

QUEANBEYAN-PALERANG REGIONAL COUNCIL

Council Meeting Attachment

28 FEBRUARY 2018

ITEM 12.7 MAJARA STREET PLANNING PROPOSAL

ATTACHMENT 2 GATEWAY DETERMINATION FOR PLANNING PROPOSAL TO
 AMEND PALERANG LOCAL ENVIRONMENTAL PLAN
 2014 - MAJARA STREET BUNGENDORE
 (PP_2017_QPREG-001-00)



**Planning &
Environment**

Queanbeyan-Palerang Regional Council	
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27 MAR 2017	
ECM No:	717197
Dist. to:	Arthean McBride
Contact:	Louise Myler
Phone:	(02) 4224 9463 Qbn office
Email:	louise.myler@planning.nsw.gov.au

Mr Tim Overall
Administrator
Queanbeyan Palerang Regional Council
PO Box 348
BUNGENDORE NSW 2621

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Attention: Arthean McBride

Dear Mr Overall

**Planning proposal to amend Palerang Local Environmental Plan 2014 –
Majara Street Bungendore (PP_2017_QPREG_001_00)**

I am writing in response to Council's request for a Gateway determination under section 56 of the *Environmental Planning and Assessment Act 1979* in respect of the planning proposal to rezone Lot 3 DP 1195030 Majara Street Bungendore, and to apply a 1000m² minimum lot size and 8.5m height control.

As delegate of the Minister for Planning, I have determined the planning proposal should proceed subject to the conditions in the attached Gateway determination

In issuing this Gateway determination, I have found that the planning proposal's inconsistencies with the following s117 Directions are justified and/or are of minor significance:

- 1.1 Business and Industrial Zones
- 5.1 Implementation of Regional Strategies.

To ensure consistency with s117 Direction 4.4 Planning for Bushfire Protection, Council is required to consult with the NSW Rural Fire Service (RFS) prior to exhibition of the planning proposal.

No further approval is required in relation to these, or other Directions while the proposal remains in its current form, subject to consultation with the RFS.

Council has identified that it will require an acoustic analysis to identify potential noise impacts from nearby industrial operations and options for mitigation. While this study has not been required as a condition of the Gateway determination, this does not prevent Council from requiring any relevant study it considers necessary to progress the proposal.

Planning and Environment - Southern Region

PO Box 5475 Wollongong NSW 2520 | T 02 4224 9450 | F 02 4224 9470 | www.planning.nsw.gov.au

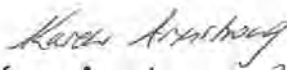
Plan making powers were delegated to Councils by the Minister in October 2012. It is noted that Council has requested to be issued with delegation for this planning proposal. I have considered the nature of Council's planning proposal and have decided to issue an authorisation for Council to exercise delegation to make this plan.

The amending Local Environmental Plan is to be finalised within 12 months of the date of the Gateway determination. Council's request to draft and finalise the Local Environmental Plan should be made directly to Parliamentary Counsel's Office six weeks prior to the projected publication date. A copy of the request should be forwarded to the Department of Planning and Environment for administrative purposes.

The State Government is committed to reducing the time taken to complete Local Environmental Plans by tailoring the steps in the process to the complexity of the proposal, and by providing clear and publicly available justification for each plan at an early stage. In order to meet these commitments, the Minister may take action under section 54(2)(d) of the Act if the time frames outlined in this determination are not met.

Should you have any queries in regard to this matter, I have arranged for Ms Louise Myler of the Department's regional office to assist you. Louise can be contacted on (02) 4224 9463.

Yours sincerely


Karen Armstrong 21/3/17
Director Regions
Southern
Planning Services

Encl:
Gateway Determination
Written Authorisation to Exercise Delegation
Attachment 5 – Delegated Plan Making Reporting Template



Planning & Environment

Gateway Determination

Planning proposal (Department Ref: PP_2017_QPREG_001_00): to rezone certain land in Majara Street Bungendore from IN2 Light Industrial to R2 Low Density Residential, and to apply appropriate minimum lot size, and height of buildings controls.

I, the Director Regions, Southern at the Department of Planning and Environment as delegate of the Minister for Planning, have determined under section 56(2) of the *Environmental Planning and Assessment Act 1979* that an amendment to the Palerang Local Environmental Plan 2014 as described above should proceed subject to the following conditions:


1. Community consultation is required under sections 56(2)(c) and 57 of the Act as follows:
 - (a) the planning proposal must be made publicly available for 28 days; and
 - (b) the relevant planning authority must comply with the notice requirements for public exhibition of planning proposals and the specifications for material that must be made publicly available along with planning proposals as identified in section 5.5.2 of 'A guide to preparing local environmental plans (Planning and Environment, 2016)'.
2. Consultation is required with the following public authorities under section 56(2)(d) of the Act:
 - NSW Rural Fire Service
 - NSW Roads and Maritime Services
 - NSW Office of Water

Each public authority is to be provided with a copy of the planning proposal and any relevant supporting material. Each public authority is to be given at least 21 days to comment on the proposal, or to indicate that it will require additional time to comment on the proposal. Public authorities may request additional information or additional matters to be addressed in the planning proposal.

Consultation is required with the NSW Rural Fire Service prior to undertaking community consultation in order to satisfy the requirements of s117 Direction 4.4 Planning for Bushfire Protection.

3. No public hearing is required to be held into the matter under section 56(2)(e) of the Act. This does not discharge Council from any obligation it may otherwise have to conduct a public hearing (for example in response to a submission or if reclassifying land).
4. The timeframe for completing the LEP is to be 12 months from the date of the Gateway determination.

Dated 21st day of MARCH 2017


 Karen Armstrong
 Director Regions, Southern
 Planning Services
 Department of Planning and
 Environment
 Delegate of the Minister for Planning



Planning & Environment

WRITTEN AUTHORISATION TO EXERCISE DELEGATION

Queanbeyan Palerang Regional Council is authorised to exercise the functions of the Minister for Planning under section 59 of the *Environmental Planning and Assessment Act 1979* that are delegated to it by instrument of delegation dated 14 October 2012, in relation to the following planning proposal:

Number	Name
PP_2017_QPREG_001_00	Planning proposal to rezone Lot 3 DP 1195030 Majara Street Bungendore from IN2 Light Industrial to R2 Low Density Residential – and to apply relevant lot size and height of building controls.

In exercising the Minister's functions under section 59, the Council must comply with the Department of Planning and Environment's "A guide to preparing local environmental plans" and "A guide to preparing planning proposals".

Dated 21ST MARCH 2017


Karen Armstrong
 Director Regions
 Southern
 Planning Services
 Department of Planning and Environment



Planning & Environment

Attachment 5 – Delegated plan making reporting template

Reporting template for delegated LEP amendments

Notes:

- Planning proposal number will be provided by the Department of Planning and Environment following receipt of the planning proposal
- The Department of Planning and Environment will fill in the details of Tables 1 and 3
- RPA is to fill in details for Table 2
- If the planning proposal is exhibited more than once, the RPA should add additional rows to **Table 2** to include this information
- The RPA must notify the relevant contact officer in the regional office in writing of the dates as they occur to ensure the publicly accessible LEP Tracking System is kept up to date
- A copy of this completed report must be provided to the Department of Planning and Environment with the RPA's request to have the LEP notified

Table 1 – To be completed by Department of Planning and Environment

Stage	Date/Details
Planning Proposal Number	PP_2017_QPREG_001_00
Date Sent to DP&E under s56	27/02/2017
Gateway determination date	

Table 2 – To be completed by the RPA

Stage	Date/Details	Notified Reg Off
Dates draft LEP exhibited		
Date of public hearing (if held)		
Date sent to PCO seeking Opinion		
Date Opinion received		
Date Council Resolved to Adopt LEP		
Have changes been made to the draft LEP after obtaining final PC opinion?	YES NO	
Date LEP made by GM (or other) under delegation		
Date sent to DoP&E requesting notification		

Table 3 – To be completed by Department of Planning and Environment

Stage	Date/Details
Notification Date and details	

Additional relevant information:

To: QUEANBEYAN-PALERANG REGIONAL CO

Fax:

From: Reserve Bank of Australia

09-03-2017 04:01AM p. 1

DEPT OF INFRASTRUCTURE AND REGIONAL DEVELOPMENT
GPO BOX 594
CANBERRA CITY, ACT, 2601

Contact Telephone: (02)6274 7555
Fax: (02)6274 7057
Contact Name: ACCOUNTS PAYABLE
Contact E-mail Address: help.financialoperations@infrastructure.gov.au



Australian Government

Department of Infrastructure and Regional Development

Ref 07489947-1

QUEANBEYAN-PALERANG REGIONAL CO
PO Box 348
QUEANBEYAN NSW 2621

Queanbeyan-Palerang Regional Council

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21 MAR 2017

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Remittance Advice

Date 09/03/2017

Amount \$200,000.00

E-mail Address: recods@palerang.nsw.gov.au

Page 1 of 1

Description	Amount
0051147460 REF: RTR 03/17 RTR Quarterly Payment	200,000.00
Total	\$200,000.00

Default Fax Number 62747057

QUEANBEYAN-PALERANG REGIONAL COUNCIL

Council Meeting Attachment

28 FEBRUARY 2018

ITEM 12.7 MAJARA STREET PLANNING PROPOSAL

ATTACHMENT 3 PLANNING PROPOSALS RELATING TO BUNGENDORE AND
 ITS IMMEDIATE SURROUNDS AND THE REVIEW OF
 THE STRUCTURE PLAN - COUNCIL - 25 JANUARY 2017

12.7 Majara Street Planning Proposal

Attachment 3 - Planning Proposals Relating to Bungendore and its Immediate Surrounds and the Review of the Structure Plan - Council - 25 January 2017 (Continued)

Summary

Currently there are three planning proposals with Council that seek to rezone land in Bungendore for residential purposes. These are:

- North Bungendore (Part Lot 1 DP 798111);
- Bungendore East (Lot 1 DP 747767 and others); and
- Lot 3 DP 1195030 Majara Street.

Additionally, a draft planning proposal has been provided to Council for discussion with a view to it being lodged for the rezoning of Lots 1 and 2 DP 1195030 King and Majara Streets from industrial (IN2 Light Industry) to residential land (R2 Low Density Residential). Council is also aware of several more propositions for the rezoning of land on the edges of Bungendore.

As outlined in the 19 May and 9 November 2016 strategic planning reports to Council, the Bungendore Structure Plan adopted by Council on 5 August 2010 is being reviewed and Council is undertaking work to determine whether additional groundwater for Bungendore's town water supply is available.

This report recommends that the work associated with increasing the town water supply and reviewing the Structure Plan continues and that no planning proposals except for Lot 3 DP 1195030 be referred to the Minister for Planning for a gateway determination until this work has been substantially progressed and discussed with government agencies and the community.

Recommendation

1. That Council refer the planning proposal concerning the rezoning of Lot 3 DP 1195030 from IN2 Light Industrial to R2 Low Density Residential (Attachment 1) to the Minister for Planning for a Gateway determination in accordance with section 56 of the *NSW Environmental Planning and Assessment Act 1979* noting the following matters:
 - a) The need for an acoustic report to be undertaken to determine appropriate treatment measures for noise with mitigation measures to be funded by the proponent.
 - b) The need to correct minor amendments to the bushfire report concerning the implication that the planning proposal is integrated development prior to referral to the NSW Rural Fire Service.
 - c) A recommendation that the proposal be exhibited for 28 days.
 - d) The need for the proponent to work with Council's strategic planning staff prior to the planning proposal being lodged with the Minister for Planning to address the following matters:
 - i. Typographic errors.
 - ii. An error in relation to the light industrial precinct (p12).
 - iii. An error in relation to the permissibility of the concrete batching plant in IN2 (pp14 and 20).
-

12.7 Majara Street Planning Proposal

Attachment 3 - Planning Proposals Relating to Bungendore and its Immediate Surrounds and the Review of the Structure Plan - Council - 25 January 2017 (Continued)

- iv. **Comment on the industrial situation in Bungendore.**
 - v. **Any other matter that may arise.**
 - 2. **That work continues on the current groundwater investigations with a view to securing an increase in the Bungendore town water supply.**
 - 3. **That work continues on the review of the Bungendore Structure Plan.**
 - 4. **That work continues on the three planning proposals listed below:**
 - a) **Part Lot 1 DP 798111 (North Bungendore), has a Gateway determination**
 - b) **Lot 1 DP 747767 and others (Bungendore East), has been forwarded to the Minister.**
 - c) **Lot 5 DP 1204393, Malbon Street, has a Gateway determination.**
 - 5. **That Council not proceed to refer any new Planning Proposals for the Bungendore area to the Minister for Planning for a gateway determination until work on the groundwater and Structure Plan has been substantially completed and discussed with government agencies and the community. This includes Lot 1 and Lot 2 DP 1195030 Majara Street.**
-

Background

Over the last fifteen years Bungendore has experienced substantial residential development and resultant population growth. At the time of the 2001 census there were 1,685 people, in 2011 there were 2,754 and in November 2015 there were estimated to be 3,254 (based on the 2011 census plus the number of constructed dwellings (3 people/dwelling) following the census). The population would have increased again due to the large number of dwellings erected in south Bungendore since November 2015.

In 2010, the former Palerang Council adopted a Structure Plan for Bungendore which was subsequently endorsed by the Director-General of the NSW Department of Planning. The Structure Plan identified that the quantity of potable water available was an issue and limited development to within the existing town boundaries. However, areas for possible residential development outside of the town boundary were also identified if further groundwater could be sourced and any other constraints addressed.

Since the endorsement of the Structure Plan by the then Director-General of Planning, Council has received two major planning proposals for residential development. Both these planning proposals have been detailed in reports to Council (December 2014 and December 2015) and in reports providing an update on strategic planning projects (19 May and 9 November 2016). Both Council reports also outline the work being undertaken in relation to the preparation of a revised Structure Plan, Integrated Water Cycle Management Strategy (IWCM) and increasing the amount of groundwater available to the Bungendore town water supply.

In mid-2016, Council also received a planning proposal for the rezoning of Lot 3 DP 1195030 (Attachment 1) Majara Street from IN2 Light Industrial to R2 Low Density Residential. If successful, the rezoning and a subsequent subdivision would result in the creation of a maximum of ten residential lots. Additionally, a draft planning proposal has been provided to Council for discussion regarding the rezoning of Lots 1 and 2 DP 1195030 Majara Street from IN2 Light Industrial to R2 Low Density Residential (refer to attachment 2). The draft proposal suggests that potentially twenty-four lots could be created. An overview of these two proposals is provided below. Additionally,

12.7 Majara Street Planning Proposal

Attachment 3 - Planning Proposals Relating to Bungendore and its Immediate Surrounds and the Review of the Structure Plan - Council - 25 January 2017 (Continued)

there is substantial interest from developers and property owners in rezoning land on the edges of Bungendore. The location of the above planning proposals is shown in (Attachment 2).

The Rezoning process (Gateway process)

To initiate the rezoning process, a planning proposal is prepared. A planning proposal is a document that explains the intended effect of the proposed local environmental plan or amendment (the rezoning mechanism) and provides the justification for making it and facilitates the process. The intention of the gateway process is to allow the proposal to be reviewed at an early stage so that a decision as to whether to proceed can be made; before significant resources are committed. The stages are outlined below:

- 1 Council determines whether it supports the planning proposal.
- 2 If the planning proposal is supported, it is forwarded to the Minister for Planning for a gateway determination
- 3 If the Gateway determination permits the planning proposal to proceed, any required assessments will need to be undertaken. The planning proposal is then sent to relevant government agencies for comment and following this, exhibited for the period stated on the gateway determination.
- 4 Submissions are considered by Council and if required a revised planning proposal is sent to the Minister for Planning.
- 5 If the proposal is supported by the Minister, the local environmental plan is amended.

Only the planning proposal and supporting documents are exhibited. The written legal instrument (draft amending local environmental plan) is prepared by the Parliamentary Counsel when the planning proposal is finalised, immediately before it is made by the Minister or his delegates. The local environmental plan takes effect when it is published (notified) on the NSW government legislation website.

Further information on the process can be found in the NSW Department of Planning and Environment documents "*A guide to preparing local environmental plans*" and "*A guide to preparing planning proposals*".

Note - the planning proposal and accompanying report are only discussing broad concepts, the layout of the lots and design of roads and associated infrastructure is undertaken as part of the subdivision application process once the land has been rezoned.

Overview of Majara Street planning proposals

During the development of the draft *Palerang Local Environmental Plan 2014*, Council received a submission requesting that the lots (Lot 11, 12 and 13 Section 12 DP 976608 at the time) be rezoned to R2 Low Density Residential (pp 47, 48 and 49, Extraordinary Council meeting No.2 27 February 2014). The staff comment in the Council report is provided below:

- "the current development control plan Yarrowlumla LEP 2002-2(v) Village Zone includes the lots in the industrial precinct of Bungendore. Whilst all development control plans are development guidelines, the precincts included in the above development control plan have been part of the Bungendore land use planning system for over ten years
- it is also suggested that until further strategic planning work is undertaken on Bungendore and its immediate surrounds (not part of the Rural Lands Study) that the draft local environmental plan land use zones are not amended. It is a significant decision to remove industrial/employment lands from Bungendore when detailed strategic planning work has not

12.7 Majara Street Planning Proposal

Attachment 3 - Planning Proposals Relating to Bungendore and its Immediate Surrounds and the Review of the Structure Plan - Council - 25 January 2017 (Continued)

been undertaken, some of the land in the immediate surrounds of Bungendore is subject to flood and factors such as the road hierarchy require consideration. The section 117(2) Ministerial Direction 1.1 Business and Industrial Zones requires Council to retain the areas and locations of existing business and industrial zones unless there is substantial justification for removing it. In this instance, it is believed that the loss of land that has been identified as industrial land for some time for residential purposes is not appropriate. It is considered that no change is required."

The minutes of the Council meeting show there was no recommendation or discussion in relation to the staff comment.

Planning proposal for Lot 3 DP 1195030

This planning proposal seeks to rezone Lot 3 DP 1195030 from IN2 Light Industrial to R2 Low Density Residential (refer to Attachment 1). If rezoned, the land would be subdivided to create ten residential lots. As the lot is within the existing urban land use zones, town water is available.

Road layout - Page 6 of the traffic study shows the proposed lot and road layout (shown below).

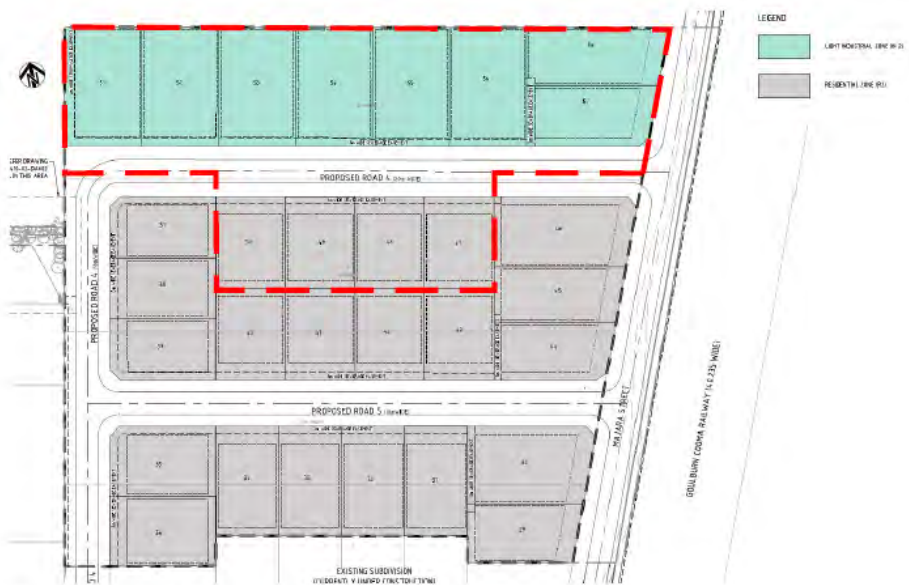


Figure 4: Majara St, Bungendore, Lots 3-4 Proposed Subdivision Layout

It is proposed that the road currently being constructed for the residential subdivision south of Lot 3 DP 1195030 will be used to access the lots to be created from Lot 3 DP 1195030 (shown in green). Additionally, the four lots included in the red area which are not part of the current subdivision will be included in the subdivision concerning Lot 3 DP 1195030. Whilst this approach is considered appropriate no final decision should be made until an acoustic report is received as a buffer area between the concrete batching plant and the proposed western residential lot may need to be included (see below re noise). Any measures required to mitigate noise issues will be constructed at the proponent's expense.

12.7 Majara Street Planning Proposal

Attachment 3 - Planning Proposals Relating to Bungendore and its Immediate Surrounds and the Review of the Structure Plan - Council - 25 January 2017 (Continued)

Stormwater - The stormwater from the Lot 3 DP 1195030 is proposed to drain to an existing 3.0m wide easement across Lot 101 DP 835461. As part of the construction works for the residential lots immediately to the south of this planning proposal, stormwater infrastructure within the easement has been improved and additional capacity provided. The design of these works has included consideration of this planning proposal and it is not expected that further works would be required.

Bushfire - It is recommended that prior to the planning proposal being referred for a Gateway determination that the reference in the bushfire report statement concerning the implication that the planning proposal is integrated development be corrected.

Noise - Page 20 of the planning proposal suggests several options for addressing potential noise from the concrete batching plant. These are:

- 1 An acoustic barrier.
- 2 A 10 metre buffer
- 3 A driveway on the western lot which would provide a 3-4 metre buffer.

It is suggested that it is appropriate to undertake an acoustic report if the planning proposal receives a Gateway determination to proceed to the assessment and consultation stage. This would enable treatment measures for noise to be considered.

Planning proposal for Lot 1 and 2 DP 1195030

A draft planning proposal has also been provided to Council for discussion concerning the rezoning of Lot 1 and 2 DP 1195030 from IN2 Light Industrial to R2 Low Density Residential (shown in Attachments 2 and 3). If rezoned, the land would be subdivided with a view to creating twenty-four residential lots. As with Lot 3 DP 1195030, town water is available.

Prior to the gazettal of the *Palerang Local Environmental Plan 2014*, the land was zoned No.2 (v) (Village) with a development control plan industrial precinct over it. The precinct was included in the Yarrowlumla Council Development Control Plan No. 1 November 1993, Yarrowlumla Development Control Plan – 2(V) Village Zone 2002 and the Palerang Development Control Plan – Yarrowlumla LEP 2002 2(v) Village Zone. During the period that these development control plans were in operation, it was common for rural councils to take this approach to the management of land uses in rural towns and villages.

The IN2 Light Industrial land use zone is the only industrial land use zone in Bungendore. The nearest industrial land use zones to Bungendore are Braidwood, Queanbeyan and the Australian Capital Territory (ACT).

The objectives of IN2 Light Industrial land use zone are:

- To provide a wide range of light industrial, warehouse and related land uses.
- To encourage employment opportunities and to support the viability of centres.
- To minimise any adverse effect of industry on other land uses.
- To enable other land uses that provide facilities or services to meet the day to day needs of workers in the area.
- To support and protect industrial land for industrial uses.
- To ensure that new development has regard to the character and amenity of the locality.

The *Palerang Local Environmental Plan 2014* permits light industry with consent in IN2 light industry zone however, it should be noted that the definition of light industry does not prohibit any industry - rather for the industry to be permissible it must meet the following definition:

12.7 Majara Street Planning Proposal

Attachment 3 - Planning Proposals Relating to Bungendore and its Immediate Surrounds and the Review of the Structure Plan - Council - 25 January 2017 (Continued)

light industry means a building or place used to carry out an industrial activity that does not interfere with the amenity of the neighbourhood by reason of noise, vibration, smell, fumes, smoke, vapour, steam, soot, ash, dust, waste water, waste products, grit or oil, or otherwise, and includes any of the following:

- (a) high technology industry,
- (b) home industry.

It is suggested that industry for instance which involves the transportation of materials would be unlikely to be able to meet the definition.

Attachment 3 illustrates the current land uses in the area of the planning proposals. As seen from the map there is a concrete batching plant and furniture manufacturing business adjacent to the Lots 1 and 2. The concrete batching plant was approved by Council in 1994. In 2016, Council refused a development application for the production of jersey barriers in the southern part of the lot associated with the concrete batching plant on the grounds that it could not satisfy the definition of light industry.

The following are a list matters that require consideration in the rezoning of Lot 1, 2 or 3 DP 1195030.

1. Residential development in the vicinity of industrial land does make it difficult for light industry to operate due to noise, the movement of vehicles and other amenity issues. As seen in Attachment 3 there are several industrial businesses adjacent to the IN2 area that is the subject of the planning proposals. However, it should also be noted that residential development in the existing R2 land use zone surrounding the planning proposal areas is well established or continuing to occur. A development application for seniors housing has been submitted to Council on land to the north of Lots 1, 2 and 3 DP 1195030 and it is possible that this development (if it receives development approval) may wish to expand onto the adjacent IN2 land in the future. Vehicles leaving the industrial lots in the vicinity of the planning proposals need to pass through a residential area in any direction to access either the Kings Highway, Bungendore or Tarago roads. It is suggested that it would be preferable for a 'greenfields' industrial area to be established just outside Bungendore but at this time there are no firm commitments for this to occur. However this would be part of the review of the Structure Plan review.
2. The land zoned IN2 is in multiple ownerships and each of the owners is likely to have a different plan for the use of the land.
3. Council has for a long time viewed Bungendore as being a key location in the regional freight network. The requirement for freight vehicles to pass through a residential area limits the ability to develop this network. As with the residential situation (above), it would be preferable to have an industrial area outside of Bungendore.
4. As Bungendore is a now medium-sized town and infill commercial and residential development continues to occur, it is necessary to have some industrial land in Bungendore to service the town and to generate potential employment for Bungendore residents. There is a need for diversity of employment rather than there being a high reliance on government related employment in Queanbeyan and the Australian Capital Territory (ACT). For these reasons the industrial land in Queanbeyan and the ACT should be not be viewed as being able to address the industrial needs of Bungendore. In addition, Bungendore has a price advantage over both the ACT and Queanbeyan with larger tracts of potential industrial land available in these locations and is likely to have cheaper purchase prices.
5. As part of the review of the Bungendore Structure Plan it is intended that potential 'greenfield' areas for both IN1 General Industrial and IN2 Light Industrial land use zones are identified. The exhibition of the draft Structure Plan would provide Council with the opportunity to discuss

12.7 Majara Street Planning Proposal

Attachment 3 - Planning Proposals Relating to Bungendore and its Immediate Surrounds and the Review of the Structure Plan - Council - 25 January 2017 (Continued)

the industrial needs of the town with existing and prospective industry businesses and developers.

6. The Ministerial Direction issued under section 117 of the NSW Environmental Planning and Assessment Act 1979, 1.1 Business and Industrial Zones has as its objectives, the following:
 - encourage employment growth in suitable locations,
 - protect employment land in business and industrial zones, and
 - support the viability of identified strategic centres.

The Direction applies in this instance and requires that:

- The planning proposal gives effect to the objectives of the direction.
- Retain the areas and locations of existing business and industrial zones
- Not reduce the total potential floor space area for industrial uses in industrial zones

If a planning proposal is not consistent with this Direction then it is necessary to justify this inconsistency with a strategy, study or demonstrate that it is accordance with a strategy prepared by the Department of Planning and Environment or is of minor significance.

7. In relation to the management of amenity, particularly noise and the suggestions of an acoustic wall or buffer, it is suggested that an assessment should be undertaken by an acoustic consultant with experience in industrial areas for all lots. Further it is suggested that consultation is required with the adjoining industrial property owners. As stated above the exhibition of the draft Bungendore Structure Plan would provide the opportunity to do this.

It is concluded that the rezoning of Lot 3 DP 1195030 is of a minor nature as it is only one lot which is not directly adjacent to the furniture manufacturing business, noise impacts from the nearby batching plant can be dealt with by an acoustic review and the stormwater generated by ten residential lots can be accommodated within the existing system. As a result it is recommended that Council refer the planning proposal concerning the rezoning of Lot 3 DP 1195030 from IN2 Light Industrial to R2 Low Density Residential (Attachment 1) to the Minister for Planning for a Gateway determination in accordance with section 56 of the *NSW Environmental Planning and Assessment Act 1979* subject to clarifying the following matters with the proponent:

- Correction of typographic errors.
- An error in relation to the light industrial precinct (p12).
- An error in relation to the permissibility of the concrete batching plant in IN2 (p14 and 20).
- Comment on the industrial situation in Bungendore.
- Other matters that may arise.

In relation to the future planning proposal for Lots 1 and 2 1195030, it is noted that these properties are adjacent to the furniture manufacturing business and concrete batching plant and the rezoning of this land would substantially decrease the town's industrial land supply. Without there being a strategy which takes into account the increase in residential development in this area and an analysis of the industrial needs of Bungendore it is considered premature to rezone this land to residential. Any such planning proposal should only be considered in the context of the future review to establish a single LEP for the new local government area.

Other strategic matters requiring attention in Bungendore

In addition to the above planning proposals there are numerous matters that require attention in an integrated manner in relation to Bungendore. These are:

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Attachment 3 - Planning Proposals Relating to Bungendore and its Immediate Surrounds and the Review of the Structure Plan - Council - 25 January 2017 (Continued)

Water - Council is continuing the assessment of groundwater in the Bungendore area so that an increase in the Bungendore town water supply entitlement can be sought. The next stage in this process is the development of a number of prospective production bores, with the aim of securing a suitable additional town water supply entitlement issued by DPI Water. Two targets have been identified with the intention being to commence field works possibly as early as February 2017. This milestone will be critical both in terms of the quantity and quality of water available. It is felt that all potable water for Bungendore should be sourced, treated and supplied as part of a Council managed town water supply.

Council should continue to work on the current groundwater investigations with a view to securing an increase in the Bungendore town water supply entitlement.

Integrated Water Cycle Management (IWCN) Strategy

The IWCN is a thirty year strategy which incorporates a total asset management plan and financial plan for Council's water and sewerage businesses. New government guidelines require this process to be reviewed on a four-yearly program with each second review to be a major IWCN review, and each alternate to be a more moderate review of the strategic business plan. The Strategy takes into account current and future land uses and available town water licenses. The background to this project was provided in the 9 November 2016 strategic planning report to Council (Item 9.1). A final draft of the first stage "Issues Paper" is currently being prepared by consultants and following this the Project Reference Group will meet to discuss the draft Strategy. The Reference Group will consist of community members, council and government agency staff and local business representatives.

