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ENA - APGA Seminar 2024

Melbourne CBD MRP Program

15th May 2024

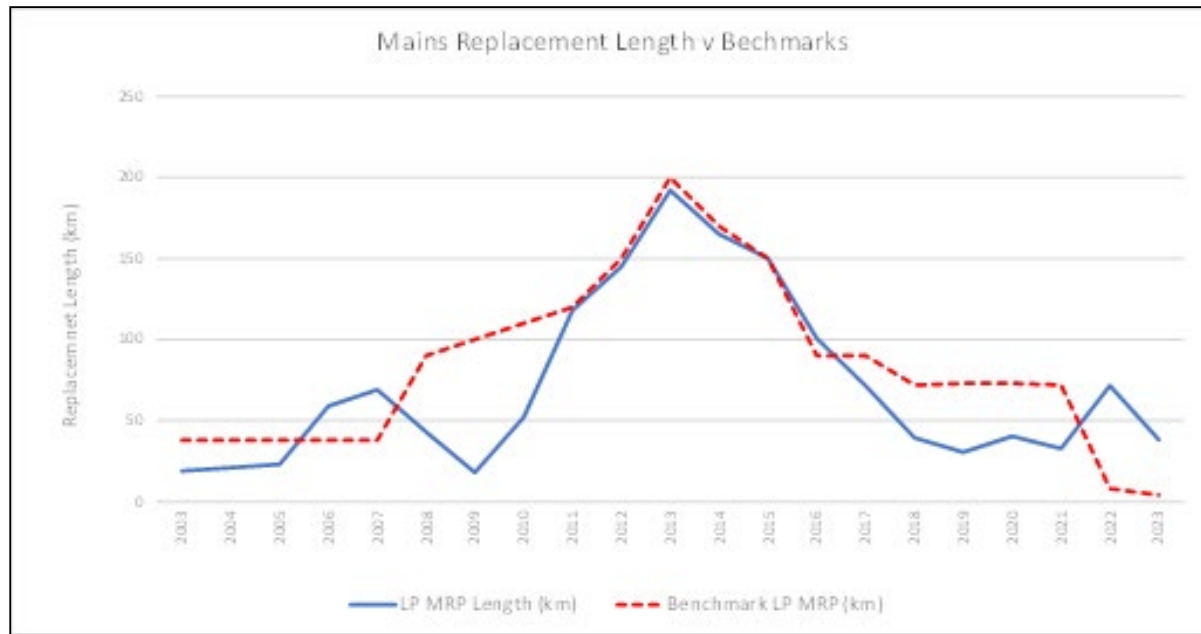


Agenda

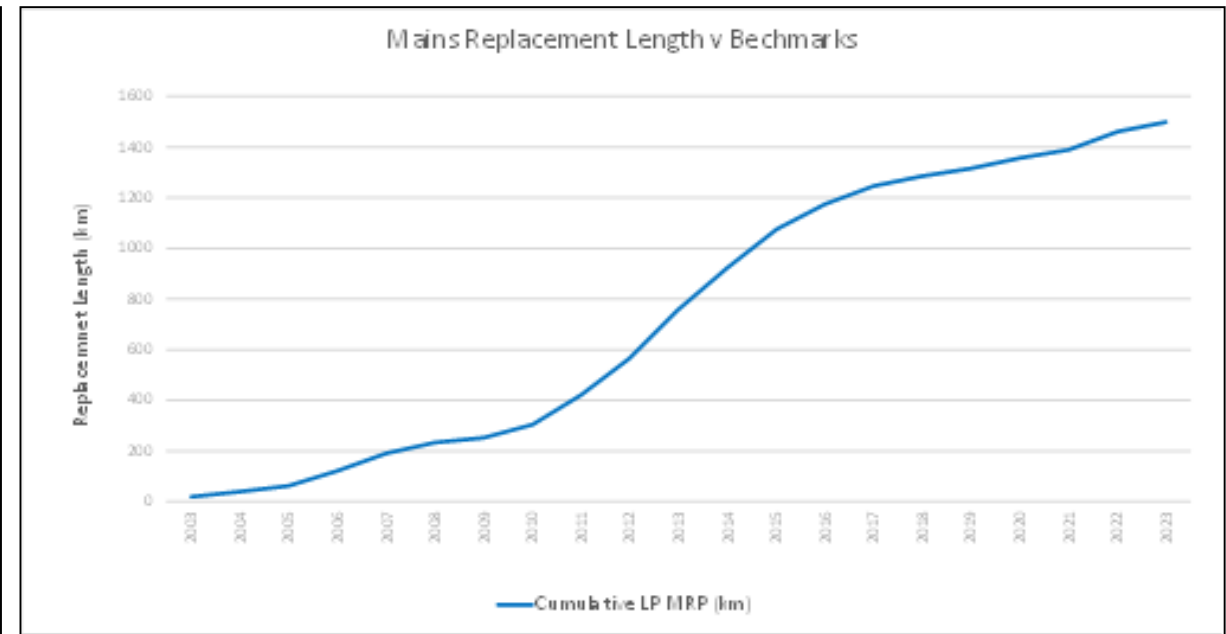
- VIC MRP Program Overview
- CBD MRP Program
- Project and Contract Management
- Key Construction Challenges
- Lessons Learned and Opportunities for Improvement
- Q&A

VIC MRP Program Overview

- Vic MRP started in **2003** to replace cast iron, unprotected steel and high density polyethylene mains.
- Program spanned **4x Access Arrangement periods** – completed CBD in 2022 and Metro H1 2023.
- In total, circa **1,500km** of mains replaced including **29.4km** of Melbourne CBD.



