14 May 2019

610.17533-L01-v1.2.docx

Hanson Construction Materials Pty Ltd
Level 18, 2-12 Macquarie Street
PARRAMATTA NSW 2150

Attention: Andrew Driver

Dear Andrew

Concrete Batch Plant NIA, Glebe Island Noise Impact Assessment (SSD 8544) Response to DP&E Request for Additional Information

Hanson Construction Materials Pty Ltd (Hanson) is seeking development consent to develop a new intermodal aggregate storage facility and concrete batching plant at Glebe Island, and SLR provided a Noise Impact Assessment (NIA) in Report 610.17533-R01, dated 15 March 2018 to accompany the development application.

The NSW Department of Planning & Environment (DP&E) provided comments to the NIA (DP&E letter undated, reference SSD 8544) and attached to this letter are the key issues raised by the DP&E (shown in *italic*) with the associated response presented thereafter.

Please advise if you require additional information or clarification of any matter at your earliest convenience.

Yours sincerely

GLENN THOMAS
Director

Checked: JS
Authorised by: GT

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ATTACHMENT A

SCHEDULE 1 - KEY ISSUES

Noise

3. *Assess noise impacts from vessels at berth in accordance with the requirements of the Noise Policy for Industry (NPfI), and provide information on sound power levels from potential vessels to be used for loading/unloading, and other types of loading/unloading equipment, e.g. crane and bucket, other than the CSL Rhine.*

The *Glebe Island Multi-User Facility Ship Noise Addendum to the Construction and Operation Noise and Vibration Assessment* (Multi-user Addendum) (Spoke Acoustics and AECOM, 2018) outlines the Port Authority's current position on assessing noise from shore based operations and ship based activities and their collaboration with EPA and DP&E on this matter. Some key points are:

The management of ship noise has more in common with aircraft, heavy vehicles and rail locomotive noise than an industrial site. This is because ships:

- Operate in a broader context and travel to other locations in Australia. Like aircraft many ships also operate in an international context; and
- Vary in noise emission between different ships with similar tonnage and also between ships of different tonnage and function.

Comparing noise from shipping and industrial sites, key differences include:

- An industrial site comprises mostly fixed mechanical plant that may be acoustically treated. In contrast, ships are a mobile noise source;
- There are generally greater opportunities to mitigate noise from industrial sites, including potential installation of noise barriers between the source and the receiver. Such options are not feasible for a mobile, on-water shipping noise source;
- Vehicles visiting industrial sites have either NSW, Australian or international design requirements which limit the maximum noise emissions from the vehicle. These design requirements act to minimise noise levels at sensitive or residential receivers. There are currently no similar, consistent design requirements for shipping noise sources. The only international design requirements to manage noise are for the on-board comfort and crew safety; and
- Opportunities to deny a ship to enter a port are currently limited.

Relevant NSW Acts refer to the Maritime Authority for the management of ship and associated shore based noise, however these powers have not been enacted and in some instances the EPA has undertaken this role but not developed specific guidelines for this form of transportation noise.

"Evaluation of ship noise levels against industrial noise criteria is not endorsed by the Port Authority of NSW", however comparisons with industrial noise criteria can be made.

"There is currently no specific guideline in NSW that addresses noise emissions associated with the operations of ships while berthed. The lack of any specific guidelines and criteria for ship noise emissions and impacts on residential receivers in NSW, and the lack of any International or Australian design requirements for noise emission from a ship, makes the management of ship noise complex." Various outcomes have been:

- Ship noise on occasions being assessed using EPA industrial noise criteria, although in most instances, based on previous experience, noise criteria cannot be met.
- Ship noise not being assessed or regulated; and

- Voluntary regulation of ship noise

There are existing processes for managing exceedences of new criteria by existing infrastructure under the NPfI and all superseded approaches. These may be used for noise from the berths at White Bay and Glebe Island which predate all NSW noise policy and guidelines.

In response to noise from existing vessels at Glebe Island, planning controls were in place to protect residences of apartment buildings at Jackson's Landing through building design.

The predicted noise levels from vessels servicing the Multi-User facility and the Batch Plant are less than historical noise levels.

The Port Authority's attached letter dated 17 December 2018 (Attachment B) outlines work being undertaken to deliver broad noise policy for White Bay and Glebe Island with two new guidelines. The first outlines the Port Authority's approach to manage ship noise and the second guideline will define how shore based noise is managed as a precinct under the EPA's NPfI.

NIA Table 2 and Section 4.3 describe berth activity at GIB1, and recognises that activity as a continued use of the existing port facility. NIA Table 20 already presents the predicted amenity noise levels from the combined berth (GIB1) (typical) activity and the Facility operating.

The EPA (in their submission) have requested that NIA Table 20 be supplemented by presenting the predicted intrusive noise levels from the combined berth (GIB1) typical activity and the Facility operating, as shown in Table 20A.

Table 20A Predicted Berth (GIB1) Typical Activity and Facility Intrusive Noise Levels (dBA re 20 µPa)

Locality	Location	Combined Operation - GIB1 Typical Activity plus the Facility Intrusive $L_{Aeq(15minute)}$ Noise Levels		
		Daytime	Evening	Night-time
Balmain	Donnelly Street	47	46	45
	Batty Street / Roberts Road[1]	48	47	46
Pyrmont	Bowman Street[2]	54-56	53-54	52-53
	Refinery Drive[2]	52-53	51-53	51-52
Glebe	Glebe Point Road	43	42	42

Note 1 The higher noise level from receivers at Batty Street and Roberts Road is shown

Note 2 The range of noise levels to the different floors at multilevel apartment buildings

Furthermore, a review of vessel noise levels while delivering bulk goods to Glebe Island (refer Multi-user Addendum Table 1) indicates that the maximum effective sound power level including the unloading mechanism (ie enclosed conveyor or crane and bucket mechanism) is SWL 112 dBA. NIA Table 20 can be further supplemented by presenting the predicted intrusive noise levels from the combined berth (GIB1) maximum activity and the Facility operating, as shown in Table 20B.

