MELBOURNE METRO RAIL PROJECT ENVIRONMENT EFFECTS STATEMENT INQUIRY AND ADVISORY COMMITTEE

MMRA TECHNICAL NOTE

TECHNICAL NOTE NUMBER:	058
DATE:	19 September 2016
PRECINCT:	All Precincts
EES/MAP BOOK REFERENCE:	EES Chapter 13; Technical Appendix I: Noise and Vibration
SUBJECT:	SoundPLAN Noise Modelling for Airborne Construction Noise

NOTE:

1. During the cross-examination of Mr Fearnside by counsel for MMRA, a query arose about the SoundPLAN acoustic modelling which was undertaken for the assessment of airborne construction noise in the EES.
2. This Technical Note provides an explanation of the model, its application to structures that may be affected by airborne noise, and the mitigation responses.

Model

3. SoundPLAN Environmental Software is a 3-dimensional noise modelling package offering a range of noise evaluation modules.
4. The ISO 9613 part 2 standard[1] was the calculation methodology used for the prediction of the airborne construction noise levels within the SoundPLAN environment.
5. The acoustic model includes:
    a. Topography;
    b. Building Structures;

[1] ISO 9613-2: 1996 Acoustics – Attenuation of sound during propagation – Part 2: General method of calculation.

c. Noise sources;

d. Noise sensitive receivers; and

e. Ground absorption.

6. The noise sources can be modelled as point sources, line sources and / or area sources.

7. The noise sources included in the acoustic model have been based upon their octave band sound power levels and relevant directivity.

8. The construction source noise levels used in the acoustic model are from DEFRA's *Update of Noise Database for Prediction of Noise on Construction and Open Sites*[2] (DEFRA) and the AJM construction noise database. The DEFRA sound level data are based on actual field measurements on construction sites. However, it should be noted that noise levels associated with a spoil truck is very dependent on what the spoil truck is doing (e.g. driving past at speed, dumping material etc). The spoil trucks in the AJMJV model are on-site and are either idling or moving slowly.

9. Buildings included in the SoundPLAN model for all precincts, other than the Eastern Portal Precinct and the Western Turnback, were from the shapefile *City of Melbourne Building Footprints* prepared by the City of Melbourne. A shapefile is a file format that stores geometric information and assigns attributes to it (similar to a dxf). It is a file format that can be imported into SoundPlan.

10. The City of Melbourne shapefile presents a dataset of all of buildings (along with information assigned to each building) within the City of Melbourne council extents. The information assigned to each building included the building footprint, building heights, number of floors and addresses. This information was extracted from the dataset for our investigation.

11. For the Eastern Portal Precinct and the Western Turnback, the buildings were based on information derived by AJMJV from site visits and google maps (including street view).

12. As far as practicable, all existing buildings in the vicinity of the Melbourne Metro construction sites were included in the acoustic model. An example for CBD South Station from the AJMJV SoundPLAN model is provided in Figure 1 below. The grey objects are buildings and the yellow stars are receiver points which clearly extend up the building.

[2] Department of Environment, Food and Rural Affairs, *Update of Noise Database for Prediction of Noise on Construction and Open Sites,* 2005

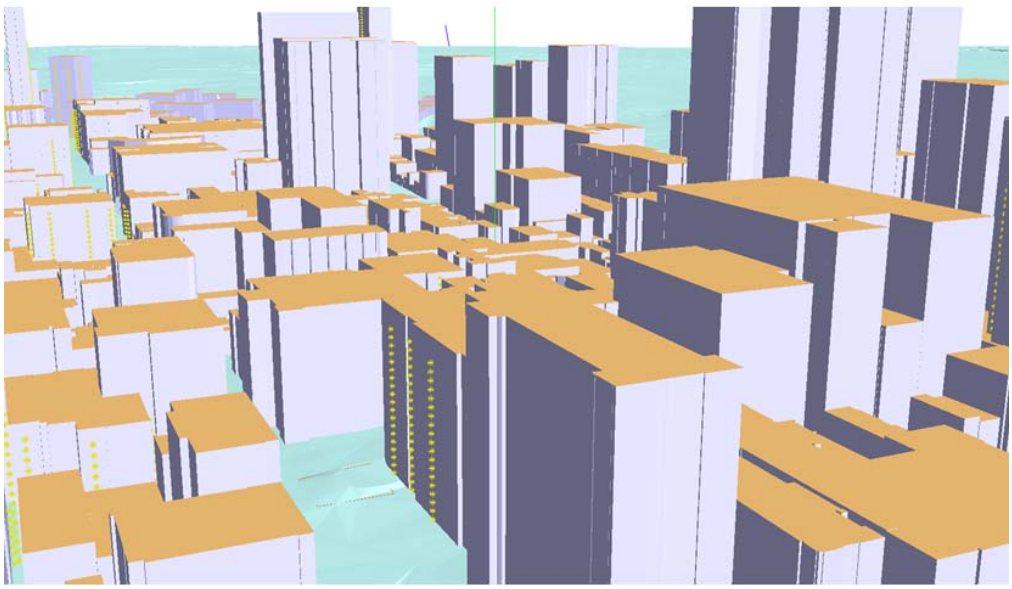

Figure 1: AJMJV SoundPLAN model – CBD South Station

Predictions

13. The construction scenarios modelled by the AJMJV were provided by MMRA's constructability advisor. The modelled construction scenarios were selected to represent a range of typical construction scenarios. These were used to identify if practicable mitigations could be applied to meet the relevant Guideline Noise Levels.

