



# ARDEN AND PARKVILLE COMMUNITY REFERENCE GROUP

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MEETING 8

13 DECEMBER 2019



Construction partner:



# AGENDA

1. Introductions and welcome
2. Construction update – Parkville
3. Construction update – North Melbourne
4. Tunnelling update
5. Stakeholder and communications update
6. Intake Substation Development Plan update
7. Parkville Storytelling Project
8. Metro Tunnel Creative Program update
9. Questions
10. Meeting close

# CONSTRUCTION UPDATE - PARKVILLE



# PARKVILLE 2019/2020 PROGRAM

Activity	Dec	Jan	Feb	Mar	Apr	May
Grattan Street east: stage 3 excavation						
Grattan Street east: retail and entrances excavation						
Grattan Street west: service relocations						
Grattan Street west: station entrances construction						

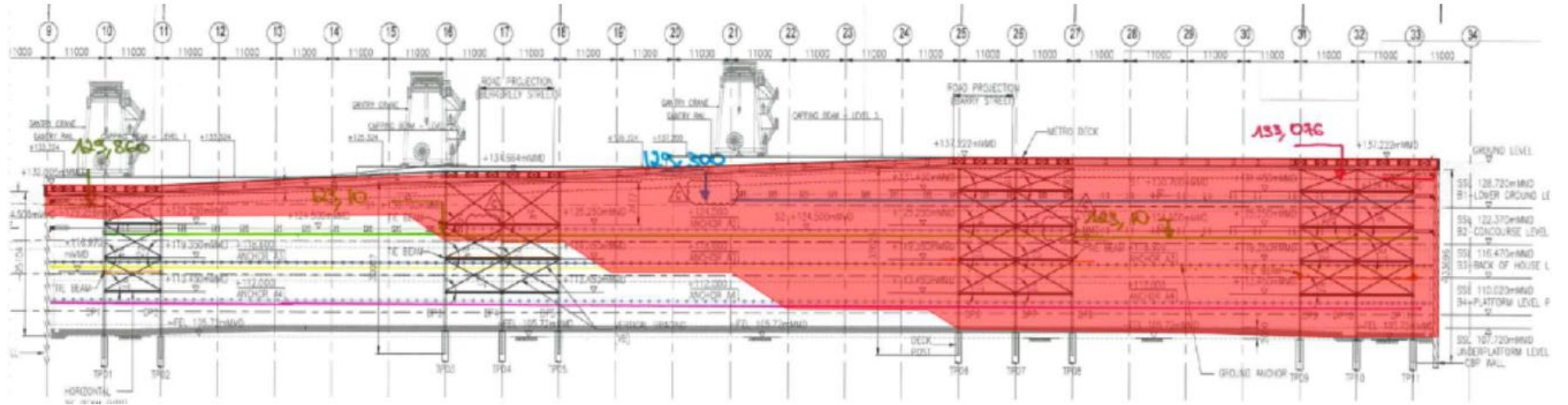
*Dates are indicative and subject to change*

# WHAT'S HAPPENING AT GRATTAN ST EAST

- Phase 2 excavation complete
- Phase 3 excavation underway
- Trafficable deck complete
- Station box bulk excavation scheduled for completion March 2020
- Royal Parade station entrance excavation commencing mid-December 2019
- Strut and ground anchor installation ongoing.



# EXCAVATION PROGRESS





**GRATTAN STREET EAST**

# PARKVILLE PROGRESS





# PARKVILLE PRECINCT 2019 PROGRESS



# WHAT'S HAPPENING AT GRATTAN ST WEST

## Grattan Street southern footpath

- Sewer and telecommunications relocations underway until mid-December (night works)
- Additional work may be required with sewer relocation throughout January 2020

## Elizabeth Street/Royal Parade northbound lanes

- Sewer and telecommunications underway until mid-December (night works)
- Water relocation (Royal Pde service) – complete (excluding tie-ins)
- HV relocation (Royal Pde service) – complete

