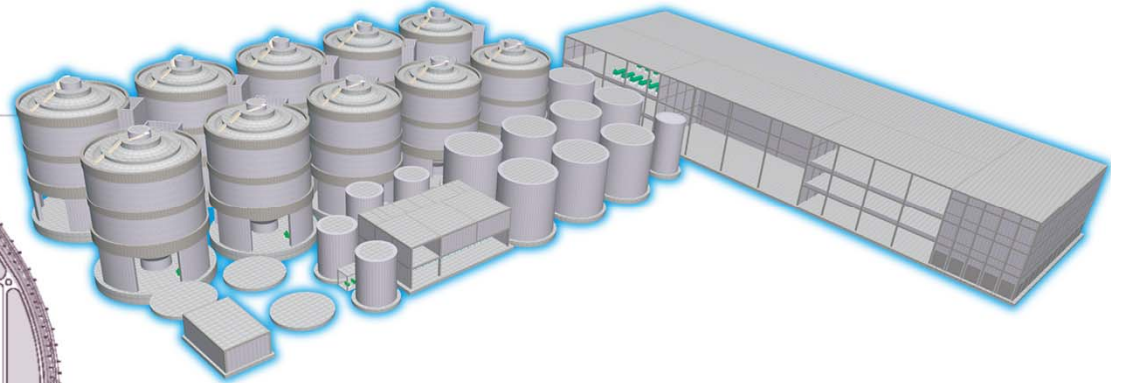
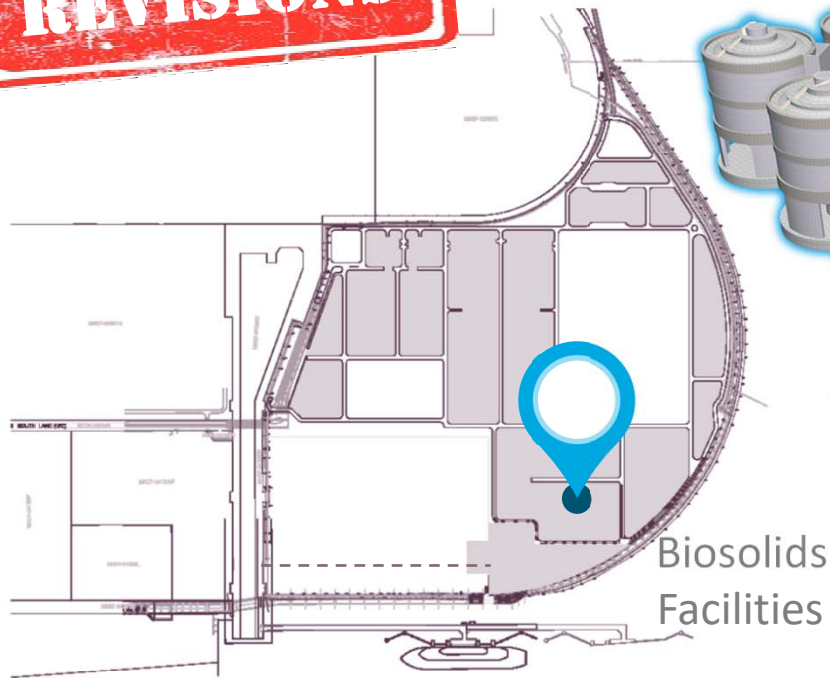
Scope includes:

- » *Two liquids treatment modules*
- » *Headworks, primary treatment tanks, secondary bioreactor and membrane tanks*
- » *Ceramic and polymeric membranes*
- » *Industrial water treatment – now tendered separately (C3B)*
- » *Odour control facility*

Contract 4A: Biosolids and Digesters



REVISIONS



Scope includes:

