Response to Melbourne Metro Rail Authority

Environmental Effects Statement

Submitted by Melbourne Health on behalf of Parkville Precinct stakeholders:

Royal Melbourne Hospital (RMH)
Royal Women's Hospital (RWH)
Walter and Eliza Hall Institute (WEHI)
Peter MacCallum Cancer Centre (PMCC)
University High School

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Final submission
# Table of contents

1. Introduction .................................................................................................................. 3

2. Melbourne Biomedical Precinct .................................................................................. 4

3. The Royal Melbourne Hospital ..................................................................................... 6

4. Key Outcomes of our Assessment .............................................................................. 7
   4.1. Patient and Staff Safety .......................................................................................... 7
   4.2. Pedestrian Safety .................................................................................................. 9
   4.3. Emergency Access ............................................................................................... 11
   4.4. Future capital growth and expansion .................................................................. 12

5. Detailed Assessment ................................................................................................... 14

6. Conclusion .................................................................................................................... 14

7. Appendix 1 .................................................................................................................. 15
   i. Design and Construction of Parkville Station ......................................................... 15
   ii. Capital planning – redevelopment ....................................................................... 17
   iii. Noise and vibration ............................................................................................. 18
   iv. Closure of Grattan Street ..................................................................................... 21
   v. Emergency access, traffic flows and public transport ........................................ 22
   vi. Stakeholder engagement ...................................................................................... 26
   vii. Business impacts ............................................................................................... 28
   viii. Air quality ........................................................................................................ 30
   ix. Surface water and ground water ......................................................................... 32
   x. Ground movement ............................................................................................... 33
1. Introduction

Foreword

Thank you for the opportunity to formally respond to the Melbourne Metropolitan Rail Authority (MMRA) through the Environment Effects Statement (EES) process. Melbourne Health in conjunction with our partners within the Parkville Precinct comprising leading health and research institutions recognise the importance of this critical infrastructure project for all Victorians.

We strongly support the development of a rail network that will improve the connectivity of the Melbourne Biomedical Precinct. Improving access and more effectively linking Melburnians and its visitors to the 25 partners that form the Parkville Precinct is imperative. Only with strong public transport linkages can the Precinct achieve its vision of becoming a globally renowned centre of excellence in health care, biomedical research and education. It is anticipated that the proposed Parkville station will provide significant social and economic benefits once operational by providing access to approximately 45,000 jobs, 14,000 residents and 70,000 tertiary students.

Our collective response seeks to further inform the risk assessment made as part of the EES and outlines our preferred approach in managing the potential impacts associated with the proposed construction and operation of the project. We recognise based on our assessment that the development of the Parkville station will impose a significant impact on the major health services and research institutions across the Precinct, in particular those located in close proximity to the ‘station box / exits’ which is proposed to reside under Grattan Street between Royal Parade and University Square.

As a major health Precinct, we recognise that the health and safety of our patients, consumers, carers, visitors and staff is paramount and must be protected at all times during each phase of the project. This is particularly relevant given that a large proportion of service users across the Precinct are an aging and frail population with complex co-morbidities, and the Royal Women’s Hospital (RWH) cohort are pregnant and with young families.

As a result, it is our position that further consideration needs to be given and planning undertaken to address a number of key areas due to the potential impact that these may have on our patients and staff. These are summarised below and addressed in more detail in the subsequent sections of our submission.

- **Patient and staff safety**
  - The impact and severity of potential adverse effects on the health and wellbeing of our patients, consumers and carers and staff associated with the construction and operation of the Parkville station.

- **Pedestrian safety**
  - The proposed location of the station entrance/exit has the potential to have a significant impact on public safety and access due to the increased above ground foot traffic and need to cross over Royal Parade and Grattan Street to access health services, research facilities and educational institutions located north-west of the intersection between Royal Parade and Grattan Street.

- **Emergency access**
  - Access to emergency and specialist acute services including the designated state-wide trauma centre is potentially compromised due to the construction and design of the station.

- **Future capital growth and expansion**
  - Population growth will necessitate future capital planning across the major hospitals and research institutes in Parkville, therefore the construction, design and operation of the station
should not inhibit or preclude proposed redevelopment plans and where possible be complimentary in ‘future-proofing’ underground tunnel connections.

We are supportive of the EES process to guide the project’s detailed design, construction and operation. In our response, we have described the outcomes of our initial evaluation of the assessment undertaken and identify further actions that are required to adequately manage, plan and minimise the impacts of the project. This includes Melbourne Health working on behalf of our Precinct partners as we seek to establish a project team to support risk mitigation and these work activities by MMRA and its contracting agencies, in the development of the Parkville Station.

We are keen to be involved in ongoing discussions with MMRA in the development and progression of the project. In addition, we seek the opportunity to provide our feedback to the joint Inquiry / Advisory Committee that has been appointed by the Minister for Planning to review public submissions and consider the environmental effects of the project.

Should you have any questions regarding Melbourne Health’s feedback or wish to consult us at an appropriate time, please contact Dr. Gareth Goodier, Chief Executive, Melbourne Health and Chair of the Parkville Leaders Group on 03 9342 7762 or gareth.goodier@mh.org.au.

We look forward to continuing to work closely with the MMRA to support the transformation of Victoria’s rail network to meet the growing and changing transport needs of our population across metropolitan Melbourne.

2. Melbourne Biomedical Precinct

Overview

The Melbourne Biomedical Precinct (MBP) is Australia’s pre-eminent aggregation of healthcare, biomedical/life sciences research and teaching and training entities. The MBP located on the edge of Melbourne’s CBD, has the critical mass and research excellence to be competitive with the best biomedical precincts in the world, such as those based in Boston or Cambridge.

Twenty-five remarkable entities, located within easy reach of each other, are engaged in breakthrough research, education and the delivery of clinical care and health services. The MBP partners include the following organisations:

- The Royal Melbourne Hospital (RMH)
- The Royal Women’s Hospital (The Women’s)
- The Royal Children’s Hospital (RCH)
- Victorian Comprehensive Cancer Centre (VCCC) which is home to the Peter MacCallum Cancer Centre (PMCC)
- The University of Melbourne (The University)
- Walter and Eliza Hall Institute (WEHI)
- Murdoch Children’s Research Institute (MCRI)
- Doherty Institute for Infection and Immunity (Peter Doherty Institute)
- Florey Institute of Neuroscience and Mental Health (The Florey)
- CSIRO
- CSL

This dense concentration of hospitals, research facilities and academic campuses is a key factor in fostering collaboration, integration and breakthroughs. Precinct partners share a formidable history of ground-breaking medical discoveries and developments, as well as an exciting future focussed on innovation and transformation in healthcare.

Figure 1 below provides an overview of the MBP including the physical location of relevant partner organisations.
Service Activity

The MBP has major strengths in education, research, health, professional and technical industries with considerable natural landscape and parklands. Researchers in the precinct alone produce 24% of Australia’s output in academic journals.

Over the last decade, more than $AUD 3 billion of new public and private investments have flowed into the Precinct with the construction of state-of-the-art hospitals, research buildings and infrastructure. This investment is enabling previously stand-alone research organisations to co-locate and collaborate more effectively, as illustrated by the VCCC, the Melbourne Brain Centre and The Peter Doherty Institute for Infection and Immunity. It is anticipated that many of the leading institutions and organisations within the Precinct continue to expand, or plan to grow their footprint.

