

Melbourne Arts Precinct Transformation

Construction noise and vibration

The Victorian Government is investing \$1.7 billion to transform the Melbourne Arts Precinct into one of the great cultural and creative destinations in the world.

The Melbourne Arts Precinct Transformation (MAPT) is the largest cultural infrastructure project in Australia's history.

The project includes the creation of a new expansive 18,000 square metre urban garden that will connect Arts Centre Melbourne, NGV International and a new gallery, The Fox: NGV Contemporary.

During construction, the community surrounding the Melbourne Arts Precinct may experience some noise and vibration different to existing noise levels due to use of heavy machinery.

Key construction activities

There are various construction activities that will be undertaken on site which may result in intermittent noise and vibration:

- earthworks, including excavation
- vehicle and plant movements in and out of site areas
- piling
- demolition of existing structures
- assembly and operation of a mobile crane
- general construction works
- use of power and pneumatic hand tools

Types of potential disruptions

There are different types of disruptions that may be caused by construction activities. These are detailed below.

Air-borne noise is sound that travels through the air. It may be continuous, impulsive or intermittent, and may contain high pitch or low dominating tones. Examples of air-borne noise include talking, a car starting, the radio or television, or even a dog barking.

Ground-borne noise is sound generated by vibration transmitted through the ground into a structure. The ground-borne vibration causes the walls and floors of the building to faintly vibrate and subsequently radiate noise. If it is of sufficient magnitude to be heard, it is typically heard as a low frequency rumbling. Sources of ground-borne noise include trains, buses on rough roads, and construction activities such as rock-breaking and drilling that are vibration intensive.

Vibration is the rapid movement of an object back and forth which occurs when it is displaced from its original position and returned to it. Causes of vibration include excavation works such as piling and concrete pumping, the assembly and operation of a mobile crane, and demolition works. In some cases, the ground borne vibrations can cause secondary noise effects such as the rattling of crockery and other furnishings.

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Perception of vibration

Vibration is generally detectable to humans at levels well below those at which structural damage can occur. This can be the reason that people feel concerned or raise issues when they feel vibrations while construction activity is underway.

Vibration-induced damage is very rare. Minor damage, such as cosmetic cracks in plaster, is normally due to another cause.

Construction vibration levels are generally well below levels associated with minor cosmetic damage.

Steps we are taking to reduce impact

There are a variety of ways that the project will attempt to reduce the impact of noise and vibration on site. Some of these include:

- undertaking noisy and vibration-generating works during normal working hours (Monday to Friday, 7am to 7pm and Saturday 8am to 3pm)
- implementing timing restrictions on particularly noisy works, which will be managed on a case-by-case basis
- selection of construction equipment that produces less noise and vibration
- installing barriers and/or acoustic dampening materials around the static noise sources, where practicable
- undertaking noisy and vibration-generating preparatory works off site where practicable
- planning the site to ensure that, where practicable, noise and vibration sources are placed as far as possible from sensitive receptors (such as offices, cafes, residences)
- where vibration-generating works are proposed near sensitive receptors, monitoring will be carried out to confirm that vibration is within applicable thresholds.

Working hours for construction noise

In line with the City of Melbourne's guidelines for High Impact projects, works can only be carried out during prescribed hours:

- Monday to Friday – 7am to 7pm
- Saturday – 8am to 3pm

Any times beyond these permitted hours are referred to as 'out of hours' and require an out of hours permit.

How is sound measured?

Sound is measured in decibels (dB). The sound level of typical daytime activities can vary between 40 dB and 85 dB.

The project will comply with the City of Melbourne Noise and Vibration Management Guidelines.

Sound Pressure Level (dB(A))	Typical Source	Subjective Evaluation
60	Moderate radio or television	Moderate to quiet
	Traffic at City Road from the building balcony	
	Conversation at 1m	
70	Passenger car at 7m	
	Vacuum cleaner at 1m	
70-85	Use of power and pneumatic hand tools at 10m	Loud
80	Traffic at City Road from the kerb	
	Earthworks (including excavation with bucket attachment) at 10m	
	Bored piling (to be used where practicable) at 10m	
	Assembly and operation of mobile crane at 10m	Very noisy
	Vehicle and plant movements in and out of site areas at 7m	
90	Heavy truck at 10m	Very noisy
90-95	Demolition works of existing structures at 10m	
100	Loud car horn at 3m	
140	Jet plane taking off at 25m	Pain threshold, unpleasant to intolerable

Contact

The Melbourne Arts Precinct Transformation project team is committed to responding to the community about noise impacts, while delivering Australia's largest cultural infrastructure project that will transform Melbourne's creative precinct and enhance the community's public space.

Visit: artsprecinct.melbourne

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