Table 20B Predicted Berth (GIB1) Maximum Activity and Facility Intrusive Noise Levels (dBA re 20 µPa)

Locality	Location	Combine Operation - GIB1 Maximum Activity plus the Facility Intrusive $L_{Aeq(15minute)}$ Noise Levels		
		Daytime	Evening	Night-time
Balmain	Donnelly Street	48	48	47
	Batty Street / Roberts Road[1]	50	49	49
Pyrmont	Bowman Street[2]	58-59	57-58	57-58
	Refinery Drive[2]	57-58	57-58	57-57
Glebe	Glebe Point Road	48	48	48

Note 1 The higher noise level from receivers at Batty Street and Roberts Road is shown.

Note 2 The range of noise levels to the different floors at multilevel apartment buildings.

4. *Clarify whether the modelled noise sources from loading/unloading include noise from the vessel, or just the loading/unloading activities.*

As presented in NIA Section 6.2.1, NIA Table 13 (and Table 13A below) already describes the in service operating condition of the CSL Rhine, where the SWL (typical 106 dBA) is inclusive of significant noise sources based on 12,000 tonnes vessel capacity (ie engine, ventilation and the like) and the ship bow is orientated south, with the discharge conveyor feeding the hopper.

5. *Consideration must be given to the cumulative noise impacts of all activities in the surrounding area, including the proposed Port Authority's multi-user facility adjacent to the site. These include, but are not limited to ships docking and ship's engines running during port time.*

NIA Table 7 and Section 4.3 and describes the applicable $L_{Aeq(period)}$ precinct amenity and project amenity noise levels, for assessing the operational noise from the Facility to the nearest residential localities in Balmain, Pyrmont (and Glebe).

For Balmain and Pyrmont, the resulting precinct amenity noise levels are daytime 65 $L_{Aeq(11hour)}$, evening 55 $L_{Aeq(4hour)}$ and night-time 50 $L_{Aeq(9hour)}$, and for Glebe the resulting precinct amenity noise levels are daytime 60 $L_{Aeq(11hour)}$, evening 50 $L_{Aeq(4hour)}$ and night-time 45 $L_{Aeq(9hour)}$.

The Facility and Multi-user facility Operating and Precinct Amenity Noise Levels

The predicted operating amenity noise levels from the Facility are presented in NIA Table 17, as shown below.

NIA Table 17 Predicted Facility Operating Amenity Noise Levels (dBA re 20 µPa)

Locality	Location	Facility Operating Amenity $L_{Aeq(period)}$ Noise Levels		
		Daytime	Evening	Night-time
Balmain	Donnelly Street	40	36	34
	Batty Street / Roberts Road[1]	43	40	37
Pyrmont	Bowman Street[2]	47-51	43-47	42-45
	Refinery Drive[2]	44-46	41-42	40-41
Glebe	Glebe Point Road[2]	37-38	33-34	32-33

Note 1 The higher noise level from receivers at Batty Street and Roberts Road is shown

Note 2 The range of noise levels to the different floors at multilevel apartment buildings

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Noise levels for repurposed Multi-user facility are contained in the Glebe Island Multi-User Facility Review of Environmental Factors (Multi-user REF) (AECOM, January 2018) Appendix D Noise Impact Assessment including the predicted intrusive noise levels from the Multi-user facility operating. Noise levels for repurposed Multi-user facility have been further supplemented in the Multi-user Addendum including the predicted amenity noise levels from the Multi-user facility operating. The relevant noise levels have been extracted from Multi-user Addendum (Table 3 and Table 6) as presented in Table 17A.

Table 17A Predicted Multi-user facility Operating Amenity Noise Levels (dBA re 20 µPa)

Locality	Location	Multi-user facility Operating Amenity $L_{Aeq(period)}$ Noise Levels		
		Daytime[3]	Evening[3]	Night-time
Balmain	Donnelly Street[4]	40	40	40[1]
	Batty Street	40	40	40[1]
Pyrmont	Bowman Street	47	47	47[1]
	Refinery Drive	44	44	44[2]
Glebe	Glebe Point Road	40	40	40[1]

Note 1 Refer Multi-user Addendum Table 3

Note 2 Refer Multi-user Addendum Table 6.

Note 3 Daytime and evening amenity noise levels assumed to be the same as the night-time noise amenity levels.

Note 4 Grafton Street assumed to conservatively reflect Donnelly Street noise level amenity noise levels.

The total operating amenity noise levels from NIA Table 17 (Facility operating) plus Table 17A (Multi-user facility operating) are presented in Table 17B, together with the precinct amenity noise level (refer NIA able 7).

Table 17B Predicted Facility plus Multi-user facility and Precinct Amenity Noise Levels (dBA re 20 µPa)

Locality	Location	Facility plus Multi-user facility Operating Total Amenity $L_{Aeq(period)}$ Noise Levels			Precinct Amenity $L_{Aeq(period)}$ Noise Levels		
		Daytime	Evening	Night-time	Daytime	Evening	Night-time
Balmain	Donnelly Street	43	41	41	65	55	50
	Batty Street	45	43	42	65	55	50
Pyrmont	Bowman Street[1]	52	50	49	65	55	50
	Refinery Drive[1]	48	46	46	65	55	50
Glebe	Glebe Point Road[1]	42	41	41	60	50	45

Note 1 The highest of noise levels to the different floors at multilevel apartment buildings shown.

At Pyrmont and Balmain, the Facility operating plus Multi-user facility total operating amenity noise levels are below the precinct amenity noise levels of daytime 65 $L_{Aeq(11hour)}$, evening 55 $L_{Aeq(4hour)}$ and night-time 50 $L_{Aeq(9hour)}$.

Similarly at Glebe, the Facility operating plus Multi-user facility total operating amenity noise levels are below precinct amenity noise levels of daytime 60 $L_{Aeq(11hour)}$, evening 50 $L_{Aeq(4hour)}$ and night-time 45 $L_{Aeq(9hour)}$.

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Facility Operating & Berth (GIB1) Activity plus Multi-user facility Operating & Berth (GIB2) Activity

The predicted combined amenity noise levels from the Berth (GIB1) typical activity (ie CSL Rhine) and the Facility operating are presented in NIA Table 20, as shown below.