Bungendore Structure Plan

Regardless of whether there is 'greenfield' residential development, there are numerous matters in Bungendore that require a holistic approach, some of these are; the management of the inner precincts of the town and their heritage attributes, the development of laneways and the land adjoining them, underutilised residential infill opportunities which may be sympathetic to the character of Bungendore (as described in the Palerang Development Control Plan), the road hierarchy and associated treatments, pedestrian and cycle routes, the location of industrial land, stormwater quality and quantity management, the long-term use of Bungendore Park and the provision of community facilities such as outdoor and indoor space for community events.

Currently, Council is preparing a revised Bungendore Structure Plan to ensure that the development of Bungendore occurs in a co-ordinated and efficient manner and in a direction that reflects the views of the community, government agencies and Council. The Structure Plan will be closely aligned with the IWCN Strategy and the ability to find a reliable groundwater supply. It is intended that the Structure Plan is reviewed and updated every four years over the life of the Plan, at the same time as the IWCN Strategy.

The Structure Plan will build on the *Bungendore Land Use Strategy and Structure Plan* which was adopted by Council on 5 August 2010 and endorsed by the Director-General of the NSW Department of Planning on 30 November 2011.

There is no single definition, either in NSW legislation or in the NSW planning community, of what constitutes a structure plan. It is suggested that a structure plan provides a framework for the co-ordinated provision and arrangement of future land use. It is a particularly important planning tool when land is held in multiple ownership, as in the instance of Bungendore. It links the provision of transport, public open space, utility and service networks, water management, social and other infrastructure such as roads. A structure plan is a medium to long term broad plan, an 'umbrella'

12.7 Majara Street Planning Proposal

Attachment 3 - Planning Proposals Relating to Bungendore and its Immediate Surrounds and the Review of the Structure Plan - Council - 25 January 2017 (Continued)

plan. The strategies for achieving the plan are contained in the 'tools' associated with it. For example the local environmental plan, the development control plan, development contributions plans, Council designs for roads and traffic management features, the management of stormwater in the southern part of Bungendore asset plans and landscape plans. The detail of each location for example the central business district or a residential area can be planned using a master plan.

The benefits of the process of preparing a structure plan are:

1. An awareness of previous and current work for all involved and the community – often people are not aware that work in an area has been undertaken and an outcome has either been determined or achieved.
2. The identification of the various perspectives of individuals and groups – when people are aware of previous and current work their perspective may alter and compromise or consensus may be reached on major issues.
3. The ability to discuss and make a decision about major issues – for example the identification and management of 'hot spot' and 'honey pot' areas, allowing a decision to be made and then the community can 'move on' from the issue(s).

The key benefits of having a structure plan for Bungendore are:

1. Infrastructure co-ordination (hard and soft) - structure plans identify sites for future infrastructure development, reduce land use conflicts and enable better staging of infrastructure provision to support land development
2. Land supply monitoring – structure plans enable the tracking of prospective amounts and yields (dwellings, employment etc.) of land to ensure the future supply and timely release of land for development.
3. Efficient subdivision and development approvals – structure plans address and resolve broader, more strategic planning issues ahead of detailed planning in respect to subdivision and development, allowing for more efficient assessment and approval processes.
4. Review and development of planning policy – structure plans can be used to measure the effectiveness of planning strategies and policies.
5. Guidance – structure plans can assist landowners and their representatives or decision making authorities to identify the specific issues and actions required to progress the land through the required planning and development processes.
6. Project co-ordination - non-government projects can be co-ordinated resulting in maximising opportunities for developers and the community.
7. A cohesive 'look' and 'feel' across developments in separate areas of Bungendore can be achieved.
8. There is a reduction in unintended consequences due to a lack of awareness of other projects or the 'direction/flavour' of an area.
9. An implementation plan can be prepared and over the life of a plan, the strategies are budgeted for and undertaken.

Currently, development is driven by developers and vacant land opportunities. There is limited ability for Council to co-ordinate infrastructure as the timing, funding and location of development is frequently unknown. Additionally, there are a large number of plans which either have no or limited links to each other.

12.7 Majara Street Planning Proposal

Attachment 3 - Planning Proposals Relating to Bungendore and its Immediate Surrounds and the Review of the Structure Plan - Council - 25 January 2017 (Continued)

Under the *NSW Environmental Planning and Assessment Act 1979*, a structure plan has no legal status. However, if a structure plan has been adopted by Council and is a major consideration in the management of development and infrastructure then it should be taken into account for infrastructure and land use decisions. Also it is likely that a revised structure plan will be submitted to the Secretary of the Department of Planning and Environment for endorsement.

Since the completion of the 2010 Structure Plan the following has occurred:

1. The current local environmental plan has been gazetted which has applied specific land use zones such as business, residential and industrial to areas of Bungendore moving away from a 'village' zoning with a wide range of permissible land uses across the entire town and land use precincts.
2. A new development control plan (Palerang Development Control Plan 2015 has been approved which includes the identification and description of the character of Bungendore and the inner Bungendore precincts. These precincts include the civic and retail/tourist areas.
3. A flood study has been completed, a recreation strategy commenced and the potable water supply has been enhanced through a new bore (*Curraandooley*, adjacent to Tarago Road).
4. The land in the Trucking Yard Lane area contains many new dwellings and the south Bungendore area is being subdivided for residential lots and numerous dwellings including townhouses have been erected. There are few vacant lots in the Elmslea area. At the time the Bungendore Land Use Strategy and Structure Plan was being prepared it was estimated that there were 913 existing dwellings (p20). The 2011 census found that there were 967 dwellings. The number of dwellings at the time of the 2016 census is likely to exceed 1000
5. The planning proposals outlined above have been received.
6. Residential development around the light industrial area has increased.
7. There is strong interest in 'greenfields' residential and industrial development on the edges of Bungendore.
8. An Aboriginal cultural heritage and revised native vegetation GIS (Geographic Information Systems) layer have been prepared. The native vegetation layer requires further work on the grassland areas surrounding Bungendore, however, it is expected that mapping work currently being undertaken by the NSW government will assist with this

The area to be considered in a review of the Bungendore Structure Plan should include:

- The existing urban area.
- The areas immediately around Bungendore.
- The gateway areas.
- The existing water and sewer treatment plants.

The suggested process and timeframes for preparing the reviewed Bungendore Structure Plan are:

task	timeframe
Preparation of draft Structure Plan	February 2017
Discussion with Council staff	March 2017
Discussion with government agencies	March 2017
Revised draft Structure Plan	April 2017
Council adopts plan for exhibition	end of April 2017

12.7 Majara Street Planning Proposal

Attachment 3 - Planning Proposals Relating to Bungendore and its Immediate Surrounds and the Review of the Structure Plan - Council - 25 January 2017 (Continued)

Exhibition for one month, workshops and comment from government agencies , displays at the markets, council foyer and community events)	May 2017
Collation of comments and submissions, preparation of report for council with a revised draft Structure Plan	June/July 2017
Adoption of the final structure Plan	August 2017

From the above it is clear that both the water supply issue and the Structure Plan need to proceed in tandem and that until these matters are finalised the prospect of considering any new planning proposals in the Bungendore area will be highly constrained.

Given this Council should:

1. Continue its work on reviewing the Bungendore Structure Plan.
2. Continue to work on the three existing planning proposals presently before Council being:
 - Lot 3 DP 1195030 Majara Street
 - North Bungendore
 - Bungendore EastNoting that in the case of the two latter proposals the Department of Planning requires additional information relating to water supply and the progress of the Structure Plan.
3. Not proceed to refer any new Planning Proposals for the Bungendore area to the Minister for Planning for a gateway determination until work on the groundwater and Structure Plan has been substantially completed and discussed with government agencies and the community. This includes Lot 1 and Lot 2 DP 1195030 Majara Street.

Council would also be aware from previous reports that a non-residential planning proposal for land acquired by Council in Bungendore is also progressing. This relates to Lot 5 DP 1204393, Malbon Street, which seeks to rezone Commercial B2 land to Infrastructure (carpark). This proposal has already received a gateway determination and will be finalised in due course.

Implications

Legal

While there is no provision in the *NSW Environmental Planning and Assessment Act 1979*, that prevents a planning proposal being lodged by an individual or organisation, two points should be taken into account:

- 1 Where a planning proposal is lodged, section 55 (1) of the Act states that the relevant planning authority (in most instances, Council) is to prepare the planning proposal. In many instances, the planning proposal is prepared by consultants but with Council 'having the final say' on its content, this enables Council to 'shape' the planning proposal.
- 2 There is a low risk that a planning proposal proponent may request a *rezoning review* (previously known as a pre-gateway review) if Council does not submit the planning proposal to the Minister under section 56 of the Act for a gateway determination. The review is undertaken by a planning panel and in accordance with the Department's document, *a guide*

12.7 Majara Street Planning Proposal

Attachment 3 - Planning Proposals Relating to Bungendore and its Immediate Surrounds and the Review of the Structure Plan - Council - 25 January 2017 (Continued)

to preparing local environmental plans (prepared under section 55(3) of the Act). The panel applies a Strategic Merit Test when considering the planning proposal. The matters in the Test include whether the planning proposal being consistent with any strategies prepared by the Department of Planning and Environment and if the proposal is responding to a change in circumstances such as changing demography. Where a proposal seeks to amend controls (generally a local environmental plan) that are less than five years old (as is the case for *Palerang Local Environmental Plan 2014*), the proposal will only be considered where it clearly meets the Strategy Merit Test.

Policy

There is no Council policy regarding the management of planning proposals in the former Palerang Local government area. The revised Structure Plan will be a policy document which will link directly to the Community Strategic Plan, IWCN, asset plans and the comprehensive local environmental plan. The effect of the adoption of the recommendations in this report will be to place constraints on any new planning proposals foreshadowed for the Bungendore area until such time as a Structure Plan is in place or the LEP is reviewed on a Council wide scale.

Environmental

Environmental matters have been considered in the planning proposal for Lot 3 DP 1195030. The revised Structure Plan, IWCN and assessment of groundwater availability will consider environmental matters. These will be detailed in future reports to Council.

Asset

Any future residential subdivision will be required to pay development contributions (section 94 and 64) to Council for the management of Bungendore assets in addition to providing the required hard infrastructure necessary for residential use.

Social / Cultural

If Lot 3 DP 1195030 is developed for residential use, there will be an increase of approximately thirty people. It is suggested that this is a minor impact and that there are sufficient existing services and infrastructure to accommodate this increase. Additionally, a proportion of section 94 contributions will be allocated to the provision of community infrastructure. The social environment will be a major consideration in the development of the revised Structure Plan.

Economic

It is suggested that the development of Lot 3 DP 1195030 for residential purposes and loss of one lot zoned industrial as a result, is not economically detrimental to Bungendore. However, it is important that the economic development of Bungendore is part of the revised Structure Plan. Council has commenced this with the engagement of a consultant economist to consider economic opportunities and to combine this with work being undertaken by Council staff on the types of land uses in the commercial and industrial areas of Bungendore and the amount of available land for these land uses.

Strategic

Whilst Council seeks to encourage the development of Bungendore, it is important that development occurs in a co-ordinated manner (refer to the above section on the Structure Plan) and that staff

12.7 Majara Street Planning Proposal

Attachment 3 - Planning Proposals Relating to Bungendore and its Immediate Surrounds and the Review of the Structure Plan - Council - 25 January 2017 (Continued)

time is available to prepare a draft local environmental plan for the amalgamated Council within the next two years. Without this approach, the Queanbeyan-Palerang planning system will be operating on an 'ad-hoc' basis which will have expensive unwanted long term consequences for the whole of the local government area.

Engagement

There has been no community or government agency consultation on either the planning proposal for Lot 3 DP 1195030, the IWCM Strategy (apart from the DPIWater) or the Structure Plan. When Planning proposals are given a gateway determination the public exhibition period is generally 28 days. Agency consultation is also likely to be required.

Financial

Staff time and the cost of any studies associated with the planning proposal would be paid for by the developer, but co-ordinating the assessment and overview of the project involves considerable staff time. The preparation of the revised Structure Plan and IWCM Strategy are included in the 16/17 Operational Plan and budget and need to be the focus of where Council commits its strategic planning resources. Other than the three planning proposals recommended to progress in this report no additional resources are planned for any new planning proposals.

Resources (including staff)

The preparation of this report has involved considerable research primarily by two staff members as well as meetings and the like. Further work will be required if the report's recommendations are adopted.

Conclusion

It is concluded that Bungendore continues to be subject to development pressures and that it is necessary to take a strategic approach to the growth of Bungendore as well as some of the current land use and infrastructure matters. The best approach to do this is to continue work on the Structure Plan, IWCM Strategy, groundwater and the draft local environmental plan, making this a priority over any planning proposals which seek to increase develop either residential, commercial or industrial land. However, as Lot 3 DP 1195030 is considered minor, Council should seek a Gateway determination for this to proceed.

Attachments

Attachment 1	Attachment 1 Planning Proposal - Majara Street - December 2016 Revision <i>(Under Separate Cover)</i>
Attachment 2	Attachment 2 Draft and current Planning Proposals <i>(Under Separate Cover)</i>
Attachment 3	Attachment 3 South Bungendore Landuses <i>(Under Separate Cover)</i>

QUEANBEYAN-PALERANG REGIONAL COUNCIL

Council Meeting Attachment

28 FEBRUARY 2018

ITEM 12.7 MAJARA STREET PLANNING PROPOSAL

ATTACHMENT 4 FINAL NOISE ASSESSMENT FOR MAJARA STREET
 PLANNING PROPOSAL, BUNGENDORE



Acoustics
Vibration
Structural Dynamics

PLANNING PROPOSAL FOR LOT 3 DP 1195030, BUNGENDORE

Environmental Noise Assessment

18 August 2017

Queanbeyan-Palerang Regional Council

TJ750-01F02 (r3) Noise Assessment



Sydney Melbourne Brisbane Gold Coast Kuwait
Renzo Tonin & Associates (NSW) Pty Ltd ABN 29 117 462 861
Level 1/418A Elizabeth St SURRY HILLS NSW 2010 | PO Box 877 STRAWBERRY HILLS NSW 2012
P (02) 8218 0500 F (02) 8218 0501 sydney@renzotonin.com.au www.renzotonin.com.au



RENZO TONIN & ASSOCIATES

18 AUGUST 2017

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We have derived data in this report from information sourced from the Client (if any) and/or available in the public domain at the time or times outlined in this report. The passage of time, manifestation of latent conditions or impacts of future events may require further examination and re-evaluation of the data, findings, observations and conclusions expressed in this report.

We have prepared this report in accordance with the usual care and thoroughness of the consulting profession, for the sole purpose described above and by reference to applicable standards, guidelines, procedures and practices at the date of issue of this report. For the reasons outlined above, however, no other warranty or guarantee, whether expressed or implied, is made as to the data, observations and findings expressed in this report, to the extent permitted by law.

The information contained herein is for the purpose of acoustics only. No claims are made and no liability is accepted in respect of design and construction issues falling outside of the specialist field of acoustics engineering including and not limited to structural integrity, fire rating, architectural buildability and fit-for-purpose, waterproofing and the like. Supplementary professional advice should be sought in respect of these issues.

RENZO TONIN & ASSOCIATES

18 AUGUST 2017

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RENZO TONIN & ASSOCIATES

18 AUGUST 2017

1 Introduction

Renzo Tonin & Associates was engaged by Queanbeyan-Palerang Regional Council to provide an environmental noise assessment for the Planning Proposal for Lot 3 DP 1195030, located on Majara Street in Bungendore. The proposal is for the rezoning of the site from IN2 Light Industrial to R2 Low Density Residential. The purpose of the noise study was to determine potential impacts from existing industrial facilities to the west of the proposed site and future light industrial uses to the north of the site.

The report quantifies noise imission onto the site from the existing and future industrial uses surrounding the site. Industrial noise impacting the site is assessed in accordance with the NSW Environment Protection Authority's (EPA) 'Industrial Noise Policy' (INP – 2000) and other relevant policies, guidelines and/or legislations.

The work documented in this report was carried out in accordance with the Renzo Tonin & Associates Quality Assurance System, which is based on Australian Standard / NZS ISO 9001. Appendix A contains a glossary of acoustic terms used in this report.

2 Project Description

2.1 Site Description

The Site, Lot 3, DP 1195030 is located in the southeast of the rural township of Bungendore. The site is bounded by following features:

- Majara Street and a rail line are located to the east of the site. Rural farmlands are located further to the east of the Majara Street.
- Existing industrial facilities, including Bungendore Concrete and Uneke Furniture are located to the west of the site and share common boundaries with the site. It is understood that the operation of the industrial facilities is limited to the daytime hours of 7am to 6pm, Monday to Friday and 7am to 12pm on Saturdays. Additionally, the manager of the concrete plant advised that a compressor is activated around 6am that operates a pneumatic equipment on the silos.
- Future light industrial estate, fronting King Street is proposed to be located to the north of the site. The development of the proposed light industrial estate has been approved for 14 lots; however, it is currently a greenfield site and no industrial facilities have been constructed at the time of this assessment.
- A residential development along Finch Street is located to the south of the site, with a future residential development to be located between Finch Street and the subject site.

Figure 1 below shows the site, surrounds and monitoring locations.

Figure 1 – Site, Surrounds and Monitoring Locations



2.2 Assessment Methodology

The following methodology was used to assess the potential noise impacts from the existing and proposed industrial developments onto the subject site;

- Identify noise sources from the nearby industrial developments potentially affecting the subject site.
- Determine the noise immission from the existing nearby industrial developments onto the subject site.
- Determine existing background noise levels representative of the subject site without industrial noise.
- Use monitored ambient noise and background levels to establish noise goals in accordance with the standard noise criteria issued by the relevant authority.
- Determine the extent of noise impact from the industrial developments on the proposed residential site using predictive noise modelling software.
- Identify where noise emission from the site may exceed the relevant criteria.
- Where noise emission from the site is predicted to exceed the relevant criteria examine potential amelioration methods.

3 Existing Noise Environment

Criteria for the assessment of industrial noise are usually derived from the existing noise environment of an area. Appendix B of the NSW EPA's 'Industrial Noise Policy' (INP) outlines two methods for determining the background noise level of an area, being 'B1 – Long-term background noise method' and 'B2 – Short-term background noise method'. This assessment has used a combination of long-term and short-term noise monitoring.

As the noise environment of an area almost always varies over time, background noise levels need to be determined for the purpose of determining construction noise goals. The INP outlines the following standard time periods over which the background noise levels are to be determined:

- **Day** is defined as 7:00am to 6:00pm, Monday to Saturday and 8:00am to 6:00pm Sundays & Public Holidays.
- **Evening** is defined as 6:00pm to 10:00pm, Monday to Sunday & Public Holidays.
- **Night** is defined as 10:00pm to 7:00am, Monday to Saturday and 10:00pm to 8:00am Sundays & Public Holidays.

The INP also outlines methods for assessing 'shoulder periods' being shorter periods on either side of a standard period, where the standard period noise levels are not representative. For this project a shoulder period is considered for the period between 6am and 7am where the night time period background noise level is not representative. This was considered for the assessment of the compressor and pneumatic equipment at the concrete plant.

3.1 Noise Monitoring Locations

Long-term and short-term noise monitoring was undertaken at the following locations to determine existing L_{eq} industrial noise levels and background L_{90} noise levels at the subject site.

Table 3.1 – Noise Monitoring Locations

ID	Description
Long-Term Noise Monitoring	
Location L1	15 Finch Street The noise monitor was located in the rear yard of the residential property, approx. 150m to the south of the subject site, in the free field (ie. away from any buildings). Noise levels were dominated by natural sounds from flora and fauna. The noise environment at this location is considered representative of the subject site without noise from nearby industrial sites.
Short-Term Noise Monitoring	
Location S1, S2	Lot 3 DP1195030 (The Site) Noise monitors were located at the north-western side of the subject site and approx. 3.5m east of the common boundary fence with the adjoining concrete batch plant. The microphones of the monitors were located in the free-field at 1.5m (S1) and 4.5m (S2) above the ground level to represent ground floor and first floor levels of future residential dwellings. Noise levels were dominated by industrial noise from the concrete batch plant and furniture factory.

ID	Description
Location S3	<p>Lot 3 DP1195030 (The Site)</p> <p>A noise monitor was located along the northern lot boundary of the site and approx. 55m east of the common boundary fence with the adjoining concrete batch plant. The microphone of the noise monitor was located in the free-field at 1.5m above the ground level. Noise levels were dominated by industrial noise from the concrete batch plant and furniture factory.</p>

Figure 1 presents the monitoring locations and surrounding area.

3.2 Long-Term Noise Measurement Results

Long-term (unattended) noise monitoring was conducted from Tuesday 4th to Wednesday 12th July 2017 to quantify the existing ambient noise environment.

Weather information was obtained from the Bureau of Meteorology for the area over this monitoring period and any data adversely affected by rain, wind or extraneous noise were discarded.

The graphical recorded output from the long-term noise monitoring is included in APPENDIX C of this report. The graphs in APPENDIX C were analysed to determine a single assessment background level (ABL) for each day, evening and night period, in accordance with the NSW 'Industrial Noise Policy'.

Existing ambient and background noise levels at the long-term noise monitoring location (L1) are presented in Table 3.2 below and are considered representative of the noise environment at the subject site without existing industrial noise contributions.

Table 3.2 – Measured Existing Background (L₉₀) & Ambient (L_{eq}) Noise Levels, dB(A)

Monitoring Location	L ₉₀ Background Noise Levels				L _{eq} Ambient Noise Levels			
	Shoulder ¹	Day ²	Evening ³	Night ⁴	Shoulder ¹	Day ²	Evening ³	Night ⁴
Location L1 – 15 Finch Street	36	36	29	22	48	47	38	40

- Notes:
1. The shoulder period has been established for 6am to 7am. The shoulder period rating background level is taken to be the mid-point between the rating background levels between the two assessment periods that are on either side of the shoulder period.
 2. Day: 7am to 6pm Monday to Saturday and 8am to 6pm Sundays & Public Holidays
 3. Evening: 6pm to 10pm Monday to Sunday & Public Holidays
 4. Night: 10pm to 7am Monday to Saturday and 10pm to 8am Sundays & Public Holidays

3.3 Short-Term Noise Measurement Results

Short-term noise measurements were undertaken during the morning of Wednesday 12th July 2017 from 7am to 8.30am to establish the existing industrial noise levels used to validate the noise model.

Investigation into the operation of the nearby industrial sites revealed the dominant noise source potentially impacting the subject site would be generated by the adjoining concrete batch plant. Through discussions with the management of the concrete plant it was confirmed that the operating hours are 7am to 6pm, Monday to Friday and 7am to 12pm on Saturdays. The number of concrete trucks entering the site and loaded with concrete during a day may be up to 20 based on demand and

weather. Primary operation of the concrete plant typically occurs between 7am and 8am daily and throughout the day as required. Typical activities include:

- Transfer of materials from elevated silos into concrete agitator trucks,
- Vibratory shaking of the silos to loosen materials,
- Mixing of materials in concrete agitator trucks,
- Operation of front end loader to transfer materials from storage bins to feeders,
- Wash out of concrete agitator trucks and equipment at the end of deliveries.
- Truck delivery of cement as required. This may occur once per fortnight or up to twice per week.

During the noise measurements, mechanical plant associated with the concrete plant was audible and continuous throughout its operations. Noise from vibratory shaking of the silos occurred for 1 to 5 minutes during the loading of each concrete truck and was clearly audible over the background noise environment. Mixing of the concrete in the agitator trucks was continuous for approximately 10 minutes per truck and was the main contribution to the noise environment during operations.

In addition to the loading and mixing process, intermittent noise was emitted from a pneumatic valve on the silo which provides a pulse of air approximately every 20 seconds, emitting a puff sound that is clearly audible over the background noise. It was confirmed by management of the concrete plant that air pulsing occurs while the compressor is operating. The compressor is usually switched on when staff arrive in the morning, typically between 6am and 6.30am, and switched off at the end of daily operations on the site, typically between 3pm and 5pm.

The duration of the process of loading and mixing the concrete in the trucks was approximately one hour. Once the process was complete and the concrete agitator trucks left the site, all plant appeared to be shut down and there was no significant noise emission from the site, with the exception of the pneumatic pulse from the silo, which is switched off at the end of daily operations.

Management of the concrete plant confirmed that the main activities relating to the concrete batching are located in the northern area of the site. The southern area of the site is used for storage and is not used for typical operational activities.

Activity from the adjacent furniture factory typically occurs between 7am and 5pm and includes operation of a dust collector and various woodworking machinery. The operations of the factory are considered small to medium scale with use of machinery understood to be intermittent and located within the factory building. Noise from the furniture factory was just audible at the monitoring location S1.

A summary of the short-term measurement results is presented in Table 3.3.

Table 3.3 – Measured Existing Industrial (L_{eq}) Source Noise Levels, dB(A)

Date	Time	Noise Source	Location	Microphone Height	$L_{Aeq, 15\text{minute}}$ (Plant On)	$L_{Aeq, 15\text{minute}}$ (Plant Off) ¹	L_{Aeq} Source Noise Level
12 July 2017	7.45am to 8.00am	Concrete plant	S1	1.5m	52	43	51
			S2	4.5m	55		55
			S3	1.5m	50		49
12 July 2017	8.00am to 8.15am	Furniture factory	S1	1.5m	48	43	46
			S2	4.5m	50		49
			S3	1.5m	48		46

Notes: 1. L_{A90} background noise level for the period from 6.45am to 7.00am at Location L1, immediately prior to operation of industrial noise sources

Table 3.4 – Measured Existing Industrial (L_{max}) Source Noise Levels - Pneumatic Air Puff, dB(A)

Date	Time	Noise Source	Location	Microphone Height	L_{Amax} Noise Level
12 July 2017	7.33am	Pneumatic air puff from concrete silo	S1	1.5m	52
			S2	4.5m	55
			S3	1.5m	50

Notes: 1. Short pulse of air occurring approximately every 20 seconds.

4 Acoustic Criteria

4.1 Industrial Noise Policy (INP)

The NSW Industrial Noise Policy (INP) assessment has two components:

- Controlling intrusive noise impacts in the short-term for residences; and
- Maintaining noise level amenity for particular land uses, for residences and other land uses.

4.1.1 Intrusive Noise Criteria

According to the INP, the intrusiveness of a noise source may generally be considered acceptable if the equivalent continuous (energy-average) A-weighted level of noise from the source (represented by the L_{Aeq} descriptor) does not exceed the background noise level measured in the absence of the source by more than 5dB(A). The intrusiveness criterion is summarised as follows:

- $L_{Aeq,15minute} \leq \text{Rating Background Level (RBL) plus 5dB}$

It is noted that where the RBL is measured to be less than 30dB(A), then it is set to 30dB(A), in accordance with Section 3.1 of the INP.

4.1.2 Amenity Noise Criteria

The INP amenity criteria are designed to maintain noise level amenity for particular land uses, including residential and other land uses. The INP recommends base acceptable noise levels for various receivers, including residential, commercial, industrial receivers and other sensitive receivers in Table 2.1 of the INP. Noise from new sources need to be designed such that the cumulative effect does not produce levels that would significantly exceed the criterion.

Table 4.1 – INP Amenity Criteria, dB(A)

Type of Receiver	Indicative Noise Amenity Area	Time of Day	Recommended $L_{Aeq(Period)}$ Noise Level	
			Acceptable	Recommended Maximum
Residence	Suburban	Day	55	60
		Evening	45	50
		Night	40	45

Note: 1. Daytime 7.00 am to 6.00 pm; Evening 6.00 pm to 10.00 pm; Night time 10.00 pm to 7.00 am
 2. On Sundays and Public Holidays – Daytime 8.00 am to 6.00 pm; Evening 6.00 pm to 10.00 pm; Night time 10.00 pm to 8.00 am
 3. The L_{Aeq} index corresponds to the level of noise equivalent to the energy average of noise levels occurring over a measurement period.

4.1.3 Summary of Noise Goals

In accordance with the INP, noise impact should be assessed in terms of both intrusiveness and amenity. The applicable noise criteria were determined from the background and ambient noise monitoring carried out at the nearby residential location.

Given that the industrial facilities operate during the day time period, only the criteria for the day period are presented herein.

A summary of the project specific noise criteria is set out below.

Table 4.2 – Summary of Project Specific Noise Criteria, dB(A)

Type of receiver	Time of Day	Intrusiveness Criteria ¹	Amenity Criteria ²
Residence	Day	36 + 5 = 41	55

Notes: 1. Intrusiveness criteria determined based on daytime background noise levels monitored at Location L1
2. The daytime amenity criteria have been adopted for the residential type receivers in a suburban area

The table above shows that the intrusiveness criteria of 41dB(A) is more stringent than the amenity criteria of 55dB(A). Therefore, for a conservative approach, the intrusiveness criteria have been applied for the noise assessment.

4.2 Sleep Disturbance Criteria

Given that the intermittent pneumatic air puff from the concrete silo occurs from 6am, which is during the night time period, noise imission onto the proposed residential site has been assessed for its potential to disturb sleep. The NSW EPA has made the following policy statement with respect to sleep disturbance:

“Peak noise level events, such as reversing beepers, noise from heavy items being dropped or other high noise level events, have the potential to cause sleep disturbance. The potential for high noise level events at night and effects on sleep should be addressed in noise assessments for both the construction and operational phases of a development. The INP does not specifically address sleep disturbance from high noise level events.

Research on sleep disturbance is reviewed in the NSW Road Noise Policy. This review concluded that the range of results is sufficiently diverse that it was not reasonable to issue new noise criteria for sleep disturbance.

From the research, the EPA recognised that the current sleep disturbance criterion of an $L_{A1, (1 \text{ minute})}$ not exceeding the $L_{A90, (15 \text{ minute})}$ by more than 15 dB(A) is not ideal. Nevertheless, as there is insufficient evidence to determine what should replace it, the EPA will continue to use it as a guide to identify the likelihood of sleep disturbance. This means that where the criterion is met, sleep disturbance is not likely, but where it is not met, a more detailed analysis is required.

The detailed analysis should cover the maximum noise level or $L_{A1, (1 \text{ minute})}$, that is, the extent to which the maximum noise level exceeds the background level and the number of times this happens during the night-time period. Some guidance on possible impact is contained in the review of research results in the NSW Road Noise Policy. Other factors that may be important in assessing the extent of impacts on sleep include:

- *how often high noise events will occur*
- *time of day (normally between 10pm and 7am)*
- *whether there are times of day when there is a clear change in the noise environment (such as during early morning shoulder periods).*

The $L_{A1, (1 \text{ minute})}$ descriptor is meant to represent a maximum noise level measured under 'fast' time response. The EPA will accept analysis based on either $L_{A1, (1 \text{ minute})}$ or $L_A (Max)$.