At present, approximately 32,700 people are currently employed in the Precinct, which is centrally located and has access to a wide catchment of the population across metropolitan Melbourne. The Metropolitan Planning Authority forecast that the Precinct is expected to grow by around 230,000 to 280,000 people between 2011 and 2031. This population growth will be characterised by greater diversity in terms of culture, language and age with increases expected in both older and younger population groups.

Key Considerations:

In planning for the new Parkville station, we propose that MMRA consider the key trends across the Parkville Precinct including:

- As the population ages and chronic disease becomes more prevalent, demand for health services will increase and greater pressure will be placed on the healthcare system. To meet this demand,
major hospitals such as those located in the Parkville Precinct will need to grow to accommodate this additional health service capacity through capital planning and redevelopment.

- The station layout and design should further strengthen existing connections and linkages between the major entities within the Parkville Precinct. The new station should be a central feature of the Precinct which enhances connectivity and symbiotic collaboration between the key health, education and research institutions. This would be consistent with other leading and internationally renowned biomedical precincts.

- The design of the new Parkville station needs to be closely aligned to broader government planning and urban design requirements to ensure that the environment is reflective and builds on the existing strengths and characteristics of the Precinct.

### 3. The Royal Melbourne Hospital

**Overview**

Melbourne Health, comprising of The Royal Melbourne Hospital (RMH), NorthWestern Mental Health NWMH) and the Royal Melbourne at the Doherty Institute for Infection and Immunity (Doherty Institute) provides a comprehensive range of acute, subacute and community health services to our local community in Melbourne’s west and north, as well as regional, rural and interstate population. The services we provide enable us to serve a population base of more than 1 million people. As one of the largest hospitals in Victoria, our RMH City Campus provides general and specialist medical and surgical acute services. As a leading academic tertiary and quaternary service, the RMH plays a key role within the broader Victorian health sector as a major referral service for specialist and complex care and a designated statewide provider of services including trauma.

We are also the largest provider of mental health services in Victoria, as NWMH works in partnership with consumers and carers to provide a comprehensive suite of general and specialist services to youth, adult and aged people. This includes a number of specialist statewide services such as the neuropsychiatry and eating disorder service.

As the City Campus, the main acute campus for RMH is located on the corner of Grattan Street and Royal Parade, we have assessed that the proposed station and construction under Grattan Street will have a significant impact on the service.

**Service Activity**

The RMH in meeting the needs of its local communities is balanced with fulfilling its role as a tertiary referral centre for patients requiring complex care from across Victoria and interstate. At present, over 50 per cent of patients treated at RMH are from outside the hospital’s local ‘catchment area’ and across some service specialities, including cardiac services and neurosciences, this proportion is much higher.

The dual role of RMH as a provider of health care services to the local community, as well as on a statewide basis contributes to the RMH City Campus being one of Australia’s busiest hospitals, treating almost 90,000 admitted inpatients, 637,000 outpatient attendances, 66,000 emergency attendances and 25,000 emergency transportations in 2014-15. These activity levels illustrate the substantial growth experienced by RMH in recent years, with service growth in both multi-day and same-day separations since 2011-12. Coupled with this there has been nearly a 10 per cent growth in emergency department presentations.

In 2014, forecast service modelling was undertaken in conjunction with the Department of Health and Human Services (DHHS) which identified based on population growth the RMH will need by 2026:

- An additional 193 acute multi-day and same-day beds
• An additional 44 intervention areas, including theatres, procedure rooms and cardiac catheterisation laboratories.

Key Considerations:

In planning for the new Parkville station, we propose that MMRA consider the future role and service direction for the RMH in the context of the broader Victorian health system which includes:

• Projected growth in both emergency and elective demand will continue to grow, increasing the demand for tertiary and quaternary services to be provided to the broader population. As a result, access to critical services provided by major hospitals in the Precinct cannot be compromised such as the RMH which is the designated provider of emergency and trauma services across the State. This is further described in Chapter 4.3. under ‘Emergency Access’.

• The development of the new Parkville station needs to adequately consider the impact of construction of the aging infrastructure and facilities of the RMH which was built prior to the introduction of modern building standards. This is further detailed in Chapter 4 under the heading of ‘Patient Safety’.

4. Key outcomes of our assessment

Based on our assessment of the EES, it is our position that there are a number of key areas that require further consideration and consultation by MMRA as part of the design, planning and construction of the Parkville station. We have assessed that these points are critical ensuring the safety and wellbeing of our patients, visitors, community and staff during and following the construction phase. These are outlined below:

Key Issue:
The impact and severity of potential adverse effects on the health and wellbeing of our patients, consumers and carers associated with the construction and operation of the Parkville station.

4.1. Patient and Staff Safety

Construction and Engineering Impacts:

It is our assessment that the risks and proposed mitigation strategies identified in the EES fails to adequately recognise the significant impact that construction activities will have on hospital operations and subsequently the ability to ensure a safe environment and best practice care at all times for severely acute and immunocompromised patients.

It is our view that the documentation does not adequately consider the major risks for our patients in terms of service provision and business continuity brought about by noise, dust and vibration impacts associated with construction. The EES lacks specificity in addressing the following risks to patient safety:

• The health, education and research precinct has high sensitivity resources including medical and research equipment that requires specific limits of vibration to be achieved. It is unclear how the predicted levels of vibration both during the construction and operation of the station will be best managed to limit impacts on these sensitive areas and equipment.

• The vibration and ground-borne noise impacts of tunneling in Parkville has been assessed to exceed the recommended guideline targets on a temporary basis and to occur for limited periods of time (e.g. up to 10 days on two occasions) over the course of the construction program. It is our view that the noise and vibration impact in terms of human comfort may be more significant than specified in the EES given the acute and complex nature of patients treated across Parkville. It is
also unclear in the documentation provided the extent of actions that would be taken by the contractor to address the unacceptable levels of vibration and ground-borne noise.

- The application of standard industry air quality guidelines is not considered acceptable for a specialist health and research precinct containing significant personnel and bio-resources with immune deficiencies and medical and research technologies with high environmental sensitivities. The failure to perform a risk assessment for the Parkville Precinct is considered a major deficiency in the EES.

- It is identified that there is potential for some inundation at the Parkville station site. While construction of small barriers has been identified to mitigate flooding, it is our view additional contingency plans need to be considered and tested.

The construction and engineering impacts of the Parkville Station is further complicated by the aged and obsolete infrastructure and buildings at the RMH. The main clinical buildings on the City campus were constructed during the early 1940s, based on designs completed in the 1930s, and are past their functional and structural lifespan. Some of these buildings are now literally falling down; for example, a disintegrating storey brick wall was wrapped in a temporary wire mesh to protect people from falling bricks over decade ago, and now that mesh itself is also becoming unsafe and needs to be replaced.

The RMH buildings were constructed before the introduction of modern Australian building standards which provide minimum standards for safety, health, and general welfare including structural integrity, mechanical integrity (including sanitation, water supply, light, and ventilation), means of egress, fire prevention and control, and energy conservation. It is our concern that significant structural analysis and impact has not been completed for these buildings.

**Impact:**

- Sensitive equipment such as diagnostic imaging machines and surgical devices is compromised impacting on the ability for major hospitals to deliver timely, safe and best practice care.

- Level of noise and vibration during both the construction and operation of the Parkville station is detrimental to patient’s health, wellbeing and recovery.