NIA Table 20 Predicted Berth (GIB1) Typical Activity and Facility Amenity Noise Levels (dBA re 20 µPa)

Locality	Location	Berth (GIB1) Typical Activity plus the Facility Operating Combined Amenity $L_{Aeq(period)}$ Noise Levels		
		Daytime	Evening	Night-time
Balmain	Donnelly Street	45	45	44
	Batty Street / Roberts Road[1]	47	45	45
Pyrmont	Bowman Street[2]	54-55	52-53	52-52
	Refinery Drive[2]	52-53	51-52	51-52
Glebe	Glebe Point Road	42-42	41-41	41-41

Note 1 The higher noise level from receivers at Batty Street and Roberts Road is shown.

Note 2 The range of noise levels to the different floors at multilevel apartment buildings.

As described above, noise levels for repurposed Multi-user facility are contained in the Multi-user REF Appendix D Noise Impact Assessment including the predicted intrusive noise levels from the combined berth (GIB2) large ship activity (ie CSL Thevenard) and the Multi-user facility operating. Noise levels for repurposed Multi-user facility have been further supplemented in the Multi-user Addendum including the predicted amenity noise levels from the combined berth (GIB2) large ship activity (ie CSL Thevenard) and the Multi-user facility operating. The relevant noise levels have been extracted from Multi-user Addendum Table 5 and presented in Table 20C.

Table 20C Predicted Berth (GIB2) Activity and Multi-user Facility Amenity Noise Levels (dBA re 20 µPa)

Locality	Location	Berth (GIB2) Activity plus the Mult-user facility Operating Combined Amenity $L_{Aeq(period)}$ Noise Levels		
		Daytime[2]	Evening[2]	Night-time[1]
Balmain	Donnelly Street	45	45	45
	Batty Street	46	46	46
Pyrmont	Bowman Street	57	57	57
	Refinery Drive	56	56	56
Glebe	Glebe Point Road	48	48	48

Note 1 Refer Multi-user Addendum Table 5.

Note 2 Daytime and evening amenity noise levels assumed to be the same as the night-time noise amenity levels.

The cumulative amenity noise levels from NIA Table 20 (combined Berth [GIB1] typical activity and Facility operating) plus Table 20C (combined Berth [GIB2] large ship activity and the Multi-user facility operating) are presented in Table 20D.

Table 20D Predicted Cumulative GIB1, Facility, GIB2 and Multi-user Facility Amenity Noise (dBA re 20 µPa)

Locality	Location	Berth (GIB1) and Facility plus Berth (GIB2) and Multi-user facility Cumulative Amenity $L_{Aeq(period)}$ Noise Levels		
		Daytime	Evening	Night-time
Balmain	Donnelly Street	48	48	48
	Batty Street	50	49	49
Pyrmont	Bowman Street[1]	59	58	58
	Refinery Drive[1]	58	57	57
Glebe	Glebe Point Road	49	49	49

Note 1 The highest of noise levels to the different floors at multilevel apartment buildings shown.

Table 20D presents the typical worst case scenario from combined berth (GIB1) typical activity (ie CSL Rhine) and the Facility operating PLUS combined berth (GIB2) large ship activity (ie CSL Thevenard) and the Multi-user facility operating.

Hanson supports the Port Authority's position with respect to assessment of port noise and the associated management of shore and ship based noise levels, and does not favour the rigid application of industrial noise criteria to these combined or cumulative activities. Notwithstanding, the resulting cumulative daytime, evening and night-time amenity noise levels are less than (or equal to) 50 $L_{Aeq(period)}$ at Balmain and Glebe.

At Pyrmont, the cumulative amenity noise levels are below the daytime Precinct amenity noise level of 65 $L_{Aeq(11hour)}$. Further at Pyrmont, cumulative amenity noise levels may exceed the Precinct amenity level of 55 $L_{Aeq(4hour)}$ by up to 3 dBA during the evening, and during the night-time may exceed the Precinct amenity level of 50 $L_{Aeq(9hour)}$ by up to 8 dBA. However, in both cases (during the evening and night-time) the typical worst case cumulative amenity noise levels are predicted to remain well below the Jacksons Landing residential façade design noise level criteria of 63 dBA.

Hanson undertakes to coordinate with the Port Authority to conduct noise validation measurements to verify the predicted Facility intrusive noise levels together with the cumulative amenity noise levels, and review feasible and reasonable noise mitigation measures in accordance with the Precinct noise management plan.

6. *Confirm the ambient and existing noise levels measured for affected residential receivers in the NIA are current and accurate.*

NIA Table 5 presents the ambient noise environment in the absence of the Facility (and Port Authority's repurposed Multi-user facility). Section 3.2 also presents a detailed description of the ambient noise environment in the surrounding residential areas. The requirement for further ambient noise monitoring was discussed with the Port Authority in September 2017, however it was considered unnecessary due to the following reasons.

A review of the historical ambient noise levels recorded at the nearest potentially affected residential locality of Pyrmont (Refinery Drive) indicates relatively constant noise levels over an extended period of time. For Pyrmont (Refinery Drive) in 2003 the RBLs were: daytime 50 dBA; evening 48 dBA; and night-time 46 dBA, which were all unchanged in 2009. Similarly, in 2012 the RBLs were: daytime 50 dBA; evening 49 dBA; and night-time 47 dBA, and were subsequently adopted for background noise assessment purposes in NIA Table 5. The same background noise levels have been conservatively adopted for Pyrmont (Bowman Street) residences [which are located appreciably closer by comparison with the Pyrmont (Refinery Drive) residences] to the major source of traffic noise emanating from on the Anzac Bridge.

In addition, NIA Section 4.3 describes berth activity at GIB1, and recognises that activity as a continued use of the existing port facility. Just in the past 10 years, SLR has conducted operator-attended noise monitoring of shipping activity at GIB1 in August 2009; April, October and November 2010; July and August 2011; January 2012; April 2014; February and July 2015; February 2016; May 2017 and again February 2018; which are merely samples of its on-going and continued use.

