

# Residential Impact Mitigation Guidelines for Construction

These Guidelines have been prepared to address clause 4.7.2 of the "Melbourne Metro Rail Project - Incorporated Document" (Incorporated Document) as incorporated into the Melbourne, Stonnington, Port Phillip and Maribyrnong planning schemes.

These Guidelines have also been prepared to address Environmental Performance Requirements SC2, NV21B.3, NV21D.3, NV21F.2 and NV21J.2 for the Melbourne Metro Rail Project (also referred to in these Guidelines as "Metro Tunnel").

## 1 Context

The Metro Tunnel will deliver a range of benefits for Melbourne, substantially increasing the capacity of the rail network and improving connectivity and accessibility of the city's key growth areas. By stimulating urban renewal in inner city areas and enhancing access to the CBD and Parkville, the Metro Tunnel will also create opportunities for new commercial development, jobs and housing close to the city centre.

Melbourne Metro Rail Authority (MMRA) recognises that construction of the Metro Tunnel may affect those who live in areas close to construction activities. The Environmental Management Framework (EMF) for the project incorporates a number of Environmental Performance Requirements (EPRs) which prescribe outcomes and processes designed to reduce the impacts of construction on residential amenity.

Importantly, the EPRs require management and mitigation measures to be undertaken at the source of the noise in accordance with approved management plans. The EPRs also set Guideline Targets and Guideline Levels for noise and vibration at residences, with the requirement to comply with these Targets and Levels where practicable. However if, despite practicable at-source mitigation measures being deployed, the Guideline Targets and Guideline Levels are exceeded for an extended period of time, other management actions under the EPRs must also be taken by contractors to keep noise emissions to reasonable levels.

The EPRs require airborne noise from night time construction activities to be inaudible within habitable rooms of residences, except where the works fall within the definition of Unavoidable Works. Unavoidable Works must have been approved by the Independent Environmental Auditor (IEA) appointed for the Metro Tunnel prior to the Works commencing, except in the case of emergency works which must subsequently be approved by the IEA. In practical terms, this means that for most of the time, airborne noise from construction activities should not be heard by residents within bedrooms and living rooms at night.

Metro Tunnel contractors will implement all practicable noise mitigation measures "on-site" at the source of the impact to comply with the EPRs. Despite the extensive and tiered "at-source" management responses required under the EPRs, due to the scale, duration and variable nature of the construction works required for the Metro Tunnel, there may be some residual impacts on residential amenity despite at-source mitigation measures being implemented.

The EPRs acknowledge the potential for residual amenity impacts by requiring that these Guidelines be implemented so as to reduce the effects of construction activities on residents.

The causes of potential residual impacts on residential amenity addressed in these Guidelines are airborne noise, ground-borne noise and vibration, temporary loss of access and the cumulative effects arising during rail occupations of noise, light-spill, dust and construction traffic. These Guidelines have been developed as part of the EMF for the Metro Tunnel.

## 2 Purpose

Due to the scale, duration and variable nature of the construction works required for the Metro Tunnel, there may be some residual impacts on residential amenity despite on-site mitigation measures being implemented in accordance with the EPRs.

EPR SC2 requires the preparation of a relocation management framework prior to construction of the Metro Tunnel shafts and main works to provide for the temporary relocation of households on a voluntary basis. Any relocation management framework is required to be consistent with these Guidelines.

Accordingly, the purpose of these Guidelines is to provide direction to the Metro Tunnel contractors on how to address residual impacts on residential amenity so far as is reasonably practicable and appropriate.

These Guidelines specify a range of engagement measures and “off-site” mitigation measures to be implemented for this purpose, and criteria for determining when these measures are to apply.

The Appendix to these Guidelines describes the process for implementing these Guidelines.

These Guidelines do not create entitlements for residents affected by the Metro Tunnel construction works.

## 3 Scope

These Guidelines apply to residents in properties which are subject to amenity impacts due to the proximity of the Metro Tunnel construction works.