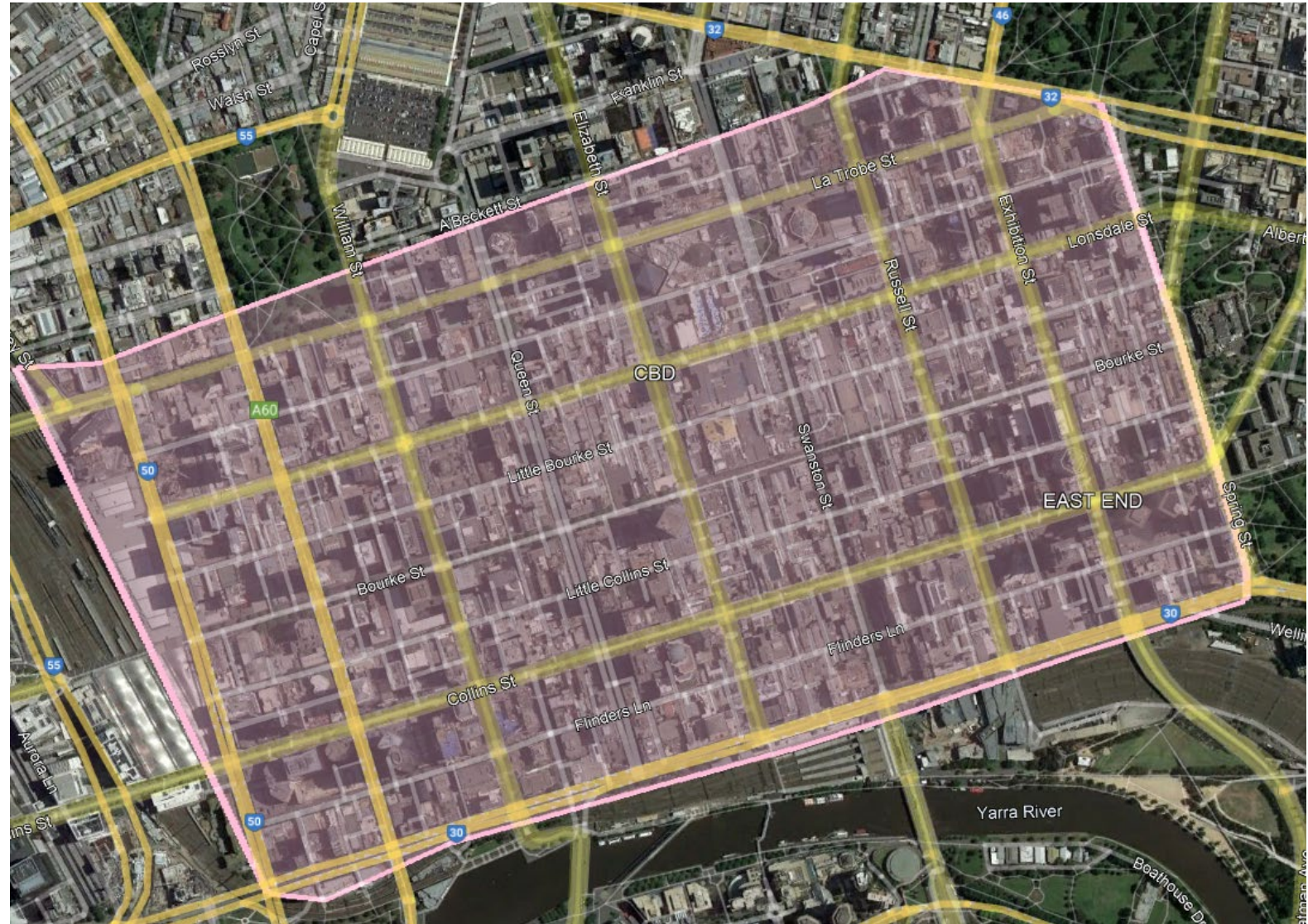
MRP by Year Against Benchmark



Cumulative MRP

CBD MRP (2018-2022)

- Commenced in July 2019 and completed by December 2022
- Completed **29.4km mains** renewal
- Upgraded more than **700 Services** including multistorey buildings
- Actual cost **\$92 million**
- Good overall safety performance and customer satisfaction
- Most of the project was done under covid conditions with an average of 6 to 8 gas renewal crews working



Project and Contract Management

Commercial Model Complexities for CBD MRP

Fixed Lump Sum (FLS) model

- FLS model had been successful in delivering previous large MRP programs in metro suburbs
- Contractor pricing under FLS model for CBD MRP was very high due to unknown risks, congestion of existing assets, heritage sites, contaminated soils, and interaction with large businesses
- Efficient pricing was a key challenge as FLS model was way off the Access Arrangement (AA) estimates

Cost Plus Arrangement

- Cost Plus arrangement adopted for CBD MRP to ensure we got efficient pricing with CBD partners
- It was a complete paradigm shift from tested FLS model to first time cost plus model that was materialized after challenging discussions with stakeholders and meticulous preparations

Project Management

KIPs

- stages were pre-awarded to contractors but contractor performance against agreed KPIs metrics across safety, cost, schedule and quality had to be achieved before next package of work could commence
- In few occasions the works transferred to other contractors based on performance

Unit Cost Management

- actual run rates monitored regularly against budget and ensured ongoing forecast run rates to pre-empt any cost issue and prevent any overspend

Scope Variations

- variation registers were maintained for each stage

Resource Management

- principle contractors utilised combination of internal and sub-contractor resources and specialised contractors, key challenge was retaining skilled resource due to Vic Big Build and multiple projects happening across Vic by other utility companies

Full-Time Site Supervision – Day and Night Shifts

Benefits

- Quickly addressed site technical queries,
- Verified site progress and contractor resources to control costs – contractor monthly invoices verified by supervisors against daily diaries
- Promoted compliance to APA procedures with positive coaching and mentoring
- Ensured quality control by identifying any non-conformances and immediate rectifications
- Ensured safety compliance by conducting daily pre-starts, safety toolbox talks and safety audits including PVIT, FRP, HTP, P&E, and joint audits with AGIG and ESV
- Verified contractors paperwork and implemented hazardous task permits process
- Coordinated communication with Melbourne City Council and other utility authorities
- Presented APA for communication with customers and amicable complaints resolutions
- Performed line walks for scope investigations, weekly or daily planning and projects closeouts