- Poor air quality has the potential to adversely impact patient outcomes, which is a major issue in the Parkville Precinct due to the number of health and education facilities in treating patients with severely acute respiratory conditions.

- The impact of construction and operation of the Parkville station near buildings such as the RMH which were developed prior to the advent of modern building standards and codes is still relatively unknown.

**Requested action:**

- Further studies and detailed assessments are required in relation to noise, vibration, air quality and flooding which needs to be evidenced and communicated to stakeholders with a particular focus on:
  - The compliance threshold, how it will be monitored and the agreed process when these levels are reached
  - Contingency plans for the risk mitigation strategies proposed by MMRA
  - Planning to ensure that key stakeholders in the Precinct work very closely with the preferred contractor during construction
• An internal assessment of sensitive materials within our Precinct facilities, particularly RMH, The Doherty, RWH, Peter MacCallum Cancer Institute and WEHI given their location to construction and tolerance levels.

• Further investigations are required on the impacts during construction and post-construction including structural engineering assessments of RMH’s older buildings.

4.2. Pedestrian Safety

Key Issue:
The proposed location of the station entrance/exit has the potential to have a significant impact on public safety and access due to the increased above ground foot traffic and need to cross over Grattan Street.

Station Entrances / Exits:

Based on our analysis, we believe that the proposed location of the station entrances / exits on the VCCC south west corner is likely to have the potential for adverse impacts on patient, visitor and staff safety and access to all services on the north west corner of Royal Parade (RMH, RWH, RCH, WEHI and University High School). This is heightened if Grattan Street remains open to non-emergency traffic.

In the initial consultation with MMRA, Melbourne Health identified an issue with access to the current Emergency Department as an entrance / exit was proposed in front of the Grattan Street emergency access entrance. In the next consultation with other Precinct partners in December 2015, the entrances / exits had shifted to the VCCC south-west corner from the north-west corner of Royal Parade and Grattan Street with no opportunity for further input.

It was communicated to Melbourne Health that these entrances / exits were proposed in response to:

• Flow studies for proposed rail service users
• Minimise ongoing health service disruptions to the emergency department
• Uncertainty regarding future Melbourne Health redevelopment activities.

Engagement with MMRA on the preferred location of the station entrance / exit has been limited over the course of the project over the last twelve months, as any issues or concerns that have been identified, in most cases have resulted in changes that have not subsequently been consulted on and tested by stakeholders.

As a result, we recommend that further work is required to better understand the impact of the proposed location of the station entrances / exits on the VCCC south-west corner on traffic flow to navigate across Grattan Street.

Closure of Grattan Street:

We note that keeping Grattan Street open and having the station exit on VCCC may present significant patient and service user risk, and emergency department access issues due to potential increased above ground foot traffic and the need to cross Grattan Street. Foot traffic is expected to increase given future capital plans and growth anticipated for the RMH and RWH’s in comparison to the VCCC.

Jaywalking across Grattan Street has already been observed following the opening of the VCCC Southside; with a growth in services on the north-west corner of Royal Parade and the station exit, this is expected to increase. It is our belief that the rail station should be integrated as a part of a connectivity hub to improve flow within the Precinct, and limit adverse pedestrian flows where possible.
Current plans to reduce Grattan street to one lane each way presents additional safety and access concerns for:

- Emergency and non-emergency transport access – if pedestrian flow is increased crossing Grattan Street, and regular traffic continues to flow
- Taxis and drop off – the space is currently constrained at present for taxi and patient drop off facilities

The traffic studies and modelling that has been presented by MMRA to date has proposed that the volume and flow of vehicular traffic will remain fairly constant across the Parkville Precinct in the future. It is our view that these studies do not adequately recognise the large proportion of our service users are an ageing and frail population with complex co-morbidities, and RWH cohort with pregnant and young families, which necessitates a greater reliance on vehicular access to the hospital. The number of visitors to both services is expected to increase, is it is estimated that RMH alone has over 500,000 people annually that pass through the Precinct, exacerbating traffic flows.

**Impact:**

- The proposed location of the station entrances / exits on the VCCC south-west corner has the potential to have an adverse impact on access to the major hospitals and research institutions (e.g. RMH, RWH, RCH and WEHI) and greater risk associated with the increased volume of pedestrian traffic without a dedicated connection or concourse across Grattan Street.
- There is significant patient and service user risk due to potential increased above ground foot traffic and the need to cross Grattan Street.
- Pedestrian safety on Grattan Street is further complicated by the need for emergency vehicles such as Ambulance Victoria, Metropolitan Fire Brigade (MFB) and Victoria Police who require unrestricted access and easy traffic flow to the Precinct.
- Vehicular transportation to the Precinct for our patients, visitors and staff remains high as evidenced by the occupied capacity of the RMH and RWH carparks, in particular due to the considerable proportion of frail, sick and disabled patients. This also poses a further risk to pedestrian safety both during construction and operation of the Parkville station.

**Requested action:**

- Flow studies and analysis to be provided by MMRA as requested in December 2015 to support the current proposed VCCC exit location and removal of Parkville station entrances / exits at the RMH and Barry Street.
- Further analysis to be completed on our preferred option to limit the access of Grattan Street to emergency vehicles including but not limited to Ambulance Victoria, Metropolitan Fire Brigade (MFB) and Victoria Police. There is a need for designated area to facilitate patient and consumer drop off / pick-up near the RMH entrance as well as access to our patient transit lounge on Grattan Street.
- Consideration of midblock proposal and mid-crossing for pedestrian to run across Grattan Street corridor if deemed that the street was unable to be closed.
- Revise traffic studies and modelling to include future demand for the health service and recognition of patient cohorts.
- For the safety of emergency vehicles, patients and pedestrians, we strongly recommend the permanent closure of Grattan Street between Royal Parade/ Flemington Road to non-emergency traffic during construction and in perpetuity.
## 4.3. Emergency access

**Key Issue:**
Access to emergency and specialist acute services including the designated state-wide trauma centre is potentially compromised due to the construction and design of the station.

**Improving health outcomes and patient experience:**

The major hospitals in the Parkville Precinct have a significant role in the provision of care for acute patients with very complex and advanced conditions. This includes the full range of both general and specialist medical and surgical acute services on a secondary, tertiary, and in some cases quaternary basis from birth to end of life.

These hospitals play a key role within the broader Victorian health system, which includes the RMH as one of the busiest EDs in Victoria and a designated state-wide trauma centre, uninterrupted emergency access to this service is imperative to the health and wellbeing of the community. In addition, the RCH is the statewide paediatric major trauma service in providing emergency treatment and ongoing care for the majority of Victoria’s most severely injured and unwell children.

As a result, rail or other transport, road or flight impacts directly associated with these major hospitals, whether it is associated to the Parkville station, or broader, need to be planned for, in collaboration with our emergency partners.

The healthcare system of the future will also require even closer collaboration with other acute health service providers so that patients have timely access to tertiary services. With high population growth corridors forecast in the north, north-west and south-east areas of Melbourne, it is anticipated there will be an increasingly need to accommodate a greater number of patient transfers and referrals between health services in the future.

We recognise that the broader redevelopment and expansion of the Melbourne metropolitan rail network will also have a significant impact on the only other trauma service in Victoria, in the Alfred Hospital with the construction of the Domain Station. It is imperative that the scheduling of construction activities across the project is coordinated appropriately to ensure statewide services are maintained and patient outcomes are not adversely impacted.

