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# Crane Safety – A Collaborative Effort



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# Overview

- **Crane-related WSH Statistics**
- **Crane-related Incidents**
- **Challenges & Working in the New Normal**



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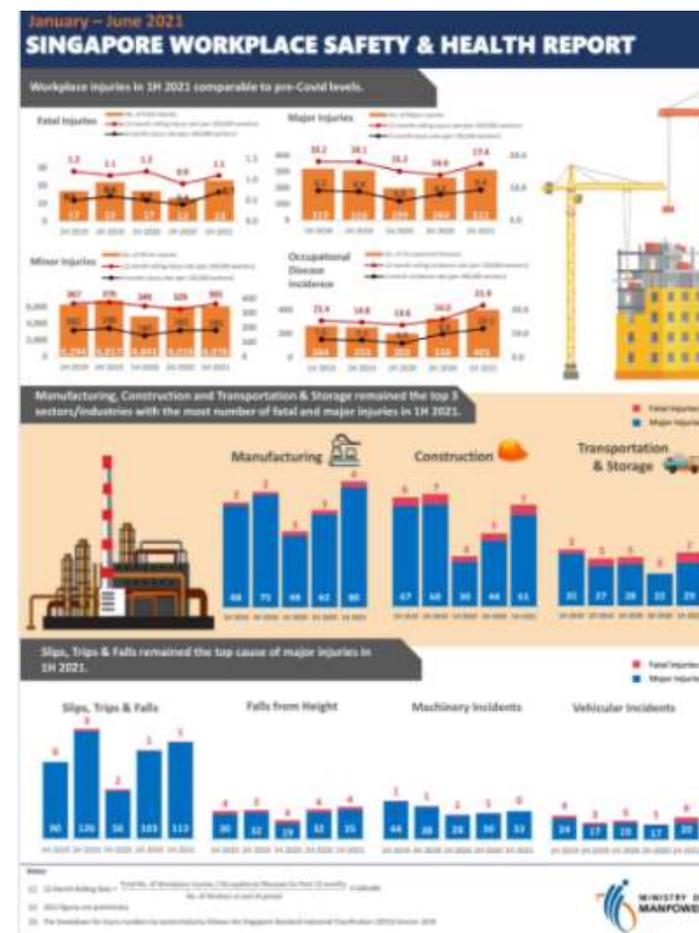
# Crane-related WSH Statistics



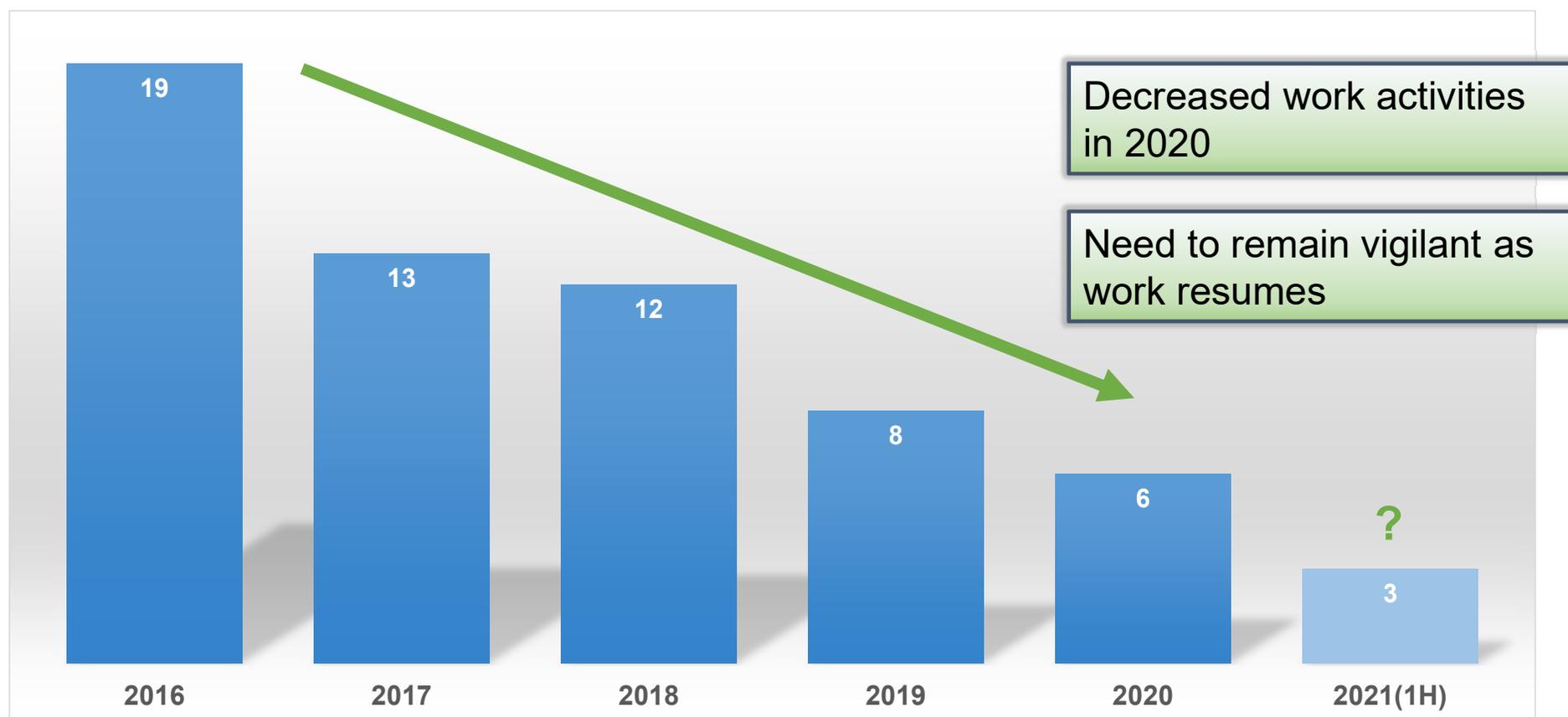
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# WSH Performance 1H 2021