Key Construction Challenges

Key Construction Challenges

Asset congestion

- Excavations without damaging other utilities in close proximity to gas assets
- Complex jobs in deep excavations, tram crossings with tunnel boring
- Open cut to replace shallow or non-compliant sections
- Separation / clearances from other utility assets
- Off-set distances from building alignment
- Mains running under canopies

Maintain supply

- Un-interrupted supply to the customers
- Upgrading services in multi storey buildings
- Commissioning and decommissioning around large buildings

Traffic and Pedestrian

- No interruption to trams and public transport
- Traffic and pedestrian management around construction sites

Stakeholders

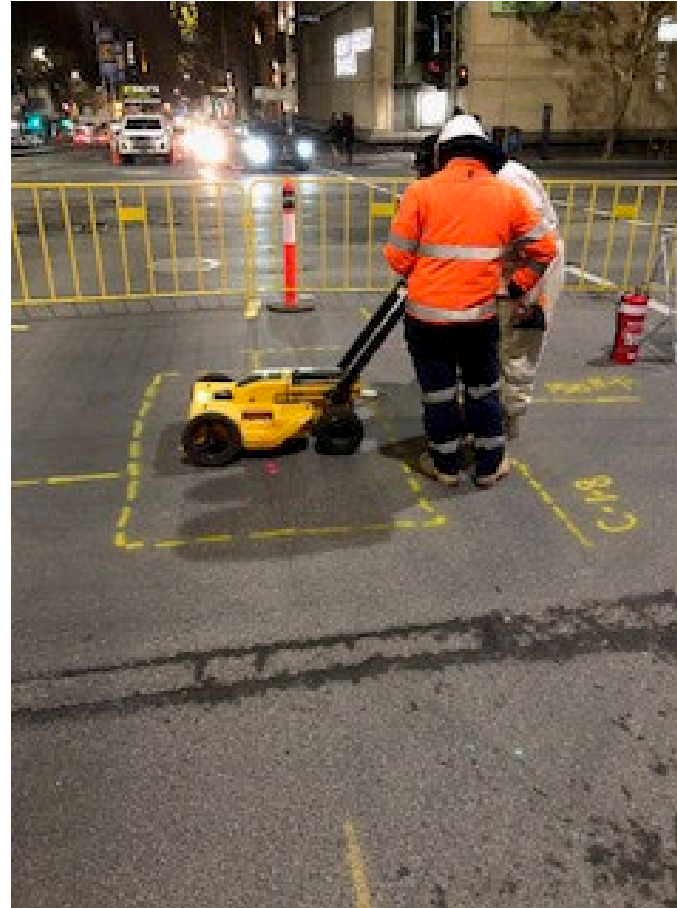
- High noise of construction machinery, e.g. saw cutting, NDD, etc.
- Interacting with residents, businesses, council and other utility authorities
- Dealing with heritage sites and artefacts