Source: <http://www.epa.nsw.gov.au/noise/applicnotesindustnoise.htm>

Where the background noise levels are less than 40dB(A), some studies indicate that the above approach may result in noise limits that are unnecessarily strict.

In relation to maximum noise level events, the NSW 'Road Noise Policy' (NSW EPA, 2012) identifies several investigations into the impacts of intermittent and emerging noise sources on the disturbance of sleep. Reference is made to enHealth report (2004) which notes the following in relation to maximum noise level events:

"As a rule in planning for short-term or transient noise events, for good sleep over 8 hours the indoor sound pressure level measured as a maximum instantaneous value should not exceed approximately 45 dB(A) L_{Amax} more than 10 or 15 times per night."

The NSW 'Road Noise Policy' summaries the research on sleep disturbance to date as follows:

*"maximum internal noise levels below 50–55 dB(A) are unlikely to awaken people from sleep
one or two noise events per night, with maximum internal noise levels of 65–70 dB(A), are not likely to affect health and wellbeing significantly"*

The above references identify that internal noise levels of 45dB(A) and up to 55dB(A), may have the potential to impact sleep but are unlikely to cause awakenings. On the assumption that there is a 10dB(A) outside-to-inside noise loss through an open window (see NSW 'Industrial Noise Policy', p17), the above references indicate that external noise levels of L_{Amax} 55 to 65dB(A) are unlikely to cause awakening reactions.

To assess the likelihood of sleep disturbance, an initial screening level of $(L_{Amax} \text{ or } L_{A1(1min)}) \leq L_{A90(15min)} + 15\text{dB(A)}$ is used. In situations where this results in an external screening level of less than 55dB(A), a

minimum screening level of 55dB(A) is set. Note that this is equivalent to a maximum internal noise level of 45dB(A) with windows open.

Where there are noise events found to exceed the initial screening level, further analysis is made to identify:

- The likely number of events that might occur during the night assessment period
- Whether events exceed an 'awakening reaction' level of $L_{A1(1min)}$ 65dB(A).

Therefore, based on the measured noise levels for the shoulder period from 6am to 7am, the initial screening level is as follows:

$$\text{Initial Screening level} = L_{A90(15min)} + 15 = (36 + 15) = 51\text{dB(A)}$$

It can be seen that the screening level was determined to be less than 55dB(A). Therefore, based on the above information, the sleep disturbance assessment levels for the project are presented in Table 4.3.

Table 4.3 – $L_{A1,1min}$ (or L_{Amax}) Sleep Disturbance Assessment Levels, dB(A)

Receiver Location	External Screening Level ($L_{A90,15min} + 15$)	Awakening Reaction Level
All residential receivers	55 ¹	65

Notes: 1. Initial screening level determined to be less than 55dB(A); therefore, external screening level set at 55dB(A)

5 Noise Assessment

5.1 Assessment of Measurement Results

An assessment of the measured noise levels presented in Table 3.3 from the existing industrial facilities was conducted and results are presented below.

Table 5.1 – Assessment of Existing $L_{Aeq(15min)}$ Industrial Noise Levels Impacting the Subject Site, dB(A)

Location	Microphone Height	Period	Criteria	$L_{Aeq(15min)}$ Measured Noise Level ¹	Complies?
Concrete Batch Plant					
Location S1	1.5m (ground floor)	Day	47	51	No, exceeds by 10dB(A)
Location S2	4.5m (first floor)			55	No, exceeds by 14dB(A)
Location S3	1.5m (ground floor)			49	No, exceeds by 8dB(A)
Furniture Factory					
Location S1	1.5m (ground floor)	Day	47	46	No, exceeds by 5dB(A)
Location S2	4.5m (first floor)			49	No, exceeds by 8dB(A)
Location S3	1.5m (ground floor)			46	No, exceeds by 5dB(A)

Notes: ¹ L_{Aeq} noise contribution from industrial source, as presented in Table 3.3

The results presented above show that noise from the concrete plant and furniture factory exceed the criteria at the monitoring locations by up to 10dB(A) for a ground floor location and up to 14dB(A) for a first floor location. Therefore, noise mitigation measures would be required in order to achieve compliance with the INP criteria for residential developments.

5.2 Sleep Disturbance Assessment

In addition to the assessment of measured $L_{Aeq(15min)}$ noise levels, Table 5.2 below presents an assessment of the measured L_{Amax} noise levels from Table 3.4 for sleep disturbance. The measured L_{Amax} noise levels represent the noise from the pneumatic pulse of air from the concrete plant silos during the night time shoulder period from 6am to 7am that has the potential to cause sleep disturbance.

Table 5.2 – Assessment of Sleep Disturbance from Existing L_{Amax} Industrial Noise Levels, dB(A)

Location	Height	Period	Criteria	L_{Aeq} Measured Noise Level ¹	Complies?
Location S1	1.5m (ground floor)	Night shoulder (6am to 7am)	55	52	Yes
Location S2	4.5m (first floor)			55	Yes
Location S3	1.5m (ground floor)			50	Yes

Notes: ¹ L_{Amax} noise contribution from industrial source, as presented in Table 3.4

The results above indicate that existing L_{Amax} noise levels from the concrete plant would comply with the applicable sleep disturbance external screening limit of 55dB(A) at the nearest point to the noise source on the subject site. Therefore, no noise mitigation measures would be required for sleep disturbance.

5.3 Noise Modelling Methodology

Noise modelling was undertaken in addition to on-site measurements of industrial noise levels to assist in determining the noise impact across the subject site and in turn determining reasonable and feasible noise mitigation measures. The noise model was calibrated using the on-site measured noise levels.

The 3D noise model was based upon aerial maps of the area and layout plans for the proposed light industrial subdivision to the north of the subject site. Noise predictions for the development were carried out in accordance with ISO9613 as implemented by the Cadna-A computer modelling software. The software takes into account sound radiation patterns, acoustic shielding and potential reflections from intervening building elements, and noise attenuation due to distance.

The following assumptions and mitigation measures were included for the purpose of noise predictions:

- As observed on site, a 2.5m high solid wall was located on the common boundary between the concrete plant and the furniture factory.
- Noise sources representing the concrete truck mixing and silo operation were modelled at a height of 3.5m above the ground level.
- Noise source representing movement of trucks around the concrete plant was modelled in the northern area of the site.
- Development of the approved light industrial subdivision adjacent to the northern boundary of the subject site was modelled based on the layout plans approved by Queanbeyan-Palerang Regional Council as part of DA.2015.172 (drawing no. 3002456-DA10 Rev 4, dated 11th March 2016).
- A 2m high acoustic fence was modelled along the common boundary between the subject site and the approved light industrial subdivision to the north, in accordance with Condition 10 of the Conditions of Consent issued for DA.2015.172.
- Noise sources associated with the approved light industrial subdivision to the north were assumed to include truck movements along the access roads within the site. It was assumed that up to 4 trucks per hour would access the site.
- The receiver height was assessed at 1.5m above the ground level to represent single storey dwellings.

5.4 Noise Modelling Results

Six scenarios have been assessed to represent the presence of the light industrial subdivision to the north of the subject site, the presence of dwellings on the subject site and the implementation of various noise walls along the northern and eastern boundaries of the subject site. The results are presented below.

Noise modelling results are presented as noise contours maps covering the subject site, representing external noise levels on ground floor levels, applicable to single storey dwellings. The green shaded areas represent areas that comply with the 41dB(A) INP intrusiveness criterion.

5.4.1 Scenario 1

Scenario 1 represents the existing state of the subject site, where:

- No light industrial subdivision to the north of the subject site;
- No noise wall on the common boundary between the subject site and the concrete plant; and
- No dwellings on the subject site.

Figure 2 – Noise Modelling Results for Scenario 1



The modelling results for Scenario 1 show that noise impacts from the existing industrial sites would exceed the applicable criteria across the entire subject site based on the current situation, as there are no intervening structures to provide any shielding.

5.4.2 Scenario 2

Scenario 2 has been based on the following:

- Inclusion of approved light industrial subdivision to the north of the subject site;
- A 2m high noise wall on the common boundary between the subject site and approved light industrial subdivision;
- No noise wall on the common boundary between the subject site and the concrete plant; and
- No dwellings on the subject site.

Figure 3 – Noise Modelling Results for Scenario 2



The modelling results for Scenario 2 show that if the approved light industrial subdivision to the north of the subject site is developed and a 2m high noise wall is constructed along the northern boundary, the buildings from the light industrial subdivision would provide some shielding of noise from the concrete plant and furniture factory to the eastern and northern areas of the subject site. However, the 2m high noise wall is not expected to provide significant noise shielding to the subject site. As a result, compliance with the applicable criteria is shown for parts of the northern and eastern areas of the subject site.

5.4.3 Scenario 3

Scenario 3 has been based on the following:

- Inclusion of approved light industrial subdivision to the north of the subject site;
- A 2m high noise wall on the common boundary between the subject site and approved light industrial subdivision;
- A 2m high noise wall on the common boundary between the subject site and the concrete plant; and
- No dwellings on the subject site.

Figure 4 – Noise Modelling Results for Scenario 3



The modelling results for Scenario 3 show that the results are very similar to the results for Scenario 2. It is noted that the 2m high noise walls provide minimal noise shielding and are only effective in areas directly behind the walls. As with Scenario 2, compliance with the criteria is shown for parts of the northern and eastern areas of the subject site.

5.4.4 Scenario 4

Scenario 4 has been based on the following:

- Inclusion of approved light industrial subdivision to the north of the subject site;
- A 2m high noise wall on the common boundary between the subject site and approved light industrial subdivision;
- No noise wall on the common boundary between the subject site and the concrete plant; and
- Inclusion of single storey dwellings on the subject site, representative of potential subdivision layout with dwellings positioned along the western boundary to optimise noise shielding effect.

Figure 5 – Noise Modelling Results for Scenario 4



The modelling results for Scenario 4 show that shielding is provided by the buildings within the light industrial subdivision to the north and the dwellings within the subject site. Positioning dwellings along the western site boundary is shown to be effective at providing shielding to other dwellings on the site such that compliance with the criteria is generally shown for the eastern and southern sides of the dwellings. However, noise impact on the western and northern sides of the dwellings would exceed the applicable criteria.

5.4.5 Scenario 5

Scenario 5 has been based on the following:

- No industrial subdivision to the north of the subject site;
- No noise wall on the common boundary between the subject site and approved light industrial subdivision;
- No noise wall on the common boundary between the subject site and the concrete plant; and
- Inclusion of single storey dwellings on the subject site, representative of potential subdivision layout with dwellings positioned along the western boundary to optimise noise shielding effect.

Figure 6 – Noise Modelling Results for Scenario 5



A comparison of the results for Scenario 4 and Scenario 5 show that the buildings and 2m high wall associated with the approved light industrial subdivision provides significant noise shielding benefits to the subject site. This scenario provides an appreciation of the noise impacts onto the subject site from existing industrial noise sources should the approved light industrial subdivision to the north not proceed.

Noise shielding provided by the proposed dwellings within the subject site generally results in compliance with the applicable noise criteria for the eastern and southern sides of the dwellings. However, noise impact on the western and northern sides of the dwellings would exceed the applicable criteria.

5.4.6 Scenario 6

Scenario 6 has been based on the following:

- No light industrial subdivision to the north of the subject site;
- A 4m high noise wall on the northern boundary of the subject site;
- A 4m high noise wall on the common boundary between the subject site and the concrete plant; and
- Inclusion of single storey dwellings on the subject site, representative of potential subdivision layout with dwellings positioned along the western boundary to optimise noise shielding effect.

Figure 7 – Noise Modelling Results for Scenario 6



Scenario 6 is similar to that of Scenario 5, with the addition of 4m high noise walls on the northern and western site boundaries. A comparison of the results for Scenario 5 and Scenario 6 shows the noise shielding benefits that are provided by the 4m high noise walls. This scenario provides an appreciation of the noise impacts onto the subject site from existing industrial noise sources should the approved light industrial subdivision to the north not proceed.

Noise shielding provided by the proposed dwellings within the subject site generally results in compliance with the applicable noise criteria for the eastern and southern sides of the dwellings. However, noise impact on the western and northern sides of the dwellings would likely exceed the applicable criteria.

5.5 Discussion

The noise contours presented in Figure 2 to Figure 7 represent external noise levels on the ground floor levels of future proposed dwellings (ie. 1.5m above ground level).

Results show that the existing industrial facilities generate noise levels that exceed the INP intrusiveness criteria across the subject site. When the approved light industrial subdivision to the north of the site is developed, the industrial buildings are likely to provide some shielding of noise from the concrete plant and furniture factory.

The inclusion of 2m high noise walls along the northern and western site boundaries of the subject site would provide minimal shielding benefits as the noise sources at the concrete plant are generally located at heights more than 2m above the ground. Noise walls of 4m in height along the northern and western site boundaries would provide some shielding benefits; however, exceedances of the INP criteria are still predicted for the majority of the subject site. Noise walls of a greater height would provide a greater level of shielding; however, may not be reasonable and feasible in terms of constructability, cost, overshadowing and visual impacts.

Positioning dwellings along the western site boundary was shown to be effective in providing shielding benefits to other dwellings to the east of the site. However, noise impact to the external areas of these dwellings would likely exceed the INP criteria. Internal amenity may be achieved through the acoustic treatment of the dwellings.

Recommendations for in-principal noise control solutions to reduce noise impact to residential dwellings is provided in the following section.

6 Recommendations

The following recommendations provide in principle noise control solutions to reduce noise impacts to residential receivers. This information is presented for the purpose of the preparation of the proposed residential zoning and shall not be used for construction unless otherwise approved in writing by an acoustic consultant. Assistance of an acoustic consultant must be sought at the detailed design phase of these works to provide the necessary design details and specifications prior to construction.

The advice provided here is in respect of acoustics only. Supplementary professional advice may need to be sought in respect of fire ratings, structural design, build ability, fitness for purpose and the like.

Methods available to mitigate industrial noise include, but are not limited to:

1. Reducing noise at source,
2. Noise walls or barriers,
3. Land-use planning, site design, building layout and building treatment.

It is not within the developer's control to change or reduce noise at the source. Therefore, only Options 2 and 3 are viable options for reducing industrial noise levels for the subject site.

6.1 Noise Walls

As discussed in Section 5.5, noise walls located along the northern and western site boundaries may provide some shielding from industrial noise upon the subject site. It is noted that noise walls of up to 2m high were shown to have minimal benefits. It is recommended that further acoustic advice be sought regarding the optimum height of noise walls once lot boundaries have been established.

The construction of the noise wall can be from any durable material with sufficient mass to prevent direct noise transmission e.g. masonry, fibrous-cement, lapped and capped timber fence, polycarbonate, or any combination of such materials, provided they withstand the weather elements. A natural barrier of trees or shrubs is not an effective noise screen.

A noise wall can be very effective for mitigating industrial noise as long as there are no breaks in the barrier. However, in areas where the noise wall will be discontinuous (for example, for drainage purposes) an overlap of at least three times the width of the gap should exist in between the two sections of the noise wall.

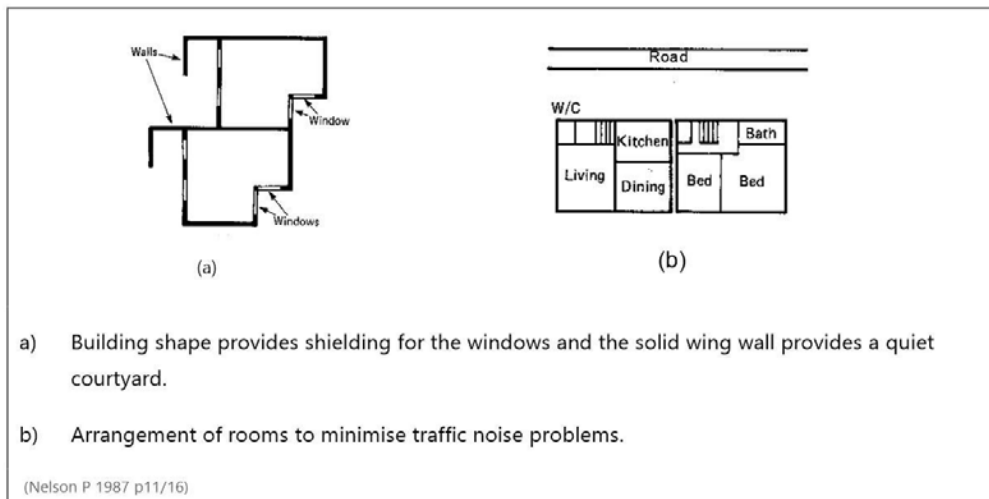
6.2 Site and Building Design

Residential dwellings constructed in noise affected areas can be designed so that their layouts minimise noise in studying, living and sleeping areas. Additionally, courtyards and open space areas can be located away from the noise source, using the building as a buffer to obtain a quiet outdoor environment. Within the building itself, locate less sensitive rooms closest to the industrial noise source,

so that these essentially form a barrier between the industrial noise source and noise sensitive rooms such as bedrooms and study's. Where possible, locate the building further away from the industrial noise source, thereby reducing industrial noise at the facade.

Figure 8 below provides examples of 'self protecting' building design with reference to road traffic noise, which would also be applicable to industrial noise.

Figure 8 – Examples of 'Self-Protecting' Buildings



Using the above site and building design concepts, the use of "quiet house" dwellings adjacent to the boundaries with the industrial developments can be incorporated into the site. Quiet house dwellings may also consist of double storey buildings which will provide additional shielding of noise to other properties within the residential subdivision area.

It is noted that "quiet house" dwellings should incorporate the following principles:

- All "quiet house" dwellings should be designed as two-storey dwellings.
- Where feasible, dwellings should be attached to each other to create a continuous acoustic type barrier.
- Living and sleeping areas should be located away from the noise source, while wet areas, utility rooms and non-habitable areas should be designed to form a buffer zone and block the noise to the living and sleeping areas.
- If a bedroom on the first floor cannot be shielded by a bathroom or other non-habitable area, the bedroom facade facing the noise source should be blanked out with no opening windows.
- Extra acoustic treatment to the dwellings should be considered in addition to planning of room layouts to further reduce noise to sensitive areas.

6.3 Building Treatment

Building treatment should only be considered for residential dwellings where the INP criteria is exceeded and other noise mitigation measures are either exhausted or are not cost effective.

Any building treatment should be designed to achieve the internal noise levels set out in Australian Standard 2107:2016 'Recommended design sound levels and reverberation times for building interiors' (AS2017:2016).

AS2017:2016 recommends design criteria for conditions affecting the acoustic environment within occupied spaces that take into account the function of the area(s). The sound levels are to apply for a fully fitted out and completed building, but excluding occupant noise. The Standard is applicable to steady-state or quasi-steady state sounds such as mechanical services equipment, industrial noise and road traffic noise intrusion, but not intended for transient or variable sources such as aircraft noise, railways and construction noise.

The noise level ranges from the Standard for residential dwellings are reproduced in the table below.

Table 6.1 – Recommended Design Sound Levels for Residential Dwellings, dB(A)

Type of occupancy/ activity	Design Sound Level ($L_{Aeq,1}$) Range
Houses and apartments in suburban areas or near minor roads –	
Living areas	30 to 40
Sleeping areas (night time)	30 to 35
Work areas	35 to 40
Apartment common areas (e.g. foyer, lift lobby)	45 to 50

Building treatment options that may be considered in order to achieve the AS2107:2016 internal criteria are:

- Provide glazing with sufficient acoustic performance for windows facing the noise source including the installation of acoustic seals for operable windows.
- Provide doors with sufficient acoustic performance for doors facing the noise source including the installation of acoustic seals.
- Facades facing the noise source should be of masonry construction.
- If the internal criteria can only be achieved with windows and doors closed, then fresh air mechanical ventilation (eg. acoustic wall ventilators) should be provided to ensure fresh airflow inside the dwelling so to meet the requirements of the Building Code of Australia.

It is noted that the recommended options provided are preliminary and should be used for the planning process only. Where the rezoning of the site is approved, more detailed noise assessments should be undertaken during the detailed design stage of the project.

7 Conclusion

An assessment of industrial noise impact on the proposed rezoning of Lot 3 DP 1195030, located on Majara Street in Bungendore, from IN2 Light Industrial to R2 Low Density Residential has been undertaken.

Industrial noise impacting the site has been assessed in accordance with the NSW Environment Protection Authority's (EPA) 'Industrial Noise Policy' (INP) 2000.

On-site measurements of existing industrial noise were assessed to exceed the INP intrusiveness criteria. Additionally, measured maximum noise levels for the assessment of sleep disturbance were determined to comply with the applicable sleep disturbance external screening limit and the limit for awakening reactions within the subject site.

Noise contours at receiver heights of 1.5m representing ground floor levels of dwellings were prepared for the day time period for various scenarios based on various noise wall and building configurations.

In-principle noise control recommendations in the form of site and building design and building treatment are provided for consideration during the planning process for areas within the proposed residential subdivision where noise exceedances were predicted through the noise contours.

APPENDIX A Glossary of Terminology

The following is a brief description of the technical terms used to describe noise to assist in understanding the technical issues presented.

Adverse weather	Weather effects that enhance noise (that is, wind and temperature inversions) that occur at a site for a significant period of time (that is, wind occurring more than 30% of the time in any assessment period in any season and/or temperature inversions occurring more than 30% of the nights in winter).
Ambient noise	The all-encompassing noise associated within a given environment at a given time, usually composed of sound from all sources near and far.
Assessment period	The period in a day over which assessments are made.
Assessment point	A point at which noise measurements are taken or estimated. A point at which noise measurements are taken or estimated.
Background noise	Background noise is the term used to describe the underlying level of noise present in the ambient noise, measured in the absence of the noise under investigation, when extraneous noise is removed. It is described as the average of the minimum noise levels measured on a sound level meter and is measured statistically as the A-weighted noise level exceeded for ninety percent of a sample period. This is represented as the L90 noise level (see below).
Decibel (dB)	The units that sound is measured in. The following are examples of the decibel readings of every day sounds: 0dB The faintest sound we can hear 30dB A quiet library or in a quiet location in the country 45dB Typical office space. Ambience in the city at night 60dB CBD mall at lunch time 70dB The sound of a car passing on the street 80dB Loud music played at home 90dB The sound of a truck passing on the street 100dB The sound of a rock band 115dB Limit of sound permitted in industry 120dB Deafening
dB(A)	A-weighted decibels. The A-weighting noise filter simulates the response of the human ear at relatively low levels, where the ear is not as effective in hearing low frequency sounds as it is in hearing high frequency sounds. That is, low frequency sounds of the same dB level are not heard as loud as high frequency sounds. The sound level meter replicates the human response of the ear by using an electronic filter which is called the "A" filter. A sound level measured with this filter switched on is denoted as dB(A). Practically all noise is measured using the A filter.
dB(C)	C-weighted decibels. The C-weighting noise filter simulates the response of the human ear at relatively high levels, where the human ear is nearly equally effective at hearing from mid-low frequency (63Hz) to mid-high frequency (4kHz), but is less effective outside these frequencies.
Frequency	Frequency is synonymous to pitch. Sounds have a pitch which is peculiar to the nature of the sound generator. For example, the sound of a tiny bell has a high pitch and the sound of a bass drum has a low pitch. Frequency or pitch can be measured on a scale in units of Hertz or Hz.
Impulsive noise	Having a high peak of short duration or a sequence of such peaks. A sequence of impulses in rapid succession is termed repetitive impulsive noise.
Intermittent noise	The level suddenly drops to that of the background noise several times during the period of observation. The time during which the noise remains at levels different from that of the ambient is one second or more.
L _{Max}	The maximum sound pressure level measured over a given period.
L _{Min}	The minimum sound pressure level measured over a given period.

RENZO TONIN & ASSOCIATES

18 AUGUST 2017

L ₁	The sound pressure level that is exceeded for 1% of the time for which the given sound is measured.
L ₁₀	The sound pressure level that is exceeded for 10% of the time for which the given sound is measured.
L ₉₀	The level of noise exceeded for 90% of the time. The bottom 10% of the sample is the L90 noise level expressed in units of dB(A).
L _{eq}	The "equivalent noise level" is the summation of noise events and integrated over a selected period of time.
Reflection	Sound wave changed in direction of propagation due to a solid object obscuring its path.
SEL	Sound Exposure Level (SEL) is the constant sound level which, if maintained for a period of 1 second would have the same acoustic energy as the measured noise event. SEL noise measurements are useful as they can be converted to obtain L _{eq} sound levels over any period of time and can be used for predicting noise at various locations.
Sound	A fluctuation of air pressure which is propagated as a wave through air.
Sound absorption	The ability of a material to absorb sound energy through its conversion into thermal energy.
Sound level meter	An instrument consisting of a microphone, amplifier and indicating device, having a declared performance and designed to measure sound pressure levels.
Sound pressure level	The level of noise, usually expressed in decibels, as measured by a standard sound level meter with a microphone.
Sound power level	Ten times the logarithm to the base 10 of the ratio of the sound power of the source to the reference sound power.
Tonal noise	Containing a prominent frequency and characterised by a definite pitch.

APPENDIX B Long-Term Noise Monitoring Methodology

B.1 Noise Monitoring Equipment

A long-term unattended noise monitor consists of a sound level meter housed inside a weather resistant enclosure. Noise levels are monitored continuously with statistical data stored in memory for every 15-minute period.

Long term noise monitoring was conducted using the following instrumentation:

Description	Type	Octave band data	Logger location(s)
RTA06 (NTi Audio XL2, with low noise microphone)	Type 1	1/1	L1
Notes: All meters comply with AS IEC 61672-1:2004 'Electroacoustics – sound Level Meters' and designated either Type 1 or Type 2 as per table; and are suitable for field use.			

The equipment was calibrated prior and subsequent to the measurement period using a Bruel & Kjaer Type 4230 or 4231 calibrator. No significant drift in calibration was observed.

B.2 Meteorology During Monitoring

Measurements affected by extraneous noise, wind (greater than 5m/s) or rain were excluded from the recorded data in accordance with the NSW INP. Determination of extraneous meteorological conditions was based on data provided by the Bureau of Meteorology (BOM), for a location considered representative of the noise monitoring location(s). However, the data was adjusted to account for the height difference between the BOM weather station, where wind speed and direction is recorded at a height of 10m above ground level, and the microphone location, which is typically 1.5m above ground level (and less than 3m). The correction factor applied to the data is based on Table C.1 of ISO 4354:2009 'Wind actions on structures'.

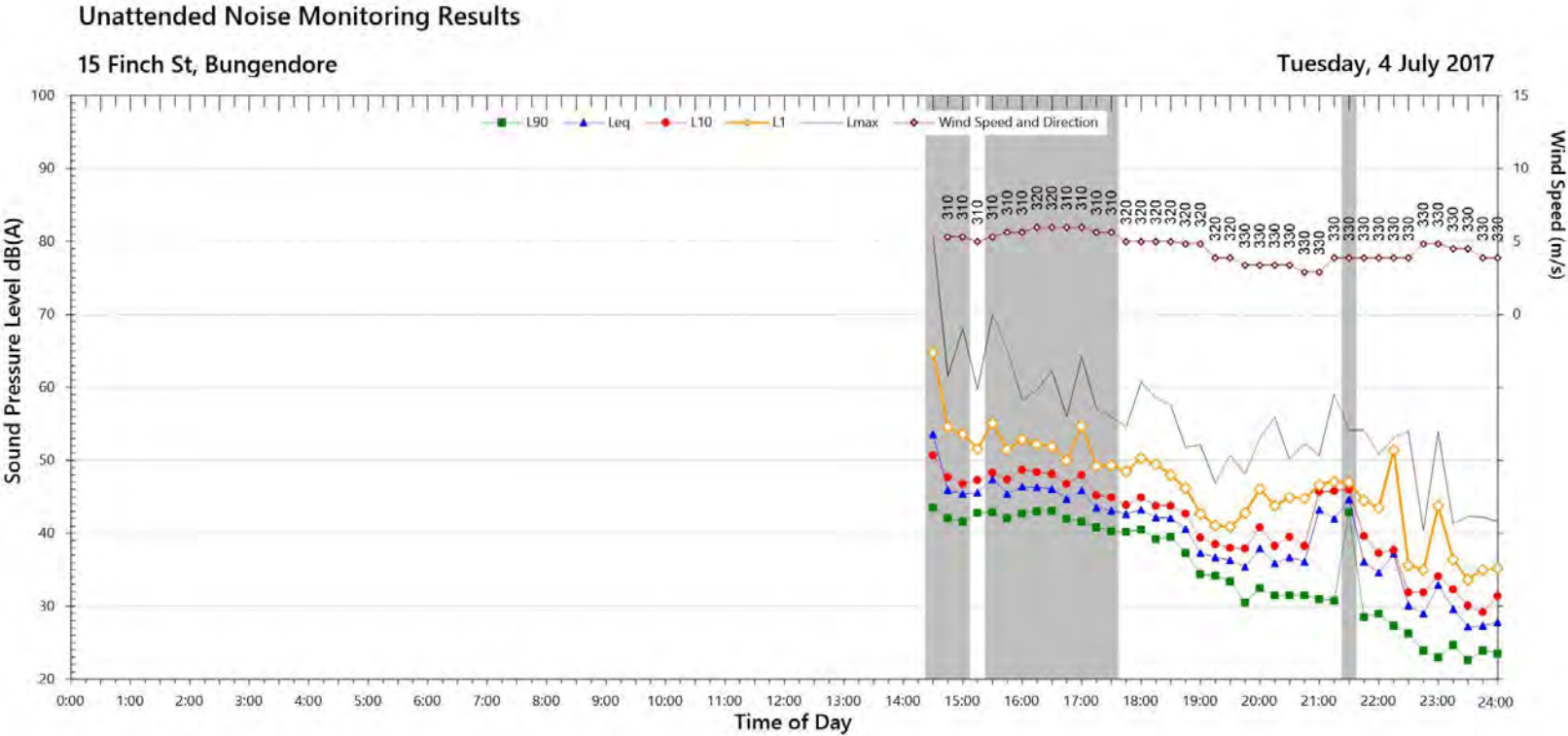
B.3 Noise vs Time Graphs

Noise almost always varies with time. Noise environments can be described using various descriptors to show how a noise ranges about a level. In this report, noise values measured or referred to include the L_{10} , L_{90} , and L_{eq} levels. The statistical descriptors L_{10} and L_{90} measure the noise level exceeded for 10% and 90% of the sample measurement time. The L_{eq} level is the equivalent continuous noise level or the level averaged on an equal energy basis. Measurement sample periods are usually ten to fifteen minutes. The Noise -vs- Time graphs representing measured noise levels, as presented in this report, illustrate these concepts for the broadband dB(A) results.