**Impact:**
- With two statewide services in Parkville and a number of specialist tertiary health service providers across the Precinct in several clinical specialties including neurosciences, nephrology, oncology, cardiology and genomics, there can be no adverse impact on trauma and emergency services, including road and air ambulances due to the construction and operation of the project.

  Current plans to reduce Grattan street to one lane each way presents additional safety and access concerns in relation to:
  - 24/7 road ambulance access at Grattan Street/Royal Parade.
  - Access to Grattan Street for emergency vehicles including Ambulance Victoria, Metropolitan Fire Brigade (MFB) and Victoria Police.
  - On-street ambulance and non-emergency parking on Grattan Street between Flemington Road/Royal Parade.
  - MFB and Victoria Police Emergency vehicle parking on Grattan Street by the main pedestrian entrance.
  - 24/7 access to the decontamination showers off Grattan Street.
  - Major emergency or crucial incident at RMH or RWH requiring mass evacuation or an event with mass casualties requiring emergency treatment.
• Plans for future tram ‘super stops’ may impede ambulance access and turning, particularly if raised curbs are used. Planning will need to be done in concert with Melbourne Health and partners on the impact of the tram stop construction.

**Requested action:**

• Any potential impact to the provision of or access to clinical services associated with the construction of the Parkville station needs to be clearly communicated and well-planned to ensure disruptions are minimised. A detailed project plan which outlines key timelines and methodology has been requested from MMRA over the last six months but still remains outstanding.

• Further planning and investigation of traffic flows to explore the permanent closure of Grattan Street to all non-emergency traffic. It remains the preference of Melbourne Health and a number of precinct partners that Grattan Street is closed during construction and in perpetuity. We believe that we will need to work collaboratively with MMRA with the City of Melbourne and VicRoads to support traffic planning and management. Again, analysis of traffic flows from road changes have been requested by Precinct partners but yet to be received.

• Additional traffic studies and modelling to explore the feasibility of alternate tram stop sites, including alternate stops either side of the Royal Parade / Grattan Street intersection. This includes further consideration in maintaining existing public transport connections to the Parkville Precinct including buses and trams as well as taxi access during construction will be critical for our patients and visitors.

### 4.4. Future capital growth and expansion

**Key Issue:**

*It is anticipated that population growth will necessitate future capital planning across the major hospitals and research institutes in Parkville. Therefore the construction, design and operation of the station should not inhibit or preclude proposed future redevelopment plans and where possible be complimentary in ‘future-proofing’ underground tunnel connections.*

**Redevelopment of major facilities**

The RMH City Campus is shared with the RWH and WEHI, and is ‘land-locked’ on three sides by roads and on the fourth side by the University High School. Almost all the available land has been used and there are limited possibilities for upward expansion because of the flight-path needs of the existing helipad (part of the major trauma centre).

Over the next 10 to 15 years, major health services such as the RMH and RWH are expected to experience further demand pressures due to the ageing population, the burden of chronic disease and the rise in trauma and emergency patients. Based on current forecast service modelling undertaken by the DHHS, it is anticipated that the RMH will need to grow by more than 40 per cent in multi-day beds and nearly 8 per cent in same-day beds over the next decade to meet the health needs of the Victorian population.

We at Melbourne Health are working closely with the DHHS, along with precinct and private partners, to accommodate our anticipated service growth through future capital plans to redevelop and significantly expand our facilities. The 2016-17 State government budget announcement of $3 million to support the future of the MBP and demonstrates a strong commitment to progressing these redevelopment plans.

The most recent masterplan study that was completed by RMH in 2014 has demonstrated the potential for future health service capacity to be accommodated under a multi-campus model on an alternative geographical site owned by the University in Parkville. This capital plan includes the
construction of an ambulatory/short-stay surgery centre which would be integrated with the new University of Melbourne clinical school proposed for the north east corner of Grattan Street/Royal Parade. It is anticipated that this building would be the initial stage as part of the full redevelopment of the hospital which is proposed to be in close proximity to the main RMH City Campus.

Figure 12 below provides a broad representation of the potential location of the proposed redevelopment (e.g. Gateway North / South).

**Figure 2: Map of the Melbourne Biomedical Precinct**

![Map of the Melbourne Biomedical Precinct](image)

**Impact:**

- The construction, operation and design of the Parkville station should not inhibit or preclude proposed future redevelopment plans on the RMH and/or associated sites.

- The development of the proposed ambulatory/short-stay surgery facility will require strong linkages and connections to the RMH City Campus to support emergency access and transfer to critical services. A disused service tunnel currently exists across Royal Parade, but is inadequate in its current state in terms of size and location to facilitate underground patient transfers between these proposed buildings.

**Requested action:**

- Further investigation and work is required to explore the potential to support future planning activities by ‘future-proofing’ and ‘piggy back’ construction activities of the station with the proposed development of an ambulatory/short-stay surgery centre on the University ‘Tri-radiate’ site. This would include the potential to establish connections under Royal Parade/Grattan Street as part of the required tunneling and excavation. It is unclear to date whether future capital planning across the Precinct has been considered as part of the design and constructability phases.

- Regular communication and consultation between MMRA and key stakeholders such as Melbourne Health, the University and the DHHS is required to ensure progress made on the proposed redevelopment concept is considered as part of the project methodology for the new Parkville station. This consideration needs to be incorporated and reflected into the tender specifications for the project.
5. Detailed assessment

Appendix 1 provides an overview of our assessment of the key risks and impacts for consideration during the design and construction of the Parkville station. These sections relate to the relevant chapters in the EES.

6. Conclusion

Again Melbourne Health on behalf of our Precinct Partners acknowledges the planning that has occurred to date and the opportunity to provide formal feedback through the EES process on this significant infrastructure project of the Melbourne metropolitan rail network including the new underground Parkville station.

As a collective health, research and education Precinct, our response has sought to inform the next phase of planning as part of the design and construction of the Parkville station. This includes the need for further investigation and technical studies in order to better understand, validate and address the key impacts on service provision and business continuity identified in this response. We also recognise the need to ensure that all major stakeholders in the Precinct receive regular project updates and communication and have the opportunity to work in close collaboration with the preferred contractor during both the design and constructability phases.

We advocate that a dedicated resource team needs to be established to ensure that adequate support is provided for the planning activities being undertaken by MMRA over the life of the project. In recent discussions with MMRA, it has been highlighted that our allocated resources are insufficient to meet the needs of the project. In particular, resources to coordinate and communicate Precinct responses with MMRA in addition to more detailed analysis is required to support an informed response to the technical implications associated with the construction of the Parkville Station.

Melbourne Health on behalf of the Parkville Precinct will seek to progress the establishment of such a resource team over the coming months to ensure potential construction and legacy risks are managed and mitigated.

We are keen to be involved in ongoing discussions with MMRA in the development and progression of the project. We reiterate our intent to present our feedback to the joint Inquiry / Advisory Committee at the designated public hearings in August 2016.

Should you have any questions regarding Melbourne Health’s feedback or wish to consult us at an appropriate time, please contact Dr Gareth Goodier, Chief Executive, Melbourne Health and Chair Parkville Leaders Group on 03 9342 2762 or Gareth.goodier@mh.org.au.