14. Practicable mitigation was also identified and modelled to inform the assessment of construction noise for situations where Guideline Noise Levels did not necessarily apply.

15. Conservative assumptions were applied for the acoustic predictions, including:

    a. atmospheric conditions which favor the propagation of sound; and

    b. all construction equipment is operating continuously and simultaneously. This is a worst case situation and unlikely to happen in practice.

16. Airborne noise levels were predicted at all levels of the facades of relevant buildings (for both construction and operation). See examples in Attachment A of (i) noise levels at the Westin façade for Construction Scenario Cii and (ii) noise levels for Parkville Construction Scenario C (scenarios as detailed in Appendix A of Appendix I of the EES). Both of these scenarios include noise mitigation.

17. Noise contours were presented in the Appendix A of EES Technical Appendix I at 1.5 m above the ground.

18. Noise levels were predicted for scenarios without additional mitigation and for those with additional mitigation.

19. Multiple reflection paths have been included in calculation settings (run properties) within SoundPLAN.

Mitigation

20. Mitigations have been evaluated in the SoundPLAN modelling to assess possible ways in which the Environmental Performance Requirements could be met.

21. In areas with high rise buildings typical of many of the precincts, the noise mitigation which has been modelled and recommended is the use of acoustic construction sheds.

22. This can be seen in:

    a. Arden Station Precinct: An acoustic construction shed along with an extensive noise barrier have been evaluated.

    b. Parkville Precinct: An acoustic construction shed and extensive noise barriers have been evaluated.

    c. CBD North Precinct: Acoustic construction sheds have been evaluated.

    d. CBD South Precinct: Acoustic construction sheds have been evaluated.

    e. Domain Station Precinct: Acoustic construction sheds and noise barriers have been evaluated.

23. The only locations where noise barriers for construction are have been considered are:

    a. Western Portal Precinct: mostly single or double-storey dwellings, all work is during normal working hours except if it is Unavoidable Work (and as much as possible the noisy activities would be undertaken during the daytime) and Guideline Noise Levels do not therefore apply. Regardless, extensive barriers up to 6m in height have been modelled as an appropriate mitigation response. Due to the construction being proposed in an operating railway environment it would not be appropriate to install acoustic construction sheds in this area.

    b. Arden Station Precinct: An extensive barrier up to a height of 6m has been modelled as an appropriate mitigation response. In this area there is a mix of single and multi-storey dwellings, and the modelled barrier is predicted to be effective for some buildings. Two buildings have been identified where there is a risk that the requirement of inaudibility may not be achieved on Level 2/3. Building mitigation has been recommended as a mitigation measure at this location.

    c. Parkville Station Precinct: This precinct includes a range of building types and uses including multi-storey. Both barriers and enclosures have been assessed as an effective and practicable mitigation.

d. Domain Station Precinct: This precinct includes multi-storey high rise buildings, which is why acoustic construction sheds have been evaluated. In addition to this, extensive noise barriers have been modelled as a means to reduce the noise levels at Melbourne Grammar School and also in the precinct generally.

e. Eastern Portal Precinct: This precinct includes a combination of single and multi-storey dwellings. All construction work is to be undertaken during normal working hours except if itis Unavoidable Work. Guideline Noise Levels do not therefore apply, although barriers up to 6m in height have been modelled as a means to reduce noise levels at receivers in this precinct. Due to the construction being proposed in an operating railway environment it would not be appropriate to install acoustic construction sheds in this area.

f. Western Turnback: This precinct consists of mostly single dwellings and the occasional double-storey dwelling. All construction work in this area would be undertaken during normal working hours except it it is Unavoidable Work (rail occupation). Guideline Noise Levels do not therefore apply, although barriers up to 2.5m in height have been modelled as a means to reduce noise levels at receivers in this precinct. Due to the nature of the work being undertaken in an operating railway environment, acoustic construction sheds would be impractical in this area.

ATTACHMENTS:

A. Predicted noise levels at the (i) Westin for Scenario C(ii) and (ii) Parkville for Scenario C. Both scenarios include mitigation. Results presented include façade reflection.

