

Appendix J

Noise impact assessment

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Re: White Bay 6 Marine Park Modification 5 to MP06_0037 - Noise Impact Assessment

Dear Taylor,

1 Introduction

White Bay 6 Pty Ltd (the proponent) is seeking to modify major project approval MP06_0037 under Section 75W of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) at the White Bay 6 Marine Park in Balmain, NSW (the site).

EMM Consulting Pty Limited (EMM) has prepared this noise impact assessment (NIA) to assess the potential noise impacts of Modification 5, which will allow for additional boat storage berths and confirms the future arrangements for operations undertaken on the site's hardstand area, including boat storage, maintenance and repairs. The NIA accompanies the environmental assessment (EA) for Modification 5.

This assessment has been conducted in accordance with relevant contemporary noise policies and guidelines, including:

- NSW Department of Environment, Climate Change and Water (DECCW) 2009, *Interim Construction Noise Guideline* (ICNG);
- NSW Environmental Protection Authority (EPA) 2000, *Industrial Noise Policy* (INP); and
- EPA 2013, *Road Noise Policy* (RNP).

2 Existing environment

The noise impacts associated with the construction and operation of the approved operations were assessed as part of the original EA (KBR 2006) and, where relevant, as part of subsequent modifications, including the previous Modification 4, which allowed for additional dry boat storage. Where potential adverse impacts were identified measures were proposed to manage and/or mitigate these impacts. Construction and operation is undertaken in accordance with the relevant conditions of the project approval (MP06_0037) which, in relation to noise, include specified construction and operating hours, the preparation of and adherence to a noise and vibration management plan, compliance with specified noise limits and the requirement for ongoing noise measurements and monitoring.

3 Noise limits

MP06_0037, for the construction and operation of the marine refuelling facility at Berth 6, White Bay, issued 14 September 2009, stipulates the noise contribution limits applicable to the operation of the facility

and the requirements for compliance noise monitoring. Conditions F1 and F2 of MP06_0037 are reproduced below:

F1 Noise Limits

The use of any part of the premises including vessel refuelling and other activities, and the operation of the plant, machinery or other equipment on the site must not exceed the sound pressure level (noise) limits presented in the table below. Note the limits represent the sound pressure level (noise) contribution, at the nominated receiver locations in the Table.

(a) Noise Limits – During operation of the facility

Residential location	Day	Evening		Night	
	$L_{Aeq,15min}$	$L_{Aeq,15min}$	$L_{Aeq,15min}$	$L_{Aeq,9hours}$	$L_{A1,1min}$
1 Grafton St, Balmain	54	48	48	45	59
Datchett St, Balmain	49	44	44	41	54
33 Adolphus St, Balmain	36	35	35	35	60
2 Point St, Pyrmont	40	35	35	35	61

Notes: * The sleep disturbance limits do not apply to trucks whilst engaged in movement on the access road to enter or leave site.

(b) For the purpose of clause (a) of this condition:

(i) Day is defined as the period from 7:00 am to 6:00 pm Monday to Saturday and 8:00 am to 6:00 pm Sundays to Public Holidays;

(ii) Evening is defined as the period from 6:00pm to 10:00pm; and

(iii) Night is defined as the period from 10:00pm to 7:00 am Monday to Saturday, and 10:00pm to 8:00am Sundays to Public Holidays

F2 Noise Measurements

(1) Noise from the premises is to be measured at the most affected point within the residential boundary, or at the most affected point within 30 metres of the dwelling where the dwelling is more than 30 metres from the boundary, to determine compliance with the noise level limits in Condition F1 unless otherwise stated.

(2) Noise from the premises is to be measured at 1 metre from the dwelling facade to determine compliance with the $L_{Aeq(1\text{ minute})}$ noise level in Condition F1.

(3) Where it can be demonstrated that direct measurement of noise from the premises is impractical, the DECC may accept alternative means of determining compliance (See Chapter 11 of the Industrial Noise Policy).

(4) The modification factors presented in section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where practicable.

(5) The noise emission limits identified in F1 apply under meteorological conditions of wind speed up to 3 metres per second at 10 metres above ground level, and temperature inversion conditions.