Again we look forward to continuing to work closely with MMRA to support the transformation of our rail network to meet the growing and changing needs of the Victorian population.
7. Appendix 1

i. Design and construction of Parkville station

Summary of key issues:

- Proposed location of the station entrance/exit on the VCCC south west corner of Grattan Street/Royal Parade has the potential to adversely impact emergency, non-emergency and pedestrian access to RMH and RWH.
- The majority of RMH buildings are more than 70 years old, and the impact of construction on them is unknown.
- To minimise construction, access and traffic flow impacts, Melbourne Health supports the cut and cover construction in Grattan Street between Royal Parade and Leicester Street, and the relocation of the station box (Option A) to the east of Royal Parade.

### EES Chapter 5 – Project Development

<table>
<thead>
<tr>
<th>Issue</th>
<th>Design/construction risks</th>
<th>Legacy risks</th>
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<tbody>
<tr>
<td>• Removal of Parkville station entrance/exit from RMH and Barry Street.</td>
<td>• The proposed location of the station entrance/exit on the VCCC corner may adversely affect access to RMH and The Women’s.</td>
<td>• The proposed future redevelopment of RMH will see the City Campus double in size.</td>
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<tr>
<td>• Proposed location of the station entrance/exit on the VCCC corner of Grattan Street/Royal Parade. While the station will be fully DDA (Disability Discrimination Act) compliant, there are safety aspects regarding pedestrians crossing Grattan Street which have not been addressed.</td>
<td>• Risks will be increased for the greater numbers of pedestrians crossing Grattan Street, particularly if Grattan Street is not closed to non-emergency traffic (see 3.4. Closure of Grattan Street).</td>
<td>• The State Government has already committed $3 million in the 2016/17 budget for planning development for RMH City Campus and for a joint medical facility with the University of Melbourne on the north east corner of Grattan Street/Royal Parade. • It is critical that the design, construction and operation of the Parkville station does not inhibit or preclude these developments.</td>
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</table>

### EES Chapter 6 – Project Description and EES Chapter 13 – Noise and Vibration

<table>
<thead>
<tr>
<th>Issue</th>
<th>Design/construction risks</th>
<th>Legacy risks</th>
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</thead>
<tbody>
<tr>
<td>• Minimising impacts of early work including stabilisation methods and locations of workforces,</td>
<td>• As a statewide trauma service, there can be no impact during construction on trauma and emergency services,</td>
<td></td>
</tr>
<tr>
<td>Materials, work sites and access shafts.</td>
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<td>----------------------------------------</td>
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<tr>
<td>• There may be periods when access to RMH would be affected.</td>
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<table>
<thead>
<tr>
<th>Including road and air ambulances.</th>
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<tr>
<th>Impact of construction on RMH building structure and key medical equipment.</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The majority of RMH buildings are more than 70 years old and were constructed well before the introduction of Australian building standards (1989). The impact of construction on these buildings and on sensitive medical equipment is unknown (see 3.3. Noise and Vibration).</td>
</tr>
<tr>
<td>• Service tunnels beneath Grattan Street provide connections between RMH and VCCC, including oxygen and fibre, which must be maintained.</td>
</tr>
<tr>
<td>• Melbourne Health would require a minimum of 3 weeks’ notice of planned power outages. While emergency generators exist, any loss of power would cause significant disruption to the provision of emergency and surgical procedures.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Future levels of ongoing noise and vibration from train movements are unknown.</th>
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<tbody>
<tr>
<td>• It is not known whether RMH’s older buildings are physically sustainable in the light of train vibrations.</td>
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</table>

**Requested Action:**

- Further explore location and design of station exits.

- Ensure emergency access is available 24/7, and consult with Ambulance Victoria, Victoria Police and Metropolitan Fire Board.

- Further structural analysis is required to understand the impact of construction on the RMH building structure and key equipment.
ii. Capital Planning – Redevelopment

Summary of key issues:

- Major redevelopments are planned both for the RMH City Campus site and a University of Melbourne site on the north of Grattan Street/Royal Parade.
- It is critical that the construction, operation and design of the Parkville Station does not inhibit or preclude these proposed development plans.

<table>
<thead>
<tr>
<th>EES Chapter 9 – Land Use and Planning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Issue</strong></td>
</tr>
<tr>
<td>Land Use and Planning reflects only future planning identified by the University of Melbourne and not Melbourne Health.</td>
</tr>
</tbody>
</table>
| The construction and operation of the Parkville station should not inhibit or preclude:  
  - Major redevelopment plans for RMH City Campus  
  - The planned ACC on the University of Melbourne site |                                                                 | There is a disused tunnel under Royal Parade, but it is inadequate in size and location. There are Plans for a new and enlarged service tunnel between the two facilities. |
| | | Land use of the north of Grattan St/Royal Parade will change radically with planned developments to double the size of RMH City Campus and establish a Short Stay/Ambulatory Care Centre. |

Requested Action:

- Ensure planning activities for RMH and University of Melbourne are future proofed.
- Explore opportunities to ‘piggy back’ connections under Royal Parade/Grattan Street during tunneling and excavation activities.
- Determine mutually beneficial construction opportunities and include these in tender specifications.
iii. Noise and Vibration

Summary of key issues:

- Some 70 – 80% of RMH buildings were built before the introduction of Australian building standards (1989) therefore the impact of construction on them is unknown.

- Comprehensive assessment of vibration and construction on this infrastructure, surgical theatres and critical machines is imperative.

- The impact and severity of noise and vibration is of concern during construction and in the long term.
  - The application of a non-technical EPA480 Guideline is not satisfactory in determining the vibrational Environmental Performance Requirements for the Contractor. The health, education and research precinct has high sensitivity resources that require specific limits of vibration to be achieved.
  - EPR NV13 only identifies noise targets and fails to identify vibration targets which is a major deficiency.
  - Real-time monitoring of vibration and development of response protocols are required to ensure limits are not exceeded should be implemented with independent auditing and transparent communication of results to enable researchers to account for anomalies in research. Further, the 50m limit applied to this Guideline we believe is insufficient and needs to be extended to minimum 150m from the alignment for any sensitive receiver.

- Technical and engineering support is essential to manage the construction and legacy risks of this project.

<table>
<thead>
<tr>
<th>EES Chapter 13 – Noise and Vibration</th>
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<tbody>
<tr>
<td><strong>Issue</strong></td>
</tr>
<tr>
<td>Baseline noise and vibration modelling to be completed to determine appropriate mitigation measures and construction methodologies.</td>
</tr>
<tr>
<td>Existing noise and vibration based on studies undertaken be MMRA.</td>
</tr>
<tr>
<td>External ambient noise (49-59 evening range) and night range (42-55).</td>
</tr>
<tr>
<td>External vibration (2.9).</td>
</tr>
<tr>
<td>Vibration levels during construction - Medium risk rating</td>
</tr>
</tbody>
</table>
for Parkville precinct.

- Hours of operation (day is considered 6am-10pm).

- The Parkville station precinct contains a significant amount of vibration-sensitive equipment as well as highly sensitive areas such as hospital wards, ICUs and bio-resource facilities.

- Equipment within these locations may experience vibration levels higher than the guideline targets for relatively short period of time (up to two weeks on two occasions.)

- Noise and vibration-sensitive operations include bio-resource facilities, patient wards and surgical theatres located on all floors facing Grattan Street and Royal Parade at RMH, RWH and Peter MacCallum Cancer Centre.