CBD South Scenario C (ii) (Vestin)

Receiver	Obj.-No.	Fl	rD	dB(A)
99-209 Collins Street MELBOURNE VIC 3	259	F 1	37	
99-209 Collins Street MELBOURNE VIC 3	259	GF	37	
99-209 Collins Street MELBOURNE VIC 3	833	F 1	37	
99-209 Collins Street MELBOURNE VIC 3	833	GF	36	
99-209 Collins Street MELBOURNE VIC 3	259	F 2	36	
99-209 Collins Street MELBOURNE VIC 3	834	F 1	36	
99-209 Collins Street MELBOURNE VIC 3	834	GF	36	
99-209 Collins Street MELBOURNE VIC 3	259	F 3	36	
99-209 Collins Street MELBOURNE VIC 3	833	F 2	36	
99-209 Collins Street MELBOURNE VIC 3	834	F 2	35	
99-209 Collins Street MELBOURNE VIC 3	833	F 3	35	
99-209 Collins Street MELBOURNE VIC 3	834	F 3	35	
99-209 Collins Street MELBOURNE VIC 3	259	F 4	35	
99-209 Collins Street MELBOURNE VIC 3	834	F 4	34	
99-209 Collins Street MELBOURNE VIC 3	833	F 4	34	
99-209 Collins Street MELBOURNE VIC 3	259	F 5	34	
99-209 Collins Street MELBOURNE VIC 3	260	F 1	34	
99-209 Collins Street MELBOURNE VIC 3	260	GF	34	
99-209 Collins Street MELBOURNE VIC 3	834	F 5	33	
99-209 Collins Street MELBOURNE VIC 3	260	F 2	33	
99-209 Collins Street MELBOURNE VIC 3	259	F 6	33	
99-209 Collins Street MELBOURNE VIC 3	833	F 5	33	
99-209 Collins Street MELBOURNE VIC 3	260	F 3	33	
99-209 Collins Street MELBOURNE VIC 3	834	F 6	33	
99-209 Collins Street MELBOURNE VIC 3	259	F 7	33	
99-209 Collins Street MELBOURNE VIC 3	833	F 6	33	
99-209 Collins Street MELBOURNE VIC 3	260	F 4	33	
99-209 Collins Street MELBOURNE VIC 3	834	F 7	33	
99-209 Collins Street MELBOURNE VIC 3	259	F 8	32	
99-209 Collins Street MELBOURNE VIC 3	834	F 8	32	
99-209 Collins Street MELBOURNE VIC 3	833	F 7	32	
99-209 Collins Street MELBOURNE VIC 3	260	F 5	32	
99-209 Collins Street MELBOURNE VIC 3	259	F 9	32	
99-209 Collins Street MELBOURNE VIC 3	834	F 9	32	
99-209 Collins Street MELBOURNE VIC 3	833	F 8	32	
99-209 Collins Street MELBOURNE VIC 3	260	F 6	32	
99-209 Collins Street MELBOURNE VIC 3	259	F 10	31	
99-209 Collins Street MELBOURNE VIC 3	834	F 10	31	
99-209 Collins Street MELBOURNE VIC 3	833	F 9	31	
99-209 Collins Street MELBOURNE VIC 3	260	F 7	31	
99-209 Collins Street MELBOURNE VIC 3	259	F 11	31	
99-209 Collins Street MELBOURNE VIC 3	834	F 11	31	
99-209 Collins Street MELBOURNE VIC 3	833	F 10	31	
99-209 Collins Street MELBOURNE VIC 3	260	F 8	31	
99-209 Collins Street MELBOURNE VIC 3	259	F 12	31	
99-209 Collins Street MELBOURNE VIC 3	834	F 12	31	
99-209 Collins Street MELBOURNE VIC 3	260	F 9	30	
99-209 Collins Street MELBOURNE VIC 3	833	F 11	30	

CBD South Scenario C (ii) (Vestin)