These Guidelines do not apply to non-residential receivers (including sensitive receivers, such as schools and hospitals). These receivers are likely to require specifically tailored mitigation measures which will be developed on a case by case basis. Similarly, commercial premises are not within the scope of these Guidelines. The overarching framework of mitigation measures to address the impact of the Metro Tunnel construction works on businesses is set out in the Business Support Guidelines for Construction, which also form part of the EMF.

### 3.1 Engagement measures

The engagement measures to be applied under these Guidelines are described below:

- a. **Works notifications** – used to disseminate advance information about the timing and nature of works to residents and to provide early warning of high impact activities (notifications could be provided electronically or in hard copy);
- b. **Phone calls** – used to inform residents personally about the timing, nature and predicted impacts and the mitigation measures that will be implemented;
- c. **Individual briefings** – used to inform residents personally about the timing, nature and predicted impacts and the mitigation measures that will be implemented; and
- d. **Specific notification** – targeted communications to residents (electronically or in hard copy) to advise that construction activities are expected to exceed the relevant criteria for respite offers, acoustic treatment or alternative accommodation as described below.

### 3.2 “Off-site” Mitigation measures

The off-site mitigation measures to be applied under these Guidelines are described below:

- a. **Respite offer** – residents subject to periods of exposure to construction activities expected to exceed the applicable criteria for respite offers will be provided with a respite offer (e.g. pre-purchased movie tickets);
- b. **Acoustic treatment** – residents subject to significant periods of airborne noise expected to exceed the applicable criteria for acoustic treatment may be offered improved window glazing or other appropriate acoustic treatment if it is considered that this will effectively mitigate acoustic impacts;
- c. **Alternative accommodation** – residents subject to substantial periods of exposure to construction activities expected to exceed the applicable criteria for alternative accommodation will be offered alternative accommodation; and
- d. **Earplugs** – residents subject to periods of exposure to construction activities that are expected to exceed the applicable criteria will be offered earplugs (recognising that some people may prefer to stay at home during the relevant works).

More details about the off-site mitigation measures can be found in the Appendix to these Guidelines.

## 4 Criteria for engagement and “off-site” mitigation measures

Under these Guidelines:

- sepecific engagement and ‘off-site’ mitigation measures apply according to different criteria which reflect the impacts on residential amenity associated with the Metro Tunnel works; and
- exceedance of the applicable criteria refers to exceedance of both the guideline noise levels (by reference to time periods referred to in Tables 1 and 2) and durations specified in these Guidelines.

### 4.1 Airborne noise

#### a. Overview

Based on the predicted (or measured) airborne noise level and the relevant time period, contractors must take the following measures with respect to residents affected by airborne noise where appropriate:

1. engagement with residents and respite in relation to acoustic impacts. The criteria and measures for engagement and respite are described Part 4.1(b);
2. acoustic treatment for residences. The criteria for considering acoustic treatment are described in Part 4.1(c); and
3. alternative accommodation. The criteria for considering offers of alternative accommodation are described in Part 4.1(d).

#### b. Engagement with residents and respite in relation to airborne noise

The noise management levels for residential land uses adopt the guideline noise levels in EPR NV6 (for evening/weekends and night time) and EPR NV21 (for weekdays and Saturday mornings). The contractors must comply with the EPRs, which require all practicable work practices to be applied to meet the guideline noise levels.

At locations where the predicted (or measured) residual construction noise levels exceed the noise guideline levels, the engagement measures and mitigation measures specified in Table 1 shall apply.