Key Construction Challenges – Asset Congestions

Advanced asset location methodologies



Locating assets - Flinders Lane



Ground Penetrating Radar
Assets Locator



Electromagnetic Induction
Asset Locator - SE3 Swanston St

Key Construction Challenges – Asset Congestion



**Saw Cutting – Lt Collins St (SE2)
Comdain**



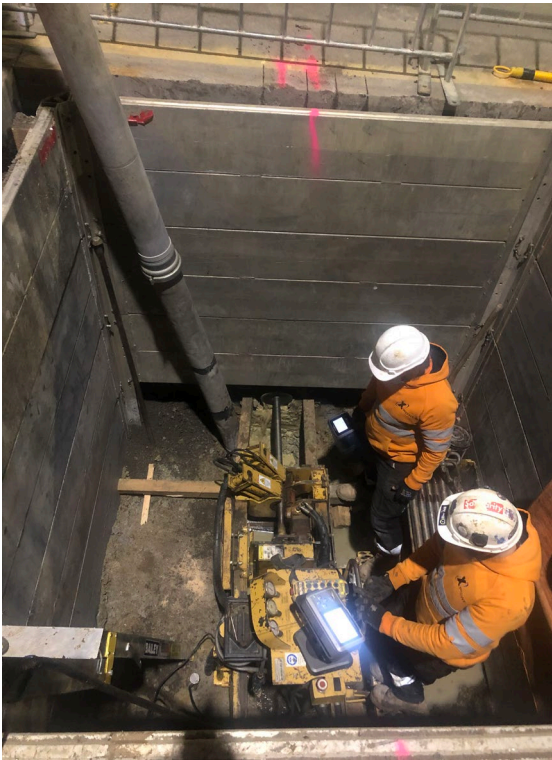
**Inline camera inspection – Lt Bourke St (NE4)
Diona**



Key Construction Challenges – Asset Congestion



Welding of End Cap in Deep Excavation



Tram crossing with Bed Borer
Flinders Street



Installation of Warning Tape
Open Cut Section Lt Bourke St



Compactions and Backfilling
Open Cut Section Lt Bourke St

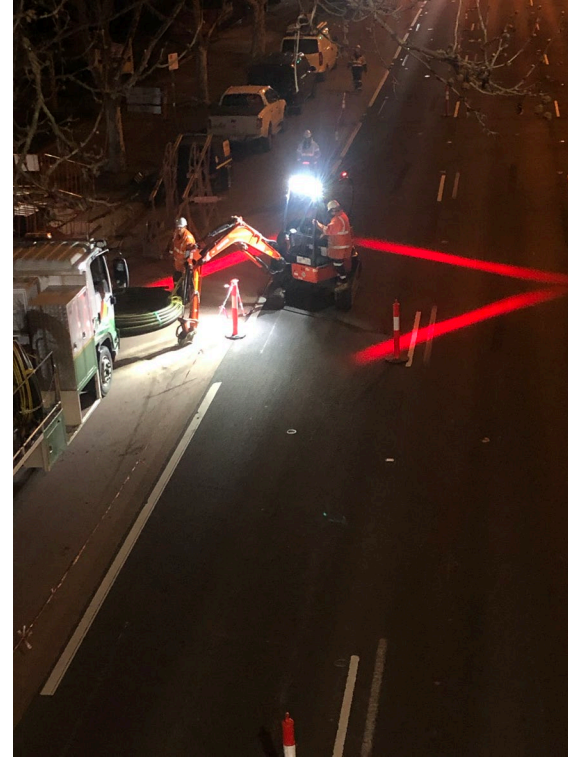
Key Construction Challenges – Asset Congestion



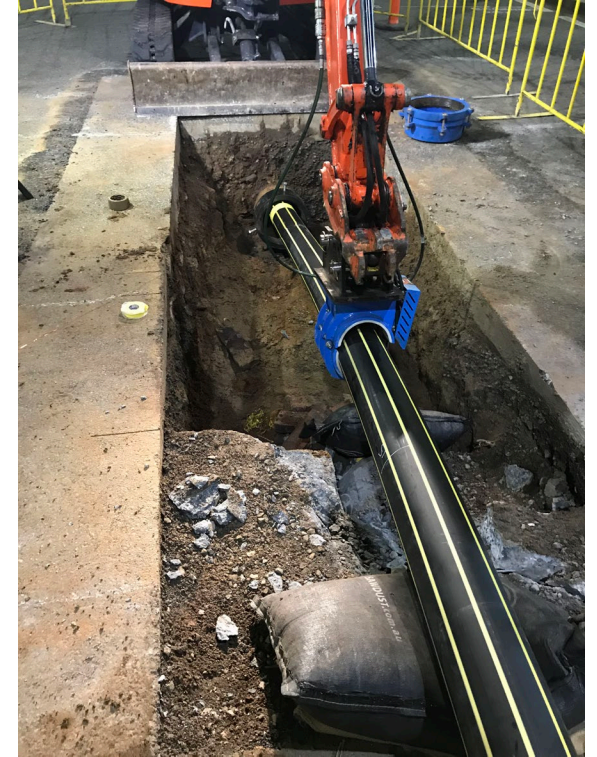
**Challenge maintaining
Separation from other assets**