Receiver	Obj.-No.	Fl	rD	dB(A)
99-209 Collins Street MELBOURNE VIC 3	259	F 13	30	
99-209 Collins Street MELBOURNE VIC 3	834	F 13	30	
99-209 Collins Street MELBOURNE VIC 3	260	F 10	30	
99-209 Collins Street MELBOURNE VIC 3	833	F 12	30	
99-209 Collins Street MELBOURNE VIC 3	259	F 14	30	
99-209 Collins Street MELBOURNE VIC 3	834	F 14	30	
99-209 Collins Street MELBOURNE VIC 3	260	F 11	30	
99-209 Collins Street MELBOURNE VIC 3	259	F 15	30	
99-209 Collins Street MELBOURNE VIC 3	833	F 13	30	
99-209 Collins Street MELBOURNE VIC 3	834	F 15	30	
99-209 Collins Street MELBOURNE VIC 3	260	F 12	30	
99-209 Collins Street MELBOURNE VIC 3	259	F 16	30	
99-209 Collins Street MELBOURNE VIC 3	833	F 14	29	
99-209 Collins Street MELBOURNE VIC 3	834	F 16	29	
99-209 Collins Street MELBOURNE VIC 3	260	F 13	29	
99-209 Collins Street MELBOURNE VIC 3	259	F 17	29	
99-209 Collins Street MELBOURNE VIC 3	833	F 15	29	
99-209 Collins Street MELBOURNE VIC 3	834	F 17	29	
99-209 Collins Street MELBOURNE VIC 3	260	F 14	29	
99-209 Collins Street MELBOURNE VIC 3	259	F 18	29	
99-209 Collins Street MELBOURNE VIC 3	833	F 16	29	
99-209 Collins Street MELBOURNE VIC 3	834	F 18	29	
99-209 Collins Street MELBOURNE VIC 3	260	F 15	29	
99-209 Collins Street MELBOURNE VIC 3	833	F 17	29	
99-209 Collins Street MELBOURNE VIC 3	260	F 16	29	
99-209 Collins Street MELBOURNE VIC 3	833	F 18	28	
99-209 Collins Street MELBOURNE VIC 3	260	F 17	28	
99-209 Collins Street MELBOURNE VIC 3	260	F 18	28	
99-209 Collins Street MELBOURNE VIC 3	261	F 2	25	
99-209 Collins Street MELBOURNE VIC 3	261	F 3	25	
99-209 Collins Street MELBOURNE VIC 3	261	F 4	25	
99-209 Collins Street MELBOURNE VIC 3	261	F 5	25	
99-209 Collins Street MELBOURNE VIC 3	261	F 1	25	
99-209 Collins Street MELBOURNE VIC 3	261	F 6	25	
99-209 Collins Street MELBOURNE VIC 3	261	F 7	25	
99-209 Collins Street MELBOURNE VIC 3	261	F 8	24	
99-209 Collins Street MELBOURNE VIC 3	261	F 9	24	
99-209 Collins Street MELBOURNE VIC 3	261	F 10	24	
99-209 Collins Street MELBOURNE VIC 3	261	F 11	24	
99-209 Collins Street MELBOURNE VIC 3	261	F 12	24	
99-209 Collins Street MELBOURNE VIC 3	261	GF	24	
99-209 Collins Street MELBOURNE VIC 3	261	F 13	24	
99-209 Collins Street MELBOURNE VIC 3	261	F 14	24	
99-209 Collins Street MELBOURNE VIC 3	261	F 15	23	
99-209 Collins Street MELBOURNE VIC 3	261	F 16	23	
99-209 Collins Street MELBOURNE VIC 3	261	F 17	23	
99-209 Collins Street MELBOURNE VIC 3	261	F 18	23	

Receiver	Obj.-No.	Fl	rD	dB(A)
199-209 Collins Street MELBOURNE VIC 3	835	F 7	17	
199-209 Collins Street MELBOURNE VIC 3	835	F 6	17	
199-209 Collins Street MELBOURNE VIC 3	835	F 8	17	
199-209 Collins Street MELBOURNE VIC 3	835	F 5	17	
199-209 Collins Street MELBOURNE VIC 3	835	F 4	17	
199-209 Collins Street MELBOURNE VIC 3	835	F 3	17	
199-209 Collins Street MELBOURNE VIC 3	835	F 9	17	
199-209 Collins Street MELBOURNE VIC 3	835	F 2	17	
199-209 Collins Street MELBOURNE VIC 3	835	F 10	17	
199-209 Collins Street MELBOURNE VIC 3	835	F 11	17	
199-209 Collins Street MELBOURNE VIC 3	835	F 12	16	
199-209 Collins Street MELBOURNE VIC 3	835	F 13	16	
199-209 Collins Street MELBOURNE VIC 3	835	F 18	16	
199-209 Collins Street MELBOURNE VIC 3	835	F 14	16	
199-209 Collins Street MELBOURNE VIC 3	835	F 15	16	
199-209 Collins Street MELBOURNE VIC 3	835	F 17	16	
199-209 Collins Street MELBOURNE VIC 3	835	F 16	16	
199-209 Collins Street MELBOURNE VIC 3	835	F 1	16	
199-209 Collins Street MELBOURNE VIC 3	835	GF	15	

Parkville Scenario C			
Receiver	Obj.-No.	Fl	LrD dB(A)
3,202,295,814,549	767	GF	50
3,202,295,814,549	767	F 1	51
3,202,295,814,549	767	F 2	51
3,202,295,814,549	767	F 3	52
3,202,295,814,549	767	F 4	52
3,202,295,814,549	767	F 5	53
3,202,295,814,549	767	F 6	53
3,202,295,814,549	767	F 7	54
3,202,295,814,549	767	F 8	54
3,202,295,814,549	767	F 9	55
3,202,295,814,549	767	F 10	55
3,202,295,814,549	767	F 11	55
3,202,295,814,549	767	F 12	56
3,202,295,814,549	767	F 13	57
3,202,295,814,549	767	F 14	57
3,202,295,814,549	767	F 15	58
3,202,295,814,549	767	F 16	58
3,202,295,814,549	767	F 17	58
3,202,295,814,549	767	F 18	58
3,202,805,814,380	785	GF	48
3,202,805,814,380	785	F 1	47
3,202,805,814,380	785	F 2	47
3,202,805,814,380	785	F 3	48
3,202,805,814,380	785	F 4	48
3,202,805,814,380	785	F 5	48
3,202,805,814,380	785	F 6	48
3,202,805,814,380	785	F 7	48
3,203,015,814,402	806	GF	49
3,203,015,814,402	806	F 1	50
3,203,015,814,402	806	F 2	49
3,203,015,814,402	806	F 3	50
3,203,015,814,402	806	F 4	50
3,203,015,814,402	806	F 5	50
3,203,015,814,402	806	F 6	51
3,203,015,814,402	806	F 7	51
3,203,015,814,402	806	F 8	52

