

2 June 2023

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Multiplex Australasia
Level 22, 135 King Street, Sydney NSW 2000

Attention: Mitch Pelling

Dear Mitch

Bridge Road Works Revised Design Noise Assessment

SLR Consulting Australia Pty Ltd (SLR) has been engaged by Multiplex Australasia (Multiplex) to prepare a Noise Assessment for works associated with the redevelopment of Bridge Road – Revised Design, which are occurring as part of the wider new Sydney Fish Market (nSFM) project. This assessment addresses the change in potential noise impacts resulting from the revised design of the Bridge Road Works, with respect to the *Bridge Road Works - Construction Noise and Vibration Management Plan (CNVMP)*, prepared by SLR dated May 2023 (610.30264.00000-R06-v2.1).

SLR is suitably qualified to produce this assessment and SLR staff are members of the Australian Acoustical Society (AAS). SLR is also a member firm of the Association of Australasian Acoustical Consultants (AAAC). Details of this assessment are provided below.

1 Work Description

1.1 Work Activities and Locations

The work covered in this assessment has been modified from the Bridge Road Works identified in the CNVMP. The work will occur in the stages identified below:

- **Stage 1A** will involve the preliminary activities associated with the road works, some of which will need to occur during the night-time and include:
 - Utility trenching and installation throughout the Roadworks Extent.
 - Demolition of existing traffic islands and installation of temporary pavement at the intersection of Bridge Road and Wentworth Park Road.
 - Temporary and permanent road pavement works at Wentworth Park intersection including some demolition and pavement profiling works.
 - Installation of Klemmfix in the proposed kerb location at the same intersection.
 - Temporary amendments to cyclist and pedestrian access

Note: tree trimming activities are no longer required and have therefore been removed from the assessment. The duration of roadworks has been reduced from 4 months to 2 months with the revised design, resulting in approximately half the number of out-of-hours work events.

- **Stage 2** will be significantly reduced in the revised design, with road pavement build-up in the road corridor generally eliminated. This represents a significant shortening in overall construction timeframes (approximately 22 weeks), which brings wide-ranging impact reductions. Importantly, this includes a reduction in night works, particularly for Stages 2A and 2C. Activities will include:
 - Utility trenching and other civil components of the road works.
 - Temporary and permanent road pavement works including some demolition and pavement profiling works.
 - Temporary amendments to cyclist and pedestrian access.
 - Live traffic will use the two southernmost existing lanes, with works to occur on the northern eastbound lanes, which will be occupied. A large portion of the works will occur during the daytime; night works will occur near the Wentworth Park Road and Wattle Street intersections as identified in the CNVMP.
- Note: the duration of roadworks has been reduced from 4 months to 3 months with the revised design, resulting in less out-of-hours work events.
- **Stage 3** will be largely unchanged, it will involve the installation of the wearing course layer on Bridge Road, line marking and signal works etc., some of which will also need to occur during the night-time.

Construction staging diagrams showing where the works will occur are provided in the CNVMP.

1.2 Construction Program

Multiplex has provided SLR with a construction program, which is reproduced in **Table 1** and **Figure 1** below to highlight the differences in duration with the revised design.