In view of the historical consistency of the ambient noise levels between 2003 and 2012, the proximity of the nearest residences (Pyrmont) to the proposed Facility and the major source of traffic noise from the Anzac Bridge, together with the on-going and continued use of the existing port facility (GIB1), it is reasonable to conclude that the adopted background noise levels remain representative (ie current and accurate) of the ambient environment in the absence of the proposed facilities. If anything, the adopted background noise levels are more likely to be conservatively low, that is, in the absence of material reductions to the controlling background noise sources (ie traffic, port, commercial and residential activities and the like), then background noise levels generally increase (rather than decrease) overtime in an urban environment. It follows, that as there have been no material reductions to the controlling background noise sources over recent years, it is more likely (than not), that the prevailing background noise levels would be slightly higher by comparison with the adopted background noise levels.

Furthermore, additional ambient noise monitoring was considered unnecessary due to the resulting night-time PTNLs $L_{Aeq(15minute)}$ (refer NIA Table 8) being controlled by the project amenity $L_{Aeq(15minute)}$ noise levels at three (out of four) of the nearest residential localities, namely: Pyrmont (Refinery Drive); Balmain (Batty Street) and Glebe (Leichhardt Street). In other words, in the event background noise levels had risen over the past 10 years, then the night-time PTNLs $L_{Aeq(15minute)}$ are limited by the project amenity $L_{Aeq(15minute)}$ noise levels (and independent of the locality based RBLs).

7. (Part A) Provide further specific detail on how the proposed noise management precinct will function …

The attached letter dated 17 December 2018 (Attachment B) from the Port Authority provides an overview of two proposed noise guidelines that are being developed for Glebe Island and White Bay in consultation with the EPA and DP&E. The purpose of the first guideline is to manage ship noise. This is consistent with other areas of NSW transportation where the relevant authority has developed specific noise guidelines. The second proposed guideline is an approach to manage shore based noise in accordance with the concept of a noise management precinct as introduced by the NPfI. The NPfI has introduced noise management precincts with the aim of simplifying the management of large sites such as ports. The proposed noise management precinct would enable the port facility, with its multiple proponents and users, to operate as a single site where all operators are required to meet common precinct noise amenity criteria.

In accordance with the NPfI access agreements for port users would be developed which set noise standards for each user so that the combined port noise levels meet the relevant precinct noise amenity level. As indicated in the NIA, the batching plant contribution criteria for shore based noise from the concrete batching plant at Pyrmont is 47dBA $L_{Aeq(9hour)}$ during the night time period which would be documented in the proposed Port Authority's noise standard. This provides allowance for other shore based port activities so that the combined noise levels meet the port precinct night time amenity noise level of 50dBA $L_{Aeq(9hour)}$. Allowances have currently been made in project specific criteria at Pyrmont for equal noise contributions between the proposed Multi-User facility, which if approved will be adjacent to the batching plant, and the batching plant. In other locations night time noise criteria have been set at 45dBA $L_{Aeq(9hour)}$ to include the potential for noise contributions from multiple other shore based sources which is in accordance with the NPfI and will be documented in the proposed noise standard.

Should port night time amenity noise levels be projected to exceed 50dBA, due to future shore based activities from other users, the access agreements will provide the flexibility for the batching plant contribution criteria in the noise standard to be reduced. The batching plant contribution criteria in the noise standard may be reduced if a new port user is able to identify feasible and reasonable noise mitigation for the batching plant operations that do not unreasonably interfere with the operation of the batching plant.

Prior to the operation of other new users at Glebe Island, the 9 hour night time noise contribution criteria from the batching plant are 47dBA at Pyrmont and 45dBA elsewhere. Hanson's will be responsible for demonstrating compliance with relevant noise criteria. Following the finalisation of the Port Authority's proposed noise guidelines, the noise contribution criteria will be included in the noise standard and may change depending on future users with approved operations under the noise management precinct.

7. *(Part B) … and carry out a detailed assessment of maximum noise level events as required by and in accordance with the NPfI.*

See response to issue 8 below.

8. *Provide detailed information on feasible and reasonable mitigation measures to address the predicted 2 dB exceedance of the sleep disturbance noise level at Pyrmont.*

In accordance with Section 2.5 of the NPfI, it is noted that the SDNL L_{Amax} 62 dBA is a screening noise level that triggers further investigation of the potential for sleep disturbance. The predicted maximum noise levels (NIA Table 19) potentially result from short term effects such as truck start-up, and parking brake with compressed air release. Of these events the SDNL L_{Amax} 62 dBA was only exceeded by the parking brake compressed air release events. Hanson have subsequently investigated and confirmed the fitting of air release silencers to concrete trucks that will use the Facility. The silencers are commercially available and can be retrofitted with an estimated minimum noise reduction of 6 dBA to the L_{Amax} noise level. This will remove the exceedance of the SDNL L_{Amax} 62 dBA screening noise level, negating the requirement to conduct a detailed assessment of maximum noise level events.

9. *Derive project noise trigger levels in accordance with the NPfI.*

There is no need to reconsider and or revise the Project Trigger Noise Levels (PTNLs) for the Facility as they have been determined in accordance the NPfI and not influenced by the façade noise attenuation design levels. SLR can confirm that the noise mitigation design at the façade of properties at Pyrmont was not used to increase the noise amenity trigger levels. The 63 dBA $L_{Aeq(15minute)}$ Project Amenity noise levels of NIA Table 8 equate to the 60 dBA $L_{Aeq(period)}$ noise level + 3 dB, in accordance with the NPfI.

10. *Provide detailed information regarding the assumed mitigation measures and provide evidence to support the claim that no corrections are required for annoying noise characteristics.*

NIA Section 6.2.2 states that the proposed noise mitigation measures (NIA Table 13) and associated noise controlled SWLs aim to minimise potential annoying characteristics from the Facility operating noise levels at the noise source, thus negating modifying factor corrections to the predicted intrusive noise levels (NIA Table 18) in accordance with NPfI Section 3.3.1 Identifying noise parameters and NPfI Fact Sheet C. The application of modifying factor adjustments (as described in NPfI Fact Sheet C) includes potential modifying factors for tonal noise, low frequency noise, and intermittent noise, each of which are further discussed below.