Receiver	Obj.-No.	Fl	LrD dB(A)
3,203,175,814,412	803	GF	50
3,203,175,814,412	803	F 1	50
3,203,175,814,412	803	F 2	53
3,203,175,814,412	803	F 3	55
3,203,175,814,412	803	F 4	56
3,203,175,814,412	803	F 5	57
3,203,175,814,412	803	F 6	58
3,203,175,814,412	803	F 7	60
3,203,175,814,412	803	F 8	60
3,203,365,814,409	802	GF	50
3,203,365,814,409	802	F 1	51
3,203,365,814,409	802	F 2	52
3,203,365,814,409	802	F 3	54
3,203,365,814,409	802	F 4	56
3,203,365,814,409	802	F 5	57
3,203,365,814,409	802	F 6	58
3,203,365,814,409	802	F 7	59
3,203,365,814,409	802	F 8	60
3,203,615,814,406	804	GF	46
3,203,615,814,406	804	F 1	46
3,203,615,814,406	804	F 2	47
3,203,615,814,406	804	F 3	50
3,203,615,814,406	804	F 4	52
3,203,615,814,406	804	F 5	53
3,203,615,814,406	804	F 6	53
3,203,615,814,406	804	F 7	54
3,203,615,814,406	804	F 8	55
3,203,715,814,377	805	GF	42
3,203,715,814,377	805	F 1	42
3,203,715,814,377	805	F 2	41
3,203,715,814,377	805	F 3	41
3,203,715,814,377	805	F 4	41
3,203,715,814,377	805	F 5	41
3,203,715,814,377	805	F 6	41
3,203,715,814,377	805	F 7	41
3,203,715,814,377	805	F 8	41
3,202,455,814,541	769	GF	48
3,202,455,814,541	769	F 1	47
3,202,455,814,541	769	F 2	48
3,202,455,814,541	769	F 3	48
3,202,455,814,541	769	F 4	48
3,202,455,814,541	769	F 5	48
3,202,455,814,541	769	F 6	48
3,202,455,814,541	769	F 7	48

					3,202,455,814,541	769	F 8	48
					3,202,455,814,541	769	F 9	48
					3,202,455,814,541	769	F 10	48
					3,202,455,814,541	769	F 11	49
					3,202,455,814,541	769	F 12	49
					3,202,455,814,541	769	F 13	49
					3,202,455,814,541	769	F 14	51
					3,202,455,814,541	769	F 15	52
					3,202,455,814,541	769	F 16	52
					3,202,455,814,541	769	F 17	53
					3,202,455,814,541	769	F 18	55