4 Overview of the proposed modification

4.1 General

The proponent is seeking approval to modify MP06_0037 under Section 75W of the EP&A Act to allow for:

- the reorientation of the footprint of Building 1;
- the extension of Building 2 to provide a covered boat maintenance zone;
- boat storage for up to 126 boats on portable racks on the site's hardstand area;
- two new purpose-built workshops (buildings 3 and 5);
- an extension to the temporary office (building 4);
- a new floating 'finger' pontoon and pile attached to the existing marina;
- an increase in the number of car parking spaces from 45 to 96;
- identification signage;
- administrative changes to existing conditions of approval, comprising:
 - the removal of Condition A4 Lease Renewal;
 - changes to the wording of Condition A7 Hours of Operation to allow for an extension of hours; and
 - changes to the wording of Condition F19 Anti-fouling and Spray Painting in relation to the application of anti-foul.

A detailed description of and justification for each component of Modification 5 is provided in Section 2.4 for the main EA.

4.2 Operating hours

The proponent seeks a modification to operating hours. The existing approved and proposed modified hours of operation are provided in Table 1. The changes are only proposed during daylight saving or peak periods during warmer months.

Table 1 Proposed changes to operating hours

Activity reference	Activity	Day of week	Existing approved	Modification 5
1	Mixed marine tenancies and commercial storage and work sheds and dry boat storage use	Monday to Saturday Sunday and Public Holidays	7:00am to 6:00pm 8:00am to 6:00pm	7.00am to 7.00pm ¹ 7.00am to 7.00pm ¹
	All activities on the hardstand lay down area eg power tools, travel lifts, roll on roll off ramp, cranes, forklifts			
	Truck movements to and			

Table 1 Proposed changes to operating hours

Activity reference	Activity	Day of week	Existing approved	Modification 5
	from site			
	General deliveries			
	Disposal and collection of garbage including cans and bottles from vessels			
2	Recreational vessel arrivals, departure and mooring	Monday to Sunday	5:00am to 10:00pm	Anytime ²
	Recreational vessel refuelling and grey water sewerage pump out			

Notes: 1. Daylight saving period of 1 September to 30 April only.
2. Peak season only from 1 October to 31 January.

Operating times for all other activities not presented in Table 1 will remain unchanged under Modification 5.

5 Impact assessment

5.1 Construction

The AECOM (2013) EA for Modification 4 included a noise assessment (AECOM 2013b) which assessed the potential noise impacts associated with the construction of four buildings (Buildings 1, 2, 3A and 3B) in accordance with ICNG (DECCW 2009). Following public exhibition, Modification 4 was revised to include only the two buildings (Buildings 1 and 2) approved as part of the original EA (KBR 2006). The assessment was not revised and, therefore, overestimated the construction noise that would be generated.

Modification 5 will result in the reorientation of Building 1, an extension of Building 2, construction of two small workshops and an office building. The location of buildings is similar to the location of those in Modification 4. The construction method and plant and equipment will also be similar. Therefore, construction noise associated with the modification will very likely be representative of noise assessed for Modification 4.

The ICNG remains the relevant guideline for assessing construction noise and the proposed changes to operating hours will not alter the construction periods. Construction noise will also be managed in accordance with methods described in the ICNG. Therefore, no further assessment of construction noise associated with Modification 5 is required.

5.2 Operation

5.2.1 Change to site layout and berth capacity

The noise assessment (AECOM 2013b) for Modification 4 also included an assessment of operational noise, assuming a maximum storage capacity of 150 dry berths. As discussed, Modification 4 was revised following public exhibition, which also included a reduction in the storage capacity from 150 to 50 dry berths and limited boat storage within Building 2. The noise assessment (AECOM 2013b) conservatively assessed the greater number of berths that were originally proposed for both buildings.

Modification 5 will allow the storage of up to 176 boats, comprising up to 50 boats in Building 2 and 126 boats at the south external hardstand area. The proposal will not introduce additional operating plant and

equipment from that assessed in the Modification 4 noise assessment (AECOM 2013b). The majority of new boat storage is located further away from noise sensitive receivers in Grafton Street, Balmain, which would increase the distance between operating boat lifts to these receiver locations. On this basis, it is likely that noise from Modification 5 would be representative of noise levels presented in the Modification 4 noise assessment (AECOM 2013b) which demonstrates that relevant operational noise criteria can be satisfied.