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APPENDIX C Long-Term Noise Monitoring Results



NSW Industrial Noise Policy (Free Field)			
Descriptor	Day ²	Evening ³	Night ^{4,5}
L ₉₀	-	29.0	21.8
L _{Aeq}	-	39.2	41.8

- Notes:
1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Day" is the period from 8am till 6pm on Sundays and 7am till 6pm on other days.

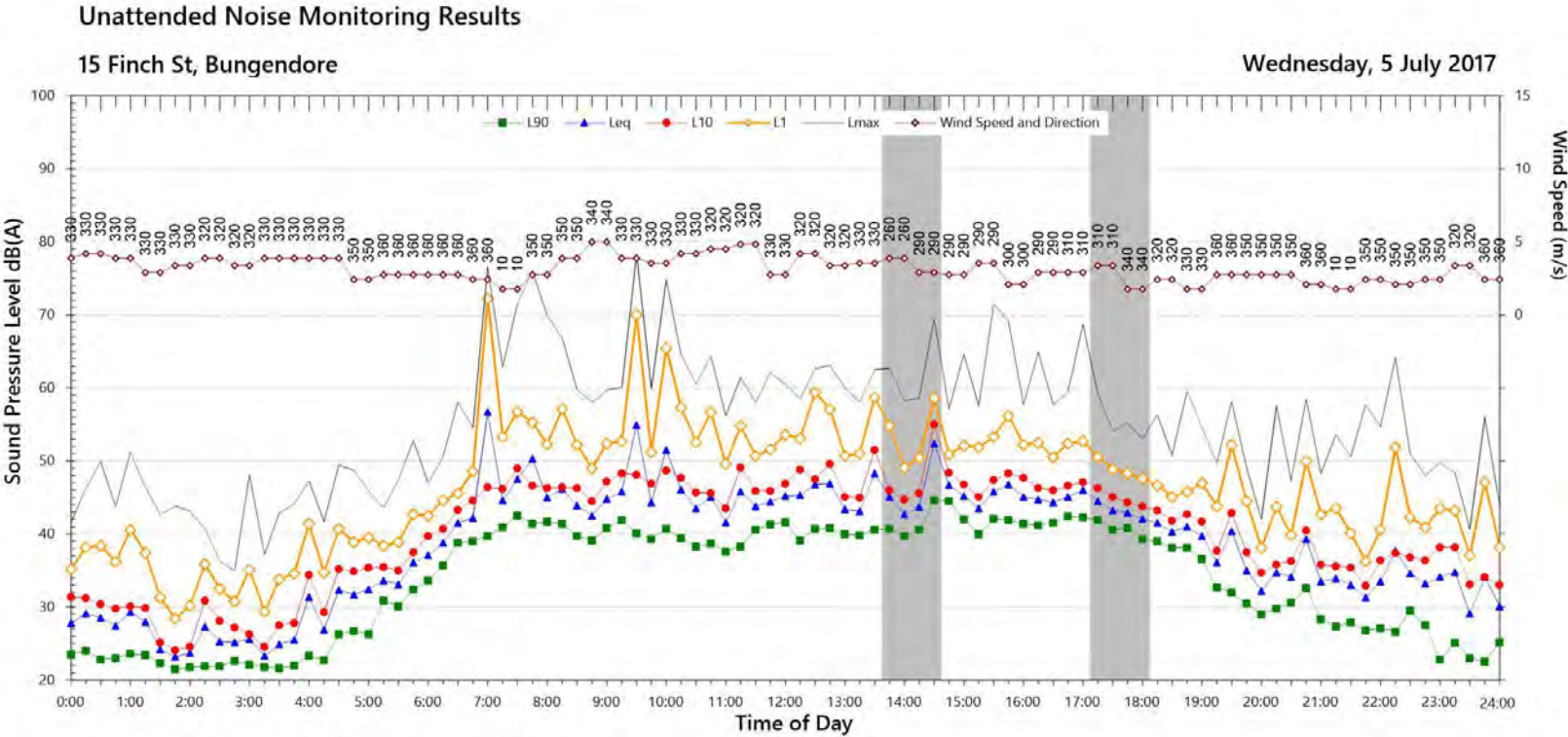
3. "Evening" is the period from 6pm till 10pm

4. "Night" relates to the remaining periods

5. "Night" relates to period from 10pm on this graph to morning on the following graph.

6. Graphed data measured in free-field, tabulated results facade corrected

7. Night time L₁₀ values are shown only where L₁₀ > 65dB(A) and where L₁₀ - Leq ≥ 15dB(A)



NSW Industrial Noise Policy (Free Field)			
Descriptor	Day ²	Evening ³	Night ^{4,5}
L ₉₀	38.7	27.1	21.2
L _{Aeq}	46.7	37.5	39.7

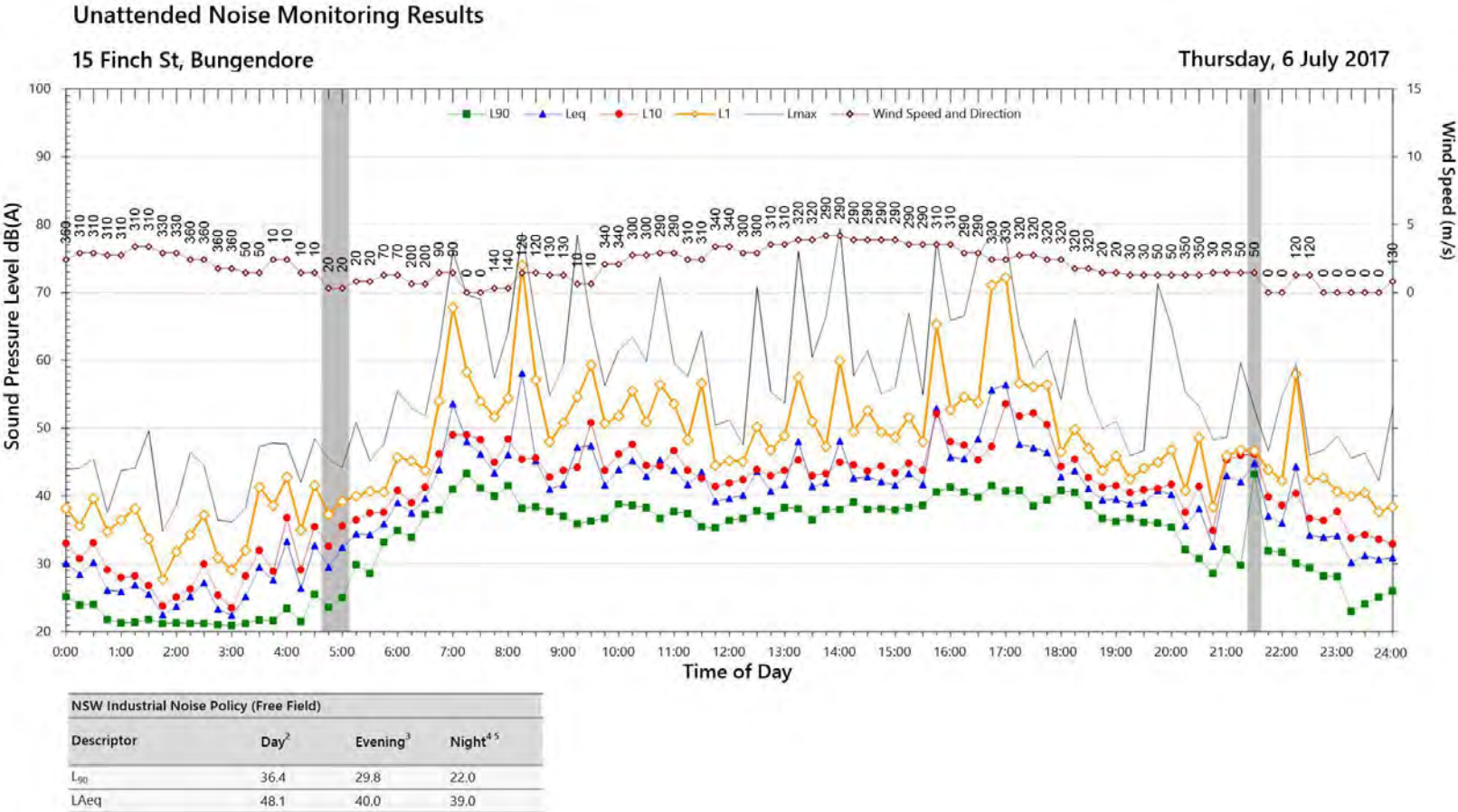
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise – data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am till 6pm on other days.
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field, tabulated results facade corrected
7. Night time L₁₀ values are shown only where L₁₀ > 65dB(A) and where L₁₀ - L_{eq} ≥ 15dB(A)

Data File: 2017-07-04_SLM_000_123_Rpt_Report.txt

T7750-01M01 15 Finch St Bungendore (r0)

QTE-26 (rev 15) Logger Graphs Program



Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise – data in these periods are excluded from calculations.
3. "Evening" is the period from 6pm till 10pm
6. Graphed data measured in free-field, tabulated results facade corrected

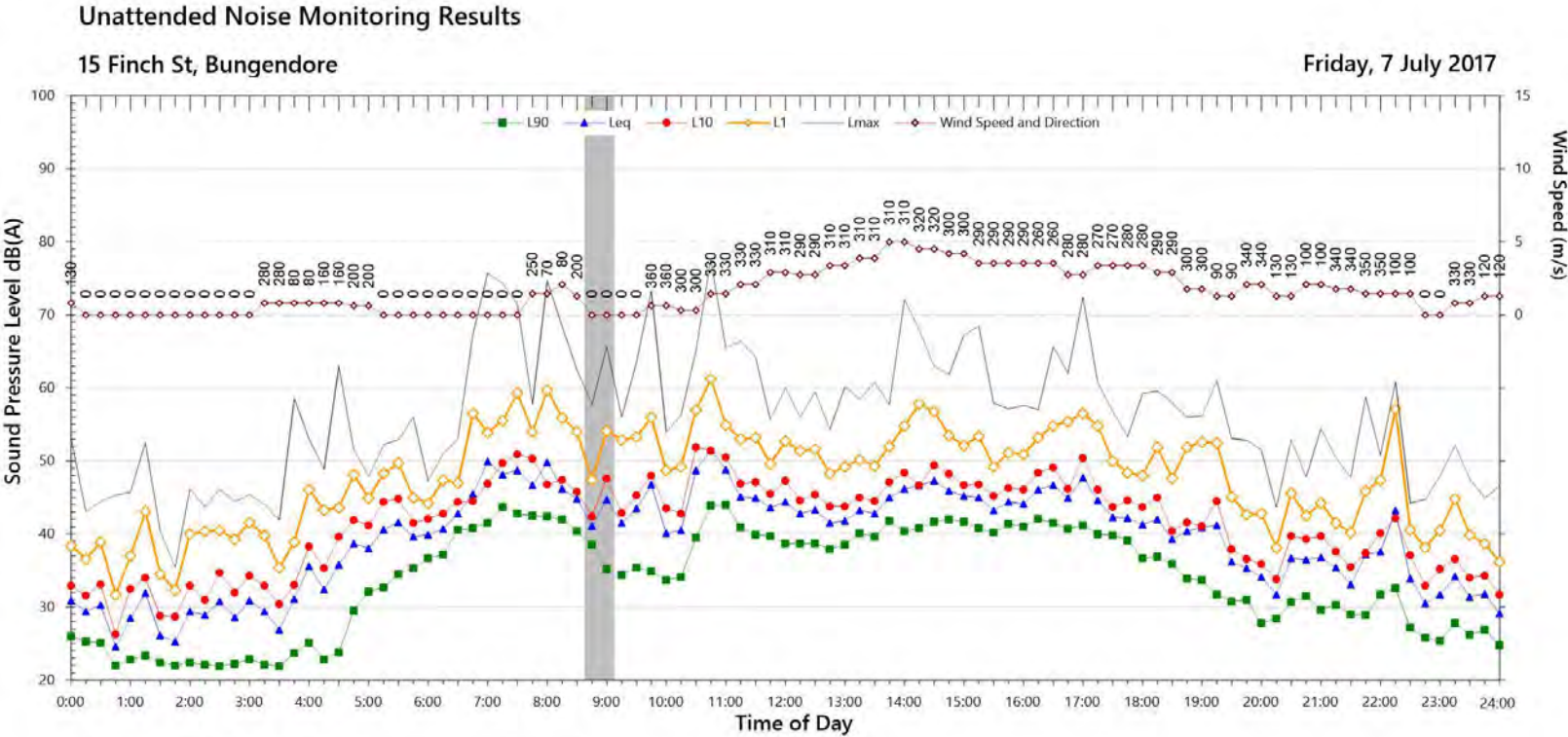
2. "Day" is the period from 8am till 6pm on Sundays and 7am till 6pm on other days.
4. "Night" relates to the remaining periods
7. Night time L₁₀ values are shown only where L₁₀ > 65dB(A) and where L₁₀ - Leq ≥ 15dB(A)

5. "Night" relates to period from 10pm on this graph to morning on the following graph.

Data File: 2017-07-04_SLM_000_123_Rpt_Report.txt

TJ750-01M01 15 Finch St Bungendore (r0)

QTE-26 (rev 15) Logger Graphs Program



NSW Industrial Noise Policy (Free Field)			
Descriptor	Day ²	Evening ³	Night ^{4,5}
L ₉₀	35.4	28.4	22.7
L _{Aeq}	45.7	38.1	35.5

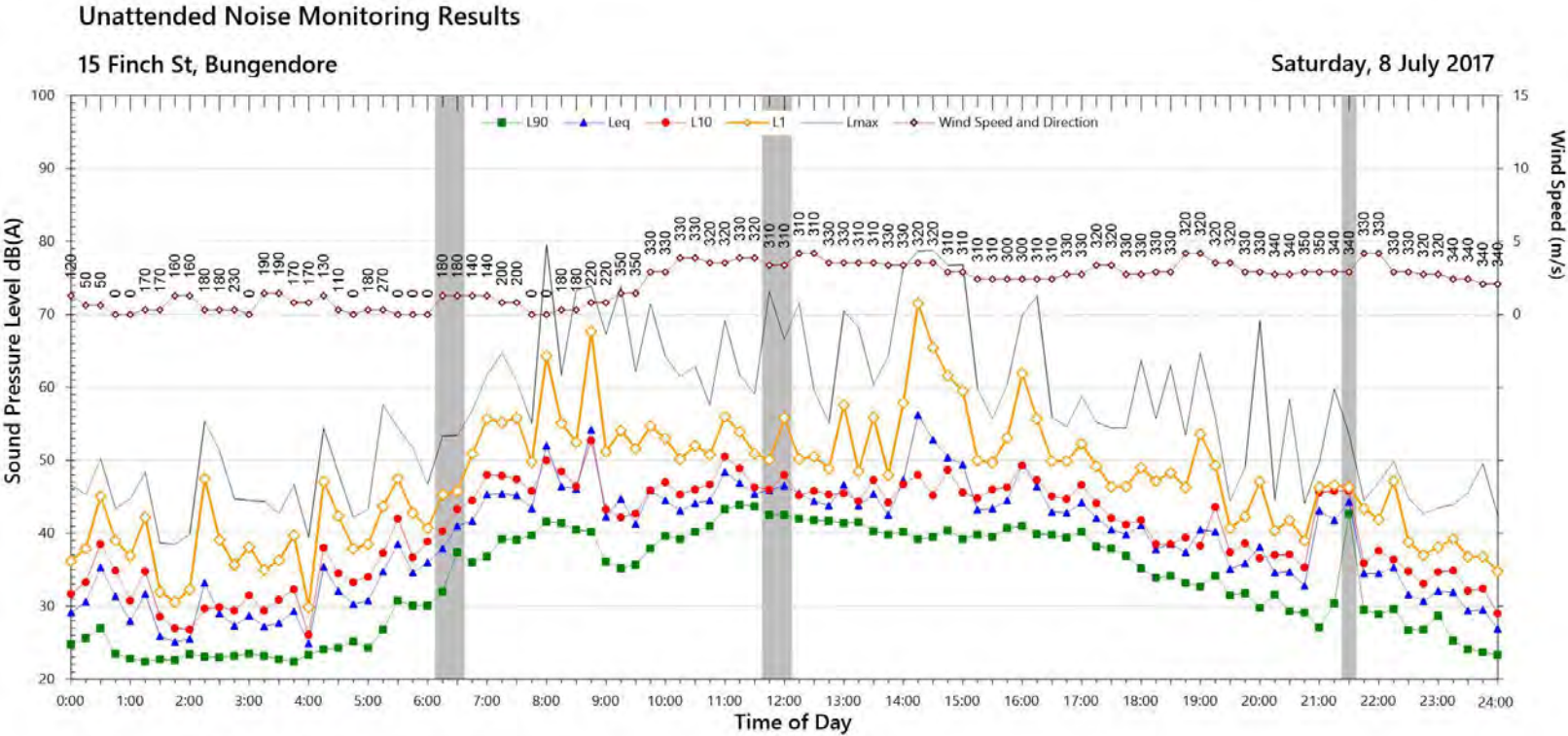
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise – data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am till 6pm on other days.
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field, tabulated results facade corrected
7. Night time L₁₀ values are shown only where L₁₀ > 65dB(A) and where L₁₀ - Leq ≥ 15dB(A)

Data File: 2017-07-04_SLM_000_123_Rpt_Report.txt

T7750-01M01 15 Finch St Bungendore (r0)

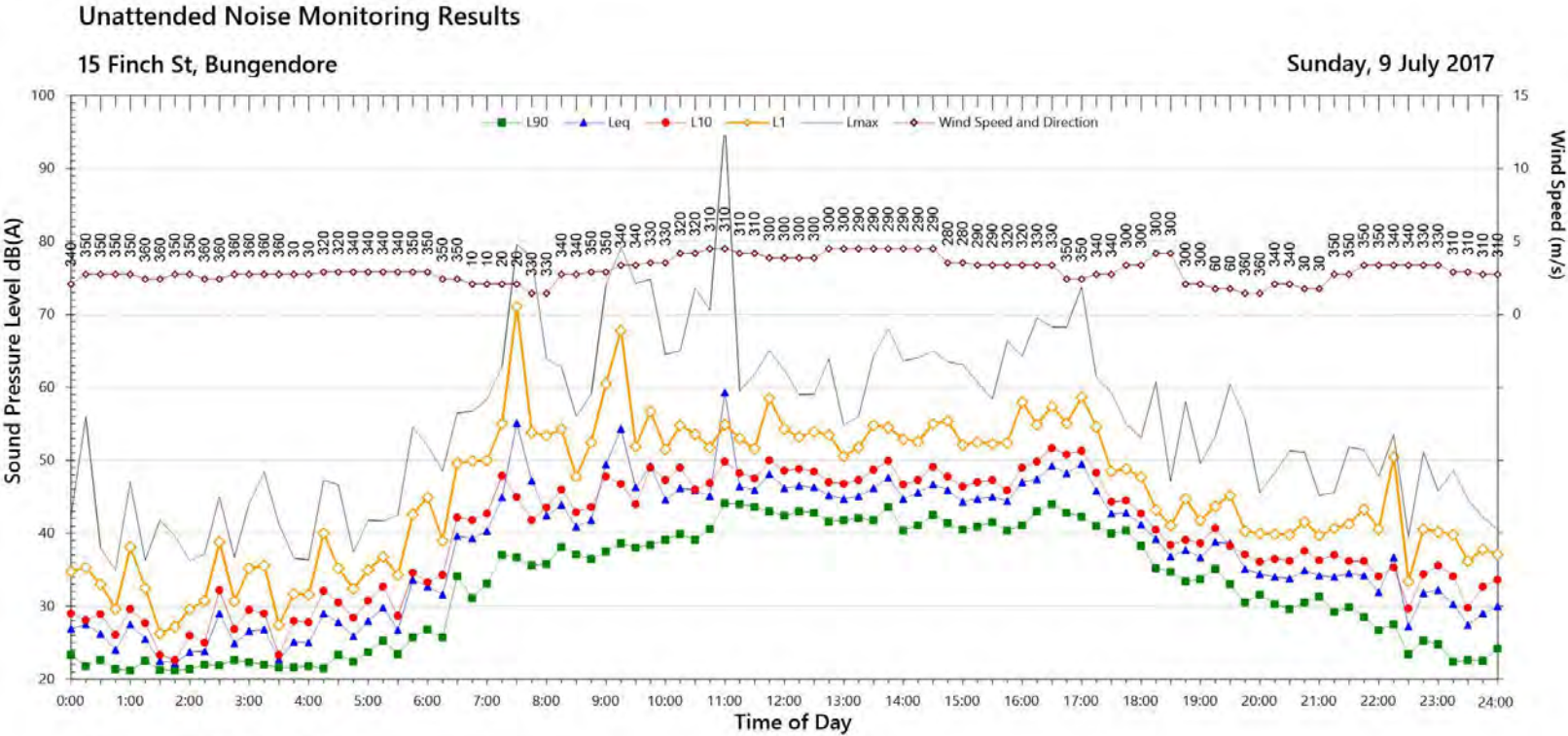
QTE-26 (rev 15) Logger Graphs Program



NSW Industrial Noise Policy (Free Field)			
Descriptor	Day ²	Evening ³	Night ^{4,5}
L ₉₀	36.9	28.9	21.4
L _{Aeq}	47.4	38.4	40.8

- Notes:
1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise – data in these periods are excluded from calculations.
 2. "Day" is the period from 8am till 6pm on Sundays and 7am till 6pm on other days.
 3. "Evening" is the period from 6pm till 10pm
 4. "Night" relates to the remaining periods
 5. "Night" relates to period from 10pm on this graph to morning on the following graph.
 6. Graphed data measured in free-field, tabulated results facade corrected
 7. Night time L₁₀ values are shown only where L₁₀ > 65dB(A) and where L₁₀ - Leq ≥ 15dB(A)

Data File: 2017-07-04_SLM_000_123_Rpt_Report.txt T7750-01M01 15 Finch St Bungendore (r0) QTE-26 (rev 15) Logger Graphs Program



NSW Industrial Noise Policy (Free Field)			
Descriptor	Day ²	Evening ³	Night ^{4,5}
L ₉₀	38.1	28.5	21.9
L _{Aeq}	48.3	36.1	34.4

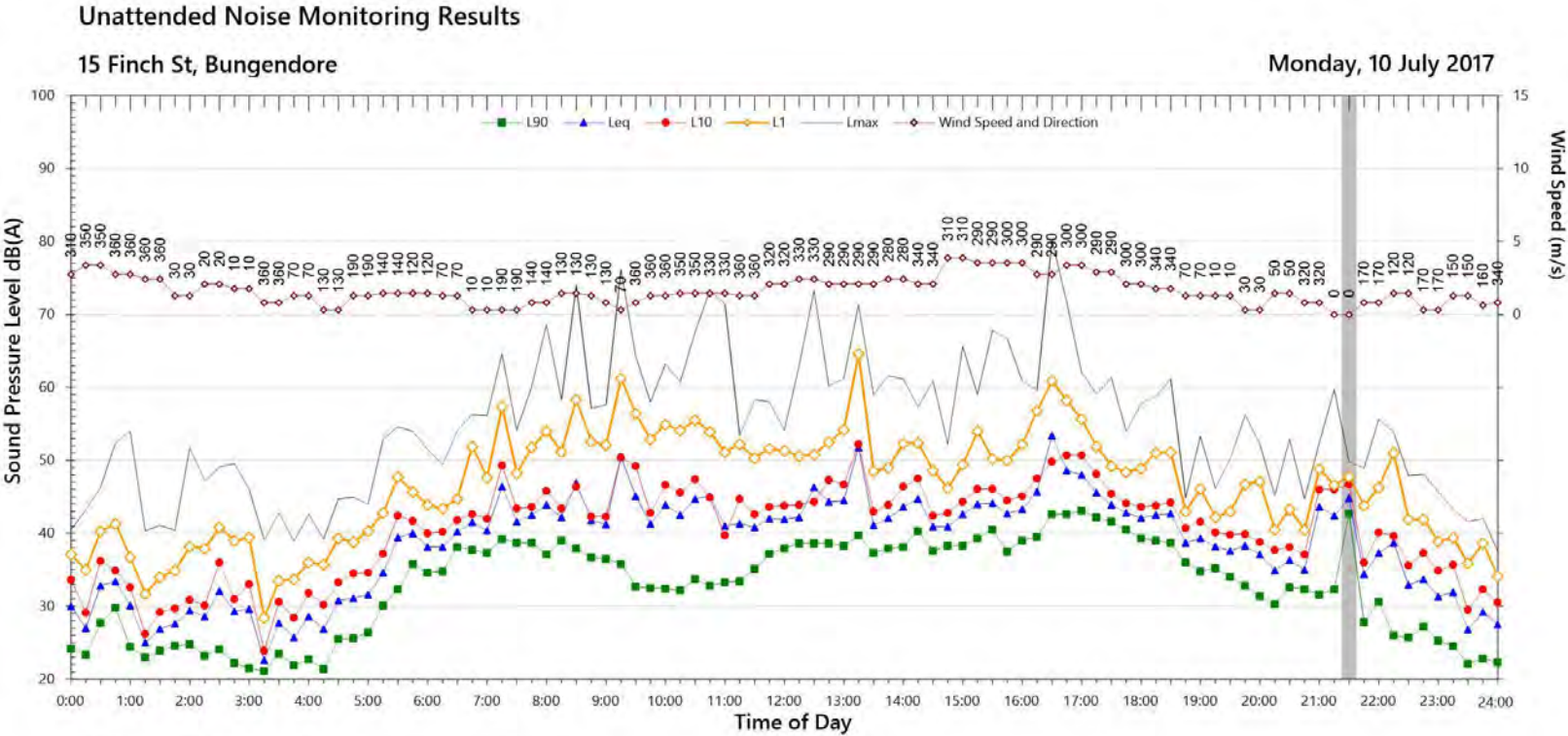
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise – data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am till 6pm on other days.
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7. Night time L₁₀ values are shown only where L₁₀ > 65dB(A) and where L₁₀ - L_{eq} ≥ 15dB(A)

Data File: 2017-07-04_SLM_000_123_Rpt_Report.txt

T7750-01M01 15 Finch St Bungendore (r0)

QTE-26 (rev 15) Logger Graphs Program

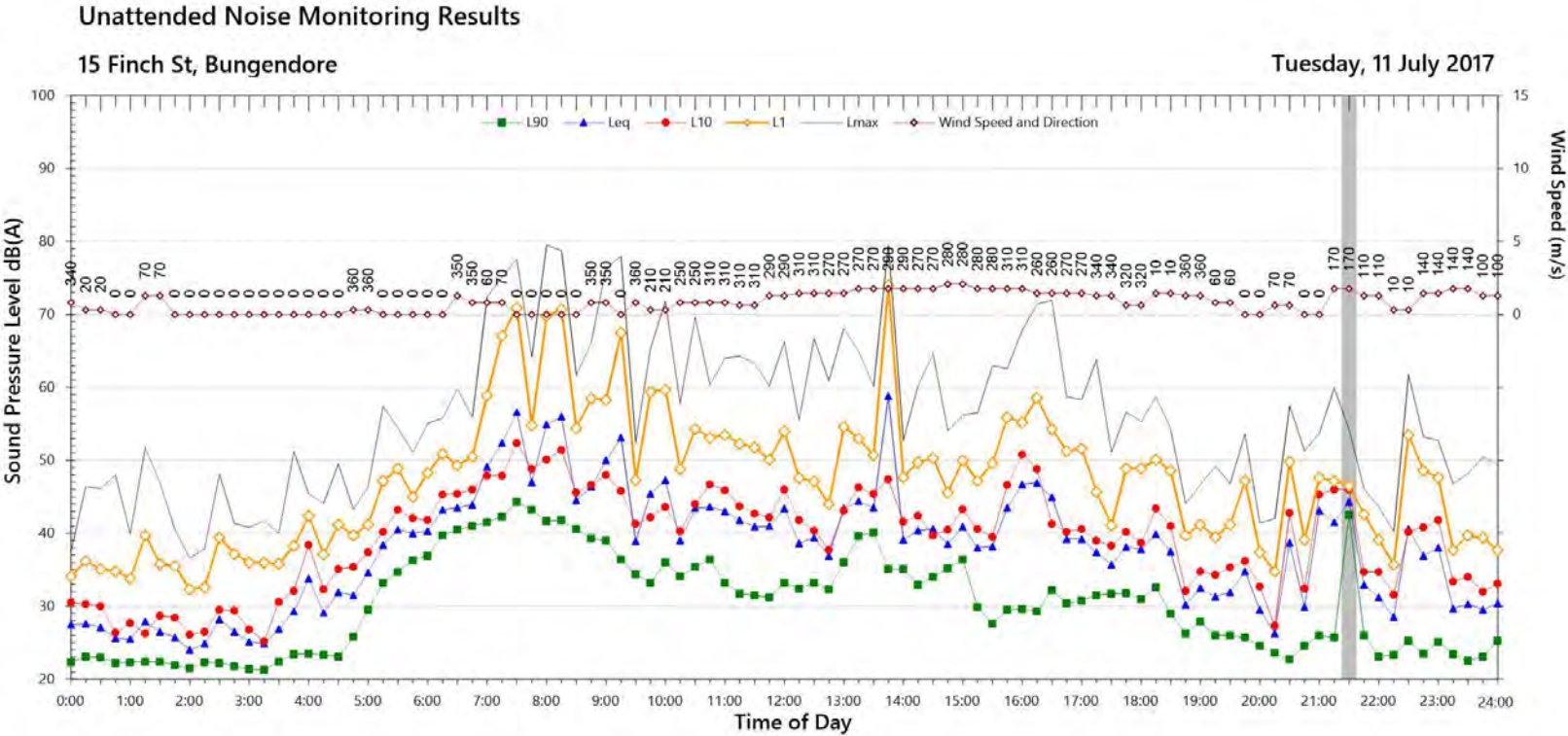


NSW Industrial Noise Policy (Free Field)			
Descriptor	Day ²	Evening ³	Night ^{4,5}
L ₉₀	32.8	30.3	21.8
L _{Aeq}	45.3	39.6	37.9

- Notes:
1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise – data in these periods are excluded from calculations.
3. "Evening" is the period from 6pm till 10pm
6. Graphed data measured in free-field, tabulated results facade corrected

2. "Day" is the period from 8am till 6pm on Sundays and 7am till 6pm on other days.
4. "Night" relates to the remaining periods
7. Night time L₁₀ values are shown only where L₁₀ > 65dB(A) and where L₁₀ - Leq ≥ 15dB(A)

5. "Night" relates to period from 10pm on this graph to morning on the following graph.