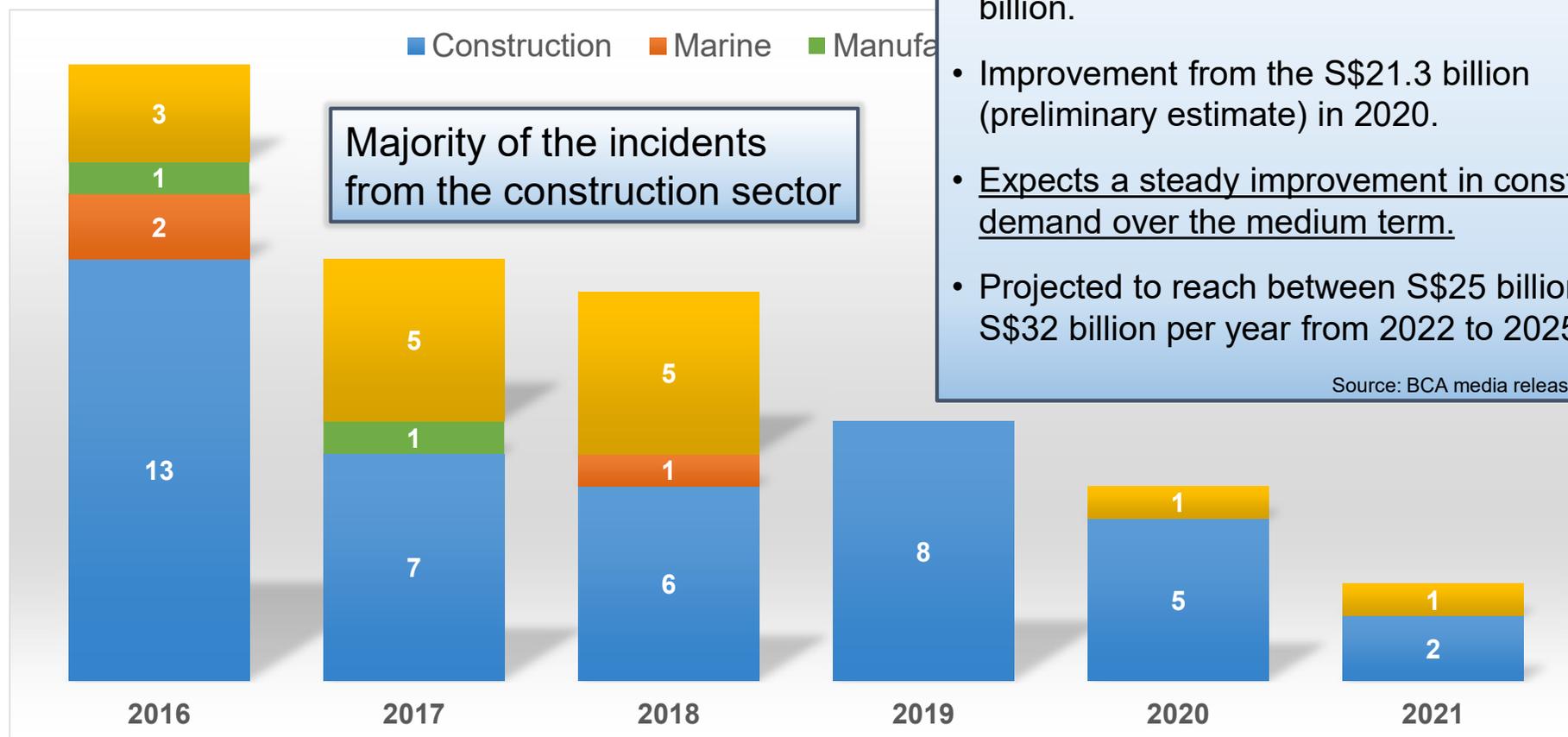
- Workplace injury and fatality rates in 1H 2021 comparable to pre-COVID levels (2H 2019).
  - 193 injuries vs 205 injuries per 100,000 workers
  - 0.7 fatalities vs 0.6 fatalities per 100,000 workers
- Workplace injuries and fatalities in 1H 2021 has increased slightly when compared with 2H 2020 as a result of gradual resumption of workplace activities.
- Vehicular Incidents and Falls from Height continue to be the top causes of fatalities.
- Slips, Trips and Falls remain the top cause of injuries.