The proposed workshops will contain maintenance activities which currently occur outdoors. Building 3 workshop doors are orientated to the east and noise egress from the building would be shielded partly by Building 2. Building 5 workshop doors are orientated to the east and therefore away from nearest noise sensitive receivers in Grafton Street, Balmain. Noise from the maintenance activities would therefore be expected to decrease compared to existing levels due to the construction of the maintenance sheds. Workshop activities would be contained to the INP day time period of 7am to 10pm, Monday to Saturday.

De-fouling and anti-fouling activities are undertaken in conjunction with other boat repair and maintenance activities and, as such, are limited to daytime hours, Monday to Sunday. The previous noise assessments (KBR 2006 and AECOM 2013b) included activities that are similar to noise-generating activities associated with anti-fouling. Specifically, noise generated by the use of the travel lift, forklift movements, the use of electric power tools, and high pressure water spray guns. Activities associated with anti-fouling, including the proposed changes to the application of anti-foul via spraying, are not anticipated to generate noise above the previously predicted noise levels.

5.2.2 Change to operating hours

i Activity 1

a. General operations

This activity is currently contained to the INP daytime period of 7am to 6pm Monday to Saturday and 8am to 6pm Sundays and Public Holidays. The proponent seeks approval to extend operations during daylight saving periods only. This will extend operations into the MP06_0037 evening 'shoulder' period from 6pm to 7pm from Monday to Sunday and into the night 'shoulder' period from 7am to 8pm on Sundays and Public Holidays.

The site's operating activities will not change across the existing approved and proposed modified hours so the operating noise level will remain the same throughout each operating period. Notwithstanding, MP06_0037 noise criteria that applies during the evening and night is more stringent than the day.

The Modification 4 noise assessment (AECOM 2013b) predicted operational noise levels, including the use of measured data and hence was adopted for this assessment. Using existing measured site noise to establish the existing baseline operating noise level is considered most representative and more precise.

Based on the adopted method, the Modification 4 noise assessment (AECOM 2013b) predicted operational noise levels of 48 dB at the nearest residential assessment location at 1 Grafton Street, Balmain. This noise level complies with the MP06_0037 noise limits during the evening and night period of 48 dB (Section 3). Furthermore:

- the Operational Noise Compliance Assessment (AECOM 2013) measured operational noise levels during the daytime period at 1 Grafton Street Balmain of 47 dB;
- the Operational Noise Compliance Assessment (AECOM 2014) measured operational noise levels during the daytime period at 1 Grafton Street Balmain of 50 dB. The noise levels during this measurement were dominated by the boat hoist;

- noise monitoring results from White Bay 6 Operational Noise Compliance Assessment for 2016 (EMM 2016) during typical site operations indicate operational noise levels at 1 Grafton Street of less than 46 dB; and
- noise monitoring results from White Bay 6 Operational Noise Compliance Assessment for 2017 (EMM 2017) during typical site operations indicate operational noise levels at 1 Grafton Street of 51 dB.

The above demonstrates noise levels of less than or equal to the 48 dB evening and night noise limit for three out of five noise assessments¹. The Operational Noise Compliance Assessment (AECOM 2014) and White Bay 6 Operational Noise Compliance Assessment for 2017 (EMM 2017) noted that the boat hoist was the dominant noise source at the time of monitoring which generated the exceedance. It should be noted that the INP allows for a 2 dB measurement tolerance for compliance noise measurements and, therefore, noise levels 2 dB above criteria would be considered compliant.

The Modification 4 noise assessment (AECOM 2013b) also concludes that if noise limits at the nearest assessment location of 1 Grafton Street are satisfied, compliance at other assessment location is likely. On this basis, noise impacts due to the proposed changes to operating hours for this activity are unlikely, granted that noise from the boat hoist can be managed during evening and night periods, so that distance to nearest noise sensitive receivers is maximised.

b. Sleep disturbance

Maximum noise levels during 7am to 8am on Sundays and Public Holidays have been assessed through a literature review of previous recorded noise levels from annual compliance noise monitoring campaigns. Table 2 provides a summary of measured levels used in the assessments that are representative of maximum noise events from site. It is noted there is limited maximum noise level data available given that assessment to date has generally been contained to the day period.