# GRATTAN STREET WEST TREE REMOVAL





**GRATTAN STREET WEST**

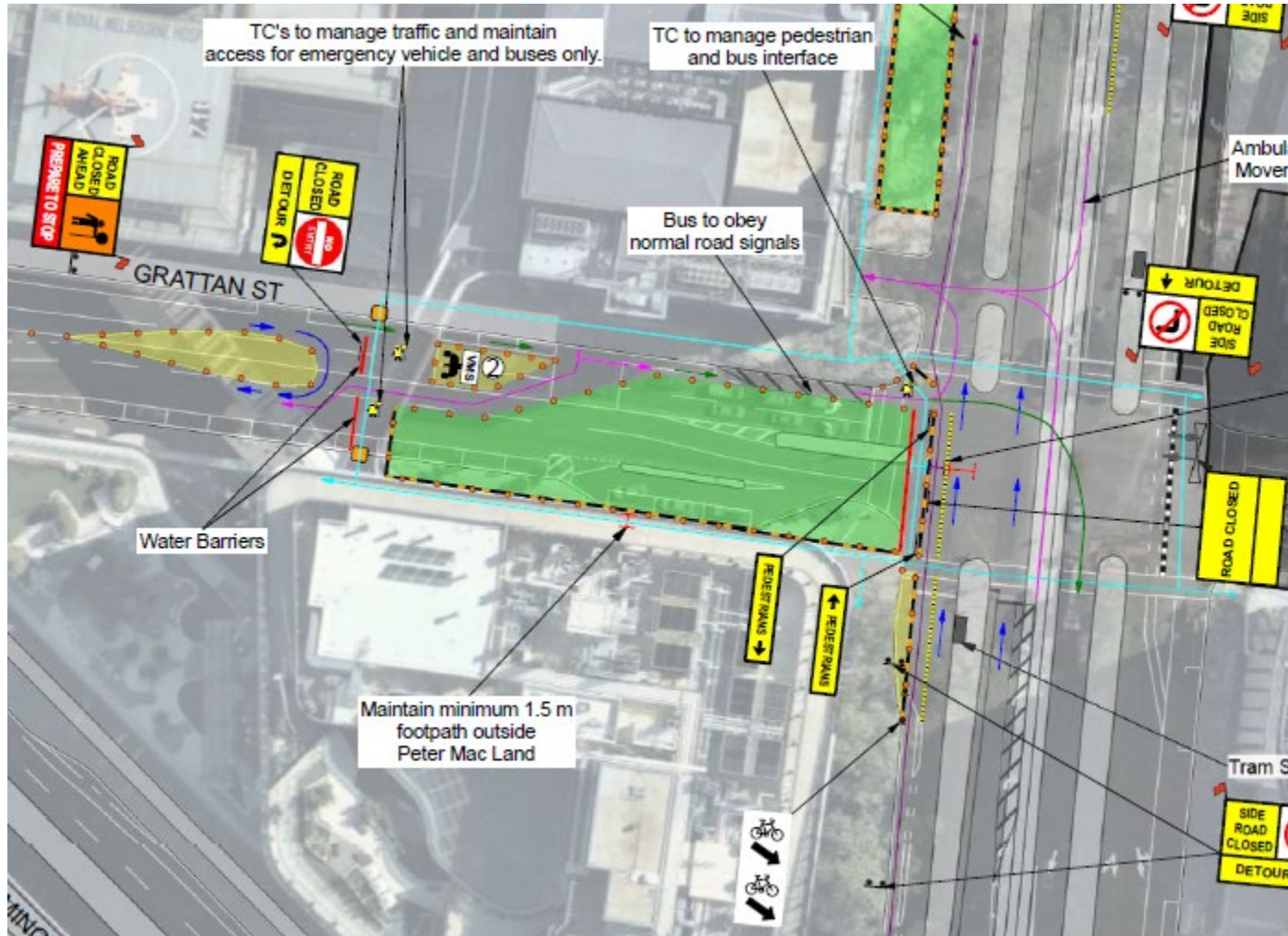
# UPCOMING WORKS

## Closure between Flemington Road and Royal Parade

### 2020:

- 24/7 from late January (TBC) for approximately 4-5 weeks
- Weekends will include an additional closure of the Grattan Street intersection
- Scope of works:
  - Relocating underground services
  - Median modification to the Elizabeth Street median strip
  - Tree removal (x1)

# TRAFFIC UPDATE – GRATTAN STREET WEST



# CONSTRUCTION UPDATE – NORTH MELBOURNE



# NORTH MELBOURNE 2019/2020 PROGRAM

Activity	Dec	Jan	Feb	Mar	Apr	May
East box base slab construction						
East box wall construction						
Cross passage ground improvement, Lothian St (CP5)						
Concourse slab construction						
Tunnelling (North Melbourne to Kensington)						
Tunnelling (North Melbourne to Parkville)						

*Program is indicative and subject to change*



# WHAT'S HAPPENING IN NORTH MELBOURNE

## **New North Melbourne Station site**

- Inner wall and concourse slab construction
- Completion of strut removal
- Tunnelling, including operation of slurry treatment plant, grout pump and segment facility
- Operation of concrete batching plant (including transport of concrete to other Metro Tunnel sites)
- Site maintenance activities
- Service proving
- Survey and monitoring activities