# Crane-related Dangerous Occurrences



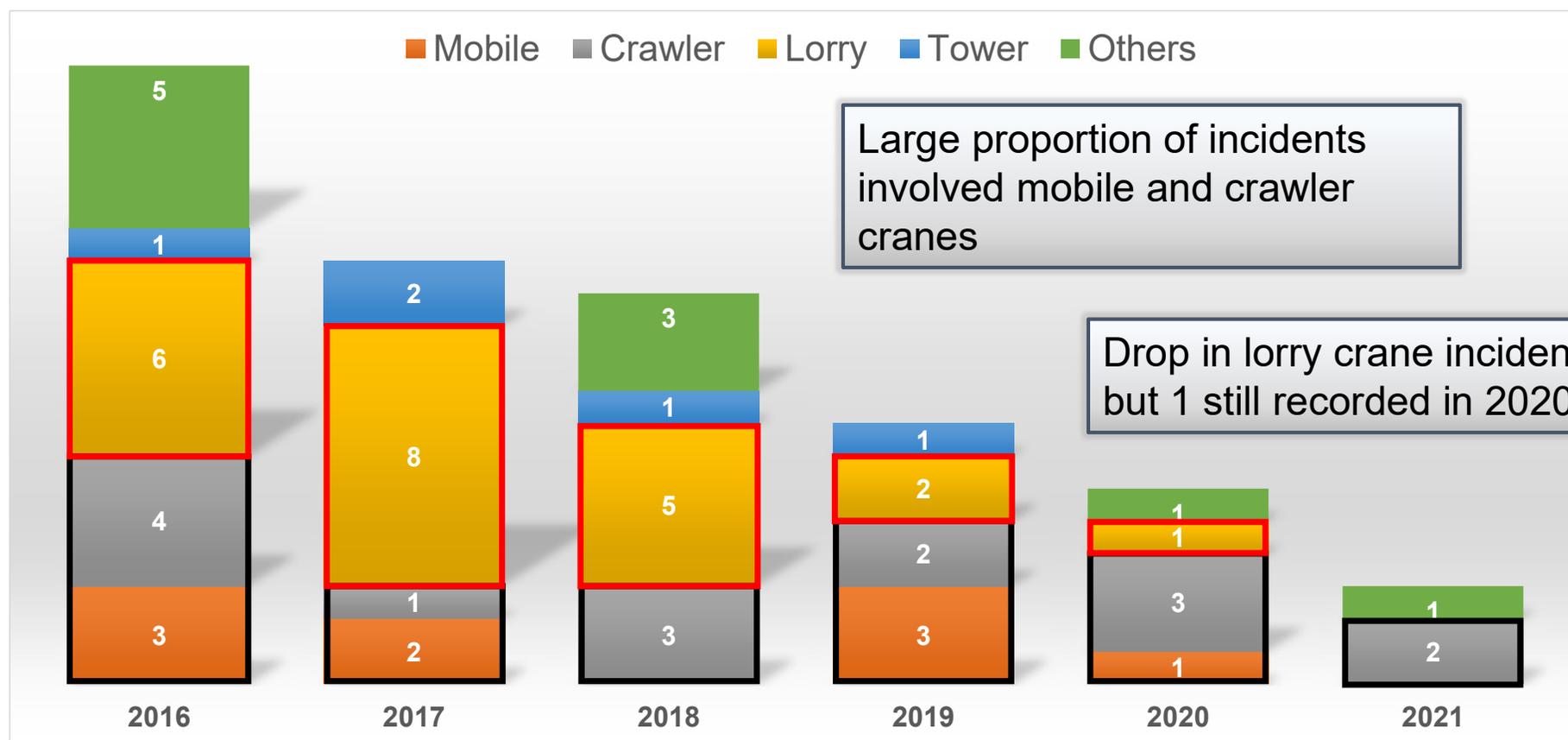
# By Industry



- BCA projects the total construction demand in 2021 to range between S\$23 billion and S\$28 billion.
  - Improvement from the S\$21.3 billion (preliminary estimate) in 2020.
  - Expects a steady improvement in construction demand over the medium term.
  - Projected to reach between S\$25 billion and S\$32 billion per year from 2022 to 2025.
- Source: BCA media release 18 Jan 2021



# By Equipment Type



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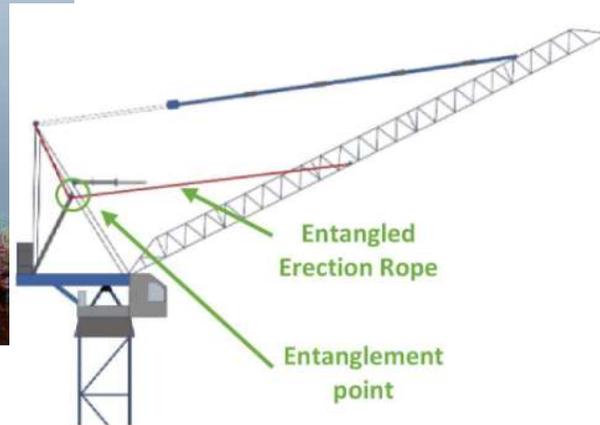


# Crane-related Incidents



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# Failure of Tower Crane



- On 4 Nov 2019, a luffing jib tower crane was lifting a bundle of scaffolding material when its jib suddenly buckled, causing the load and the hook block to drop.
- The accident result in one fatality and injury to another worker.

- The erection rope became entangled with the A-frame during the lifting operation.
- As the jib was lowered, the erection rope took on the weight of the jib and load, and eventually failed.





## Learning Report

Fatal Accident Involving Failure  
At Kajima Overseas Asia (Singapore)  
At Tan Tock Seng Link

Circular: Recommendation from Learning Report for Fatal Accident Involving Failure of Tower Crane



MOM/OSHD/2020-10

06 NOVEMBER 2020

*Tower Crane Owners, Approved Crane Contractors, Authorised Examiners and All Interested Parties*

### RECOMMENDATION FROM LEARNING REPORT FOR FATAL ACCIDENT INVOLVING FAILURE OF A TOWER CRANE

1 On 6 November 2020, the Ministry of Manpower (MOM) published a Learning Report for a fatal accident involving the failure of a Luffing Jib Tower Crane. The tower crane was lifting a bundle of scaffolding material when the jib failed. This resulted in the load and the hook block of the tower crane plummeting down to the ground. The accident killed one worker and injured another.

2 MOM introduced the concept of a Learning Report in 2019 under section 27A of the Workplace Safety and Health Act, as a way for industry to be informed about hazards they are not aware of, as soon as possible after an accident, without having to wait for the conclusion of criminal proceeding. The sole objective of the Learning Report is to educate industry to prevent the recurrence of workplace incidents, where the WSH risks are not well understood, could be present in other companies, and have the potential for serious harm.

3 In consultation with industry stakeholders, MOM has published a Learning Report on the above accident to alert the industry on the relevant learning points. It was found that the crane's Erection Ropes are at risk of becoming entangled with the fixed structure of the crane during lifting operations. The entanglement can prevent the jib from being lowered properly.