Table 2 Review of maximum noise levels

Assessment location	MP06_0037 criteria	Measured/observed maximum ($L_{A1,1min}$) noise levels (where available), dB ¹				
		Night, $L_{A1,1min}$	2013 Compliance assessment (AECOM)	2014 Compliance assessment (AECOM)	2015 Compliance assessment (EMM)	2016 Compliance assessment (EMM)
1 Grafton St, Balmain	59	None available	56	54	58	55
Datchett St, Balmain	54	None available	None available	None available	<45	53

Notes: 1. Estimated using sound pressure level observations during attended noise measurements.

Based on the data available, representative maximum noise levels are below the MP06_0037 criteria for each assessment location. Assessment locations in Table 2 are nearest to site, so as per previous assessments, it can be inferred that the MP06_0037 noise limits are likely to be satisfied at other assessment locations in the MP06_0037 and surrounding receivers. Sleep disturbance impacts during the 7am to 8am are considered unlikely and can be managed to acceptable noise levels by adopting current site practices, including close supervision of activities during these night time 'shoulder' periods.

¹ Measured noise levels in the White Bay 6 Operational Noise Compliance Assessment for 2015 (EMM 2015) were not included in this comparison. Measurements in this period were used to calibrate a predictive model which was used to determine compliance, and were not representative of typical site operations over a 15 minute period.

ii Activity 2

The proponent currently undertakes activity 2 between 5am and 10pm which spans across day, evening and night periods as defined in MP06_0037. The fact that approval has been granted for these periods infers that compliance from this activity can be achieved. A further assessment of noise during these periods for the purpose of Modification 5 is therefore considered unnecessary and on the basis of the MP06_0037, the extension of hours for this activity is unlikely to result in surrounding noise impacts. This is because noise limits for the proposed extension of hours (ie full length of the night time period) are the same as those for the approved hours.

5.3 Traffic noise

Consistent with the traffic impact assessment prepared to accompany the EA for Modification 5, the traffic noise associated with the potential maximum utilisation of the site was assessed. Under this scenario, a total of 309 daily traffic movements would be generated for all activities on the site, including boat storage.

All traffic would continue to access the site via Victoria Road and Robert Street which are classified as arterial/sub-arterial roads in accordance with NSW EPA 2011, Road Noise Policy (RNP). Of these roads, potential worst case road traffic noise impacts would occur at residents along Robert Street given the higher percentage increase of existing to proposed traffic movements.

Site traffic during the RNP daytime period (between 7am and 10pm), conservatively assuming all 309 movements would occur during this time would generate an average noise level over 15 hours (in accordance with the RNP) of 50 dB $L_{Aeq,15hours}$ at 10 m from Robert Street (representative of the distance to the facade of the nearest residence). This level is 10 dB less than the RNP daytime criterion of 60 dB. Therefore, the total traffic generated by all operations on the site (including Modification 5) would satisfy the relevant RNP criteria.

6 Management and mitigation measures

Noise management at the site will continue to be undertaken in accordance with site's operational environmental management plan (OEMP). In addition to good practice management and mitigation confirmed in the OEMP, the proponent will limit the operation of the boat hoist for prolonged periods in exposed areas on the site during the proposed evening and night operations period in daylight savings months. Close supervision of activities during the night 'shoulder' period (7am to 8am on Sundays and Public Holidays) will be implemented to minimise maximum noise level events during this period. The OEMP will be updated to incorporate Modification 5 and the above management measures.

7 Conclusion

EMM has completed a noise impact assessment to accompany the Modification 5 application in accordance with contemporary government noise policies and guidelines.

Noise impacts from Modification 5 have been assessed as being largely the same as those predicted for the approved construction and operations on the site.

No additional noise generating machinery (such as forklifts) is proposed. Noise from Modification 5 is therefore assessed to be within levels presented in the previous noise assessment, which demonstrated that relevant operational noise criteria can be satisfied.

An extension to operating hours is proposed during daylight savings periods for certain site activities. Noise levels from these activities during the modified operating periods are predicted to satisfy the relevant MP06_0037 noise limits with management measures in place. Therefore, noise impacts due to the proposed modification to operating hours are unlikely.

Traffic noise generated by the maximum number of boats that could potentially be stored on the site under Modification 5 was also considered and determined to be within the RNP criteria.

We trust this meets your current requirements and we would be happy to discuss any details raised herein if required.

Yours sincerely

A handwritten signature in black ink, appearing to read 'D. Weston', with a stylized flourish at the end.

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Reviewed by: Taylor Richardson, 12 July 2017