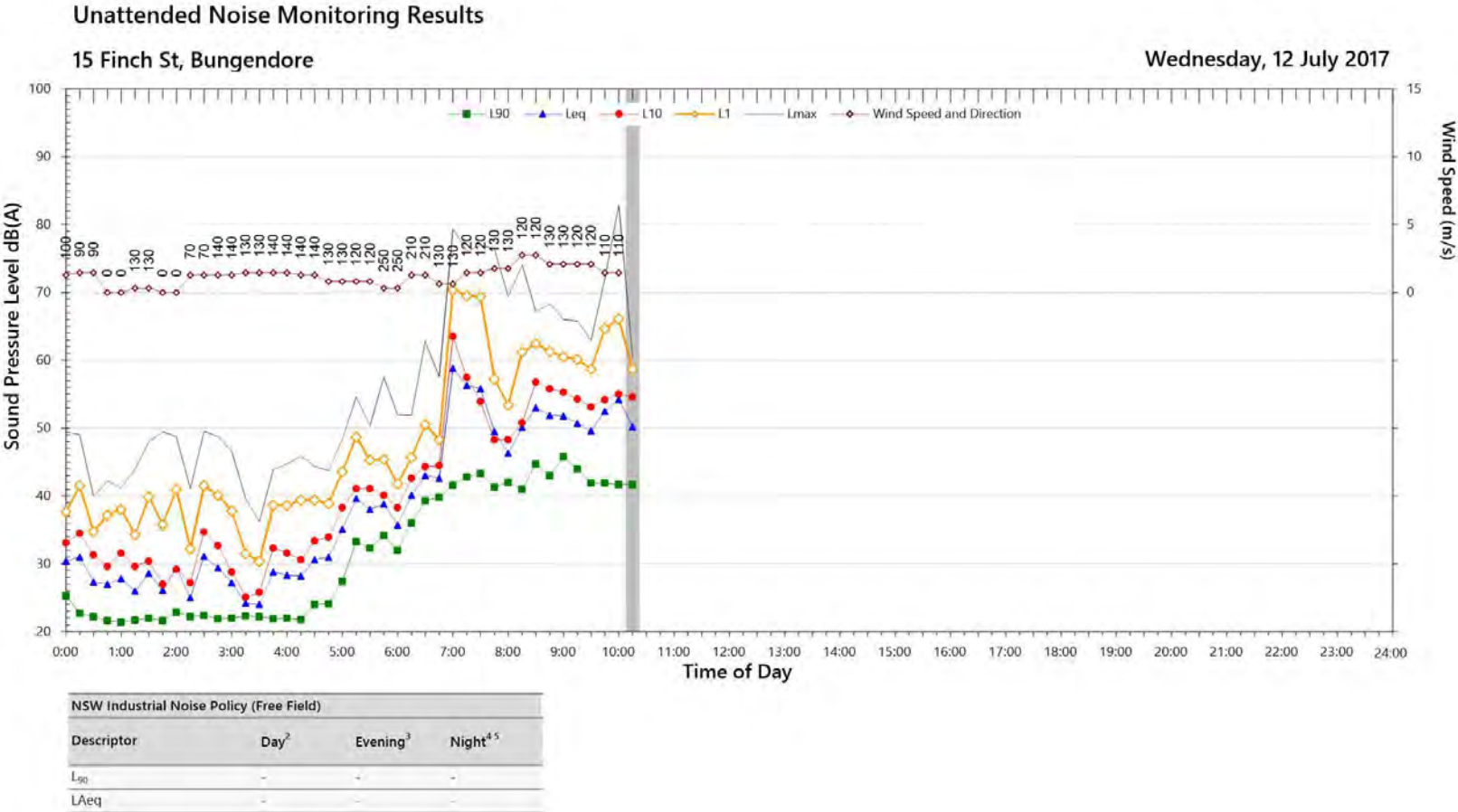
NSW Industrial Noise Policy (Free Field)			
Descriptor	Day ²	Evening ³	Night ^{4,5}
L ₉₀	29.9	23.1	21.7
L _{Aeq}	48.5	36.8	43.9

- Notes:
1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise – data in these periods are excluded from calculations.
3. "Evening" is the period from 6pm till 10pm
6. Graphed data measured in free-field; tabulated results facade corrected

2. "Day" is the period from 8am till 6pm on Sundays and 7am till 6pm on other days.
4. "Night" relates to the remaining periods
7. Night time L₉₀ values are shown only where L₉₀ > 65dB(A) and where L₉₀ - L_{eq} ≥ 15dB(A)

5. "Night" relates to period from 10pm on this graph to morning on the following graph.

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TJ750-01M01 15 Finch St Bungendore (r0)
QTE-26 (rev 15) Logger Graphs Program



Notes:

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3. "Evening" is the period from 6pm till 10pm
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QUEANBEYAN-PALERANG REGIONAL COUNCIL

Council Meeting Attachment

28 FEBRUARY 2018

ITEM 12.7 MAJARA STREET PLANNING PROPOSAL

ATTACHMENT 5 FINAL NOISE ASSESSMENT FOR MAJARA STREET
 PLANNING PROPOSAL



Acoustics
Vibration
Structural Dynamics

PLANNING PROPOSAL FOR LOT 3 DP 1195030, BUNGENDORE

Environmental Noise Assessment

29 January 2018

Queanbeyan-Palerang Regional Council

TJ750-01F02 (r5) Noise Assessment



Sydney Melbourne Brisbane Gold Coast Kuwait
Renzo Tonin & Associates (NSW) Pty Ltd ABN 29 117 462 861
Level 1/418A Elizabeth St SURRY HILLS NSW 2010 | PO Box 877 STRAWBERRY HILLS NSW 2012
P (02) 8218 0500 F (02) 8218 0501 sydney@renzotonin.com.au www.renzotonin.com.au



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Prepared for:	Queanbeyan-Palerang Regional Council
Address:	256 Crawford Street Queanbeyan NSW 2620
Attention:	MRS ARTHEAN MCBRIDE

Document Control

Date	Revision history	Non-issued revision	Issued revision	Prepared	Instructed	Authorised
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18/08/2017	Final Report	—	3	AC	MCH	MCH
16/01/2018	Update for NPfI	—	4	MCH	MCH	MCH
29/01/2018	Finalise report	—	5	MCH	MCH	MCH

Important Disclaimer:

The work presented in this document was carried out in accordance with the Renzo Tonin & Associates Quality Assurance System, which is based on Australian Standard / NZS ISO 9001.

This document is issued subject to review and authorisation by the Team Leader noted by the initials printed in the last column above. If no initials appear, this document shall be considered as preliminary or draft only and no reliance shall be placed upon it other than for information to be verified later.

This document is prepared for the particular requirements of our Client referred to above in the 'Document details' which are based on a specific brief with limitations as agreed to with the Client. It is not intended for and should not be relied upon by a third party and no responsibility is undertaken to any third party without prior consent provided by Renzo Tonin & Associates. The information herein should not be reproduced, presented or reviewed except in full. Prior to passing on to a third party, the Client is to fully inform the third party of the specific brief and limitations associated with the commission.

In preparing this report, we have relied upon, and presumed accurate, any information (or confirmation of the absence thereof) provided by the Client and/or from other sources. Except as otherwise stated in the report, we have not attempted to verify the accuracy or completeness of any such information. If the information is subsequently determined to be false, inaccurate or incomplete then it is possible that our observations and conclusions as expressed in this report may change.

We have derived data in this report from information sourced from the Client (if any) and/or available in the public domain at the time or times outlined in this report. The passage of time, manifestation of latent conditions or impacts of future events may require further examination and re-evaluation of the data, findings, observations and conclusions expressed in this report.

We have prepared this report in accordance with the usual care and thoroughness of the consulting profession, for the sole purpose described above and by reference to applicable standards, guidelines, procedures and practices at the date of issue of this report. For the reasons outlined above, however, no other warranty or guarantee, whether expressed or implied, is made as to the data, observations and findings expressed in this report, to the extent permitted by law.

The information contained herein is for the purpose of acoustics only. No claims are made and no liability is accepted in respect of design and construction issues falling outside of the specialist field of acoustics engineering including and not limited to structural integrity, fire rating, architectural buildability and fit-for-purpose, waterproofing and the like. Supplementary professional advice should be sought in respect of these issues.

Executive Summary

Renzo Tonin & Associates was engaged by Queanbeyan-Palerang Regional Council to provide an environmental noise assessment for the Planning Proposal for Lot 3 DP 1195030, which forms part of Lot 47 DP 1229434 and is located on Majara Street in Bungendore. The proposal is for the rezoning of the site from IN2 Light Industrial to R2 Low Density Residential.

Previous reports and assessments undertaken by Renzo Tonin & Associates in August 2017 were in accordance with the requirements of the NSW 'Industrial Noise Policy' (INP), which was the applicable policy at the time. However, since the submission of the previous report, the NSW EPA released the 'Noise Policy for Industry' (NPfI) in October 2017, which replaces the INP. Therefore, this updated report and assessment has been undertaken in accordance with the recently released NPfI.

The site is bounded by:

- Majara Street and a rail line are located to the east of the site. Rural farmlands are located further to the east of the Majara Street.
- Existing industrial facilities, including Bungendore Concrete and Uneke Furniture are located to the west of the site and share common boundaries with the site.
- Future light industrial estate, fronting King Street is proposed to be located to the north of the site. The proposed light industrial estate site is currently a greenfield site and no industrial facilities have been constructed at the time of this assessment.
- A residential development along Finch Street is located to the south of the site, with a future residential development to be located between Finch Street and the subject site.

Long-term unattended noise measurements were undertaken from Tuesday 4th to Wednesday 12th July 2017 to quantify the existing ambient noise environment. Short-term noise measurements were undertaken during the morning of Wednesday 12th July 2017 from 7am to 8.30am to establish the existing industrial noise levels used to validate the noise model.

Section 2.4.3 of the NPfI states that noise assessments for new residential sub-divisions impacted by existing industrial developments are not required to be assessed against the intrusiveness noise levels, only amenity noise levels. Therefore, noise impact from the existing industrial developments on the proposed residential sub-division was based on the amenity noise levels presented in Table 2.2 of the NPfI. Furthermore, to assess the potential for sleep disturbance for residences within the proposed sub-division, Section 2.5 of the NPfI was referred to.

Based on the short-term noise measurements, noise emission levels from the existing industrial developments (ie. concrete batch plant and furniture factory) were assessed as complying with the established amenity noise levels at the measurement locations. Furthermore, the measured maximum noise level were assessed for sleep disturbance and results indicated that existing L_{Amax} noise levels

would exceed the sleep disturbance assessment by 3dB(A) at the future first floor assessment location. Therefore, feasible and reasonable noise mitigation measures would be required for sleep disturbance.

In addition to the assessment of the measurement results, noise modelling was also undertaken to determine to assist in determining the noise impact across the subject site and in turn determining reasonable and feasible noise mitigation measures. Six scenarios were modelled and assessed – four for the assessment against the $L_{Aeq(15min)}$ amenity noise level; and two for the assessment against the L_{Amax} sleep disturbance assessment noise level.

Results of the modelling indicate that compliance is achieved for the four scenarios applicable for the assessment against the $L_{Aeq(15min)}$ amenity noise level. For the assessment of sleep disturbance, the modelling results indicate that future ground floor residences would comply with the sleep disturbance assessment noise level; however, first floor levels of future residences would exceed the sleep disturbance assessment noise level for future dwellings to be located on the north western corner of the subject site.

The following in principle noise mitigation measures to reduce L_{Amax} noise levels to future first floor levels were presented.

- Noise walls – up to 4m high along the northern and western boundaries adjacent to the north western corner of the site
- Site and Building Design – it is recommended that double storey dwellings not be located in the north western area of the subject site. Should double storey dwellings be located in the north western area, then the buildings should be designed so that bedrooms are facing away from the concrete plant facility; ie. on the eastern side of the building

It is noted that the NPfI assesses noise impacts from existing industry on new residential developments slightly differently to the superseded INP. The main difference is that the NPfI does not require the assessment of intrusiveness noise impacts onto the proposed residential sub-division from existing industry, as stated in Section 2.4.3 of the policy, compared to the INP. Given that the location of the subject site is in a rural type area, background noise levels were measured to be relatively low which had previously resulted in an intrusiveness noise goal significantly lower than the amenity noise level applied in this report. With this in mind, noise impacts presented in this report are minimal when assessed against the amenity noise levels, compared to the previous INP assessment against the intrusiveness noise goals.

RENZO TONIN & ASSOCIATES

28 JANUARY 2018

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RENZO TONIN & ASSOCIATES

29 JANUARY 2018

1 Introduction

Renzo Tonin & Associates was engaged by Queanbeyan-Palerang Regional Council to provide an environmental noise assessment for the Planning Proposal for Lot 3 DP 1195030, which forms part of Lot 47 DP 1229434 and is located on Majara Street in Bungendore. The proposal is for the rezoning of the site from IN2 Light Industrial to R2 Low Density Residential. The purpose of the noise study was to determine potential noise impacts from existing industrial facilities to the west of the proposed site and future light industrial uses to the north of the site.

The report quantifies noise imission onto the site from the existing and future industrial uses surrounding the site. Industrial noise impacting the site is assessed in accordance with the NSW Environment Protection Authority's (EPA) 'Noise Policy for Industry' (NPfI – October 2017) and other relevant policies, guidelines and/or legislations. It is noted that the NPfI supersedes the EPA's 'Industrial Noise Policy' (INP), for which previous reports and assessments were assessed against. During the preparation of the previous Renzo Tonin & Associates report in August 2017, the NPfI was not published by the EPA and the INP was still the applicable policy at the time.

The work documented in this report was carried out in accordance with the Renzo Tonin & Associates Quality Assurance System, which is based on Australian Standard / NZS ISO 9001. Appendix A contains a glossary of acoustic terms used in this report.

2 Project Description

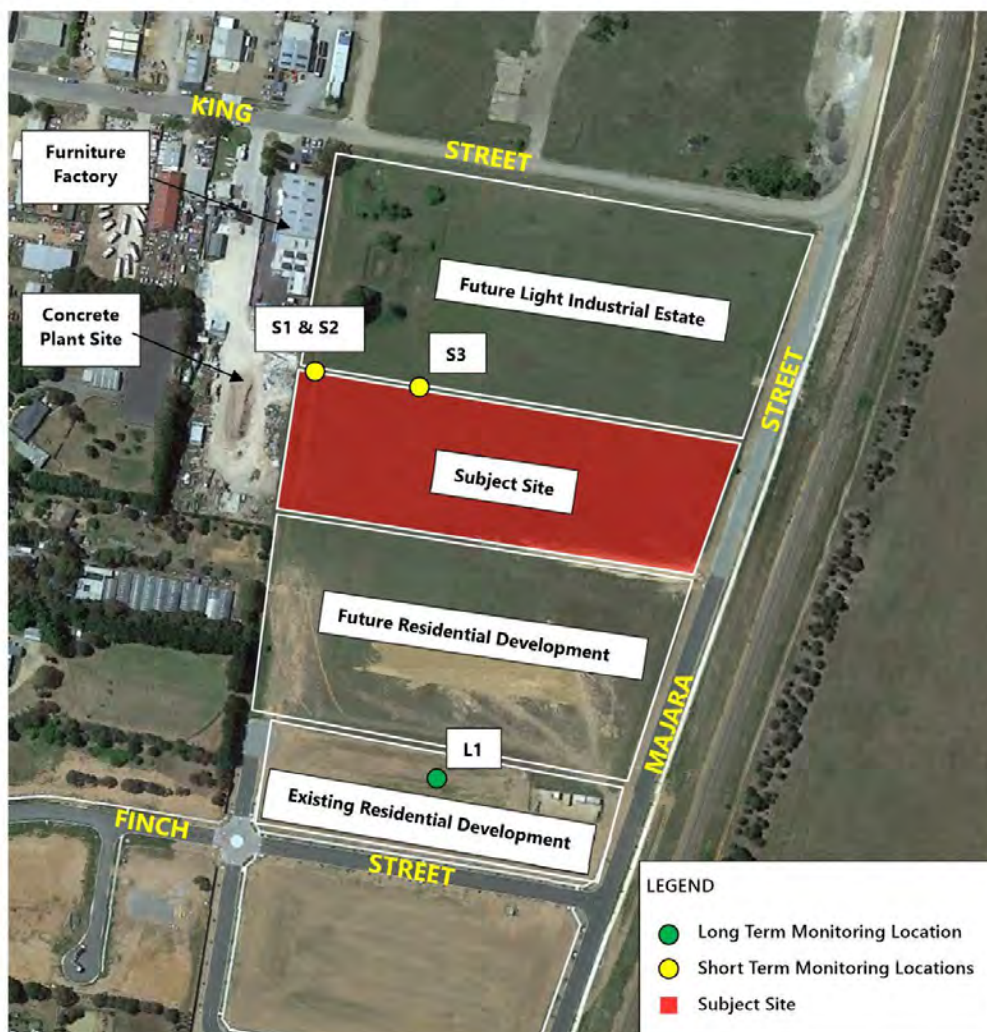
2.1 Site Description

The Site, Lot 3, DP 1195030 is located in the southeast of the rural township of Bungendore. The site is bounded by following features:

- Majara Street and a rail line are located to the east of the site. Rural farmlands are located further to the east of the Majara Street.
- Existing industrial facilities, including Bungendore Concrete and Uneke Furniture are located to the west of the site and share common boundaries with the site. It is understood that the operation of the industrial facilities is limited to the daytime hours of 7am to 6pm, Monday to Friday and 7am to 12pm on Saturdays. Additionally, the manager of the concrete plant advised that a compressor is activated around 6am that operates a pneumatic equipment on the silos.
- Future light industrial estate, fronting King Street is proposed to be located to the north of the site. The development of the proposed light industrial estate has been approved for 14 lots; however, it is currently a greenfield site and no industrial facilities have been constructed at the time of this assessment.
- A residential development along Finch Street is located to the south of the site, with a future residential development to be located between Finch Street and the subject site.

Figure 1 below shows the site, surrounds and monitoring locations.

Figure 1 – Site, Surrounds and Monitoring Locations



2.2 Assessment Methodology

The following methodology was used to assess the potential noise impacts from the existing and proposed industrial developments onto the subject site;

- Identify noise sources from the nearby industrial developments potentially affecting the subject site.
- Determine the noise lmission from the existing nearby industrial developments onto the subject site.
- Determine existing background noise levels representative of the subject site without industrial noise.
- Refer to Section 2.4.3 and Table 2.2 of the NPfI to establish applicable noise goals for impacts from nearby existing and future industrial developments on the proposed residential sub-division.
- Refer to Section 2.5 of the NPfI to establish applicable maximum noise level goals for the assessment of sleep disturbance from the nearby existing and/or future industrial developments on the proposed residential sub-division.
- Use monitored ambient noise and background levels to establish noise goals in accordance with the standard noise criteria issued by the relevant authority.
- Determine the extent of noise impact from the industrial developments on the proposed residential sub-division using predictive noise modelling software.
- Identify where noise emission from the site may exceed the relevant criteria.
- Where noise impacts onto the proposed residential sub-division is predicted to exceed the relevant noise goals examine potential amelioration methods.

3 Existing Noise Environment

Criteria for the assessment of industrial noise are usually derived from the existing noise environment of an area. Fact Sheet B of the NSW EPA's 'Noise Policy for Industry' (NPfI) outlines two methods for determining the background noise level of an area, being 'B1 – long-term noise measurements' and 'B2 – short-term noise measurements'. This assessment has used a combination of long-term and short-term noise measurements.

As the noise environment of an area almost always varies over time, background noise levels need to be determined for the purpose of determining construction noise goals. The NPfI outlines the following standard time periods over which the background noise levels are to be determined:

- **Day** is defined as 7:00am to 6:00pm, Monday to Saturday and 8:00am to 6:00pm Sundays & Public Holidays.
- **Evening** is defined as 6:00pm to 10:00pm, Monday to Sunday & Public Holidays.
- **Night** is defined as 10:00pm to 7:00am, Monday to Saturday and 10:00pm to 8:00am Sundays & Public Holidays.

The NPfI also outlines methods for assessing 'shoulder periods' being shorter periods on either side of a standard period, where the standard period noise levels are not representative. For this project a shoulder period is considered for the period between 6am and 7am where the night time period background noise level is not representative. This was considered for the assessment of the compressor and pneumatic equipment at the concrete plant.

3.1 Noise Monitoring Locations

Long-term and short-term noise monitoring was undertaken at the following locations to determine existing L_{eq} industrial noise levels and background L_{90} noise levels at the subject site.

Table 3.1 – Noise Monitoring Locations

ID	Description
Long-Term Noise Monitoring	
Location L1	15 Finch Street The noise monitor was located in the rear yard of the residential property, approx. 150m to the south of the subject site, in the free field (ie. away from any buildings). Noise levels were dominated by natural sounds from flora and fauna. The noise environment at this location is considered representative of the subject site without noise from nearby industrial sites.
Short-Term Noise Monitoring	
Location S1, S2	Lot 3 DP1195030 (The Site) Noise monitors were located at the north-western side of the subject site and approx. 3.5m east of the common boundary fence with the adjoining concrete batch plant. The microphones of the monitors were located in the free-field at 1.5m (S1) and 4.5m (S2) above the ground level to represent ground floor and first floor levels of future residential dwellings. Noise levels were dominated by industrial noise from the concrete batch plant and furniture factory.

ID	Description
Location S3	<p>Lot 3 DP1195030 (The Site)</p> <p>A noise monitor was located along the northern lot boundary of the site and approx. 55m east of the common boundary fence with the adjoining concrete batch plant. The microphone of the noise monitor was located in the free-field at 1.5m above the ground level. Noise levels were dominated by industrial noise from the concrete batch plant and furniture factory.</p>

Figure 1 presents the monitoring locations and surrounding area.

3.2 Long-Term Noise Measurement Results

Long-term (unattended) noise monitoring was conducted from Tuesday 4th to Wednesday 12th July 2017 to quantify the existing ambient noise environment.

Weather information was obtained from the Bureau of Meteorology for the area over this monitoring period and any data adversely affected by rain, wind or extraneous noise were discarded.

The graphical recorded output from the long-term noise monitoring is included in APPENDIX C of this report. The graphs in APPENDIX C were analysed to determine a single assessment background level (ABL) for each day, evening and night period, in accordance with the NSW 'Noise Policy for Industry'.

Existing ambient and background noise levels at the long-term noise monitoring location (L1) are presented in Table 3.2 below and are considered representative of the noise environment at the subject site without existing industrial noise contributions.

Table 3.2 – Measured Existing Background (L₉₀) & Ambient (L_{eq}) Noise Levels, dB(A)

Monitoring Location	L _{A90} Background Noise Levels				L _{Aeq} Ambient Noise Levels			
	Shoulder ¹	Day ²	Evening ³	Night ⁴	Shoulder ¹	Day ²	Evening ³	Night ⁴
Location L1 – 15 Finch Street	36	36	29	22	48	47	38	40

- Notes:
1. The shoulder period has been established for 6am to 7am. The shoulder period rating background level is taken to be the mid-point between the rating background levels between the two assessment periods that are on either side of the shoulder period.
 2. Day: 7am to 6pm Monday to Saturday and 8am to 6pm Sundays & Public Holidays
 3. Evening: 6pm to 10pm Monday to Sunday & Public Holidays
 4. Night: 10pm to 7am Monday to Saturday and 10pm to 8am Sundays & Public Holidays

3.3 Short-Term Noise Measurement Results

Short-term noise measurements were undertaken during the morning of Wednesday 12th July 2017 from 7am to 8.30am to establish the existing industrial noise levels used to validate the noise model.

Investigation into the operation of the nearby industrial sites revealed the dominant noise source potentially impacting the subject site would be generated by the adjoining concrete batch plant. Through discussions with the management of the concrete plant it was confirmed that the operating hours are 7am to 6pm, Monday to Friday and 7am to 12pm on Saturdays. The number of concrete trucks entering the site and loaded with concrete during a day may be up to 20 based on demand and

weather. Primary operation of the concrete plant typically occurs between 7am and 8am daily and throughout the day as required. Typical activities include:

- Transfer of materials from elevated silos into concrete agitator trucks,
- Vibratory shaking of the silos to loosen materials,
- Mixing of materials in concrete agitator trucks,
- Operation of front end loader to transfer materials from storage bins to feeders,
- Wash out of concrete agitator trucks and equipment at the end of deliveries.
- Truck delivery of cement as required. This may occur once per fortnight or up to twice per week.

During the noise measurements, mechanical plant associated with the concrete plant was audible and continuous throughout its operations. Noise from vibratory shaking of the silos occurred for 1 to 5 minutes during the loading of each concrete truck and was clearly audible over the background noise environment. Mixing of the concrete in the agitator trucks was continuous for approximately 10 minutes per truck and was the main contribution to the noise environment during operations.

In addition to the loading and mixing process, intermittent noise was emitted from a pneumatic valve on the silo which provides a pulse of air approximately every 20 seconds, emitting a puff sound that is clearly audible over the background noise. It was confirmed by management of the concrete plant that air pulsing occurs while the compressor is operating. The compressor is usually switched on when staff arrive in the morning, typically between 6am and 6.30am, and switched off at the end of daily operations on the site, typically between 3pm and 5pm.

The duration of the process of loading and mixing the concrete in the trucks was approximately one hour. Once the process was complete and the concrete agitator trucks left the site, all plant appeared to be shut down and there was no significant noise emission from the site, with the exception of the pneumatic pulse from the silo, which is switched off at the end of daily operations.

Management of the concrete plant confirmed that the main activities relating to the concrete batching are located in the northern area of the site. The southern area of the site is used for storage and is not used for typical operational activities.

Activity from the adjacent furniture factory typically occurs between 7am and 5pm and includes operation of a dust collector and various woodworking machinery. The operations of the factory are considered small to medium scale with use of machinery understood to be intermittent and located within the factory building. Noise from the furniture factory was just audible at the monitoring location S1.

A summary of the short-term measurement results is presented in Table 3.3.

Table 3.3 – Measured Existing Industrial (L_{eq}) Source Noise Levels, dB(A)

Date	Time	Noise Source	Location	Microphone Height	$L_{Aeq, 15\text{minute}}$ (Plant On)	$L_{Aeq, 15\text{minute}}$ (Plant Off) ¹	L_{Aeq} Source Noise Level
12 July 2017	7.45am to 8.00am	Concrete plant	S1	1.5m	52	43	51
			S2	4.5m	55		55
			S3	1.5m	50		49
12 July 2017	8.00am to 8.15am	Furniture factory	S1	1.5m	48	43	46
			S2	4.5m	50		49
			S3	1.5m	48		46

Notes: 1. L_{A90} background noise level for the period from 6.45am to 7.00am at Location L1, immediately prior to operation of industrial noise sources

Table 3.4 – Measured Existing Industrial (L_{max}) Source Noise Levels - Pneumatic Air Puff, dB(A)

Date	Time	Noise Source	Location	Microphone Height	L_{Amax} Noise Level
12 July 2017	7.33am	Pneumatic air puff from concrete silo	S1	1.5m	52
			S2	4.5m	55
			S3	1.5m	50

Notes: 1. Short pulse of air occurring approximately every 20 seconds.

4 Acoustic Criteria

Noise impact from the existing and future industrial facilities onto the subject residential site is assessed against the requirements of the recently released NSW 'Noise Policy for Industry' (NPfI). The assessment procedure in terms of the NPfI has two components:

- Controlling intrusive noise impacts in the short-term for residences; and
- Maintaining noise level amenity for particular land uses, for residences and other land uses.

However, Section 2.4.3 of the NPfI provides guidance for the assessment of industrial noise impacting on a new residential area as follows:

"2.4.3 Effects of changing land use

When land uses in an area are undergoing significant change, for example, residential subdivisions with associated development of local and regional roads, the background noise levels would be expected to change, sometime significantly. The impact of noise from an existing industry on a proposed new residential area should be made using the recommended amenity noise level for the residential land use, not the project intrusiveness noise level. Where impacts exceed the amenity noise level, consideration should be given to how these impacts can be avoided or mitigated, such as modifying the location of the proposed residential development, placing screening land uses in-between the proposed residences and existing industry, or ensuring residences are built in a manner that provides acceptable indoor noise amenity."

Therefore, in accordance with the requirements of the NPfI, the assessment of industrial noise impacts onto the subject site will be against the recommended amenity noise levels presented in Table 2.2 of the NPfI.

Furthermore, the NPfI provides the following guidance on adjusting the $L_{Aeq,period}$ level to a representative $L_{Aeq,15minute}$ level in order to standardise the time periods.

$$L_{Aeq,15minute} = L_{Aeq,period} + 3dB(A)$$

It is noted that the future residential receivers within the subject site have been categorised as being in a 'suburban' area in accordance with Table 2.3 of the NPfI, as once the site is developed it would have a suburban type ambient noise environment.

Table 4.1 – NPfI Recommended Amenity Noise Levels, dB(A)

Receiver	Noise Amenity Area	Time of Day	Recommended Amenity Noise Level	
			$L_{Aeq, Period}$	$L_{Aeq, 15min}$
Residential	Suburban	Day	55	$55 + 3 = 58$
		Evening	45	$45 + 3 = 48$
		Night	40	$40 + 3 = 43$

Receiver	Noise Amenity Area	Time of Day	Recommended Amenity Noise Level	
			L _{Aeq, Period}	L _{Aeq, 15min}

Note:

1. Daytime 7.00 am to 6.00 pm; Evening 6.00 pm to 10.00 pm; Night-time 10.00 pm to 7.00 am
2. On Sundays and Public Holidays – Daytime 8.00 am to 6.00 pm; Evening 6.00 pm to 10.00 pm; Night-time 10.00 pm to 8.00 am
3. The L_{Aeq} index corresponds to the level of noise equivalent to the energy average of noise levels occurring over a measurement period

Given that the existing facility typically operates during the day period, noise impacts from the facility will be assessed against the amenity noise level for the day period.