Receiver	Obj.-No.	Fl	LrD dB(A)	Receiver	Obj.-No.	Fl	LrD dB(A)
Royal Melbourne Hospital 300-328 Gratta	192	GF	59	Royal Melbourne Hospital 300-328 Gratta	759	GF	51
Royal Melbourne Hospital 300-328 Gratta	192	F 1	60	Royal Melbourne Hospital 300-328 Gratta	759	F 1	51
Royal Melbourne Hospital 300-328 Gratta	192	F 2	62	Royal Melbourne Hospital 300-328 Gratta	759	F 2	51
Royal Melbourne Hospital 300-328 Gratta	192	F 3	64	Royal Melbourne Hospital 300-328 Gratta	759	F 3	51
Royal Melbourne Hospital 300-328 Gratta	192	F 4	67	Royal Melbourne Hospital 300-328 Gratta	759	F 4	52
Royal Melbourne Hospital 300-328 Gratta	192	F 5	70	Royal Melbourne Hospital 300-328 Gratta	759	F 5	52
Royal Melbourne Hospital 300-328 Gratta	192	F 6	71	Royal Melbourne Hospital 300-328 Gratta	759	F 6	52
Royal Melbourne Hospital 300-328 Gratta	192	F 7	72	Royal Melbourne Hospital 300-328 Gratta	759	F 7	52
Royal Melbourne Hospital 300-328 Gratta	192	F 8	72	Royal Melbourne Hospital 300-328 Gratta	759	F 8	52
Royal Melbourne Hospital 300-328 Gratta	192	F 9	73	Royal Melbourne Hospital 300-328 Gratta	759	F 9	60
Royal Melbourne Hospital 300-328 Gratta	192	F 10	73	Royal Melbourne Hospital 300-328 Gratta	759	F 10	60
Royal Melbourne Hospital 300-328 Gratta	192	F 11	73	Royal Melbourne Hospital 300-328 Gratta	759	F 11	61
Royal Melbourne Hospital 300-328 Gratta	192	F 12	73	Royal Melbourne Hospital 300-328 Gratta	759	F 12	61
Royal Melbourne Hospital 300-328 Gratta	192	F 13	72	Royal Melbourne Hospital 300-328 Gratta	759	F 13	61
Royal Melbourne Hospital 300-328 Gratta	192	F 14	72	Royal Melbourne Hospital 300-328 Gratta	759	F 14	62
Royal Melbourne Hospital 300-328 Gratta	758	GF	54	Royal Melbourne Hospital 300-328 Gratta	772	GF	62
Royal Melbourne Hospital 300-328 Gratta	758	F 1	54	Royal Melbourne Hospital 300-328 Gratta	772	F 1	64
Royal Melbourne Hospital 300-328 Gratta	758	F 2	54	Royal Melbourne Hospital 300-328 Gratta	772	F 2	69
Royal Melbourne Hospital 300-328 Gratta	758	F 3	54	Royal Melbourne Hospital 300-328 Gratta	772	F 3	75
Royal Melbourne Hospital 300-328 Gratta	758	F 4	54	Royal Melbourne Hospital 300-328 Gratta	772	F 4	77
Royal Melbourne Hospital 300-328 Gratta	758	F 5	66	Royal Melbourne Hospital 300-328 Gratta	772	F 5	77
Royal Melbourne Hospital 300-328 Gratta	758	F 6	66	Royal Melbourne Hospital 300-328 Gratta	772	F 6	76
Royal Melbourne Hospital 300-328 Gratta	758	F 7	65	Royal Melbourne Hospital 300-328 Gratta	772	F 7	76
Royal Melbourne Hospital 300-328 Gratta	758	F 8	65	Royal Melbourne Hospital 300-328 Gratta	772	F 8	75
Royal Melbourne Hospital 300-328 Gratta	758	F 9	65	Royal Melbourne Hospital 300-328 Gratta	772	F 9	75
Royal Melbourne Hospital 300-328 Gratta	758	F 10	65	Royal Melbourne Hospital 300-328 Gratta	772	F 10	75
Royal Melbourne Hospital 300-328 Gratta	758	F 11	65	Royal Melbourne Hospital 300-328 Gratta	772	F 11	74
Royal Melbourne Hospital 300-328 Gratta	758	F 12	68	Royal Melbourne Hospital 300-328 Gratta	772	F 12	74
Royal Melbourne Hospital 300-328 Gratta	758	F 13	68	Royal Melbourne Hospital 300-328 Gratta	772	F 13	73
Royal Melbourne Hospital 300-328 Gratta	758	F 14	70	Royal Melbourne Hospital 300-328 Gratta	772	F 14	72
Royal Melbourne Hospital 300-328 Gratta	178	GF	64	Royal Melbourne Hospital 300-328 Gratta	771	GF	50
Royal Melbourne Hospital 300-328 Gratta	178	F 1	66	Royal Melbourne Hospital 300-328 Gratta	771	F 1	50
Royal Melbourne Hospital 300-328 Gratta	178	F 4	79	Royal Melbourne Hospital 300-328 Gratta	771	F 4	50
Royal Melbourne Hospital 300-328 Gratta	178	F 5	78	Royal Melbourne Hospital 300-328 Gratta	771	F 5	50
Royal Melbourne Hospital 300-328 Gratta	178	F 6	78	Royal Melbourne Hospital 300-328 Gratta	771	F 6	50
Royal Melbourne Hospital 300-328 Gratta	178	F 7	77	Royal Melbourne Hospital 300-328 Gratta	771	F 7	50
Royal Melbourne Hospital 300-328 Gratta	178	F 8	77	Royal Melbourne Hospital 300-328 Gratta	771	F 8	51
Royal Melbourne Hospital 300-328 Gratta	178	F 9	76	Royal Melbourne Hospital 300-328 Gratta	771	F 9	51
Royal Melbourne Hospital 300-328 Gratta	178	F 10	76	Royal Melbourne Hospital 300-328 Gratta	771	F 10	51
Royal Melbourne Hospital 300-328 Gratta	178	F 11	75	Royal Melbourne Hospital 300-328 Gratta	771	F 11	53
Royal Melbourne Hospital 300-328 Gratta	178	F 12	74	Royal Melbourne Hospital 300-328 Gratta	771	F 12	60
Royal Melbourne Hospital 300-328 Gratta	178	F 13	74	Royal Melbourne Hospital 300-328 Gratta	771	F 13	60
Royal Melbourne Hospital 300-328 Gratta	178	F 14	73	Royal Melbourne Hospital 300-328 Gratta	771	F 14	60