**Table 1 – Guideline noise levels and management measures**

Time period	Guideline noise levels	Management Measures
Normal working hours		
Mon-Fri: 7am – 6pm	External construction $L_{Aeq(15\text{ min})} > 10\text{dB(A)}$ above the pre-existing ambient noise level, $L_{Aeq}$ , or 75dB(A) (whichever is higher)	Works notification Earplugs
Sat: 7am – 1pm		
Evening/weekend hours and public holidays		
Mon-Fri: 6pm – 10pm	External construction $L_{Aeq(15\text{ min})} > 5\text{dB(A)}$ above the pre-existing ambient noise level, $L_{Aeq}$	Works notification Earplugs Individual briefings Phone calls Specific notification Respite offer
Sat: 1pm – 10pm		
Sun/Pub Hol: 7am – 10pm		
Night hours		
Mon-Sun: 10pm – 7am	External construction $L_{Aeq(15\text{ min})} > 5\text{dB(A)}$ above the pre-existing ambient noise level, $L_{Aeq}$	Works notification Earplugs Individual briefings Phone calls Specific notification Respite offer

### **c. Acoustic treatment for residences**

This Part of the Guidelines sets out criteria for when offers of acoustic treatment to residences must be considered for Unavoidable Works at night. Offers of acoustic treatment will however only be made where acoustic treatment is deemed to be an effective solution to mitigating airborne noise.

Acoustic treatment for residences will be offered where the total airborne noise level due to Metro Tunnel works (pre-existing ambient,  $L_{AeqT}$ , measured over one hour plus airborne noise from Metro Tunnel works) is predicted at a point one metre in front of the most exposed of any windows or doors of a habitable room in any façade of a residence, to exceed whichever is the higher of:

- 55dB(A); or
- 5 dB(A) above the pre-existing ambient  $L_{Aeq}$ , noise level

between the hours of 10pm and 7am on any day of the week on at least 40 days in any six consecutive months, excluding any night during which an offer of alternative accommodation has been accepted.

Due to the long lead time required to investigate residential buildings, design and then install acoustic treatment, offers of acoustic treatment will be based on pre-construction modelling of airborne noise emissions from construction activities, not measured noise. However, if noise monitoring during construction indicates that the criteria for acoustic treatment will be or have been met (despite not being identified through earlier modelling), consideration will be given to offering acoustic treatment (taking into consideration practicability and timing).

Where a resident does not accept an offer of acoustic treatment, the resident may be offered alternative accommodation in respect of the relevant airborne noise impacts (which may be accepted by the resident before or during the period in which the relevant works are undertaken) even if the alternative accommodation criteria in Part 4.1(d) are not satisfied.

#### **d. Alternative accommodation**

Alternative accommodation will be offered where the total airborne noise level due to Unavoidable Works at night (pre-existing ambient,  $L_{AeqT}$ , measured over 1 hour plus airborne noise from Metro Tunnel works), measured or predicted at a point one metre in front of the exposed windows and doors in any façade of a residence, exceeds whichever is the higher of:

- 65 dB(A); or
- 10 dB(A) above the pre-existing ambient,  $L_{Aeq}$ , noise level,

between 10pm and 7am on any day of the week on at least:

- 10 days in any 15 consecutive days; or
- 40 days in any six consecutive months.

#### **e. Notes**

- for assessment with respect to the airborne noise criteria, the noise level is to be modelled and measured at a point 1 metre in front of the exposed windows and doors of a habitable room in any façade of the resident's property that is most exposed to construction noise at a height of approximately 1.5 metres above the ground for ground-level dwellings, or 1.5 metres above each floor for multi-storey dwellings. Modelling will be undertaken (in accordance with EPR NV3) to predict noise levels in the same location, and provide the basis for engagement and offering the "off-site" measures described above.
- if a building features a façade that provides a high level of mitigation (including where acoustic treatment has been provided to a residence in accordance with Part 4.1(c) of these Guidelines), and as a result the noise levels predicted within habitable rooms (such as bedrooms and living rooms) inside the building are not considered to adversely impact on amenity, mitigation measures available under these Guidelines will not be offered.

## **4.2 Ground-borne noise and vibration**

These Guidelines assume that, given the nature of the Metro Tunnel works, exceedance of the ground-borne noise guideline levels will also address the potential impacts on residential amenity associated with ground-borne vibration.

Based on the predicted (or actual) ground-borne noise level and the relevant time period, the following measures will apply to residents affected by ground-borne noise and vibration where appropriate.