4.1 Sleep Disturbance Assessment

Given that the intermittent pneumatic air puff from the compressors servicing the concrete silo occurs from 6am, which is during the night time period, noise imission onto the proposed residential site has been assessed for its potential to disturb sleep. In accordance with NPfI, a detailed maximum noise level event assessment should be undertaken where the night-time maximum noise levels at a residential location exceed:

- L_{Aeq, 15min} 40dB(A) or the prevailing RBL plus 5dB, whichever is the greater, and/or
- L_{AFmax} 52dB(A) or the prevailing RBL plus 15dB, whichever is the greater.

Therefore, based on the requirements of the NPfI, the sleep disturbance noise levels for the project are presented in Table 4.2 and are only applicable to all residential receivers within the proposed subdivision site. Given that the operation of the compressors occurs from 6am, the shoulder period (ie. 6am to 7am) will be assessed for sleep disturbance.

Table 4.2 – Sleep Disturbance Assessment Levels for Shoulder Period (6am - 7am), dB(A)

Receiver	Assessment Level L _{Aeq, 15min}	Assessment Level L _{AFmax}
Future Residences	36 + 5 = 41	36 + 15 = 51

From the above table it can be seen that the L_{AFmax} assessment level is less than 52dB(A); therefore, the L_{AFmax} assessment level is set at 52dB(A).

5 Noise Assessment

5.1 Assessment of Measurement Results

An assessment of the measured noise levels presented in Table 3.3 from the existing industrial facilities was conducted and results are presented below.

Table 5.1 – Assessment of Existing $L_{Aeq(15min)}$ Industrial Noise Levels Impacting the Subject Site, dB(A)

Location	Microphone Height	Period	Amenity Noise Level	$L_{Aeq(15min)}$ Measured Noise Level ¹	Complies?
Concrete Batch Plant					
Location S1	1.5m (ground floor)	Day	58	51	Yes
Location S2	4.5m (first floor)			55	Yes
Location S3	1.5m (ground floor)			49	Yes
Furniture Factory					
Location S1	1.5m (ground floor)	Day	58	46	Yes
Location S2	4.5m (first floor)			49	Yes
Location S3	1.5m (ground floor)			46	Yes

Notes: 1. L_{Aeq} noise contribution from industrial source, as presented in Table 3.3

The results presented above show that noise from the concrete plant and furniture factory comply with the amenity noise level at the measurement locations. Therefore, noise mitigation measures would not be required to reduce noise levels from the facilities at the proposed residential developments.

5.2 Sleep Disturbance Assessment

In addition to the assessment of measured $L_{Aeq(15min)}$ noise levels, Table 5.2 below presents an assessment of the measured L_{Amax} noise levels from Table 3.4 for sleep disturbance. The measured L_{Amax} noise levels represent the noise from the concrete plant during the night time shoulder period from 6am to 7am that has the potential to cause sleep disturbance.

Table 5.2 – Assessment of Sleep Disturbance from Existing L_{Amax} Industrial Noise Levels, dB(A)

Location	Height	Period	Assessment Level	L_{Amax} Measured Noise Level ¹	Complies?
Location S1	1.5m (ground floor)	Night shoulder (6am to 7am)	52	52	Yes
Location S2	4.5m (first floor)			55	No, exceed by 3dB(A)
Location S3	1.5m (ground floor)			50	Yes

Notes: 1. L_{Amax} noise contribution from industrial source, as presented in Table 3.4

The results above indicate that existing L_{Amax} noise levels from the concrete plant would comply with the applicable sleep disturbance assessment level of 52dB(A) at Locations S1 and S3, representing the ground floor levels of future residences. However, at Location S2, representing the future first floor

level, the measured L_{Amax} noise level exceeds the sleep disturbance assessment level by 3dB(A). Therefore, feasible and reasonable noise mitigation measures would be required for sleep disturbance.

5.3 Noise Modelling Methodology

Noise modelling was undertaken in addition to on-site measurements of industrial noise levels to assist in determining the noise impact across the subject site and in turn determining reasonable and feasible noise mitigation measures. The noise model was calibrated using the on-site measured noise levels.

The 3D noise model was based upon aerial maps of the area and layout plans for the proposed light industrial subdivision to the north of the subject site. Noise predictions for the development were carried out in accordance with ISO9613 as implemented by the Cadna-A computer modelling software. The software takes into account sound radiation patterns, acoustic shielding and potential reflections from intervening building elements, and noise attenuation due to distance.

The following assumptions and mitigation measures were included for the purpose of noise predictions:

- As observed on site, a 2.5m high solid wall was located on the common boundary between the concrete plant and the furniture factory.
- Noise sources representing the concrete truck mixing and silo operation were modelled at a height of 3.5m above the ground level.
- Noise source representing movement of trucks around the concrete plant was modelled in the northern area of the site.
- For the assessment of sleep disturbance, the L_{Amax} noise level from the pneumatic pulse of air generated by the compressors operating at the concrete plant silos were used and no other plant and equipment are operating from the concrete plant and furniture factory facilities.
- Development of the approved light industrial subdivision adjacent to the northern boundary of the subject site was modelled based on the layout plans approved by Queanbeyan-Palerang Regional Council as part of DA.2015.172 (drawing no. 3002456-DA10 Rev 4, dated 11th March 2016).
- A 2m high acoustic fence was modelled along the common boundary between the subject site and the approved light industrial subdivision to the north, in accordance with Condition 10 of the Conditions of Consent issued for DA.2015.172.
- Noise sources associated with the approved light industrial subdivision to the north were assumed to include truck movements along the access roads within the site. It was assumed that up to 4 trucks per hour would access the site.
- The receiver height was assessed at 1.5m above the ground level to represent ground floor levels of dwellings and 4.5m above the ground to represent first floor levels of double storey dwellings.

5.4 Noise Modelling Results

Six scenarios have been assessed to represent the presence of the light industrial subdivision to the north of the subject site, the presence of dwellings on the subject site and the implementation of various noise walls along the northern and eastern boundaries of the subject site. The results are presented below.

Noise modelling results are presented as noise contours maps covering the subject site, representing external noise levels on ground and first floor levels of dwellings. The green shaded areas represent areas that comply with the 58dB(A) NPfI recommended daytime $L_{Aeq(15min)}$ amenity noise level, as applicable for Scenarios 1 to 4; and the areas that comply with the 52dB(A) L_{Amax} sleep disturbance assessment noise level during the 6am to 7am shoulder period, as applicable for Scenarios 5 and 6.

5.4.1 Scenario 1

Scenario 1 represents the existing state of the subject site assessed against the recommended $L_{Aeq(15min)}$ amenity noise level, where:

- Ground floor level (ie. 1.5m above ground) assessment locations;
- No light industrial subdivision to the north of the subject site;
- No noise wall on the common boundary between the subject site and the concrete plant; and
- No dwellings on the subject site.

Figure 2 – Noise Modelling Results for Scenario 1



The noise modelling results for Scenario 1 show that noise impacts from the existing industrial sites would comply with the recommended $L_{Aeq(15min)}$ amenity noise level across the entire subject site for the ground floor level assessment locations based on the current situation.

5.4.2 Scenario 2

Scenario 2 represents the existing state of the subject site assessed against the recommended $L_{Aeq(15min)}$ amenity noise level, where:

- First floor level (ie. 4.5m above ground) assessment locations;
- No light industrial subdivision to the north of the subject site;
- No noise wall on the common boundary between the subject site and the concrete plant; and
- No dwellings on the subject site.

Figure 3 – Noise Modelling Results for Scenario 2



The noise modelling results for Scenario 2 show that noise impacts from the existing industrial sites would comply with the recommended $L_{Aeq(15min)}$ amenity noise level across the entire subject site for the first floor level assessment locations based on the current situation.

5.4.3 Scenario 3

Scenario 3 has been based on the following and is assessed against the recommended $L_{Aeq(15min)}$ amenity noise level:

- Ground floor level (ie. 1.5m above ground) assessment locations;
- Inclusion of approved light industrial subdivision to the north of the subject site;
- The approved 2m high noise wall on the common boundary between the subject site and approved light industrial subdivision;
- No noise wall on the common boundary between the subject site and the concrete plant;
- No dwellings on the subject site.

Figure 4 – Noise Modelling Results for Scenario 3



The modelling results for Scenario 3 show that if the approved light industrial subdivision to the north of the subject site is developed and a 2m high noise wall is constructed along the northern boundary, noise from the existing concrete plant and furniture factory and from the new light industrial subdivision would comply with the recommended $L_{Aeq(15min)}$ amenity noise level across the entire subject site for the ground floor level assessment locations.

5.4.4 Scenario 4

Scenario 4 has been based on the following and is assessed against the recommended $L_{Aeq(15min)}$ amenity noise level:

- First floor level (ie. 4.5m above ground) assessment locations;
- Inclusion of approved light industrial subdivision to the north of the subject site;
- The approved 2m high noise wall on the common boundary between the subject site and approved light industrial subdivision;
- No noise wall on the common boundary between the subject site and the concrete plant; and
- No dwellings on the subject site.

Figure 5 – Noise Modelling Results for Scenario 4



The modelling results for Scenario 4 show that if the approved light industrial subdivision to the north of the subject site is developed and a 2m high noise wall is constructed along the northern boundary, noise from the existing concrete plant and furniture factory and from the new light industrial subdivision would comply with the recommended $L_{Aeq(15min)}$ amenity noise level across the entire subject site for the first floor level assessment locations.

5.4.5 Scenario 5

Scenario 5 represents the existing state of the subject site assessed against the L_{Amax} sleep disturbance assessment noise level, where:

- Ground floor level (ie. 1.5m above ground) assessment locations;
- Only noise from the pneumatic pulse of air generated by the compressors operating at the concrete plant is occurring;
- No light industrial subdivision to the north of the subject site;
- No noise wall on the common boundary between the subject site and the concrete plant; and
- No dwellings on the subject site.

Figure 6 – Noise Modelling Results for Scenario 5



The modelling results for Scenario 5 show that noise impacts from the pneumatic pulse of air generated by the compressors would comply the applicable L_{Amax} sleep disturbance assessment noise level across the entire subject site for the ground floor assessment locations.

5.4.6 Scenario 6

Scenario 6 represents the existing state of the subject site assessed against the L_{Amax} sleep disturbance assessment noise level, where:

- First floor level (ie. 4.5m above ground) assessment locations;
- Only noise from the pneumatic pulse of air generated by the compressors operating at the concrete plant is occurring;
- No light industrial subdivision to the north of the subject site;
- No noise wall on the common boundary between the subject site and the concrete plant; and
- No dwellings on the subject site.

Figure 7 – Noise Modelling Results for Scenario 6



The modelling results for Scenario 6 show that noise impacts from the pneumatic pulse of air generated by the compressors would generally comply the applicable L_{Amax} sleep disturbance assessment noise level across the entire subject site for the first floor assessment locations. However, as shown in the figure above, L_{Amax} noise levels are predicted to exceed the sleep disturbance assessment noise level in the north western corner of the site for first floor levels of double storey dwellings potentially located there.

5.5 Discussion

The noise contours presented in Figure 2 to Figure 7 represent external noise levels on the ground and first floor levels of future proposed dwellings (ie. 1.5m and 4.5m above ground level, respectively).

Results show that the existing industrial facilities generate noise levels that would comply with the NPfI recommended amenity noise levels at the ground and first floor level assessment locations across the subject site. When the approved light industrial subdivision to the north of the site is developed (including the 2m high noise wall), noise from the existing concrete plant and furniture factory, and from the future light industrial subdivision would also comply at the ground and first floor level assessment location across the site.

For the assessment of sleep disturbance, L_{Amax} noise levels from the pneumatic pulse of air generated by the existing compressors operating at the concrete plant silos were predicted to generally comply with the sleep disturbance assessment noise level across the subject site for the ground and first floor level locations. However, exceedances were predicted for future first floor level receivers that may be located on the north western corner of the site

Recommendations for in-principal noise control solutions to reduce noise impact to residential dwellings is provided in the following section.

6 Recommendations

The following recommendations provide in principle noise control solutions to reduce noise impacts to residential receivers. This information is presented for the purpose of the preparation of the proposed residential zoning and shall not be used for construction unless otherwise approved in writing by an acoustic consultant. Assistance of an acoustic consultant must be sought at the detailed design phase of these works to provide the necessary design details and specifications prior to construction.

The advice provided here is in respect of acoustics only. Supplementary professional advice may need to be sought in respect of fire ratings, structural design, build ability, fitness for purpose and the like.

Methods available to mitigate industrial noise include, but are not limited to:

1. Reducing noise at source,
2. Noise walls or barriers,
3. Land-use planning, site design, building layout and building treatment.

It is not within the developer's control to change or reduce noise at the source. Therefore, only Options 2 and 3 are viable options for reducing industrial noise levels for the subject site.

6.1 Noise Walls

Noise walls located along the northern and western site boundaries may provide some shielding from industrial noise upon the subject site. It is noted that noise walls of up to 4m high along the northern and western boundaries adjacent to the north western corner of the site would be required to reduce L_{Amax} noise levels from the pneumatic pulse of air generated by the existing compressors operating at the concrete plant silos. It is recommended that further acoustic advice be sort regarding the optimum height of noise walls once lot boundaries have been established.

The construction of the noise wall can be from any durable material with sufficient mass to prevent direct noise transmission e.g. masonry, fibrous cement, lapped and capped timber fence, polycarbonate, or any combination of such materials, provided they withstand the weather elements. A natural barrier of trees or shrubs is not an effective noise screen.

A noise wall can be very effective for mitigating industrial noise as long as there are no breaks in the barrier. However, in areas where the noise wall will be discontinuous (for example, for drainage purposes) an overlap of at least three times the width of the gap should exist in between the two sections of the noise wall.

6.2 Site and Building Design

Residential dwellings constructed in noise affected areas can be designed so that their layouts minimise noise in studying, living and sleeping areas. Additionally, courtyards and open space areas can be

located away from the noise source, using the building as a buffer to obtain a quiet outdoor environment. Within the building itself, locate less sensitive rooms closest to the industrial noise source, so that these essentially form a barrier between the industrial noise source and noise sensitive rooms such as bedrooms and study's. Where possible, locate the building further away from the industrial noise source, thereby reducing industrial noise at the facade.

Given that the noise modelling results indicate L_{Amax} noise levels may potentially cause sleep disturbance to first floor levels of double storey dwellings, it is recommended that double storey dwellings not be located in the north western area of the subject site. Should double storey dwellings be located in the north western area, then the buildings should be designed so that bedrooms are facing away from the concrete plant facility; ie. on the eastern side of the building.

7 Conclusion

An assessment of industrial noise impact on the proposed rezoning of Lot 3 DP 1195030, which forms part of Lot 47 DP 1229434 and is located on Majara Street in Bungendore, from IN2 Light Industrial to R2 Low Density Residential has been undertaken.

Industrial noise impacting the site has been assessed in accordance with the recently released NSW Environment Protection Authority's (EPA) 'Noise Policy for Industry' (NPfI – October 2017).

On-site measurements of existing industrial noise were assessed to comply with the NPfI recommended $L_{Aeq(15min)}$ amenity noise levels. Additionally, measured maximum noise levels for the assessment of sleep disturbance were determined to comply with the applicable sleep disturbance assessment L_{Amax} noise level for future ground floor level assessment locations; however, exceedances were measured for the future first floor level assessment locations.

Noise contours at receiver heights of 1.5m and 4.5m representing ground and first floor levels, of dwellings, respectively, were prepared for the day time period for various scenarios. Noise contours presenting modelled L_{Amax} noise levels were also prepared to provide an assessment of sleep disturbance for the early morning shoulder period from 6am to 7am.

In-principle noise control recommendations in the form of noise walls and site and building design are provided for consideration during the planning process for areas within the proposed residential subdivision where noise exceedances were predicted through the noise contours.

It is noted that the NPfI assesses noise impacts from existing industry on new residential developments slightly differently to the superseded INP. The main difference is that the NPfI does not require the assessment of intrusiveness noise impacts onto the proposed residential sub-division from existing industry, as stated in Section 2.4.3 of the policy, compared to the INP. Given that the location of the subject site is in a rural type area, background noise levels were measured to be relatively low which had previously resulted in an intrusiveness noise goal significantly lower than the amenity noise level applied in this report. With this in mind, noise impacts presented in this report are minimal when assessed against the amenity noise levels, compared to the previous INP assessment against the intrusiveness noise goals.

APPENDIX A Glossary of Terminology

The following is a brief description of the technical terms used to describe noise to assist in understanding the technical issues presented.

Adverse weather	Weather effects that enhance noise (that is, wind and temperature inversions) that occur at a site for a significant period of time (that is, wind occurring more than 30% of the time in any assessment period in any season and/or temperature inversions occurring more than 30% of the nights in winter).
Ambient noise	The all-encompassing noise associated within a given environment at a given time, usually composed of sound from all sources near and far.
Assessment period	The period in a day over which assessments are made.
Assessment point	A point at which noise measurements are taken or estimated. A point at which noise measurements are taken or estimated.
Background noise	Background noise is the term used to describe the underlying level of noise present in the ambient noise, measured in the absence of the noise under investigation, when extraneous noise is removed. It is described as the average of the minimum noise levels measured on a sound level meter and is measured statistically as the A-weighted noise level exceeded for ninety percent of a sample period. This is represented as the L90 noise level (see below).
Decibel [dB]	The units that sound is measured in. The following are examples of the decibel readings of every day sounds: 0dB The faintest sound we can hear 30dB A quiet library or in a quiet location in the country 45dB Typical office space. Ambience in the city at night 60dB CBD mall at lunch time 70dB The sound of a car passing on the street 80dB Loud music played at home 90dB The sound of a truck passing on the street 100dB The sound of a rock band 115dB Limit of sound permitted in industry 120dB Deafening
dB(A)	A-weighted decibels. The A-weighting noise filter simulates the response of the human ear at relatively low levels, where the ear is not as effective in hearing low frequency sounds as it is in hearing high frequency sounds. That is, low frequency sounds of the same dB level are not heard as loud as high frequency sounds. The sound level meter replicates the human response of the ear by using an electronic filter which is called the "A" filter. A sound level measured with this filter switched on is denoted as dB(A). Practically all noise is measured using the A filter.
dB(C)	C-weighted decibels. The C-weighting noise filter simulates the response of the human ear at relatively high levels, where the human ear is nearly equally effective at hearing from mid-low frequency (63Hz) to mid-high frequency (4kHz), but is less effective outside these frequencies.
Frequency	Frequency is synonymous to pitch. Sounds have a pitch which is peculiar to the nature of the sound generator. For example, the sound of a tiny bell has a high pitch and the sound of a bass drum has a low pitch. Frequency or pitch can be measured on a scale in units of Hertz or Hz.
Impulsive noise	Having a high peak of short duration or a sequence of such peaks. A sequence of impulses in rapid succession is termed repetitive impulsive noise.
Intermittent noise	The level suddenly drops to that of the background noise several times during the period of observation. The time during which the noise remains at levels different from that of the ambient is one second or more.
L _{Max}	The maximum sound pressure level measured over a given period.
L _{Min}	The minimum sound pressure level measured over a given period.

L ₁	The sound pressure level that is exceeded for 1% of the time for which the given sound is measured.
L ₁₀	The sound pressure level that is exceeded for 10% of the time for which the given sound is measured.
L ₉₀	The level of noise exceeded for 90% of the time. The bottom 10% of the sample is the L ₉₀ noise level expressed in units of dB(A).
L _{eq}	The "equivalent noise level" is the summation of noise events and integrated over a selected period of time.
Reflection	Sound wave changed in direction of propagation due to a solid object obscuring its path.
SEL	Sound Exposure Level (SEL) is the constant sound level which, if maintained for a period of 1 second would have the same acoustic energy as the measured noise event. SEL noise measurements are useful as they can be converted to obtain L _{eq} sound levels over any period of time and can be used for predicting noise at various locations.
Sound	A fluctuation of air pressure which is propagated as a wave through air.
Sound absorption	The ability of a material to absorb sound energy through its conversion into thermal energy.
Sound level meter	An instrument consisting of a microphone, amplifier and indicating device, having a declared performance and designed to measure sound pressure levels.
Sound pressure level	The level of noise, usually expressed in decibels, as measured by a standard sound level meter with a microphone.
Sound power level	Ten times the logarithm to the base 10 of the ratio of the sound power of the source to the reference sound power.
Tonal noise	Containing a prominent frequency and characterised by a definite pitch.

APPENDIX B Long-Term Noise Monitoring Methodology

B.1 Noise Monitoring Equipment

A long-term unattended noise monitor consists of a sound level meter housed inside a weather resistant enclosure. Noise levels are monitored continuously with statistical data stored in memory for every 15-minute period.

Long term noise monitoring was conducted using the following instrumentation:

Description	Type	Octave band data	Logger location(s)
RTA06 (NTi Audio XL2, with low noise microphone)	Type 1	1/1	L1
Notes: All meters comply with AS IEC 61672-1 2004 "Electroacoustics – sound Level Meters" and designated either Type 1 or Type 2 as per table, and are suitable for field use.			

The equipment was calibrated prior and subsequent to the measurement period using a Bruel & Kjaer Type 4230 or 4231 calibrator. No significant drift in calibration was observed.

B.2 Meteorology During Monitoring

Measurements affected by extraneous noise, wind (greater than 5m/s) or rain were excluded from the recorded data in accordance with the NSW NPfl. Determination of extraneous meteorological conditions was based on data provided by the Bureau of Meteorology (BOM), for a location considered representative of the noise monitoring location(s). However, the data was adjusted to account for the height difference between the BOM weather station, where wind speed and direction is recorded at a height of 10m above ground level, and the microphone location, which is typically 1.5m above ground level (and less than 3m). The correction factor applied to the data is based on Table C.1 of ISO 4354:2009 'Wind actions on structures'.

B.3 Noise vs Time Graphs

Noise almost always varies with time. Noise environments can be described using various descriptors to show how a noise ranges about a level. In this report, noise values measured or referred to include the L_{10} , L_{90} , and L_{eq} levels. The statistical descriptors L_{10} and L_{90} measure the noise level exceeded for 10% and 90% of the sample measurement time. The L_{eq} level is the equivalent continuous noise level or the level averaged on an equal energy basis. Measurement sample periods are usually ten to fifteen minutes. The Noise -vs- Time graphs representing measured noise levels, as presented in this report, illustrate these concepts for the broadband dB(A) results.

RENZO TONIN & ASSOCIATES

29 JANUARY 2018

APPENDIX C Long-Term Noise Monitoring Results



Acoustics
Vibration
Structural Dynamics

sydney@renzotonin.com.au
www.renzotonin.com.au

15 Finch St, Bungendore

Background & Ambient Noise Monitoring Results - NSW 'Industrial Noise Policy', 2000

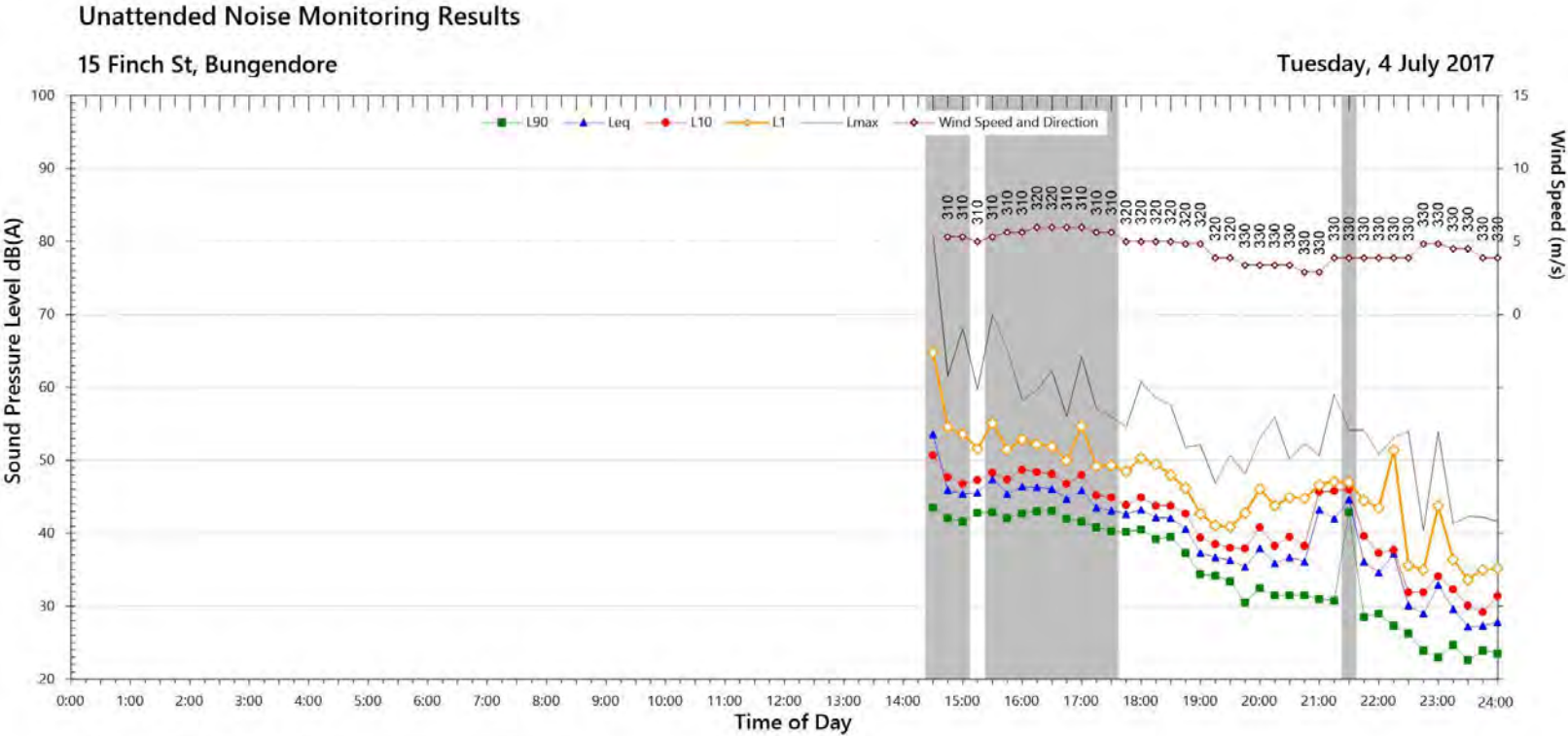
Date	L _{A90} Background Noise Levels ⁴			L _{Aeq} Ambient Noise Levels		
	Day ¹	Evening ²	Night ³	Day ¹	Evening ²	Night ³
Tuesday-04-July-2017	-	29	22	-	39	42
Wednesday-05-July-2017	39	27	21	47	38	40
Thursday-06-July-2017	36	30	22	48	40	39
Friday-07-July-2017	35	28	23	46	38	36
Saturday-08-July-2017	37	29	21	47	38	41
Sunday-09-July-2017	38	29	22	48	36	34
Monday-10-July-2017	33	30	22	45	40	38
Tuesday-11-July-2017	30	23	22	48	37	44
Wednesday-12-July-2017	-	-	-	-	-	-
Representative Weekday ⁵	35	29	22	47	39	40
Representative Weekend ⁵	37	29	22	48	37	39
Representative Week ⁵	36	29	22	47	38	40

Notes:

1. Day is 8:00am to 5:00pm on Sunday and 7:00am to 6:00pm at other times.
2. Evening is 6:00pm to 10:00pm.
3. Night is the remaining period.
4. Assessment Background Level (ABL) for individual days.
5. Retired Background Level (RBL) for L_{A90} and background average for L_{Aeq}.
6. L_{Aeq} is calculated in the free field. If 5m is subtracted from results it agrees to nearest.