Receiver	Obj.-No.	Fl	LrD dB(A)	Receiver	Obj.-No.	Fl	LrD dB(A)
Peter Doherty Institute Elizabeth Street	749	GF	54	Peter Doherty Institute Elizabeth Street	190	GF	63
Peter Doherty Institute Elizabeth Street	749	F 1	54	Peter Doherty Institute Elizabeth Street	190	F 1	64
Peter Doherty Institute Elizabeth Street	749	F 2	55	Peter Doherty Institute Elizabeth Street	190	F 2	68
Peter Doherty Institute Elizabeth Street	749	F 3	56	Peter Doherty Institute Elizabeth Street	190	F 3	76
Peter Doherty Institute Elizabeth Street	749	F 4	57	Peter Doherty Institute Elizabeth Street	190	F 4	78
Peter Doherty Institute Elizabeth Street	749	F 5	58	Peter Doherty Institute Elizabeth Street	190	F 5	78
Peter Doherty Institute Elizabeth Street	749	F 6	59	Peter Doherty Institute Elizabeth Street	190	F 6	78
Peter Doherty Institute Elizabeth Street	749	F 7	60	Peter Doherty Institute Elizabeth Street	190	F 7	77
Peter Doherty Institute Elizabeth Street	749	F 8	61	Peter Doherty Institute Elizabeth Street	190	F 8	77
Peter Doherty Institute Elizabeth Street	749	F 9	62	Peter Doherty Institute Elizabeth Street	190	F 9	76
Peter Doherty Institute Elizabeth Street	191	GF	57	Peter Doherty Institute Elizabeth Street	189	GF	56
Peter Doherty Institute Elizabeth Street	191	F 1	58	Peter Doherty Institute Elizabeth Street	189	F 1	56
Peter Doherty Institute Elizabeth Street	191	F 2	61	Peter Doherty Institute Elizabeth Street	189	F 2	56
Peter Doherty Institute Elizabeth Street	191	F 3	65	Peter Doherty Institute Elizabeth Street	189	F 3	57
Peter Doherty Institute Elizabeth Street	191	F 4	68	Peter Doherty Institute Elizabeth Street	189	F 4	57
Peter Doherty Institute Elizabeth Street	191	F 5	72	Peter Doherty Institute Elizabeth Street	189	F 5	58
Peter Doherty Institute Elizabeth Street	191	F 6	72	Peter Doherty Institute Elizabeth Street	189	F 6	59
Peter Doherty Institute Elizabeth Street	191	F 7	72	Peter Doherty Institute Elizabeth Street	189	F 7	60
Peter Doherty Institute Elizabeth Street	191	F 8	72	Peter Doherty Institute Elizabeth Street	189	F 8	60
Peter Doherty Institute Elizabeth Street	191	F 9	72	Peter Doherty Institute Elizabeth Street	189	F 9	63

Receiver	Obj.-No.	Fl	LrD dB(A)	Receiver	Obj.-No.	Fl	LrD dB(A)
Victorian Comprehensive Cancer Centre	752	GF	59	Victorian Comprehensive Cancer Centre	757	F 1	50
Victorian Comprehensive Cancer Centre	752	F 1	59	Victorian Comprehensive Cancer Centre	757	F 2	50
Victorian Comprehensive Cancer Centre	752	F 2	60	Victorian Comprehensive Cancer Centre	757	F 3	50
Victorian Comprehensive Cancer Centre	752	F 3	62	Victorian Comprehensive Cancer Centre	757	F 4	50
Victorian Comprehensive Cancer Centre	752	F 4	64	Victorian Comprehensive Cancer Centre	757	F 5	50
Victorian Comprehensive Cancer Centre	752	F 5	66	Victorian Comprehensive Cancer Centre	757	F 6	51
Victorian Comprehensive Cancer Centre	752	F 6	66	Victorian Comprehensive Cancer Centre	754	F 1	57
Victorian Comprehensive Cancer Centre	753	GF	64	Victorian Comprehensive Cancer Centre	754	F 2	57
Victorian Comprehensive Cancer Centre	753	F 1	65	Victorian Comprehensive Cancer Centre	754	F 3	60
Victorian Comprehensive Cancer Centre	753	F 2	68	Victorian Comprehensive Cancer Centre	754	F 4	64
Victorian Comprehensive Cancer Centre	753	F 3	73	Victorian Comprehensive Cancer Centre	754	F 5	68
Victorian Comprehensive Cancer Centre	753	F 4	76	Victorian Comprehensive Cancer Centre	754	F 6	68
Victorian Comprehensive Cancer Centre	753	F 5	77	Victorian Comprehensive Cancer Centre	755	F 1	52
Victorian Comprehensive Cancer Centre	753	F 6	77	Victorian Comprehensive Cancer Centre	755	F 2	52