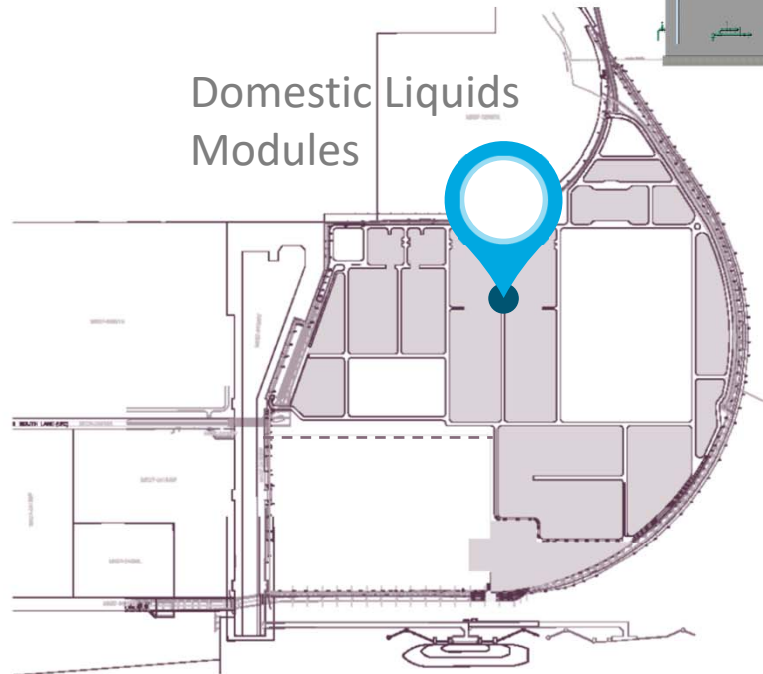
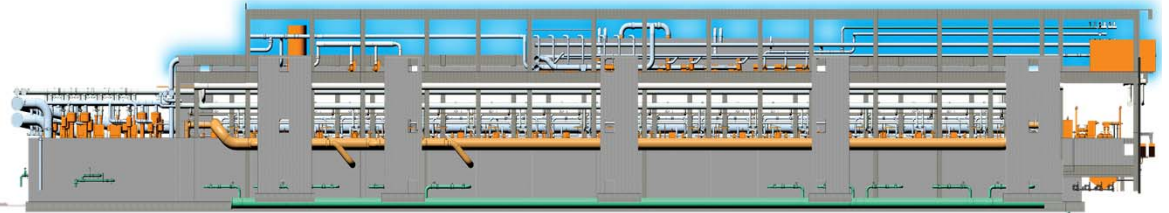
- » *Biosolids building with space for future equipment*
- » *Thermal hydrolysis pre-digestion, centrifuges for pre-dewatering and thickening*
- » *10 silo digesters – potential construction with post-tensioned precast panels*
- » *Majority of the IWMF interfaces*
- » *Food waste and greasy waste receiving and treatment*
- » ***Odour control facilities***



Contract 3C: **Entire** Domestic Liquids Modules & NEWater



REVISIONS



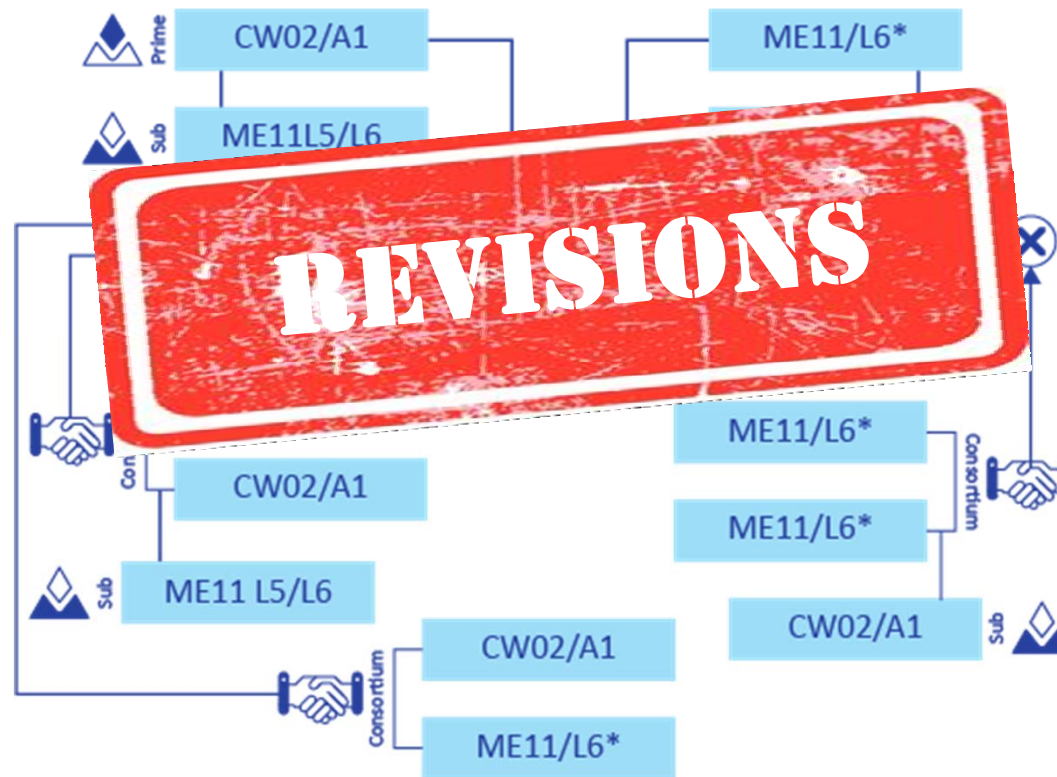
Scope includes:

- » *Two liquids treatment modules*
- » *Headworks, primary treatment tanks, secondary bioreactor and membrane tanks*
- » *Polymeric MBR membranes*
- » *NEWater production*
- » *Odour control facilities*

Contract 3A: Tendering Requirements – BCA



C3A



Contract **3A, 3C & 4A:** Tendering Requirements – BCA



Structure

» Prime w/ named ME11-L5* (or higher) subcontractor

» Consortium

○ Lead plus 1 or 2 members (3 parties maximum)

○ May require named **ME11-L5*** (or higher) subcontractor IF no **ME11-L6*** member

ME11-L5* means ME11-L5 with min. paid-up capital and min. net worth of \$1.5 million (equivalent to Mechanical Engineering L6 financial grade)

ME11-L6* means ME11-L6 with min. paid-up capital and min. net worth of \$15 million (equivalent to Civil Engineering A1 financial grade)

Prime or Consortium Lead

» CW01-A1

» CW02-A1

Consortium

» Members may be CW01-A1, CW02-A1, or ME11-L6*

» Consortium parties must be exclusive

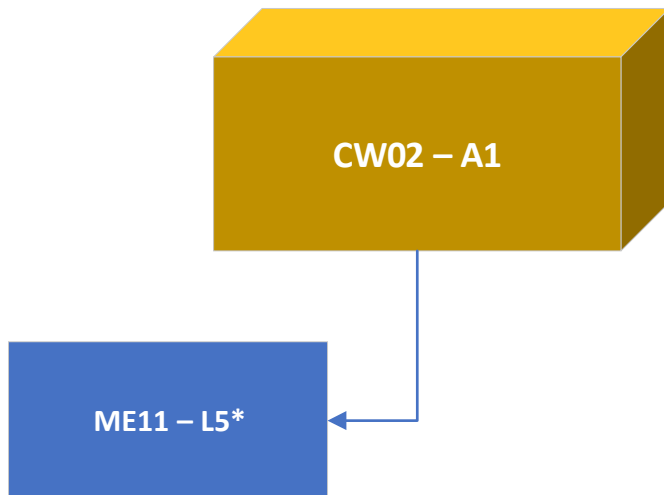
» Joint and Several – all parties



Examples



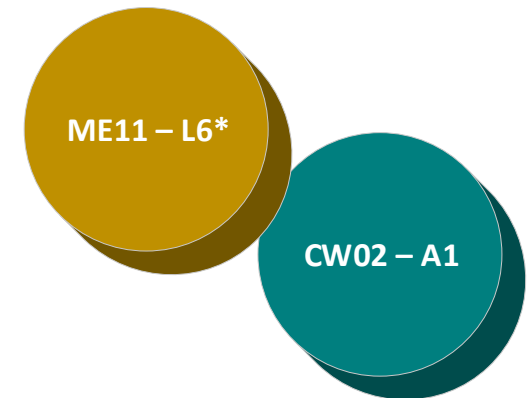
PRIME WITH SUBCONTRACTOR



CONSORTIUM (No Subcon Req'd)