**Road crossing with deep
Excavation – using shoring plates
for trench support**



**Excavator mounted with
Flashing lights marking
Exclusion Zone**



Use of Pipe Grabber for Insertion

Key Construction Challenges – Asset Congestions



Condition of Old Cast Iron Gas Main



Old Cast Iron Gas Main with off-take connections



Old Cast Iron Main Clogged with Debris



**Elbow Blockage that was Cut-out
Lt Collins St SE1 - Comdain**

Key Construction Challenges – Asset Congestion



**Services in TPZ
Russel St - Downer**



**Services in TPZ
Russel St - Downer**

Key Construction Challenges – Maintain Supply



**Temporary Regulator Setup
Lt Collins St – Diona**

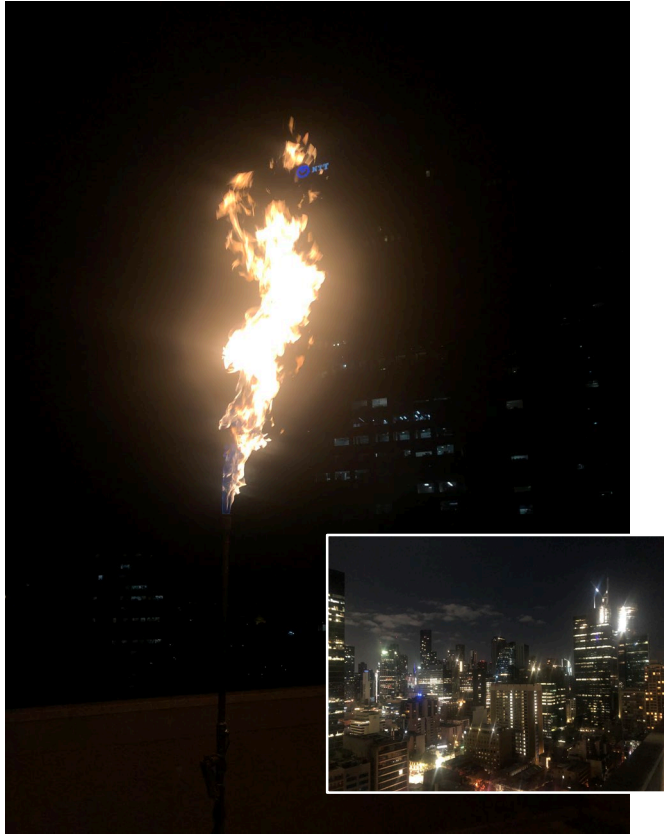


**Wask Gears for Cut and Cap
Preparing for Decommissioning**



**NRC Emergency Crew
Attending Existing Gas Leak**

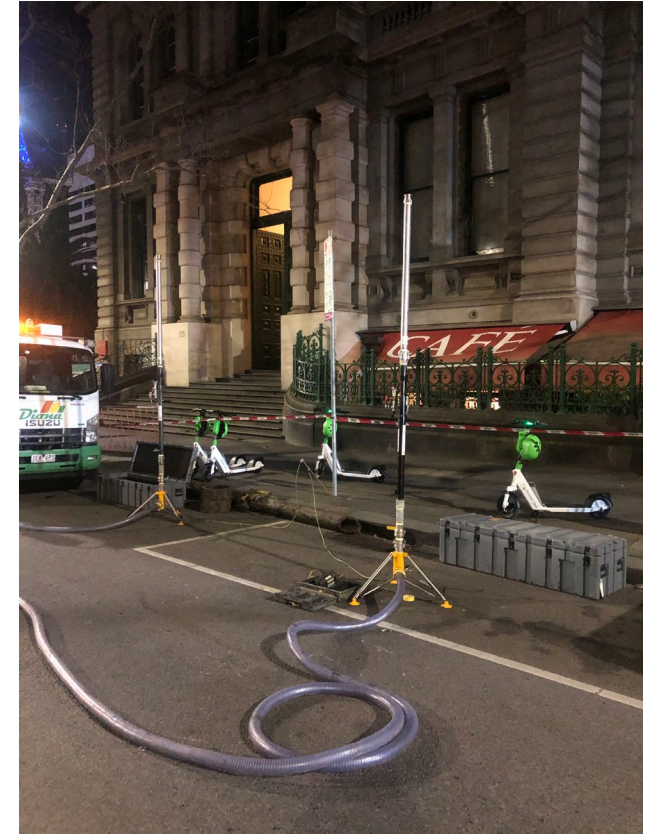
Key Construction Challenges – Maintain Supply