**Table 2 - Ground-borne noise guideline noise levels**

Mitigation measures if construction noise ( $L_{Aeq}$ (15 mins)) exceeds 40dB(A) during the evening period and 35dB(A) in the night time period by the decibel ranges shown below			
Time Period	0 – 10dB(A)	10 – 20dB(A)	>20dB(A)
Mon-Sun: 6pm – 10pm	Works notification	Works notification Specific notification Earplugs Respite offer	Works notification Individual briefings Phone calls Specific notification Earplugs Respite offer
Mon-Sun: 10pm – 7am	Works notification	Works notification Individual briefing Phone calls Specific notification Earplugs Respite offer Alternative accommodation*	Works notification Individual briefings Phone calls Specific notification Earplugs Respite offer Alternative accommodation*

\*Alternative accommodation will be offered where ground-borne noise exceeds these criteria for more than 10 days in any 15 consecutive days.

#### **a. Notes**

- management measures are not provided for the daytime period, as ambient daytime noise levels typically provide masking with respect to ground-borne noise.
- acoustic treatment is not offered as it is not an effective mitigation for groundborne noise, which is generated within a dwelling due to vibration.
- guideline noise levels are based on the levels in EPR NV13.

#### **4.3 Loss of access**

There may be circumstances where access to residential properties is temporarily restricted for periods of time during construction works.

Respite or alternative accommodation will be offered to residents as appropriate where access to or egress from their property (including for vehicles) is temporarily unavailable and adequate alternative access has not been provided.

#### **4.4 Cumulative effects (rail occupations)**

Rail occupations required to undertake intensive construction work outside of standard working hours may have a significant effect on the amenity of nearby residents through a combination of impacts such as noise, light spill and temporary loss of access.

As the works to be undertaken during each rail occupation will vary, it will be necessary to determine the likely effects on nearby residents when planning the occupation.

Respite and alternative accommodation for residents affected by rail occupations shall be based on:

- the time periods for the construction works and predicted exceedance of guideline noise levels set out above in relation to airborne noise, based on the relative disruption associated with the particular occupation; and
- whether the residence is located within a zone identified by MMRA as eligible for respite or alternative accommodation based on an assessment of the total predicted impacts of the rail occupation works.

#### **4.5 Special circumstances**

There may be circumstances in which the impacts of airborne noise, ground-borne noise and vibration or combined impacts do not exceed the criteria in these Guidelines, but the resident is particularly sensitive to those impacts. Requests for respite or alternative accommodation from such residents shall be considered on a case by case basis, taking into account:

- the impacts of Metro Tunnel works on the resident's amenity, with a preference given to quantitatively modelled or measured impacts on the residence where possible; and
- the special circumstances of the resident that would increase sensitivity in relation to those impacts, such as night/shift workers or those with a medical condition exacerbated by noise or vibration.

### **5 Implementation overview**

Metro Tunnel contractors will be responsible for implementing the engagement and mitigation measures set out in these Guidelines, including the development of a relocation management framework that is consistent with these Guidelines.

The Appendix to these Guidelines sets out minimum requirements regarding the processes and standards to be used by contractors in implementing the measures set out in these Guidelines.

## Appendix - Implementation requirements

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This Appendix sets out the processes and standards to be used by Metro Tunnel contractors to develop a relocation framework that satisfies EPR SC2.

### 1 Prior to construction

#### 1.1 Assessing potential impacts and notification

Prior to commencing the relevant works, each Metro Tunnel contractor will assess the properties that are likely to be significantly affected by the construction activities for their works package.

This assessment will be based on noise modelling of the proposed construction works and methodology, time of day and duration of works for each works package.

From this assessment, a predicted area of impact will be established. The relevant contractor will notify residents in this area in advance of the works commencing in accordance with the notification periods set out below. Notification will be via the engagement measures outlined in Part 3.1.