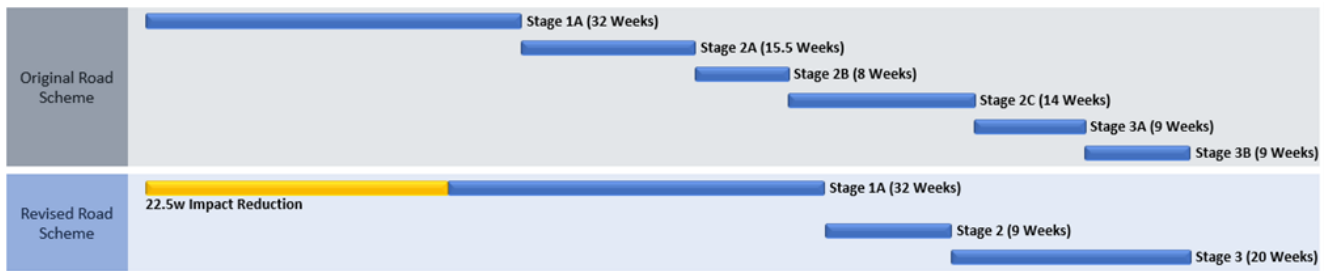
Table 1 Construction Program

Scope	Description of Works	Program	CNVMP Duration (shifts)	Revised Duration (shifts)	Construction Hours		Out of Hours Works Anticipated as per C4(c)?
					Period	Specific ¹	
Stage 1A	Service Installations	Q2 2023 - Q1 2024	8 months	8 months	Day & Night	Day: SSD Approved Hours Night: 7pm-5am ¹	Yes
	Tree Trimming			Not required	-	-	-
	Roadworks		4 months	2 months	Day & Night	Day: SSD Approved Hours Night: 7pm-5am ¹	Yes
Stage 2A	Roadworks	Q2 2023 - Q2 2024	4 months	3 months	Day & Night	Day: SSD Approved Hours Night: 7pm-5am ¹	Yes
Stage 2B	Roadworks		4 months	Not required	-	-	-
Stage 2C	Roadworks		4 months	Not required	-	-	-
Stage 3	Roadworks	Q2 2024 - Q3 2024	2 months	2 months	Day & Night	Day: SSD Approved Hours Night: 7pm-5am ¹	Yes

Note 1: Note all works outside of SSD Approved Hours are forecast based on previous authority advice, and will be subject to final determination by the relevant authority (e.g. TfNSW).

Note 2: The SSD Approved hours are detailed in the CNVMP.

Figure 1 Forecast Construction Duration Comparison



Note 1: Indicative construction forecast provided by Multiplex (subject to detailed design and approval).

2 Noise Assessment

Noise modelling was conducted consistent with the method outlined in the CNVMP. **Table 2** details the work scenarios assessed in this report. Further details of existing conditions, noise management levels and assessment methodology are provided in the CNVMP.

Table 2 Construction Scenarios and Equipment Sound Power Levels

Equipment	L _{Aeq} Sound Power Level (dBA) ¹	Estimated utilisation in assessment period (%)	Quantities Per Scenario			
			W.001	W.002	W.003	W.004
			Utility Trenching and Civil Work	Profiling Work	Asphalt/ Pavement Work	Tree Trimming ⁵
Total L _{Aeq} Sound Power Level ² (dBA)			118 ⁴	117	115	117
Excavator 14t + hydraulic hammer	123 ³	30	1	-	-	-
Concrete Saw	123 ³	30	1	-	-	-
Lighting Tower	80	100	2	2	2	2
Light Vehicle - 4WD	103	25	4	4	4	2
Pavement Laying Machine	114	50	-	-	1	-
Pavement Profiler	117	100	-	1	-	-
Truck - Medium Rigid (20 tonne)	103	25	2	2	2	2
Tub Grinder/Mulcher (40-50hp)	116	100	-	-	-	1
Concrete Agitator Truck	109	100	-	-	2	-
Chainsaw	110 ³	30	-	-	-	1
Roller 18t	102	100	-	-	1	-

Note 1: L_{Amax} sound power levels can be assumed to be 8 dB louder than the LAeq sound power levels.

Note 2: Total sound power levels consider the LAeq sound power levels of individual items, quantities of each of each item, the estimated utilisation of each item in the assessment period and any other penalties that may apply to individual items.

Note 3: Includes a +5 dB penalty for annoyance in accordance with the *Interim Construction Noise Guideline* (ICNG), as detailed in **Section Error!** Reference source not found.

Note 4: The total LAeq sound power level for the Utility Trenching and Civil Work scenario (W.001) assumes that either the excavator + hydraulic hammer or the concrete saw will operate in any 15-minute period, but not both.

Note 5: Activity not required in revised design.

Table 3 shows which noise modelling scenarios have been assessed in each construction stage. The main difference between the CNVMP assessment and the revised design assessment is that the Stage 2B, Stage 2C and the tree trimming activity are no longer required.

Table 3 Construction Scenarios within each Stage

Bridge Road Construction Stage	Noise Modelling Scenario Assessed			
	W.001	W.002	W.003	W.004 ¹
Stage 1A	Yes	Yes	Yes	-
Stage 2A	Yes	Yes	Yes	-
Stage 2B ¹	-	-	-	-
Stage 2C ¹	-	-	-	-
Stage 3	-	-	Yes	-

Note 1: Not required in revised design.

2.1 Predicted Noise Levels

Predicted noise levels are shown in **Table 5**. The level of noise impact has been colour coded based on the exceedance of the night-time NMLs, as per the categories in **Table 4**. These align with the Additional Mitigation Measures Matrix (AMMM) detailed in Section 5.2 of the CNVMP.