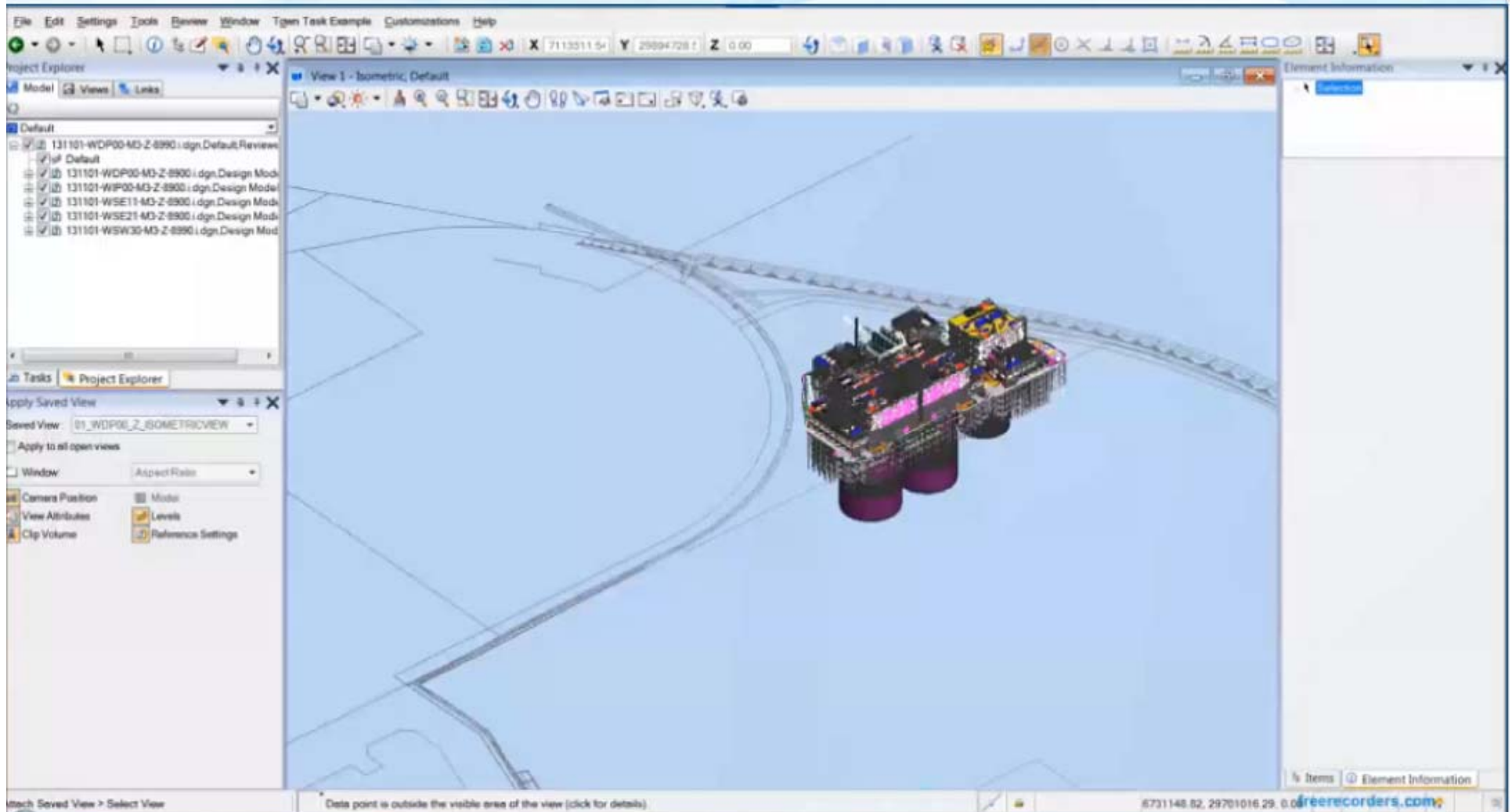
CONSORTIUM ME11-L6* LEAD **Not Allowed**



ME11 - L5* or higher must be
named subcontractor
or
ME11 - L6* consortium member



BIM Tendering and Delivery (Video)





Pre-Tender Qualification (PTQ) for Domestic Liquids

Contract 3C: PTQ Requirements – BCA



Structure

- » *Prime**
- » *Consortium**

**Note: Subcontractors must be named and only Applicant(s) shall provide detailed information*

Prime or Consortium Lead

- » *CW01-A1*
- » *CW02-A1*

Consortium Applicants

- » *May be CW01-A1, CW02-A1, or ME11-L6**
- » *Consortium parties must be exclusive*