**Table 2 - Notification timeframes**

Timing of works	Notification period in advance of works
<b>Daytime works:</b> 7am to 6pm weekdays and 7am to 1pm Saturday	5 business days
<b>Out of hours and night works:</b> all Works after 6pm weekdays, after 1pm Saturday or any time on Sundays or public holidays	10 Business days

#### 1.2 Respite

Prior to the commencement of the relevant works, respite offers will be made to residents who occupy properties where the applicable noise levels for respite are predicted to be exceeded.

The purpose of respite offers will depend on the extent and duration of the relevant works. However, a respite offer will typically either provide residents with an opportunity to leave their homes for the duration of short-term (i.e. up to a few hours) construction activities, or for a break away from longer term activities.

Metro Tunnel contractors will be required to offer eligible residents either one or both of the following options:

- a choice of pre-determined and pre-paid respite options. Possible respite options may include tickets to cultural or sporting activities (e.g. cinema tickets, sporting tickets, admission to galleries/museum), public transport vouchers (e.g. pre-paid myki cards), and gift vouchers to be used at retail or restaurant outlets from which residents may choose; or
- reimbursement of the reasonable costs incurred by the resident, up to a dollar value equivalent to the pre-determined respite offers.

#### 1.3 Acoustic treatment (noise insulation to buildings)

Prior to the commencement of the relevant works, offers to undertake acoustic treatment will be made to residents who occupy properties where the applicable airborne noise criteria (including duration) are predicted to be exceeded in accordance with Part 4.1(c). Offers will only be made where acoustic treatment is deemed to be an effective solution to mitigating airborne noise.

Metro Tunnel contractors will be required to offer eligible residents either one or both of the following options:

- a choice of approved and pre-paid insulation technicians to install acoustic treatment at affected residents' properties that is appropriate to the circumstances and design of the affected premises; or
- reimbursement of the reasonable costs incurred by the resident in having acoustic treatment installed at their premises, provided that the installation of any acoustic treatment is agreed with the relevant contractor prior to the acoustic treatment being carried out on the property and is completed before construction work commences.

#### **1.4 Alternative accommodation**

Prior to the commencement of the relevant works, offers to provide temporary alternative accommodation will be made to residents who occupy properties where the applicable criteria (including duration) are predicted to be exceeded.

Whilst noise levels and durations affect people differently, MMRA's guiding principle is that staying at home is generally the best option for everyone. Residents are therefore under no obligation to accept the offer for alternative accommodation. If a resident decides to stay but then finds that they would prefer alternative accommodation, this can still be offered subject to prior agreement with the contractor.

Metro Tunnel contractors will be required to offer eligible residents a choice of pre-arranged and pre-paid local accommodation providers that can provide a standard of accommodation (for example, serviced apartments) that enables the affected resident to receive respite from the works and to go about their daily life.

Consideration will also be given to including incidentals such as car parking, wifi and a breakfast pack with the alternative accommodation offer. All other incidentals associated with the alternative accommodation will be paid for by the resident. Requests for pet accommodation will be assessed on a case by case basis.

Residents who accept an offer of alternative accommodation will remain responsible for the costs associated with their existing residence while temporary accommodation is provided.

## **2 During construction**

### **2.1 Monitoring**

Contractors will undertake noise and vibration monitoring throughout the construction of the Metro Tunnel to ensure compliance with environmental requirements, including those which may impact on residential amenity as set out in these Guidelines.

### **2.2 Complaints and requests**

A 24-hour Metro Tunnel Project Information Line will be established through which residents may obtain further information or register complaints regarding the carrying out of Metro Tunnel works, including the effect of construction works on residential amenity.

Residents who were offered respite or alternative accommodation but did not take up the offer prior to construction commencing may contact the Metro Tunnel contractors at any time during the carrying out of the relevant works to request respite or alternative accommodation via the Project Information Line.

Residents who have not received offers of respite or alternative accommodation but who believe their residential amenity is or will be adversely impacted by construction works may register a request for assessment by reference to these Guidelines via the Project Information Line.

Where the relevant contractor has deemed a resident ineligible for respite or alternative accommodation, the resident may request MMRA to review this decision by reference to these Guidelines.