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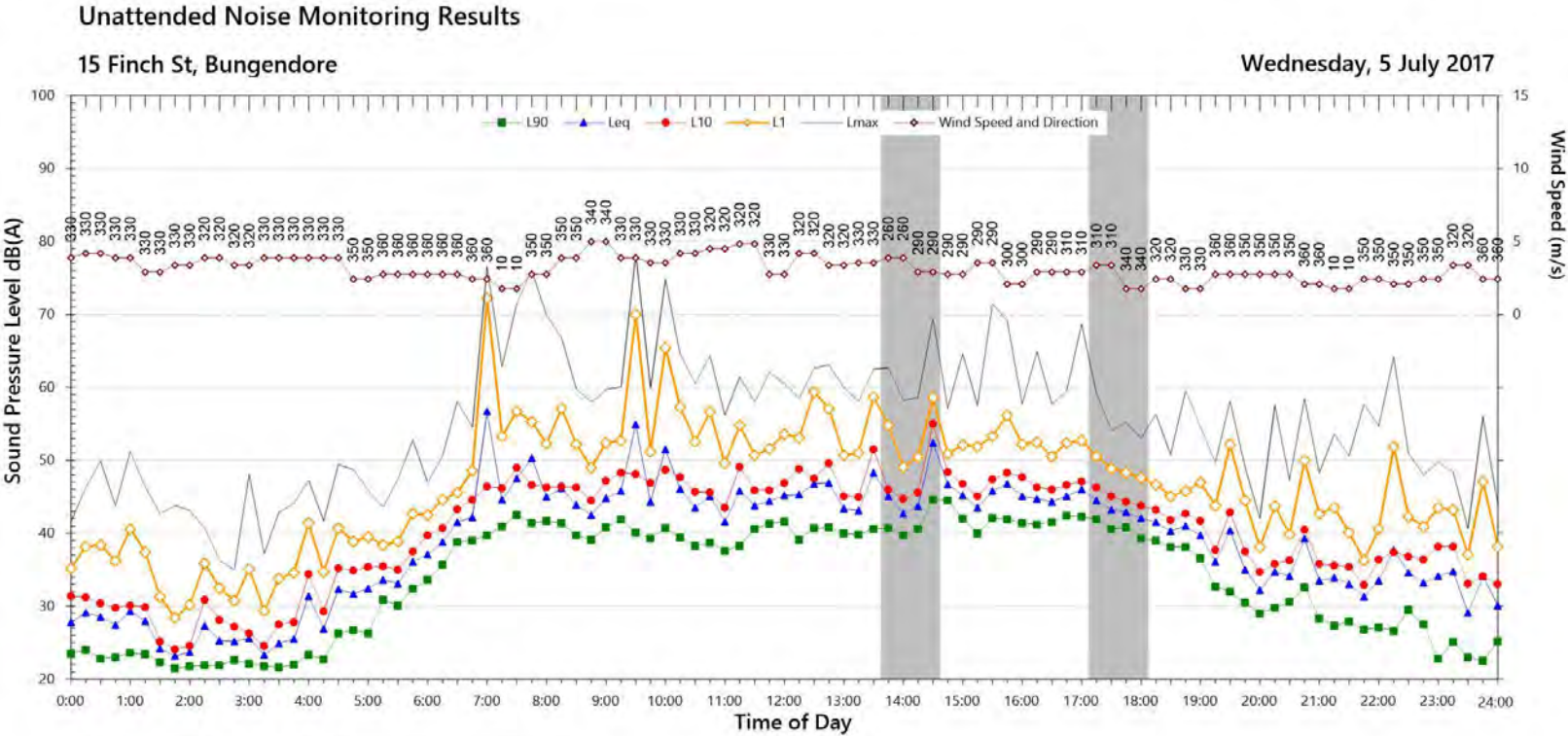
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NSW Industrial Noise Policy (Free Field)			
Descriptor	Day ²	Evening ³	Night ^{4,5}
L ₉₀	-	29.0	21.8
L _{Aeq}	-	39.2	41.8

- Notes:
1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise – data in these periods are excluded from calculations.
 2. "Day" is the period from 8am till 6pm on Sundays and 7am till 6pm on other days.
 3. "Evening" is the period from 6pm till 10pm
 4. "Night" relates to the remaining periods
 5. "Night" relates to period from 10pm on this graph to morning on the following graph.
 6. Graphed data measured in free-field, tabulated results facade corrected
 7. Night time L₁₀ values are shown only where L₁₀ > 65dB(A) and where L₁₀ - Leq ≥ 15dB(A)

Data File: 2017-07-04_SLM_000_123_Rpt_Report.txt T7750-01M01 15 Finch St Bungendore (r0) QTE-26 (rev 15) Logger Graphs Program

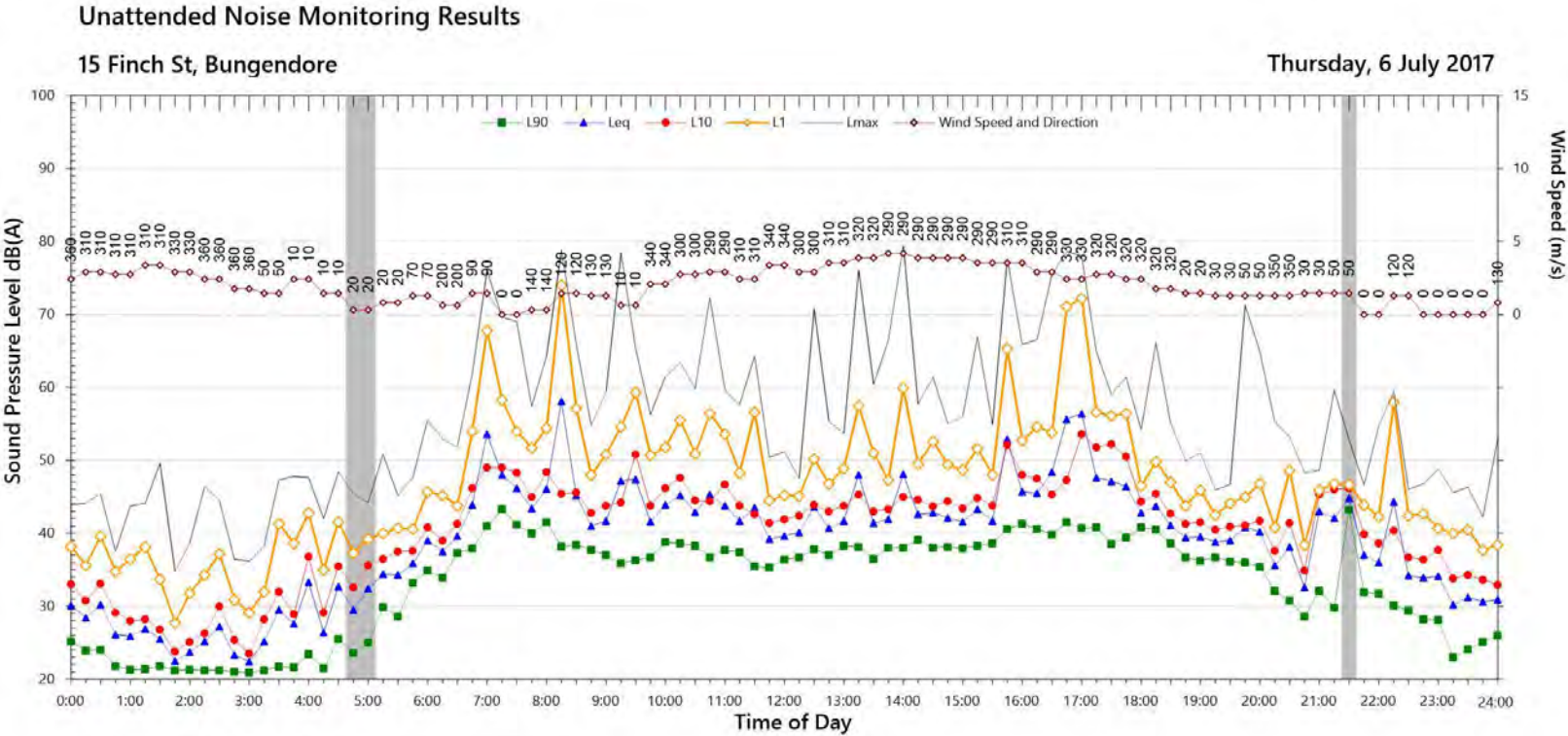


NSW Industrial Noise Policy (Free Field)			
Descriptor	Day ²	Evening ³	Night ^{4,5}
L ₉₀	38.7	27.1	21.2
L _{Aeq}	46.7	37.5	39.7

- Notes:
1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise – data in these periods are excluded from calculations.
3. "Evening" is the period from 6pm till 10pm
6. Graphed data measured in free-field, tabulated results facade corrected

2. "Day" is the period from 8am till 6pm on Sundays and 7am till 6pm on other days.
4. "Night" relates to the remaining periods
7. Night time L₁₀ values are shown only where L₁₀ > 65dB(A) and where L₁₀ - Leq ≥ 15dB(A)

5. "Night" relates to period from 10pm on this graph to morning on the following graph.



NSW Industrial Noise Policy (Free Field)			
Descriptor	Day ²	Evening ³	Night ^{4,5}
L ₉₀	36.4	29.8	22.0
L _{Aeq}	48.1	40.0	39.0

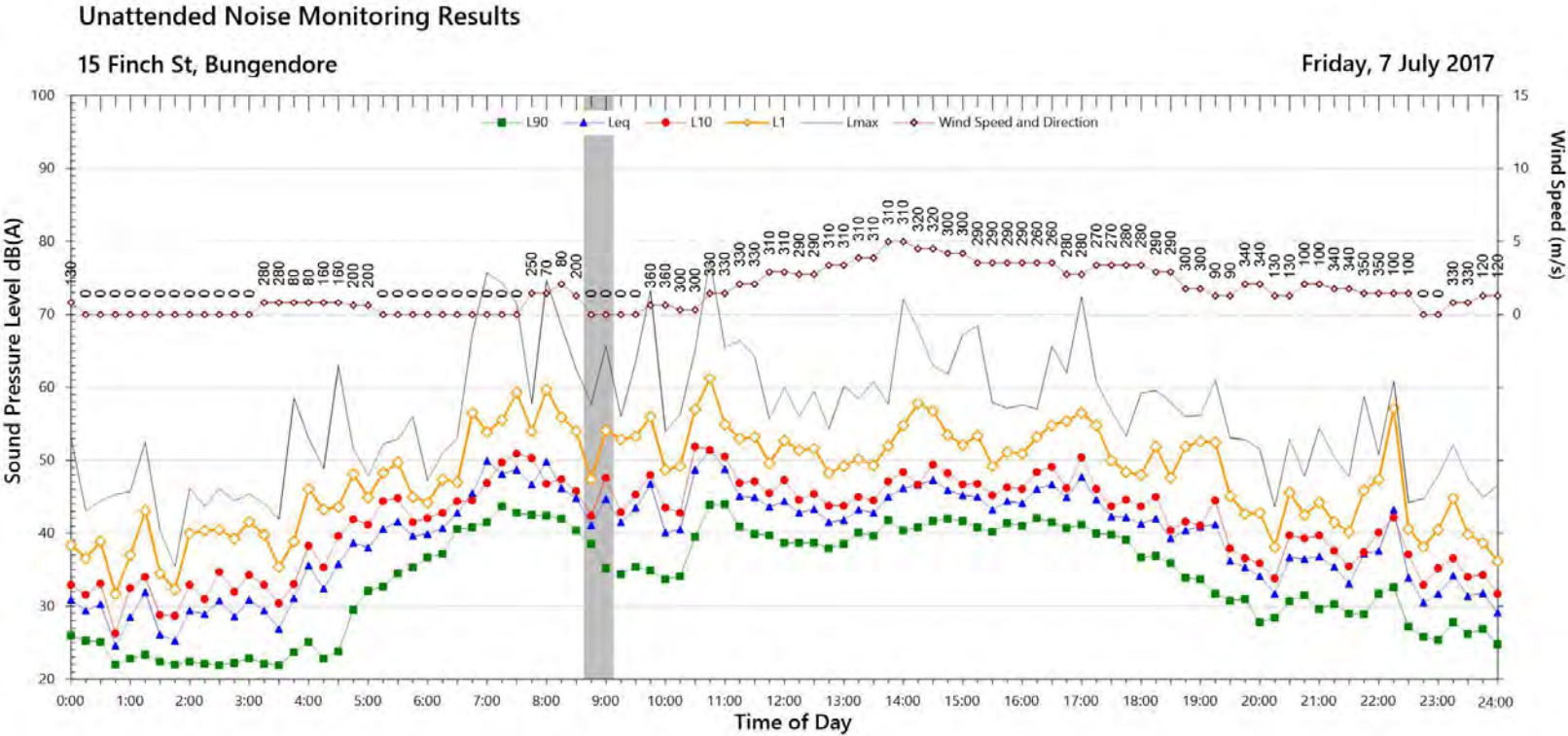
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise – data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am till 6pm on other days.
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
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Data File: 2017-07-04_SLM_000_123_Rpt_Report.txt

TJ750-01M01 15 Finch St Bungendore (r0)

QTE-26 (rev 15) Logger Graphs Program

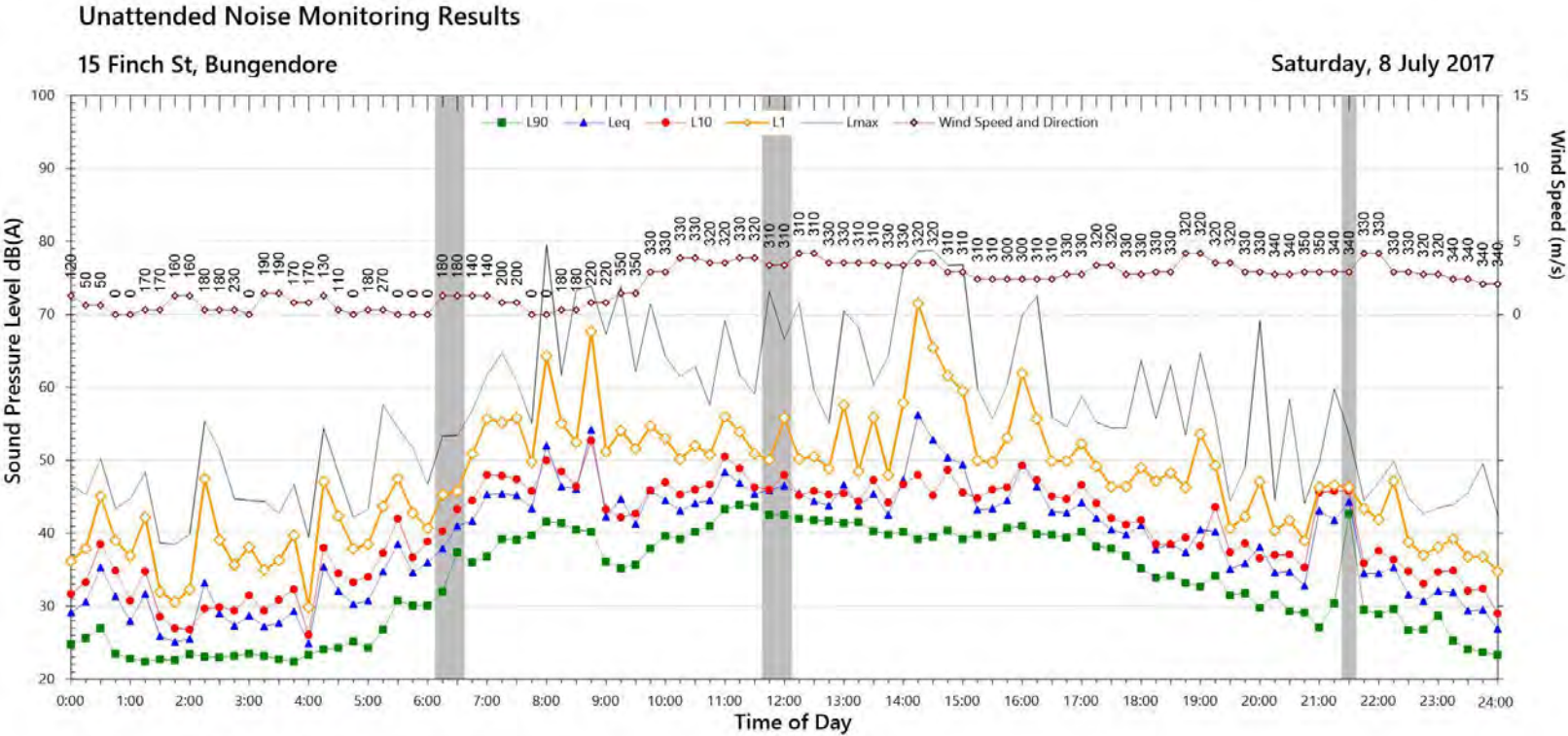


NSW Industrial Noise Policy (Free Field)			
Descriptor	Day ²	Evening ³	Night ^{4,5}
L ₉₀	35.4	28.4	22.7
L _{Aeq}	45.7	38.1	35.5

- Notes:
1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise – data in these periods are excluded from calculations.
3. "Evening" is the period from 6pm till 10pm
6. Graphed data measured in free-field, tabulated results facade corrected

2. "Day" is the period from 8am till 6pm on Sundays and 7am till 6pm on other days.
4. "Night" relates to the remaining periods
7. Night time L₁₀ values are shown only where L₁₀ > 65dB(A) and where L₁₀ - Leq ≥ 15dB(A)

5. "Night" relates to period from 10pm on this graph to morning on the following graph.



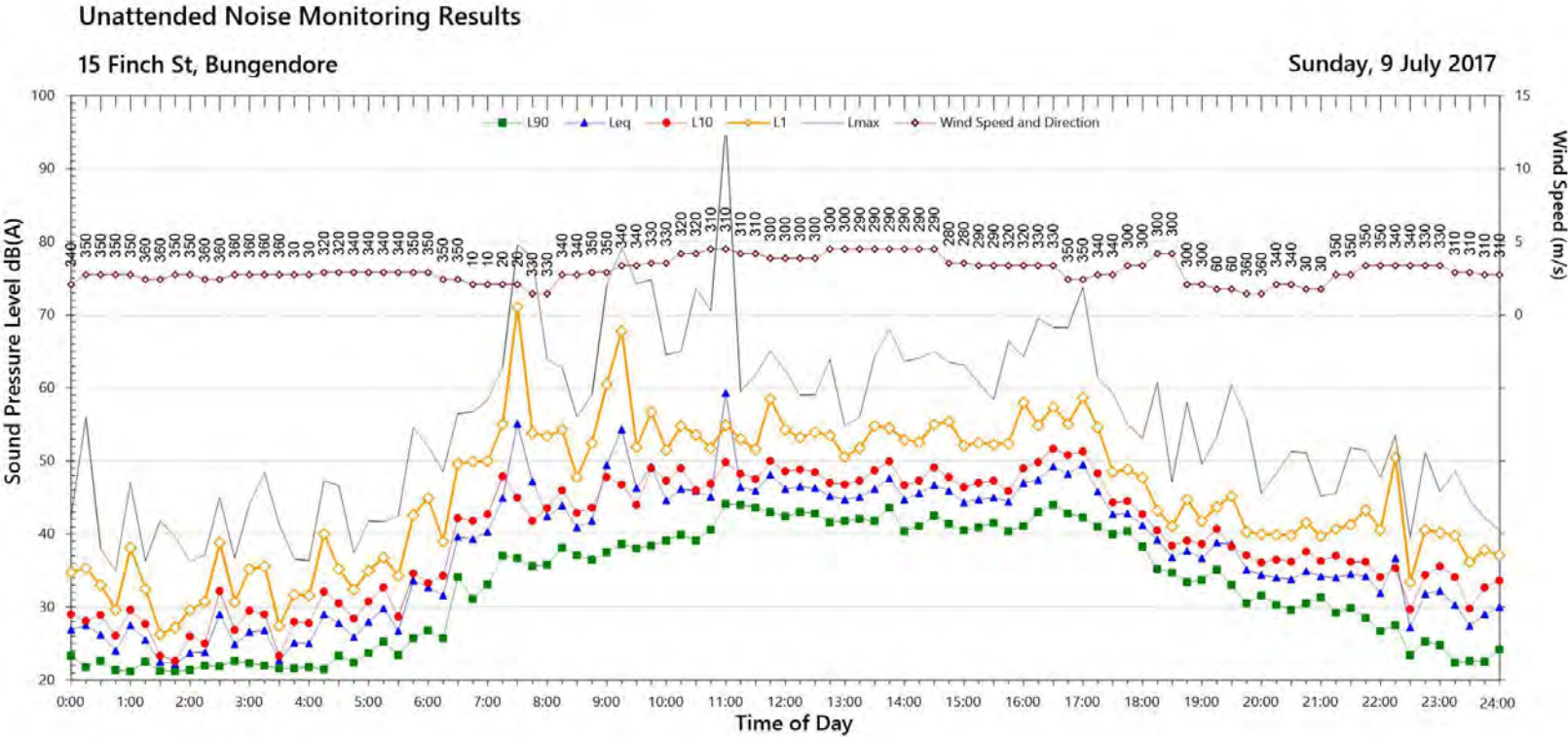
NSW Industrial Noise Policy (Free Field)			
Descriptor	Day ²	Evening ³	Night ^{4,5}
L ₉₀	36.9	28.9	21.4
L _{Aeq}	47.4	38.4	40.8

- Notes:
1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise – data in these periods are excluded from calculations.
3. "Evening" is the period from 6pm till 10pm
6. Graphed data measured in free-field, tabulated results facade corrected

2. "Day" is the period from 8am till 6pm on Sundays and 7am till 6pm on other days.
4. "Night" relates to the remaining periods
7. Night time L₁₀ values are shown only where L₁₀ > 65dB(A) and where L₁₀ - Leq ≥ 15dB(A)

5. "Night" relates to period from 10pm on this graph to morning on the following graph.

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T7750-01M01 15 Finch St Bungendore (r0)
QTE-26 (rev 15) Logger Graphs Program



NSW Industrial Noise Policy (Free Field)			
Descriptor	Day ²	Evening ³	Night ^{4,5}
L ₉₀	38.1	28.5	21.9
L _{Aeq}	48.3	36.1	34.4

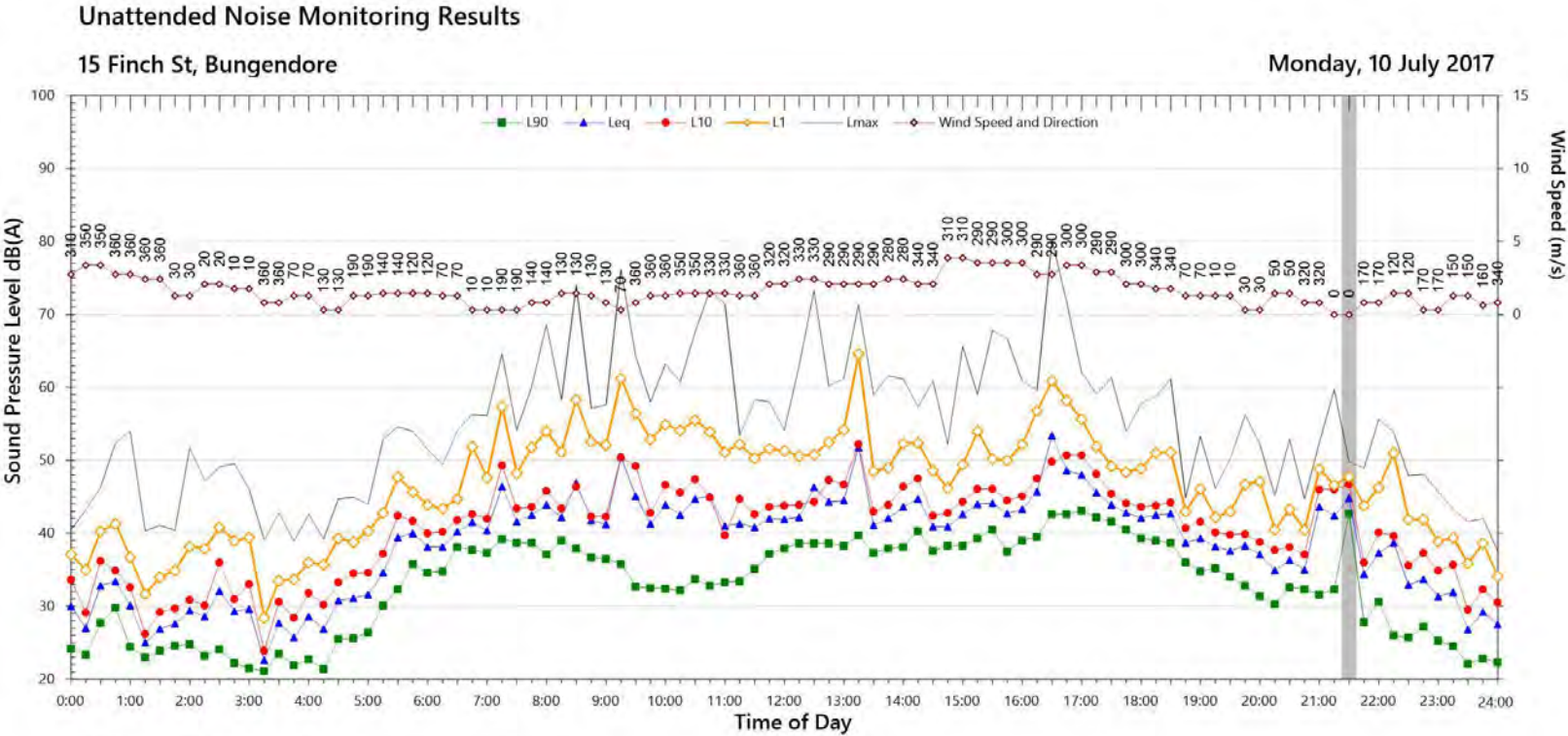
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1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise – data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am till 6pm on other days.
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Data File: 2017-07-04_SLM_000_123_Rpt_Report.txt

T7750-01M01 15 Finch St Bungendore (r0)

QTE-26 (rev 15) Logger Graphs Program



NSW Industrial Noise Policy (Free Field)			
Descriptor	Day ²	Evening ³	Night ^{4,5}
L ₉₀	32.8	30.3	21.8
L _{Aeq}	45.3	39.6	37.9

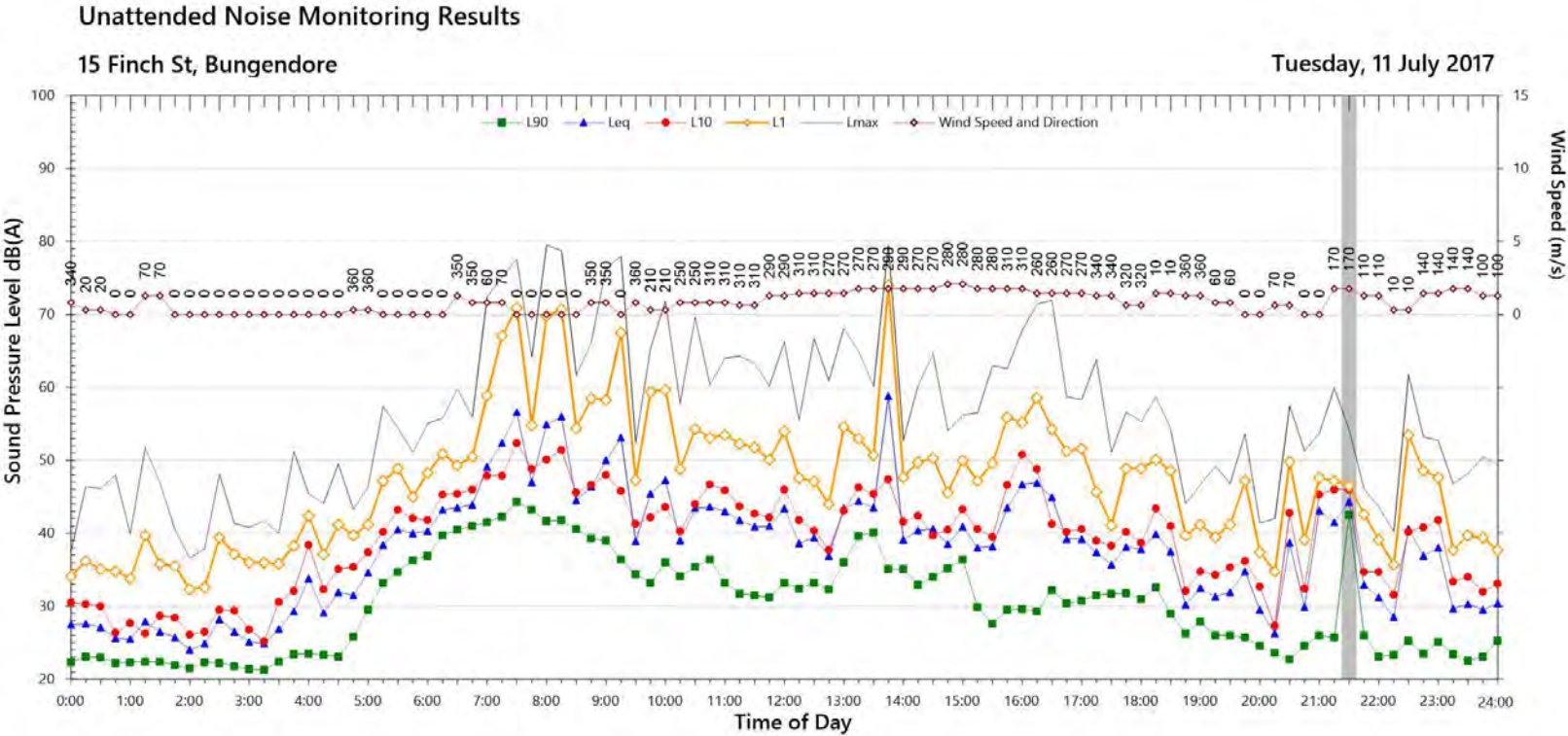
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1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise – data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am till 6pm on other days.
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Data File: 2017-07-04_SLM_000_123_Rpt_Report.txt

TJ750-01M01 15 Finch St Bungendore (r0)

QTE-26 (rev 15) Logger Graphs Program



NSW Industrial Noise Policy (Free Field)			
Descriptor	Day ²	Evening ³	Night ^{4,5}
L ₉₀	29.9	23.1	21.7
L _{Aeq}	48.5	36.8	43.9

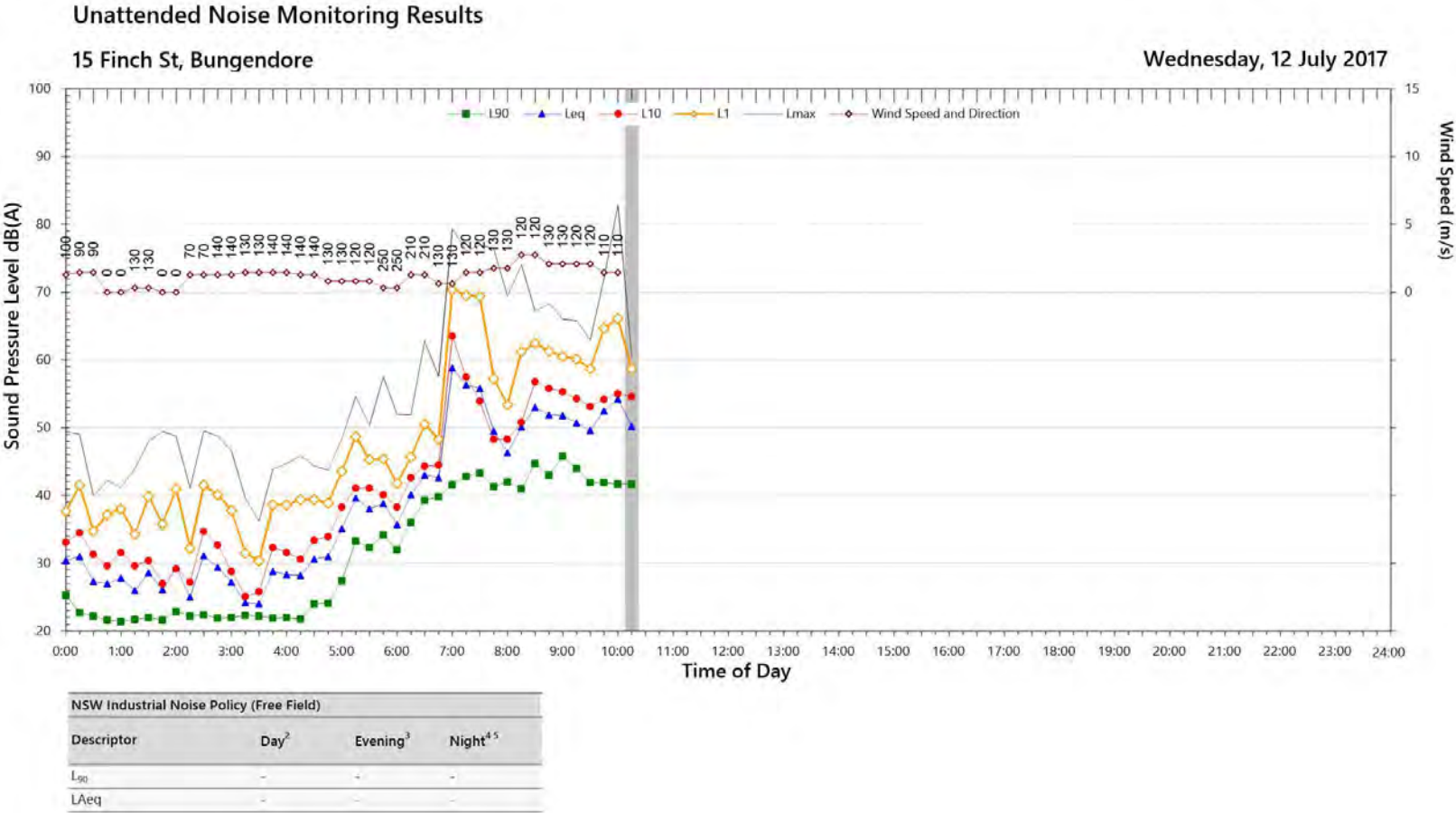
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise – data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am till 6pm on other days.
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Data File: 2017-07-04_SLM_000_123_Rpt_Report.txt

TJ750-01M01 15 Finch St Bungendore (r0)

QTE-26 (rev 15) Logger Graphs Program



Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am till 6pm on other days.
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Data File: 2017-07-04_SLM_000_123_Rpt_Report.txt

T7750-01M01 15 Finch St Bungendore (r0)

QTE-26 (rev 15) Logger Graphs Program

QUEANBEYAN-PALERANG REGIONAL COUNCIL

Council Meeting Attachment

28 FEBRUARY 2018

ITEM 12.7 MAJARA STREET PLANNING PROPOSAL

ATTACHMENT 6 COMBINED REDACTED SUBMISSIONS - MAJARA STREET
 PLANNING PROPOSAL - 2017

From: [REDACTED]
To: [REDACTED]
Subject: [REDACTED] completed Comments
Date: Saturday, 9 September 2017 10:06:41 PM

[REDACTED] just submitted the survey 'Comments' with the responses below.