## **Cross passage 5 (Lothian Street)**

- Production jet grouting
- Spoil removal and street cleaning

# WHAT'S HAPPENING IN NORTH MELBOURNE

## Out of hours works (New North Melbourne Station site)

- 6pm –10pm (evening works), Monday to Friday
  - Inner wall and concourse slab construction (including concrete deliveries), and strut removal (east box)
- 10pm – 7am (night works), Monday to Friday
  - Over-size equipment deliveries to and from site and use of a crawler crane to unload deliveries
  - Inner wall and concourse slab construction and strut removal
  - Concrete deliveries for inner wall and concourse slab construction
  - Road cleaning on Arden and Laurens streets as required
  - After 6pm, construction vehicles will enter and exit via Arden Street wherever possible
- 24 hours, seven days a week
  - Tunnelling, slurry treatment plant, grout pump and segment facility operation.

# WHAT'S HAPPENING IN NORTH MELBOURNE





**INTERNAL WALL CONCRETE POUR**



**INTERNAL WALL CONCRETE POUR**



## COLUMN FORMWORK



**COLUMN CONCRETE POUR**

# TUNNELLING





# TUNNELLING TIMELINE

Indicative timing	Activity
Remainder of 2019	TBM 1 & 2 tunnelling North Melbourne to Western Portal
Q1 2020	TBM 1 & 2 retrieved and transported back to North Melbourne
Q2 2020 – Q4 2020	TBM 1 & 2 tunnelling North Melbourne to Parkville