Tonal noise: Tonality is defined in the NPfI as "noise containing a prominent frequency and characterised by a definite pitch". The occurrence of tonal noise (if any) is typically associated with stationary plant (i.e. pumps, fans, drives, and the like) where rotating equipment operates at a constant frequency. The NIA Table 13 lists the major items of stationary plant (and mobile equipment) and the associated sound power levels (SWL) for the Facility. A one third octave band analysis of the SWLs for the Facility does not indicate any tonal noise sources, hence no tonal noise modifying factor is applicable.

Low frequency noise (LFN): Low frequency noise is defined in the NPfI as "noise containing major components in the low-frequency range (10 hertz [Hz] to 160 Hz) of the frequency spectrum". NIA Table 18 presents the predicted intrusive noise levels from the Facility to the nearest receivers. The C weighted intrusive noise levels have also been determined, and the difference between the C weighted and A weighted predicted intrusive noise levels are less 15 dB. Hence, compliance with the requirements of NPfI Table C1 would be achieved, no further assessment in accordance with Table C2 is warranted and no LFN noise modifying factor is applicable.

Intermittent noise: Is defined in the NPfI, as "noise where the level suddenly drops/increases several times during the assessment period, with a noticeable change in source noise level of at least 5dB(A)", which is subjectively assessed but should be assisted with measurement to gauge the extent of change in noise level. Intermittent noise is not typically a characteristic of a concrete batching facility, as a large proportion of the mobile equipment is operated in repeatable routines and a relatively smaller proportion of the noise emanates from fixed plant (refer to NIA Section 6.1), hence no intermittent noise modifying factor is applicable.

Furthermore, the major items of plant and equipment would be subject to procurement specifications to ensure that the major items are designed, installed, and operated in the absence of annoying characteristics.

11. *State whether the source sound power levels (SWLs) and assumptions on the number of deliveries I volume of concrete represent the maximum capacity of the proposal. If not, predictions must consider future growth of the project.*

NIA Section 2.3 describes the maximum operating capacity of the Facility, and NIA Table 13 (and Table 13A below) presents the major plant and equipment operating SWLs of the Facility.

12. *Further consideration shall be given to the provision of enclosures to the silos to reduce potential noise impacts on surrounding residents and covering the batching plant side of the shipping containers with noise absorption material.*

As described in NIA Section 6.2.1, noise mitigation requirements and resulting source and transmission noise control and management measures are presented in NIA Table 13. NIA Table 13 has been amended to include further detail of the noise mitigation measures as presented in Table 13A below.

ATTACHMENT A

Table 13A Facility and Berth Noise Mitigation Measures and Sound Power Levels (SWLs) (dBA re 1ρW)

Plant and Equipment	Nominal Noise Control	Mitigation Requirements	Overall SWL $L_{Aeq(15min)}$
Front End Loader[1] (Komatsu 480)	low-noise specification	Procurement specification	SWL 107 dBA per unit
Truck operation[1]	speed limited to 20 km/hr	Speed Limit Sign Posted	SWL 108 dBA per unit
Concrete Truck handbrake[1]	parking brake compressed air release silencers	Procurement specification with minimum reduction of 6 dBA	SWL L_{Amax} 116 dBA per unit
Reversing alarms[1]	squawker reversing alarms fitted to all mobile plant, concrete and aggregate trucks	Procurement specification	SWL L_{Amax} 105 dBA per unit
Building Enclosure[1]	selection of quiet mechanical plant and equipment	Confirmation of reverberant level during commissioning	Internal reverberant SPL 87 dBA
	construction colour bond minimum thickness 0.6 mm	Architectural drawings	
	roof ventilation maximum area 15 square metres	Architectural drawings	
	roller doors automatic open and closure; maximum opening time 60 seconds	No openings in roller doors rubber seal at reveal	
Conveyors[2]	low-noise specification with full enclosure	Procurement specification	SWL 95 dBA/100 m
Conveyor drive[2]	low-noise specification with full enclosure	Procurement specification	SWL 90 dBA/100 m
CSL Rhine[3,4]	In service operating condition	Internal hull reclaiming conveyor, with external discharge conveyor system	SWL 106 dBA

Note 1 SWL for mobile equipment and fixed plant from SLR database of equivalent operating machinery

Note 2 Conveyors and drives located external to buildings, silos and silo to ship hopper

Note 3 SWL inclusive of significant noise sources based on 12,000 tonnes vessel capacity

Note 4 Ship bow orientated south, with the discharge conveyor feeding the hopper

In particular, the proposed 'silos' are essentially passive buildings and not considered to be a major noise source. As shown in Table 13A, conveyors and drives (located external to buildings, silos and silo to ship hopper) are of low-noise specification with full enclosure. The shipping containers located on the eastern perimeter of the site will reduce at the nearest potentially affected residential locality of Pyrmont in the absence of noise absorption material (and in any case while technically feasible, it's not considered practically reasonable to install and maintain an absorptive lining on the containers).

13. Clarify the modelled scenarios by providing noise contour maps of all scenarios in the NIA.

NIA Figure 3 presents proposed Facility layout, NIA Table 13 lists the major items of stationary plant (and mobile equipment) and the associated SWLs for the Facility, and NIA Table 12 describes the Facility (daytime, evening and night-time) noise modelling scenarios. The predicted operating intrusive $L_{Aeq(15minute)}$ noise levels from the Facility's three operating scenarios are present in NIA Table 18, the associated noise contours for daytime, evening and night-time are shown in Attachment C.

14. Propose mitigation actions for the construction phase that align with the Interim Construction Noise Guideline (ICNG). This should include consideration of cumulative construction noise impacts from the neighbouring Glebe Island Multi-User Facility.

Construction noise impacts have been assessed in accordance with the ICNG (as presented in the NIA Section 7) where the predicted daytime construction noise levels comply with the relevant CNML (noise affected) except at Pyrmont (Bowman Street) where the Pyrmont CNML (noise affected) of 60 dBA is exceeded by up to 2 dBA, but well below the CNML (highly noise affected) of 75 dBA.