Comments on the planning proposal

Don't dare permit anymore residential development in south bungendore without making provision for a children's park in south bungendore. Similarly safe cycle way access to kidszone childcare (205 car movements per day) on Forster st and linked up ellendon st pathways.

From: [REDACTED]
To: [REDACTED]
Subject: Concerned ratepayer completed Comments
Date: Friday, 1 September 2017 2:26:18 PM

Concerned ratepayer just submitted the survey 'Comments' with the responses below.

Comments on the planning proposal

This rezoning proposal should not have its comments closed before the September 11 elections. Rezoning will make some properties more valuable, and introducing a minimum lot size will mean that more houses can be developed on a large block size. These proposals should first have been placed on the agenda for a duly elected council. Far too many decisions on the future of the QOPRC seem to have been undertaken by an unelected council administrator for QPRC, but ratepayers will then have to live with some of these decisions. Who will tend to benefit from these rezonings? Queanbeyan seems to be rapidly replacing sold houses with apartments, and Bungendore with limited water, cannot keep developing its land and still keep its rural atmosphere and natural resources such as its limited artesian water supplies. QPRC seems to envision developing the maximum number of apartments, possibly to maximise its rate revenue, irrespective of long-term traffic, limited water resources etc. These decisions should be made by an elected council and those councillors with vested interests in any council proposals should not be voting on any proposals where they may have direct or indirect interests.

From: [REDACTED]
To: [REDACTED]
Subject: [REDACTED]
Date: Friday, 1 September 2017 9:20:52 PM

[REDACTED] just submitted the survey 'Comments' with the responses below.

Comments on the planning proposal

Like all things in bungendore - I feel there is a reason lake george will not return to its former glory days - too many houses in bungendore for the ground water. therefore I feel any houses that are built or redeveloped need to have adequate water tank to reduce need for ground water

22 September 2017

The General Manager
Queanbeyan - Palerang Regional Council
PO Box 90
Queanbeyan NSW 2620

Attention: David Carswell

Dear David,

**COMMUNITY CONSULTATION ON PLANNING PROPOSAL TO REZONE LAND AT
LOT 3 DP1195030 MAJARA STREET, BUNGENDORE**

We acknowledge this opportunity to comment on the proposal to rezone IN2 (Light Industry) land at Bungendore to R2 (Low Density Residential).

It is quite clear that Bungendore does not need additional residential land so urgently that it is considered necessary to commence rezoning of IN2 land.

There are so many existing opportunities, in many locations, to further develop the existing residential lands in Bungendore and in addition there are current planning proposals to create large areas of future residential lands.

One comment noted in Council's staff presentation to the Council meeting of 25 January 2017, relating to the proposal, requires very careful consideration:-

"It is concluded that the rezoning of Lot 3 DP 1195030 is of a minor nature".

This proposed rezoning cannot be of a minor nature when the above Council meeting was also advised "a draft planning proposal has also been provided to Council for discussion concerning the rezoning of Lots 1 and 2 in DP 1195030 from IN2 to R2". Where does it stop?

Previous planning decisions made by Council affecting the current IN2 lands were clearly made in the knowledge of the development situation at that time.

The location of the concrete batching plant site (as noted on the attached plan) was approved in May 1994 and has been operating for over twenty years. There is no doubt this legal activity will continue to operate and we can be confident that demand for premix continue will not be reducing in the future.

The clear outcome of this rezoning assessment is that serious consideration must always be given to both the current and future industrial activities in the existing IN2 area and to the fact that existing industry and industrial activities will obviously continue to affect siting of residential lands.

The suggestion that we merely rezone industrial lands for the unnecessary expansion of residential land whilst ignoring the reality of their zoning incompatibility is obviously unacceptable. Do we really consider that the need to install 3, 4 or 5 metre walls to part protect a rezoned residential area is a clever decision?

The attached plan shows the relationship between industrial and residential lands which would have been carefully considered by Council planners when these zones were created.

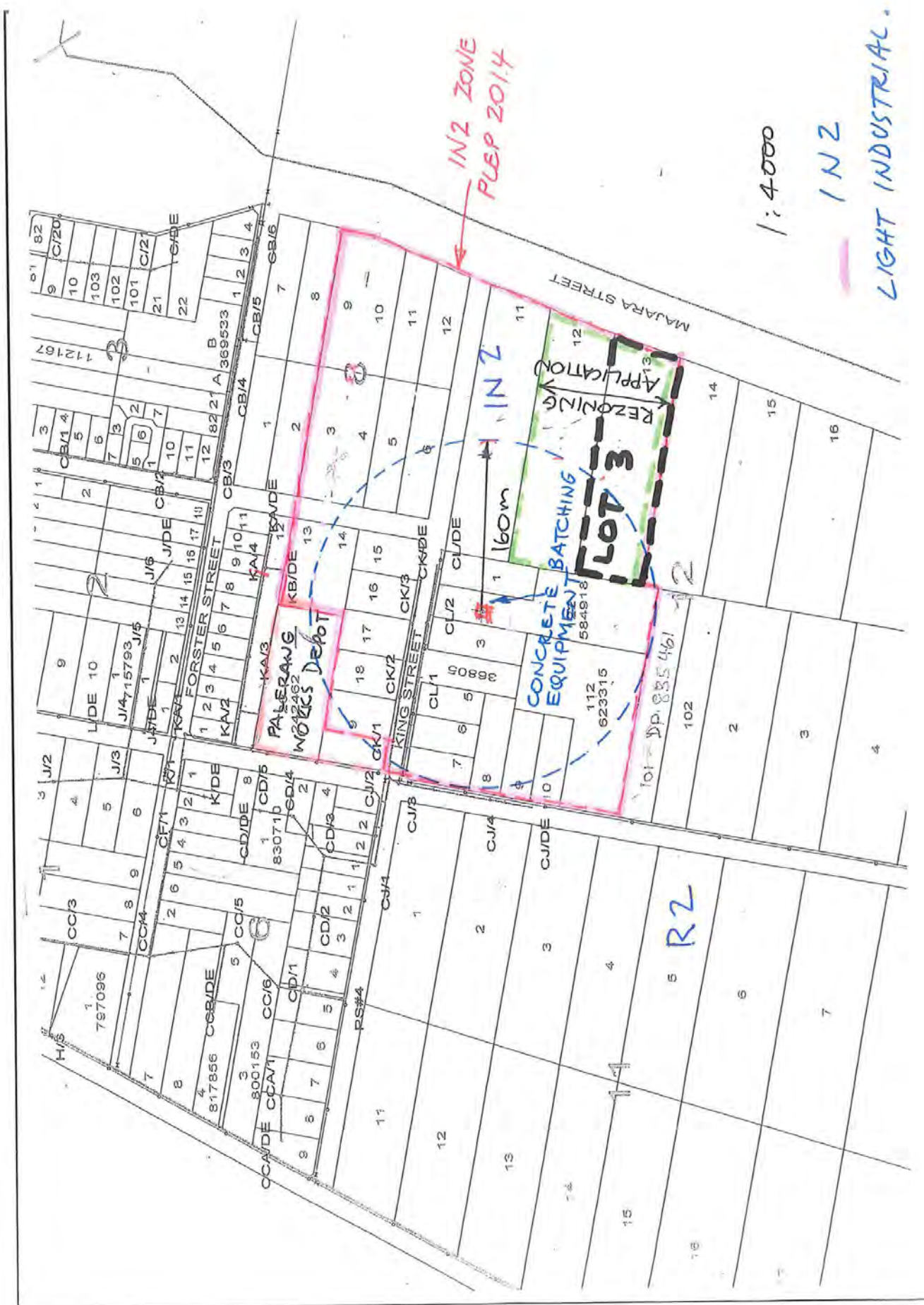
It is quite clear that the planners were aware of the need to exclude residential zoning from the proximity of the concrete batching plant.

Bungendore does not need additional residential areas, particularly areas that would be located in proximity to known industrial land use.

There is no doubt that the concept of rezoning IN2 lands to R2 at Bungendore must be rejected.

Yours sincerely,







Objection to Planning Proposal

PP_2017_QPREG_001_00

Majara Street, Bungendore
Proposed rezoning of Lot 3 DP1195030 from IN2 Light Industrial to R2 Low Density Residential





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1 Introduction

This Objection to Planning Proposal (PP Number: PP_2017_QPREG_001_00) is submitted by [REDACTED]

The Subject Site of the Planning Proposal (Lot 3 DP1195030) [REDACTED]

The Planning Proposal, seeks to amend the provisions of Palerang Local Environmental Plan 2014 (PLEP 2014) to rezone the Subject Site from its current IN2 Light Industrial zone to a proposed R2 Low Density Residential zone.

2 Site Particulars

Site and Surrounding Areas

The land subject to the Planning Proposal being Lot 3 DP 1195030 is located between Majara Street and Hopkins Street, Bungendore. The site is rectangular in shape and has dimensions of 240 m to the north, 62 m at Majara Street to the east, 230 m to the south and 61 m to the west. The site has an area of 14,151m².

The site and allotments north of the site are zoned IN2 Light Industrial, while allotments south of the site are zoned R2 Low Density Residential.



Figure 1: Subject Site in context of surrounding PLEP 2014 Land Use Zoning (planningportal.nsw.gov.au)

Surrounding residential developments consist of one and two-storey detached cottages, with more recent subdivisions currently being constructed, to the south on 1,000 m² minimum lot sizes. Located to the north and west of the Subject Site is a small IN2 Light Industrial zoned precinct which has an area of approximately 7.18ha.



Figure 2: Subject Site showing new road and subdivision construction at the site and to the south.



3 Basis of Objection to Planning Proposal

On behalf of our client, we are of the strong view that the Planning Proposal does not have strategic merit and accordingly cannot be supported. Specifically, the Planning Proposal fails to properly address the following:

3.1.1 Land Use Conflict

It is considered that a land use conflict would be created with the proposed location of residential development [REDACTED]

[REDACTED] The Planning Proposal documentation on exhibition on the Council's website, is accompanied by a more recent Acoustic Assessment dated 18 August 2017 (<http://yourvoice.gprc.nsw.gov.au/planning-proposal-to-rezone-land-at-bungendore#>), which does not appear on the NSW Department of Planning's LEP Tracking website (<http://leptracking.planning.nsw.gov.au/PublicDetails.aspx?Id=3848>).

The recently submitted Acoustic Assessment Report details the future incompatibility of the Subject Site for residential use and confirms that the site is in fact unsuitable for the proposed change in land use zone from IN2 Light Industrial to R2 Low Density Residential. Approval of the Planning Proposal will conflict with any future residential amenity of the area due to noise, vehicle movements, hours of operation and visual impact and jeopardise [REDACTED] the ongoing use of the established light industrial area.

3.1.2 Acoustic Barrier

The offer in the Planning Proposal to construct a 3.0 metre high concrete noise barrier is an unacceptable solution which recognises that noise from the existing industrial area will impact on the amenity of future residents should the land be rezoned from IN2 Light Industrial to R2 Low Density Residential as proposed. The only acceptable and satisfactory solution is not to rezone the land for residential purposes. In the event that a 3.0 m high concrete noise barrier [REDACTED] was constructed, there appears to be no proposal to provide for the ongoing maintenance of the barrier. [REDACTED]

The recently submitted Acoustic Assessment dated 18 August 2017 states at *section 5.5 Discussion* that:

The inclusion of 2 m high noise walls along the northern and western site boundaries of the subject site would provide minimal shielding benefits as the noise sources at the concrete plant are generally located at heights more than 2 m above the ground. Noise walls of 4 m in height along the northern and western site boundaries would provide some shielding benefits; however, exceedances of the INP criteria are still predicted for the majority of the subject site. Noise walls of a greater height would provide a greater level of shielding; however, may not be reasonable and feasible in terms of constructability, cost, overshadowing and visual impacts.

The above quote highlights the inherent conflict that would be created by the rezoning of the industrial land to residential use.

It is noted that *Figure 7 of the Acoustic Assessment* models the acoustic impact of erecting 4 m high walls on not only the northern and western boundaries of the Subject Site, [REDACTED]

[REDACTED] demonstrates the inherent incompatibility of the proposed R2 low density residential land [REDACTED] Notwithstanding erection of the enormous, out of character barrier walls, the future residential dwellings will continue to be adversely impacted by the operations of the industrial area.



Figure 7 – Noise Modelling Results for Scenario 6



3.1.3

Page 13 of the Planning Proposal incorrectly states that:

[Redacted text]

Lawful commencement of

- [Redacted text]
 - [Redacted text]
- [Redacted text]
- [Redacted text]
- [Redacted text]

Palerang LEP 2014 permits light industry with consent in the IN2 Light Industry zone. The definition of 'Light Industry' does not prohibit any other type of 'Industry'. Rather for the industry to be permissible it must meet the following definition:



"Light industry" – means a building or place used to carry out an industrial activity that does not interfere with the amenity of the neighbourhood by reason of noise, vibration, smell, fumes, smoke, vapour, steam, soot, ash, dust, waste water, waste products, grit or oil, or otherwise, and includes any of the following:

- High technology industry,
- Home industry"



3.1.4 Limited supply of Industrial Lands in Bungendore

The IN2 Light Industrial zone shown on **Figure 1** is the only industrial land use zone in Bungendore. The nearest industrial land use zones to Bungendore are located in Braidwood, Queanbeyan, and the Australian Capital Territory. It is considered necessary to retain the limited industrial lands in Bungendore to service, what is regarded as being a medium-sized town, and to generate employment opportunities for Bungendore residents. There is a need for a diversity of local employment opportunities located in Bungendore, rather than a high reliance on public service employment in ACT and Queanbeyan. Protection of the limited industrial lands in Bungendore would support this local need. Therefore the incremental loss of local industrial lands within Bungendore should not be supported.



3.1.5 Adequate supply of residential zoned urban land in Bungendore

As set out in Appendix 1 of this submission, a preliminary review of lands zoned residential in Bungendore indicates approximately 28 ha of residential zoned land currently not developed. Even allowing for land approved for subdivision however not yet developed, there is a significant supply of land already zoned that does not justify the rezoning of additional lands. This is particularly the case when the land proposed to be rezoned will compromise the ongoing use of the established adjoining industrial area of Bungendore. This amount does not include the as yet undeveloped potential within existing residential areas to develop multi-dwelling housing.

As such, there is no strategic basis for supporting this rezoning in terms of the supply and demand for residential land in Bungendore.



4 Conclusion

In summary and on behalf of our client [REDACTED] we strongly object to the Planning Proposal noting that it is neither justified nor supportable in terms of having demonstrated any satisfactory strategic merit. Accordingly, Council must not make this plan pursuant to the delegation issued by the Minister for Planning.

There is no plan adopted by Council for the reviewing of the location of the industrial lands in Bungendore and accordingly, no strategic basis to support this Planning Proposal despite the suggestion in the Gateway Determination report by the Department of Planning and Environment (Department) that this is to occur. The same report by the Department also refers to the existing industrial land to the north but [REDACTED]

Accordingly, we are of the view that the proposed rezoning is not of minor significance and ought not to be made by Council under delegation.

We wish to thank Council for the opportunity to comment and await your advice on the matters raised.



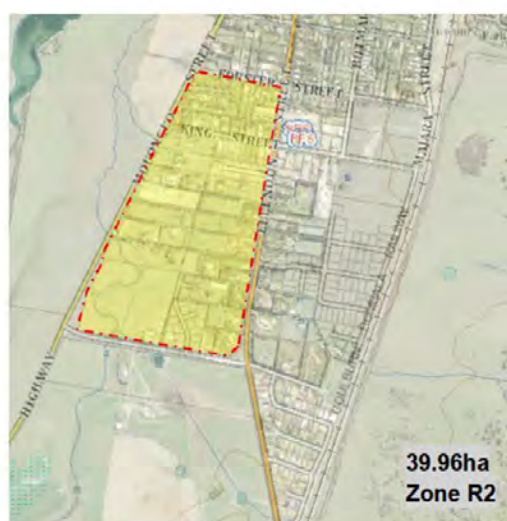
Appendix 1

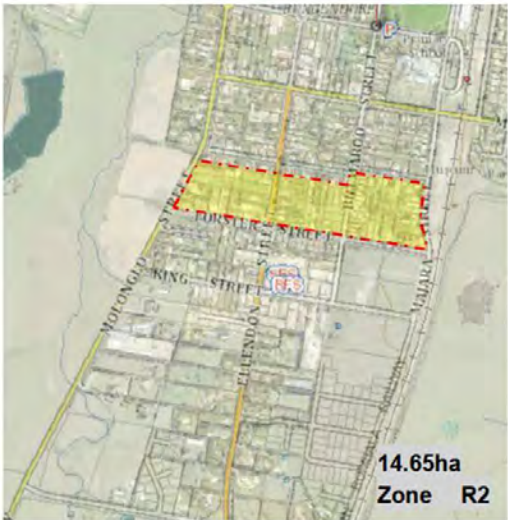
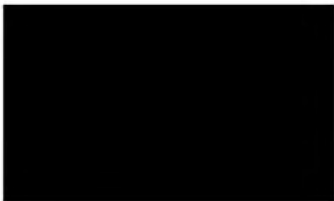
Existing Residential Land Mapping



The following maps based on the residential zonings under the Palerang LEP, illustrate the extent of residential land in Bungendore noting:

- Total area of all residential zoned land, within the Bungendore urban areas = approximately 303.28 ha; and
- Approximately 28.24 ha of the above residential zoned land is as yet vacant and undeveloped.





QUEANBEYAN-PALERANG REGIONAL COUNCIL

Council Meeting Attachment

28 FEBRUARY 2018

ITEM 12.7 MAJARA STREET PLANNING PROPOSAL

ATTACHMENT 7 PUBLIC EXHIBITION REPORT ON MAJARA STREET
 PLANNING PROPOSAL

Attachment 5:
**Planning Proposal for Majara Street, Bungendore –
summary of public exhibition**

Executive Summary of engagement report:

The Planning Proposal to rezone Lot 3 DP 1195030 from IN2 Light Industrial to R2 Low Density Residential was publicly exhibited between 22 August 2017 and 22 September 2017. The documents – Planning Proposal Report, the Gateway Determination, an Acoustic Study by Renzo Tonin, Public Authority responses and Council Report and Minutes dated 25 January 2017 were advertised and made available via:

- Regular Council advertisement in Queanbeyan Age, Braidwood Times and Bungendore Weekly
- Displays at Council's Customer Service Centres and libraries
- Council's Your Voice community engagement website

Participation in engagement:

Council received 5 submissions on the exhibition of this planning proposal, with 3 of these received via the Your Voice QPRC engagement hub. Others were received by email to Council.

Data obtained from the Your Voice QPRC site showed that:

- 189 users visited the page
- 77 document downloads (45 for Planning Proposal Report)

Summary of submissions received:

Note: In some cases the submission was small enough to reproduce in full here. In other cases a summary was done.

Submission:	Submission (full/summary):	Council response	Recommendation (staff)
1	Full submission: Like all things in Bungendore - I feel there is a reason Lake George will not return to its former glory days - too many houses in Bungendore for the ground water. Therefore I feel any houses that are built or redeveloped need to have adequate water tank to reduce need for ground water.	Council is undertaking work to determine whether additional groundwater for Bungendore's townwater supply is available.	No further action required.
2	Full submission: Don't dare permit anymore residential development in South Bungendore without	If Lot 3 DP 1195030 is developed for residential use, there will be an increase of approximately thirty people which is considered to be a minor impact and that	Forward the submission to the General Manager Community Connection and Service Manager Urban

Submission:	Submission (full/summary):	Council response	Recommendation (staff)
	<p>making provision for a children's park in South Bungendore.</p> <ul style="list-style-type: none"> Similarly safe cycle way access to Kidszone Childcare (205 car movements per day) on Forster St and linked up Ellendon St pathways. 	<p>sufficient existing services and infrastructure can accommodate this increase. Additionally, a proportion of section 94 contributions will be allocated to the provision of community infrastructure and if these types of needs are warranted they can be included in the Council's Capital Works program.</p> <p>Recreation is one of the matters being considered in the review of the Structure Plan</p>	<p>Landscapes and include in the review of the Structure Plan.</p>
3	<p>Full submission: This rezoning proposal should not have its comments closed before the September 11 elections and should first have been placed on the agenda for a duly elected council.</p> <p>Rezoning will make some properties more valuable, and introducing a minimum lot size will mean that more houses can be developed on a large block size. Who benefits from these rezonings?</p> <p>Queanbeyan seems to be rapidly replacing sold houses with apartments, and Bungendore with limited water, cannot keep developing its land and still keep its rural atmosphere and natural resources such as its limited artesian water supplies.</p> <p>QPRC seems to envision developing the maximum number of apartments, possibly to</p>	<p>The public exhibition did not close until 22 September after the new Council was elected and the results of community consultation will be considered by the elected Council.</p> <p>From a monetary point of the view the proponent/ landowner benefits. However increasing density closer to the village centre benefits those residents who want to be closer to shops and services being able to walk rather than always using a car. It can also be seen as being a more efficient use of land.</p> <p>Council is undertaking work to determine whether additional groundwater for Bungendore's town water supply is available.</p> <p>The issue of retaining Bungendore's rural atmosphere is recognised in relation to growth. The Palerang Development Control Plan 2015 contains a character statement taking this into account and this will be</p>	<p>No further action required.</p>

Submission:	Submission (full/summary):	Council response	Recommendation (staff)
	<p>maximise its rate revenue, irrespective of long-term traffic, limited water resources etc.</p> <p>Far too many decisions on the future of the QPRC seem to have been undertaken by an unelected council administrator for QPRC, but ratepayers will then have to live with some of these decisions. These decisions should be made by an elected council and those councillors with vested interests in any council proposals should not be voting on any proposals where they may have direct or indirect interests.</p>	<p>considered in the review of the Structure Plan.</p> <p>All planning proposals (process for the rezoning of land) include a requirement to consult with the community.</p> <p>QPRC can only develop apartments in the R4 High Density zone or on the new land release areas such as Googong or South Tralee.</p>	
4a)	<p>See Attachment 4 for the full submission</p> <p>Summary of submission: Bungendore does not need additional residential land so urgently that it is considered necessary to rezone the IN2 zoned land. There are existing residential opportunities as well as current planning proposals to zone land to residential.</p>	Bungendore currently has opportunities for residential development within the existing town boundary. Additionally, there are proposals for greenfield areas around Bungendore awaiting the outcome of the availability of townwater and the review of the Structure Plan.	That Council advise the Minister for Planning under Section 59 of the <i>NSW Environmental Planning and Assessment Act 1979</i> to make the local environmental plan amendment.
4b)	The planning proposal states that it is of minor nature but it is not of minor nature as it sets a precedent for neighbouring industrial lots.	If this planning proposal goes ahead then it is likely that the industrially zoned land to the north will look to rezone land to residential. Council has received such a proposal (refer to the report to the meeting of Council 25 January 2017).	That Council advise the Minister for Planning under Section 59 of the <i>NSW Environmental Planning and Assessment Act 1979</i> to make the local environmental plan amendment.
4c)	Serious consideration needs to be given to both current and future industrial activities including the concrete batching plant which	It appears that the concrete batching plant will continue operating for the foreseeable future. However, it is less likely that any future uses would cause the same land use conflict as the	No further action required.

Submission:	Submission (full/summary):	Council response	Recommendation (staff)
	will continue to affect the siting of residential lands.	objective of the IN2 Light Industrial zone requires residential amenity (in terms of noise, odour, dust) to be considered.	
4d)	"It is unnecessary to rezone industrial land when the land use is incompatible and installing a wall is clever solution?"	Noise amelioration is often solved by building noise walls. Whether it is a solution depends whether it is able to work effectively.	No further action required.
4e)	Historically residential zones were excluded from areas in proximity to the concrete batching plant. Bungendore does not need additional residential areas especially in proximity to known industrial uses and this planning proposal should be rejected.	Landuse zones were introduced to Bungendore with the gazettal of the <i>Palerang Local Environmental Plan 2014</i> prior to this there were precincts as part as of a development control plan. This approach did not allow for as much control on the location of land uses as a local environmental plan. Currently there is a supply of land that has the potential for infill residential development within current residential zones and lot sizes albeit some are harder to develop due to laneways, narrow blocks or heritage issues.	No further action required.
5a)	See Attachment 4 for the full submission. Summary of submission: The Planning Proposal does not have any strategic merit as it does not address the following:	There is no strategic document that identifies this site as being suitable for residential purposes.	Continue to work on the review of the Structure Plan and an increase in the town water licence allocation.
5b)	Land Use Conflict will be created by locating residential alongside the concrete batching plant. The Acoustic Assessment (which does not appear on the NSW Department of Planning LEP's Tracking website) details the incompatibility of the site for residential use. The approval of the planning proposal will conflict with future residential amenity in terms of noise, vehicle movements, hours of	The incompatibility of the site is noted. The Acoustic Assessment has now been uploaded to the website.	No further action required.

Submission:	Submission (full/summary):	Council response	Recommendation (staff)
	operation and visual impact and jeopardise both the continued batching operations and ongoing use of the established light industrial area.		
5c)	Acoustic Barrier The proposal to build a 3m high concrete noise barrier is an unacceptable solution and there is no provision made for its maintenance. The Acoustic Report says that with 4m high walls there will be some shielding benefits but that the majority of the site will still exceed the Industrial Noise Policy (INP). Walls any higher may provide a greater level of shielding but may not be feasible in terms of constructability, cost, overshadowing and visual impacts. The Acoustic Report also erects a 4m wall between the boundaries of no.s 41 and 43 King Street without our client's permission.	<p>The updated Acoustic Report makes no reference to how, whatever the height of the wall, is to be maintained.</p> <p>The 4m high wall would raise other issues to be considered. such as cost, overshadowing and visual impacts</p> <p>It is understood that the wall between the boundaries of 41 and 43 already exists but at a height of 2m not 4m.</p>	No further action required.
5d)	Permissibility of Concrete Batching Plant – the Planning Proposal is incorrect when it says that the concrete batching plant is not permissible under the current IN2 Light Industrial zoning as it has a development consent and has been in operation since 1994 and is established as a lawful consent. Even if the IN2 zone would no longer permit a new concrete batching plant the site benefits from “Existing Use Rights” and the client will continue existing operations and future plans to expand or diversify the operations. Clearly the amenity of the neighbourhood is measured against any proposal within a light industrial zone and therefore the batching	A new concrete batching plant in this location would find it hard to meet the objectives “To minimise any adverse effect of industry on other land uses” and “To ensure that new development has regard to the character and amenity of the locality”, because of the proximity to dwellings.	No further action required.

Submission:	Submission (full/summary):	Council response	Recommendation (staff)
	plant's future operations will be further constrained by the proximity of future nearby residents - this is unacceptable and Council should refuse this Planning Proposal.		
5e)	Limited Supply of Industrial Land In Bungendore This IN2 Light Industrial Land is the only land zoned in Bungendore and as such should be retained to service a medium sized town to generate employment opportunities and relying less on public service employment commutes to the ACT. The protection of the limited industrial lands in Bungendore supports this local need and its incremental loss should not be supported. Retaining the concrete batching plan is critical to the growth to support future growth and development of Bungendore being able to deliver time-critical concrete products to the locality sustainably rather than having to travel longer distances from other industrial centres which affects the quality of the concrete.	Noted that the land is within the only light industrial land the review of the Structure Plan is on-going and will suggest alternative sites suitable for industry .	That Council advise the Minister for Planning under Section 59 of the <i>NSW Environmental Planning and Assessment Act 1979</i> to make the local environmental plan amendment.
5f)	Adequate Supply of residential zoned urban land in Bungendore There are approximately 28ha of land zoned for residential currently not developed therefore rezoning additional land is not justified even more so when it will compromise the ongoing use of the established adjoining industrial area. This does not include the as yet potential within existing residential areas to develop multi-dwelling housing.	Bungendore does have opportunities for residential development although at present mainly infill and then some of these are constrained. There are proposals for further greenfield areas around Bungendore however these are awaiting the outcome of the availability of town water to support these new areas and the review of the Structure Plan.	That Council advise the Minister for Planning under Section 59 of the <i>NSW Environmental Planning and Assessment Act 1979</i> to make the local environmental plan amendment.
5g)	No adopted plan by Council exists for reviewing the location of industrial lands in	A review of the Structure Plan is currently being undertaken by Council. Community	Continue to work on the review of the Structure Plan

Submission:	Submission (full/summary):	Council response	Recommendation (staff)
	Bungendore and therefore no strategic basis to support the Planning Proposal even although a Plan has to be done As such the proposed rezoning is not of minor significance and ought not to be made by Council under delegation.	consultation will be a key component of the review.	and an increase in the town water licence allocation.