*Program is indicative and subject to change*

# TBM PROGRESS

## North Melbourne to Kensington

### TBM Joan

- 540 metres
- 310 rings installed

### TBM Meg

- 280 metres
- 160 rings installed





## TUNNELS 1 AND 2



**TUNNEL 2**

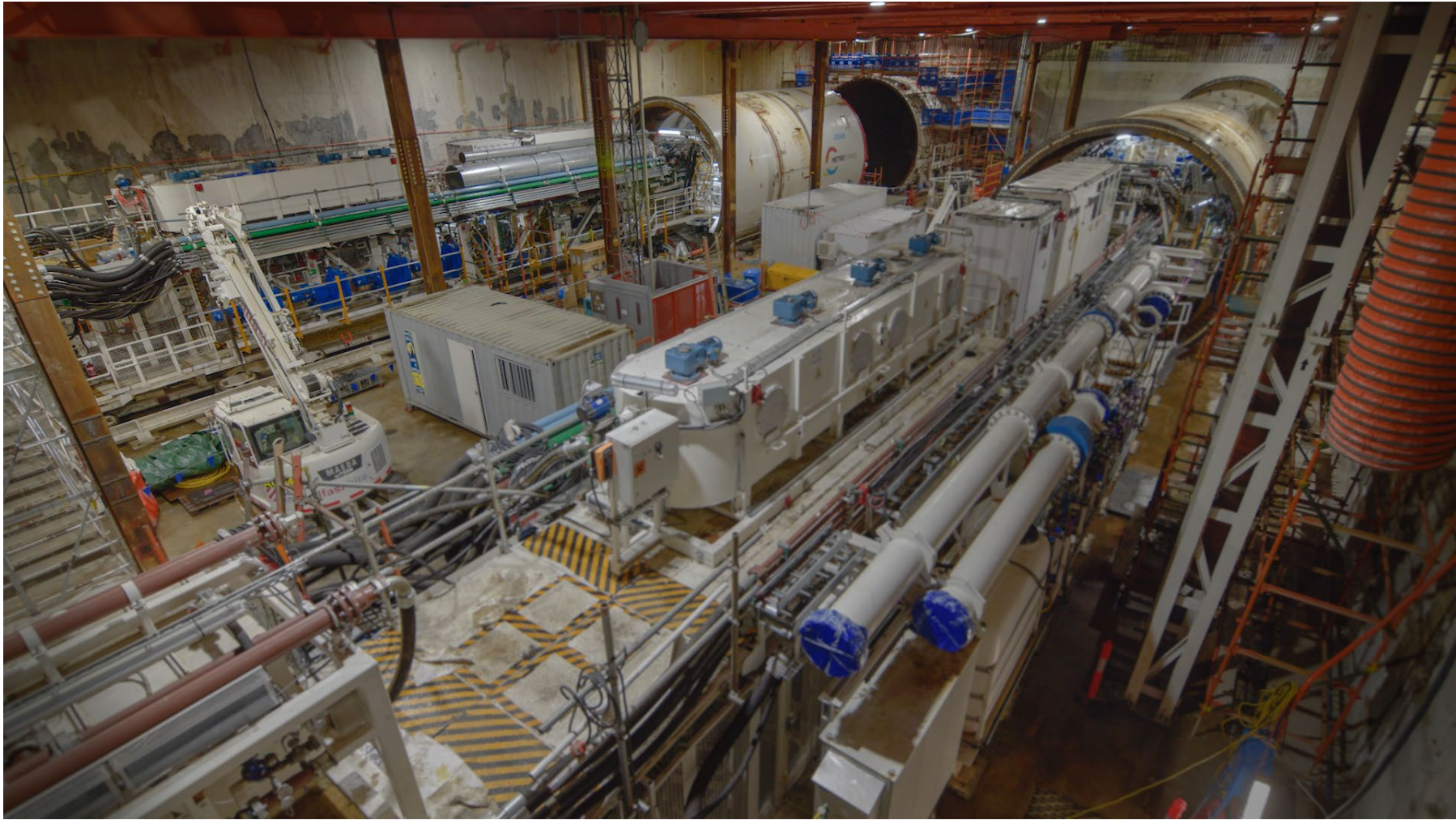


**TUNNEL 2**

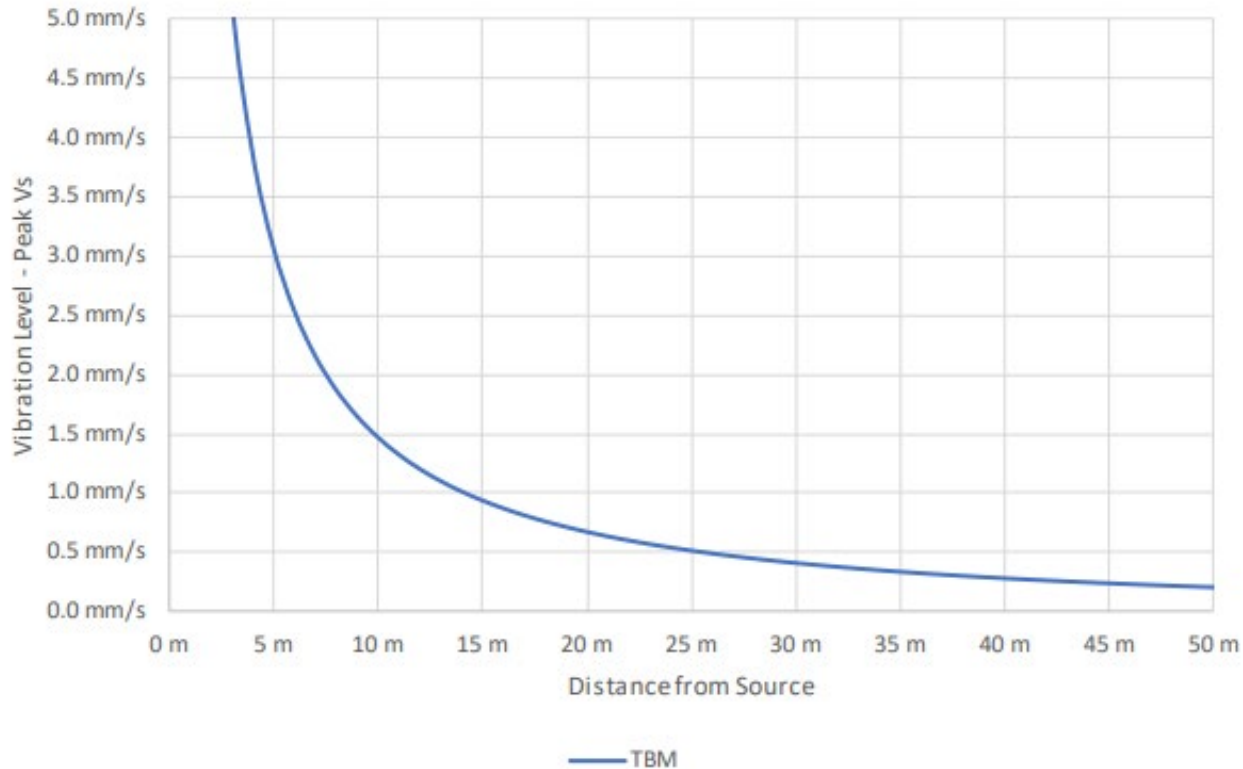


**TUNNEL 2 AND TBM MEG**

# TUNNELLING PROGRESS



# TBM MODELLING – VIBRATION



Estimated level of vibration as a function of distance from the TBM cutter head

Note: this slide demonstrates the information that is inputted into the vibration action and regenerated noise modelling process to determine compliance with the relevant EPRs