The exceedances are predicted during 'enabling' and 'silo' construction works when the construction equipment would be potentially operating on the eastern side of the site. However, for the majority of the time it is anticipated that when the enabling and silo construction work occurs, equipment would be operating at the middle of the site, or further to the west, resulting in reductions of typically 4 dBA at Bowman Street.

In all cases, Hanson will implement best practice construction noise mitigation measures including:

- all construction works to be conducted within standard construction hours;
- schedule noisier activities during less sensitive times when possible;
- prioritise contactors utilising broadband reversing alarms when possible;
- stand-down construction plant and equipment when not in use;
- utilise equipment with the indicative SWLs presented in the NIA Appendix C;
- identify construction noise minimisation during contactor site inductions;
- implement an effective community information and notification regime; and
- respond to community concerns in a prompt and effective manner.

As described in NIA Section 7.2.1, subject to the approval of the Facility, Hanson will prepare a Construction Noise and Vibration Management Plan (CNVMP) detailing control, management and mitigation of construction noise impacts for the site.

NIA Section 7.2.1 presents the cumulative construction noise impacts with the Multi-user facility, but any cumulative noise impact will depend on the actual construction date for each facility so may be considered a worst case construction scenario. Similarly, NIA Section 7.2.2 presents the cumulative construction noise impacts with the WestConnex M4-M5 Link Rozelle site.

15. *Clarify how the NSW Ports Authority management plan for ship deliveries has been considered and to what extent this will protect surrounding residents from unacceptable noise impacts.*

The Port Authority is developing a ship noise guideline and operating procedure (refer Attachment B and Multi-user Addendum) draws from industry best practice approaches in managing port activities, and also recognises that managing noise from a vehicle such as a ship is more complex than machinery on an industrial site. A key part of this guideline is a procedure to manage noisy vessels. The guideline aims to identify ships that are noisier than typical vessels and define collaborative actions to review noise emission and reduce noise levels.

The Port Authority's Multi-user Addendum report has identified the range in ship noise levels at Jacksons Landing, Pyrmont since 2010. This range has a median level of 55dBA and a 90th percentile level of 58dBA. The Port Authority's development of the proposed guideline is considering this range of noise levels and potential approaches.

It is our understanding the Port Authority's intention is this guideline and operating procedure will be officially adopted prior to the operation of the proposed development. In the interim, Hanson will prepare an operating procedure with which ships visiting the Hanson facility via GIB1 will have to comply. This procedure will align with the forthcoming Port Authority NSW Ports guideline and will ensure that all shipping activity is subject to a consistent management strategy to control noise within the precinct. Noise will be controlled through the introduction of collaborative approaches to manage noise which may result in punitive measures if noise reductions are not implemented on uncharacteristically noisy ships.

16. *Further consideration should be given to the provision of shore to ship power in partnership with the Port Authority NSW, including the use of solar power and a battery storage facility; to generate sufficient power to enable shore to ship energy supply at both facilities.*

Hanson has considered the concept of providing shore to ship (solar) power at the Facility. However, as none of the potential vessels to be used for loading/unloading are capable of connecting to such a power supply, the concept is not technically feasible or practically reasonable.

ATTACHMENT B

Port Authority of NSW Draft Noise Procedure letter dated 17 December 2018

PORT AUTHORITY
OF NEW SOUTH WALES

Andrew Driver
Development Manager
Hanson Construction Materials Pty Ltd
Level 5, 75 George Street
PARRAMATTA NSW 2150

Dear Mr Driver,

Proposed Hanson's Concrete Batching Plant at Glebe Island (SSD 8544) / Port Authority of NSW's Draft Noise Procedure

This letter outlines work being undertaken by the Port Authority to investigate ways of improving noise management at White Bay and Glebe Island. This work has been undertaken in consultation with the EPA and DP&E and aims to:

- Clarify for all stakeholders the noise emission profile of the port and noise criteria
- Facilitate consistent noise assessments and approvals for new projects
- Simplify noise management for the port

An outcome of this work is consideration by the Port Authority in developing two noise guidelines. These would also set noise standards for vessels and shore based activities at each berth.

The purpose of the first guideline would be to manage ship noise. This is consistent with other areas of NSW transportation where the relevant authority has developed specific noise guidelines; for example. Noise guidelines have been developed by the road and rail organisations within the Transport for NSW (TfNSW) cluster.

The guideline would draw from industry best practice approaches in managing port activities, and also recognise that managing noise from a vehicle such as a ship is more complex than machinery on an industrial site. The guideline aims to identify ships that are noisier than typical vessels and define collaborative actions to review noise emission and reduce noise levels.

Preliminary analysis has identified the range in ship noise levels at Jacksons Landing, Pyrmont since 2010. This range has a median level of 55dBA and a 90th percentile level of 59dBA. The development of the guideline would consider the range of noise levels, potential approaches to reduce noise and set a noise standard for vessels. An overview of a process that may be undertaken where noise levels by a vessel exceed the standard is below:

- A vessel specific management plan is developed based on measurements. The management plan outlines operational actions and recommended mitigation to reduce noise levels to the standard or quieter.

YAMBA
PO Box 143
Yamba NSW 2464
T: 61 2 6646 2002

NEWCASTLE
PO Box 663
Newcastle NSW 2300
T: 61 2 4985 8222

SYDNEY
PO Box 25
Millers Point NSW 2000
T: 61 2 9296 4999

PORT KEMBLA
PO Box 89
Port Kembla NSW 2505
T: 61 2 4275 0100

EDEN
PO Box 137
Eden NSW 2551
T: 61 2 66461596

ABN: 50 825 884 846

portauthoritynsw.com.au

- If exceedances remain after 3 vessel visits and the vessel cannot demonstrate improvements via a specific management plan, then night time self-unloading or night time berthing may be restricted so that noise levels from the vessel are less than the standard.