- Day works may impact on surgical theatres, outpatients, patient wards, equipment including MRI and radiology, and bio-medical resources.

- Night works may impact on patient wards and emergency surgical procedures (e.g. major trauma).

- Construction noise may impact on the provision of specialist surgical procedures.

- Timelines for construction periods with high noise and vibration levels require discussion. For example, weekend works will have less impact on Melbourne Health operations because of fewer medical procedures, patients and staff.

- Works in January would also have less impact, because of fewer elective surgery procedures, however emergency department attendances increase over summer.

- Temporary relocation of some services may be required during construction, entailing significant costs and loss of revenue to Melbourne Health.

- Significant investment in new capital equipment may be required to mitigate impacts on services and equipment remaining at RMH.

- Future levels of ongoing noise and vibration from train movements are unknown, but could impact on sensitive medical equipment, theatre procedures and bio-resource facilities.

**Requested Action:**

Further investigations are required on noise and vibration impacts during construction and post-construction including:

- Structural engineering assessments of RMH’s older buildings.
• Evidence of baseline noise and vibration modelling studies to be provided and consultation undertaken on appropriate thresholds.
• Provision of detailed timelines for tunnel boring and construction in the Parkville Precinct.
• Investigations as to whether the tunnel boring machine can be slowed, to reduce noise and vibration.
• Discussion regarding least disruptive construction periods for Melbourne Health (e.g. weekends and January)
• Acceptable vibration levels and noise levels for medical facilities.
• Temporary relocation of services and equipment.
• Investment in capital equipment to mitigate impacts on other services and equipment.
• Detailed budgeting re costs of relocating services and equipment, capital expenditure to mitigate impacts on remaining services and equipment, and loss of revenue to Melbourne Health through reduced inpatient and outpatient services.
iv. Closure of Grattan Street

Summary of key issues:

- Grattan Street realigned with one lane each way between Royal Parade and Flemington Road presents serious safety and access concerns for emergency transport.
- If the station exit is located on the VCCC Southside corner (southwest corner of Grattan Street/Royal Parade), pedestrian risks will likely increase due to the need to cross Grattan Street.
- Foot traffic will increase given future capital plans and growth anticipated for RMH and The Women’s.
- We strongly recommend the permanent closure of Grattan Street between Royal Parade/ Flemington Road to non-emergency traffic.

<table>
<thead>
<tr>
<th>EES Chapter 5 – Project Development and EES Chapter 8 – Transport</th>
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<td><strong>Issue</strong></td>
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</tbody>
</table>
| • Removal of Parkville station entrances/exits at RMH and Barry Street.  
• Location of entrance/exit at VCCC.  
• Narrowing of Grattan Street to a single lane each way between Royal Parade and Flemington Road post-construction. | • For the safety of emergency vehicles, patients and pedestrians, we have already put forward a strong preference for Grattan Street access to be permanently limited to emergency vehicles between Royal Parade/Flemington Road.  
• If Grattan Street were not closed, a dedicated pedestrian connection or concourse across Grattan Street would be required. | • If Grattan Street were to remain open as a single lane each way and the station entrance/exit located on the south east VCCC corner, significant risks would arise for emergency vehicle access, patients and service users crossing Grattan Street. |

Requested Action:

- Further analysis of our preferred option to limit access to Grattan Street to emergency vehicles including Ambulance Victoria, MFB and Victoria Police during construction and legacy.
- If Grattan Street were not closed, consideration of mid-block proposal including a dedicated pedestrian connection or concourse across Grattan Street.
- Further analysis of a station entrance/exit on the north west side of Grattan Street/Royal Parade intersection, located towards RWH.
v. Emergency access, traffic flows and public transport

Summary of key issues:

- RMH is one of the busiest emergency departments in Victoria and a designated statewide trauma centre.
- Uninterrupted access by road and air to RMH’s services is imperative for 25,000 emergency transportations annually.
- Closure of Grattan Street to the east of Royal Parade during construction will impact local traffic patterns and emergency access.
- Permanent realignment of Grattan Street with one lane in each direction between Flemington Road/Royal Parade would impact emergency vehicle access.
- Grattan Street access should be permanently limited to emergency vehicles between Royal Parade/Flemington Road.
- Traffic studies and modelling presented by MMRA regarding volume and flow of traffic may not be accurate.
- The Parkville Precinct has been noted as achieving an overall Negative Impact on road traffic as a result of the project. The project will achieve a nodal shift towards public transport but despite this still have a negative road traffic impact.

<table>
<thead>
<tr>
<th>Issue</th>
<th>Design/construction risks</th>
<th>Legacy risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Removal of Parkville station entrances/exits at RMH and Barry Street.</td>
<td></td>
<td>The single lane design of Grattan Street may prove to be a major impediment to emergency vehicle access. Peak period traffic jams will exacerbate this issue.</td>
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<tr>
<td>Truck movements associated with construction. While truck movements would generally be planned to occur outside peak periods, they would add to existing local traffic and affect transport operations to a modest degree.</td>
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<td>In some precincts, construction activities would result in the temporary loss of car parks.</td>
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<td>Truck movements of 100 per day for four years, including after-</td>
<td>Emergency access</td>
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<td></td>
<td>- A better understanding is required on the impact of road closures and truck movements on emergency vehicle access, given that significant increases in traffic on other roads is expected.</td>
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<td></td>
<td>- As the statewide trauma service, there can be no impact on trauma and emergency services, including road and air ambulances. RMH is also a provider of a number of statewide services including stroke, cardiology and infectious diseases.</td>
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<td>- It is imperative that construction does not impede:</td>
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<td></td>
<td>- 24/7 road and air ambulance access at Grattan Street/Royal Parade.</td>
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<tr>
<td></td>
<td>- Access to Grattan Street for emergency vehicles including Ambulance Victoria, Metropolitan Fire Brigade (MFB) and Victoria Police.</td>
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</table>
- There may be periods when access would be affected to RMH.
- The temporary closure of Grattan Street east, which would impact on local traffic patterns, bus and tram operations, cycling and walking activities.
- A large construction workforce would need to drive or be transported to and from workplaces, which could potentially impact on the road network at times.
- Grattan Street to be permanently reduced to one lane in each direction between Flemington Road and Leicester Street to provide for a bus lane in each direction.
- We are supportive of Option A for the location of the station box for reasons provided in the EES (e.g. future transport outcomes, minimising construction and access issues).

<table>
<thead>
<tr>
<th>Traffic flows and pedestrian management</th>
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<tbody>
<tr>
<td>RMH is likely to double in size in the next 10-15 years, with a consequent increase of patients, visitors, staff and associated vehicle movements. This may result in the relocation of key service pedestrian and vehicular access points as well as drop off and taxi zones.</td>
</tr>
<tr>
<td>Any existing traffic studies may not have taken this growth into account.</td>
</tr>
<tr>
<td>Neither do we believe that these studies adequately recognise that a large proportion of our users are ageing</td>
</tr>
<tr>
<td>If Grattan Street were to remain open as a single lane each way and the station entrance/exit located on the south east VCCC corner, legacy traffic issues would also include:</td>
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<tr>
<td>Car drop off and taxi zones.</td>
</tr>
<tr>
<td>Increased foot traffic as a result of RMH future capital plans and growth.</td>
</tr>
<tr>
<td>Possible relocation of key service pedestrian and vehicular access points as well as drop off</td>
</tr>
</tbody>
</table>

- On-street ambulance parking on Grattan Street between Flemington Road/Royal Parade.
- MFB and Victoria Police Emergency vehicle parking on Grattan Street by the main pedestrian entrance.
- 24/7 access to the decontamination showers off Grattan Street.
- Major emergency at RMH or RWH requiring mass evacuation or an event with mass casualties requiring emergency treatment.