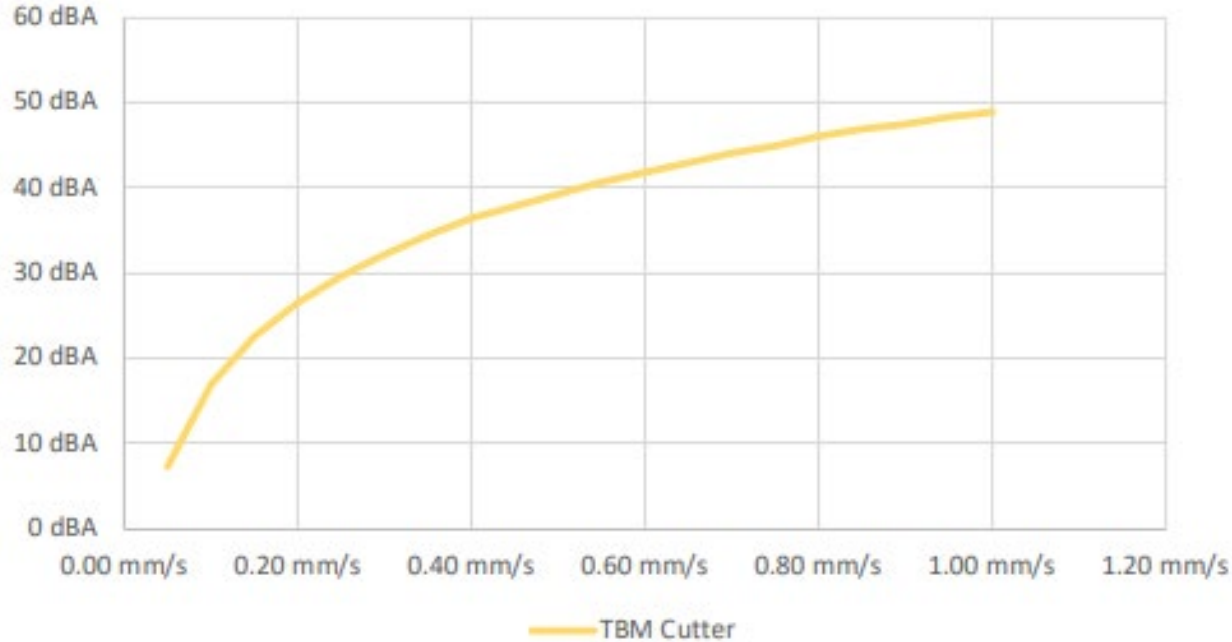
Table NV8-1: Short-term vibration on structures

Type of structure	Vibration at the foundation, mm/s (Peak Component Particle Velocity)			Vibration at horizontal plane of highest floor at all frequencies
	1 - 10 Hz	10 - 50 Hz	50 - 100 Hz <sup>1</sup>	mm/s (Peak Component Particle Velocity)
Type 1: Buildings used for commercial purposes, industrial buildings and buildings of similar design	20	20 - 40	40 - 50	40
Type 2: Dwellings and buildings of similar design and/or occupancy	5	5 - 15	15 - 20	15
Type 3: Structures that have a particular sensitivity to vibration e.g. heritage buildings	3	3 - 8	8 - 10	8

EPR NV8 criteria



# TBM MODELLING – REGENERATED NOISE



Time Period	Internal $L_{Aeq,15min}$ , dB
Evening, 6pm to 10pm	40
Night, 10pm to 7am	35