Table 4 Exceedance Bands and Impact Colouring

Exceedance of NML	Subjective Classification	Impact Colouring
No exceedance	None	
1 to 5 dB	Noticeable	
6 dB to 15 dB	Clearly Audible	
16 dB to 25 dB	Moderately Intrusive	
>25 dB	Highly Intrusive	

Table 5 Predicted Noise Impacts for Scenario

NCA	ID	Night-time NML (dBA)	Predicted LAeq(15minute) Noise Level (dBA)									
			Stage 1A				Stage 2A			Stage 2C ¹		
			W.001	W.002	W.003	W.004 ¹	W.001	W.002	W.003	W.001	W.002	W.003
3	1	55	87	86	84	79	82	81	79	82	81	79
	2	70	80	79	77	74	88	87	85	88	87	85
	3	55	71	70	68	68	82	81	79	82	81	79
	4	55	64	63	61	64	73	72	70	73	72	70
	5	55	60	59	57	60	65	64	62	65	64	62
	6	55	51	50	48	54	55	54	52	55	54	52
	7	55	57	56	54	61	60	59	57	60	59	57
	8	55	64	63	61	67	65	64	62	65	64	62
	9	55	74	73	71	73	70	69	67	70	69	67
	10	55	68	67	65	69	65	64	62	65	64	62

NCA	ID	Night-time NML (dBA)	Predicted LAeq(15minute) Noise Level (dBA)									
			Stage 1A				Stage 2A			Stage 2C ¹		
			W.001	W.002	W.003	W.004 ¹	W.001	W.002	W.003	W.001	W.002	W.003
	11	55	66	65	63	66	63	62	60	63	62	60
4	12	47	59	58	56	58	62	61	59	62	61	59
	13	47	61	60	58	58	63	62	60	63	62	60
	14	65	63	62	60	61	66	65	63	66	65	63
5	15	51	40	39	37	48	46	45	43	49	48	46
1	16	55	51	50	48	52	53	52	50	53	52	50
2	17	55	57	56	54	73	79	78	76	79	78	76
	18	70	58	57	55	77	82	81	79	85	84	82
	19	55	59	58	56	78	78	77	75	82	81	79
	20	55	59	58	56	75	72	71	69	75	74	72
	21	55	58	57	55	69	68	67	65	70	69	67
	22	55	56	55	53	64	65	64	62	65	64	62
	23	55	57	56	54	62	66	65	63	65	64	62
	24	55	56	55	53	65	65	64	62	67	66	64
	25	55	54	53	51	64	69	68	66	67	66	64

Note 1: Works not required in revised design.

The assessment of construction noise levels presented in **Table 5** indicates the following:

- The night-time NMLs are exceeded at numerous locations for each works scenario. All reasonable and feasible noise mitigation measures need to be implemented for the works. Mitigation measures are detailed in Section 5.2 of the CNVMP.
- Highly intrusive worst-case noise levels of 87 dBA are predicted for:
 - the Utility Trenching and Civil Works scenario (W.001) at R01: 84 Wentworth Park Road, Glebe
- Individual receivers would be subject to a large range of worst-case impacts, depending on how far from the works they are. The highest impacts are seen when works occur in the zone closest to the receiver: for example, at receiver R01, which is close to the Stage 1A night-works, the predicted levels are higher in comparison to more distant receivers in NCA2.

2.2 Key Differences in Revised Design

While the predicted worst-case noise impacts presented above are consistent with those presented in the CNVMP, it is important to highlight the changes in the revised design. These are summarised below:

- Stage 1A** - tree trimming activities are no longer required and have therefore been removed from the assessment. The duration of roadworks has been reduced from 4 months to 2 months with the revised design, resulting in approximately half the number of out-of-hours work events.
- Stage 2A** - the duration of roadworks has been reduced from 4 months to 3 months with the revised design, resulting in less out-of-hours work events.
- Stage 2B and 2C** – no longer required and removed from the assessment. The removal of Stage 2B and 2C results in a combined reduction in approximately 8 months of out-of-hours work.
- Stage 3** - will be largely unchanged, with the installation of wearing course layer on Bridge Road, line marking and signal works etc., some of which will also need to occur during the night-time

3 Conclusion

SLR has prepared an assessment of the Bridge Road Works – Revised Design. This has included modelling of the proposed construction work and a comparison of the results against the Bridge Road CNVMP assessment.

Based on the outcomes of this assessment it can be seen that the revised design would reduce the number of noise-generating activities required for the project and reduce the overall duration (ie number of out-of-hours work events) of the project. On the basis of reduced noise impact, the revised design is therefore a preferable option from an acoustic standpoint.

Whilst the final impacts will be subject to design development, approvals and consultation, the revised design demonstrates significant impact reductions, representing clear benefits to stakeholders. These design changes could be captured in an updated CNVMP post-approval of the MOD.

Yours sincerely



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Associate Consultant

Checked/
Authorised by: MI