<table>
<thead>
<tr>
<th>Traffic studies and modelling presented by MMRA propose that the volume and flow of traffic will remain fairly constant across the Parkville Precinct in the future. These studies were requested by Melbourne Health in December 2015, but have not been provided.</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEither do we believe that these studies adequately recognise that a large proportion of our users are ageing</td>
</tr>
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</table>
and frail, with complex co-morbidities, or the RWH’s cohort of pregnant and young families. Traffic issues that will arise during construction also include:
- Truck movements which may impact on service access.
- Taxi-pick up and drop off for many elderly, ill and infirm patients.
- Patient drop off/pick up near the RMH and The Women’s entrances.
- Access to the RMH patient transit lounge on Grattan Street.
- Reduced street car parking. Cars are a key method of patient access, and the RMH carpark is already heavily utilised.
- Ability for people to easily attend outpatient appointments (e.g. x-ray or pathology, which may have a financial impact on Melbourne Health’s revenue.
- Melbourne Health supports a preferred truck movement route other than Grattan Street west (between Royal Parade and Flemington Street).
- The impact on inpatients needs to be considered and actioned, particularly if trucks (100 per day for 4 days) are going to be accommodated during after-hours activity. Current analysis has only assessed the truck movements on traffic but not on patients health and wellbeing.

| Construction of the new tram stop in Royal Parade. |
| Bus route changes. |
| Public transport |
| Plans for new tram stops may impede ambulance access and turning, particularly if raised kerbs are used. RMH supports additional stops that improve safety and access, but not if this impacts on ambulance access and increases congestion in the area, e.g. by locating both stops on Royal Parade north of the Grattan Street/Royal Parade intersection. Alternate stops either side of the Royal Parade/Grattan Street intersection would be preferable. |

| Public transport |
| Plans for future tram stops may impede ambulance access and turning, particularly if raised kerbs are used. Planning must take into account the planned doubling in size of RMH and pedestrian congestion. |
| Location of proposed tram stops do not consider future redevelopment of the RMH and proposed locations of emergency access and front entrances to the hospital that may be located off Royal Parade. |
Requested Action:

A range of studies is required, including:

- Revised traffic studies and modelling that recognises the impact of trucks, access for emergency vehicles, the future doubling in size of RMH, patient cohorts of RMH and The Women’s, patient car drop off/pick up near the RMH and The Women’s entrances, taxi access, replacement car parking close to the hospitals for less mobile patients, and access to the RMH patient transit lounge.

- Better understanding is required on the road closures on emergency vehicle access given that the EES suggests that there will be significant increases in traffic on roads with the closure of Grattan Street. We need to be provided outcomes of the analysis and assessment undertaken as well as a commitment in the tender for road closures not to adversely impact service access.

- Further analysis of our preferred option to limit access to Grattan Street to emergency vehicles including Ambulance Victoria, MFB and Victoria Police.

- Traffic management plans, including public transport, must be developed in partnership with stakeholders and communicated well in advance.

- If Grattan Street were not closed, consideration of mid-block proposal including a dedicated pedestrian connection or concourse across Grattan Street.

- Investigations are required into the impact of tram stop construction, including alternate stops either side of the Royal Parade/Grattan Street intersection rather than both stops north of this intersection, in alignment with future redevelopment plans.

- Greater investigation should be placed on achieving a positive traffic management outcome for the Parkville Precinct. Of specific emphasis would be the closure to Grattan Street to all vehicles excluding local traffic, public transport and emergency services, and improved understanding of parking infrastructure access points and design of traffic network accordingly to avoid excessive circulating traffic.

- Support that the non-preferred route for truck movement is not Grattan Street (e.g. west-side).

- Early communication of bus route changes is necessary. The most appropriate and safe location for a temporary bus stop should be found in the context of minimising the impact of service access for patients, visitors and staff.

- We are supportive of replacement car parking to be provided, however require that it is as close to the hospital as possible, given the impact this may have on patient access and safety.

- We are supportive of enhancing active transport and providing appropriate facilities (e.g. back racks and lanes).
vi. Stakeholder engagement

Summary of key issues:

- Limited project engagement over the past 12 months including lack of consultation on key decisions.
- Timely stakeholder engagement will be critical for the key stakeholders in close proximity to Grattan Street/Royal Parade.

<table>
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<tr>
<th>Issue</th>
<th>Design/construction risks</th>
<th>Legacy risks</th>
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</table>
| • Communication on construction, access, noise, vibration and traffic impacts. | • There has been poor project engagement over the past 12 months, and Melbourne Health has not been consulted on decisions which may directly or indirectly impact on services.  
• Consultation regarding project decision making, design and construction has been limited, and follow up has been poor.  
• RMH and The Women’s service efficiency and goodwill with patients, visitors and referring services will be severely impacted unless there is clear and timely communication on construction, noise, vibration, road access and closures, parking and public transport changes. | • Service efficiency will be impacted with patients, visitors and referring services unless post-construction traffic management plans are clearly communicated.  
• Communication requirements need to be cognisant of the impact that it may have on referring services (e.g. access issues) with our external partners such as General Practitioners who may not be located in the Parkville area. |

Requested Action:

- Further evidence of traffic impacts and management is required.
- Project plan and updated timelines must be provided to our communications team for distribution to internal and external stakeholders. Sufficient notice needs to be provided to the communication relations teams of major stakeholders across the Precinct to ensure these consistent messages are communicated to patients, visitors and staff in a timely and coordinated manner.
- Information packs should be explored for patients and visitors regarding noise, vibration, access and construction impacts.
- Communication materials and key messages must be developed throughout the project phases for stakeholders.
- We support traffic management plans being developed during construction and legacy to support change management. Clear and early communication is required to patients, visitors and those associated with the health service including referrers and emergency services is required.
• We support a healthy lifestyle for our patients, visitors and staff which required improved safe bicycle access around the station and enhanced bicycle storage facilities which does not impede emergency access.

• Advocate for further baseline noise and vibration modelling to be completed to determine appropriate mitigation measures and construction methodologies.

• An increased MMRA presence in the hospitals precinct, including pop-ups in RMH, would be required for the life of the project.
vii. Business Impacts

Summary of key issues:

- During construction, medical institutes may need additional labour resources, to relocate some services and/or invest in new capital equipment.
- The impacts on surgical theatres, imaging equipment and revenue due to relocation of services must be investigated.
- There are insufficient Performance Requirements in relation to expectations that the Contractor would develop effective Business Continuity Planning and Critical Incident Management response to support precinct partners in advance of commencement of any works.
- Notification periods relating to service disruptions do not reflect the sensitive nature of the precinct and the life safety and catastrophic business impacts that service disruptions potentially impose.
- Electricity disruptions in particular are critical to WEHI. Emergency generators are available and (seasonally dependent) can offer anywhere between critical systems only (summer) and entire premises backup (winter). However, many experiments require continuity and even a brownout is sufficient to terminate an experiment.
- Natural gas disruption is not business critical for short duration outages (e.g. <3hrs), however (seasonally dependent) longer duration disruptions start to have moderate business impacts.
- Fibre connections to the University are fundamental to our business and like electricity loss of service has extended duration recovery outcomes.