The second proposed guideline is an approach to manage shore based noise in accordance with the Noise Policy for Industry (NPfI) (EPA, 2017). The NPfI has introduced noise management precincts with the aim of simplifying the management of large sites including ports. The proposed noise management precinct would enable the port, with its multiple proponents and users, to operate as a single site where all operators are required to meet common precinct noise amenity criteria.

Consistent with the NPfI, as you are aware, we have requested Hanson to adopt a precinct noise contribution allowance to limit the upper noise level in its environmental assessment for its proposed concrete batching plant. In turn, Port Authority has adopted a precinct noise contribution allowance to limit the upper level of noise in its environmental assessment for the proposed multi-user facility. Equal allowances have currently been allocated to each project so that when combined together, the noise contributions sum to meet the precinct amenity noise level criteria at Pyrmont for shore based activities. In other locations night time noise criteria have been set at a lower level to provide allowances for additional projects which would be located closer to other receivers than these two projects.

Port Authority intends to define the requirements of a noise precinct in its lease documentation with Hanson, its lease documentation with its existing tenants, and any users of the Multi- User Facility. These contracts will define the requirements of the noise precinct so that the combined port noise levels meet the relevant precinct noise amenity criteria in accordance with the NPfI.

Should future port precinct amenity noise levels be projected to exceed criteria, due to future shore based activities from new users, the Lease for the batching plant will further provide the flexibility for the batching plant noise contribution allowance in the noise standard to be reduced. The contribution criteria in the noise standard may be reduced if a new port user is able to identify feasible and reasonable noise mitigation for the batching plant that does not unreasonably interfere with the operation of the batching plant.

The responsibility for monitoring and managing compliance with the noise standard is being reviewed by the Port Authority.

Please do not hesitate to contact Simon Kean (simon.kean@spokeacoustics.com.au) or Christa Sams (csams@portauthoritynsw.com.au) if you have any queries or require additional information.

Yours sincerely,

Brad Milner
EGM, Commercial, Technical & Legal
17 December 2018

ATTACHMENT C

Predicted Daytime, Evening and Night-time Facility Operating Intrusive $L_{Aeq(15minute)}$ Noise Contours

PROJECT:

Glebe Island Concrete Batching Plant

TITLE:

Operating Noise Levels
Daytime
Assessment at 1.5m above ground

MAP NO: 1

Predicted
Noise Level
dBA, Leq

	< 40.0
40.0<=	< 45.0
45.0<=	< 50.0
50.0<=	< 55.0
55.0<=	< 60.0
60.0<=	

Scale 1:6901

0 35 70 140 210 m

Prediction Algorithm: Concawe

Meteorological Category: N/A

Wind: N/A Stability Class: N/A

PROJECT NO.: 610.17533

REPORT NO.:

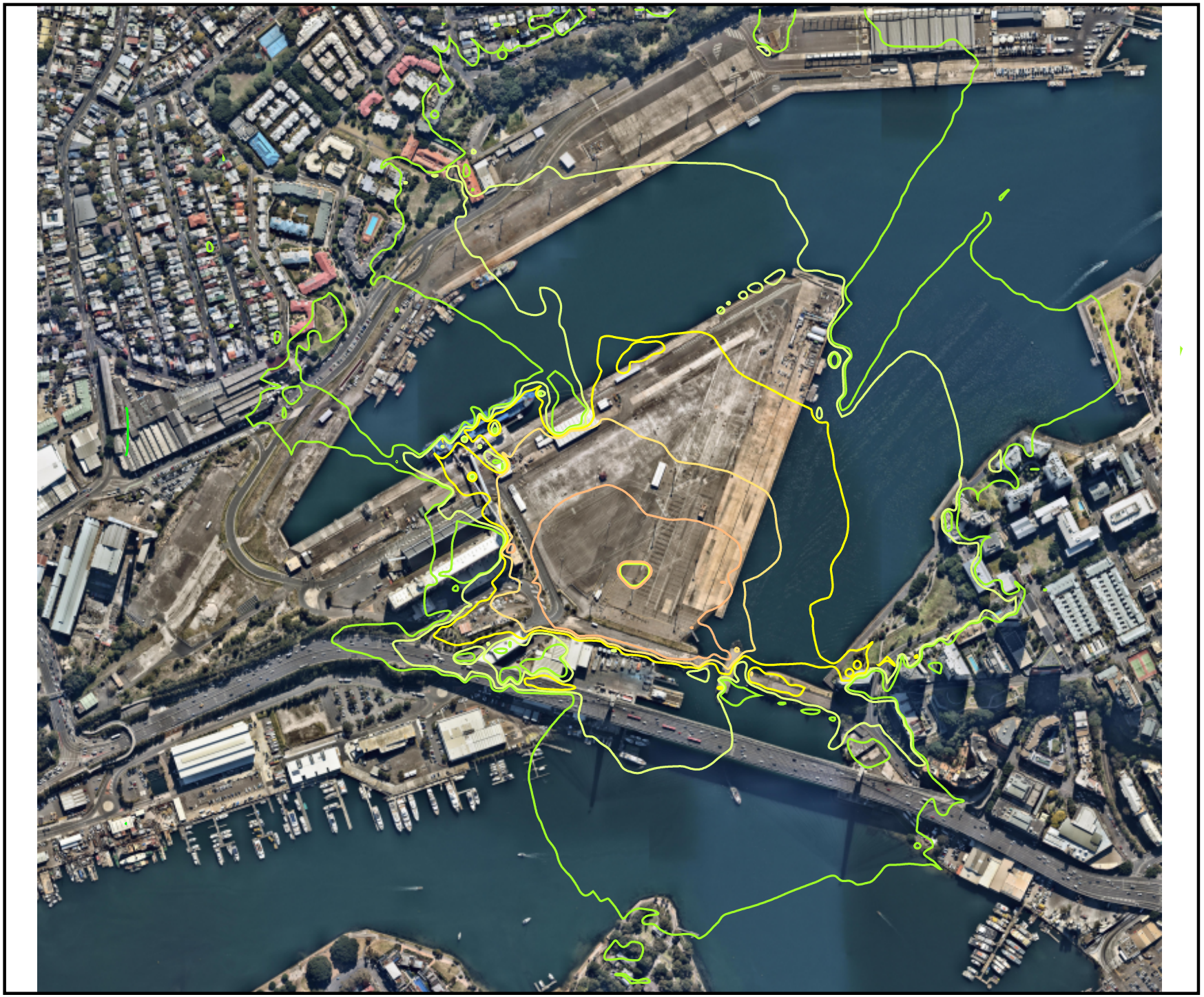
APPENDIX: A

DATE: 13-08-2018

PREPARED: JS

SLR Consulting Australia

ABN 29 001 584 612
2 Lincoln Street
Lane Cove NSW 2066
Tel: 61 2 94288100 Fax: 61 2 94288200