Contract 3C: PTQ Criteria



CRITICAL CRITERIA



BCA Registration

Safety, Debarment Record

Safety, ISO Certifications

OTHER CRITERIA



Track Record

Certified HSE policy and track record

Large, complex WRP projects and processing plants and facilities

OTHER CRITERIA



Personnel & Organisation

Staff proposed for the work

Performance of the work

Necessary resources to support project

OTHER CRITERIA



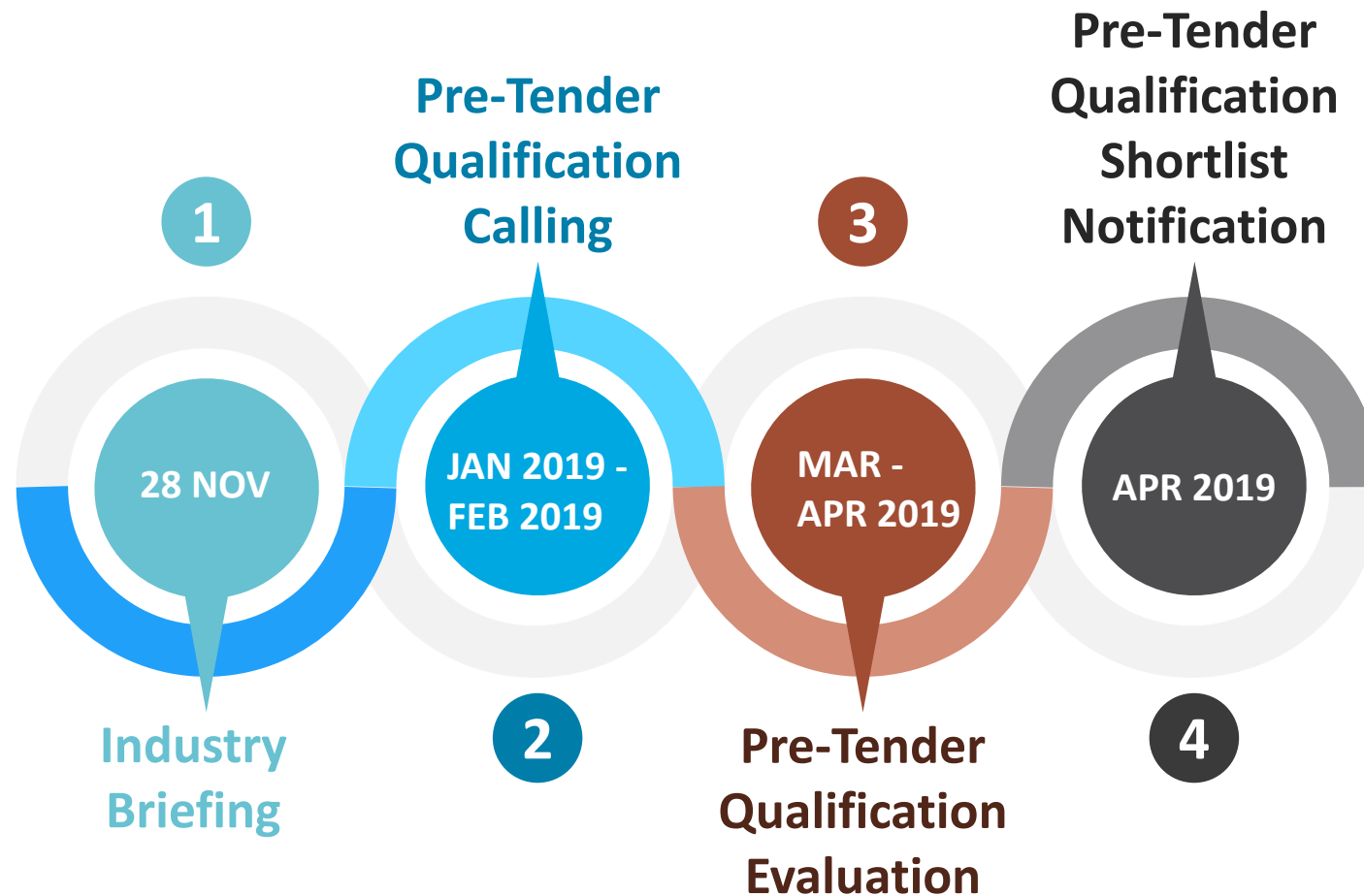
Approach & Scope of Appreciation

Understanding of the project and requirements

Response to specific topics



Contract 3C: PTQ and Tendering Timeline





Key Takeaways

SAFETY • SCHEDULE • BUDGET • QUALITY



Upcoming Tenders and Resources



01

UPCOMING TENDERS

C3C Pre-tender qualification – Jan 2019 to Apr 2019

C3A Tender – Q1 2019

C3C Tender – Q3 2019

C4A Tender – Q2 2019

C5A Tender – Q3 2019

C3D Tender – Q4 2019

02

DTSS 2 RESOURCES

Visit <https://www.pub.gov.sg/dtss/phase2/resources> for more information related to DTSS 2 projects

03

FOR ENQUIRIES

Use TWRP@jacobs.com mailbox for general enquiries





Q&As

Reminder: Ground Rules



INFORMATION SHARED

in this briefing / presentation is only meant for your guidance and planning purpose.

First

Second

Third

NO QUESTIONS

or information to be asked pertaining to ongoing TWRP tenders.

ACTUAL CONTRACT INFORMATION

shall derive from respective tender documents issued by the Board.





Thank you