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<tr>
<th>EES Chapter 11 – Business</th>
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<td><strong>Issue</strong></td>
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<tr>
<td>The medical and research institutes in the precinct operate equipment and conduct research that is highly susceptible to vibration.</td>
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<tr>
<td>In particular, MRI machines are affected by some construction materials and activities and may need additional protection.</td>
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<tr>
<td>During the construction phase, medical institutes may need to use additional labour resources to manage construction impacts.</td>
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relocate some services and/or invest in new capital equipment to mitigate the impacts.

- Significant investment in new capital equipment may be required to mitigate impacts on services and equipment remaining at RMH.

- Other business impacts include:
  - Temporary closure of Grattan Street.
  - Partial closure of Royal Parade.
  - Changes to 401 bus service.
  - Disruptions to tram services.
  - Additional truck and construction traffic.
  - Acquisition of car parking spaces and reduced amenity.

- Businesses - especially retail, food and beverage services – that are reliant on foot traffic for a proportion of their sales.

- Business risks must be effectively managed through planning and communication to stakeholders.

**Requested Action:**
- Further assessment is required into additional labour resources to manage construction impacts, relocate some services and/or invest in new capital equipment to mitigate the impacts.
viii. Air Quality

Summary of key issues:
- The application of standard industry Air Quality Guidelines is not considered acceptable for a specialist health and research precinct containing significant personnel and bio-resources with immune deficiencies and medical and research technologies with high environmental sensitivities.
- The failure to perform a Risk Assessment for the Parkville Precinct is considered a major deficiency in the EES.
- The Parkville Precinct is a highly susceptible area regarding air quality.
- The compliance threshold, how it will be monitored, and the agreed process when these levels are reached.
- Contingency plans for the risk mitigation strategies proposed by MMRA.

EES Chapter 12 – Air Quality

<table>
<thead>
<tr>
<th>Issue</th>
<th>Design/construction risks</th>
<th>Legacy risks</th>
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<tbody>
<tr>
<td>Dust emissions would be managed in accordance with the recommended Environmental Performance Requirements.</td>
<td>Parkville is potentially the most sensitive of the Melbourne Metro precincts as it is in close proximity to a number of health and educational facilities.</td>
<td></td>
</tr>
<tr>
<td>Although Parkville is a highly sensitive location, it was not considered to have a high risk of air quality impacts and was not selected for detailed assessment.</td>
<td>Air quality assessment will be within EPA guidelines; however it is not known whether this will meet the stringent air quality requirements of medical facilities.</td>
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<tr>
<td>MMRA risk mitigation includes:</td>
<td>RMH air intakes are located on Grattan Street, and air filters are quickly clogged with construction dust.</td>
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<tr>
<td>- Truck movements resulting in lower spoil volumes and haulage rates that result in lower intensity of dust generating activities.</td>
<td>Additional air filtering equipment may be required pre-construction.</td>
<td></td>
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<tr>
<td>- Temporary ventilation facilities would require suitable dust extraction and filtration systems where dust is being extracted to the</td>
<td>Parkville Precinct stakeholders require further details on the compliance threshold, how it will be monitored and the agreed process when these levels are reached; and on contingency plans for the risk mitigation strategies proposed by MMRA.</td>
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</table>
- Dust monitoring at sensitive receptors at these locations would be required to demonstrate compliance with the air quality criteria set for Melbourne Metro.

**Requested Action:**
Further studies and detailed assessments are required including:

- The compliance threshold, how it will be monitored and the agreed process when these levels are reached.
- Contingency plans for the risk mitigation strategies proposed by MMRA.
- Planning to ensure that health services work very closely with the preferred contractor during construction.
ix. **Surface Water and Ground Water**

*Summary of key issues:*

- The potential for inundation of station boxes from minor overland flows.
- Water - WEHI have rooftop water tanks providing 3 hour contingency but outages beyond that (seasonally dependent) can lead to significant business impact through loss of chiller plant, and need to cease operations due to loss of safety related infrastructure (e.g. eyewash/emergency shower).
- Sewer - WEHI could cease sewer production for moderate period (days) without critical business impact - so long as water supply maintained for cooling tower supply which is evaporation losses.

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<tr>
<th>EES Chapter 17 – Groundwater and EES Chapter 18 – Surface Water</th>
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<td><strong>Issue</strong></td>
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<tr>
<td>Potential for inundation of both station boxes during construction from minor overland flow. These could be mitigated relatively easily by the construction of small barriers to intercept flows and divert them away from the excavation sites.</td>
</tr>
<tr>
<td>There are no active groundwater users within the predicted area of drawdown around this station precinct. There are no surface water bodies within 2 km of the Parkville station precinct, and vegetation is not expected to be dependent on groundwater. Therefore, impacts on groundwater dependent ecosystems would not be expected.</td>
</tr>
<tr>
<td>We do not anticipate any significant issues with groundwater.</td>
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</tbody>
</table>

**Requested Action:**

- Further assessment is required to understand the inundation risks, given the age of RMH infrastructure.
- RMH would need to be adequately informed if groundwater issues arise during construction.
x. **Ground Movement**

**Summary of key issues:**

- Preliminary assessments show that negligible to minor impact is predicted for buildings in the Parkville precinct.
- The risk assessment of ‘negligible to minor impact’ is too low, given the age of RMH buildings.
- Animal research Facilities - vibration impacts on breeding and stress related impacts on research experiments. Based upon published research data - WEHI would be seeking an upper limit of 2x10^-3 m/s Vibration Level assuming that there would be some pre-conditioning as the TBM approaches and departs the local area. Should the Vibration Levels be sudden onset - an upper limit of 1.5x10^-3 m/s Vibration Level would be proposed.
- WEHI Risk Mitigation - Potentially consider duplicating some high value strains to Kew (or even Bundoora) during critical periods (e.g. TBM)
- Aquatic Facilities - vibration through water medium can amplify effects - need to monitor vibration levels and respond quickly to apparent impacts. No published data appears apparent for Zebrafish.
- Invertebrate - Nil Impacts anticipated. Closely monitor.
- Sensitive Equipment - Air tables typically for high end but potential for disruption to low/medium end systems operation.

**EES Chapter 19 – Ground movement**

<table>
<thead>
<tr>
<th>Issue</th>
<th>Design/construction risks</th>
<th>Legacy risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential for ground movement associated with the cut and cover construction of the station. Negligible to minor impact is predicted for buildings in the Parkville precinct</td>
<td>• Approximately 70 – 80% of Melbourne Health buildings are more than 70 years old, and were constructed well before the introduction of Australian building standards. • The impact of construction and resulting ground movement on these buildings and their footings is unknown. • Of particular concern is impact of tunnel boring directly in front of RMH. • Existing issues which may be exacerbated by ground movement include bricks falling from façades (protection mesh is already in place on some walls), serious cracking of older walls and old float glass windows.</td>
<td>• It is not known whether RMH’s older buildings are sustainable in the light of ground movement.</td>
</tr>
</tbody>
</table>

**Requested Action:**

- Further investigations are required on ground movement impacts during construction and post-construction including structural engineering assessments of RMH’s older buildings.