4 MOM recommends that Erection Ropes should be removed or disconnected and stowed securely on Luffing Jib Tower Cranes after the jib installation. This is to eliminate any risk of accidental entanglement of the Erection Ropes with any fixed structure of the cranes. If the removal or disconnection of the Erection Ropes is not practicable or it introduces additional risks, a review is required to identify any potential entanglement points and mitigate the risks of accidental entanglement of the Erection Ropes at these points. Support brackets to contain and guide the Erection Ropes in position should also be adequately designed to prevent unintended slippage during the repeated raising and lowering of the jib.

Erection ropes are at risk of becoming entangled with the crane's fixed structure, preventing the jib from being lowered properly.

Erection ropes should be removed or disconnected and stowed securely after jib installation.

Identify potential entanglement points and mitigate risk of entanglement.

Support brackets adequately designed to prevent unintended slippage.





# Overturning of Crawler Crane



- Crawler crane was slewing when it overturned to its side.
- Crane's tracks were retracted.



# Overturning of Piling Rig



Similar type of incident in the same year

- Involving a piling rig.
- Piling rig was travelling across the worksite when it overturned.
- Piling frame had just been mobilised to the worksite.
- Tracks had not been extended.



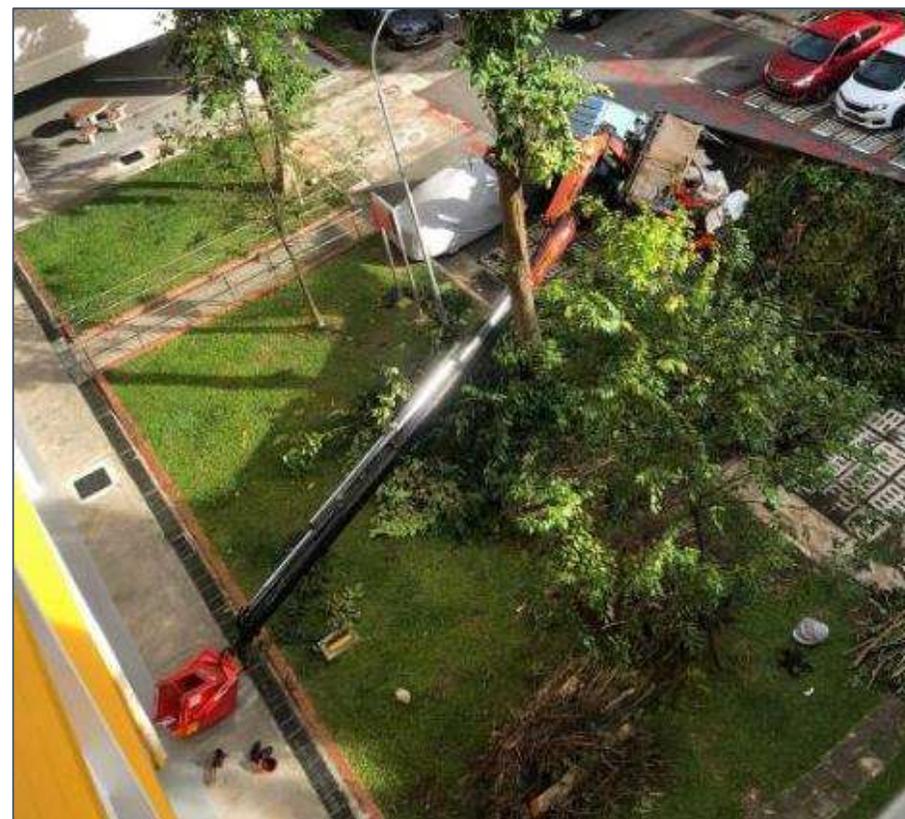
# Ops Heron III

- Control measures are often administrative.
- Need for better controls in relation to operation in retracted tracks configuration.



# Overturning of Lorry Crane

- Lorry crane overturned to its side as the workman basket with worker in it was being lowered.
- Outriggers were not fully extended.



# Overturning of Lorry Crane



## Common occurrences

- Many similar incidents over the years.
  - Lorry crane was lifting an excavator onto its lorry bed when it overturned.
  - Outriggers were not fully extended.
- Operator slewed the boom when the outriggers had been retracted, resulting in the overturning of the crane.