PROJECT:

Glebe Island Concrete Batching Plant

TITLE:

Operating Noise Levels
Evening
Assessment at 1.5m above ground

MAP NO: 1

Predicted
Noise Level
dBA, Leq

	< 40.0
40.0<=	< 45.0
45.0<=	< 50.0
50.0<=	< 55.0
55.0<=	< 60.0
60.0<=	

Scale 1:6901

0 35 70 140 210 m

Prediction Algorithm: Concawe

Meteorological Category: N/A

Wind: N/A Stability Class: N/A

PROJECT NO.: 610.17533

REPORT NO.:

APPENDIX: B

DATE: 13-08-2018

PREPARED: JS

SLR Consulting Australia

ABN 29 001 584 612
2 Lincoln Street
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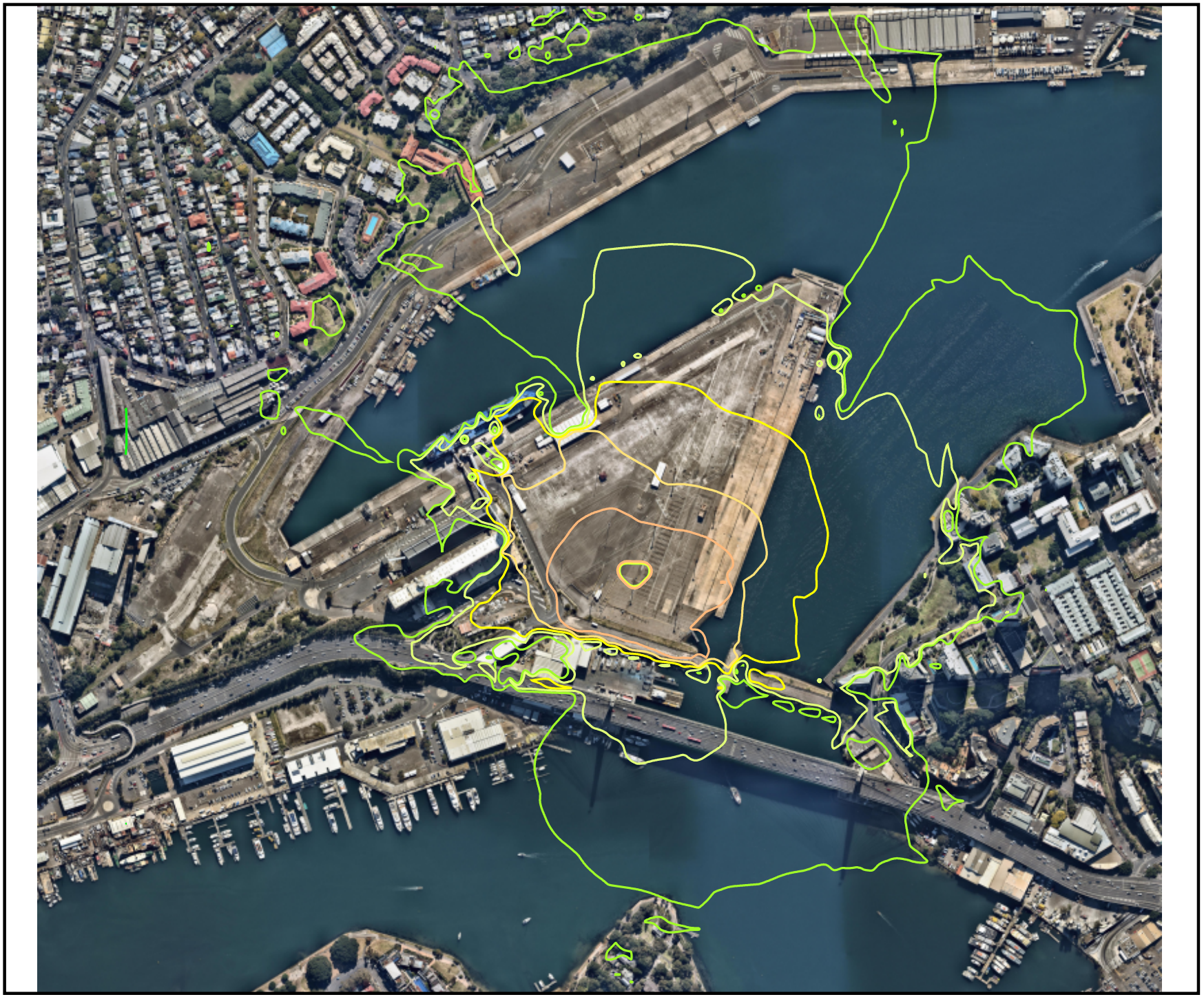
Tel: 61 2 94288100 Fax: 61 2 94288200



PROJECT:

Glebe Island Concrete Batching Plant

TITLE:

Operating Noise Levels
Night-time
Assessment at 1.5m above ground

MAP NO: 1

Predicted
Noise Level
dBA, Leq

	< 40.0
40.0<=	< 45.0
45.0<=	< 50.0
50.0<=	< 55.0
55.0<=	< 60.0
60.0<=	

Scale 1:6901

0 35 70 140 210 m

Prediction Algorithm: Concawe

Meteorological Category: N/A

Wind: N/A Stability Class: N/A

PROJECT NO.: 610.17533

REPORT NO.:

APPENDIX: C

DATE: 13-08-2018

PREPARED: JS

SLR Consulting Australia

ABN 29 001 584 612
2 Lincoln Street
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