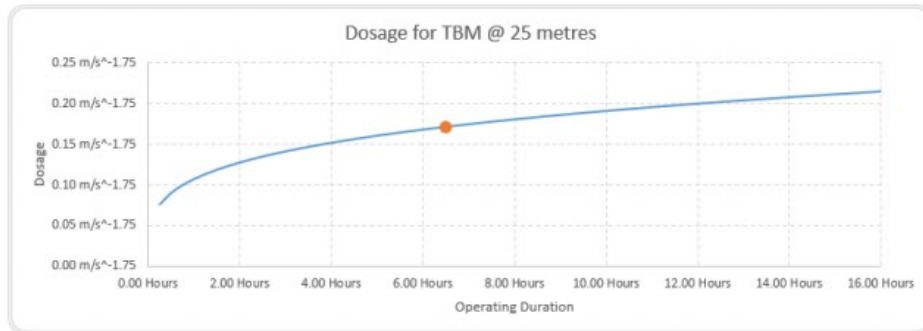
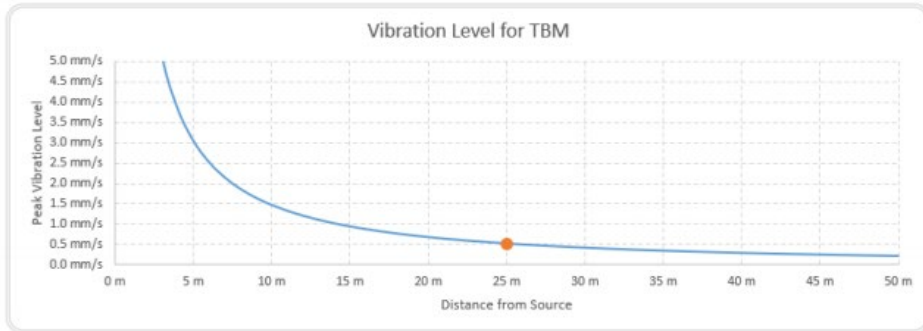
EPR NV13 criteria

Expected range of regenerated noise levels depending upon source vibration characteristics

Note: this slide demonstrates the information that is inputted into the vibration action and regenerated noise modelling process to determine compliance with the relevant EPRs

# TBM MODELLING – HUMAN COMFORT

EQUIPMENT: TBM  
 Distance: 25 m  
 Vibration Level: 0.51 mm/s  
 Operation Time: 6.50 Hours  
 Dosage: 0.17  
 Crest Factor: 5



Example of the dosage calculations for estimating dosage based upon the peak vibration level in mm/s and the TBM operating schedule

Vibration Dosage Values	Estimated equivalent peak vibration level based upon frequency spectra
0.1 m/s <sup>1.75</sup>	0.4 mm/s
0.2 m/s <sup>1.75</sup>	0.8 mm/s
0.4 m/s <sup>1.75</sup>	1.4 mm/s
0.8 m/s <sup>1.75</sup>	2.4 mm/s

Approximate peak vibration levels for equivalent vibration dosage values

Location	VDV (m/s <sup>1.75</sup> )			
	Day 7:00am to 10:00pm		Night 10:00pm to 7:00am	
	Preferred Value	Maximum Value	Preferred Value	Maximum Value
Residences	0.20	0.40	0.10	0.20
Offices, schools, educational institutions, places of worship	0.40	0.80	0.40	0.80
Workshops	0.80	1.60	0.80	1.60

EPR NV11 criteria

Note: this slide demonstrates the information that is inputted into the vibration action and regenerated noise modelling process to determine compliance with the relevant EPRs

# TUNNELLING COMMUNICATIONS AND ENGAGEMENT

## Communications to potentially impacted properties

- TBM arrival four week out letter
- Tunnelling information sessions
- One-on-one meetings
- TBM arrival one week out letter

# STAKEHOLDER AND COMMUNICATIONS UPDATE



# ENGAGEMENT AND COMMUNICATIONS UPDATE

## NORTH MELBOURNE AND PARKVILLE

### Notifications and communications

- Parkville – Grattan Street west Royal Parade works notification (30 October)
- North Melbourne – CP5 works update (13 November)
- Parkville – Grattan Street west service relocations update DL (22 November)
- North Melbourne – extended operation of concrete batching plant DL (22 November)
- North Melbourne – December 2019/January 2020 Construction Update (3 December)
- Parkville – December 2019/January 2020 Construction Update (6 December)

### Door knocks, meetings, briefings and events

- Parkville - fortnightly meetings with Peter Mac, Melbourne Health, UoM, Graduate House, CoM
- Health check phone calls to CP5 residents (20 November)
- Parkville site tour with Chief Financial Officer of the University of Melbourne (27 November)
- Parkville site tour for University of Melbourne medical reunion weekend (30 November)
- Parkville – door knock health check of residents near City Ford site (2 December)
- Tunnelling modelling process overview stakeholder briefing - NWMA (5 December)
- Parkville site tour for University of Melbourne (6 December)
- Health check drop-ins to CP5 residents and businesses (11 December)

# ENGAGEMENT AND COMMUNICATIONS UPDATE

## NORTH MELBOURNE AND PARKVILLE

### Community issues/enquiries

- Tunnel alignment, strata divestment enquiries and property condition survey requests

### Upcoming engagement

- Ongoing cross passage ground improvement notifications, meetings and health checks with residents and businesses
- Ongoing meetings with stakeholders for Grattan Street west service relocations and station entrance construction
- End of year health check for Parkville businesses
- End of year health check door knocks to North Melbourne residents.