**Flaring on Roof of Building
Spring St**



**Flaring and Venting with Nitrogen for Decom
Flare Stack opposite to Flinders Station**



**Decom Gas Main with Purge Ejectors
Spencer St LP Decom**

Key Construction Challenges – Traffic and Pedestrian



Traffic Management Setup - Trams and Public Transport

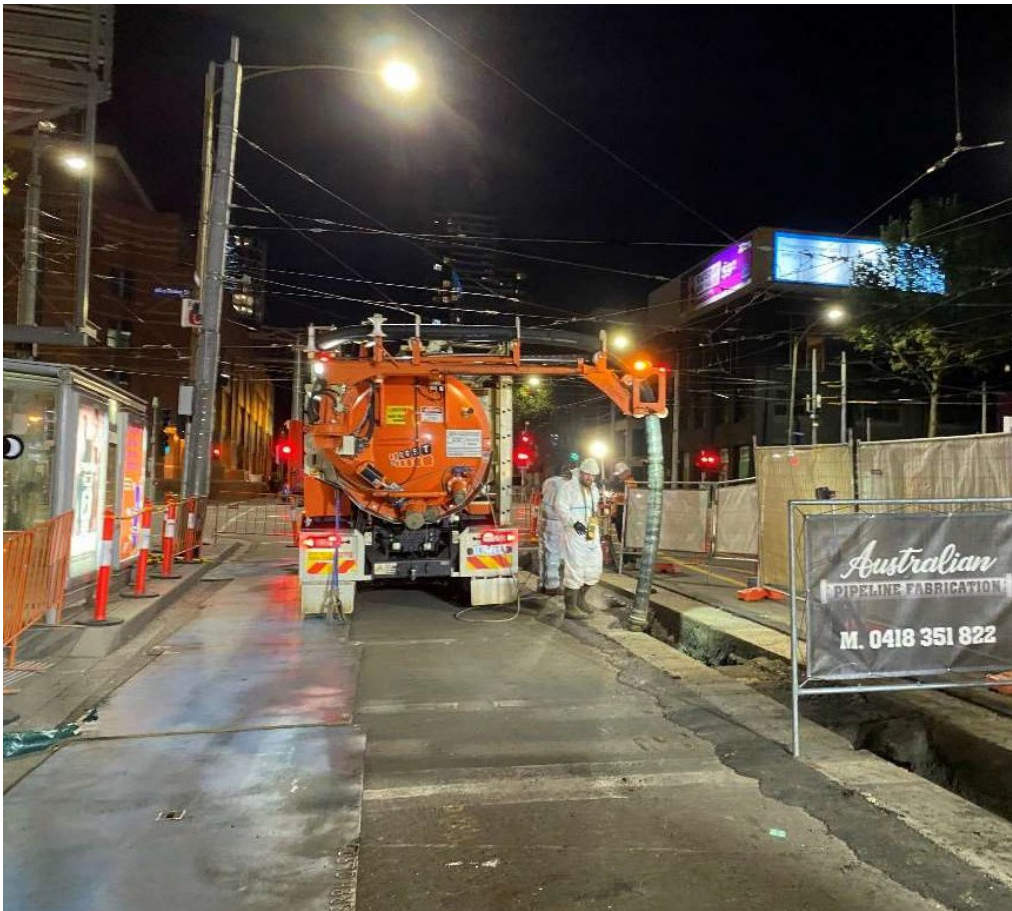


Traffic and Pedestrian Management - Franklyn St

Key Construction Challenges – Stakeholders



Non-destructive digging (NDD)



Non-destructive digging (NDD) – Spencer St

Key Construction Challenges – Stakeholders



**Hardware Ln – After Works
During Covid Lockdown**



Hardware Ln –Before Works or Lockdown

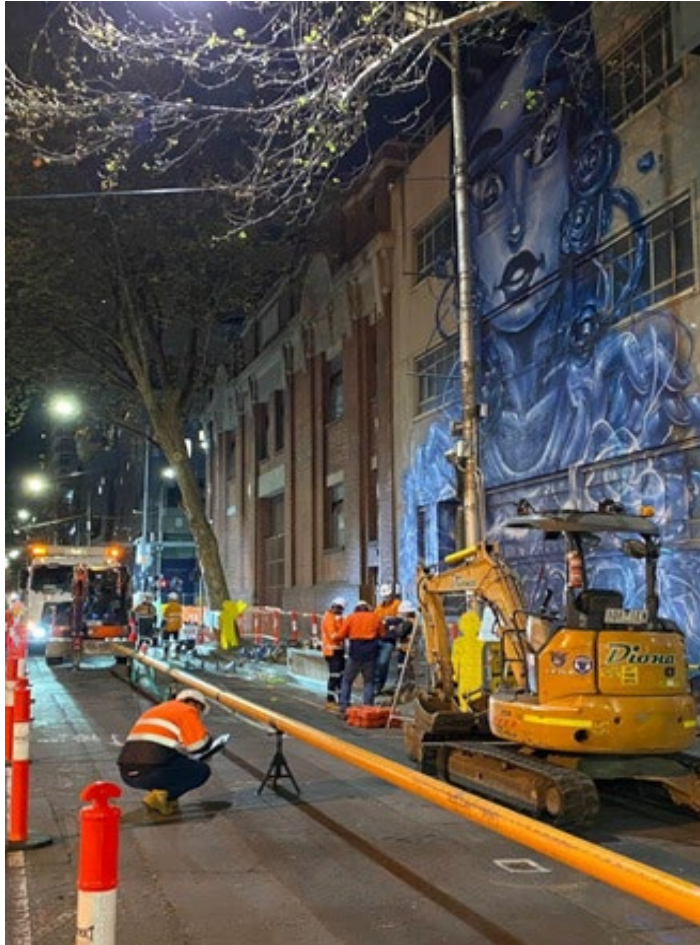


Block PI SE1 – Comdain

Key Construction Challenges – Stakeholders



**Effectively dealt with Heritage sites
and Artefacts especially in CBD**



**Steel Trunk welding
Spencer Street Trunk**

Lessons Learned and Opportunities for Improvement

Opportunities for Improvement

Tender Process

- Reduce transactional tendering, offering larger work packages providing contractors better ability to plan workforce, continuity of work to attract sub-contractors and allow better investment in equipment to drive efficiency

Contractors Development

- Develop contractors to enable them issue permits for low risk activities to improve scheduling and production

Field Delivery Advisor

- Refine Supervisor role into Field Delivery Advisor to ensure coaching, mentoring and assistance for contracting crews and not just focus on quality audit

Contract Management

- Use incentives and penalty mechanism(s) to ensure collaborative efforts for project delivery targets (schedule, cost, safety, quality)

Risk Based Approach

- Use Risk based approach for environmental and cultural heritage surveys and studies instead of conducting surveys for each site

Q & A

For further information

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