# Safe Lifting Clinic



- Assist lorry crane owners in taking steps to ensure safe lifting operations whilst using lorry cranes.



## WSH Guidelines Safe Use of Lorry Cranes



# Adoption of SCS

- SCS can detect the position of outriggers and compute the safe zone for crane operations.
- 6 government agencies committed to encourage adoption of SCS at WSH Symposium on Crane 2020.



- Increase in lorry cranes with SCS.
- Requirements have been cascaded to partners and stakeholders.



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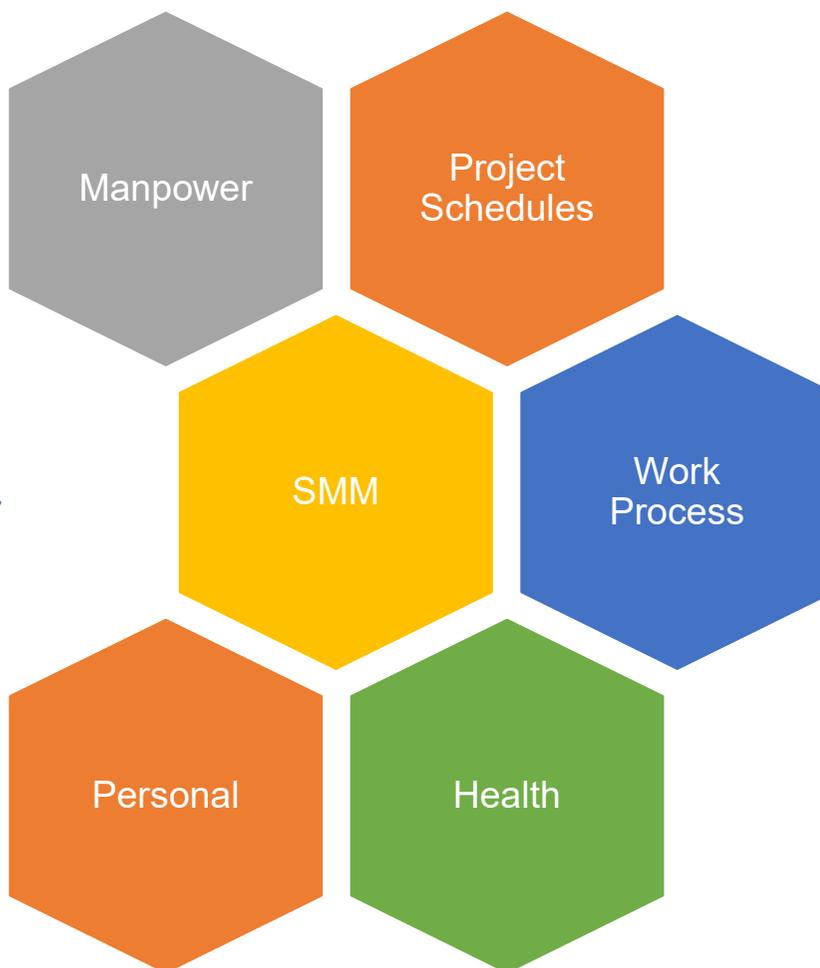
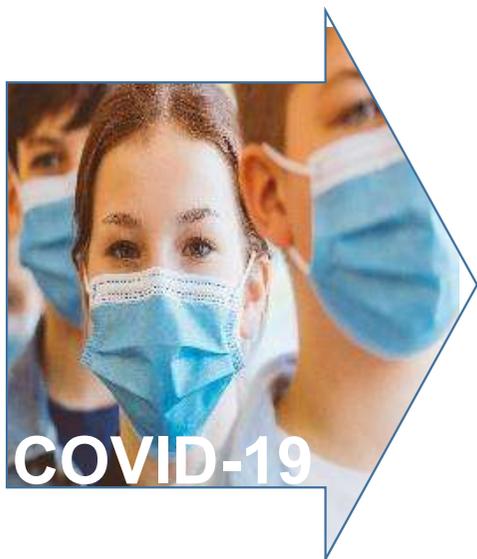


# Challenges & Working in the New Normal



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# Changes to the Workplace



Distractions or reduces capacity to manage general WSH

Changes to accommodate SMM

Affects well-being of the workforce



Demonstrated the need to also focus on health and hygiene

Impetus to redesign work to improve WSH



## Summary

- Leverage on technological developments
- Workplace and the way we work has changed

# Success through Collaboration



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# Thank You

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