# INTAKE SUBSTATION DEVELOPMENT PLAN



# INTAKE SUBSTATION

- Amended Early Works Plan submitted to Minister for Planning for approval
- Development Plan public display period closed 5pm Friday 6 December
  - 9 public submissions received
- Early works expected to commence mid-January 2020, following approval of amended Early Works Plan



# PARKVILLE STORYTELLING PROJECT - 2020



# LADY MILLIE PEACOCK - FIRST WOMAN ELECTED TO THE PARLIAMENT OF VICTORIA



# JOAN KIRNER – FIRST FEMALE PREMIER OF VICTORIA



# MEG LANNING - CAPTAIN OF THE AUSTRALIAN WOMEN'S NATIONAL CRICKET TEAM



# MAJOR ALICE APPLEFORD – HEROIC MILITARY NURSE



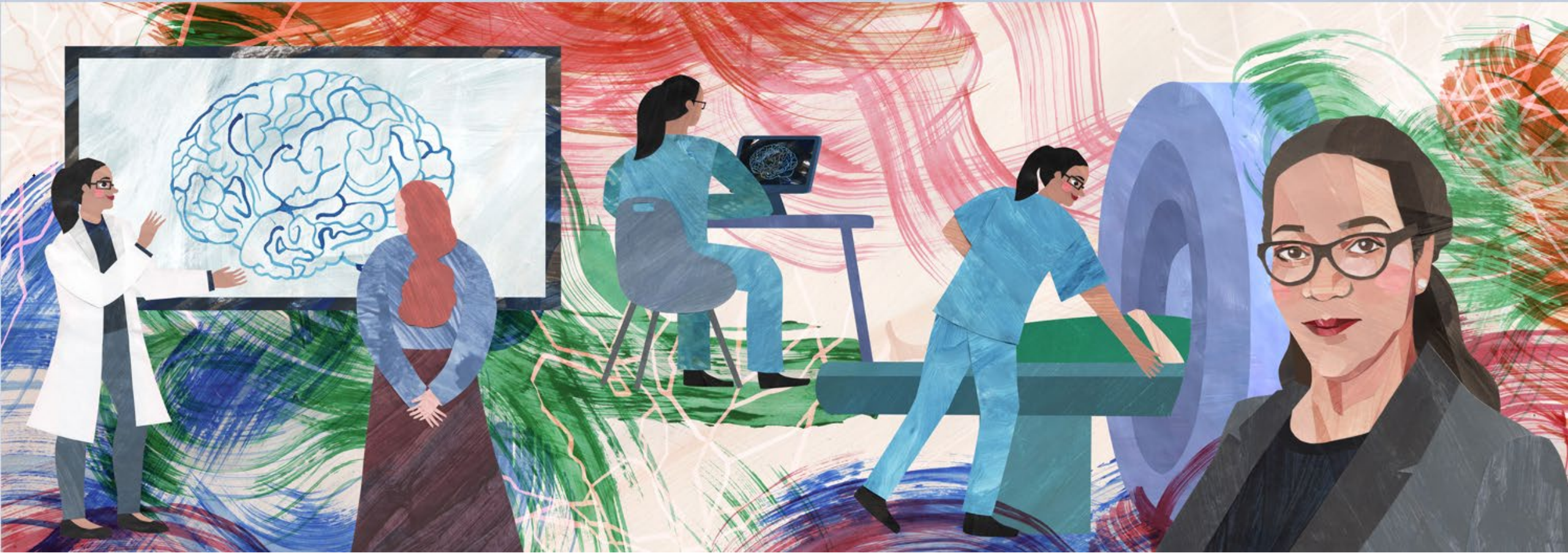
# PROFESSOR PETER BOSSAERTS AND THE BRAIN MIND MARKET