Victorian Comprehensive Cancer Centre	750	GF	53	Victorian Comprehensive Cancer Centre	755	F3	52
Victorian Comprehensive Cancer Centre	750	F1	53	Victorian Comprehensive Cancer Centre	755	F4	52
Victorian Comprehensive Cancer Centre	750	F2	54	Victorian Comprehensive Cancer Centre	755	F5	53
Victorian Comprehensive Cancer Centre	750	F3	55	Victorian Comprehensive Cancer Centre	755	F6	53
Victorian Comprehensive Cancer Centre	750	F4	56	Victorian Comprehensive Cancer Centre	756	F1	51
Victorian Comprehensive Cancer Centre	750	F5	56	Victorian Comprehensive Cancer Centre	756	F2	51
Victorian Comprehensive Cancer Centre	750	F6	57	Victorian Comprehensive Cancer Centre	756	F3	51
Victorian Comprehensive Cancer Centre	751	GF	54	Victorian Comprehensive Cancer Centre	756	F4	51
Victorian Comprehensive Cancer Centre	751	F1	55	Victorian Comprehensive Cancer Centre	756	F5	51
Victorian Comprehensive Cancer Centre	751	F2	56	Victorian Comprehensive Cancer Centre	756	F6	52
Victorian Comprehensive Cancer Centre	751	F3	57				
Victorian Comprehensive Cancer Centre	751	F4	57				
Victorian Comprehensive Cancer Centre	751	F5	59				
Victorian Comprehensive Cancer Centre	751	F6	60				

Receiver	Obj.-No.	Fl	LrD dB(A)	Receiver	Obj.-No.	Fl	LrD dB(A)
3,203,805,814,472	780	GF	42	University of Melbourne Medical School	194	GF	55
3,203,805,814,472	780	F1	42	University of Melbourne Medical School	194	F1	55
3,204,125,814,444	782	GF	41	University of Melbourne Medical School	194	F2	57
3,204,225,814,439	781	GF	43	University of Melbourne Medical School	194	F3	58
University of Melbourne Medical School	196	GF	58	University of Melbourne Medical School	194	F4	59
University of Melbourne Medical School	196	F1	58	University of Melbourne Medical School	194	F5	60
University of Melbourne Medical School	196	F2	60	University of Melbourne Medical School	194	F6	61
University of Melbourne Medical School	196	F3	61	University of Melbourne Medical School	194	F7	62
University of Melbourne Medical School	196	F4	62	University of Melbourne Medical School	778	GF	42
University of Melbourne Medical School	196	F5	63	University of Melbourne Medical School	778	F1	42
University of Melbourne Medical School	196	F6	64	University of Melbourne Medical School	778	F2	42
University of Melbourne Medical School	196	F7	66	University of Melbourne Medical School	778	F3	42
University of Melbourne Medical School	777	GF	52	University of Melbourne Medical School	778	F4	42
University of Melbourne Medical School	777	F1	52	University of Melbourne Medical School	778	F5	42
University of Melbourne Medical School	777	F2	54	University of Melbourne Medical School	778	F6	42
University of Melbourne Medical School	777	F3	55	University of Melbourne Medical School	778	F7	42
University of Melbourne Medical School	777	F4	56	University of Melbourne Medical School	779	F1	42
University of Melbourne Medical School	777	F5	58	University of Melbourne Medical School	779	F2	41
University of Melbourne Medical School	777	F6	59	University of Melbourne Medical School	779	F3	41
University of Melbourne Medical School	777	F7	60	University of Melbourne Medical School	779	F4	41
University of Melbourne Medical School	776	GF	52	University of Melbourne Medical School	779	F5	41
University of Melbourne Medical School	776	F1	52	University of Melbourne Medical School	779	F6	41
University of Melbourne Medical School	776	F2	54	University of Melbourne Medical School	779	F7	41
University of Melbourne Medical School	776	F3	55	University of Melbourne Medical School	760	GF	57
University of Melbourne Medical School	776	F4	56	University of Melbourne Medical School	760	F1	59
University of Melbourne Medical School	776	F5	57	University of Melbourne Medical School	760	F2	59
University of Melbourne Medical School	776	F6	58	University of Melbourne Medical School	760	F3	60
University of Melbourne Medical School	776	F7	59	University of Melbourne Medical School	760	F4	61
University of Melbourne Medical School	775	GF	55	University of Melbourne Medical School	760	F5	62
University of Melbourne Medical School	775	F1	58	University of Melbourne Medical School	760	F6	63
University of Melbourne Medical School	775	F2	59	University of Melbourne Medical School	760	F7	64
University of Melbourne Medical School	775	F3	60				
University of Melbourne Medical School	775	F4	61				
University of Melbourne Medical School	775	F5	62				
University of Melbourne Medical School	775	F6	63				
University of Melbourne Medical School	775	F7	64				