# GRADUATE HOUSE



# SHAWNA FARQUARSON - CHIEF RESEARCH RADIOGRAPHER AT THE FLOREY





# MICHAELA MALCOLM AND SARAH WELLS - FIRST MICA PARAMEDICS



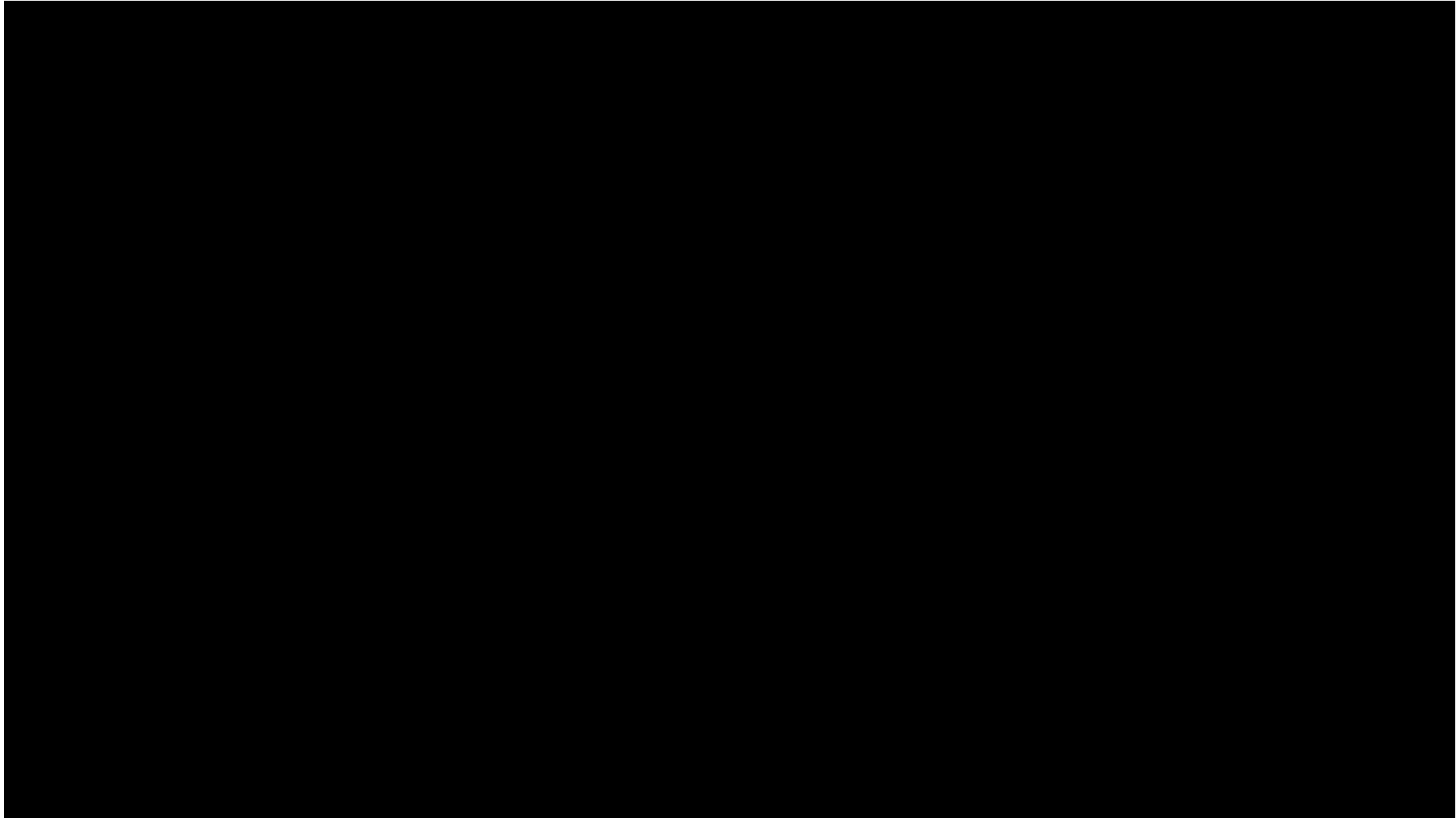
# PROFESSOR MAJID SARVI & AIMS – THE AUSTRALIAN INTEGRATED MULTIMODAL ECOSYSTEM



# PRETTY LITTLE THINGS RECAP



# CREATIVE PROGRAM UPDATE



# QUESTIONS?



# WE'RE TAKING A BREAK

## Parkville

- Last day of construction for 2019: Friday 20 December
- First day of construction for 2020: Monday 13 January
- Project team on call during closure.

## North Melbourne

- Last day of tunnelling for 2019: 23 December
- First day of tunnelling for 2020: 2 January
- Small crew on site to monitor TBM during this period
- Other construction activities will shut down on Friday 20 December and recommence on Monday 13 January.



# NEXT MEETING

Friday 7 February 2020





Western Portal

North Melbourne

Parkville

State Library

Town Hall

Anzac

Eastern Portal

The existing 'North Melbourne' station will be renamed West Melbourne.

Sunbury Line

South Kensington

West Melbourne

Melbourne Central

Flagstaff

Parliament

Southern Cross

Flinders Street

Richmond

South Yarra

Cranbourne / Pakenham Line